



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL  
TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

# RC-Specific Evaluation of ECO – Evolving Continents

Seppo Saari & Antti Moilanen (Eds.)



Evaluation Panel: Natural Sciences



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**University of Helsinki  
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<b>Title:</b> International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010 : RC-Specific Evaluation of ECO – Evolving Continents	<b>Type of publication:</b> Evaluations
<b>Summary:</b> Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate. Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report. Chapters in the report: 1. Background for the evaluation 2. Evaluation feedback for the Researcher Community 3. List of publications 4. List of activities 5. Bibliometric analyses The level of the RCs' success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.	
<b>RC-specific information:</b>	
<b>Main scientific field of research:</b> Natural Sciences	<b>RC-specific keywords:</b> continental, crust, mantle, lithosphere, bedrock, granites, mineral resources, supercontinents, geochemistry, isotope geology, petrology, reflection seismology, tomography, paleomagnetism, Precambrian, Finland
<b>Participation category:</b> 4. Research of the participating community represents an innovative opening	
<b>RC's responsible person:</b> Korja, Annakaisa	
<b>Keywords:</b> Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community	

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## Foreword

The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which led to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs’ answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.

On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth  
Vice-Rector  
Chair of the Steering Group of the Evaluation

### **Steering Group of the evaluation**

Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

### **Chair**

Vice-Rector, professor **Johanna Björkroth**

### **Vice-Chair**

Professor **Marja Airaksinen**

Chief Information Specialist, Dr **Maria Forsman**

Professor **Arto Mustajoki**

University Lecturer, Dr **Kirsi Pyhälä**

Director of Strategic Planning and Development, Dr **Ossi Tuomi**

Doctoral candidate, MSocSc **Jussi Vauhkonen**



# Panel members

## **CHAIR**

### **Professor Jan-Otto Carlsson**

Materials science in chemistry and physics, nanotechnology, inorganic chemistry  
Uppsala University, Sweden

## **VICE-CHAIR**

### **Professor Jan van Leeuwen**

Computer science, information technology  
University of Utrecht, the Netherlands

### **Professor Caitlin Buck**

Probability and statistics, archeology, palaeoenvironmental science  
University of Sheffield, Great Britain

### **Professor David Colton**

Mathematics, inverse problems of acoustic and electromagnetic scattering  
University of Delaware, USA

### **Professor Jean-Pierre Eckmann**

Mathematics, dynamical systems, mathematical physics  
University of Geneva, Switzerland

### **Professor Ritske Huismans**

Geosciences, geodynamics  
University of Bergen, Norway

### **Professor Jukka Jurvelin**

Medical physics and engineering  
University of Eastern Finland

### **Professor Lea Kauppi**

Environmental sciences, water research  
The Finnish Environment Institute, Finland

### **Professor Riitta Keiski**

Chemical engineering, heterogeneous catalysis, environmental technology, mass and heat transfer processes  
University of Oulu, Finland

### **Professor Mats Larsson**

Experimental molecular physics, chemical dynamics, molecular spectroscopy, astrobiology  
Stockholm University, Sweden

### **Professor Holger Stark**

Medicinal, organic and pharmaceutical chemistry, pharmacology  
Johann Wolfgang Goethe Universität, Germany

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.

Added expertise to the evaluation was contributed by the members from the other panels.

### **Experts from the Other Panels**

**Professor Barbara Koch**, from the Panel of Biological, Agricultural and Veterinary Sciences

**Professor Peter York**, from the Panel of Medicine, Biomedicine and Health Sciences

### **EVALUATION OFFICE**

**Dr Seppo Saari, Doc.**, Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

**Dr Eeva Sievi, Doc.**, Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

**MSocSc Paula Ranne**, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

**Mr Antti Moilanen**, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

### **TUHAT OFFICE**

#### **Provision of the publication and other scientific activity data**

**Mrs Aija Kaltera**, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

**MA Liisa Ekebon**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

**BA Liisa Jäppinen**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

### **HELSINKI UNIVERSITY LIBRARY**

#### **Provision of the publication analyses**

**Dr Maria Forsman**, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.

## **Acronyms and abbreviations applied in the report**

### **External competitive funding**

AF - Academy of Finland  
TEKES - Finnish Funding Agency for Technology and Innovation  
EU - European Union  
ERC - European Research Council  
International and national foundations  
FP7/6 etc. /Framework Programmes/Funding of European Commission

### **Evaluation marks**

Outstanding (5)  
Excellent (4)  
Very Good (3)  
Good (2)  
Sufficient (1)

### **Abbreviations of Bibliometric Indicators**

P - Number of publications  
TCS - Total number of citations  
MCS - Number of citations per publication, excluding self-citations  
PNC - Percentage of uncited publications  
MNCS - Field-normalized number of citations per publication  
MNJS - Field-normalized average journal impact  
THCP10 - Field-normalized proportion highly cited publications (top 10%)  
INT\_COV - Internal coverage, the average amount of references covered by the WoS  
WoS - Thomson Reuters Web of Science Databases

### **Participation category**

Category 1. The research of the participating community represents the international cutting edge in its field.

Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.

Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.

Category 4. The research of the participating community represents an innovative opening.

Category 5. The research of the participating community has a highly significant societal impact.

### **Research focus areas of the University of Helsinki**

Focus area 1: The basic structure, materials and natural resources of the physical world

Focus area 2: The basic structure of life

Focus area 3: The changing environment - clean water

Focus area 4: The thinking and learning human being

Focus area 5: Welfare and safety

Focus area 6: Clinical research

Focus area 7: Precise reasoning

Focus area 8: Language and culture

Focus area 9: Social justice

Focus area 10: Globalisation and social change



# 1 Introduction to the Evaluation

## 1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation<sup>1</sup> and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

## 1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University's strategic policies. The improvement of doctoral training should be compared to the University's policy.<sup>2</sup>
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University's research potential.
- to exploit the University's TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

## 1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

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<sup>1</sup> The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.

<sup>2</sup> [Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.](#)

The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

**Five stages of the evaluation method were:**

1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT<sup>3</sup> compilations on publications and other scientific activities<sup>4</sup>
4. External evaluation
5. Public reporting

## 1.4 Implementation of the external evaluation

### Five Evaluation Panels

Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:

1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:

- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

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<sup>3</sup> TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki

<sup>4</sup> Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.

## 1.5 Evaluation material

The main material in the evaluation was the RCs' self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

### Evaluation material

1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
  - 3.1. statistics of publications
  - 3.2. list of publications
  - 3.3. statistics of other scientific activities
  - 3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
  - 4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
  - 4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

### Background material

University of Helsinki

- [Basic information about the University of the Helsinki](#)
- [The structure of doctoral training at the University of Helsinki](#)
- Previous evaluations of research at the University of Helsinki – links to the reports: [1998](#) and [2005](#)

The Finnish Universities/Research Institutes

- [Finnish University system](#)
- [Evaluation of the Finnish National Innovation System](#)
- [The State and Quality of Scientific Research in Finland. Publication of the Academy of Finland 9/09.](#)

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.

## 1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the **additional material** as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

### 1. Focus and quality of the RC's research

- Description of
  - the RC's research focus.
  - the quality of the RC's research (incl. key research questions and results)
  - the scientific significance of the RC's research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC's research

The additional material: TUHAT compilation of the RC's publications, analysis of the RC's publications data (provided by University of Leiden and the Helsinki University Library)

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

### 2. Practises and quality of doctoral training

- Organising of the doctoral training in the RC. Description of the RC's principles for:
  - recruitment and selection of doctoral candidates
  - supervision of doctoral candidates
  - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
  - good practises and quality assurance in doctoral training
  - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

### 3. The societal impact of research and doctoral training

- Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
- Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.

The additional material: TUHAT compilation of the RC's other scientific activities.

A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)



#### **4. International and national (incl. intersectoral) research collaboration and researcher mobility**

- Description of
  - the RC's research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

A written feedback from the aspects of: scientific quality, national and international collaboration

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

#### **5. Operational conditions**

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

#### **6. Leadership and management in the researcher community**

- Description of
  - the execution and processes of leadership in the RC
  - how the management-related responsibilities and roles are distributed in the RC
  - how the leadership- and management-related processes support
    - high quality research
    - collaboration between principal investigators and other researchers in the RC
    - the RC's research focus
    - strengthening of the RC's know-how
- Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes

#### **7. External competitive funding of the RC**

- The RCs were asked to provide information of such external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
  - 1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation , EU, ERC, foundations, other national funding organisations, other international funding organisations), and
  - 2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness, future significance

- Strengths
- Areas of development
- Other remarks
- Recommendations

#### **8. The RC's strategic action plan for 2011–2013**

- RC's description of their future perspectives in relation to research and doctoral training.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

- Strengths
- Areas of development

- Other remarks
- Recommendations

## 9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC's fitness to the chosen participation category

A written feedback evaluating the RC's fitness to the chosen participation category

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

## 10. Short description of how the RC members contributed the compilation of the stage 2 material

Comments on the compilation of evaluation material

## 11. How the UH's focus areas are presented in the RC's research?

Comments if applicable

## 12. RC-specific main recommendations based on the previous questions 1-11

## 13. RC-specific conclusions

# 1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:

- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, 'criteria'). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

## Description of criteria levels

### Question 1 – FOCUS AND QUALITY OF THE RC'S RESEARCH

#### Classification: Criteria (level of procedures and results)

#### Outstanding quality of procedures and results (5)

Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

*In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of "international attention" or "international impact" etc. in the grading criteria above may be replaced by "international comparability".*

Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

#### **Excellent quality of procedures and results (4)**

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

#### **Very good quality of procedures and results (3)**

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

#### **Good quality of procedures and results (2)**

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

#### **Sufficient quality of procedures and results (1)**

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

### **Question 2 – DOCTORAL TRAINING**

### **Question 3 – SOCIETAL IMPACT**

### **Question 4 – COLLABORATION**

#### **Classification: Criteria (level of procedures and results)**

##### **Outstanding quality of procedures and results (5)**

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

##### **Excellent quality of procedures and results (4)**

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

##### **Very good quality of procedures and results (3)**

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and

management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

#### **Good quality of procedures and results (2)**

Procedures are of good quality, shared occasionally in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

#### **Sufficient quality of procedures and results (1)**

Procedures are of sufficient quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

### **Question 9 – CATEGORY**

Participation category – fitness for the category chosen

The choice and justification for the chosen category below should be reflected in the RC's responses to the evaluation questions 1–8.

1. *The research of the participating community represents the international cutting edge in its field.*
2. *The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.*
3. *The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.* The research is of high quality and has great significance and impact in its field. However, the generally used research evaluation methods do not necessarily shed sufficient light on the merits of the research.
4. *The research of the participating community represents an innovative opening.* A new opening can be an innovative combination of research fields, or it can be proven to have a special social, national or international demand or other significance. Even if the researcher community in its present composition has yet to obtain proof of international success, its members can produce convincing evidence of the high level of their previous research.
5. *The research of the participating community has a highly significant societal impact.* The participating researcher community is able to justify the high social significance of its research. The research may relate to national legislation, media visibility or participation in social debate, or other activities promoting social development and human welfare. In addition to having societal impact, the research must be of a high standard.

#### **An example of outstanding fitness for category choice (5)<sup>5</sup>**

The RC's representation and argumentation for the chosen category were convincing. The RC recognized its real capacity and apparent outcomes in a wider context to the research communities. The specific character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in the positioning of the classification. There was no exact definition for the category fitness.

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<sup>5</sup> The panels discussed the category fitness and made the final conclusions of the interpretation of it.

## 1.8 Timetable of the evaluation

The main timetable of the evaluation:

- |  |                       |
|--|-----------------------|
| 1. Registration                            | November 2010         |
| 2. Submission of self-evaluation materials | January–February 2011 |
| 3. External peer review                    | May–September 2011    |
| 4. Published reports                       | March–April 2012      |
| - University level public report           |                       |
| - RC specific reports                      |                       |

The entire evaluation was implemented during the university's strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

## 1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.



# 2 Evaluation feedback

## 2.1 Focus and quality of the RC's research

- *Description of*
    - *the RC's research focus*
    - *the quality of the RC's research (incl. key research questions and results)*
    - *the scientific significance of the RC's research in the research field(s)*
  - *Identification of the ways to strengthen the focus and improve the quality of the RC's research*
- ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness*

The ECO RC focuses on geodynamic / plate tectonic problems using a variety of geological, geochemical and geophysical methods. It studies continental evolution including formation of island arcs, continental blocks and sedimentary basins, deformation during orogenesis, and continental breakup. It integrates research on petrology and lithology, geochemistry and isotope geology, structural geology and tectonics, economic geology and mineralogy, and seismology and paleomagnetism.

ECO consists of 14 professors and lecturers, 2 emeritus professors, 8 post docs and 18 phd's.

The publication records show reasonable scientific production (105 papers) in good journals. Impact and number of references are good (MNJS 1.11, THCP 1.79). The citation indices are also good: MCS 4.26 to reasonable: MNCS 0.89 consistent with the average in the field. Given the size of the RC more publications could have been expected.

The members of the ECO RC are very active in editorial and referee work in top journals in their field and as examiners of PhD theses. They have received several awards and are very active in public outreach.

The group is multi-disciplinary, combines a range of geological and geophysical data sources with modeling to obtain understanding of geodynamic processes in the crust and lithosphere. The research has both fundamental importance as economic relevance. Although the group has selected category 4 they could also easily fall under category 2 to 3.

**Numeric evaluation: 3.5 (Very good)**

## 2.2 Practises and quality of doctoral training

- *Organising of the doctoral training in the RC. Description of the RC's principles for:*
  - *recruitment and selection of doctoral candidates*
  - *supervision of doctoral candidates*
  - *collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes*
  - *good practises and quality assurance in doctoral training*
  - *assuring of good career perspectives for the doctoral candidates/fresh doctorates*
- *Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.*
- *Additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations*

*ASPECTS: Processes and good practices related to leadership and management*

In 2005–2010, the RC has 11 trained doctoral candidates in geology and geophysics. This is a surprisingly low number given the size of the research group and the current number of PhD students. From the evaluation it appears that only 3 of the academic staff (Korja, Pesonen, and Luttinen) have been involved in PhD supervision. Is this an accurate representation?

Doctoral training follows the best practices established for the national graduate research school and by the University of Helsinki with:

- Regular (week to monthly) meetings
- Work visits with national and international collaborative partners
- Thesis evaluation by an independent international peer review committee.

Doctoral training appears multi-disciplinary reflecting the multi-disciplinary nature of the RC, combining geology, geophysics, and modeling. This is highly laudable.

Doctoral training is executed in the context of the Finnish Graduate School in Geology led by the Department of Geosciences and Geography and collaboration with four other Finnish universities (University of Oulu, University of Turku, the Åbo Akademi University, and the Aalto University). This is commendable as it pools national resources and expertise in graduate training and allows the PhD students to establish a network early on.

Private company funding of PhD projects and collaboration on research shows that the research has a high societal relevance.

### **Strengths and challenges**

The doctoral training is highly interdisciplinary. The combination of geological and geophysical approaches in PhD research projects is highly commendable. Collaboration with other national earth science centers in Finland and abroad provides a very good training environment for the graduates.

Challenges noted:

- More method training is planned. Combining different disciplines provides significant challenges in bridging disciplines (math/physics vs geology). Offering high level specialized courses for PhD students.
- Stronger collaboration with exploration companies is intended. This is commendable and will provide better job opportunities after PhD are finished.
- More transparent recruitment practices are planned. Is recruitment now by the main supervisor? Is an evaluation committee for all applicants established? Are the posts internationally advertised?
- It is not completely clear how PhD progress is monitored?

In summary, the ECO RC provides an excellent PhD training environment. Especially the ambition to combine more traditional geological research directions, geophysics, and modeling into a multi-disciplinary research and training environment is highly commendable. That this provides challenges in terms of bridging disciplines is not a surprise. The RC seems well aware of this and intends to meet this challenge with appropriate measures.

**Numeric evaluation: 4 (Excellent)**

## **2.3 The societal impact of research and doctoral training**

- *Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).*
- *Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.*
- *Additional material: TUHAT compilation of the RC's other scientific activities.*

**ASPECTS: Societal impact, national and international collaboration, innovativeness**

The RC is well aware of the wider societal relevance of their research, and has links to various industry and government agencies during the evaluation period. There appears to be a good demand for economic geologists in Finland which is one area of societal relevance the RC exploits. The RC collaborates with the Finnish seismic observatory on monitoring seismic events in Scandinavia and Russia relevant for bedrock stability, clearly highly relevant for nuclear power plant planning and hydrological conditions in planned nuclear waste depository in south-western Finland.

The RC utilizes national TV and radio channels and newspapers for public dissemination, and public outreach at Finnish Museum of Natural History.



Recruitment of a new chair in economic geology is planned to consolidate the societal / economic relevant aspects of research. This is commendable as it fits the Finnish context well.

The RC plans to increase its public impact by:

- Conducting more popular science activities through lectures and websites
- By increasing and improving the earth science curriculum of the geography teachers at the University of Helsinki.

These seem realistic and worthwhile efforts.

**Numeric evaluation: 4 (Excellent)**

## 2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- *Description of*
  - *the RC's research collaborations and joint doctoral training activities*
  - *how the RC has promoted researcher mobility*
- *Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.*

*ASPECTS: Scientific quality, national and international collaboration*

The RC has a strong national and international scientific network.

Nationally ECO collaborates with a range of institutes with a range of disciplines including:

- Earth Science and Physics Departments of the Finnish universities
- Geological Survey of Finland
- Meteorological Institute
- Research oriented companies.

Notable national research activities are

- Major seismic reflection surveys in Finland, FIRE in 2001–2006 and HIRE, which started 2007 (with GTK)
- Three dimensional deformation of the crust (with a consortium of national collaborators)
- Natural hazard warning system (with the Meteorological institute).

The RC uses exchange of doctoral students, post-doctoral researchers, and established scientists for facilitating national and international collaboration. These are efficient means for collaboration. The RC also uses the Nordic infra structure NORDSIM in Stockholm.

The RC participates in a pan-European seismic working group involved in large-scale seismic refraction studies in Europe, and in the establishment of new programs and databases. Networks as these are very useful for the professional development of junior (and senior) scientists.

The RC participates in international research programs such as ICDP, IGCP, and ILP.

### Challenges and future plans

The RC plans to continue using its national and international network for scientific collaboration which requires that laboratories and observatories are maintained.

- Is there sufficient basic funding available to maintain the present-day state, and also improve facilities?

The RC intends to promote research mobility to and from Finland through:

- short-, medium-, and long-term funding for exchange of doctoral students, post-doctoral researchers, and senior scientists
- participating in international congresses and symposia
- international scientific meetings in Finland
- new IGCP and NordForsk projects involving national and international partners.

This is highly commendable.

In summary, the RC is very well connected both nationally and internationally. The RC could benefit from participation in EU funded programs.

**Numeric evaluation: 4.5 (Excellent)**

## 2.5 Operational conditions

- *Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).*
- *Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.*

*ASPECTS: Processes and good practices related to leadership and management*

### Facilities

The RC hosts and has access to a range of seismologic, mineralogic, and geochemical research facilities necessary to perform its research, including permanent and mobile broadband stations, XRF and XRD analysis, a recently upgraded electron microprobe, and a state of the art ICP mass spectrometer. Technical support is available.

In addition the RC has access to the national isotope laboratory SIGL, equipped with an LA-MC-ICPMS.

The RC has also state-of-the-art equipment for petrophysical and paleomagnetic measurements.

### Teaching vs. Research

If we understand correctly academic staff have currently one semester (one period) free of teaching every year. This seems a very nice arrangement not available in many places, which should give ample time for research. One sabbatical year every five to seven years is also recommended if possible to institute.

The RC intends to maintain its state of the art laboratories and observatories. Is it a challenge to maintain the present-day state of the art? If yes, which strategic priorities would the RC establish? Is current technical support sufficient? Is there pressure to reduce the current support?

In summary, the RC hosts and has access to excellent state of the art facilities. These facilities are essential for the RC research and its ambitions to become a leading centre for integrated solid earth research. It is recommended that these facilities are maintained at its present level.

## 2.6 Leadership and management in the researcher community

- *Description of*
  - *the execution and processes of leadership in the RC*
  - *how the management-related responsibilities and roles are distributed in the RC*
  - *how the leadership- and management-related processes support*
    - *high quality research*
    - *collaboration between principal investigators and other researchers in the RC*
    - *the RC's research focus*
    - *strengthening of the RC's know-how*
- *Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes*

*ASPECTS: Processes and good practices related to leadership and management*

This RC has only been operating as a group since December 2010. The group structure and the range of disciplines is very appropriate.

The RC is managed through team leadership with monthly meetings of the PI team chaired by the RC coordinator to discuss research strategies, current issues, and further developments. Research is bottom up: each PI leads and manages his/her research group.

The RC has defined good and concrete practices for management:

- An annual RC workshop to discuss research strategy and related personnel and infra structure
- Interaction with the university, faculty and department on RC strategy
- A Google document site for joint preparation of documents and for discussion
- Discussion of research strategy at RC meetings
- A bimonthly scientific seminar.

The PI team is used to

- Evaluate recruitment of new doctoral candidates, post doctoral fellows and other research staff
- Evaluating the topics offered for doctoral candidates and postdoctoral fellows.

In summary, the RC has defined good practices for management. Shared group leadership as planned may not be the most efficient approach to management. This will probably only work if respective tasks/responsibilities are very clearly delineated. It might be useful to consider appointing a single group leader/coordinator.

## 2.7 External competitive funding of the RC

- *The RCs were asked to provide information of such external competitive funding, where:*
  - *the funding decisions have been made during 1.1.2005–31.12.2010, and*
  - *the administrator of the funding is/has been the University of Helsinki*
- *On the e-form the RCs were asked to provide:*
  - 1) *The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and*
  - 2) *The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.*

*Competitive funding reported in the text is also to be considered when evaluating this point.*

*ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance*

ECO has been successful in obtaining research funding. During the evaluation period the total amount of external funding was 3.53 million Euro. This is a reasonable level of funding given the size of the research community. Funding appears to be obtained by a limited number of PIs. It appears that there could be more opportunities for funding in TEKES, EU and ERC programs. Given the economic relevance of the research there seems to be potential to obtain more research funding from the mining industry. More participation from all PIs in proposal writing could help to increase the level of funding.

## 2.8 The RC's strategic action plan for 2011–2013

- *RC's description of their future perspectives in relation to research and doctoral training.*

*ASPECTS: Scientific quality, scientific significance, societal Impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance*

The RC is a highly multi-disciplinary research group. The combination of geology, geophysics, and modeling to understand complex continental evolutionary processes on a range of scales which the RC has defined as its mission is highly commendable.

The RC has as a well defined and ambitious research strategy. It aims to be among the ten top European groups in its field. The RC has all means and a number of excellent and very active staff members to meet this goal. Its goal to increase activity in economic geology will be ensured by the planned hiring of a new professor.

The decision to open up a new focus in geodynamic modeling is highly appropriate given multi-disciplinarity of the research group, and the fact that this is a missing research activity. Opening a lecturer position in solid earth geophysics/geodynamics should be a priority. Also defining PhD projects in geodynamics, integrating the different disciplines is commendable.

Maintaining the research infrastructure is essential for the research of this RC.  
The RC could include planning for EU/ERC funding in its priorities for obtaining research funding.

## **2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)**

*The RC's fitness to the chosen participation category.*

*Category 4. The research of the participating community represents an innovative opening.*

ECO has chosen the participation category: 4. The research of the participating community represents an innovative opening.

Given that this RC was only formed in December 2010 this choice is appropriate. However, the material provided shows that in terms of research quality the research and project activity of members in this RC may as well fall in category 2 'The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear breakthrough'. The individual members of the RC have produced high quality research, have very strong international collaboration, perform basic research with high societal relevance, and have access to state of the art research facilities. The panel anticipates that the RC as formed at the end of the evaluation period will continue in this direction in the near future.

Its productivity in terms of publishing and obtaining research funding has potential to increase, given the level of funding and the number of PIs, post docs, and PhDs. There also seems to be potential to increase recruitment of PhDs.

**Numeric evaluation: 3.5 (Very good)**

## **2.10 Short description of how the RC members contributed the compilation of the stage 2 material**

The full RC was involved in the compilation of the material. The RC has been formed late 2010. All members have contributed to the material.

## **2.11 How the UH's focus areas are presented in the RC's research**

*Focus area 1: the basic structure, materials and natural resources of the physical world*

ECO is highly relevant for the UH focus area "The basic structure, materials and natural resources of the physical world".

## **2.12 RC-specific main recommendations**

The publication output could be higher. It is recommended that the RC develops strategies to increase publication output.

The number of PhDs produced is low. The RC should consider ways to increase the number of PhD projects. More even distribution of supervision among the members of the RC should also be considered.

Combining geophysics and field/data based activities poses challenges in these traditionally separate fields. Interdisciplinary graduate courses could be provided.

The committee supports the implementation of transparent PhD recruitment practises.

The planned establishment of a lecturer position in geodynamic modelling is also highly commended.

The RC hosts and has access to excellent state of the art facilities. These facilities are essential for the RC's research and its ambitions to become a leading centre for integrated solid earth research. It is recommended that these facilities are maintained at their present level.

Shared group leadership as planned may not be the most efficient approach to management. This will probably only work if respective tasks/responsibilities are very clearly delineated. It might be useful to consider appointing a single group leader/coordinator.

It appears that funding from the EU, Tekes and the mining industry is quite low for this RC. Given the expertise in the RC there should be more opportunities for research funding from the mining industry. The planned establishment of a chair in economic geology may help access such funding. The committee also recommends that the RC includes planning for EU/ERC funding in its priorities for obtaining research funding.

## 2.13 RC-specific conclusions

The RC is a highly multi-disciplinary research group. The combination of geology, geophysics, and modeling to understand complex continental evolutionary processes on a range of scales which the RC has defined as its mission is highly commendable.

The RC has selected Category 4 which is appropriate given that the group was only established in 2010.

The publication record of the group is good but has potential to increase.

Similarly the number of PhD students produced during the evaluation period is low given the staff numbers and the current number of PhD students; three out of 14 staff members have apparently supervised PhD students, and there is surely potential to increase this.

PhD training is well organized. Hiring procedures could be more transparent.

Given the interdisciplinary nature of the group, interdisciplinary training courses for PhDs could be developed to span the range of fields.

There appears to be potential to secure research funding from the mining industry given the economic and societal relevance of the research. There is also a lack of funding from the EU, ESF and more effort could be made to secure funding from these sources.

The RC has potential to increase its public impact by conducting more popular science activities, linking with high schools and providing input to school teachers.

The RC is very well connected both nationally and internationally. The RC could benefit from participation in EU funded programs.

The RC hosts and has access to excellent state of the art facilities. These facilities are essential for the RC research and its ambitions to become a leading centre for integrated solid earth research.

The RC has defined good practices for management.

## 2.14 Preliminary findings in the Panel-specific feedback

### Quality in research and doctoral training

- **Research focus.** The RC is a highly multi-disciplinary research group. The combination of geology, geophysics, and modeling to understand complex continental evolutionary processes on a range of scales, which the RC has defined as its mission is highly commended.
- **Practices and quality of doctoral training.** The RC has well organized PhD training. We recommend structured international PhD hiring procedures and progress monitoring.
- **Societal impact.** The RC has a high societal and economic relevance. More interaction with the mining industry and with ground-water utilities is appropriate.
- **International and national collaboration.** The work of the RC has a strong national and international scientific network. We recommend that the group seeks to capitalise on this by initiating or joining international collaborative projects funded by, for instance, the EU/ESF.

University supported research and sabbatical stays are recommended to facilitate international contacts and collaboration.

- **Leadership and management.** The RC has defined good practices for management.
- **External funding.** More effort could go into obtaining research funds from industry and EU sources.
- **Strategic action plan.** The RC is a highly multi-disciplinary research group. The combination of geology, geophysics, and modeling to understand complex continental evolutionary processes on a range of scales which the RC has defined as its mission is highly commended.

# 3 Appendices

- A. Original evaluation material
  - a. Registration material – Stage 1
  - b. Answers to evaluation questions – Stage 2
  - c. List of publications
  - d. List of other scientific activities
- B. Bibliometric analyses
  - a. Analysis provided by CWTS/University of Leiden
  - b. Analysis provided by Helsinki University Library (66 RCs)



International evaluation of research and doctoral training  
at the University of Helsinki 2005-2010

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW

NAME OF THE RESEARCHER COMMUNITY:  
Evolving Continents (ECO)

LEADER OF THE RESEARCHER COMMUNITY:  
Doc. Annakaisa Korja, Department of Geosciences and Geography, Faculty of Science

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
  - STAGE 1 material: RC's registration form (incl. list of RC participants in an excel table)
  - STAGE 2 material: RC's answers to evaluation questions
- TUHAT compilations of the RC members' publications 1.1.2005-31.12.2010
- TUHAT compilations of the RC members' other scientific activities 1.1.2005-31.12.2010
- Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010 (analysis carried out by CWTS, Leiden University)

*NB! Since Web of Science(WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library (results available by the end of June, 2011)*





INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: Korja, Annakaisa

E-mail:

Phone: 191 51606

Affiliation: Department of Geoscience and Geography

Street address: Gustaf Hällströminkatu 2b

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Evolving continents

Acronym for the participating RC (max. 10 characters): ECO

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces): The Evolving continents (ECO) group is a research conglomerate merged from small high-profile Earth science research groups of the University of Helsinki that focuses on different aspects of continental evolution and uses a variety of geological, geochemical and geophysical methods. In the beginning of the year 2010, the geoscience departments of Geology, Geography, and the Institute of Seismology merged to better meet the increasing societal, educational and scientific demands of expertise in the modern world posed with problems related to population growth and urbanization, tapering of natural resources, growing impact of natural hazards and climate change.

Recent advances in computer sciences and geoscientific techniques have led to increasing number of high-resolution observations (geochemical in situ geochemical analysis, high resolution seismic, paleomagnetic measurements) opening completely new avenues for addressing pertinent questions in Earth Sciences. For example, large-scale multidisciplinary data sets can now be stored and used with easily accessible programs, and, combined with comprehensive sets of trace elements and isotope systems, facilitate studies of continental evolution and mineralization processes in unprecedented efficiency. The ECO group has the expertise required for exploiting the new technological possibilities in a broad range of topics from single mineral grains to the plate tectonic scale. Broad expertise also helps to develop better public information services on the wide scope of pressing geoscientific issues, such as increasingly destructive volcanic and tectonic geohazards.

The core of the research group is formed from research groups in the Department of Geosciences and Geography with important additions from the Solid Earth Geophysics Unit and the Finnish Museum of Natural History. Since 2010, a joint research education program "The Finnish graduate school in Geology" has operated in geology and geophysics. In close co-operation with the graduate school we are providing education and research training in multidisciplinary geosciences.



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE  
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC's research: natural sciences

RC's scientific subfield 1: Geosciences, Multidisciplinary

RC's scientific subfield 2: Geology

RC's scientific subfield 3: Geochemistry and Geophysics

RC's scientific subfield 4: Mineralogy

Other, if not in the list:

4 RC'S PARTICIPATION CATEGORY

Participation category: 4. Research of the participating community represents an innovative opening

Justification for the selected participation category (MAX. 2200 characters with spaces): Major advances in understanding the continental evolutionary processes will in the future come from the multidisciplinary studies. For facilitating these studies, the (ECO) research community was merged from small, active high profile research groups of the University of Helsinki studying the continental evolution using a variety of geological, geochemical and geophysical methods. The groups have gathered world-class geological information on crustal rock types around the globe, geophysical data on supercontinents and have produced excellent crustal scale seismic data sets. Our unique data sets have also helped to develop active collaboration with some of the leading foreign universities and institutions. Further combination the data sets and methods will provide new insights into the complex problems of continental evolution on several scales. Very important in this regard will be petrologic process-oriented studies (utilizing new in situ geochemical methods such as LA-QICP-MS and LA-MC-ICP-MS) that will set novel boundary conditions for larger-scale lithospheric studies.

The merger also facilitates advances economically important applications, such as new tools and techniques of ore exploration. For example, at some exploration sites we have (high-precision/world class) seismic data sets that can be used to develop magmatic or geochemical emplacement models, which are testable with novel petrophysical measurements (e.g. seismic ultrasound techniques developed at UH). Another emerging field of interdisciplinary research involve site surveys for nuclear power plants and waste repository locations and the locations of deep continental drilling sites (e.g. ICDP-program; Outokumpu 2,5 km) aimed to shed light on both the formation of the continental crust and its links to economical ore deposits.

We aim to renew research training and education to include more interdisciplinary studies and to introduce research as done in a multidisciplinary environment. Collaboration with international research groups is utilized to train the young researchers into the emerging new disciplines of geoscience.



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RC-SPECIFIC STAGE 1 MATERIAL (registration form)

5 DESCRIPTION OF THE RC'S RESEARCH AND DOCTORAL TRAINING

Public description of the RC's research and doctoral training (MAX. 2200 characters with spaces): The Evolving Continents research group studies the most basic geological process in the Earth: formation and evolution of the continents. These processes are fundamentally linked to the movement of the lithospheric plates at the Earth's surface and within the underlying hot interior of the planet. These movements and the related magmatic activity (e.g., volcanic eruptions), earthquakes, and the rise and fall of mountain belts, also have a fundamental control on the origin of ore deposits and the environmental and climatic conditions. Understanding of these complex processes supports solving the severe problems caused by tapering natural resources, increasing rate of natural hazards and climate change.

Using various geological, geochemical and geophysical methods, the ECO group focuses on several aspects of evolving continents in Europe, the Americas, Africa, India, Asia, and Antarctica. Modern, extremely sensitive and precise seismic measurements and chemical and physical analyses of rocks provide us with tools for understanding, for example, mountain building and the character of deep crustal layers, melting, crystallization and eruption of magma in volcanic systems, deposition of ore bodies from melts and fluids, and changes in past atmospheric compositions.

Our group has broad scientific expertise, active collaborative network of domestic and international partners, comprehensive data sets and up to date laboratory facilities for new geochemical and isotopic analyses as well as petrophysical and seismic measurements. These strengths provide good prospects for scientific research and methodological development in the fields of seismology, geophysics and geochemistry.

In doctoral training, the group is intimately associated with the Finnish Graduate School in Geology. The graduate school, led by the Department of Geosciences and Geography operates in close collaboration with the five Finnish universities offering a geoscience curriculum. Doctoral training benefits from long-term relationships with foreign top-quality universities and research units and responds to the growing societal demand of highly trained geoscientists.

Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces): The research group brings together separate research teams focusing on isotope geology, geochemistry, petrology and geophysics. The group combines expertise in bedrock geology, geochemistry and geophysics, strengthening the multidisciplinary aspects of geoscientific research. Being the first group of this kind in the Finnish universities, it will establish the University of Helsinki as the leading domestic site of research and researcher education in geosciences. This will also help the University of Helsinki to become a globally attractive research and training unit in these disciplines, which will promote international exchange of students and scholars.

Increasing global demand of natural resources puts strong demands on research but also gives opportunities to Finnish society. Exploration of natural resources, including deposits of high-tech metals, and their sustainable use, requires knowledge not only in bedrock geology but also in geochemistry, geophysics and seismology. It may be anticipated that the group is well equipped to provide answers to timely questions posed by the society.



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On a national scale, the group carries a substantial responsibility of training doctoral students that have a wide arsenal of skills, broadly relevant to the needs of the society in the general field of bedrock geosciences.

Keywords: continental, crust, mantle, lithosphere, bedrock, granites, mineral resources, supercontinents, geochemistry, isotope geology, petrology, reflection seismology, tomography, paleomagnetism, Precambrian, Finland

6 QUALITY OF RC'S RESEARCH AND DOCTORAL TRAINING

Justified estimate of the quality of the RC's research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces): The high quality of the RC's research can be measured with the impact on the geoscientific community and society through its research results. The group publishes in top quality journals and has high citation indexes. A member of the group has received Elsevier's landmark publication in 2008. Another good indication of the high quality is the group's success rate of raising research funding from the Academy of Finland (11 grants), international funding agencies (ESF, NordForsk), private foundations, as well as government surveys (HIRE) and domestic and international industrial partners (Posiva, Areva). Yet another qualification is high rankings in national scientific evaluations.

The good quality of the research is also acknowledged by the scientific community as several members of the group have been asked to act as referees and editors in scientific journals and books or to organize and convene international and national meetings and workshops (e.g., SEISMIX 2008 and IGCP-510 in 2010). Members of the group have participated in international science programs (IGCP, ILP, ICDP). The RC also led UNESCO's and IUGS's International Geoscience Program project IGCP-510. The group has collected internationally frequently downloaded geophysical databanks (Nordic seismic catalogue, Moho map of Europe, paleomagnetic poles).

The group is regarded as a productive researcher training unit. Young doctors are trained in various disciplines and they enjoy from full employment within industry and government agencies. The group is training about 30 % of researchers in the fields of hydrogeology, petrology, geochemistry, economic geology, mineralogy, solid earth geophysics in Finland. It has trained eleven doctors, eight post doctoral fellows and is still currently training sixteen doctoral students. The group has three foreign doctoral students, two young doctors have left the group for post doctoral training abroad. Many doctoral candidates have found permanent jobs within industry before their defense thus delaying the defense process. In 2007 a doctoral student of the group was awarded with the PhD prize of the Geological Society of Finland.

Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): We suggest that scientific productivity is assessed using statistics on publications, citation indexes, number of referee assignments, employment of young PhDs, number of PhD/number of PhD in Finland, number of scientific papers in meetings, the amount of funding, number of industry



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partnerships, activities as scientific expert on national and international levels, public appearances in TV and radio news and programs.

The research results are published in international, high-impact journals such as Lithos, Precambrian Research, Journal of Petrology, Tectonophysics, Journal of Geophysical Research, Canadian Mineralogist, Tectonics, Geology, Geophysical Journal International, Earth and Planetary Science Letters) in top quality scientific volume series (Elsevier, Geological Society of London, GSA, AGU). The results with more local relevance or including large data bases are published in national referee journals (Geological Society of Finland, Geophysica), special volumes or map series of the Geological Survey of Finland. New manuscripts will be placed in the open access library of the University of Helsinki.

The results are presented in meetings such as the IGC, GSA, EGU, AGU, IDC and the Nordic Winter Meeting and in special topic symposia and workshops. The researchers also actively take part in the domestic discussion on the crustal evolution at the biannual Lithosphere symposia and meetings of the Geological and Geophysical Societies.

The results are also spread and advertized in scientific news magazines in both English and in Finnish. The research results are communicated to the general public through newspapers, web portal Geologia.fi and at the Natural history museum. The researchers are frequently acting as scientific experts on radio and television news and programs popularizing science.

LIST OF RC MEMBERS

NAME OF THE RESEARCHER COMMUNITY:		Evolving continents			
RC-LEADER		A. Korja			
CATEGORY		4			
	Last name	First name	PI-status (TUHAT, 29.11.2010)	Title of research and teaching personnel	Affiliation
1	Donadini	Fabio		Postdoctoral Researcher	UH, Faculty of Science, Department of Physics
2	Haapala	Ilmari		Professor emeritus	UH, Faculty of Science, Department of Geology
3	Hagros	Annika		Doctoral candidate	UH, Faculty of Science, Department of Geology
4	Halla	Jaana		Museum caretaker, University Researcher	UH, Finnish Museum of Natural History
5	Heikkilä	Pasi		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
6	Heikkinen	Pekka	x	Director, Research Director	UH, Faculty of Science, Department of Geoscience and Geography
7	Heilimo	Esa		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
8	Heinonen	Aku		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
9	Heinonen	Jussi		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
10	Heinonen	Suvi		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
11	Hyvönen	Tellervo	x	Seismologist, Postdoctoral Researcher	UH, Faculty of Science, Department of Geoscience and Geography
12	Hölttä	Pentti	x	Professor	UH, Faculty of Science, Department of Geoscience and Geography
13	Karhu *	Juha	x	Professor	UH, Faculty of Science, Department of Geoscience and Geography
14	Klein	Robert		Doctoral candidate	UH, Faculty of Science, Department of Physics
15	Komminaho	Kari		Computing coordinator, University Researcher	UH, Faculty of Science, Department of Geoscience and Geography
16	Korja	Annakaisa	x	Seismologist, Research Coordinator	UH, Faculty of Science, Department of Geoscience and Geography
17	Kortelainen	Nina		Doctoral candidate	UH, Faculty of Science, Department of Geology
18	Kosunen	Paula		Postdoctoral Researcher	UH, Institute of Seismology
19	Kurhila	Matti		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
20	Kuusisto	Minna		Doctoral candidate	UH, Institute of Seismology
21	Larjamo	Kirsi		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
22	Lauri	Laura		Postdoctoral Researcher	UH, Faculty of Science, Department of Geology
23	Lehtinen	Martti		Professor	UH, Finnish Museum of Natural History
24	Lipponen	Annukka		Doctoral candidate	UH, Faculty of Science, Department of Geology
25	Lukkari	Sari		Postdoctoral Researcher	UH, Faculty of Science, Department of Geoscience and Geography
26	Luosto	Urmias		Professor emeritus	UH, Institute of Seismology
27	Luttinen	Arto	x	Senior curator, Professor	UH, Finnish Museum of Natural History
28	Mäntyniemi	Päivi	x	Seismologist, University Researcher	UH, Faculty of Science, Department of Geoscience and Geography
29	Niinikoski	Paula		Doctoral candidate	UH, Faculty of Science, Department of Geology
30	Niiranen	Tero		Doctoral candidate	UH, Faculty of Science, Department of Geology
31	Partamies	Sami		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
32	Pesonen	Lauri J.*	x	Professor	UH, Faculty of Science, Department of Physics
33	Poutiainen	Matti	x	University Instructor	UH, Faculty of Science, Department of Geoscience and Geography
34	Romu	Ilona		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
35	Rämö	O. Tapani	x	Professor	UH, Faculty of Science, Department of Geoscience and Geography
36	Sahlstedt	Elina		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
37	Salminen	Johanna		Postdoctoral Researcher	UH, Faculty of Science, Department of Physics
38	Salminen	Paula		Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography
39	Tarvainen	Matti	x	Seismologist, Senior Researcher	UH, Faculty of Science, Department of Geoscience and Geography

40	Tiira	Timo	x	Seismologist, Senior Researcher	UH, Faculty of Science, Department of Geoscience and Geography
41	Törnroos	Ragnar	x	Professor	UH, Faculty of Science, Department of Geoscience and Geography
42	Uski	Marja		Seismologist, Doctoral candidate	UH, Faculty of Science, Department of Geoscience and Geography



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RC-SPECIFIC STAGE 2 MATERIAL

BACKGROUND INFORMATION

Name of the RC's responsible person: Korja, Annakaisa

E-mail of the RC's responsible person:

Name and acronym of the participating RC: Evolving continents, ECO

The RC's research represents the following key focus area of UH: 1. Maailman perusrakenne, materiaalit ja luonnonvarat – The basic structure, materials and natural resources of the physical world

Comments for selecting/not selecting the key focus area: ECO community's studies are an essential part of the research carried out in the focus area number 1 of both the Faculty of Science and UH; The basic structure, materials and natural resources of the physical world. According to European and Finnish mineral and natural resources strategies, geosciences will be one of the fastest growing scientific fields because the need to find new materials and mineral resources for new technology is high and the demand of traditional raw materials and metals is also increasing.

ECO studies the most basic geological process in the Earth: formation and evolution of the continents. The movements of the lithospheric plates at the Earth's surface and the related magmatic activity (e.g., volcanic eruptions), earthquakes, and the rise and fall of mountain belts, also have a fundamental control on the origin of ore deposits and the environmental and climatic conditions. Understanding of these complex processes supports solving the severe problems caused by tapering natural resources, increasing rate of natural hazards and climate change.

1 FOCUS AND QUALITY OF RC'S RESEARCH (MAX. 8800 CHARACTERS WITH SPACES)

- **Description of the RC's research focus, the quality of the RC's research (incl. key research questions and results) and the scientific significance of the RC's research for the research field(s).**

The RC is studying the evolution of the continents; their initiation from accretion of island arcs, continental blocks and sedimentary basins, their deformation and differentiation during orogenesis, their rifting apart, drifting and accretion into stable continents (Fig 1.). To pursue all the above, we focus on the processes governing the evolution of the continents and the resultant environments, crustal architecture, and rock formations. To test hypotheses we integrate the results obtained from field campaigns with those gained from state-of-the-art laboratory analysis or with up-to-date modeling techniques; further methodologies are developed on demand. The scale of the experiments ranges from crystals to continents. We apply tools from all salient branches of geosciences: petrology and lithology, geochemistry and isotope geology, structural geology and tectonics, economic geology and mineralogy, and seismology and paleomagnetism

In 2005-2010 the RC has studied (Fig. 2) processes associated with plate convergence; accretion, and spreading and stabilization of continental crust; magmatic processes associated with crustal differentiation, plate convergence and divergence and plume activity; A-type granites and related rocks on a global scale as a proxy of crustal evolution; continental large igneous provinces (mafic LIPs); and paleomagnetic records of growth and destruction of supercontinents. Some closely related processes – the formation of mineral deposits and the evolution of the early atmosphere – have also been studied.

RC is taking part in the debate on when did plate tectonics begin and when did supercontinent cycle start? Further issues of substantial magnitude are (1) How newly formed crust evolves into stable crust,





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which is a prerequisite for the formation of the modern large stable continents; (2) What is the role of mafic LIPs in continental and mantle evolution, continental break-up and the dispersal of supercontinents; (3) How can granitoids and related rocks be used to monitor crustal growth and reorganization?; (4) How was the carbon cycle in the crust-mantle system operating at the A-Pc boundary, at the time of the rise of atmospheric oxygen levels; (5) How are the economically important natural resources formed in and controlled by lithospheric processes and (6) How can the modern high-resolution geophysical and other methods best be used to delineate the crustal structures and associated deposits.

The members of the RC have been involved in drafting a new plate tectonic model for Paleoproterozoic Fennoscandia based on combined geological and geophysical data. The model suggests that the Svecofennian accretionary orogen was formed from microcontinents, arcs and intervening sedimentary basins. The model has been widely adopted and tested in Fennoscandian literature. Seismic tomographic results confirm that the orogen is composed of blocks the size of microcontinents and the deep seismic reflection (FIRE, BABEL) results suggests similar crustal deformation structures. Thus Svecofennian crustal evolution, structures, and rock composition can be used as a proxy for process taking place at similar depths in modern orogenies in the Alps and the Himalayas. Growth of the continents have also been the focus of European deep seismic surveys, whose results have been included in the new Moho map of Europe: the most down loaded paper of GJI in 2009 (Grad and Tiira).

The supercontinent cycle – amalgamation and subsequent break up of supercontinents – has had a major impact on geology and biology of the Earth, such as forming the orogenic belts, global changes in ocean chemistry, existence of peculiar C and Sr excursions, long-lived mantle convection patterns giving rise to plumes and large igneous provinces. By using paleomagnetic measurements of the RC have succeeded in reconstruction of four supercontinents during the Proterozoic: Kenorland, Columbia, Hudsonland, Rodinia and they have been able to follow the drifting of individual cratons, or collage of cratons (Baltica and Laurentia, > 600 Ma). In the Early Mesoproterozoic most of continents lied at equatorial positions, which influenced the prevailing climatic and oceanic systems and maybe lead to Snowball Earth. L.J. Pesonen was the most cited author of Elsevier's Tectonophysics between 2003-2007 with his paper "Paleomagnetic configurations of continents during the Proterozoic".

Mafic LIPs are manifestations of anomalous melting events in the mantle and represent significant growth mechanism of juvenile lithosphere. They frequently form shortly before continental breakup. Although they have been ascribed to mantle plume activity, neither the principal source of the highly voluminous magmas nor the processes producing are identified. RC's LIP program has addressed the Jurassic Karoo flood basalts of Antarctica and southern Africa which were emplaced during incipient dispersal of the Gondwana supercontinent. By studying the number and identity of different mantle sources involved, diversification of magmas by magmatic differentiation, and the sequence of events by precise geochemistry and chronology. The members of the RC have identified two distinctive mantle sources in the Karoo LIP: deep and anomalously hot asthenosphere and continental lithospheric mantle. Extensive melting occurred at every stage of as a response to prolonged insulation of convective mantle below Gondwana. This recent result has stirred the ongoing web-debate on mantle plumes.

The granitoid research of the RC has focused on utilization of granitoid suites emplaced in various tectonic settings through the geologic time (Archean to Miocene) for the study of mantle-crust differentiation, crustal reorganization, and plate boundary processes. Granitoid suites have been thoroughly studied using petrological, geochemical, and isotope geological methods to acquire a firm handle on their magmatic evolution, source constraints, and geochronology and their relation to lithospheric evolution. The RC has studied granitoid suites on several continents of different ages, those



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of Laurentia, Amazonia, and Fennoscandia in particular. Studies on the origin of massif-type anorthosites associated with the mid-Proterozoic rapakivi granites have recently led to recognition of the depleted mantle as a crucial source component, in contrast to the idea of a crustal source for massif-type anorthosites. Members of the RC (I. Haapala, O.T. Rämö) wrote one of the most cited articles of Lithos (Elsevier) in 2003-2007. In 2005-2011, the RC was in a key role in conducting global-scale correlation program on A-type granites and related rocks (IGCP-510; O.T. Rämö, coleader).

One of the focus areas of RC is ancient carbon(C) cycle that relates to the evolution of the oxygenic atmosphere and the isotopic composition of C in Precambrian oceans. The RC has been active in collecting data to constrain variations of the isotopic composition of C in Precambrian oceans. Data collected by the group have been used to establish systematic C isotopic excursions, which can be used as a chemostratigraphic correlation tool when delineating Precambrian supercontinents. In 2010, a member of the RC (Karhu) acted as an invited guest editor of a special volume on isotope chemostratigraphy in Precambrian Research (Elsevier). Early studies conducted from 1990 to 2000 on the Fennoscandian Shield indicated that a major C isotope excursion affected the Paleoproterozoic C cycle globally and that it was associated with the evolution of the oxygenic atmosphere. In a review paper in 2005, this highly debated result was demonstrated to be of global significance.

• **Ways to strengthen the focus and improve the quality of the RC's research.**

RC group has just been merged from several small research teams to promote scientific collaboration between units that study linked problems with complementary methods. At the moment RC has quite a dispersed set of focus areas and thus needs a more coherent research strategy. Manufacturing of a joint research agenda has already been commenced via a series of seminars during the preparation period for Stage 2 of this evaluation process.

One of the first actions was to setup a bimonthly seminar series that features presentations from within RC and its collaborators from domestic partners and from overseas. The second action (in progress) is the compilation of a new strategic action plan for the group (see Section 8 of this application). The next steps will involve compiling joint graduate school programs with pertinent recruitment policies that aim at truly interdisciplinary research projects. The quality of the research of RC can be strengthened with successful (international) recruitment and instrumentation updates that serve the principal fields of RC.

2 PRACTISES AND QUALITY OF DOCTORAL TRAINING (MAX. 8800 CHARACTERS WITH SPACES)

- How is doctoral training organised in the RC? Description of the RC's principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

In 2005-2010, RC has trained doctoral candidates majoring in geology and geophysics. Practices in their recruitment and supervision, and quality assurance of doctoral training have been diverse and have been governed mainly by the participating departments (Department of Geology, Department of Physics) and the Finnish Graduate School in Geology that coordinates doctoral training on national level. The Geological Survey of Finland (GTK) has also had a strong influence on the doctoral training of RC. Several PhD projects of RC have been carried out in collaboration with the GTK and many of the doctoral candidates have been co-supervised by the survey personnel, and have used the resources and laboratory facilities of the GTK in their research.



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In practice, doctoral supervision has involved weekly to monthly encounters between doctoral students and supervisors. This has often woven around co-writing scientific manuscripts on pertinent themes of doctoral projects. The doctoral students have also gained experience in pertinent scientific practices while carrying out responsible tasks in the organization of international scientific congresses and symposia arranged by RC in Finland.

The policies of doctoral training in RC have, for the most part, followed the best practices established by the national graduate school and the Faculty of Science, University of Helsinki. RC as such has not had a significant role in enforcing or implementing the practices. Due to the relatively small size of RC, not all the recruitment practices have been enforced and hence the role of individual project leaders (principal investigators/professors) and their resources and contacts have been emphasized. The quality of doctoral training has been monitored by the Faculty of Science that, in consultation with the supervisors of doctoral projects, appoints external (international and domestic) reviewers and opponents to assure the scientific quality of the dissertations.

Doctoral training within RC has greatly benefited from the long-term relationships with foreign top-quality universities and research units. Exceptionally good international contacts of the supervisors and PI's have been well exploited in doctoral training. Many doctoral candidates have been able to launch significant collaboration with international experts in respective fields. International and domestic contacts have also been utilized to open career opportunities.

The doctoral training of RC is intimately tied to the Finnish Graduate School in Geology. The school is led by the Department of Geosciences and Geography and it operates in close collaboration with four other Finnish universities (University of Oulu, University of Turku, the Åbo Akademi University, and the Aalto University). It offers a geoscience curriculum with various special courses and international guest lecturers designed for doctoral students. The annual meeting of the graduate school, the National Geosocial Colloquium, has provided an important platform for the doctoral candidates to present their work, learn about timely practices in their field, meet each other, and network.

Significant number of private companies (e.g., mining industry, nuclear waste management) share research interests with RC. Some doctoral studies have been partly funded by private companies. The private sector can provide funding as well as other resources that may not otherwise be available for RC. Collaboration with the private sector has realized research projects with significant societal influence, such as nuclear waste management studies.

Additional funding for doctoral and post doctoral studies has been available through private foundations, whose contribution has amounted to 280 000 during the evaluation period. This amount has not been circulated through the university system.

- RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

Strong collaboration with the GTK and the national graduate school will be maintained. Doctoral candidates are treated as peers within the community and they are well integrated with the permanent staff. Excellent international contacts and the interdisciplinary and wide-scope research are strengths of RC; these should, however, be better coordinated with doctoral training in mind: more transparent, equal, and open recruitment practices should be implemented. More method-oriented training will be organized to exploit the full potential of the facilities of RC. A further challenge is to promote stronger collaboration with exploration companies. This will enhance career building and development of post-doctoral positions, and thus better respond to the growing societal demand of highly trained



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geoscientists. RC will promote more transparent recruitment practices to assure that the best possible candidates are chosen for PhD projects, and will widen bilateral exchange of students, post-doctoral researchers, and established scientists.

3 SOCIETAL IMPACT OF RESEARCH AND DOCTORAL TRAINING (MAX. 4400 CHARACTERS WITH SPACES)

- Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).

As the human population continues to grow exponentially, increasing quantities of earth resources – metals, minerals, energy resources etc. – are needed to fulfill the needs of the society. Particularly, the markets for new exotic metals are growing. Economic geology is a subfield of geology that focuses on mineral resources and their formation, and has been identified as one of the focus areas of RC. Research in economic geology is strongly dependent on various geological, geochemical, and geophysical methods. The wide scope of RC thus offers an excellent possibility to conduct science at a high international level.

Successful recent economic geology projects carried out by RC include assessment of the uranium potential of the granite bedrock of southern Finland and metallogeny of lithium pegmatites of western Finland. Overall, the demand of well educated economic geologists and exploration geophysicists is high, especially those with modern doctoral training and a solid background in geochemistry and geophysics. In this field, RC is crucial for the Finnish society, as the teachers and researchers of RC are responsible for educating a substantial part of Finnish geologists and solid earth geophysicists. Judging from employment and enrollment figures the graduates of RC are well-received by the society.

Seismic monitoring is another field in which RC can outstandingly contribute to fulfilling the needs of the society. Researchers of the Institute of seismology, responsible for maintaining the Finnish seismic observatory and monitoring of seismic events (earthquakes, industrial explosions nuclear explosions) in Finland and areas nearby, are members of RC. After 2005 tsunami event, the governmental research institutes (including members of RC) have been designing a national natural disaster warning program (LUOVA.)

Information on seismicity can be utilized, for instance, in evaluation of the stability of the bedrock in Finland in general and under nuclear power plants in particular. RC is involved in research involving assessment of the paleohydrological conditions in bedrock around the planned nuclear waste depository in southwestern Finland. Understanding the variations in the past environmental conditions is critical for successful evaluation of how the state of the bedrock and the deep groundwater system may evolve in the future. RC has also been involved in seismic monitoring and studies of the seismic structure of the nuclear waste deposit site at Olkiluoto.

RC members are frequently asked to give statements on seismic and volcanic events on national TV and radio channels and to newspapers. They are also involved in giving public lectures and also arranging exhibitions of the Finnish Museum of Natural History.

- Ways to strengthen the societal impact of the RC's research and doctoral training.

RC constitutes a wide network of specialists in geology, geochemistry, and geophysics to support internationally high-level research in economic geology. This will most probably lead to novel innovations in exploration, research, and exploitation of the natural resources of the Finnish bedrock and soil. In 2011, the Department of Geosciences and Geography will recruit a new professor in economic geology through an international call and by the recruitment of new doctoral students. RC is



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also involved in developing high resolution reflection seismic exploration tools in PhD and Post doctoral projects.

Because the value of the earth and as a source of prosperity and safety for the society is currently not sufficiently understood, RC plans to conduct more popular science activities. The increasingly popular geologia.fi website and the communication and exhibition resources of the Finnish Museum of Natural History provide effective means. RC pursues to increase and improve the geological and geophysical component in the curriculum of the geography teachers at the University of Helsinki

#### 4 INTERNATIONAL AND NATIONAL (INCL. INTERSECTORAL) RESEARCH COLLABORATION AND RESEARCHER MOBILITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.

RC is a conglomerate of research groups with strong international and domestic collaboration traditions (Fig. 3) with top-quality universities (European, American and Australian universities) and research units (Geological Surveys, Science Academies, Stockholm Natural History Museum, Carnegie Institution) marked as dots on map 1. The university collaboration is based on long-term exchange of expertise, technology, methodology as well as doctoral training. The long-term research collaboration is also commonly manifested as joint research projects and research initiatives which involve exchange (in some cases bilateral) of doctoral students, post-doctoral researchers, and established scientists in the field, classroom, and laboratory. RC's uses only joint Nordic infra structure NORDSIM in Stockholm.

International collaboration is especially active with those research groups, which have modern top quality technology (such as isotope and geophysical labs, stations), needed by the current research or who have common interest in developing new research tools or methods or who have joint research field areas and research problems. In many cases there are many common points of interest. In geochemistry and isotope geology the research collaboration takes place in the laboratories where new instruments are trimmed using interesting research samples of the doctoral trainees, and fellow researchers joint field campaigns.

In geophysics the collaboration takes place in a pan-European seismic working group that not only plan and conduct surveys, interpret and publish most of the large-scale seismic refraction studies in Europe, but also develop and distribute new programs and databases. PhD students are encouraged to participate in the surveys and following workshops. Seismic observatory has a long-term earthquake data exchange with international seismological data centers.

Members of the group have participated in international research programs ICDP, IGCP, ILP. Doctoral students and researchers regularly part in sampling campaigns, workshops organized at the drill core depot or in the excursions organized by the programs. These have proved to be an efficient way of networking.

Fruitful national collaboration has been conducted with the Earth Science and Physics Departments of the Finnish universities, the Geological Survey of Finland, Meteorological Institute and with research oriented companies. The research collaboration with GTK has produced two major seismic reflection surveys in Finland, FIRE in 2001-2006 and HIRE, which started 2007. As a result of this cooperation, Finland has one of the most extensive regional databases of seismic reflection data. With the GS,F RC has active research collaboration with paleomagnetic laboratory and isotope geology, where the joint infrastructure ID-TIMS is located. With the Meteorological institute the group has worked with natural hazards warning system and geomagnetic dipole field studies. RC has recently initiated a research



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consortium of the geosciences and physics departments of the Universities of Oulu, Turku, Åbo Akademi to study the three dimensional deformation of the crust.

- RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

RC's research and doctoral training benefit from long-term relationships with foreign top-quality universities and research units. Because science heavily relies on technological development, also international expertise and data exchange rely on top quality laboratories and equipments. It is a challenge to maintain our laboratories high standard so that they coax international researchers also in the future. This requires constant updating of laboratories and observatories.

Another challenge is to increase the research mobility to and from Finland. RC will further enhance researcher mobility via applying for short-, medium-, and long-term funding for exchange of doctoral students, post-doctoral researchers, and senior scientists. It will maintain an active role in international congresses and symposia, and will propose and organize international scientific meetings in Finland. New IGCP and NordForsk projects will be proposed in collaboration with international partners. Students are encouraged to take part in international and Nordic research programs and summer schools.

#### 5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).

RC is located at two connected buildings on the Kumpula science campus and at the Natural History Museum downtown Helsinki. The science laboratories (Fig. 4) are located at the campus, the seismic observatory has seismic stations around the country. The Department of Geosciences and Geography has mineralogical and geochemical laboratories and a seismic observatory. The Department of Physics has a solid earth geophysics laboratory. RC has also access to the national isotope laboratory SIGL and NordSIM laboratory on Stockholm as well as national data bases of GTK.

The seismological observatory consists of 19 permanent stations, semi-permanent local networks and portable stations. It also hosts portable stations for active and passive seismic experiments of the lithosphere and post glacial faults. The permanent seismic network monitors global seismicity as well as seismic activity and explosions in Finland and its vicinity. The semi-permanent networks monitor local seismicity in areas of increased seismicity. For processing of seismic reflection data commercial software packages are available. An large portion of the software is designed by the researchers and technical personnel.

The mineralogical laboratory is equipped for the analysis of the main element composition of rock and mineral samples by XRF and for the identification of mineral species by XRD. Compositional analyses of minerals can be performed by electron microprobe, upgraded in 2010 with new software. The geochemical laboratory has a laser-ablation ICP mass spectrometer for the analysis of trace element concentrations in rock samples, either from a laser source or as a solution. The laser system is capable of in situ trace element analysis of solid materials with an analytical spot size in the sub-100 µm range. The geochemical laboratory also includes an isotope ratio mass spectrometer for measuring the isotopic composition of carbon and oxygen in rock and mineral samples. Both laboratories are managed by the department and a laboratory engineer is responsible for maintaining the instruments and for providing guidance to students and researcher. SIGL is an isotope laboratory owned jointly by the geoscience departments of the Finnish universities and GTK. The facility is equipped with an LA-MC-ICPMS, giving



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possibility to investigate several isotope systems, including the U-Pb system used in mineral and rock dating. The laboratory is located at GTK, Espoo.

The Solid Earth Geophysics laboratory has state-of-the-art equipment for detailed petrophysical and paleomagnetic measurements. The main instrument is a SQUID magnetometer with demagnetization coils for detailed paleomagnetic measurements. The lab contains also equipment for thermal demagnetization of rock samples, for high resolution magnetic susceptibility measurements and for measuring magnetic hysteresis properties. The lab has developed a novel ultrasonic apparatus for determining seismic velocities in crustal (p,T) conditions.

Today the teachers have possibility to have one period per year free of teaching duties. However, for many research projects or development work this time is too short. A good solution would be some kind of sabbatical leave every 5 years, i.e., two consecutive periods free of teaching.

- RC's strengths and challenges related to operational conditions, and the actions planned for their development.

The laboratories and observatories are equipped with quite up-to-date instruments and the members of RC have also access thru their partners to modern facilities abroad. The seismic data sets of RC and geoscientific data available thru GTK are top class research material.

Replacing ageing instruments requires continuous efforts. Resources are also required for development of laboratory methods and improvement of quality. Some of the analytical instruments are relatively old, the solid earth physics laboratory needs magnetic shielding and the seismological observatory more stations. All laboratories must have capable personnel to operate the equipment, and finding an efficient way for this is a major challenge.

RC formulates its infrastructure plan, taking into account the infrastructure investments of the Departments as well as infrastructure programs of the Helsinki University and the Academy of Finland. RC sees the good infrastructure also as a way to enhance researcher mobility by drawing scientists and students from abroad.

#### 6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership- and management-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC's research focus and strengthening of the RC's know-how.

RC has adopted team leadership shared among PIs. The PI team or council meets monthly to discuss research strategies, current issues, and further developments. Each PI is leading his/her research group and program and is managing related projects. RC coordinator is maneuvering the PI meeting and RC meetings. Research strategy and related personnel and infrastructure documents are prepared by an annual RC workshop. The document is prepared in dialog with university, faculty and department strategies. RC has also a Google document site for joint preparation of documents and for discussion. The focus areas of the strategy are selected in RC meeting.

The PIs are responsible for executing the strategic choices via selection of research priorities and personnel policies in their own programs and projects. Each PI is leading a research program involving at least one individually financed project in one of the major focus areas and laboratories. Either PI or university researchers are responsible for designing the projects as well as managing their cost, time,



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and quality. The laboratories are run by PI's and laboratory engineers. The distributed projects will ensure high quality research results in individual subprojects whereas programs may tackle more fundamental research questions. The assessment of the projects is organized in conjunction with seminars and final reports are downloaded in TUHAT.

RC has a scientific seminar twice a month to discuss current research topics of the group. The speakers are either RC members or invited visitors. The main functions of the seminar are to encourage cross-disciplinary studies between the PIs and RC members and to strengthen the know-how of the group. The seminar is organized by a senior scientist. Strengthening the know-how of RC is realized by recruiting new research, teaching and laboratory personal and by attending international meetings. The PI council discusses research priorities before recruitment of new doctoral candidates, post doctoral fellows and other research staff, and assesses the topics offered for doctoral candidates and post-doctoral fellows

Information on meetings, funding and current activities are distributed via email groups and on the bulletin board on RC's website.

- RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes.

The strength of the group relies in the potential of a new group without any old management or leadership practices. It will thus have to create new routines within the next year. At the moment the group is heading towards a shared leadership with very light management. Joint leadership can be a strength to a group because experts are found for most tasks, this is however a major challenge as well if the collaboration of the PIs does not work seamlessly. The most difficult task is the execution of strategy and this will be tackled in the monthly meetings of the PI council. Another problem may come across when resources are to be allocated to novel interdisciplinary geoscience projects.

The group as whole needs also a place to discuss strategic matters as well as emerging scientific issues affecting the science. The seminar series will serve this purpose. The discussion may also take place in the new social media as suggested by the younger researchers of the group they are also willing to take responsibility of the new sites.

#### 7 EXTERNAL COMPETITIVE FUNDING OF THE RC

- Listing of the RCs external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- Academy of Finland (AF) - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: 2240000
- Finnish Funding Agency for Technology and Innovation (TEKES) - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: 60000
- European Union (EU) - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010:
- European Research Council (ERC) - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010:





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- International and national foundations – names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the foundations: K.H.Renlund Foundation,
  - Outokumpu Oy Foundation
  - total amount of funding (in euros) from the above-mentioned foundations: 150000
- Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: Nordplus (Nordic Council of Ministers' programme)
  - CNRS (National Center for Scientific Research, France)
  - total amount of funding (in euros) from the above-mentioned funding organizations: 180000
- Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: Ministry of Education and Culture of Finland,
  - CIMO (Centre for International Mobility),
  - University of Helsinki,
  - Finnish Academy of Science and Letters
  - total amount of funding (in euros) from the above-mentioned funding organizations: 360000

8 RC'S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's future perspectives in respect to research and doctoral training.

The Evolving continents (ECO) group is a research conglomerate merged from small high-profile Earth science research groups of the University of Helsinki, focusing on different aspects of continental evolution and using a variety of geological, geochemical and geophysical methods. The mission of the research community is to understand complex continental evolutionary processes using multidisciplinary datasets and methods on several scales. A broader scientific base will also better meet the increasing societal, educational and scientific demands of expertise in problems related to tapering of natural resources and growing impact of natural hazards.

Being the first multidisciplinary geoscience group in the Finnish universities, RC will establish the UH as the leading domestic site of research and researcher education in geosciences. This will also promote the UH as an internationally recognized and a globally attractive research and training unit in these disciplines; enhancing international exchange of students and scholars. In the long term the group will establish itself at the cutting edge of continental evolution research groups of Europe, conducting high profile research and encouraging interdisciplinary research projects.

The major research objectives of the group are the architecture and origin of layered crust and mantle, mantle-crust differentiation and crustal anatexis, supercontinental cycle and evolution of the Early Earth and its atmosphere, as well as mineralization processes in the continental crust and the structural control of ore deposits. The objectives are tackled by international and national research projects focusing on granitoids and related rocks, mafic dykes and lavas, seismic surveys and structural geological



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analysis. The multidisciplinary approach will be enhanced by the new consortium project funded by the Academy of Finland: This project includes PhD and post doctoral projects focused on the magmatic, metamorphic, and structural evolution of the middle crust. Funding will also be applied for PhD/PDF research on in situ analytics and modeling of petrological processes as well as for developing 3D visualization and 3D modeling tools for mining.

RC aims to integrate geological and geophysical research and education, to strengthen economic geology and open up a new focus area in geodynamic modeling. Economic geology will be strengthened by the opening a professorship in economic geology and the lectureship in structural geology, both to be filled in 2011. New PhD topics will guided towards their specialities in 2012-2013. The integration of geology and geophysics could be possible as the professorship in geophysics is to be opened in 2012. An additional lectureship in solid earth geophysics has been included in the action plan of the Geoscience department.

A major new focus area and an innovative opening will be geodynamic modeling studying the formation processes through rheological modeling where geophysical and geological data sets are used as input. Although the research is started as collaboration with European, American and Australian groups, our input will the opening of a tenure track position, the financing of which is partly covered by reallocation of resources of the Institute of Seismology. This will not only strengthen the processes oriented research but also the geophysics curriculum at UH.

The training of new methods is done in collaboration with research schools. Stronger collaboration with exploration companies would provide much needed opportunities for career building and post-doc positions, and better respond to the growing societal demand of highly trained geoscientists. To better meet the increased societal interest RC, the amount of incoming students - also from abroad - has to be increased, as well as the number of HU researcher and teaching staff.

A necessary prerequisite for being among the top ten continental evolution research groups in Europe in 2020, is good research infrastructure. Thus laboratory equipments in the mineralogical, geochemical and petrophysical laboratories as well in the seismic observatory should be kept up-to date.

This newly formed group has chosen to adopt team leadership that needs a coordinated decision and communication system. RC continues to develop its seminar and strategic planning meetings as well as PI meetings.

#### 9 SHORT DESCRIPTION OF HOW THE RC MEMBERS HAVE CONTRIBUTED TO THE COMPILATION OF THE STAGE 2 MATERIALS (MAX. 1100 CHARACTERS WITH SPACES).

In Dec 2010, RC had a general meeting of the group in which the evaluation and the reasons to participate in it were discussed and the focus of the group was outlined. The group set up a bimonthly seminar to discussion mainly science but also strategic planning. With Stage 2 participation in mind, and on the initiative of the younger researchers of the group, a web-based discussion group was established. As a first step, an online Google.helsinki.fi document of the Stage 2 questionnaire was opened for all the group members to modify. In late Jan 2011, RC reconvened to discuss the material on the web-page and the focus area and to decide on working groups for each subcategory. Another planning meeting, where all the categories were tackled and deadlines for the final text was decided upon, was held in early Feb. Just before the deadline, RC coordinator merged the webpage drafts and comments into a single document that was circulated among PIs. Data on projects, finances, infrastructure and strategic actions were collected as Excel-files by the coordinator and a project coordinator.

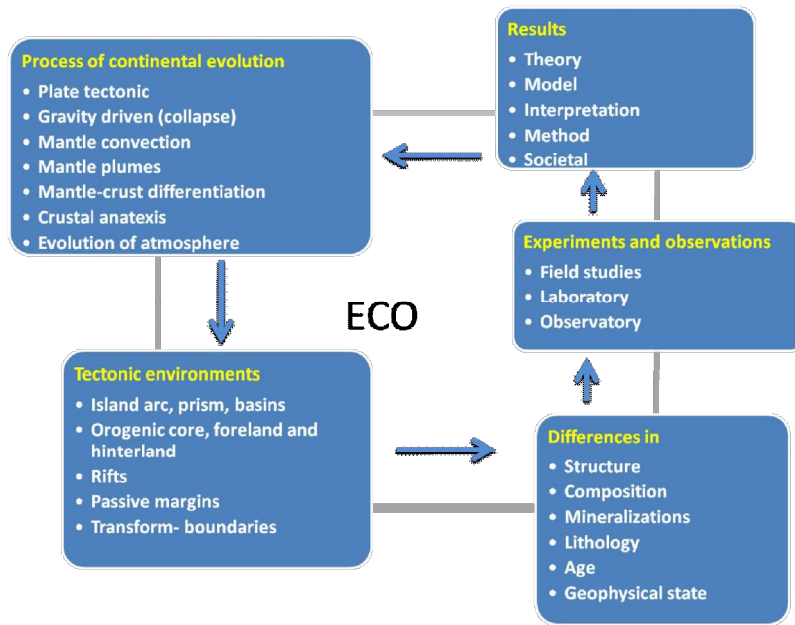


Figure 1. Different research aspects of the Evolving continents (ECO) research community.



Figure 2. Processes and problems related to continental evolution.

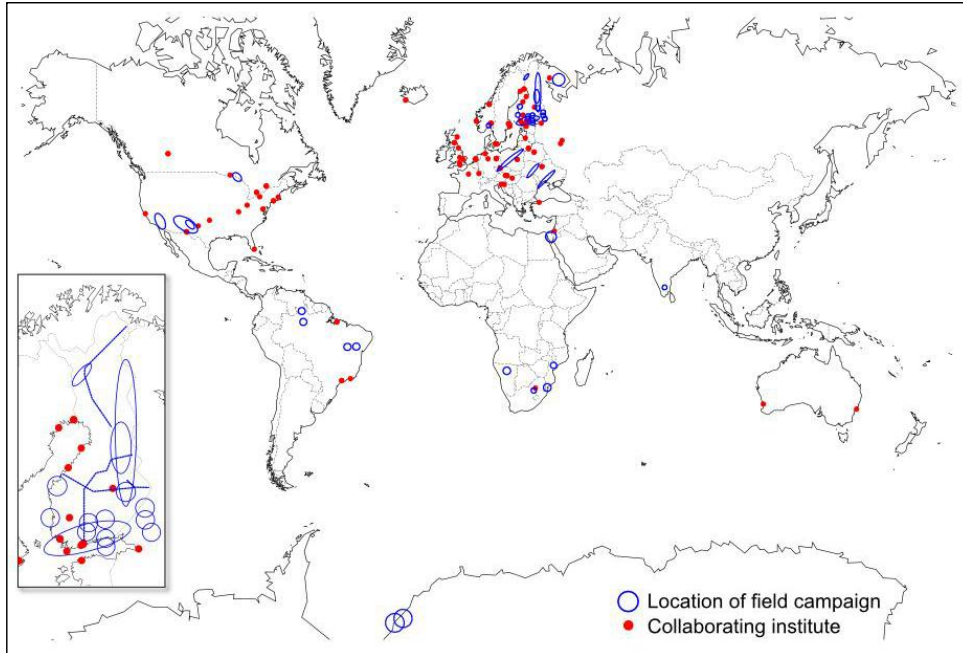


Figure 3. International collaborations and field experiments areas.

## ECO INFRASTRUCTURE

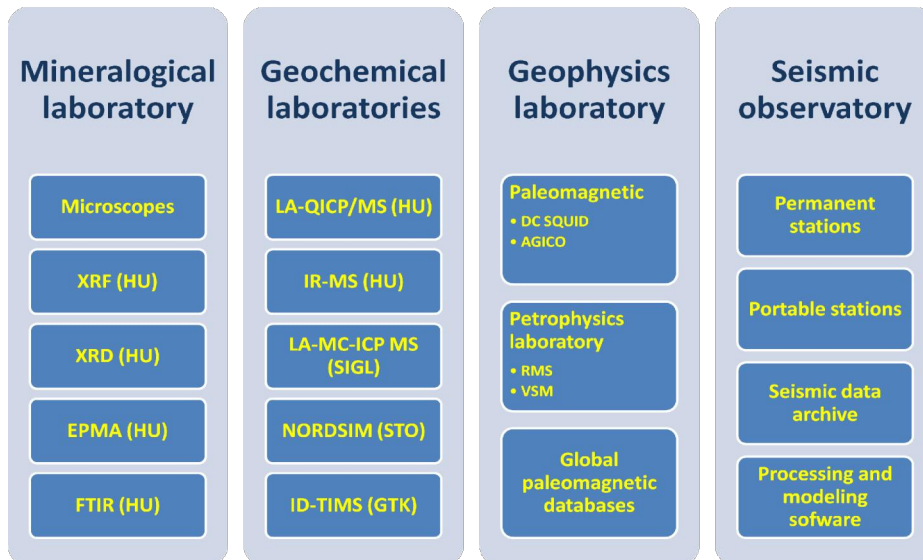


Figure 4. Laboratory and observatory infrastructure of the Evolving continents (ECO) research community.



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**RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010**

**ECO/Korja**

**1 Analysis of publications**

- Associated person is one of Fabio Donadini, Ilmari Haapala, Jaana Halla, Pasi Antero Heikkilä, Jussi Heinonen, Pekka Heikkinen, Esa Heilimo, Aku Heinsonen, Pentti Hölttä, Suvi Elina Heinonen, Tellervo Hyvönen, Kari Komminaho, Annakaisa Korja, Juha Karhu, Robert Klein, Minna Kuusisto, Kirsi Marjaana Larjamo, Paula Kosunen, Matti Kurhila, Urmas Luosto, Arto Luttinen, Päivi Mäntyniemi, Laura Susanna Lauri, Martti Lehtinen, Sari Lukkari, Tero Tapio Niiranen, Lauri Pesonen, Matti Poutiainen, Paula Niinkoski, Ilona Romu, Tapani Rämö, Elina Sahlstedt, Johanna Salminen, Paula Salminen, Marja Uski, Matti Tarvainen, Timo Tiira, Ragnar Törnroos, Marja Uski.

Publication type	Publication Year						Total Count 2005 - 2010
	2005	2006	2007	2008	2009	2010	
A1 Refereed journal article	18	15	23	15	16	16	103
A2 Review in scientific journal					1	2	3
A3 Contribution to book/other compilations (refereed)	10	13	2	3	6		34
A4 Article in conference publication (refereed)	1	8	2	1	1	2	15
B1 Unrefereed journal article	4	8	2	2			16
B2 Contribution to book/other compilations (non-refereed)		7		8	3	6	24
B3 Unrefereed article in conference proceedings	13	9	17	13	7	26	85
C1 Published scientific monograph	3	1	1	2	1		8
C2 Edited book, compilation, conference proceeding or special issue of journal	5	2	3	2	2	4	18
D1 Article in professional journal	3	5	2	5	4	8	27
D2 Article in professional hand or guide book or in a professional data system, or text book material						1	1
D3 Article in professional conference proceedings					1	5	6
D4 Published development or research report					7	5	12
D5 Text book or professional handbook or guidebook or dictionary					1		1
E1 Popular article, newspaper article	7	9	5	6	1	2	30
E2 Popular monograph				2			2



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**RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010**

**ECO/Korja**

**2 Listing of publications**

**A1 Refereed journal article**

**2005**

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**2006**

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**RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010**

**ECO/Korja**

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**D5 Text book or professional handbook or guidebook or dictionary**

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**E1 Popular article, newspaper article**

**2005**

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Mäntyniemi, P **2006**, 'Kuusamon kirkonkylässä rytyisi: kuusamolaisia ja taivalkoskelaisia 80 vuotta sitten pelästyttänyt maanjäristys hakee vertaistaan', **Kaleva**, pp. 25.

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**2009**

Heinonen, A, Heilimo, E, Halla, J, Kurhila, M, Rämö, T **2009**, 'Eurogranites ARCTIC 2009 pohjoinen kenttäkonferenssi', **Geologi**, vol 61, no. 6, pp. 168-177.

**2010**

Karhu, J, Heikkinen, P, Rämö, T **2010**, 'Geotieet uudistuvat Kumpulan tiedekampuksella', **Materia**, vol 2010 / 68, no. 5, pp. 26-28.

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**E2 Popular monograph**

**2008**

Lehtinen, M, Lehtinen, JI **2008**, *Helsingin kaupunkikiviopas, Karttakeskus, [Helsinki]*.

Söderström, H, Pesonen, L **2008**, *Mannerheimintien yhteiskoulu: katsaus historiaan, [Helsinki]*.





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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

ECO/Korja

**1 Analysis of activities 2005-2010**

- Associated person is one of Fabio Donadini, Ilmari Haapala , Jaana Halla , Pasi Antero Heikkilä ,  
Heinonen , Pekka Heikkinen , Esa Heilimo , Aku Heinonen , Jussi  
Suvi Elina Heinonen , Tellervo Hyvönen , Pentti Hölttä ,  
Juha Karhu , Robert Klein , Kari Komminaho , Annakaisa Korja ,  
Paula Kosunen, Matti Kurhila , Minna Kuusisto , Kirsi Marjaana Larjamo ,  
Mäntyniemi , Laura Susanna Lauri, Martti Lehtinen, Sari Lukkari , Urmas Luosto, Arto Luttinen , Päivi  
Poutiainen , Paula Niinikoski , Tero Tapio Niiranen, Lauri Pesonen , Matti  
Johanna Salminen , Ilona Romu , Tapani Rämö , Elina Sahlstedt ,  
Ragnar Törnroos , Paula Salminen , Marja Uski , Matti Tarvainen , Timo Tiira ,

Activity type	Count
Supervisor or co-supervisor of doctoral thesis	11
Prizes and awards	4
Editor of research journal	37
Editor of research anthology/collection/conference proceedings	5
Peer review of manuscripts	35
Editor of series	1
Editor of special theme number	1
Assessment of candidates for academic posts	1
Membership or other role in review committee	3
Membership or other role in research network	23
Membership or other role in national/international committee, council, board	154
Membership or other role in public Finnish or international organization	67
Membership or other role of body in private company/organisation	36
Participation in interview for written media	174
Participation in radio programme	36
Participation in TV programme	43
Participation in interview for web based media	1



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### RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

ECO/Korja

## 2 Listing of activities 2005-2010

### Supervisor or co-supervisor of doctoral thesis

#### **Annakaisa Korja ,**

Henna Valppu, University of Oulu, Annakaisa Korja, 01.01.2007 → 31.12.2010, Finland

Kaisa Wanne, Annakaisa Korja, 2008 → 2010

#### **Arto Luttinen ,**

Väitöskirjan ohjaus, Arto Luttinen, 2006 → 2011

Väitöskirjan ohjaus, Arto Luttinen, 2006 → ...

#### **Lauri Pesonen ,**

PhD-Thesis supervisor for Fabio Donadini, Lauri Pesonen, 2007, Finland

PhD-Thesis co-supervisor for Tellervo Hyvönen, Lauri Pesonen, 2008, Finland

PhD-Thesis supervisor for Päivi Mäntyniemi, Lauri Pesonen, 2008, Finland

PhD-Thesis supervisor for Robert Klein, Lauri Pesonen, 2009, Finland

PhD-Thesis supervisor for Johanna Salminen, Lauri Pesonen, 2009, Finland

PhD-Thesis supervisor for Tomas Kohout, Lauri Pesonen, 2009, Finland

PhD-Thesis supervisor for Toni Veikkolainen, Lauri Pesonen, 2010, Finland

### Prizes and awards

#### **Aku Heinonen ,**

Matemaattis luonnontieteellisen tiedekunnan pro gradu -palkinto, Aku Heinonen, 2008, Finland

Pikku Karhu -palkinto, Aku Heinonen, 2008, Finland

K.H. Renlundin Säätiön pro gradu -palkinto, Aku Heinonen, 2009, Finland

#### **Lauri Pesonen ,**

Award for most cited Tectonophysics paper during 2003-2007, Elsevier Publ. Co, Lauri Pesonen, 2003 → 2007

### Editor of research journal

#### **Jaana Halla ,**

Journal of South American Sciences, Jaana Halla, 01.01.2007 → 31.12.2007, Brazil

Journal of Volcanology and Geothermal Research, Jaana Halla, 01.01.2007 → 31.12.2007, Netherlands

Lithos, Jaana Halla, 01.01.2007 → 31.12.2007, Netherlands

#### **Juha Karhu ,**

Precambrian research, Juha Karhu, 01.01.2005 → 31.12.2005, Netherlands

Precambrian research, Juha Karhu, 01.01.2005 → 31.12.2005, Netherlands

Precambrian research, Juha Karhu, 01.01.2006 → 31.12.2006, Netherlands

Precambrian research, Juha Karhu, 01.01.2006 → 31.12.2006, Netherlands

Precambrian research, Juha Karhu, 01.01.2006 → 31.12.2006, Netherlands

Terra, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Geochimica Cosmochimica Acta, Juha Karhu, 12.11.2007 → 31.12.2007, Netherlands

Precambrian research, Juha Karhu, 01.01.2007 → 31.12.2007, Netherlands

Earth and Planetary Science Letters, Juha Karhu, 11.03.2008 → 31.12.2008, Netherlands

Geological Magazine, Juha Karhu, 08.09.2008 → 31.12.2008, United Kingdom



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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

ECO/Korja

Precambrian research, Juha Karhu, 01.01.2008 → 31.12.2008, Netherlands

**Annakaisa Korja ,**

Geophysica, Annakaisa Korja, 01.01.2005 → 31.12.2005, Finland

Geophysica, Annakaisa Korja, 01.01.2006 → 31.12.2006

Geophysica, Annakaisa Korja, 01.01.2007 → 31.12.2007, Finland

Geophysica, Annakaisa Korja, 01.01.2008 → 31.12.2008, Finland

Geophysica, Annakaisa Korja, 01.01.2009 → 31.12.2009

Geophysica, Annakaisa Korja, 01.01.2010 → 31.12.2010

**Matti Kurhila ,**

Geologi, Matti Kurhila, 01.01.2008 → 31.12.2008, Finland

**Martti Lehtinen**

Precambrian Geology of Finland. Key to the Evolution of the Fennoscandian Shield, Martti Lehtinen, 01.01.2005 → 31.12.2005, Netherlands

**Lauri Pesonen ,**

Journal of Geophysical Research, Lauri Pesonen, 01.01.2005 → 31.12.2005

MAPS, Lauri Pesonen, 01.01.2005 → 31.12.2005

MAPS, Lauri Pesonen, 01.01.2006 → 31.12.2006

Precambrian Research, Lauri Pesonen, 01.01.2006 → 31.12.2006

Precambrian Research, Lauri Pesonen, 01.01.2006 → 31.12.2006

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Precambrian Research, Lauri Pesonen, 01.01.2008 → 31.12.2008

Precambrian Research, Lauri Pesonen, 01.01.2009 → 31.12.2009

Precambrian Research, Lauri Pesonen, 01.01.2010 → 31.12.2010

**Tapani Rämö ,**

Developments in Precambrian Geology Series, Elsevier, Tapani Rämö, 01.01.2005 → 31.10.2005, Netherlands

Earth and Planetary Science Letters, Tapani Rämö, 24.09.2005 → 31.12.2005, Netherlands

Geochemical Journal, Tapani Rämö, 17.03.2005 → 31.12.2005, Japan

Lithos, Tapani Rämö, 01.01.2005 → 31.12.2005, Netherlands

Lithos, Tapani Rämö, 01.01.2005 → 31.12.2005, Netherlands

**Johanna Salminen ,**

Meteoritics and Planetary Science, Johanna Salminen, 01.01.2006 → 31.12.2006

**Editor of research anthology/collection/conference proceedings**

**Annakaisa Korja ,**

LITHOSPHERE 2006, Annakaisa Korja, 06.10.2006

LITHOSPHERE 2008, Annakaisa Korja, 04.10.2008

**Lauri Pesonen ,**

Lithosphere 2006- A Symposium on the Structure, Composition and Evolution of the Lithosphere in Finland, Lauri Pesonen, 2006

Lithosphere 2008- A Symposium on the Structure, Composition and Evolution of the Lithosphere in Finland, Lauri Pesonen, 2008, Finland

Lithosphere 2010- A Symposium on the Structure, Composition and Evolution of the Lithosphere in Finland, Lauri Pesonen, 2010, Finland



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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

ECO/Korja

**Peer review of manuscripts**

**Pekka Heikkinen ,**

Tectonophysics, Pekka Heikkinen, 2007  
Tectonophysics, Pekka Heikkinen, 01.2008  
Canadian Journal of Earth Sciences, Pekka Heikkinen, 01.2009  
Pageoph, Pekka Heikkinen, 01.2009

**Aku Heinonen ,**

Review of a manuscript for the South African Journal of Geology, Aku Heinonen, 2009, South Africa  
Review of a Manuscript for the Journal of Petrology, Aku Heinonen, 2010, United Kingdom

**Suvi Elina Heinonen ,**

Tieteellisen käsikirjoituksen vertaisarviointi, Suvi Elina Heinonen, 14.04.2010

**Annakaisa Korja ,**

Tectonophysics, Annakaisa Korja, 30.05.2005  
Marine Geology, Annakaisa Korja, 17.08.2006  
Precambrian Research, Annakaisa Korja, 31.01.2006  
Tectonophysics, Annakaisa Korja, 03.06.2007  
Geophysica, Annakaisa Korja, 06.02.2008  
Geophysica, Annakaisa Korja, 08.12.2008  
Geophysica, Annakaisa Korja, 15.04.2009  
Tectonophysics, Annakaisa Korja, 29.06.2009  
Tectonophysics, Annakaisa Korja, 22.06.2010

**Matti Kurhila ,**

Geological Journal, Matti Kurhila, 01.03.2008 → 31.03.2008, United States  
Lithos, Matti Kurhila, 01.05.2010 → 31.05.2010

**Arto Luttinen ,**

Dyke Swarms: time markers of crustal evolution, Arto Luttinen, 2006  
Bulletin of the Geological Society of Finland, Arto Luttinen, 2007  
Journal of Volcanology and Geothermal Research, Arto Luttinen, 2007  
Journal of Geological Society London, Arto Luttinen, 2009  
Earth and Planetary Science Letters, Arto Luttinen, 2010  
Journal of Petrology, Arto Luttinen, 2010

**Lauri Pesonen ,**

Lauri J. Pesonen acted as a reviewer of paper by R. Hanson et al. (2005) on paper Mesoproterozoic intraplate magmatism in the Kalahari Craton, Journal of African Earth Sciences, v. 46, No.1-2, pp- 141-167., Lauri Pesonen, 2005  
Lauri J. Pesonen acted as a reviewer of an NSF application by A. Maloof et al. (Princeton University) concerning "Testing the GAD-model", Lauri Pesonen, 2008  
Lauri J. Pesonen acted as a reviewer of Austrian Res. Council in "Variation of archaeomagnetic intensity since 1500 BC" by E. Schnepf, Lauri Pesonen, 2010, Austria  
Lauri J. Pesonen acted as a reviewer of a paper by J. Kakkuri on the history of the Geodesy Research in Finland, to appear in an Springer Special Book, Lauri Pesonen, 2010  
Lauri J. Pesonen acted as a reviewer of paper by Satu Mertanen and F. Karell : "Paleomagnetic and AMS studies on Satulinmäki and Kojärvi fault and shear zones" to appear in GTK Special Issue, Lauri Pesonen, 2010



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#### ECO/Korja

##### **Timo Tiira ,**

Geophysical Journal International, Timo Tiira, 01.01.2005 → 31.12.2005  
Geophysical Journal International, Timo Tiira, 01.01.2006 → 31.12.2006  
Bulletin of Seismological Society of America, Timo Tiira, 01.01.2008 → 31.12.2008, United States  
Polish Polar Research, Timo Tiira, 01.01.2008 → 31.12.2008, Poland  
Acta Geophysica, Timo Tiira, 08.2009  
Tectonophysics, Timo Tiira, 12.2009

##### **Editor of series**

##### **Arto Luttinen ,**

Bulletin of Geological Society, Arto Luttinen, 2009 → ..., Finland

##### **Editor of special theme number**

##### **Pekka Heikkinen ,**

Tectonophysics, Pekka Heikkinen, 2009

##### **Assessment of candidates for academic posts**

##### **Annakaisa Korja ,**

Rakennegerologian lehtorin virantäyttö, Annakaisa Korja, 03.2010 → 08.2010

##### **Membership or other role in review committee**

##### **Annakaisa Korja ,**

Pool of Expert panels, Annakaisa Korja, 2008 → 2011, Finland  
Julkaisufoorumi, Paneeli 5: Geotieteet ja ympäristötieteet, Annakaisa Korja, 2010 → 2011

##### **Arto Luttinen ,**

Lausunto Suomen Akatemia, Arto Luttinen, 2010

##### **Membership or other role in research network**

##### **Kari Komminaho ,**

CELEBRATION 2000, Kari Komminaho, 01.06.2000 → ...  
ALPASS, Kari Komminaho, 01.05.2005 → ...  
PASSEQ, Kari Komminaho, 01.01.2006 → ...  
LAPNET, Kari Komminaho, 01.01.2007 → ...  
PANCAKE, Kari Komminaho, 01.10.2008 → ...  
DOBRE4, Kari Komminaho, 01.08.2009 → ...

##### **Annakaisa Korja ,**

SVEKALAPKO Tomographic Working Group, Annakaisa Korja, 1998 → 2010  
Evolution of the Mesoproterozoic Baltic Sea rift basin system, Annakaisa Korja, 2004 → 2006  
Nordforsk/Nordplus - Advanced studies in seismological studies in Nordic countries, Annakaisa Korja, 01.01.2006 → 31.12.2006  
Nordforsk / Nordplus - Advanced studies in seismological studies in Nordic countries, Annakaisa Korja, 01.01.2007 → 31.12.2007  
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Three dimensional deformation model of the crust, Annakaisa Korja, 2009 → ...

##### **Lauri Pesonen ,**

Member in the cc-committee of the NordForsk Research School, Lauri Pesonen, 2005



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##### **Tapani Rämö ,**

IGCP-510 "A-type Granites and Related Rocks through Time" (johtaja), Tapani Rämö, 01.03.2005 → 31.12.2010, France

##### **Timo Tiira ,**

CELEBRATION 2000 deep seismic sounding, Timo Tiira, 01.06.2000 → ...

FIRE, Timo Tiira, 01.01.2001 → ...

ALP2002 seismic sounding, Timo Tiira, 01.06.2002 → 31.12.2009

SUDETES 2003 seismic sounding, Timo Tiira, 01.06.2003 → ...

ALPASS seismic experiment, Timo Tiira, 01.05.2005 → ...

PASSEQ seismic experiment, Timo Tiira, 01.01.2006 → ...

PANCAKE deep seismic sounding, Timo Tiira, 01.10.2008 → ...

DOBRE4 deep seismic sounding, Timo Tiira, 01.08.2009 → ...

##### **Ragnar Törnroos ,**

Medlem, Ragnar Törnroos, 2006 → 2011, Denmark

#### **Membership or other role in national/international committee, council, board**

##### **Jaana Halla ,**

Suomen Geologinen Seura, Jaana Halla, 01.01.2005 → 31.12.2005, Finland

Suomen mineraloginen seura ry, 50-vuotisjuhlaekskursion järjestäjä yhdessä Kuolan tiedekeskuksen (Venäjän tiedeakatemia) kanssa, Jaana Halla, 01.01.2007 → 31.12.2007, Finland

Eurogranites (toistuva konferenssarja), kenttäkonferenssin Eurogranites Arctic 2009 järjestelytoimikunnan jäsen, Jaana Halla, 01.01.2008 → 31.12.2008, France

International Mineralogical Association (IMA)/Commission of Museums, Jaana Halla, 01.01.2008 → 31.12.2008

Suomen Geologinen Seura ja Vuorimiesyhdistys, Kiirunaan ja Länsi-Lappiin suuntautuneen ekskursion järjestäjä, Jaana Halla, 25.08.2008 → 29.08.2008, Finland

Suomen Geologinen Seura ry, varapuheenjohtaja, Jaana Halla, 01.01.2008 → 31.12.2008, Finland

##### **Pekka Heikkinen ,**

IASPEI / Finnish National Committee, Pekka Heikkinen, 1999 → ...

IUGG / Finnish National Committee, Pekka Heikkinen, 2001 → ...

EUROPROBE / SVEKALAPKO, Pekka Heikkinen, 01.01.2005 → 31.12.2005

European Seismological Commission, Pekka Heikkinen, 01.01.2005 → 31.12.2005

IASPEI / Finnish National Committee, Pekka Heikkinen, 01.01.2005 → 31.12.2005, Finland

ILP / National Committee, Pekka Heikkinen, 01.01.2005 → 31.12.2005, Finland

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EUROPROBE/SVEKALAPKO, Pekka Heikkinen, 01.01.2007 → 31.12.2007

European Seismological Commission, Pekka Heikkinen, 01.01.2007 → 31.12.2007

IASPEI/Finnish National Committee, Pekka Heikkinen, 01.01.2007 → 31.12.2007, Finland

ILP/National Committee, Pekka Heikkinen, 01.01.2007 → 31.12.2007, Finland

IUGG/National Committee, Pekka Heikkinen, 01.01.2007 → 31.12.2007, Finland



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ILP/National Committee, Pekka Heikkinen, 01.01.2008 → 31.12.2008, Finland

IUGG/National Committee, Pekka Heikkinen, 01.01.2008 → 31.12.2008, Finland

ESC, Pekka Heikkinen, 01.01.2009 → 31.12.2009

EUROPROBE / SVEKALAPKO, Pekka Heikkinen, 01.01.2009 → 31.12.2009

IASPEI / Finnish National Committee, Pekka Heikkinen, 01.01.2009 → 31.12.2009

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European Seismological Commission, Pekka Heikkinen, 01.01.2010 → 31.12.2010

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ILP / National Committee, Pekka Heikkinen, 01.01.2010 → 31.12.2010

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**Esa Heilimo ,**

Suomen Geologinen Seura, Taloudenhoitaja, Esa Heilimo, 01.01.2009 → 31.12.2010, Finland

**Jussi Heinonen ,**

University of Helsinki, Kumpula Science Library; Post-graduate student member of the library board, Jussi Heinonen, 2007 → 2010, Finland

The Geological Society of Finland - secretary, Jussi Heinonen, 2008 → 2009, Finland

**Tellervo Hyvönen ,**

EUROPROBE / SVEKALAPKO Deep Seismic Tomography Group, Tellervo Hyvönen, 1998 → ...

ORFEUS working group on BB siting and station standards, Tellervo Hyvönen, 01.01.2005 → 31.12.2006

**Juha Karhu ,**

Expert team evaluating the study programs in geology of the Estonian higher education institutions, September 26 October 1, 2005., Juha Karhu, 26.09.2005 → 01.10.2005, Estonia

Finnish Academy of Science and Letters, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Geological Society of Finland, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

IODP (International Ocean Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Organizing Committee of the 27th Nordic Geological Winter Meeting, Oulu,, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Suomen Kansallinen Geologian Komitea, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Suomen Kansallinen Geologian Komitea, Portaaliyhäysryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2005 → 31.12.2005, Norway

FIRE - Finnish Reflection Experiment, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

ICDP (International Continental Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

IODP (International Ocean Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Lapin liitto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomalainen Tiedeakatemia, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomen Kansallinen Geologian Komitea, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomen Kansallinen Geologian Komitea, Portaaliyhäysryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomen Kansallinen Geologian Komitea, stratigrafiatyöryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2006 → 31.12.2006, Finland



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Suomen Kansallinen Geologian Komitea, Portaalihoitoryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Suomen Kansallinen Geologian Komitea, stratigrafiatyöryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Finnish Isotope Geoscience Laboratory (FIGL), Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
HY, Luonnontieteen keskusmuseo, Yli-intendentin virantäyttötoimik., Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
ICDP (International Continental Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
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Suomen Kansallinen Geologian Komitea, stratigrafiatyöryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
Tekes-hankkeen Tekopohjaveden valmistusprosessien tehostaminen hoitoryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

#### **Annakaisa Korja ,**

IODP / ESSAC, Annakaisa Korja, 2003 → ...  
ILP/Finnish National Committee, Annakaisa Korja, 01.01.2005 → 31.12.2005, Finland  
IODP/ESSAC, Annakaisa Korja, 01.01.2005 → 31.12.2005  
IODP/SMP/ECORD, Annakaisa Korja, 01.01.2005 → 31.12.2005  
ILP/Finnish National Committee, Annakaisa Korja, 01.01.2006 → 31.12.2006, Finland  
IODP/ESSAC, Annakaisa Korja, 01.01.2006 → 31.12.2006  
IODP/STP/ECORD, Annakaisa Korja, 01.01.2006 → 31.12.2006  
ILP / Finnish national Committee, Annakaisa Korja, 01.01.2007 → 31.12.2007, Finland  
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ILP / Finnish National Committee, Annakaisa Korja, 01.01.2008 → 31.12.2008, Finland  
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ILP / Finnish National Committee, Annakaisa Korja, 01.01.2009 → 31.12.2009  
IODP / ESSAC, Annakaisa Korja, 01.01.2009 → 31.12.2009

#### **Matti Kurhila ,**

Suomen mineraloginen seura ry., Matti Kurhila, 01.01.2005 → 31.12.2005, Finland  
Suomen mineraloginen seura, Matti Kurhila, 01.01.2006 → 31.12.2006, Finland  
Suomen Geologinen Seura, Matti Kurhila, 01.01.2007 → 31.12.2007, Finland  
Suomen Mineraloginen Seura, Matti Kurhila, 01.01.2007 → 14.12.2007, Finland  
Suomen geologinen seura, Matti Kurhila, 01.01.2008 → 31.12.2008, Finland

#### **Martti Lehtinen**

Helsingin kaupungin ja Helsingin yliopiston neuvottelukunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston konsistori, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston matemaattis-luonnontieteellinen tiedekunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland





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Helsingin yliopiston ympäristötutkimusyksikön (HERC) neuvottelukunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Kemiallisen aseiden kiellettyjen valvontalaitos, VERIFIN, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Komppa-väitöskirjapalkintolautakunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Koulutus- ja kehittämiskeskus Palmenian johtokunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Koulutus- ja kehittämiskeskus Palmenian luonnon-, bio- ja ympäristötieteiden neuvottelukunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Kumpulan kampuksen neuvottelukunta, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Suomen mineraloginen seura, seuran edustaja Kansainvälisen mineralogisen assosiaation komissioissa Museums ja Classification of Minerals, Martti Lehtinen, 01.01.2006 → 31.12.2006, Finland

Suomen mineraloginen seuran edustaja Kansainvälisen mineralogisen assosiaation komissioissa Museums ja Classification of Minerals, Martti Lehtinen, 01.01.2007 → 31.12.2007

**Arto Luttinen ,**

Suomen geologinen seura ry, Arto Luttinen, 2010 → ..., Finland

Suomen museoliitto, Arto Luttinen, 2010 → ..., Finland

**Päivi Mäntyniemi ,**

Tieteellisen seuran sihteeri, Päivi Mäntyniemi, 11.03.2003 → 28.02.2006, Finland

Jäsenyys tieteellisen järjestön työryhmässä, Päivi Mäntyniemi, 09.2008 → ...

**Lauri Pesonen ,**

Member in the organizing committee of the Lithosphere 2010, 2006 Symposiums of the Finnish ILP-programme, Lauri Pesonen, 2000 → 2010, Finland

Member in Science Advisory Board, Lauri Pesonen, 2005, Finland

Participating subproject leader in the IGCP-509 "Supercontinents", impact subproject, Lauri Pesonen, 2005

Archaeomagnetic Applications for the Rescue of Cultural Heritage, Lauri Pesonen, 01.01.2006 → 31.12.2006

International Geological Congress 33 (Oslo 2008), Impact Symposium and its associated field trips, principal organizer, Lauri Pesonen, 01.01.2006 → 31.12.2006

Lithosphere 2006 symposium, member of the organizing committee, Lauri Pesonen, 01.01.2006 → 31.12.2006, Finland

NSRC-based PIRE-project on Supercontinents, member of the Co-ordinating committee, Lauri Pesonen, 01.01.2006 → 31.12.2006

Finnish national International Lithosphere Program (ILP) committee, Lauri Pesonen, 01.01.2008 → 31.12.2008, Finland

Lithosphere 2008 symposium, member of the organizing committee, Lauri Pesonen, 2008

Member in Finnish Geology Graduate School, Lauri Pesonen, 01.01.2008

Appointed member of the co-ordinating committee of the 6th ICD Mafic Dyke Conference, Lauri Pesonen, 2009, India

6th International Dyke Conference in Varanasi, India (Organizing committee), Lauri Pesonen, 2010

Lithosphere 2008 symposium, member of the organizing committee, Lauri Pesonen, 2010

Member in Science Advisory Board, Lauri Pesonen, 2010, India

**Ilona Romu ,**

Suomen Mineraloginen Seura, Ilona Romu, 01.01.2008 → 31.12.2008, Finland

**Tapani Rämö ,**

Finnish National Geodetic-Geophysical Committee, Tapani Rämö, 01.01.2005 → 31.12.2005, Finland

IGCP Project 510 A-type Granites and Related Rocks through Time, Tapani Rämö, 01.01.2005 → 31.12.2005, France

**Elina Sahlstedt ,**

Suomen mineraloginen seura r.y.:n sihteeri ja rahastonhoitaja, Elina Sahlstedt, 22.02.2010 → ..., Finland

**Timo Tiira ,**

European Seismological Commission, Sub-Commission D, Timo Tiira, 01.01.2005 → 31.12.2005



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European Seismological Commission, Sub-Commission D, Timo Tiira, 01.01.2006 → 31.12.2006

#### **Ragnar Törnroos ,**

Medlem, Ragnar Törnroos, 1984 → ...

Medlem, Ragnar Törnroos, 2002 → 2005, Iceland

Medlem, Ragnar Törnroos, 2005 → 2012

International Mineralogical Association (IMA) Commission of New Minerals and Mineral Names, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

K.H. Renlunds stiftelse, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

Mineralogiska sällskapet i Finland, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

Mineralogiska sällskapet i Finland, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

Mineralogiska sällskapet i Finland, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

Nordenskiöldsamfundet i Finland rf., Ragnar Törnroos, 01.01.2006 → 31.12.2006, Finland

Nordiska Vulkanologiska Institutet på Island (Nordiska ministerr&#61508;det):, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Iceland

Nordiska Vulkanologiska Institutet på Island (Nordiska ministerr&#61508;det):, Ragnar Törnroos, 01.01.2006 → 31.12.2006, Iceland

Nordiska mineralogiska nätverket, HU:s representant och kontaktperson, Ragnar Törnroos, 01.01.2006 → 31.12.2006

Ordförande, Ragnar Törnroos, 2006 → 2008, Iceland

MA Commission on New Minerals, Nomenclature and Classification (CNMNC), Ragnar Törnroos, 01.01.2007 → 31.12.2007

Mineralogiska sällskapet i Finland, Ragnar Törnroos, 01.01.2007 → 31.12.2007, Finland

NORDVULK programkommitté, Ragnar Törnroos, 01.01.2007 → 31.12.2007, Iceland

Nordenskiöldsamfundet i Finland, Ragnar Törnroos, 01.01.2007 → 31.12.2007, Finland

Nordic Mineralogical Network, Ragnar Törnroos, 01.01.2007 → 31.12.2007

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International Mineralogical association, Commission on New Minerals, Nomenclature and Classification,, Ragnar Törnroos, 01.01.2008 → 31.12.2008

Mineralogiska sällskapet i Finland, Ragnar Törnroos, 01.01.2008 → 31.12.2008, Finland

Nordiskt vulkanologiskt centrum (NORDVULK) programkommitté, Ragnar Törnroos, 01.01.2008 → 31.12.2008, Iceland

Outokumpu Oyj:n säätö, Ragnar Törnroos, 01.01.2008 → 31.12.2008, Finland

Renlund stiftelse (för Finland praktiskeologiska undersökning), Ragnar Törnroos, 01.01.2008 → 31.12.2008, Finland

#### **Marja Uski ,**

MATINE (Maanpuolustuksen tieteellinen neuvottelukunta), Aluevalvontajaosto, Marja Uski, 01.01.2006 → 31.12.2006, Finland

#### **Membership or other role in public Finnish or international organization**

#### **Pekka Heikkinen ,**

Aasian luonnonkatastrofi, suuronnettomuuden tutkintalautakunta, Pekka Heikkinen, 13.01.2005 → 31.05.2005, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2005 → 31.12.2005

Liikenne- ja viestintäministeriön 16.2.2005 asettama työryhmä (Luonnononnettomuuksien varoitussjärjestelmä LUOVA), Pekka Heikkinen, 16.02.2005 → 31.03.2005, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2006 → 31.12.2006

MATINE (Maanpuolustuksen tieteellinen neuvottelukunta), Aluevalvontajaosto, Pekka Heikkinen, 01.01.2006 → 31.12.2006, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2007 → 31.12.2007

MATINE (Maanpuolustuksen tieteellinen neuvottelukunta), Aluevalvontajaosto, Pekka Heikkinen, 01.01.2007 → 31.12.2007, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2008 → 31.12.2008



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#### ECO/Korja

MATINE (Maanpuolustuksen tieteellinen neuvottelukunta), Aluevalvontajaosto, Pekka Heikkinen, 01.01.2008 → 31.12.2008, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2009 → 31.12.2009

MATINE Aluevalvontajaosto, Pekka Heikkinen, 01.01.2009 → 31.12.2009

Comprehensive Test Ban Treaty Organization, Working Group B, Pekka Heikkinen, 01.01.2010 → 31.12.2010

MATINE - Aluevalvontajaosto, Pekka Heikkinen, 01.01.2010 → 31.12.2010

#### **Aku Heinonen ,**

Geological Society of Finland - Member of the Board, Aku Heinonen, 2010 → 2011, Finland

#### **Jussi Heinonen ,**

Finnish Institute of Marine Research; FINNARP 2007 expedition to Antarctica; Director of the geological research party, Jussi Heinonen, 2007 → 2008, Finland

#### **Juha Karhu ,**

Administrative Committee of the Aarne ja Anna-Liisa Laitakari Fund, Finnish Cultural Foundation, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2007 → 31.12.2007, Finland

Helsingin yliopiston ja Merentutkimuslaitoksen yhteistyöryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland

Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

Helsingin yliopiston ja Merentutkimuslaitoksen yhteistyöryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

#### **Annakaisa Korja ,**

Executive Board of the Institute of Seismology, Annakaisa Korja, 2005 → 2009

IODP/Finnish National Support Group, Annakaisa Korja, 01.01.2005 → 31.12.2005, Finland

NorFA/NORDPLUS - Advanced studies in seismological studies in Nordic countries, Annakaisa Korja, 01.01.2005 → 31.12.2005

Nordisk Vulkanologisk Institut, Annakaisa Korja, 01.01.2005 → 31.12.2005

IODP/Finnish National Support Group, Annakaisa Korja, 01.01.2006 → 31.12.2006, Finland

Nordisk Vulkanologisk Institut, Annakaisa Korja, 01.01.2006 → 31.12.2006

Coordination Group of the Antarctic research, Annakaisa Korja, 2007 → ...

Etelämannertutkimuksen koordinaatioryhmä, Annakaisa Korja, 01.01.2007 → 31.12.2007, Finland

IODP / Finnish National Support Group, Annakaisa Korja, 01.01.2007 → 31.12.2007, Finland

Nordisk Vulkanologisk Institut, Annakaisa Korja, 01.01.2007 → 31.12.2007

Etelämannertutkimuksen koordinaatioryhmä, Annakaisa Korja, 01.01.2008 → 31.12.2008

IODP / Finnish National Support Group, Annakaisa Korja, 01.01.2008 → 31.12.2008, Finland

Nordisk Vulkanologisk Institut, Annakaisa Korja, 01.01.2008 → 31.12.2008

Etelämannertutkimuksen koordinaatioryhmä, Annakaisa Korja, 01.01.2009 → 31.12.2009

IODP / Finnish National Support Group, Annakaisa Korja, 01.01.2009 → 31.12.2009, Finland

Nordisk Vulkanologisk Institut, Annakaisa Korja, 01.01.2009 → 31.12.2009

Geopiste/Luma, Annakaisa Korja, 2010 → 2013

Kumpulan kampusen neuvottelukunta, Annakaisa Korja, 2010 → 2013

Tiedekuntaneuvosto, Annakaisa Korja, 01.01.2010 → 31.12.2013

Yliopisto kollegio, Annakaisa Korja, 01.01.2010 → 31.12.2013

#### **Arto Luttinen ,**

Suomen akatemia, Arto Luttinen, 2007 → ..., Finland



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### RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

#### ECO/Korja

Suomen geologinen seura ry, Arto Luttinen, 2009 → ..., Finland

Museoliiton Koulutustyöryhmä, Arto Luttinen, 2010 → ...

#### **Lauri Pesonen ,**

Board of the Institute of the Seismology, Lauri Pesonen, 01.01.2005 → 31.12.2005, Finland

Finnish Committee of the International Union of Geodesy and Geophysics, Lauri Pesonen, 01.01.2005 → 31.12.2005, Finland

Scientific Advisory Board of the Finnish Geodetic Institute, Lauri Pesonen, 01.01.2005 → 31.12.2005, Finland

Board of the Institute of the Seismology, Lauri Pesonen, 01.01.2006 → 31.12.2006, Finland

Finnish Committee of the International Union of Geodesy and Geophysics, Lauri Pesonen, 01.01.2006 → 31.12.2006, Finland

Scientific Advisory Board of the Finnish Geodetic Institute, Lauri Pesonen, 01.01.2006 → 31.12.2006, Finland

Board of the Institute of the Seismology, Lauri Pesonen, 01.01.2007 → 31.12.2007, Finland

Finnish Committee of the International Union of Geodesy and Geophysics, Lauri Pesonen, 01.01.2007 → 31.12.2007, Finland

Scientific Advisory Board of the Finnish Geodetic Institute, Lauri Pesonen, 01.01.2007 → 31.12.2007, Finland

Participating member in Elgy' gytkyn Impact Crater Drilling Project (ICDP), Lauri Pesonen, 2010

#### **Tapani Rämö ,**

Suomen Akatemia, European Young Investigator Scheme, arviointipaneeli, Tapani Rämö, 01.01.2005 → 31.12.2005, Finland

#### **Matti Tarvainen ,**

CTBTO / WGB, Matti Tarvainen, 1997 → ...

Aasian luonnonkatastrofi, suuronnettomuuden tutkintalautakunta, Matti Tarvainen, 13.01.2005 → 31.05.2005, Finland

Comprehensive Test Ban Treaty Organization, Working Group B, Matti Tarvainen, 01.01.2005 → 31.12.2005

CTBTOWG-B, Matti Tarvainen, 01.01.2006 → 31.12.2006

CTBTO / WGB / WEG, Matti Tarvainen, 2007 → ...

Comprehensive Test Ban Treaty Organization, Working Group B, Matti Tarvainen, 01.01.2007 → 31.12.2007

Comprehensive Test Ban Treaty Organization, Working Group B, Matti Tarvainen, 01.01.2008 → 31.12.2008

Comprehensive Test Ban Treaty Organization, Working Group B, Matti Tarvainen, 01.01.2009 → 31.12.2009

Comprehensive Test Ban Treaty Organization, Working Group B, Matti Tarvainen, 01.01.2010 → 31.12.2010

MATINE - Aluevalvontajaosto, Matti Tarvainen, 2010 → ...

#### **Ragnar Törnroos ,**

Utrikesministeriet och FINDECO Utvecklings- och understödsprojekt delfinansierat av UM. Markanvändning, Ragnar Törnroos, 01.01.2007 → 31.12.2007

### **Membership or other role of body in private company/organisation**

#### **Jaana Halla ,**

Suomen Jalokiviharrastajain Yhdistys ry (SJHY), Jaana Halla, 01.01.2006 → 31.12.2006, Finland

Suomen Jalokiviharrastajain Yhdistys ry (SJHY), Jaana Halla, 01.01.2007 → 31.12.2007, Finland

#### **Jussi Heinonen ,**

Suomen Geologinen Seura / Geological Society of Finland, Jussi Heinonen, 01.01.2008 → 31.12.2008, United States

#### **Juha Karhu ,**

Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Helsingin yliopiston keskusvaillautakunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Helsingin yliopiston opettajien ja tutkijoiden UPJ arviointiryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

JUKO (Julkisalan koulutettujen ammattijärjestö), Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland



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Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland  
Professoriliiton valtuusto, Juha Karhu, 01.01.2005 → 31.12.2005, Finland  
Helsingin yliopiston Geologian laitoksen johtoryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston Kumpulan Kampusneuvottelukunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston Matemaattis-luonnontieteellisen tiedekunnan suunnittelutoimikunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston Matemaattis-luonnontieteellisen tiedekunnan tiedekuntaneuvosto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston opettajien ja tutkijoiden UPJ arviointiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
JUKO (Julkisalan koulutettujen ammattijärjestö), Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Professoriliiton valtuusto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland  
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Helsingin yliopiston opettajien ja tutkijoiden UPJ arviointiryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
JUKO (Julkisalan koulutettujen ammattijärjestö), Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Professoriliiton valtuusto, Juha Karhu, 01.01.2007 → 31.12.2007, Finland  
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
Helsingin yliopiston opettajien ja tutkijoiden UPJ arviointiryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
JUKO (Julkisalan koulutettujen ammattijärjestö), Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2008 → 31.12.2008, Finland  
Professoriliiton valtuusto, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

#### **Martti Lehtinen**

Kristallografin Suomen kansallinen komitea, Martti Lehtinen, 01.01.2005 → 31.12.2005, Netherlands  
Suomen mineraloginen seura, Seuran edustaja Kansainvälisen mineralogisen assosiaation komissioissa Museums ja Classification of Minerals, Martti Lehtinen, 01.01.2005 → 31.12.2005, Netherlands

#### **Ragnar Törnroos ,**

K.H.Renlunds stiftelse, Ragnar Törnroos, 01.01.2007 → 31.12.2007, Finland  
Friisilän omakotiyhdistys, Ragnar Törnroos, 01.01.2008 → 31.12.2008, Finland

#### **Participation in interview for written media**

##### **Jaana Halla ,**

esitelmä Vantaan KiviSet ry:n jäsenille, Vantaa, Jaana Halla, 08.12.2004 → 31.12.2011, Finland  
esitelmä Vantaan KiviSet ry:n jäsenille, Vantaa, 8.12.2004, Suomi, ei-kansainvälinen, Jaana Halla, 13.04.2005 → 31.12.2011, Finland  
Lapin Kullankaivajain Liiton (LKL) kultaseminaariristeily, Jaana Halla, 27.01.2006 → 31.12.2011, Finland  
Vantaan KiviSet ry:n jäseniltä, Jaana Halla, 08.11.2006 → 31.12.2011, Finland

##### **Pekka Heikkinen ,**

Aamulehti, s. A12, Pekka Heikkinen, 09.10.2005, Finland  
Asian tsunami, Pekka Heikkinen, 01.2005, Finland  
Hufvudstadsbladet, s. 12-13, Pekka Heikkinen, 30.03.2005, Finland



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Ittalehti, s. 10-11, Pekka Heikkinen, 17.01.2005, Finland

Itä-Savo, s. 16-17, Pekka Heikkinen, 22.01.2005, Finland

Kaleva, Pekka Heikkinen, 27.12.2005, Finland

Kaleva, s. 30, Pekka Heikkinen, 31.12.2005, Finland

Haastattelu Indonesian maanjärityksestä, Pekka Heikkinen, 28.05.2006, Finland

Haastattelu maanjärityksistä, Pekka Heikkinen, 30.05.2006, Finland

Inga explosioner registrerades när "Estonia" sjönk, Pekka Heikkinen, 26.04.2006, Sweden

Syväreikä kiinnostaa tutkijoita, Pekka Heikkinen, 06.05.2006, Finland

#### **Tellervo Hyvönen ,**

Physicum-talon avajaisviikko: 'Avoimet ovet'-päivä yleisölle, Tellervo Hyvönen, 08.09.2001 → 31.12.2011, Finland

Universitas Helsingiensis, vol. XX, Tellervo Hyvönen, 01.01.2001 → 31.12.2011, Finland

Etelä-Suomen Sanomat, Tellervo Hyvönen, 12.09.2006

Kouvolan sanomat, etusivu, Tellervo Hyvönen, 22.03.2006, Finland

Turun Sanomat, Tellervo Hyvönen, 29.05.2006

Keski-Suomalainen, Tellervo Hyvönen, 16.12.2008

Uutispäivä Demari, Tellervo Hyvönen, 04.11.2008, Finland

Koillissanomat, Tellervo Hyvönen, 17.02.2010

#### **Juha Karhu ,**

Physicumin vihkiäisten yleisöluennot, Juha Karhu, 08.09.2001 → 31.12.2011, Finland

Professorin virkaanastujaisluento, Juha Karhu, 05.12.2001 → 31.12.2011, Finland

Mammutinäyttelyyn liittyvä seminaari, Luonnontieteen keskusmuseo, Juha Karhu, 20.08.2003 → 31.12.2011, Finland

Helsingin normaalityöön tiedepainotteisen luokan vierailu Geologian laitokselle, Juha Karhu, 01.01.2004 → 31.12.2011, Finland

Lifim-kurssin 187 vierailu Physicumiin, Kumpulaan, Juha Karhu, 09.10.2004 → 31.12.2011, Finland

Valtakunnalliset Geologian Päivät 2004, Esitelmä Tehtaanpuiston koulussa, Vuosaaressa, Juha Karhu, 01.01.2004 → 31.12.2011, Finland

Valtakunnalliset Geologian Päivät 2004, Kiviseminaari, Juha Karhu, 25.09.2004 → 31.12.2011, Finland

Jyväskylän ikääntyvien yliopisto, yleisluentosarja, Juha Karhu, 26.10.2005 → 31.12.2011, Finland

Valtakunnallisten geologian päivien luentoilaisuus, Helsingin yliopiston Viikin normaalikoulu, Juha Karhu, 16.09.2005 → 31.12.2011, Finland

Yliopisto-lehti, s. 11, Juha Karhu, 26.02.2007 → 31.12.2011, Finland

Yliopistolainen 2/2007, s 4-5, Juha Karhu, 27.02.2007 → 31.12.2011, Finland

Lapin kullankaivajain liiton seminaari, Juha Karhu, 25.01.2008 → 31.12.2011, Finland

#### **Annakaisa Korja ,**

Vasabladet, Pohjanmaan routajäritykset, Annakaisa Korja, 28.01.2006

Tieteestä kysymys, HS,, Annakaisa Korja, 27.04.2010

#### **Matti Kurhila ,**

Haastattelu Yliopistolainen-lehdessä, Matti Kurhila, 27.04.2010

#### **Martti Lehtinen**

Tapiolan Martat, Espoo, (60 kuulijaa), Martti Lehtinen, 01.10.2001 → 31.12.2011, Finland

Helsinki, esitys Vantaan Kiviset ry:n jäsenille (n. 25 kuulijaa), Physicumissa klo 11.00 13.10 23.11.2002, Martti Lehtinen, 01.01.2002 → 31.12.2011, Finland

Meteoritiinäyttelyn avaus klo 17.00 sekä luento aiheesta Meteoriiitit ja meteoriittikraatterit , Kaukametsäopisto, Kajaani, 12.11.2002 klo 18.00 19.50 (83 kuulijaa), Martti Lehtinen, 01.01.2002 → 31.12.2011, Finland



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#### ECO/Korja

Tampere, Kivimessut, 16.-17.11.2002, Martti Lehtinen, 01.01.2002 → 31.12.2011, Finland

luento Helsingin Latu ry:n kokouksessa Maunulan ulkoilmajasssa 24.10.2002 klo 18.00 19.45 (noin 25 kuulijaa), Martti Lehtinen, 01.01.2002 → 31.12.2011, Finland

lehtihaastattelu Kaalin meteoriitista (ja kraatterista), toim. Heljä Walamies. Artikkelit ilmestyi ET-lehdessä, lokakuu 12, 2003, sivut 44 48, Martti Lehtinen, 01.01.2003 → 31.12.2011, Finland

lehtihaastattelu meteoriittien tunnistamisesta toim. Marko Pekkola ja valok. Ismo Lehikoinen. Artikkelit ilmestyi lehdessä Tähdet ja avaruus 7/2003, sivut 38 41, Martti Lehtinen, 01.01.2003 → 31.12.2011, Finland

(= yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym.), Vilppulan kivimessuilla, Martti Lehtinen, 10.07.2004 → 11.07.2011, Finland

Espoon-päivän (Soukka- seuran järjestämä) opastettu kivikierron Soukassa, n. 40 osanottajaa, Martti Lehtinen, 27.08.2005, Netherlands

Heurekan kivitarhassa Tikkurilassa klo 12 (12 osanottajaa) ja 14 (15 osanottajaa), Martti Lehtinen, 27.08.2005, Netherlands

Meteoriitti Tikkurilassa?, Martti Lehtinen, 11.11.2005, Netherlands

Mineraalikaabinetti Leppälän koulun (Valkeakoski) luontokerholaisille (24 henkeä), Martti Lehtinen, 01.11.2005, Netherlands

Mineraalikaabinetti museologian kurssilaisille (6 henkeä), Martti Lehtinen, 08.11.2005, Netherlands

Mineraalikaabinetti ja geologian laitos, Hollolan lukiolaiset (lehtori Leena Hyttinen), 42 osanottajaa, Martti Lehtinen, 04.04.2005, Netherlands

Suomen Geologisen Seuran opastetun retken vetäjä, 31 osanottajaa, Martti Lehtinen, 12.05.2005, Finland

arkkitehtioiskelijoille (TKK) Mineraalikaabinetti, Martti Lehtinen, 05.10.2005, Netherlands

esitys Lahden kivikerhon kokouksessa (Askonkuja 5, Lahti), 27 kuulijaa, Martti Lehtinen, 03.02.2005, Netherlands

esitys Maunulan ns. saunabaarissa (Metsäpurontie 25) eläkeläisille (32 kuulijaa), Martti Lehtinen, 25.10.2005, Netherlands

esitys Turun rotareille (n. 35 henkeä), Hamburger Börss, Turku, Martti Lehtinen, 28.06.2005, Netherlands

esitys Vantaan kivikerhon Kiviset kokouksessa Vantaan Havukoskella, 25 kuulijaa, Martti Lehtinen, 12.10.2005, Netherlands

haastattelu Tiede-lehteen (toim. Heljä Walamies) Huitisten meteoriitista ja siitä ottamistani mikrokuvista, Martti Lehtinen, 09.09.2005, Netherlands

käynnit Saarijärvellä ja materiaalit toimittaja Tero Karjalaiselle (Keski-suomalainen) Saarijärven epäilyistä meteoriittikraatterista, kirjoitus lehdessä su 14.8.2005, Martti Lehtinen, 28.07.2005, Netherlands

luento Leppävaaran rotary-klubilla Albergan kartanossa (Sokerilinnantie 7, Leppävaara), 25 kuulijaa, Martti Lehtinen, 18.01.2005, Netherlands

luento luentosarjassa Nordenskiöldien jäljillä Mäntsälän kunnantalon auditoriossa, Heikinkuja 4., 34 kuulijaa, Martti Lehtinen, 16.02.2005, Netherlands

mineraaliesittely geologian laitoksen (Kumpulassa) aulassa, viisi ryhmää á 20 henkeä (koululaisia ja heidän vanhempiaan), Martti Lehtinen, 23.04.2005, Netherlands

ohjaus geologian laitoksessa Kumpulassa, Martti Lehtinen, 13.06.2005, Netherlands

opastettu kierros uusille opiskelijoille (22 henkeä) Mineraalikaabinetti, Martti Lehtinen, 11.09.2005, Netherlands

opastetun kivikävelyn ja -retken vetäjä Suomen geologisen seuran jäsenille Helsingissä, n. 30 osanottajaa, Martti Lehtinen, 13.05.2005, Netherlands

puhelinhaastatteluun ja lähetettyyn kirjalliseen materiaaliin perustuva artikkeli Etelä-Suomen Sanomiin (toim. Veikko Niemi), Martti Lehtinen, 18.02.2005, Netherlands

puhelinhaastatteluun perustuva artikkeli Elimäen sanomiin (toim. Petra Tynninen), Martti Lehtinen, 17.01.2005, Netherlands

tietoisuus Mineraalikaabinetti, n. 25 ja 35 kuulijaa, Martti Lehtinen, 13.01.2005, Netherlands

yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Kurikan kivimessuilla, Martti Lehtinen, 15.10.2005 → 16.10.2005, Netherlands

yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Lahden kivimessuilla (Jokimaa), Martti Lehtinen, 19.03.2005 → 20.03.2005, Netherlands

yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Lahden kivimessuilla (Suurhalli), Martti Lehtinen, 16.04.2005 → 17.04.2005, Netherlands

yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Tampereen kivimessuilla, Martti Lehtinen, 19.11.2005 → 20.11.2005, Netherlands



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- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Vilppulan kivimessuilla, Martti Lehtinen, 09.07.2005 → 10.07.2011, Netherlands
- Ala-Malmin yläasteen oppilaiden ohjaajana Lohjanharjun leirikeskuksessa (useita ryhmiä á 10 h., Martti Lehtinen, 28.09.2006, Finland
- Porvoon kansalaisopiston kiviurssilaisten päivä Physicumin kokoelmissa, 14 kurssilaista, Martti Lehtinen, 08.04.2006, Finland
- esitys Maa- ja metsätalousministeriön tietopalvelu-keskuksen väelle (8 h.), Martti Lehtinen, 11.10.2006, Finland
- esitys Munkkivuoren seurakunnan senioreille Munkkivuoren seurakuntatalossa (Raumantie 3) (n. 30 kuulijaa), Martti Lehtinen, 18.10.2006, Finland
- esitys aiheesta Helsingin työväenopisto, Stoa, Turunlinnantie 1, 32 kuulijaa, Martti Lehtinen, 05.04.2006, Finland
- luennot kemian opetuksen päivillä Kumpulán Physicumissa, yht. n. 30 kuulijaa, Martti Lehtinen, 01.01.2006 → 31.12.2011, Finland
- luento Kotkan kivikerhon kokouksessa, Kotka, 26 kuulijaa, Martti Lehtinen, 03.01.2006, Finland
- luento Suomen Gemmologisen Seuran dipl. gemmologikurssilaisille (12 h.), Martti Lehtinen, 15.10.2006, Finland
- luento Tampereen kivikerhon kokouksessa (Puutarhakatu 11 G), 24 kuulijaa, Martti Lehtinen, 16.03.2006, Finland
- luento, Lahden Jalo- ja Korukiviharrastajat ry. (Askonkatu 5), 24 kuulijaa, Martti Lehtinen, 07.11.2006, Finland
- luento, Suomen Jalokiviharrastajat ry. (Lönnrotinkatu 32 A 1, Helsinki), 11 kuulijaa, Martti Lehtinen, 15.02.2006, Finland
- opastetun kierroksen vetäjä, n. 35 osanottajaa, Martti Lehtinen, 30.04.2006, Finland
- oppaana Soukka-seuran järjestämällä Espoo-päivän kiviävelyllä, 28 h., Martti Lehtinen, 27.08.2006, Finland
- oppaana m/s Kristina Brahen retkellä, Martti Lehtinen, 16.07.2006, Finland
- puhelinhaastattelu (toim. Jani Timonen, Aamulehti, Tampere), Martti Lehtinen, 03.05.2006, Finland
- puhelinhaastattelu (toim. Mats Ekman, Vasabladet; juttu lehdessä, s. 7), Martti Lehtinen, 24.02.2006, Finland
- vattakunnallisiin Geologian päiviin liittyen esitys Perhon lukion ja yläasteen oppilaille koulun auditoriossa, n. 120 kuulijaa, Martti Lehtinen, 08.09.2006, Finland
- vetäjä ja opettaja (yhdessä prof. Tapani Rämön kanssa), n. 50 osanottajaa, mukana myös virolaisia opiskelijoita opettajineen, Martti Lehtinen, 05.05.2006, Finland
- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Lahden kivimessuilla (Jokimaa, järj. Lahden Jalo- ja Korukiviharrastajat ry.), Martti Lehtinen, 18.03.2006 → 19.03.2006, Finland
- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Tampereen kivimessuilla, Martti Lehtinen, 18.11.2006 → 19.11.2011, Finland
- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Kurikan kivimessuilla (järj. Lakeuden kivikerho ry.), Martti Lehtinen, 23.09.2006 → 24.09.2011, Finland
- (opettajana yhdessä FT Jaana Hallan kanssa) Mineraalikaabinetti (neljä kurssilaista), Martti Lehtinen, 05.05.2007, Finland
- Flooran-päivän kivioppaana Kumpulán kampusalueella., Martti Lehtinen, 10.05.2007, Finland
- Helsinki-päivän opastukset (noin tunnin mittaiset kiviäkerrokset) Senaatintorilla klo 14.00 (37 h.) ja Rautatien torilla klo 18.00 (n. 20 h.), Martti Lehtinen, 12.06.2007, Finland
- Hollolan lukion ryhmä (leht. Kalevi Niemikorpi ja 26 oppilasta) tutustumassa geologian laitokseen ja opetuskokoielmiin, Martti Lehtinen, 20.04.2007, Finland
- Kerava-päivän opastukset klo 13.00-14.35, (n. 50 h.) ja klo 15.00-16.00 Kivitohtorin vastaanotto Keravan museossa, Martti Lehtinen, 17.06.2007, Finland
- Kirkkonummen työväenopiston kiviäkerken opas (22 osanottajaa), Martti Lehtinen, 16.09.2007, Finland
- Puhe Suomen Geologisen seuran juhlaillallisilla (ravintola Kultainen sipuli) n. 60 h., Martti Lehtinen, 06.09.2007, Finland
- Suomen Geologisen Seuran opastetun retken vetäjä, n. 30 osanottajaa, Martti Lehtinen, 11.05.2007 → ..., Finland
- Sveitsin lukion (Hyvinkää) ryhmä Mineraalikaabinetti ja Senaatintorilla kiviäkerkuntaan tutustumassa, Martti Lehtinen, 07.05.2007, Finland
- astrobiologian luento, Porthania P674, n. 30 kuulijaa, Martti Lehtinen, 20.09.2007, Finland
- esitys (luento) Kirkkonummen koulun auditoriossa (järj. Kirkkonummen Komeetta ry.) (42 kuulijaa), Martti Lehtinen, 04.12.2007, Finland
- esitys Espoon latu ry:n ryhmälle Akilleen majalla (Espoon Puolarmetsässä) n. 15 h., Martti Lehtinen, 01.05.2007, Finland
- esitys tunturikerho Kavtsin jäsenille Kampin palvelutalossa (n. 45 kuulijaa), Martti Lehtinen, 11.12.2007, Finland





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- kivikierros GTK:n johtoryhmälle (10 h.), Martti Lehtinen, 09.10.2007, Finland
- kivikierros ryhmälle (n. 15 h.) tulevia ympäristöarkkitehteja, Martti Lehtinen, 02.10.2007, Finland
- luento Kangasala-opistossa, Kangasalan valtuustosalissa, 35 h, Martti Lehtinen, 27.10.2007, Finland
- luento Tampereen Ursan kokouksessa, Tampereen vanhassa kirjastotalossa, n. 25 kuulijaa, Martti Lehtinen, 21.02.2007, Finland
- luento ja diaesitys Kolin kivitapahtumassa (Kuudes kansainvälinen ympäristöestetiikan konferenssi), 15 kuulijaa, Martti Lehtinen, 11.06.2007, Finland
- luento, Karjaan työväenopisto, Karjaa, 13 kuulijaa, Martti Lehtinen, 13.03.2007, Finland
- opastettu kierros Heinolan kiviharrastajille (12 h.)Mineraalikäbinetissa., Martti Lehtinen, 31.03.2007, Finland
- opastus Kouvolan seudun kiviharrastajille (20 h.) Mineraalikäbinetissa, Martti Lehtinen, 28.10.2007, Finland
- opastus geologian laitoksen opintokokeelmassa Laajasalon lukiolaisille (n. 20 oppilasta), Martti Lehtinen, 14.09.2007, Finland
- oppaana kun Forssan lukion ryhmä (leht. Helena Pöijärvi) tutustumassa geologian laitokseen ja opetuskokeelmiin, Martti Lehtinen, 26.04.2007, Finland
- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Kurikan kivimessuilla (järj. Lakeuden kivikerho ry.), Martti Lehtinen, 13.10.2007 → 14.10.2011, Finland
- yleisön tuomien kiviäytteiden tunnistamista ja geologian alan valistusta ym. Lahden kivimessuilla (Jokimaan ravirata, järj. Lahden Jalo- ja Korukiviharrastajat ry.), Martti Lehtinen, 24.03.2007 → 25.03.2011, Finland
- (= yleisön tuomien kiviäytteiden tunnistamista ja yleistä geologian alan informaatiota) Tampereella Kädetaitomessujen (mm. kivimessut) yhteydessä, Martti Lehtinen, 15.11.2008 → 16.11.2008, Finland
- (= yleisön tuomien näytteiden tunnistamista ja yleistä geologian alan informaatiota)Lahden Kivimessut Jokimaalla, Martti Lehtinen, 15.03.2008 → 16.03.2011, Finland
- (= yleisön tuomien näytteiden tunnistamista ja yleistä geologian alan informaatiota)Lakeuden Kivimessut Kurikassa. Lisäksi yksi kotikäynti suuria näytteitä katsomassa, Martti Lehtinen, 25.10.2008 → 26.10.2011, Finland
- (Physicum, auditorio 204). Noin 30 kuulijaa., Martti Lehtinen, 23.10.2008, Finland
- 17 nuorta Hyvinkäältä Lasten ja nuorten kuvataidekoulusta (opettaja Ulla Kuivamäki), Martti Lehtinen, 29.05.2008, Finland
- GTK:n eläkeläisten (n. 30 henk.) oppaana bussiretkellä Helsingin Vuosaareessa ja Laajasalossa, Martti Lehtinen, 11.03.2008, Finland
- Helsingin kirjamessuilla esittelemässä (Markus Hotakaisen haastattelemana) kirjaani Helsingin kaupunkikiviopas , n. 20-25 kuulijaa., Martti Lehtinen, 28.10.2008, Finland
- LUMAn Jippo-verkkolehden avajaisilaisuus Kumpulan Chemicumissa. Mineraalitekien esittelyä opettajille ja koululaisille. N. 45 osanottajaa., Martti Lehtinen, 28.08.2008, Finland
- Opastus Mineraalikäbinetissa kivistä kiinnostuneelle FM Erkki Lehtirannan kokoamalle humanistiryhmälle (8 h.), Martti Lehtinen, 24.10.2008, Finland
- Opastus Mineraalikäbinetissa kivistä kiinnostuneelle humanistiryhmälle, 8 h., Martti Lehtinen, 21.11.2008, Finland
- Yhtenäiskoulussa (Louhentie 3, Käpylä) pe n. 400 kuulijaa, Martti Lehtinen, 14.11.2008, Finland
- esitys (30-35 kuulijaa) EDUCA-messuilla (opetusalan valtakunnallinen koulutustapahtuma) MBOL ry:n Opettajien olohuoneessa sekä sen jälkeen kivitohorin vastaanotto 14.00 n. 14.45., Martti Lehtinen, 26.01.2008, Finland
- ja kolme esitystä suomalaisesta kivistä Turun Nordic Stone -08 -messuilla Turun messukeskuksessa, Martti Lehtinen, 06.04.2008, Finland
- kaksi opastettua kierrosta (alk. klo 14 ja 16) biologian ja maantieteen opettajien liiton (MOL:n) koulutuspäivillä, Heureka, Vantaan Tikkurilassa, Martti Lehtinen, 05.04.2008, Finland
- kiventunnistusta Vantaan Kiviset ry:n kivi-illassa Hakunilan kerhotilassa, 19 osanottajaa, Martti Lehtinen, 08.10.2008, Finland
- kivikierros Espoon Soukassa mukana n. 50-40 henkeä, Martti Lehtinen, 09.05.2008, Finland
- opastettu retki Mellstenin rannassa Espoon Haukilahdessa, n. 20 osanottajaa, Martti Lehtinen, 01.04.2008, Finland
- opastus Mineraalikäbinetissa Kustannusosakeyhtiö Otavan toimittaja ryhmälle (6 h.), Martti Lehtinen, 29.10.2008, Finland
- opastus kivistä kiinnostuneelle humanistiryhmälle, 5 h, Martti Lehtinen, 19.12.2008, Finland
- vuosikokouksen pyydettyä puheenjohtajana Laakson Kivikappelissa, Martti Lehtinen, 14.03.2008, Finland
- esitys Rotary-yhdistyksen (Katajanokka) aamutapaamisessa hotelli Arthurissa, Martti Lehtinen, 10.06.2009, Finland



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**Arto Luttinen ,**

Tiedekeskus Heureka, Arto Luttinen, 01.01.2001 → 31.12.2011, South Africa  
Yliopistolehti (haastattelu), Arto Luttinen, 01.01.2001 → 31.12.2011, South Africa  
Helsingin Sanomat, Arto Luttinen, 20.02.2005  
Koillis-Savo, Arto Luttinen, 04.08.2005  
Helsingin Sanomat, Arto Luttinen, 05.02.2006  
Kirkkonummen Sanomat, Arto Luttinen, 04.11.2007  
Helsingin Sanomat, Arto Luttinen, 28.06.2009  
Aamulehti, Arto Luttinen, 17.04.2010  
HS Kuukausiliite, Arto Luttinen, 16.04.2010  
Helsingin Sanomat, Arto Luttinen, 20.04.2010  
Iltalehti, Arto Luttinen, 18.04.2010  
Iltasanomat, Arto Luttinen, 21.04.2010  
Suomen Kuvalehti, Arto Luttinen, 16.04.2010  
Yliopisto-lehti, Arto Luttinen, 02.11.2010

**Päivi Mäntyniemi ,**

Asiantuntijahaastattelu, Päivi Mäntyniemi, 23.11.2006, Finland  
asiantuntijahaastattelu, Päivi Mäntyniemi, 15.01.2010, Finland  
asiantuntijahaastattelu luonnonnonnettomuudesta, Päivi Mäntyniemi, 15.01.2010, Finland  
expertintervju, Päivi Mäntyniemi, 17.06.2010, Finland

**Lauri Pesonen ,**

Jippii-Forum, Lauri Pesonen, 13.12.2005 → 31.12.2011, Finland  
Keski-suomalainen, haastattelu, Lauri Pesonen, 30.09.2006 → 31.12.2011, Finland  
TIEDE-lehti, haastattelu, toimittaja Eeva Mäkelä, Lauri Pesonen, 01.01.2006 → 31.12.2011, Finland  
Tähdet & Avaruus -lehti 1/2006, s. 2, Lauri Pesonen, 01.01.2006 → 31.12.2011, Finland  
Yliopisto-lehti 13/2006, haastattelu, toimittaja Virve Pohjanpalo, Lauri Pesonen, 27.11.2006 → 31.12.2011, Finland  
Geotieteellinen symposium, Physicum, Lauri Pesonen, 11.01.2008 → 31.12.2011, Finland  
Yliopisto-lehti, uutinen, toim. Virve Pohjanpalo, Lauri Pesonen, 20.03.2008 → 31.12.2011, Finland

**Ilona Romu ,**

Aamuposti, Ilona Romu, 01.01.2008 → 31.12.2011, Finland

**Tapani Rämö ,**

Ikäihmisten yliopisto, Tampereen yliopiston täydennyskoulutuskeskus, Seinäjoen toimipaikka, Tapani Rämö, 08.02.2005 → 31.12.2011, Finland

**Matti Tarvainen ,**

Kotimaiset tiedotusvälineet (lukuisia haastatteluja vuoden 2006 aikana), Matti Tarvainen, 01.01.2006 → 31.12.2006, Finland  
Helsingin Sanomat, Matti Tarvainen, 13.05.2008, Finland  
Asiantuntijana ja artikkelin tarkistus, Matti Tarvainen, 08.03.2010

**Marja Uski ,**

Kotimaiset tiedotusvälineet, lukuisia haastatteluja vuoden 2006 aikana, Marja Uski, 2006, Finland  
Enontekiön Sanomat, Marja Uski, 24.01.2007, Finland  
Taloussanomat, Marja Uski, 25.02.2008, Finland



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**Participation in radio programme**

**Pasi Antero Heikkilä ,**

Radio Suomen Geologiailta 10.11.2010, Pasi Antero Heikkilä, 10.11.2010, Finland

**Pekka Heikkinen ,**

Radio News and current affairs programs, Numerous interviews concerning the tsunami catastrophe in Asia, Pekka Heikkinen, 01.01.2005 → 30.06.2005, Finland

YLE Radio1, Tiedetoimitus, Pekka Heikkinen, 08.03.2006, Finland

Yle Radiouutiset, Pekka Heikkinen, 27.05.2006, Finland

Aasian ympäristökatastrofit (Myanmar ja Kiina), Pekka Heikkinen, 14.05.2008, Finland

Radio Vega, Samoan ja Indonesian maanjäristykset, Pekka Heikkinen, 02.10.2009, Finland

**Juha Karhu ,**

YLE Radio 1, Radiaattori (Sisko Loikkanen), Juha Karhu, 07.11.2007 → 31.12.2011, Finland

**Annakaisa Korja ,**

Sumatra earthquake on Easter Day, Pravda, FSR, Annakaisa Korja, 29.03.2005, Finland

Sumatran maanjäristys, Radiaattori, YLE1, Annakaisa Korja, 19.01.2005, Finland

Sumatran maanjäristys, Radiaattori, YLE1., Annakaisa Korja, 20.01.2005

Miniskalv i Österbotten, Annakaisa Korja, 27.01.2006

Om jordbävningar i Spitsbergen och England, Radio Vega, Aktuellt 17.00, Annakaisa Korja, 27.02.2008, Finland

Until otherwise proven – Continental plates are moving. YLE 1, Annakaisa Korja, 08.08.2008, Finland

On the formation of the crust, Time of mathematics, YLE1, Annakaisa Korja, 15.07.2009

**Martti Lehtinen**

Valtakunnallisiin geologian päiviin liittyvä luento yleisölle (mukana mm. Alajärven lukion abit sekä radion ja lehdistön edustajia, yht. n. 35 kuulijaa) Alajärven Hoiskon tulivuorikeskuksessa, Martti Lehtinen, 16.09.2005, Netherlands

suora radiolähetys (Ylen aikainen) Vuosaaren maastosta, toim. Ilkka Hannula, Martti Lehtinen, 04.07.2005, Netherlands

puhelinhaastattelu (Radio Nova) aiheesta (lähetys tuli 2.3.2006 klo 10.40), Martti Lehtinen, 02.03.2006, Finland

radionauhoitus (toim. Maija Typpi), lähetys tullut kesän mittaan radiosta kahteen kertaan, Martti Lehtinen, 09.06.2006, Finland

suora radiolähetys Pasilasta yhdessä prof. V.-P. Salosen kanssa (toim. Maija Typpi, Radio 1), Martti Lehtinen, 16.01.2006, Finland

(suora lähetys) radiossa (toim. Maija Typpi, Radio 1), Martti Lehtinen, 25.04.2007 → ..., Finland

(suora lähetys) radiossa (yhdessä prof. V.-P. Salosen kanssa, toim. Maija Typpi, Radio 1), Martti Lehtinen, 07.05.2008, Finland

Yle radio, Kymenlaakson radio (toim. Kirsi Partanen) radionauhoitus liittyen illan geologian merkitystä käsittelevään esitykseeni Kotkassa, Martti Lehtinen, 08.01.2008, Finland

Yle radio, Kymenlaakson radio (toim. Kirsi Partanen) radionauhoitus, lähetys keskiviikkona 16.1. aamupäivällä, Martti Lehtinen, 14.01.2008 → 16.01.2011, Finland

**Arto Luttinen ,**

Radio Suomi, Arto Luttinen, 21.01.2006

Radio Suomi, Arto Luttinen, 11.11.2009

Radio Suomi, Arto Luttinen, 10.11.2010

Radio Suomi, Arto Luttinen, 20.04.2010

YLE, Radio Häme, Arto Luttinen, 17.11.2010

**Päivi Mäntyniemi ,**

Intervju, Päivi Mäntyniemi, 21.08.2006, Finland

expertintervju, Päivi Mäntyniemi, 13.01.2010, Finland



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**Lauri Pesonen ,**

Radio East Side, interview, Lauri Pesonen, 16.04.2005 → 31.12.2011, Finland

**Tapani Rämö ,**

Radio Suomi, Tiedeutiset, Tapani Rämö, 27.10.2005 → 31.12.2011, Finland

Radio Suomi, Tiedeutiset, Tapani Rämö, 30.09.2005 → 31.12.2011, Finland

YLE Radio 1, Tieteen viikkokatsaus, Tapani Rämö, 04.10.2005 → 31.12.2011, Finland

YLE Radioutiset, Tapani Rämö, 27.10.2005 → 31.12.2011, Finland

**Marja Uski ,**

Radio Mega, Marja Uski, 17.01.2008, Finland

**Participation in TV programme**

**Pekka Heikkinen ,**

TV News and current affairs programs, Numerous interviews concerning the tsunami catastrophe in Asia, Pekka Heikkinen, 01.01.2005 → 30.06.2005, Finland

Indonesian maanjäristys 26.5.2006, Pekka Heikkinen, 27.05.2006, Finland

Kiinan maanjäristys 12.5.2008, Pekka Heikkinen, 15.05.2008, Finland

MTV3 Huomenta Suomi, Kiinan maanjäristys 12.5.2008, Pekka Heikkinen, 14.05.2008, Finland

MTV3 Uutiset, Kiinan maanjäristys 12.5.2008, Pekka Heikkinen, 14.05.2008, Finland

MTV3 Huomenta Suomi, Yellowstonen supertulivuori, Pekka Heikkinen, 12.01.2009, Finland

MTV3 Kymmenen uutiset, Yellowstonen supertulivuori, Pekka Heikkinen, 09.01.2009, Finland

Haastattelu; Maanjäristys Haitilla, Pekka Heikkinen, 14.01.2010

MTV-3, Aamu-TV, Pekka Heikkinen, 14.01.2010

**Jussi Heinonen ,**

Consultancy in magazine programme, Jussi Heinonen, 15.09.2010, Finland

Interview, Jussi Heinonen, 16.04.2010, Finland

Live web consultancy, Jussi Heinonen, 21.04.2010, Finland

**Juha Karhu ,**

MTV3, 45 minuuttia, Juha Karhu, 27.04.2005 → 31.12.2011, Finland

Yle Aamu-tv, Juha Karhu, 01.01.2005 → 31.12.2011, Finland

Ykkösen aamu-tv, Luonto lähellä, Juha Karhu, 01.01.2007 → 31.12.2011, Finland

**Annakaisa Korja ,**

Finlands Svenska TV, TV-nytt, Annakaisa Korja, 29.03.2005, Finland

Why is the Earth shaking?, Annakaisa Korja, 03.04.2005

Italian maanjäristys, Annakaisa Korja, 07.04.2009

Jordbävning i Italien, Annakaisa Korja, 07.04.2009

Quinghai earthquake, Annakaisa Korja, 14.04.2010, Finland

**Martti Lehtinen**

haastattelu (filmaus, Broadcasters Oy, lähetys tuli 18.6.2005 TV1), Martti Lehtinen, 18.06.2005, Netherlands

suora lähetys MTV3:n Huomenta Suomi -lähetyksessä, Martti Lehtinen, 07.09.2005, Netherlands

TV-haastattelu (filminauhoitus) (toim. Helena Lehtimäki), Martti Lehtinen, 07.06.2006, Finland

asiantuntija Huomenta Suomi -lähetyksessä (MTV3, Pasila), Martti Lehtinen, 17.05.2006, Finland



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kivikohteiden kuvaus (aamuTV, toim. Paul Segersvärd) Helsingin keskustassa. (Ohjelma lähetettiin seuraavalla viikolla), Martti Lehtinen, 03.11.2006, Finland

tulivuoriohjelmaan liittyvä haastattelu (nauhoitus) Pasilassa (TV1). Ohjelma lähetettiin 10.4.2006 klo 19, Martti Lehtinen, 30.03.2006 → ..., Finland

Prismastudion nauhoitus (lähetyks klo 19.00-19.15) (toim. Jari Mäkinen, TV1), Martti Lehtinen, 01.01.2007 → 31.12.2011, Finland

filminauhoitus TV1:n iltauutisiin klo 20.30 koskien Lomonosovin selännettä pohjoisella jäämerellä., Martti Lehtinen, 03.08.2007, Finland

filminauhoitus Kaivopuiston kärjessä TV1:n Prisma-ohjelmaan, Martti Lehtinen, 30.08.2010, Finland

#### **Arto Luttinen ,**

MTV Huomenta Suomi, Arto Luttinen, 21.04.2010

MTV uutiset, Arto Luttinen, 05.11.2010

YLE Prisma, Arto Luttinen, 31.08.2010

YLE aamu-tv, Arto Luttinen, 06.03.2010

YLE iltauutiset, Arto Luttinen, 15.04.2010

#### **Päivi Mäntyniemi ,**

Expertintervju, Päivi Mäntyniemi, 08.03.2010, Finland

#### **Tapani Rämö ,**

TV1, Kulttuuriuutiset, Tapani Rämö, 12.09.2005 → 31.12.2011, Finland

TV1, Prisma Studio, Tapani Rämö, 09.11.2005 → 31.12.2011, Finland

#### **Matti Tarvainen ,**

Suomalaiset tiedotusvälineet (TV, radio ja lehdet), yhteensä ainakin 20 haastattelua, Matti Tarvainen, 01.01.2005 → 31.12.2005, Finland

Asiantuntijakomentointi uutisiin, Matti Tarvainen, 21.03.2010

Asiantuntijana aamutelkassa, Matti Tarvainen, 01.03.2010

Asiantuntijana uutislähetyksessä, Matti Tarvainen, 27.02.2010

Prisman ohjelma maanjäristyksistä, Matti Tarvainen, 08.03.2010

TV-haastattelu, Matti Tarvainen, 12.01.2010

#### **Participation in interview for web based media**

#### **Matti Tarvainen ,**

Haastattelu yliopiston verkkosivulle, Matti Tarvainen, 26.04.2010



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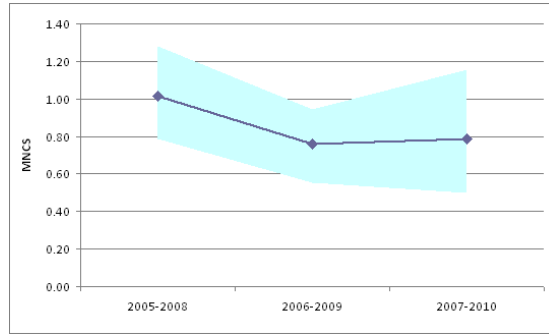
Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010  
by CWTS, Leiden University, the Netherlands

Research Group: Korja A

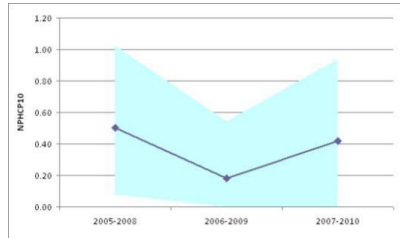
*Basic statistics*

Number of publications (P)	85
Number of citations (TCS)	362
Number of citations per publication (MCS)	4.26
Percentage of uncited publications	28%
Field-normalized number of citations per publication (MNCS)	.89
Field-normalized average journal impact (MNJS)	1.11
Field-normalized proportion highly cited publications (top 10%)	.53
Internal coverage	.61

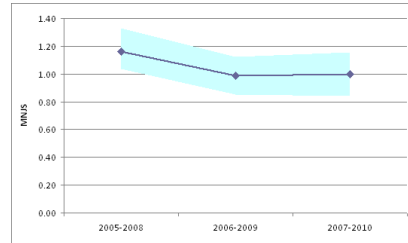
*Trend analyses*



MNCS

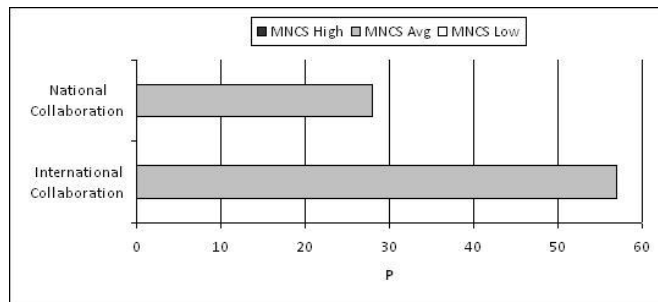


THCP10



MNJS

*Collaboration*



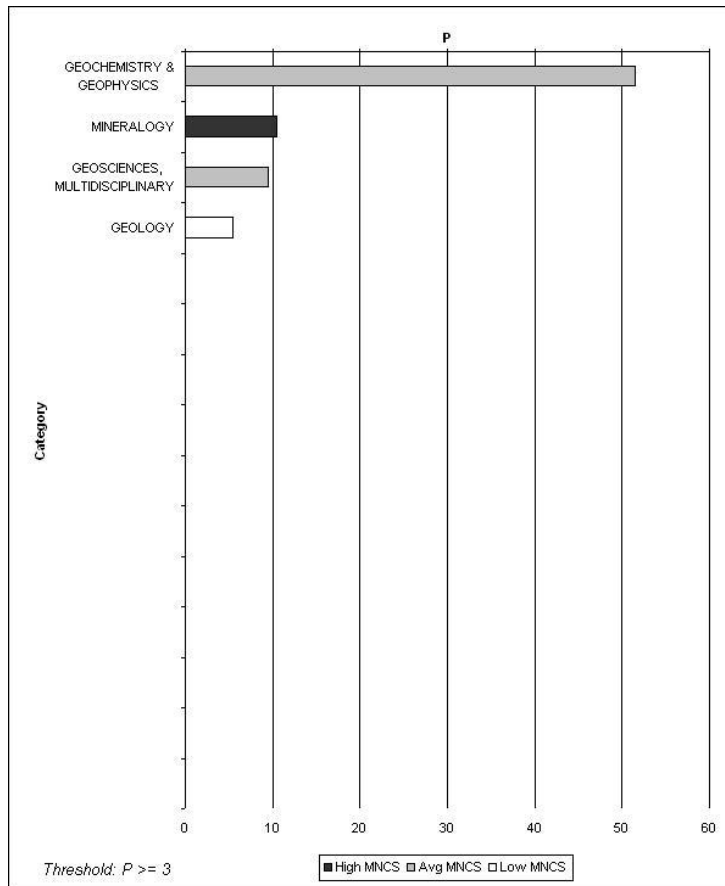
Performance (MNCS) by collaboration type



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Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010  
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*Research profile*



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