On Track

The Newsletter of the International Fission-Track Community

February 2003, Volume 13, Number 1, Issue 25

Contents

On Track is a newsletter of the international fission-track community published electronically in the months of July and February. The views expressed in On Track articles are those of the authors and do not reflect those of the fission-track community or the editor of On Track. The copyright of articles belongs to the authors. Articles may not be reproduced without written permission. Trademarks and patents are the property of the corporations and/or individuals indicated in the article.

On Track is supported by paid advertisements. Prices for 1, 1/2, and 1/4 page advertisements are US$ 200, 100 and 50. There is no charge for short ads by non-commercial entities. Please address all inquiries concerning On Track to the editor.

PREVIOUS EDITORS:
Dave Coyle (1990-91), La Trobe University
Trevor Dumitru (1991-92), Stanford University
Rasoul Sorkhabi (1992-93), Arizona State University
Dennis Arne (1993-94), Dalhousie University
Richard J. Weiland (1994-95), University of Texas
Ruth Siddall (1995-96), University College London
Danny Stockli (1996-97), Stanford University
Paul O'Sullivan (1997-98), La Trobe University
Alexander Grist (1998-99), Dalhousie University
Richard Spikings (1999-2000), ETH Zürich
Raymond Jonckheere (2000-2001) Max-Plank Heidelberg
Andy Carter (2001-2002) Birkbeck College, London

CURRENT EDITOR:
Ed Sobel
Institüt für Geowissenschaften,
Universität Potsdam,
Postfach 601553,
D-14415 Potsdam Germany
Phone: + 49 331 977 5403
Fax: + 49 331 977 5060
E-mail: sobel@rz.uni-potsdam.de

Editor's Notes

January and February in northern Germany is a good time to sit in front of a computer. Despite such a perfect time to produce OnTrack, this issue is rather late and thin. For this, I must apologize. The next issue is due at a much nicer time of year. Please help me publish it in a timely manner by sending your submissions!

A section has been reintroduced that highlights recent PhD theses. Extended abstracts from 5 recent theses have been included. Naturally, submission of such abstracts for upcoming issues of OnTrack are strongly encouraged!

In the near future, most of the back issues of OnTrack will be placed on the web in pdf format. An email will be sent around notifying you when this has been accomplished.

The past year has seen a large number of post-doc positions advertised for low-temperature thermochronology. Several of these positions have been advertised on the OnTrack mailing list by request. I hope that this hasn't bothered people. I will continue this practise until the next editor for OnTrack takes over; he or she will have to decide their own policy.

If there are issues arising from these articles or if you have general concerns that you want to sound out with the FT community there is the web-based fission-track discussion group FISSION-TRACK@jiscmail.ac.uk If you do not already belong to this group you can sign up at; http://www.jiscmail.ac.uk/lists/FISSION-TRACK.html

[Ed Sobel]

Short Tracks

Giulio Viola has established a fission track lab in Cape Town.

Paul O'Sullivan has joined **Ray and Margaret Donelick** in Moscow, Idaho. The company has been renamed Apatite to Zircon, Inc. More details follow in an advertisement.

Marc Jolivet (The CRUST Project, University of Glasgow) has been appointed as a Chargé de Recherche (CNRS) at University Montpellier II. Marc will now be running the FT lab and will also be in charge of setting up a new U-Th/He lab in Montpellier together with Patrick Monié (CNRS). Research will still be focussed on surface tectonic with ongoing projects in northern Tibet, Mongolia, the Alps and the Pyrenees. One Master project will be available starting next September for any student willing to work on the Grès d'Annot (southern Alps) (please contact Marc for information; email: jolivet@dstu.univ-montp2.fr).

Dennis Arne left full-time employment at Curtin University of Technology (Australia) late last year to move to the family to the Victorian Alps. He continues to be a Senior Teaching Fellow at Curtin, and has set up a small consultancy to handle contract teaching, report writing and editing, plus whatever else comes along!

Isabelle Coutand has finished her postdoc at Potsdam University (Germany). She was hired as an assistant professor in the University of Lille (France) and is building a fission-track lab there.

Barbara Carrapa has finished her PhD thesis at the Vrije Universiteit in Amsterdam. A summary of her thesis is included in this issue of OnTrack. Following a short postdoc project in Amsterdam on the evolution of the Alps/Apennine knot area, she will move to Potsdam as a postdoc with Manfred Strecker and Ed Sobel. There she will join a project examining the detrital signal of plateau uplift. The study area is the Argentine Puna and northern Sierras Pampeanas.

Geoffery Ruiz has finished his PhD in Zurich and moved to Amsterdam for a postdoc. The title of his new project is "Neogene landscape evolution of drainage basins in the Eastern Andean and Subandean Cordilleras, Peru."

Research Setting

We want to individually quantify the effects of tectonic and climatic variables onto landscape evolution within two different basins in Peru. Later, the evolution of these variables through time in each basin will be compared, accounting for any similarities or differences or dominances observed. Two valleys have been selected, these are the Apurimac and Madre de Dios rivers, because their drainage basins have a different tectonic and climatic history and are on opposite site of a major divide in southern Peru, the Cordillera Oriental or Eastern Cordillera.

The aims are (1) Reconstruct denudation histories of the 2 chosen drainage basins (FT and (U-Th)/He), (2) calculate denudation rates for successive down-cutting episodes (cosmogenic nucleides, (U-Th)/He, 3He, 21Ne), (3) produce a GIS of the Eastern Cordillera drainage basins of Peru integrating remote sensing and map analyses, quantitative climatic and tectonic analyses, (4) correlate denudation histories with the Miocene to Recent sedimentary sequences located further east, into the Amazon.

The results will be fully integrated with another project looking towards climate reconstructions based on chemical proxies from ostracods and molluscan bivalve faunas within the same regions/sections (postdoc position: Karin Boessenkool)

Meetings

The 32ND INTERNATIONAL GEOLOGICAL CONGRESS will be held from August 20 to 28, 2004 in Florence, Italy. Details can be found at: http://www.32igc.org/home.htm

We would like to draw the attention of the FT community to Topical Session T05 entitled **"Exhumation of Orogenic Belts."** Topics covered in this Topical Session include the crustal response to tectonism and exhumation, erosion and sedimentation in flanking basins, thermochronology in orogenic belts, and the long- and short-term rates of uplift and exhumation. T05 contains two sessions:

T05.1 Exhumation processes This session will focus on observation, theory, and modeling of the relationship of tectonic and erosional exhumation to orogenesis. Topics might include new information about rates and patterns of exhumation, the relative contribution of different exhumation processes, or the tectonic and climatic conditions needed for deep exhumation. Conveners:

Dr. Sean Willet Earth and Space Sciences, University of Washington, Seattle WA USA <swillett@u.washington.edu>

Dr. Mark T. Brandon, Geology and Geophysics, Yale University, New Haven, CT USA <mark.brandon@yale.edu>

T05.2 Sedimentary record of exhumation This session addresses sedimentary record of exhumation in orogenic belts. This focus includes understanding the provenance, stratigraphy, and sedimentary systems that record exhumation, including isotopic tracers in the sedimentary system and thermochronologic studies. Conveners:

Dr. John I. Garver Geology Department, Union College Schenectady NY, USA <garverj@union.edu>
Dr. Massimiliano Zattin, University of Bologna, Dipartimento di Scienze della Terra e Geologico - Ambientali, Bologna, ITALY <zattin@geomin.unibo.it>

These topical sessions include both invited and volunteered presentations. Abstracts may be accepted for oral or poster presentation. We hope that you consider attending the Congress, and we look forward to an exciting session. Note that FT 2004 will be in Europe at about this time, and we are hopeful that participants can attend both meetings.

[John I. Garver]

First announcement

As decided in Cadiz, Spain, the next EUROPEAN FISSION TRACK MEETING will be held in August 2006 in Bremen Germany.
The meeting will be organized by Prof. M. Olesch (University Bremen) and Dr. U. A. Glasmacher (Forschungsstelle Archaeometry, Max-Planck-Institut für Kernphysik, Heidelberg).

[Ulrich A. Glasmacher]

RECENT PhD Dissertations

THERMOTECTONIC EVOLUTION OF KRAISHTE, WESTERN BULGARIA

ALEXANDER KOUNOV

Geology Institute, ETH-Zentrum
Sonneggstrasse 5, 8092, Zurich, Switzerland

The Kraishte zone of western Bulgaria, represents part of the South European margin which was involved in the Alpine orogeny. This zone is bounded to the northeast by the upper Cretaceous Srednogorie volcanic arc. To the southwest is the high-grade metamorphic unit of the Serbo-Macedonian crystalline "massif", deemed to be part of the Rhodope.

The aim of this work was to constrain the tectonic evolution of the region using U-Pb SHRIMP (zircon), $^{40}Ar/^{39}Ar$ (mica and hornblende) and fission-track analysis (zircon and apatite), combined with structural and sedimentological observations.

The Kraishte zone is composed of two main tectonic units, the Morava and the Struma. The Morava unit, with a presumed continental basement and an Ordovician to Devonian sedimentary cover, was thrust upon the Struma during the early Cretaceous. The Struma unit consists of a heterogeneous assemblage of variably deformed and metamorphosed continent- and ocean-derived rocks of lower Cambrian age together with a Permian to lower Cretaceous sedimentary cover.

Combining data from single grain U/Pb age measurements on zircon (Graf, 2001) with the U/Pb SHRIMP analysis from this work, an age of 569 - 544 Ma has been obtained for the protolith of the crystalline basement of the Struma unit. These rocks did not experience any high-grade metamorphism, southwest of the line Zlogosh-Koniavo, until the lower Cretaceous. A Variscan metamorphic event may have affected the basement northeast of this line. Therefore it is tentatively suggested that the front of the Variscan orogen was positioned in this zone.

The lower Cretaceous thrusting of the Morava unit over the Struma unit yielded lower amphibolitic facies metamorphism in the basement of the latter. This thrusting occurred between 135 Ma, identified through the age of the youngest sediments involved in the thrusting, and 112 Ma, the oldest $^{40}Ar/^{39}Ar$ cooling age of the amphibolite facies rocks.

A rapid cooling phase at about 96 Ma predicted from $^{40}Ar/^{39}Ar$ and zircon fission-track ages, may have been related to extension at that time. Such extension is documented by the development of the Gurbino-Zlogosh low-angle normal fault (Ivanov, in press) and the normal faulting along the Contact C2 (Bonev et al., 1996).

The Cenozoic tectonic history of the Kraishte is related to the exhumation of the Osogovo-Lisets complex along the Eleshnitsa and Dragovishtitsa detachments. The extension started before 47 Ma and was contemporaneous with the extension in the Rhodope (Burg et al., 1996). Between 47 and 35 Ma, acceleration in the cooling rate of the Osogovo-Lisets core is documented through the fission-track data. The extension was accompanied by the development of sedimentary basins in the hanging wall position where syn-detachment clastic sediments were deposited. Rapid uplift of the hotter footwall induced heating in the hanging wall and the sediments. By the late Eocene the detachments were no longer active and were sealed by post-detachment marine sediments. Post-sedimentary (Miocene?) deformation was associated with SW-NE followed by NNW-SSE extension.

It is still difficult to say whether the extension in the Kraishte and the Rhodope was caused by syn- to post-orogenic collapse or was related to the retreating subduction. Syn- to post-collisional extension is suggested for the upper Cretaceous, whereas the Cenozoic extension may be more likely subduction-related.

EXHUMATION OF THE NORTHERN SUB-ANDEAN ZONE OF ECUADOR AND ITS SOURCE REGIONS: A COMBINED THERMOCHRONOLOGICAL AND HEAVY MINERAL APPROACH

GEOFFREY RUIZ

Geology Institute, ETH-Zentrum
Sonneggstrasse 5, 8092, Zurich, Switzerland

The Ecuadorian Andean Amazon Basin (AAB) developed along the eastern Andean margin as a response to the (1) interaction of the subducting Farallon/Nazca plates and the South American Craton, and (2) accretionary events since Early Cretaceous. The Aptian to Recent sediments contain clastic material which was eroded from the craton and its Paleozoic cover to the east as well as the rising Andean Cordilleras in the west. Previous work established a quantitative thermal history record of exhumation in the bounding orogen to the west although the depths of rock exhumed limit the temporal extent of this record. Often information cannot be continuously traced within the orogens because it has been removed by erosion or overprinted. Hence the details of source region tectonics can be recognized in sedimentary sequences using geochronology. An advanced thermochronological methodology based on pattern of changes in lagtime upwards in the stratigraphic column, combined with heavy mineral analysis, allowed events in the source regions of the AAB to be distinguished through dating of the eroded material present in the northern SAZ and Pastaza depression where uplift has exposed both the Jurassic basement and its Aptian to Recent sedimentary cover.

In a preliminary study, the thermal history of the northern SAZ was constrained using fission-track analysis on both zircon and apatite from 25 samples from the basement of the region. The results reveal that the basement of the sediments, dominantly Jurassic igneous sequences, has never undergone temperatures higher than 100°C since emplacement. Consequently, the region was never heated to temperatures that would have modified zircon detrital fission-track ages in the overlying sedimentary sequences (zircon has a closure temperature of ~270 ± 40°C). Hence, the dated zircon fission-track ages from the Aptian to Recent siliciclastic sediments are true detrital ages and express the varied thermal histories of the source regions.

70 detrital zircon fission-track age populations were statistically extracted from 1082 zircon grains, and show a significant variation from 579 ± 65 Ma to 22.9 ± 1.2 Ma. The abundance of DZFT populations with Proterozoic to Early Cretaceous ages in the Aptian-Albian Hollin Fm. suggests that several distinct source regions, which may have been significantly geographically dispersed, contributed to the early infilling of the AAB. The old populations (600-250 Ma) indicate a probable sourcing in the Guyana-Brazilian Shield regions to the east. Early Cretaceous detrital zircon fission-track populations suggest a Late Jurassic-Early Cretaceous phase of exhumation along the Ecuadorian margin (Peltetec event?), which may be responsible for the 60 My hiatus observed in some locations between the Jurassic Misahualli volcanic arc and the overlying Aptian-Albian sediments (Hollin Fm.).

A rapid exhumation within the source region greater than 2mm/yr during the Coniacian/Santonian to Paleocene was recognised. This is most likely from within the Cordillera and may have been due to the accretion of an oceanic plateau, referred to as the Pallatanga Terrane, against the Ecuadorian margin. This is also manifested by the first appearance of metamorphic detritus into the Maastrichtian Tena Fm.

During the Eocene, distinct provenance changes were coeval with the deposition of proximal sedimentary facies in the AAB (Tiyuyacu Fm.), suggesting that the contemporaneous tectonic development along the Ecuadorian margin was more protracted. Rapid exhumation in the hinterland of the AAB was restricted to the Middle to Late Eocene, when lower crustal levels were eroded into the AAB. This phase probably ended with the final docking of the Macuchi oceanic island arc against the Ecuadorian margin where it currently constitutes part of the Cordillera Occidental.

A clear change of provenance, characterized by the introduction of a pyroxene-olivine dominated heavy mineral assemblage, is observed between the Late Miocene Chambira Fm. and the Pliocene-Pleistocene Mesa and Mera Fms. Rocks with an oceanic affinity, such as the basement of the Cordillera Occidental and parts of the Interandean region, must have been eroded into the AAB since the Pliocene suggesting that western, allochthonous Ecuador was eroding at this time.

Collectively, the combination of these techniques permit (1) an assessment of the thermal and tectonic history of the northern Sub-Andean Zone and Pastaza depression, (2) the identification of the source regions of the preserved western and proximal deposits of the AAB, and (3) a refinement of the exhumation histories of individual source regions. Knowledge gained from this study contributes to the understanding of the Jurassic - Recent active continental margin of Ecuador. Furthermore, the northern Sub-Andean Zone forms a relic part of the flat lying Andean Amazon Basin, which is a major, hydrocarbon contributor and an increased understanding of its evolution may enhance the productivity and economic prosperity of the area.

TECTONIC EVOLUTION OF AN ACTIVE OROGEN AS REFLECTED BY ITS SEDIMENTARY RECORD; AN INTEGRATED STUDY OF THE TERTIARY PIEDMONT BASIN (INTERNAL WESTERN ALPS, NW ITALY)

BARBARA CARRAPA

Vrije Universiteit Amsterdam
De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands

Syn- to post-orogenic basins such as the Oligocene to Miocene Tertiary Piedmont Basin (TPB) contain the evolutionary record of the syn- to post-collisional kinematics in the surrounding orogen and evidence for the mechanisms responsible for the formation of the accommodation space in the sedimentary basin. Because of its position within the Internal Western Alps, the TPB represents an important record of processes occurring in the Alpine retro-wedge during the last ~30My. In particular TPB sediments contain information on the HP-UHP rock exhumation pattern (e.g. Voltri Group, Dora Maira) in the Western Alpine orogen. Furthermore, the position of the TPB on top of the Alpine/Apennine thrust belts poses fundamental questions as to the tectonics of the basin subsidence. Having undergone little deformation, TPB sediments also provide insight on the stress regime and rotations in the kinematically very complex area surrounding the basin itself. A multidisciplinary approach has been applied in this Thesis, in order to fully understand the Western Alpine orogen and related sedimentary basin evolution.

Facies analysis, electron microprobe analysis on phengite and amphibole, $^{40}Ar/^{39}Ar$ dating on phengite, and Apatite Fission Track Thermochronolgy (AFTT) has been applied to the lowermost clastic unit in order to provide a reliable picture of the geology of the source area at Oligocene time. The provenance data produce an image of the Ligurian Alps during the Oligocene very similar to the present day one. Integrated $^{40}Ar/^{39}Ar$ and AFTT suggest a fast cooling/exhumation episode of the Ligurian Alps during the Oligocene (up to 100°C/My).

In particular the $^{40}Ar/^{39}Ar$ age distribution of detrital white micas from the entire TPB infill shows that from Oligocene (~34 Ma) until Aquitanian (~20.5 Ma) times the clastic sediments were fed mainly from a southern source area (Ligurian Alps) that widely records HP Alpine metamorphism and in part Variscan metamorphism. From the Miocene, the main source area gradually moved from the south to a Western Alpine provenance characterised by strong Meso-alpine (38-50 Ma) and Eo-alpine signals (70-120 Ma). From the Serravallian, there is the reappearance of Variscan ages, this time attributed to the exposure of the Argentera Massif as new source for the TPB.

The youngest detrital signals suggest a regional fast cooling/exhumation event prior to ca. 38 Ma followed by a period of slower exhumation/erosion of crustal rocks with a statistically uniform isotopic signature for over 25 My. This has resulted in a pattern of regularly increasing lag time up section which is representative of a short-lived episode of fast exhumation followed by slow erosion in the absence of thermal equilibrium.

Furthermore subsidence, structural analysis, measurements of magnetic susceptibility anisotropy (AMS) and natural remanent magnetisation (NRM) have been applied to the TPB in order to better constrain the tectonic kinematics of the basin evolution. Subsidence of the TPB began in the Early Oligocene and continued throughout the Miocene. During the Oligocene, subsidence was stronger in the SW part of the TPB than in the NE. Towards the end of the Early Miocene subsidence accelerated over most of the TPB including the eastern sector, which was a high structural domain during the Oligocene. Burdigalian subsidence affected the entire basin and in particular its central eastern parts. Magnitudes of vertical movements are higher in this period than during Oligocene time. Structural analysis has detected two main direction of shortening one NE-SW and the other NW-SE. Structures associated with N-S tension are quite common but the amount of strain they accommodate is minor. NE-SW directed compression and limited shortening was active in Langhian-Tortonian times. NW-SE directed compressional features have been identified and they were probably active during post Tortonian time. Magnetic susceptibility anisotropy (AMS) data generally confirm the direction of deformation detected by structural investigation. In addition natural remanent magnetisation (NRM) preliminary data suggest counterclockwise rotation in the TPB in the order of 20º which has taken place during Serravallian time.

Various kinds of subsidence mechanisms have been discussed and tested for the first time with numerical models in order to check on various tectonic scenarios proposed in the past (extension vs. compression) as mechanisms involved in TPB evolution. Tests on lithospheric stretching as a possible mechanism for the TPB subsidence show that the amount of lateral displacement produced by detected normal faults is by far insufficient to produce the amount of stretching necessary to fit the total subsidence observed in the TPB. Tests on flexural loading as a possible mechanism for the TPB subsidence show that the TPB geometry cannot be reproduced and that the total subsidence can be fitted only by applying an extra vertical force. Lithospheric buckling appears to be the most promising candidate for the evolution from Late Oligocene until post Late Miocene times.

In general the new dataset produced in this multidisciplinary study shows that $^{40}Ar/^{39}Ar$ thermochronology together with AFTT, and mineral chemistry on detrital minerals have great potential for provenance discrimination and provide fundamental information on complex orogenic cooling/exhumation patterns. Structural geology together with paleomagnetic data and modelling provide information on the kinematics of sedimentary basin formation.

EXHUMING THE ALPS THROUGH TIME: CLUES FROM DETRITAL ZIRCON FISSION-TRACK AGES

MATTHIAS BERNET

Department of Geology and Geophysics, Yale University
210 Whitney Avenue, New Haven, CT 06520-8109, USA

Detrital zircon fission-track analysis, a common tool for provenance and exhumation studies, has been tested on modern river sediments from over 16 rivers draining the European Alps toward their fore- and hinterland. The outcome of this study shows that detrital zircon fission-track results are reproducible, and that all major grain-age components in a drainage area can be detected, even in larger scale drainages like the Rhone river system. Erosional yield seems more important than the areal distribution of cooling ages, indicating that areas that erode faster have an higher input, with respect to zircon yield, given similar lithologies. One result of this study is that the distribution of fission-track grain-ages changes downstream in a river system with increasing drainage area. Nevertheless, the signal of fast orogenic exhumation can be detected in the river deltas, even if the deltas are up to 1000 km away from the orogenic sediment sources.

Furthermore, analysis of over 30 stratigraphic samples from the alpine fore- and hinterland allowed the reconstruction of the long-term exhumation of the Alps. Exhumation is defined as all processes like normal faulting, ductile thinning and erosion, which contribute to the unroofing of deeply seated rocks and their rise to the Earthís surface. With respect to the zircon fission-track system, the Alps are in an exhumational steady-state since the Oligocene. The exhumational signal is evident in a relatively symmetric fashion in the fore- and hinterland. The long-term average exhumation rate of the areas with the fastest exhumation is about 0.7 km/m.y.

Additionally, the closure temperature for fission-tracks in natural zircon was determined with samples from the Gold Butte block, SE Nevada, at 205 ± 16°C for a ~20.3°C/km geothermal gradient and a 0.55°C/m.y. cooling rate. This estimate is in good agreement with previously published field-based estimates, which indicates that the closure temperature of fission-tracks in zircon is about 240°C in orogenic settings like the European Alps with a more common cooling rate of 15°C/m.y.

THE THERMOTECTONIC EVOLUTION OF THE NORTHERN PRECAMBRIAN SHIELD, WESTERN AUSTRALIA

URSULA WEBER

School of Earth Sciences, The University of Melbourne

Reconnaissance $^{40}Ar/^{39}Ar$ dating of K–feldspars and muscovites, and fission track and (U–Th)/He thermochronometry on apatites has been applied to ~1 x 10^6 km^2 of the northern Western Australian Shield. The study area includes the Archaean northern Yilgarn Craton and Pilbara Craton, and the intervening Proterozoic basins.

K–feldspar $^{40}Ar/^{39}Ar$ data reveal four cooling episodes at times between ~2400–2200 Ma, ~1800–1600 Ma or 1200–1000 Ma depending on the sample. Apatite fission track (AFT) data yield ages between ~280–150 Ma with confined horizontal mean track lengths ranging between 11.5–14.3 µm and standard deviations of track length distributions falling between 1.1–2.2 µm. (U–Th)/He apatite data yield ages ~194±6 Ma or older and are often older than their coexisting AFT ages.

Numerical modelling of the K–feldspar data reveals different monotonic cooling histories, with episodes of accelerated cooling alternating with slower cooling and periods of quiescence, commencing at some time in the Proterozoic depending on the sample. Modelling of time-temperature history paths of AFT data reveals a Late Carboniferous to Early Permian regional cooling episode lasting to the Late Jurassic/Early Cretaceous. The onset of this cooling is related either to the waning stages of the Alice Springs Orogeny or to the early stages of Gondwana breakup. The interpretation of the Phanerozoic thermal history models is reconciled with the development of extensive clastic sedimentary basins on– and offshore in Palaeozoic to Mesozoic time, adjacent to the Western Shield. Sediment supply and palaeodrainage patterns from the shield, inferred from palaeotemperature models, are directly linked with important clastic facies development hosting hydrocarbons in the North West Shelf. Assuming a geothermal gradient of ~18±2° C/km was representative of much of the Phanerozoic then a minimum of ~50° C of Late Palaeozoic to Mesozoic cooling is calculated, suggesting denudation of ~3 km of section from the northern Western Shield over this time span.

Interpretation of the helium ages is problematic, due to their old ages compared to their coexisting AFT ages and the poor replication of these data. Experiments carried out preclude the possible discordance of ages due to U and/or Th–bearing micro–inclusions and zoning of U and Th in the apatite grains. Further investigations are required to resolve this discordance.

THE AUSTRALIAN REPLACEMENT RESEARCH REACTOR AT LUCAS HEIGHTS

PAUL GREEN

Geotrack International
37 Melville Road, West Brunswick, VIC 3055, Australia

On December 12 and 13th 2002, the Australian Neutron Beam User Group organised a workshop on “Neutrons for the Earth Sciences”, the final in a series of such meetings held at Lucas Heights through 2001-2002 with the stated aim of defining the range of instrumentation and facilities required (or at least desired) for neutron beam experiments at the Replacement Research Reactor Facility, currently under construction at Lucas Heights (as discussed in previous issues of OnTrack).

By a fairly indirect route, we became aware of this meeting at a fairly late stage. All of us in Australia, and possibly many overseas users of HIFAR, have been frustrated by a long history of zero information flow from ANSTO on what we can expect from the RRR, so this promised a welcome opportunity to actually obtain some firm information. But we were puzzled by the apparent focus of the meeting solely on neutron beams. A number of emails and phone calls to meeting convenors Brett Hunter and Rob Robinson of ANSTO confirmed that the meeting was actually intended to cover all applications of neutrons to the Earth Sciences, and they had already included a talk on activation analysis by David Garnett of Becquerel Labs (a private organisation on-site at ANSTO, specialising in applications to Gold exploration). Brett Hunter, in particular, stressed that they were very keen to expand the scope of the meeting to cover as many areas of the earth sciences as possible, and offered me the opportunity to make a presentation on fission track analysis. They also organised an additional presentation by Ken Hurlock of ANSTO on the RRR and the planned irradiation facilities. At a very late stage in proceedings, requirements for $^{40}Ar/^{39}Ar$ dating were also included, as a result of input from Andy Gleadow in Melbourne and Mark Harrison and Ian MacDougall at ANU.

Prior to this, all we had been able to glean concerning the RRR amounted to vague rumours (most of which seem to have been pretty wide of the mark), so it was with a sense of anticipation that we might at last find out some firm details that I flew to Sydney on December 11th. (Plus, I got to see Peter Crowhurst's new (U-Th)/He laser system, which made the trip doubly worthwhile.)

The first day of the meeting was concerned mostly with neutron diffraction studies, particularly as applied to High Pressure High Temperature conditions, but also including applications to neutron radiography and small angle neutron scattering. Of more direct interest was a presentation on the RRR itself, by Rob Robinson, in which he explained that the RRR was planned to be commissioned in January 2006, and would operate 340 days per year. A six month period is planned where HIFAR and the RRR will operate in parallel. (This sounds good, but in fact the timing could be tight because as I understand it, the close down of HIFAR is governed by the return of the last batch of fuel for reprocessing. Any delays in commissioning the RRR are likely to impact critically on the time when parallel operation is possible.) Emphasis was placed on the choice of non-enriched uranium fuel, which will avoid potential regulatory problems with use of enriched uranium which seem set to cause problems with the new Reactor Facility under construction in Germany.

The afternoon was more productive in terms of our concerns, through a session in which each attendee (numbering around 35, from various Universities, Museums, Institutions and private companies across Australia) had the opportunity to make a 5 minute statement on why they were attending the meeting and what they hoped to gain from being there. Both myself and David Garnett and Helen Waldron from Becquerel said the same thing – we're here to get some basic information on what is planned for the new irradiation facilities! All three of us also took the opportunity to make clear our dissatisfaction at the lack of information that we had been able to obtain previously. (Prior to the meeting, Helen, who is an old friend, colleague and tennis adversary from her days at Melbourne Uni, emailed me to say that despite the fact that Becquerel were located on-site at ANSTO, they knew no more than we did about the RRR!). This led to promises that all would be revealed, and that this was why these meetings were organised.

As an aside at this point, it became clear, from talking to various people at ANSTO, that one practical factor that has impeded the flow of information to users in the past is ANSTO's practice of encouraging early retirement of their senior personnel at age 55, through inducements concerned with Superannuation rights. This certainly explains the lack of continuity we have experienced in identifying suitable contacts at ANSTO with whom we can discuss technical aspects of the RRR, and why previous attempts to have input to the design have failed. In preparing for the meeting, I discovered a letter that we had written in 1992 to the appropriate person within ANSTO at that time, setting out our ideal requirements for thermal neutron irradiations. Unfortunately, Ken Hurlock confirmed that he had never seen this letter, which seems to have vanished into the ANSTO filing system as efficiently as anything that Bernard Wooley might have filed for Jim Hacker (a reference to the BBC's "Yes, Prime Minister", for those who don't recognise it).

The real action began on the second day, which began with a detailed presentation by Ken Hurlock on the RRR and the planned irradiation facilities. This is the part that most of you will be interested in. One of the first points made by Ken was that there has been a reluctance to release any technical information on the new reactor because of worries that unsuccessful tenderers may claim that their model could have done better. But then he eased our fears considerably when he explained that the prime consideration in designing the new reactor was that it should be at least as good as HIFAR in every way. If only someone had explained this a few years ago!

On to the technical details - the following list provides some highlights of the specifications of the RRR, taken from Ken's presentation.

Project requirements

- World class facility: high performance, reliable & available
- Large neutron beam research capabilities
- Diverse & broad irradiation capabilities
- Compliant with Australian regulations and IAEA guidelines on safety

Subordinated requirements

- Pool type reactor
- Nominal reactor thermal power limited to 20 MW

- Unimpeded access to the top of the reactor core
- Fuel enrichment < 20 wt %

The reactor

Reactor: 20 MW core power. Compact core compatible with non pressurized cooling system (~300 kW/L) Plate type fuel assemblies (High density fuel, Al clad)

- Upwards forced cooling of reactor core
- D_2O reflector with intermediate cooling system
- Safety & plant systems of proven design and performance
- ALARA considerations all along the plant (segregation, material selection, shields, HVAC, operation & maintenance, ...)

Facility Requirements

- Neutron Beam Research
  –Thermal and cold neutron beams with super mirror guides
- Radioisotopes for Nuclear Medicine
  –long term bulk irradiations in removable rigs
  –short term irradiations of targets in pneumatically loaded rigs
- Irradiations for Industry
  –short term irradiations for research
  –short term irradiations of silicon ingots in rotating 'removable' rigs
- Neutron Activation and Delayed Neutron Analysis
  –short term irradiations in pneumatically loaded or rotating rigs

Thermal Flux Irradiations

- 49 irradiation positions in pneumatically operated rigs
- Irradiations cans will be aluminium or titanium
- Can diameter 25mm, length 70mm
- Flux range from $2x10^{12}$ to $1x10^{14}$ $n.cm^{-2}.s^{-1}$
- Flux uniformity will be +/- 2% to +/- 5%

Fast Flux Irradiations

- 6 irradiation positions in pneumatically operated rigs
- Fast Flux > 0.821Mev $5x10^{12}$ $n.cm^{-2}.s^{-1}$
- Can diameter 25mm, length 70mm
- Cans will rotate during irradiation
- Flux uniformity better than +/- 7%

Other highlights include a "pneumatic cushion" within the pneumatic transfer tubes, so that irradiation cans are brought to a halt smoothly. Hopefully, this will eliminate the familiar effect of broken slides that most users of HIFAR have "enjoyed' at one time or another. Operating temperatures should be similar to those in HIFAR.

So as far as this goes, it seems like all good news for fission track analysis. Flux levels will be similar to or higher than present-day levels, cans are slightly bigger, and no more broken slides! However, the one piece of information that we were most desperate for, i.e. the degree of thermalisation in the new irradiation positions, was not available at the meeting. Ken is promising to update us with this information in February. With no graphite moderator, we had been worried that the thermalisation might not be as good as in HIFAR. But Ken assures us that at least some of the irradiation tubes will be as good as or better than HIFAR. Basically, the further away from the core, the better the thermalisation, so there will be a choice of positions. With even the lowest flux levels quoted for the RRR being similar to those is the X-7 facility of HIFAR, we should be able to feel confident that the RRR will be just as suitable for fission track work as X-7.

After that, my presentation, in which I stressed the need for a uniform, well thermalised flux around a few x ^{12} $n.cm^{-2}.s^{-1}$, seemed rather unnecessary, somehow! I did, however, take the opportunity to point out that there is a large potential user base for fission track irradiations around the world, and if convenient and "user-friendly" access can be provided, the RRR could easily become the "Reactor of choice" for the fission track community. Whether all this happens remains to be seen! (And was rather outside the scope of this meeting.)

After that, discussion moved on to the question of whether suitable conditions could be designed for fast neutron irradiations as required for $^{40}Ar/^{39}Ar$ dating. Mark Harrison began his presentation with the remark that you could take almost everything I had said about irradiation conditions required for fission track analysis and reverse them for Ar-Ar studies! Ian MacDougall explained that he had pressed from an early date for inclusion of an in-core irradiation facility at the RRR, but according to ANSTO, this was just not possible. Considerable discussion ensued behind the scenes, involving Andy Gleadow, Mark Harrison and Ian MacDougall and ANSTO personnel, in an attempt to ensure that a suitable facility could be provided, and by the end of the afternoon it seemed that this would indeed be possible.

So in the end, it seems that everyone went hope satisfied, and relatively optimistic about the suitability of the RR for future needs. The one thing that worried me about the whole thing was related to the bush fires that had raged through the surrounding National Parks during the previous week. While most people on site at

Lucas Heights, including the HIFAR staff, were unaffected, the construction crews on the RRR site were evacuated. I just hope this doesn't have implications for the future!

A final postscript to the story is that Ken Horlock has now said that Cd ratios for Au will be between 250 and 480 in different facilities within the RRI.

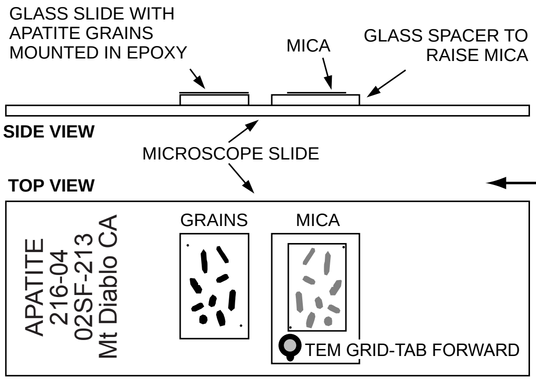
USING TEM GRIDS AS REFERENCE CROSSES ON FISSION TRACK SLIDES

TREVOR DUMITRU

Department of Geological and Environmental Sciences
Stanford University
Stanford, California 94305-2115 USA
trevor@pangea.stanford.edu

In order to use computer-automated microscope stage systems to analysis fission track slides, it is usually necessary to mark an easily visible reference point on the slide. This point serves as the origin for an X-Y coordinate system so the computer can calculate the locations of grains, mica prints, track lengths, etc. (Fig. 1). The reference point has traditionally been made by scratching a small reference cross on the glass slide with a diamond-tipped pencil.

FIG 1



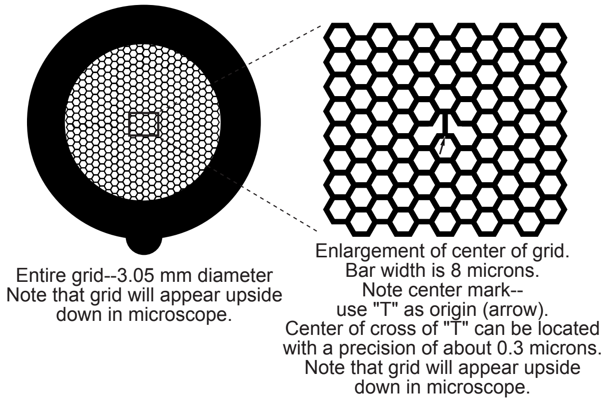
Glue TEM grid on top of glass spacer next to the mica

More recently, a few FT labs have started using TEM grids instead of crosses. After investigating various possibilities, we have settled on using Gilder Grids model G600HH grids made of nickel in our lab (Fig. 2).

The main shortcoming of crosses is that glass shards flake out along the scratched lines over time, so the center of the cross tends to move and/or become ill defined. Movement is commonly a few microns and sometimes can approach 10 microns. In contrast, the center marks of the TEM grids remain stationary and can be relocated to about ±0.3 microns.

The G600HH grid is designed for mounting samples for transmission electron microscopy (TEM). It consists of a metal disc 3.05 mm in diameter and 6 microns thick, with a grid of bars and holes something like a window screen. It also happens to have a special center mark that serves very well as a reference point for fission track purposes (Fig. 2). The grids are easy enough to handle with small, precise forceps, handling them with coarse forceps won't work.

FIG 2



In our laboratory, we mount our micas on top of rectangular glass spacers cut down from microscope slides, so the micas are at essentially the same height as the sample grains (Fig. 1). We glue the grids onto the spacers, next to the mica. The grids have little index tabs that line up with the center marks and we orient the tabs pointing away from the mica. One side of the grid is shiny, we mount the shiny side down for no particular reason. We glue the grids down with clear finger nail polish, which forms an optically clear, durable bond. The exact amount of polish used does not seem to be critical, although too large a lump could potentially scratch an objective.

The grids are made in England by a company named Gilder Grids. Their web site, www.gildergrids.co.uk, lists distributors in many countries. Be sure to specify nickel when you order. We buy ours from Electron Microscopy Sciences in the U.S. (http://www.emsdiasum.com/ems/), which charges US$51 for a vial of 100 grids. EMS's catalog number for the item is "T600H-Ni". EMS tells me they would be happy to ship to almost any country in the world.

We selected model G600HH in nickel after looking at several possibilities. In particular, the G600HH grid has the finest (smallest) pattern and the distinctive T shape in the middle serves well as a reference point. I emailed Gilder and they said that nickel grids should easily last at least 100 years under normal storage conditions on FT slides. Less expensive copper grids might corrode rapidly, whereas gold grids are considerably more expensive.

The use of TEM grids is still a bit experimental. I'm 99% sure that they will work well in all ways but this remains to be proven. Use them at your own risk. My remaining concerns are:

1--Will the grids corrode over time (years to decades), from contact with air, glass, or glue?

2--Could the metal grid scratch an objective?

3--Will the grid fall off if the glue deteriorates over time?

4--Does the glue shrink over time causing the grid to move a little?

5--Most important, the grid is a little lower than the mica (and the sample grains) because the grid is so thin. With our microscope, we can easily focus on the grid with a high power objective without hitting the mica. Other labs should be careful to confirm that they will not scratch a mica or objective with their particular slides and microscope.

In case any one is interested, the finger nail polish we use is "Sally Hansen Hard As Nails with Nylon", size 13.3 ml, color nude. Lots of luck finding it outside the U.S. It dries extremely fast, so you need to recap the bottle between gluing down each grid and work very quickly. We've used this stuff to glue our irradiated apatite mounts and micas to our slides for about 10 years. Because this product is not designed for such uses, I worry about going back to an old box of slides and finding all the mounts have fallen off, but it hasn't happened yet. I'm sure there must be some better glass adhesive available now; if any one knows, please let me know. Ed Sobel tells me they use a German product, Blitz Glas, but haven't tried it for TEM grids yet. This glue can be completely removed with acetone. (Just to avoid confusion, do not use nail polish, etc., to glue loose apatite grains to slides before grinding and polishing.)

For labs that are presently using the FT Stage automated system, I plan to send out one trial G600HH grid per lab sometime in the next few months. If anyone else would like one to look at, please email me your mailing address.

We've changed...

...for the better!

Donelick Analytical, Inc. has expanded and is now Apatite to Zircon, Inc. (A2Z).

A2Z, a woman-owned business, is pleased to announce the addition of Paul O'Sullivan as both a Vice President of the company and as a member of its Board of Directors.

Paul O'Sullivan can be reached directly via e-mail at: osullivan@apatite.com, or by phone at either his home office number, +1-208-892-1493, or at the laboratory, +1-208-875-2332. Contact details for Ray and Margaret Donelick remain the same.

We would like to thank everyone who has supported us through the years; you have certainly kept us extremely busy. We look forward to continuing to work with and alongside you for many years to come.

When you think apatite and zircon, think apatite.com!

Apatite to Zircon, Inc.

Samples and Correspondence to:
1075 Matson Road
Viola, Idaho 83872-9709 U.S.A.

voice: +1-208-875-2332 fax: +1-208-875-8881
Ray and Margaret e-mail: donelick@apatite.com
Paul e-mail: osullivan@apatite.com

visit us at: *www.apatite.com*

FT STAge Systems

Automated microscope stage systems greatly increase operator productivity by automating tedious aspects of microscope work. Since their introduction, our systems have been adopted by far more fission track laboratories than any other system.

Outstanding Hardware:
Our stage systems are based on a highly-reliable, high-precision Kinetek™ computer-automated microscope scanning stage. Several hundred Kinetek stages are currently in operation, mainly in the demanding microelectronics and biotechnology industries. Compatible with almost any brand of microscope. Use of this popular, general purpose stage significantly reduces the system cost. System also includes a high-quality Calcomp™ 12x12" digitizing tablet. Assembly to full operational status generally requires only a few days.

Outstanding Software:
Software is a complete, highly sophisticated Apple Macintosh program developed with careful attention to all aspects of microscope work. Fully integrates track counting, track length measurement, slide scanning, and file management functions. Moves precisely from grain to mica print in 3 seconds. Very user friendly.

Innovative, Highly-Intuitive Stage Control System:
Stage is driven primarily with the digitizing tablet cursor rather than a joystick. For example, to center a grain or track, just superimpose the cursor on it, push a button, and the stage automatically centers it. This avoids tedious manual centering via the joystick. Most software commands are driven from the cursor buttons, which are easily distinguished by feel, so there is no need to look away from the eyepieces to the computer screen or keyboard.

Fission Track Laboratories Using the System
(year installed; *adapted to a non-Kinetek stage)

•Stanford University, Stanford, California (1991)
•University of California, Santa Barbara, California (1992)
•ARCO Exploration and Production Technology, Plano, Texas (1992). Moved to University of Minnesota, Minneapolis, Minnesota, in 1999.
•Universität Bremen, Bremen, Germany (1993)
•E.T.H., Zürich, Switzerland (1993*)
•Kent State University, Kent, Ohio (1993)
•University of Wyoming, Laramie, Wyoming (1993)
•University of Arizona, Tucson, Arizona (1993). Moved to Syracuse University, Syracuse, New York, in 2000.
•Max-Planck-Institut, Heidelberg, Germany (1993*)
•Union College, Schenectady, New York (1994)
•Monash University, Melbourne, Australia (1994*). Moved to University of Melbourne in 1999.
•La Trobe University, Melbourne, Australia (two systems, 1994*). Moved to University of Melbourne in 1999.
•University of Pennsylvania, Philadelphia, Pennsylvania (1995)
•Universität Tübingen, Tübingen, Germany (1995)
•Universidad Central de Venezuela, Caracas, Venezuela (1995)
•Brigham Young University, Provo, Utah (1995)
•Central Research Institute of the Electric Power Industry, Chiba, Japan (1995)
•Universität Salzburg, Salzburg, Austria (1996)
•University of Southern California, Los Angeles, California (1996)
•E.T.H., Zürich, Switzerland (second system, 1996*)
•Geologisk Centralinstitut, Copenhagen, Denmark (1996*)
•University of Waikato, Hamilton, New Zealand (1996*)
•Università di Bologna, Bologna, Italy (1997)
•Centro di Studio di Geologia dell'Appenno e delle Catene Perimediterranee, Florence, Italy (1997)
•University of Wyoming, Laramie, Wyoming (second system, 1997)
•Universität Potsdam, Potsdam, Germany (1997)
•Seoul National University, Seoul, Korea (1998)
•E.T.H., Zürich, Switzerland (third system, 1998)
•Universität Basel, Basel, Switzerland (1998)
•University of Florida, Gainesville, Florida (1998)
•Universite Paris-XI, Paris, France (1998)
•Universität Graz, Graz, Austria (1998)
•Göteborgs Universitet, Göteborg, Sweden (1999)
•Universidad de Cádiz, Cádiz, Spain (1999)
•Universite Montpellier II, Montpellier, France (1999)
•Kurukshetra University, Kurukshetra, India (1999)
•Universität Tübingen, Tübingen, Germany, (second system, 1999)
•California State University, Fullerton, California (2000)
•Geoforschungszentrum, Potsdam, Germany (2000)
•Polish Academy of Sciences, Krakow, Poland (2000)
•University of Glasgow, Glasgow, Scotland (two systems, 2001)
•Yale University, New Haven, Connecticut (2001)
•Université Joseph Fourier, Grenoble, France (2001)
•Universität Bremen, Bremen, Germany (second system, 2002)
•Université des Sciences et Technologies de Lille, Villeneuve d'Ascq, France (2002)

Further Information:
An early version of the system is described in a paper in Nuclear Tracks and Radiation Measurements, vol. 21, p. 575-580, Oct. 1993 (1992 Philadelphia Fission Track Workshop volume). For detailed information please contact: Dr. Trevor Dumitru, 4100 Campana Drive, Palo Alto, California 94306, U.S.A., telephone (auto-switching voice and fax line): 1-650-725-6155.

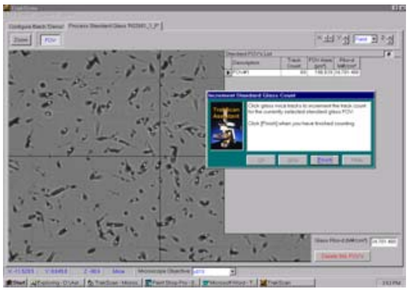
THE ORIGINAL AND THE BEST SOLUTION FOR FISSION TRACK DATING

19 YEARS - 20 COUNTRIES

TRAKSCAN[TM] - NOW IN VERSION 3.1 – EVEN BETTER :

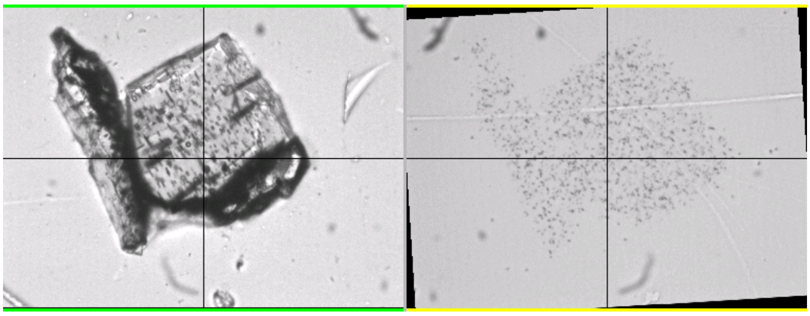
On-screen images of fission tracks for simplified marking and counting !

(Mark counted tracks with your mouse to avoid double counting).



Stereo pair of grain and mica mounts for easy comparison !

(Or instantly toggle between grain and mica images for track comparison in single-mount view).



- **Give your brain a rest : Trakscan[TM] V3.1 automatically inverts and rotates mica image as shown**
- **User can mark area for counting on grain, automatically shown on mica (and vice versa)**
- **Automatic track density calculation on marked grain and mica areas**
- **Measurement of track lengths, including inclined tracks**
- **Age calculations now included**
- **Standard glass and ART modules form part of program**
- **Ability to export data for direct use in Trackkey[TM] and Popshare[TM]**
- **Watch for Version 4 at the FTD meet in Amsterdam, 2004 ! (Free upgrade to existing WinTrak users)**

Contact us now for your free demo CD with step-by-step Trakscan[TM] walk-through/tutorial
Ask us now about AutoScope [TM] for automated counting of fission tracks in glass
Now also compatible with Image Pro Plus [TM], AnalySIS [TM], Labview [TM] and Optimas [TM]
Stereology users: ask us about Castgrid [TM] and Ellipse [TM]
ASDK now available free: incorporate Autoscan stage commands into your own software

Note : The product names accompanied by the [TM] mark are trade names of their respective owners.

AUTOSCAN SYSTEMS PTY. LTD.
ABN 73 006 275 136

P.O. Box 112, Ormond, Victoria, Australia, 3204 * Suite 4, 293 Bay Street, Brighton 3186 Australia
Telephone: + 61 3 9596 8065 Facsimile: + 61 3 9596 8369 * Home Page: www.autoscan.com.au Email: autoscan@autoscan.com.au

Fission-Track Papers

The following is a list of recent and soon-to-be published fission track papers. While a few were submitted by the authors for inclusion in this issue of On Track, the majority were found using a database and the keywords “fission track”. The list is extensive but far from complete. It may however serve as a starting point for compiling a 'complete' list of fission-track papers. We would all agree that such a list has practical use as a reference to what is happening in fission-tracks or in your study area. This cannot be achieved without everyone's active co-operation. So, if you have or know of a paper that you would like to see listed in this section, please send the complete reference or a photocopy of the first page to the editor. We are also interested in non-fission-track papers that may be of interest to the fission-track community. The next issue will only include 2001 and 2002 references which are not included herein; of course, 2003 references are welcome!

2001

Ambers, C. P., 2001, Evidence of elevated pressure and temperature during burial of the Salem Limestone in south-central Indiana, USA, and its implications for surprisingly deep burial: Sedimentary Geology, v. 143, p. 245-257.

Anczkiewicz, R., Oberli, F., Burg, J. P., Villa, I. M., Gunther, D., and Meier, M., 2001, Timing of normal faulting along the Indus Suture in Pakistan Himalaya and a case of major Pa-231/U-235 initial disequilibrium in zircon: Earth and Planetary Science Letters, v. 191, p. 101-114.

Babic, E., Kusevic, I., Marinaro, D., Dou, S. X., Boldeman, J., and Weinstein, R., 2001, Vortex pinning by fission tracks in U-235-doped Ag/Bi2223 tapes: Solid State Communications, v. 118, p. 607-610.

Badalian, R., Bigazzi, G., Cauvin, M. C., Chataigner, C., Jrbashyan, R., Karapetyan, S. G., Oddone, M., and Poidevin, J. L., 2001, An international research project on Armenian archaeological sites: fission-track dating of obsidians: Radiation Measurements, v. 34, p. 373-378.

Balcázar, M., Glasmacher, U.A., Díaz, S., A. López, A. and Wagner, G.A. 2001, Particle-Track dating a tool to define age of mineral deposits. Proc. of the ‚XXIV Conv. Int. de la Aso. de Ing. de Minas Metalurgicas Y Geologios de Mexico, 33-35.

Balestrieri, M. L., and Bigazzi, G., 2001, First record of the Late Cretaceous denudation phase in the Admiralty Block (Transantarctic Mountains, northern Victoria Land, Antarctica): Radiation Measurements, v. 34, p. 445-448.

Barbarand, J., Lucazeau, F., Pagel, M., and Seranne, M., 2001, Burial and exhumation history of the south-eastern Massif Central (France) constrained by apatite fission-track thermochronology: Tectonophysics, v. 335, p. 275-290.

Barbarand, J., and Pagel, M., 2001, Importance of the chemistry to characterise apatite fission- track annealing: Comptes Rendus De L Academie Des Sciences Serie Ii Fascicule a- Sciences De La Terre Et Des Planetes, v. 332, p. 259-265.

Batt, G. E., 2001, The approach to steady-state thermochronological distribution following orogenic development in the Southern Alps of New Zealand: American Journal of Science, v. 301, p. 374-384.

Batt, G. E., Brandon, M. T., Farley, K. A., and Roden-Tice, M., 2001, Tectonic synthesis of the Olympic Mountains segment of the Cascadia wedge, using two-dimensional thermal and kinematic modeling of thermochronological ages: Journal of Geophysical Research-Solid Earth, v. 106, p. 26731-26746.

Beate, B., Monzier, M., Spikings, R., Cotten, J., Silva, J., Bourdon, E., and Eissen, J. P., 2001, Mio-Pliocene adakite generation related to flat subduction in southern Ecuador: the Quimsacocha volcanic center: Earth and Planetary Science Letters, v. 192, p. 561-570.

Benedek, K., Nagy, Z. R., Dunkl, I., Szabo, C., and Jozsa, S., 2001, Petrographical, geochemical and geochronological constraints on igneous clasts and sediments hosted in the Oligo-Miocene Bakony Molasse, Hungary: evidence for a Paleo-Drava River system: International Journal of Earth Sciences, v. 90, p. 519-533.

Bernet, M., Zattin, M., Garver, J. I., Brandon, M. T., and Vance, J. A., 2001, Steady-stale exhumation of the European Alps: Geology, v. 29, p. 35-38.

Bierman, P. R., and Caffee, M., 2001, Slow rates of rock surface erosion and sediment production across the Namib Desert and escarpment, southern Africa: American Journal of Science, v. 301, p. 326-358.

Bondar, J. V., and Perelygin, V. P., 2001, Cosmic history of the Bragin pallasite: evidence from the fission-track analysis: Radiation Measurements, v. 34, p. 391-396.

Bondar, Y. V., and Perelygin, V. P., 2001, Fission track age of the Brahin pallasite: Solar System Research, v. 35, p. 299-306.

Boujrhal, F. Z., Carpena, J., El Moursli, R. C., and Chouak, A., 2001, A study of radon retention and fission track annealing with temperature in natural apatite: Radiation Physics and Chemistry, v. 61, p. 645-647.

Bullen, M. E., Burbank, D. W., Garver, J. I., and Abdrakhmatov, K. Y., 2001, Late Cenozoic tectonic evolution of the northwestern Tien Shan: New age estimates for the initiation of mountain building: Geological Society of America Bulletin, v. 113, p. 1544-1559.

Burov, E., and Poliakov, A., 2001, Erosion and rheology controls on synrift and postrift evolution: Verifying old and new ideas using a fully coupled numerical model: Journal of Geophysical Research-Solid Earth, v. 106, p. 16461-16481.

Cavazza, W., Zattin, M., Ventura, B., and Zuffa, G. G., 2001, Apatite fission-track analysis of Neogene exhumation in northern Corsica (France): Terra Nova, v. 13, p. 51-57.

Cederbom, C., 2001, Phanerozoic, pre-Cretaceous thermotectonic events in southern Sweden revealed by fission track thermochronology: Earth and Planetary Science Letters, v. 188, p. 199-209.

Chen, B. L., Yin, G. M., Li, W. L., Guo, L., Li, L., Lu, Y. C., and Guo, S. L., 2001, Determination of tectonic uplift rates of Qinling mountains in central China by fission tracks: Radiation Measurements, v. 34, p. 405-408.

Ciubotariu, M., 2001, On the Th internal contamination by ingestion using the fission track method: Radiation Measurements, v. 34, p. 533-535.

Cobbold, P. R., Meisling, K. E., and Mount, V. S., 2001, Reactivation of an obliquely rifted margin, Campos and Santos basins, southeastern Brazil: AAPG Bulletin, v. 85, p. 1925-1944.

Delville N., Arnaud N., Montel J. M., Brunel M., and Sobel E. 2001, Paleozoic to Cenozoic deformation along the Altyn-Tagh Fault in the Altun Shan range, Eastern Qilian Shan, NE Tibet China. In: Paleozoic and Mesozoic tectonic evolution of central and eastern Asia: From continental assembly to intracontinental deformation (M. S. Hendrix and G.A. Davis, eds.), Geological Society of America Memoir 194, p. 269-292.

Derbyshire, M., Ingelbrecht, C., DeCorte, F., Van den haute, P., and Van Ham, J., 2001, Preparation of two uranium glass reference materials for fission-track dating of geological samples: Radiation Measurements, v. 34, p. 419-422.

Dumitru T.A. and Hendrix M.S., 2001, Fission track record of north-vergent Jurassic intracontinental folding and thrusting in southern Mongolia. In: Paleozoic and Mesozoic tectonic evolution of central and eastern Asia: From continental assembly to intracontinental deformation (M.S. Hendrix and G.A. Davis, eds.) Geological Society of America Memoir 194, p. 215-229.

Dumitru T.A, Zhou D., Chang E., Graham S.A., Hendrix M. S., Sobel E.R. and Carroll, A.R., 2001, Uplift, exhumation, and deformation in the Chinese Tian Shan. In: Paleozoic and Mesozoic tectonic evolution of central and eastern Asia: From continental assembly to intracontinental deformation (M.S. Hendrix and G.A. Davis, eds.) Geological Society of America Memoir 194, p. 71-99.

Dunkl, I., Di Giulio, A., and Kuhlemann, J., 2001, Combination of single-grain fission-track chronology and morphological analysis of detrital zircon crystals in provenance studies sources of the Macigno Formation (Apennines, Italy): Journal of Sedimentary Research, v. 71, p. 516-525.

Dusel-Bacon, C., and Murphy, J. M., 2001, Apatite fission-track evidence of widespread Eocene heating and exhumation in the Yukon-Tanana Upland, interior Alaska: Canadian Journal of Earth Sciences, v. 38, p. 1191-1204.

Ehlers, T. A., Armstrong, P. A., and Chapman, D. S., 2001, Normal fault thermal regimes and the interpretation of low- temperature thermochronometers: Physics of the Earth and Planetary Interiors, v. 126, p. 179-194.

Fayon, A. K., Whitney, D. L., Teyssier, C., Garver, J. I., and Dilek, Y., 2001, Effects of plate convergence obliquity on timing and mechanisms of exhumation of a mid-crustal terrain, the Central Anatolian Crystalline Complex: Earth and Planetary Science Letters, v. 192, p. 191-205.

Fazal ur, R., Abu-Jarad, F., Al-Jarallah, M. I., and Farhat, M., 2001, Comparison and limitations of three different bulk etch rate measurement methods used for gamma irradiated PM-355 detectors: Radiation Measurements, v. 34, p. 617-623.

Freitag, R., Gaedicke, C., Baranov, B., and Tsukanov, N., 2001, Collisional processes at the junction of the Aleutian-Kamchatka arcs: new evidence from fission track analysis and field observations: Terra Nova, v. 13, p. 433-442.

Frisch, W., Kuhlemann, J., Dunkl, I., and Szekely, B., 2001, The Dachstein paleosurface and the Augenstein Formation in the Northern Calcareous Alps - a mosaic stone in the geomorphological evolution of the Eastern Alps: International Journal of Earth Sciences, v. 90, p. 500-518.

George, A. D., Marshallsea, S. J., Wyrwoll, K. H., Chen, J., and Lu, Y. C., 2001, Miocene cooling in the northern Qilian Shan, northeastern margin of the Tibetan Plateau, revealed by apatite fission- track and vitrinite-reflectance analysis: Geology, v. 29, p. 939-942.

Gessner, K., Ring, U., Johnson, C., Hetzel, R., Passchier, C. W., and Gungor, T., 2001, An active bivergent rolling-hinge detachment system: Central Menderes metamorphic core complex in western Turkey: Geology, v. 29, p. 611-614.

Green, P. F., Thomson, K., and Hudson, J. D., 2001, Recognition of tectonic events in undeformed regions: contrasting results from the Midland Platform and East Midlands Shelf, Central England: Journal of the Geological Society, v. 158, p. 59-73.

Hadler, J. C., Paulo, S. R., Iunes, P. J., Tello, C. A., Balestrieri, M. L., Bigazzi, G., Curvo, E. A. C., and Hackspacher, P., 2001, A PC compatible Brazilian software for obtaining thermal histories using apatite fission track analysis: Radiation Measurements, v. 34, p. 149-154.

Hansen, K., Bergman, S. C., and Henk, B., 2001, The Jameson Land basin (east Greenland): a fission track study of the tectonic and thermal evolution in the Cenozoic North Atlantic spreading regime: Tectonophysics, v. 331, p. 307-339.

Hasebe, N., and Tagami, T., 2001, Exhumation of an accretionary prism - results from fission track thermochronology of the Shimanto Belt, southwest Japan: Tectonophysics, v. 331, p. 247-267.

Himeno, O., Ohira, H., Liu, Z. J., Jin, X., and Watanabe, K., 2001, Provenance ages of Cretaceous strata in the Songliao Basin, northeast China inferred from fission track data: International Geology Review, v. 43, p. 945-952.

House, M. A., Wernicke, B. P., and Farley, K. A., 2001, Paleo-geomorphology of the Sierra Nevada, California, from (U- Th)/He ages in apatite: American Journal of Science, v. 301, p. 77-102.

Hu, S. B., O'Sullivan, P. B., Raza, A., and Kohn, B. P., 2001, Thermal history and tectonic subsidence of the Bohai Basin, northern China: a Cenozoic rifted and local pull-apart basin: Physics of the Earth and Planetary Interiors, v. 126, p. 221-235.

Inn, K. G. W., McCurdy, D., Kuruvilla, L., Barss, N. M., Pietrzak, R., Kaplan, E., Inkret, W., Efurd, W., Rokop, D., Lewis, D., Gautier, P., and Bell, R. T., 2001, Intercomparison study of inductively coupled plasma mass spectrometry, thermal ionization mass spectrometry and fission track analysis of mu Bq quantities of Pu-239 in synthetic urine: Journal of Radioanalytical and Nuclear Chemistry, v. 249, p. 121-131.

Jacobs, J., and Thomas, R. J., 2001, A titanite fission track profile across the southeastern Archaean Kaapvaal Craton and the Mesoproterozoic Natal Metamorphic Province, South Africa: evidence for differential cryptic meso- to neoproterozoic tectonism: Journal of African Earth Sciences, v. 33, p. 323-333.

Jolivet, M., Brunel, M., Seward, D., Xu, Z., Yang, J., Roger, F., Tapponnier, P., Malavieille, J., Arnaud, N., and Wu, C., 2001, Mesozoic and Cenozoic tectonics of the northern edge of the Tibetan plateau: fission-track constraints: Tectonophysics, v. 343, p. 111-134.

Kamp, P. J. J., 2001, Possible Jurassic age for part of Rakaia Terrane: implications for tectonic development of the Torlesse accretionary prism: New Zealand Journal of Geology and Geophysics, v. 44, p. 185-203.

Kao, M. H., 2001, Thermo-tectonic history of the Marlborough Region, South Island, New Zealand: Terrestrial Atmospheric and Oceanic Sciences, v. 12, p. 485-502.

Khattak, N. U., Qureshi, A. A., Akram, M., Khan, M. A., Qureshi, I. E., Mehmood, K., and Khan, H. A., 2001, Unroofing history of the Sillai Patti granite gneiss, Pakistan: constraints from zircon fission-track dating: Radiation Measurements, v. 34, p. 409-413.

Khattak, N. U., Qureshi, A. A., Hussain, S. S., Akram, M., Mateen, A., and Khan, H. A., 2001, Study of the tectonic uplift history of the Sillai Patti granitic gneiss, Pakistan: constraints from zircon fission- track dating: Journal of Asian Earth Sciences, v. 20, p. 1-8.

Kojima, T., Okada, M., Ohira, H., Tokieda, K., Komuro, H., and Amano, K., 2001, Paleomagnetism and fission-track ages of Oki-Dogo Island in Southwest Japan: Earth Planets and Space, v. 53, p. 45-54.

Koroknai, B., Horvath, P., Balogh, K., and Dunkl, I., 2001, Alpine metamorphic evolution and cooling history of the Veporic basement in northern Hungary: new petrological and geochronological constraints: International Journal of Earth Sciences, v. 90, p. 740-751.

Kumar, A., Singh, B., and Singh, S., 2001, Uranium, radium and radon exhalation studies in some soil samples from Una District, Himachal Pradesh, India using track etching technique: Indian Journal of Pure & Applied Physics, v. 39, p. 761-764.

Leach, D. L., Dwight, B., Lewchuk, M. T., Symons, D. T. A., de Marsily, G., and Brannon, J., 2001, Mississippi Valley-type lead-zinc deposits through geological time: implications from recent age-dating research: Mineralium Deposita, v. 36, p. 711-740.

Lewis, D., Miller, G., Duffy, C. J., Efurd, D. W., Inkret, W. C., and Wagner, S. E., 2001, Los Alamos National Laboratory thermal ionization mass spectrometry results from intercomparison study of inductively coupled plasma mass spectrometry, thermal ionization mass spectrometry, and fission track analysis of mu Bq quantities of Pu-239 in synthetic urine (LA-UR-001698): Journal of Radioanalytical and Nuclear Chemistry, v. 249, p. 115-120.

Liu, T. K., Hsieh, S., Chen, Y. G., and Chen, W. S., 2001, Thermo-kinematic evolution of the Taiwan oblique-collision mountain belt as revealed by zircon fission track dating: Earth and Planetary Science Letters, v. 186, p. 45-56.

Liu, Y. Q., Yuan, M. S., Zhou, D. W., Feng, Q., and Jian, J., 2001, New progresses on geothermal history of Turpan-Hami Basin, Xinjiang, China: Science in China Series D-Earth Sciences, v. 44, p. 166-176.

Lorencak, M., Seward, D., Vanderhaeghe, O., Teyssier, C., and Burg, J. P., 2001, Low-temperature cooling history of the Shuswap metamorphic core complex, British Columbia: constraints from apatite and zircon fission-track ages: Canadian Journal of Earth Sciences, v. 38, p. 1615-1625.

Mancktelow, N. S., Stockli, D. F., Grollimund, B., Muller, W., Fugenschuh, B., Viola, G., Seward, D., and Villa, I. M., 2001, The DAV and Periadriatic fault systems in the Eastern Alps south of the Tauern window: International Journal of Earth Sciences, v. 90, p. 593-622.

Moore, M. A., and England, P. C., 2001, On the inference of denudation rates from cooling ages of minerals: Earth and Planetary Science Letters, v. 185, p. 265-284.

O'Sullivan, P. B., Morwood, M., Hobbs, D., Aziz, F., Suminto, Situmorang, M., Raza, A., and Maas, R., 2001, Archaeological implications of the geology and chronology of the Soa basin, Flores, Indonesia: Geology, v. 29, p. 607-610.

Okudaira, T., Hayasaka, Y., Himeno, O., Watanabe, K., Sakurai, Y., and Ohtomo, Y., 2001, Cooling and inferred exhumation history of the Ryoke metamorphic belt in the Yanai district, south-west Japan: Constraints from Rb-Sr and fission-track ages of gneissose granitoid and numerical modeling: Island Arc, v. 10, p. 98-115.

Overeem, I., Weltje, G. J., Bishop-Kay, C., and Kroonenberg, S. B., 2001, The Late Cenozoic Eridanos delta system in the Southern North Sea Basin: a climate signal in sediment supply?: Basin Research, v. 13, p. 293-312.

Parry, W. T., Bunds, M. P., Bruhn, R. L., Hall, C. M., and Murphy, J. M., 2001, Mineralogy, Ar-40/Ar-39 dating and apatite fission track dating of rocks along the Castle Mountain fault, Alaska: Tectonophysics, v. 337, p. 149-172.

Pascal, C., and Gabrielsen, R. H., 2001, Numerical modeling of Cenozoic stress patterns in the mid-Norwegian margin and the northern North Sea: Tectonics, v. 20, p. 585-599.

Qureshi, A. A., Khattak, N. U., Sardar, M., Tufail, M., Akram, M., Iqbal, T., and Khan, H. A., 2001, Determination of uranium contents in rock samples from Kakul phosphate deposit, Abbotabad (Pakistan), using fission-track technique: Radiation Measurements, v. 34, p. 355-359.

Sachsenhofer, R. F., 2001, Syn- and post-collisional heat flow in the Cenozoic Eastern Alps: International Journal of Earth Sciences, v. 90, p. 579-592.

Sanchez-Vizcaino, V. L., Rubatto, D., Gomez-Pugnaire, M. T., Trommsdorff, V., and Muntener, O., 2001, Middle Miocene high-pressure metamorphism and fast exhumation of the Nevado-Filabride Complex, SE Spain: Terra Nova, v. 13, p. 327-332.

Sandhu, A. S., and Singh, K., 2001, Etching and annealing studies of nuclear tracks in glasses: Radiation Physics and Chemistry, v. 61, p. 579-581.

Shapiro, M. N., Solov'ev, A. V., Shcherbinina, E. A., Kravchenko-Berezhnoi, I. R., and Garver, J. I., 2001, New data on the time of collision of island arc with the continent on Kamchatka: Geologiya I Geofizika, v. 42, p. 841-851.

Sherlock, S. C., 2001, Two-stage erosion and deposition in a continental margin setting: an Ar-40/Ar-39 laserprobe study of offshore detrital white micas in the Norwegian Sea: Journal of the Geological Society, v. 158, p. 793-799.

Sinclair, H. D., and Jaffey, N., 2001, Sedimentology of the Indus Group, Ladakh, northern India: implications for the timing of initiation of the palaeo-Indus River: Journal of the Geological Society, v. 158, p. 151-162.

Sobel E.R., Arnaud N., Jolivet M., Ritts B.D. and Brunel M., 2001, Jurassic to Cenozoic exhumation history of the Altyn Tagh range, NW China, constrained by $^{40}Ar/^{39}Ar$ and apatite fission track thermochronology. In: Paleozoic and Mesozoic tectonic evolution of central and eastern Asia: From continental assembly to intracontinental deformation (M.S. Hendrix and G.A. Davis, eds.), Geological Society of America Memoir 194, p. 247-267.

Solov'ev, A. V., Garver, J. I., and Shapiro, M. N., 2001, Fission-track dating of detrital zircons from sandstone of the Lesnaya Group, northern Kamchatka: Stratigraphy and Geological Correlation, v. 9, p. 293-303.

Spiegel, C., Kuhlemann, J., Dunkl, I., and Frisch, W., 2001, Paleogeography and catchment evolution in a mobile orogenic belt: the Central Alps in Oligo-Miocene times: Tectonophysics, v. 341, p. 33-47.

Spikings, R. A., Foster, D. A., Kohn, B. P., and O'Sullivan, P. B., 2001, Late Neoproterozoic to Holocene thermal history of the Precambrian Georgetown Inlier, northeast Australia: Australian Journal of Earth Sciences, v. 48, p. 9-24.

Spikings, R. A., Winkler, W., Seward, D., and Handler, R., 2001, Along-strike variations in the thermal and tectonic response of the continental Ecuadorian Andes to the collision with heterogeneous oceanic crust: Earth and Planetary Science Letters, v. 186, p. 57-73.

Spotila, J. A., Farley, K. A., Yule, J. D., and Reiners, P. W., 2001, Near-field transpressive deformation along the San Andreas fault zone in southern California, based on exhumation constrained by (U-Th)/He dating: Journal of Geophysical Research-Solid Earth, v. 106, p. 30909-30922.

Stockli, D. F., Linn, J. K., Walker, J. D., and Dumitru, T. A., 2001, Miocene unroofing of the Canyon Range during extension along the Sevier Desert Detachment, west central Utah: Tectonics, v. 20, p. 289-307.

Sutherland, F. L., and Fanning, C. M., 2001, Gem-bearing basaltic volcanism, Barrington, New South Wales: Cenozoic evolution, based on basalt K-Ar ages and zircon fission track and U-Pb isotope dating: Australian Journal of Earth Sciences, v. 48, p. 221-237.

Tagami, T., Hasebe, N., Kamohara, H., and Takemura, K., 2001, Thermal anomaly around the Nojima Fault as detected by fission- track analysis of Ogura 500 m borehole samples: Island Arc, v. 10, p. 457-464.

Thomson, S. N., Herve, F., and Stockhert, B., 2001, Mesozoic-Cenozoic denudation history of the Patagonian Andes (southern Chile) and its correlation to different subduction processes: Tectonics, v. 20, p. 693-711.

Trautwein, B., Dunkl, I., and Frisch, W., 2001, Accretionary history of the Rhenodanubian flysch zone in the Eastern Alps - evidence from apatite fission-track geochronology: International Journal of Earth Sciences, v. 90, p. 703-713.

Trautwein, B., Dunkl, I., Kuhlemann, J., and Frisch, W., 2001, Cretaceous-Tertiary Rhenodanubian flysch wedge (Eastern Alps): clues to sediment supply and basin configuration from zircon fission-track data: Terra Nova, v. 13, p. 382-393.

Tricart, P., Schwartz, S., Sue, C., Poupeau, G., and Lardeaux, J. M., 2001, The tectonic denudation of the Ultradauphine Zone and the inversion of the Brianconnais frontal thrust to the southeast of the Pelvoux massif (western Alps): a Miocene to present-day dynamics: Bulletin De La Societe Geologique De France, v. 172, p. 49-58.

Tsuruta, T., 2001, Reduction in etching time for fission tracks in diallyl phthalate resin: Radiation Measurements, v. 34, p. 167-170.

van der Beek, P., Pulford, A., and Braun, J., 2001, Cenozoic landscape development in the Blue Mountains (SE Australia): Lithological and tectonic controls on rifted margin morphology: Journal of Geology, v. 109, p. 35-56.

Van der Wateren, F. M., and Dunai, T. J., 2001, Late Neogene passive margin denudation history - cosmogenic isotope measurements from the central Namib desert: Global and Planetary Change, v. 30, p. 271-307.

Vannay, J. C., and Grasemann, B., 2001, Himalayan inverted metamorphism and syn-convergence extension as a consequence of a general shear extrusion: Geological Magazine, v. 138, p. 253-276.

Ventura, B., Pini, G. A., and Zuffa, G. G., 2001, Thermal history and exhumation of the Northern Apennines (Italy): evidence from combined apatite fission track and vitrinite reflectance data from foreland basin sediments: Basin Research, v. 13, p. 435-448.

Verges, J., Ramos, E., Seward, D., Busquets, P., and Colombo, F., 2001, Miocene sedimentary and tectonic evolution of the Andean Precordillera at 31 degrees S, Argentina: Journal of South American Earth Sciences, v. 14, p. 735-750.

Villa, F., Tisserand, R., Rebetez, M., Grivet, M., and Dubois, C., 2001, Modelling the length distribution of etched tracks taking into account fragmentation due to partial annealing: Radiation Measurements, v. 34, p. 401-404.

Vincent, S. J., 2001, The Sis palaeovalley: a record of proximal fluvial sedimentation and drainage basin development in response to Pyrenean mountain building: Sedimentology, v. 48, p. 1235-1276.

Viola, G., Mancktelow, N. S., and Seward, D., 2001, Late Oligocene-Neogene evolution of Europe-Adria collision: New structural and geochronological evidence from the Giudicarie fault system (Italian Eastern Alps): Tectonics, v. 20, p. 999-1020.

Wagstaff, B. E., Kershaw, A. P., O'Sullivan, P. B., Harle, K. J., and Edwards, J., 2001, An Early to Middle Pleistocene palynological record from the volcanic crater of Pejark Marsh, Western Plains of Victoria, southeastern Australia: Quaternary International, v. 83-5, p. 211-232.

Weber, J. C., Ferrill, D. A., and Roden-Tice, M. K., 2001, Calcite and quartz microstructural geothermometry of low-grade metasedimentary rocks, Northern Range, Trinidad: Journal of Structural Geology, v. 23, p. 93-112.

Westgate, J. A., Preece, S. J., Froese, D. G., Walter, R. C., Sandhu, A. S., and Schweger, C. E., 2001, Dating early and middle (Reid) pleistocene glaciations in central Yukon by tephrochronology: Quaternary Research, v. 56, p. 335-348.

Whipple, K. X., 2001, Fluvial landscape response time: How plausible is steady-state denudation?: American Journal of Science, v. 301, p. 313-325.

Whitney, D. L., Teyssier, C., Dilek, Y., and Fayon, A. K., 2001, Metamorphism of the Central Anatolian Crystalline Complex, Turkey: influence of orogen-normal collision vs, wrench- dominated tectonics on P-T-t paths: Journal of Metamorphic Geology, v. 19, p. 411-432.

Willett, S. D., Slingerland, R., and Hovius, N., 2001, Uplift, shortening, and steady-state topography in active mountain belts: American Journal of Science, v. 301, p. 455-485.

Willingshofer, E., Andriessen, P., Cloetingh, S., and Neubauer, F., 2001, Detrital fission track thermochronology of Upper Cretaceous syn-orogenic sediments in the South Carpathians (Romania): inferences on the tectonic evolution of a collisional hinterland: Basin Research, v. 13, p. 379-395.

Yin, G. M., Lu, Y. C., Zhao, H., Li, W. L., Li, L., and Guo, S. L., 2001, The tectonic uplift of the Hua Shan in the Cenozoic: Chinese Science Bulletin, v. 46, p. 1665-1668.

Yuan, S. G., Yang, W. F., Xu, Y. B., Pan, Q. Y., Xiong, B., He, J. J., Wang, D., Li, Y. J., Ma, T. T., and Yang, Z. G., 2001, Search for beta-delayed fission of the heavy neutron-rich isotope Ac-230: European Physical Journal a, v. 10, p. 1-3.

Yuan, W. M., Hou, Z. Q., Li, S. R., and Wang, S. C., 2001, Fission track evidence on thermal history of Jiama polymetallic ore district, Tibet: Science in China Series D-Earth Sciences, v. 44, p. 139-145.

2002

Abbate, Ernesto; Balestrieri, Maria Laura; Bigazzi, Giulio, 2002, Morphostructural development of the Eritrean rift flank (southern Red Sea) inferred from apatite fission track analysis. Journal of Geophysical Research, 107, 10.1029/2001JB001009, 23 November 2002.

Anders, M. H., Gregory-Wodzicki, K. M., and Spiegelman, M., 2002, A critical evaluation of late Tertiary accelerated uplift rates for the Eastern Cordillera, central Andes of Bolivia: Journal of Geology, v. 110, p. 89-100.

Argent, J. D., Stewart, S. A., Green, P. F., and Underhill, J. R., 2002, Heterogeneous exhumation in the Inner Moray Firth, UK North Sea: constraints from new AFTA (R) and seismic data: Journal of the Geological Society, v. 159, p. 715-729.

Arne, D. C., Grist, A. M., Zentilli, M., Collins, M., Embry, A., and Gentzis, T., 2002, Cooling of the Sverdrup Basin during Tertiary basin inversion: implications for hydrocarbon exploration: Basin Research, v. 14, p. 183-205.

Audemard, F. E., and Audemard, F. A., 2002, Structure of the Merida Andes, Venezuela: relations with the South

America-Caribbean geodynamic interaction: Tectonophysics, v. 345, p. 299-327.

Batt, G. E., and Brandon, M. T., 2002, Lateral thinking: 2-D interpretation of thermochronology in convergent orogenic settings: Tectonophysics, v. 349, p. 185-201.

Bojar, A. V., Fritz, H., Kargl, S., and Unzog, W., 2002, Phanerozoic tectonothermal history of the Arabian-Nubian shield in the Eastern Desert of Egypt: evidence from fission track and paleostress data: Journal of African Earth Sciences, v. 34, p. 191-202.

Brix, M. R., Stockhert, B., Seidel, E., Theye, T., Thomson, S. N., and Kuster, M., 2002, Thermobarometric data from a fossil zircon partial annealing zone in high pressure-low temperature rocks of eastern and central Crete, Greece: Tectonophysics, v. 349, p. 309-326.

Brown, Roderick W.; Summerfield, Michael A.; Gleadow, Andrew J. W., 2002, Denudational history along a transect across the Drakensberg Escarpment of southern Africa derived from apatite fission track thermochronology, Journal of Geophysical Research, 107, 10.1029/2001JB000745.

Burbank, D. W., 2002, Rates of erosion and their implications for exhumation: Mineralogical Magazine, v. 66, p. 25-52.

Crowhurst, P. V., Green, P. F., and Kamp, P. J. J., 2002, Appraisal of (U-Th)/He apatite thermochronology as a thermal history tool for hydrocarbon exploration: An example from the Taranaki Basin, New Zealand: Aapg Bulletin, v. 86, p. 1801-1819.

de Bruijne, C. H., and Andriessen, P. A. M., 2002, Far field effects of Alpine plate tectonism in the Iberian microplate recorded by fault-related denudation in the Spanish Central System: Tectonophysics, v. 349, p. 161-184.

De Grave, J., and Van den haute, P., 2002, Denudation and cooling of the Lake Teletskoye Region in the Altai Mountains (South Siberia) as revealed by apatite fission- track thermochronology: Tectonophysics, v. 349, p. 145-159.

Dickinson, J. A., Wallace, M. W., Holdgate, G. R., Gallagher, S. J., and Thomas, L., 2002, Origin and timing of the Miocene-Pliocene unconformity in southeast Australia: Journal of Sedimentary Research, v. 72, p. 288-303.

Dunkl, I., 2002, Trackkey: a Windows program for calculation and graphical presentation of fission track data: Computers & Geosciences, v. 28, p. 3-12.

Foster, D. A., and Raza, A., 2002, Low-temperature thermochronological record of exhumation of the Bitterroot metamorphic core complex, northern Cordilleran Orogen: Tectonophysics, v. 349, p. 23-36.

Galbraith, R. F., 2002, Some remarks on fission-track observational biases and crystallographic orientation effects: American Mineralogist, v. 87, p. 991-995.

Garver, J. I., and Kamp, P. J. J., 2002, Integration of zircon color and zircon fission-track zonation patterns in orogenic belts: application to the Southern Alps, New Zealand: Tectonophysics, v. 349, p. 203-219.

Ghebreab, W., Carter, A., Hurford, A. J., and Talbot, C. J., 2002, Constraints for timing of extensional tectonics in the western margin of the Red Sea in Eritrea: Earth and Planetary Science Letters, v. 200, p. 107-119.

Glasmacher, U. A., Mann, U., and Wagner, G. A., 2002, Thermotectonic evolution of the Barrandian, Czech Republic, as revealed by apatite fission-track analysis: Tectonophysics, v. 359, p. 381-402.

Glasmacher, U. A., Wagner, G. A., and Puchkov, V. N., 2002, Thermotectonic evolution of the western fold-and-thrust belt, southern Uralides, Russia, as revealed by apatite fission track data: Tectonophysics, v. 354, p. 25-48.

Gleadow, A. J. W., Kohn, B. P., Brown, R. W., and O'Sullivan, P. B., 2002, Contrasting regional denudation patterns in southeastern Australia from apatite fission-track imaging: Geochimica Et Cosmochimica Acta, v. 66, p. A278-A278.

Gleadow, A. J. W., Kohn, B. P., Brown, R. W., O'Sullivan, P. B., and Raza, A., 2002, Fission track thermotectonic imaging of the Australian continent: Tectonophysics, v. 349, p. 5-21.

Graefe, K., Frisch, W., Villa, I. M., and Meschede, M., 2002, Geodynamic evolution of southern Costa Rica related to low- angle subduction of the Cocos Ridge: constraints from thermochronology: Tectonophysics, v. 348, p. 187-204.

Grecescu, M., Aroua, A., Boschung, M., Fiechtner, A., Gmur, K., Laedermann, J. P., Valley, J. F., and Wernli, C., 2002, Neutron field measurements at the 590 MeV ring cyclotron of the Paul Scherrer Institute: Nuclear Instruments & Methods in Physics Research Section a-Accelerators Spectrometers Detectors and Associated Equipment, v. 476, p. 58-62.

Green, P. F., 2002, Early Tertiary paleo-thermal effects in Northern England: reconciling results from apatite fission track analysis with geological evidence: Tectonophysics, v. 349, p. 131-144.

Green, P.F., Duddy, I.R. and Hegarty, K.A., 2002, Quantifying exhumation in sedimentary basins of the UK from apatite fission track analysis and vitrinite reflectance data: precision, accuracy and latest results. In: Dore, A.G., Cartwright,J.A., Stoker, M.S., Turner, J.P. and White, N. (eds.). Exhumation of the North Atlantic Margins: Timing, mechanisms and Implications for Petroleum Exploration. Geological Society, London, Special Publications, 196, 331-354.

Grimmer, J. C., Jonckheere, R., Enkelmann, E., Ratschbacher, L., Hacker, B. R., Blythe, A. E., Wagner, G. A., Wu, Q., Liu, S., and Dong, S., 2002, Cretaceous-Cenozoic history of the southern Tan-Lu fault zone: apatite fission-track and structural constraints from the Dabie Shan (eastern China): Tectonophysics, v. 359, p. 225-253.

Hansen, K., and Brooks, C. K., 2002, The evolution of the East Greenland margin as revealed from fission-track studies: Tectonophysics, v. 349, p. 93-111.

Hejl, E., Riedl, H., and Weingartner, H., 2002, Post-plutonic unroofing and morphogenesis of the Attic-Cycladic complex (Aegea, Greece): Tectonophysics, v. 349, p. 37-56.

Hill, K. C., Kendrick, R. D., Crowhurst, P. V., and Gow, P. A., 2002, Copper-gold mineralisation in New Guinea: tectonics, lineaments, thermochronology and structure: Australian Journal of Earth Sciences, v. 49, p. 737-752.

House, M. A., Kohn, B. P., Farley, K. A., and Raza, A., 2002, Evaluating thermal history models for the Otway Basin, southeastern Australia, using (U-Th)/He and fission-track data from borehole apatites: Tectonophysics, v. 349, p. 277-295.

Hungerbuhler, D., Steinmann, M., Winkler, W., Seward, D., Eguez, A., Peterson, D. E., Helg, U., and Hammer, C., 2002, Neogene stratigraphy and Andean geodynamics of southern Ecuador: Earth-Science Reviews, v. 57, p. 75-124.

Iunes, P. J., Bigazzi, G., Hadler, J. C., Tello, C., Guedes, S., Paulo, S. R., Balestrieri, M. L., Norelli, P., Oddone, M., Osorio, A. M., and Zuniga, A., 2002, The Th/U ratio in minerals by a fission-track technique: application to some reference samples in order to estimate the influence of Th in fission-track dating: Radiation Measurements, v. 35, p. 195-201.

Iunes, P. J., Hadler, J. C., Bigazzi, G., Tello, C. A., Guedes, S., and Paulo, S. R., 2002, Durango apatite fission-track dating using length-based age corrections and neutron fluence measurements by natural thorium thin films and natural U-doped glasses calibrated through natural uranium thin films: Chemical Geology, v. 187, p. 201-211.

Jonckheere, R., and Van den Haute, P., 2002, On the efficiency of fission-track counts in an internal and external apatite surface and in a muscovite external detector: Radiation Measurements, v. 35, p. 29-40.

Juez-Larre, J., and Andriessen, P. A. M., 2002, Post Late Paleozoic tectonism in the southern Catalan Coastal Ranges (NE Spain), assessed by apatite fission track analysis: Tectonophysics, v. 349, p. 113-129.

Kao, M. H., 2002, Thermo-tectonic implications of zircon and apatite FT data of the Marlborough Region, South Island, New Zealand: Terrestrial Atmospheric and Oceanic Sciences, v. 13, p. 109-124.

Koguchi, Y., and Tsuruta, T., 2002, Polymerizing condition of DAP resin as fission track detector: Radiation Measurements, v. 35, p. 171-175.

Kohn, B. P., Gleadow, A. J. W., Brown, R. W., Gallagher, K., O'Sullivan, P. B., and Foster, D. A., 2002, Shaping the Australian crust over the last 300 million years: insights from fission track thermotectonic imaging and denudation studies of key terranes: Australian Journal of Earth Sciences, v. 49, p. 697-717.

Kuhlemann, J., and Kempf, O., 2002, Post-Eocene evolution of the North Alpine Foreland Basin and its response to Alpine tectonics: Sedimentary Geology, v. 152, p. 45-78.

Lang, M., Glasmacher, U. A., Moine, B., Müller, C., Neumann, R., & Wagner, G.A., 2002, Heavy-ion induced defects in phlogopite imaged by scanning force microscopy - Surface and Coatings Technology 158-159, 439-443.

Lang, M., Glasmacher, U. A., Moine, B., Müller, C., Neumann, R., & Wagner, G.A., 2002, Arificial ion tracks in volcanic dark mica simulating natural radiation damage: A scanning force microscopy study - Nuclear Instruments and Methods B, 191, 346-351.

Lisker, F., 2002, Review of fission track studies in northern Victoria Land, Antarctica - passive margin evolution versus uplift of the Transantarctic Mountains: Tectonophysics, v. 349, p. 57-73.

Little, T. A., Holcombe, R. J., and Ilg, B. R., 2002, Ductile fabrics in the zone of active oblique convergence near the Alpine Fault, New Zealand: identifying the neotectonic overprint: Journal of Structural Geology, v. 24, p. 193-217.

Martinez-Martinez, J. M., Soto, J. I., and Balanya, J. C., 2002, Orthogonal folding of extensional detachments: Structure and origin of the Sierra Nevada elongated dome (Betics, SE Spain): Tectonics, v. 21, p. art. no.-1012.

McLaren, S., Dunlap, W. J., Sandiford, M., and McDougall, I., 2002, Thermochronology of high heat-producing crust at Mount Painter, South Australia: Implications for tectonic reactivation of continental interiors: Tectonics, v. 21, p. art. no.-1020.

Mitchell, M. M., Kohn, B. P., O'Sullivan, P. B., Hartley, M. J., and Foster, D. A., 2002, Low-temperature thermochronology of the Mt Painter Province, South Australia: Australian Journal of Earth Sciences, v. 49, p. 551-563.

Moharram, B. M., Lamaze, G., Elfiki, A., and Khalil, N., 2002, Neutron-based analysis of fission rates and ultra-trace concentrations of U-235 using gamma spectrometry and CR-39 (plastic track detector): Radiation Measurements, v. 35, p. 113-117.

Murakami, M., Yamada, R., and Tagami, T., 2002, Detection of frictional heating of fault motion by zircon fission track thermochronology: Geochimica Et Cosmochimica Acta, v. 66, p. A537-A537.

Nicol, A., Van Dissen, R., Vella, P., Alloway, B., and Melhuish, A., 2002, Growth of contractional structures during the last 10 m.y at the southern end of the emergent Hikurangi forearc basin, New Zealand: New Zealand Journal of Geology and Geophysics, v. 45, p. 365-385.

Nunn, J. A., and Lin, G., 2002, Insulating effect of coals and organic rich shales: implications for topography-driven fluid flow, heat transport, and genesis of ore deposits in the Arkoma Basin and Ozark Plateau: Basin Research, v. 14, p. 129-145.

O'Sullivan, P. B., and Wallace, W. K., 2002, Out-of-sequence, basement-involved structures in the Sadlerochit Mountains region of the Arctic National Wildlife Refuge, Alaska: Evidence and implications from fission-track thermochronology: Geological Society of America Bulletin, v. 114, p. 1356-1378.

Osadetz, K. G., Kohn, B. P., Feinstein, S., and O'Sullivan, P. B., 2002, Thermal history of Canadian Williston basin from apatite fission-track thermochronology - implications for petroleum systems and geodynamic history: Tectonophysics, v. 349, p. 221-249.

Persano, C., Stuart, F. M., Bishop, P., and Barfod, D. N., 2002, Apatite (U-Th)/He age constraints on the development of the Great Escarpment on the southeastern Australian passive margin: Earth and Planetary Science Letters, v. 200, p. 79-90.

Qiu, N. S., 2002, Tectono-thermal evolution of the Qaidam Basin, China: evidence from Ro and apatite fission track data: Petroleum Geoscience, v. 8, p. 279-285.

Raab, A. J., Brown, R. W., and Gallagher, K., 2002, Quantifying denudation rates with vertical relief fission track profiles: Geochimica Et Cosmochimica Acta, v. 66, p. A621-A621.

Raab, M. J., Brown, R. W., Gallagher, K., Carter, A., and Weber, K., 2002, Late Cretaceous reactivation of major crustal shear zones in northern Namibia: constraints from apatite fission track analysis: Tectonophysics, v. 349, p. 75-92.

Rasmussen, B., Bose, P. K., Sarkar, S., Banerjee, S., Fletcher, I. R., and McNaughton, N. J., 2002, 1.6 GaU-Pb zircon age for the Chorhat Sandstone, lower Vindhyan, India: Possible implications for early evolution of animals: Geology, v. 30, p. 103-106.

Reiners, P. W., Ehlers, T. A., Garver, J. I., Mitchell, S. G., Montgomery, D. R., Vance, J. A., and Nicolescu, S., 2002, Late Miocene exhumation and uplift of the Washington Cascade Range: Geology, v. 30, p. 767-770.

Roden-Tice, M. K., and Wintsch, R. P., 2002, Early Cretaceous normal faulting in southern New England: Evidence from apatite and zircon fission-track ages: Journal of Geology, v. 110, p. 159-178.

Soloviev, A. V., Shapiro, M. N., Garver, J. I., Shcherbinina, E. A., Kravchenko-Berezhnoy, I. R., and Berezhnoy, K., 2002, New age data from the Lesnaya Group: A key to understanding the timing of arc-continent collision, Kamchatka, Russia: Island Arc, v. 11, p. 79-90.

Stanford, S. D., Ashley, G. M., Russell, E. W. B., and Brenner, G. J., 2002, Rates and patterns of late Cenozoic denudation in the northernmost Atlantic Coastal Plain and Piedmont: Geological Society of America Bulletin, v. 114, p. 1422-1437.

Steenken, A., Siegesmund, S., Heinrichs, T., and Fugenschuh, B., 2002, Cooling and exhumation of the Rieserferner Pluton (Eastern Alps, Italy/Austria): International Journal of Earth Sciences, v. 91, p. 799-817.

Stockli, D. F., Surpless, B. E., Dumitru, T. A., and Farley, K. A., 2002, Thermochronological constraints on the timing and magnitude of Miocene and Pliocene extension in the central Wassuk Range, western Nevada: Tectonics, v. 21, p. art. no.-1028.

Stuart, F. M., 2002, The exhumation history of orogenic belts from Ar-40/Ar-39 ages of detrital micas: Mineralogical Magazine, v. 66, p. 121-135.

Suchy, V., Dobes, P., Filip, J., Stejskal, M., and Zeman, A., 2002, Conditions for veining in the Barrandian Basin (Lower Palaeozoic), Czech Republic: evidence from fluid inclusion and apatite fission track analysis: Tectonophysics, v. 348, p. 25-50.

Surpless, B. E., Stockli, D. F., Dumitru, T. A., and Miller, E. L., 2002, Two-phase westward encroachment of Basin and Range extension into the northern Sierra Nevada: Tectonics, v. 21, p. art. no.-1002.

Svojtka, M., and Kosler, J., 2002, Fission-track dating of zircon by laser ablation ICPMS: Geochimica Et Cosmochimica Acta, v. 66, p. A756-A756.

Tagami, T., Murakami, M., Hasebe, N., Kamohara, H., and Takemura, K., 2002, Zircon fission-track thermochronology of the Nojima fault system: Geochimica Et Cosmochimica Acta, v. 66, p. A760-A760.

Thomson, K., Hegarty, K. A., Marshallsea, S. J., and Green, P. F., 2002, Thermal and tectonic evolution of the Falkland Islands: implications for hydrocarbon exploration in the adjacent offshore region: Marine and Petroleum Geology, v. 19, p. 95-116.

Thomson, S. N., 2002, Late Cenozoic geomorphic and tectonic evolution of the Patagonian Andes between latitudes 42 degrees S and 46 degrees S: An appraisal based on fission-track results from the transpressional intra-arc Liquine-Ofqui fault zone: Geological Society of America Bulletin, v. 114, p. 1159-1173.

Tingate, P. R., and Duddy, I. R., 2002, The thermal history of the eastern Officer Basin (South Australia): evidence from apatite fission track analysis and organic maturity data: Tectonophysics, v. 349, p. 251-275.

Tsubamoto, T., Takai, M., Shigehara, N., Egi, N., Tun, S. T., Aung, A. K., Maung, M., Danhara, T., and Suzuki, H., 2002, Fission-track zircon age of the Eocene Pondaung Formation, Myanmar: Journal of Human Evolution, v. 42, p. 361-369.

van der Beek, P.; Summerfield, M. A.; Braun, J.; Brown, Roderick W.; Fleming, A., 2002, Modeling postbreakup landscape development and denudational history across the southeast African (Drakensberg Escarpment) margin, Journal of Geophysical Research, 107, 10.1029/2001JB000744.

Wendt, A. S., Vidal, O., and Chadderton, L. T., 2002, Experimental evidence for the pressure dependence of fission track annealing in apatite: Earth and Planetary Science Letters, v. 201, p. 593-607.

Willett, S. D., and Brandon, M. T., 2002, On steady states in mountain belts: Geology, v. 30, p. 175-178.

Yegingil, Z., Boztug, D., Er, M., Oddone, M., and Bigazzi, G., 2002, Timing of neotectonic fracturing by fission track dating of obsidian in-filling faults in the Ikizdere-Rize area, NE Black Sea region, Turkey: Terra Nova, v. 14, p. 169-174.

Yin, A., Rumelhart, P. E., Butler, R., Cowgill, E., Harrison, T. M., Foster, D. A., Ingersoll, R. V., Zhang, Q., Zhou, X. Q., Wang, X. F., Hanson, A., and Raza, A., 2002, Tectonic history of the Altyn Tagh fault system in northern Tibet inferred from Cenozoic sedimentation: Geological Society of America Bulletin, v. 114, p. 1257-1295.

Yuan, S. G., Yang, W. F., Xu, Y. B., Xiao, Y. H., and Luo, Y. X., 2002, Determination for beta-delayed fission probability of Ac-230: Science in China Series a-Mathematics Physics Astronomy, v. 45, p. 1329-1334.

Yuan, W. M., Hou, Z. Q., Wang, S. C., and Li, S. G., 2002, Apatite fission track dating evidence for tectonic movement of Yarlung Zangbo Thrust Zone: Chinese Science Bulletin, v. 47, p. 765-768.

Yuan, W. M., Wang, S. C., Li, S. R., and Yang, Z. Q., 2002, Apatite fission track dating evidence on the tectonization of Gangdese block, south Qinghai-Tibetan Plateau: Chinese Science Bulletin, v. 47, p. 239-243.

Zattin, M., Picotti, V., and Zuffa, G. G., 2002, Fission-track reconstruction of the front of the Northern Apennine thrust wedge and overlying Ligurian unit: American Journal of Science, v. 302, p. 346-379.

Zheng, G. D., Takano, B., and Chen, H. L., 2002, Fission track ages of Mahanshan Metamorphic Rock Group in Gansu Province, northwest China: Journal of Radioanalytical and Nuclear Chemistry, v. 251, p. 375-380.

2003 and in press

Armstrong, P.A., Ehlers, T.A., Chapman, D.S., Farley, K.A., and Kamp, P.J.J., In Press, Exhumation of the Central Wasatch Mountains, Utah: 1. Constraints from low-temperature thermochronometry, Journal of Geophysical Research (preprint available at: www.geo.lsa.umich.edu/~tehlers).

Balcázar, M. A López, A Hernández, R Corona, U A Glasmacher, G A Wagner, submitted, Characterization of Durango Apatite, Radiation Measurements 8 pages without figures and tables

Balestrieri M.L., Bernet M., Brandon M.T., Picotti V., Reiners P. and Zattin M., 2003, Pliocene and Pleistocene exhumation and uplift of two key areas of the northern Apennines. Quaternary International, 101-102C, 67-73.

Ehlers, T.A., and Farley, K.A., 2003, Apatite (U-Th)/He Thermochronometry: methods and applications to problems in tectonics and surface processes, EPSL-Frontiers, v. 206, p. 1-14.

Ehlers, T.A., Willett, S.D., Armstrong, P.A., and Chapman, D.S., In Press, Exhumation of the Central Wasatch Mountains, Utah: 2. Thermo-kinematic models of exhumation, erosion, and thermochronometer interpretation, Journal of Geophysical Research (preprint available at: www.geo.lsa.umich.edu/~tehlers).

Glasmacher, U.A., Lang, M., Klemme, S., Moine, B., Barbero, L., Neumann, R., & Wagner, G.A., accepted, Alpha-Recoil-Tracks in natural dark mica: Dating geological samples by optical and scanning force microscopy, Nuclear Instruments and Methods B., 7 pages, 5 figs.

Lang, M., Glasmacher, U.A., Neumann, R., & Wagner, G.A., accepted, Etching behaviour of alpha-recoil-tracks in natural dark mica by means of artificial ion tracks, Nuclear Instruments and Methods B, 8 pages, 6 figs., 2 tab.

Sobel, E.R., Hilley, G.E., and Strecker, M.R in press, Formation of internally-drained contractional basins by aridity-limited bedrock incision, *Journal of Geophysical Research - Solid Earth*.

Viola G., Mancktelow N., Seward D., Meier A. and Martin S., in press, The Pejo fault system: an example of multiple tectonic activity in the Italian Eastern Alps, GSA Bulletin.

International Fission-Track Directory

This revised and extended International Fission-Track Directory is by no means complete or accurate. Although a number of people do not figure in the staff, e-mail or phone directories of the institutes under which they are mentioned, this has not been interpreted as a sign of non-existence, and they have for the moment been retained with their old affiliations. It would be much appreciated if you would let the editor know if your address has changed, or if people have joined or definitively left your lab, so that the directory can be updated.

Abbate, Ernesto
Dipartimento di Science della Terra
University of Florence
Via La Pira 4, 50121 Firenze, Italy
Phone: +39 55 275 7527
Fax: +39 55 218 628
E-mail: abbate@unifi.it
Web: steno.geo.unifi.it

Aizawa, Minoru
Department of Geology
Imperial College
Prince Consort Road, London SW7 2BP, UK
Phone: +44 171 594 6468
Fax: +44 171 594 6464
E-mail: m.aizawa@ic.ac.uk

Andriessen, Paul A.M.
Department of Isotope Geochemistry
Faculteit Aardwetenschappen
Vrije Universiteit Amsterdam
De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands
Phone: +31 20 4447340
Fax: +31 20 6462457
E-mail: andp@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Angelmaier, Petra
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2975 240
Fax: +49 7071 5059
E-mail: petra.angelmaier@uni-tuebingen.de
Web: homepages.uni-tuebingen.de/petra.angelmaier

Armstrong, Phillip A.
Department of Geosciences
California State University
P.O. Box 6850 Fullerton, CA 92834-6850, USA
Phone: +1 714 278 3169
Phone: +1 714 278 7266
E-mail: parmstrong@fullerton.edu
Web: geology.fullerton.edu/index.htm

Arne, Dennis
Alpine Geological & Technical Services
126A Delany Avenue, Bright, Victoria 3741, Australia
E-mail: dennis.arne@bigpond.com

Avé Lallemant, Hans G.
Department of Earth Science
Rice University
6100 Main St, Houston, TX 77005-1892, USA
Phone: +1 713 348 4880
Fax: +1 713 348 5214
E-mail: ave@rice.edu
Web: terra.rice.edu

Bal, K. D.
Fission Track Laboratory
Keshav Deva Malaviya Institute of Petroleum Exploration
Oil and Natural Gas Corporation
Dehradun, India
Web: www.ongcindia.com/r&d/oiis/kdmipe

Balcázar Garcia, Miguel
Departamento de Estudios del Ambiente
Instituto nacional de investigaciones Nucleares
Apartado Postal 18-1027,México, D.F. 11801, Mexico
E-mail: mbg@nuclear.inin.mx
Web: www.inin.mx

Baldwin, Suzanne
Heroy Geology Laboratory
Department of Earth Sciences
Syracuse University
Syracuse, New York 13244-1070, USA
Phone: +1 315 443 4920
Fax: +1 315 443 2619
E-mail: sbaldwin@syr.edu
Web: su-thermochronology.syr.edu

Balestrieri, Maria Laura
Dipartimento di Science della Terra
University of Florence
Via La Pira 4, 50121 Firenze, Italy
Phone: +39 55 275 7494
Fax: +39 55 218 628
E-mail: mlaura@geo.unifi.it
Web: steno.geo.unifi.it

Barbarand, Jocelyn
Jocelyn Barbarand
UMR OrsayTerre 8616
Université Paris-Sud
Bâtiment 504
91405 Orsay cedex, France
Tel: 00.33.1.69.15.48.68
Fax: 00.33.1.69.15.48.68
E-mail: barbaran@geol.u-psud.fr

Barbero González, Luis C.
Dipartimento Geologia
Facultad de Ciencias del Mar y Ambientales
Universidad de Cadiz
1150 Puerto Real, Cadiz, Spain
Phone: +34 956 470 864
Fax: +34 956 470 811
E-mail: luis.barbero@uca.es
Web: www2.uca.es/facultad/ciencias_mar

Batt, Geoffrey
Department of Geology
Royal Holloway
University of London
Egham Hill
Egham, Surrey TW20 OEX
Phone: +44 01784 443606
E-mail: g.batt@gl.rhul.ac.uk

Belton, Dave X.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9669 /7675
Fax: +61 3 8344 7761
E-mail: d.belton@earthsci.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Bergman, Steven C.
Department of Geological Sciences
Southern Methodist University
Dallas, Texas 75275-0395, USA
Phone: +1 214 768 1510
Fax: +1 214 768 2701
E-mail: scb@mail.smu.edu
Web: www.geology.smu.edu

Bernet, Matthias
Department of Geological Sciences
University of Canterbury
Private Bag 4800
Christchurch, New Zealand
Fax: +64 3 364 2769
Phone: +64 3 364 2987 ext. 7683
E-mail: matthias.bernet@canterbury.ac.nz
matthias.bernet@aya.yale.edu

Bigazzi, Giulio
Istituto di Geocronologia e Geochimica Isotopica
Consiglio Nazionale delle Ricerche
Area delle Ricerca di Pisa
Via G. Moruzzi, 1, 56124 Pisa, Italy
Phone: +39 50 315 2283
Fax: +39 50 315 2360
E-mail: g.bigazzi@iggi.pi.cnr.it, and iggi@iggi.pi.cnr.it
Web: www.area.pi.cnr.it/AREAEN/iggi.html

Blythe, Ann E.
Department of Earth Sciences
University of Southern California
Los Angeles, CA 90089-0740, USA
Phone: +1 (213) 821-1094
Fax: +1 (213) 740-8801
E-mail: blythe@earth.usc.edu

Boettcher, Stefan S.
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Phone: +1 512 471 8547
Fax: +1 512 471 9425
E-mail: sboett@maestro.geo.utexas.edu
Web: www.geo.utexas.edu

Bojar, Ana-Voica
Insitut für Geologie und Paläontologie
Karl-Franzens Universität
Heinrichstraße 26, A-8010 Graz, Austria
Phone: +43 316 380 8727
Fax: +43 316 380 9871
E-mail: ana-voica.bojar@kfunigraz.ac.at
Web: www-ang.kfunigraz.ac.at/~bojar

Bondar, Julia
State Science Center of Environmental Radiogeochemistry
34 Palladin Avenue, 03142 Kiev, Ukraine
Fax: +380 44 451 02 36
E-mail: center@radgeo.freenet.kiev.ua

Bondarenko, Oleg
Deputy Director - Radiation Safety Chief
SSSIE Echocentre
6 Shkolnaya Str., Chornobyl
Kievskaya obl., Ukraine
Phone: +38 (04493) 52218
Fax: +38 (04493) 52398
E-mail: boa@ic-chernobyl.kiev.ua
Web http://www.ic-chernobyl.kiev.ua/ecocentr.htm

Boulyga, Sergei
Central Department for Analytical Chemistry
Research Centre Jülich
D-52425 Jülich Germany
Phone: +49 2461 613 291
Fax: +49 2461 612 560
E-mail: s.boulyga@fz-juelich.de

Boztug, Durmus
Jeoloji Mühendisli_i Bölümü
Mühendislik Fakültesi, Cumhuriyet Üniversitesi
58140 Sivas,Turkey
Phone: +90 346 219 1010
Fax: +90 346 219 1171
E-mail: boztug@cumhuriyet.edu.tr
Web: jeoloji.cumhuriyet.edu.tr

Brandon, Mark T.
Kline Geology Laboratory
Department of Geology and Geophysics
Yale University
P.O. Box 208109, 210 Whitney Avenue, New Haven, CT 06520-8109, USA
Phone: +1 203 432 3135
Fax: +1 203 432 3134
E-mail: mark.brandon@yale.edu
Web: www.geology.yale.edu/~brandon/

Brix, Manfred R.
Institut für Geologie, Mineralogie und Geophysik
Fakultät für Geowissenschaften
Ruhr-Universität Bochum
Postfach 102148, D-44721 Bochum, Germany
Phone: +49 2343 223 236
Fax: +49 2343 214 572
E-mail: manfred.r.brix@ruhr-uni-bochum.de
Web: www.ruhr-uni-bochum.de/hardrock/Mitarbeiter/brix.html

Brown, Roderick W.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9868 /7675
Fax: +61 3 8344 7761
E-mail: rwbrown@unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Brunel, Maurice
ISTEEM GGP laboratory CC 058
Universite Montpellier II
1 Place E. Bataillon, 34095 Montpellier Cedex, France
Phone: +33 4 67 14 36 47
Fax: +33 4 67 14 42 53
E-mail: brunel@dstu.univ-montp2.fr
Web: www.dstu.univ-montp2.fr

Burchart, Jan
Institute of Geological Sciences
Polish Academy of Sciences
Zwirki i Wigury 93, 02-089 Warsaw, Poland
Web: www.pan.pl/english/index.html

Calmus, Thierry
Instituto de Geología
Universidad Nacional Autonoma de México
Apartado Postal 1039, Hermosillo, Sonora, 8300 Mexico
E-mail: tcalmus@servidor.unam.mx
Web: geologia.igeolcu.unam.mx/geol.htm

Carlson, William D.
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Phone: +1 512 471 4770
Fax: +1 512 471 9425
E-mail: wcarlson@mail.utexas.edu
Web: www.geo.utexas.edu/faculty/carlson.htm

Carpéna, Joëlle
Commissariat Energie Atomique
Direction Energie Nucléaire
Centre d'Etudes de Cadarache

DED/SEP/Bâtiment 307, 13108 Saint Paul lez Durance CDX, France
Phone: +33 4 42 25 46 94
E-mail: carpe@bahia.cad.cea.fr
Web: www-cad.cea.fr/r10.htm

Carpenter, Stephen B.
Office of International and Academic Affairs
National Institute of Standards and Technology
100 Bureau Drive, Stop 1090 Gaithersburg, MD 20899-1090, USA
Phone: +1 301 975 4119
E-mail: b.carpenter@nist.gov
Web: www.nist.gov/oiaa/steve.htm

Carrière, Kevin
FS Archäometrie der Heidelberger Akad. d.
Wissenschaften am MPI für Kernphysik.
Saupfercheckweg 1
D-69117 Heidelberg, Deutchland
E-mail: carriere@mpi-hd.mpg.de
Fax: +49 6221 516 633
Phone: +49 6221 516 337

Carter, Andrew
Fission Track Research Group
Department of Earth Sciences
University College London
London WC1E 6B, UK
Phone: +44 20 7679 2418
Fax: +44 20 7813 2802
E-mail: a.carter@ucl.ac.uk
Web: www.fissiontrack.ucl.ac.uk/Personal/Andypage/AC.html

Carter, Tim J.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 7673 /7675
Fax: +61 3 8344 7761
E-mail: t.carter@pgrad.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Cawley, Steve
BP-Amoco
Farburn Industrial Estate, Aberdeen AB21 7PB, UK
E-mail: cawleysj@bp.com

Cederbom, Charlotte
Department of Geology and Geophysics
University of Edinburgh
Edinburgh EH9 3JW, Scotland, UK
Phone: +44 131 6 508 524
Fax: +44 131 6 505 931
E-mail: cederbom@glg.ed.ac.uk
Web: www.glg.ed.ac.uk

Chadderton, Lewis T.
Research School of Physical Sciences and Engineering
Australian National University
Canberra, ACT, Australia
Phone: +61 2 6125 4542
Fax: +61 2 6125 0043
E-mail: Lewis.Chadderton@anu.edu.au
Web: wwwrsphysse.anu.edu.au/ampl/research/rad/index.html

Chambaudet, Alain
Laboratoire de Microanalyses Nucléaires
Université de Franche-Comté
16 route de Gray, F-25030 Besancon Cedex, France
Phone: +33 3 81 66 65 01
Fax: +33 3 81 66 65 22
E-mail: alain.chambaudet@univ-fcomte.fr

Chan, Roslyn
Minerals Division
Australian Geological Survey Organisation
P.O. Box 378, Canberra ACT 2603, Australia
Phone: + 61 2 6249 9371
Fax: + 61 2 6249 9930
E-mail: roslyn.chan@agso.gov.au
Web: leme.anu.edu.au

Clavero, Jorge
Servicio Nacional de Geologia y Mineria
Av. Sta. Maria 0104, Casilla 10465, Providencia, Santiago de Chile
Phone: +56 2 737 5050
Fax: +56 2 777 1906
E-mail: JClavero@sernageomin.cl
Web: www.sernageomin.cl/prototipo/index.htm

Cloos, Mark
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Phone: +1 512 471 4170
Fax: +1 512 471 9425
E-mail: cloos@mail.utexas.edu
Web: www.geo.utexas.edu/faculty/cloos.htm

Coleman, Max
Research Institute for Sedimentology
The University of Reading
P.O. Box 227, Whiteknights, Reading, RG6 6AB, UK
Phone: +44 118 931 6627
Fax: +44 118 931 0279
E-mail: m.l.coleman@reading.ac.uk
Web: www.rdg.ac.uk/AcaDepts/sl/Sed/Staff/People/mlc1.html

Corrigan, Jeff D.
ARCO Exploration and Production
2300 W. Plano Parkway, Plano, TX 75075, USA
Phone: +1 214 509 4090
E-mail: dprjdc@arco.com

Coutand, Isabelle
Université des Sciences et Technologies de Lille 1
UMR-CNRS PBDS
UFR des Sciences de la Terre (bât.SN5)
59655 Villeneuve d'Ascq cedex, France
Phone: +33 (0)3.20.43.41.21
Fax: +33 (0)3.20.43.49.10
E-mail: Isabelle.Coutand@univ-lille1.fr

Crowhurst, Peter
CSIRO Petroleum Resources
P.O. Box 136, North Ryde NSW 1670, Australia
Phone: +61 2 9490 8666
Fax: +61 2 9490 8902
E-mail: p.crowhurst@dpr.csiro.au
Web: www.dpr.csiro.au/research/tbe.html

Crowley, Kevin, D.
Board on Radioactive Waste Management
National Research Council
2101 Constitution Avenue, Washington, DC 20418, USA
Phone: +1 202 334 3066
Fax: +1 202 334 3077
E-mail: kcrowley@nas.edu
Web: www4.nationalacademies.org/cger/brwmwebp.nsf

Currie, Lisel D.
Energy and Environment
Geological Survey of Canada
3303-33rd St., NW Calgary, Alberta, T2L 2A7, Canada
Phone: +1 403 292-7004
Fax: +1 403 292 4961
E-mail: lcurrie@nrcan.gc.ca
Web: www.nrcan.gc.ca/gsc/calgary/index_e.html

Danhara, Tohru
Kyoto Fission-Track Co., Ltd.
44-4 Minamitajiri-cho, Omiya, Kita-ku
Kyoto 603-8832, Japan
Phone: +81-75-493-0684

Fax: +81-75-493-0741
E-mail: kyoto-ft@mb.neweb.ne.jp

Danisik, Martin
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2975 240
Fax: +49 7071 5059
E-mail: martindanisik@uni-tuebingen.de
Web: www.uni-tuebingen.de/geo/gpi

de Bruijne, Karen
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 4447310
Fax: +31 20 6462457
E-mail: bruc@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

De Corte, Frans
Institute for Nuclear Sciences
University of Gent
Proeftuinstraat 86, B-9000 Gent, Belgium
Phone: +32 9 264 6627
Fax: +32 9 264 6699
E-mail: Frans.Decorte@rug.ac.be
Web: allserv.rug.ac.be/~jddonder/AnalChem/incmain.htm#Home

De Graeve, Johan
Geologisch Instituut
Universiteit Gent
Krijgslaan 281 (S8), B-9000 Gent, Belgium
Phone: +32 9 264 4592
Fax: +32 9 264 4997
E-mail: Johan.Degrave@rug.ac.be
Web: allserv.rug.ac.be/~fmees/mineralogy.htm

de Paulo, Sérgio R.
Instituto de Ciências Exatas e da Terra
Universidade Federal de Mato Grosso
78060-900, Cuiaba, MT, Brazil
Instituto de Geociências
Universidade de São Paulo, São Paulo, SP, Brazil
E-mail lraesergio@uol.com.br
Web: www.ufmt.br/icet/icet.html
Web: www.igc.usp.br

De Wispelaere, Antoine
Institute for Nuclear Sciences
University of Gent
Proeftuinstraat, 86, B-9000 Gent, Belgium
Phone: +32 9 264 6627
Fax: +32 9 264 6699
E-mail: Antoine.Dewispelaere@rug.ac.be
Web: allserv.rug.ac.be/~jddonder/AnalChem/incmain.htm#Home

De Wit, M.C.J.
De Beers Consolidated Mines Ltd.
P.O. Box 7383, Centurion, 0046 Pretoria, South Africa

Dickin, Alan P.
School of Geography and Geology
McMaster University
Hamilton, Ontario L8S 4M1, USA
Phone: +1 905 525 9140 Ext. 24365
Fax: +1 905 522 3141
E-mail: dickin@mcmaster.ca
Web: www.science.mcmaster.ca/geology/dickin.html

Dodson, Martin H.
Department of Earth Sciences
University of Leeds
Leeds, LS2 9JT, UK

Dokka, Roy K.
Department of Geology
Louisiana State University
E235 Howe Russell Building, LSU Baton Rouge, Louisiana, 70803-4101, USA
Phone: +1 225 388 3353
Fax: +1 225 388 2302
E-mail: dokka@geol.lsu.edu
www.geol.lsu.edu/department/facilities/laboratories/tectonics/index.html

Donelick, Raymond A.
Donelick, Margaret B.
Donelick Analytical Inc.
1075 Matson Road, Viola, Idaho 83872-9709, USA
Phone: +1 208 875 2332
Fax: +1 208 875 8881
E-mail: donelick@apatite.com
Web: www.apatite.com

Dorighel, Olivier
Groupe de Géophysique Nucléaire
Université Joseph Fourier
Institut Dolomieu
15 Rue Maurice Gignoux, 38031 Grenoble Cedex, France

Duddy, Ian R.
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.au

Dumitru, Trevor A.
Department of Geology and Environmental Sciences
Stanford University
Stanford, CA 94305-2115, USA
Phone: +1 415 725 1328
Fax: +1 415 725 2199
E-mail: trevor@pangea.stanford.edu
Web: pangea.Stanford.edu/structure/projects/fission_track.html

Dunai, Tibor J.
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 444 7398
Fax:. +31 20 646 2457
E-mail: dunt@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Dunkl, István
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2974 703
Fax: +49 7071 5059
E-mail: istvan.dunkl@uni-tuebingen.de
Web: www.uni-tuebingen.de/geo/gpi/ag-frisch/mitarbeiter/dunkl/seiten/ft-group.html

Durrani, Saeed A.
School of Physics and Space Research
University of Birmingham
Birmingham B15 2TT, UK
Phone: +44 21 414 4691 /4655
Fax: +44 21 414 4693
E-mail: s.a.durrani@bham.ac.uk

Eby, G. Nelson
Department of Environmental, Earth & Atmospheric Sciences
University of Massachusetts
Lowell, MA 01854 USA
Phone: +1 978 934 3907
Fax: +1 978 934 3069
E-mail: Nelson_Eby@uml.edu

Edwards, Michael
Institut für Geologie
University of Vienna
Althanstrasse 14
Vienna A-1090, Austria
Phone: +49 (0)177-783-2827
E-mail: medwards@gmx.net

Ege, Harald
Institut für Geologische Wissenschaften
Freie Universität Berlin
Malteserstrasse 74-100
D-12249 Berlin, Germany
E-mail: ege@zedat.fu-berlin.de

Ehlers, Todd
Department of Geological Sciences
University of Michigan
2534 C.C. Little Building, 425 East University
Ann Arbor, Michigan, 48109-1063
Phone: +1 734.763.5112 (temporary)
Fax: +1 734.763.4690
E-mail: tehlers@umich.edu

Elias, Jürgen
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Fax: +49 7071 5059
E-mail: jnelias@med.uni-tuebingen.de
Web: www.uni-tuebingen.de/geo/gpi

Enkelmann, Eva
Institut für Geologie
Technische Universität Bergakademie Freiberg
Bernhard-von-Cottastrasse 2, D-09596 Freiberg, Germany
Phone: +49 3731 393 758
Fax: +49 3731 393 295
E-mail: eva.enkelmann@geo.tu-freiberg.de
Web: www.geo.tu-freiberg.de/tektono

Evarts, Russell C.
U.S. Geological Survey, MS-999
345 Middlefield Road, Menlo Park, CA 94025, USA
Phone: +1 650 329 4929
Fax: +1 650 329 4936
E-mail: revarts@usgs.gov
Web: www.usgs.gov

Fabel, Derek
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
E-mail: d.fabel@unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Farley, Kenneth A.
Division of Geological and Planetary Sciences
California Institute of Technology
Caltech MS 170-25, Pasadena CA 91125, USA
Phone: +1 626 395 6005
Fax: +1 626 568 0935
E-mail: farley@gps.caltech.edu
Web: www.gps.caltech.edu/~farley/farley.htm

Fayon, Annia K.
Department of Geology and Geophysics
University of Minnesota-Twin Cities
108 Pillsbury Hall, 310 Pillsbury Drive SE, Minneapolis, MN 55455, USA
Phone: +1 612 626 9805
Fax: +1 612 625 3819
E-mail: annia@geolab.geo.umn.edu
Web: www.geo.umn.edu/orgs/whitney/DLW_postdoc.html

Feinstein, Shimon
Department of Geological and Environmental Sciences
Ben Gurion University of the Negev
P.O. Box 653, Beer Sheva 84105, Israel
Phone: +972 8 647 2622
Fax: +972 8 647 2997
E-mail: shimon@bgumail.bgu.ac.il
Web: www.bgu.ac.il/geol/index.html

Filip, Jiri
Institute of Geology
Academy of Sciences of the Czech Republic
Rozvojova 135, Prague 6 CZ 165 02, Czech Republic
Phone: +420 2 3308 7248
Fax: +420 2 3308 7111
E-mail: filip@gli.cas.cz
Web: www.gli.cas.cz

Fisher, David E.
Department of Geological Sciences
University of Miami
Miami, FL 33124-0401, USA
Phone: +1 305 284 3254
Fax: +1 305 284 4258
Web: www.as.miami.edu/geology

Fitzgerald, Paul G.
Heroy Geology Laboratory
Department of Earth Sciences
Syracuse University
Syracuse, New York 13244-1070 USA
Phone: +1 315 443 2871
Fax: +1 315 443 2619
E-mail: pgfitzge@syr.edu
Web: su-thermochronology.syr.edu

Fleischer, Robert L.
Department of Geology
Union College
Schenectady, NY 12308, USA
Phone: +1 518 388 6985
Fax: +1 518 388 6417
E-mail: fleischr@union.edu
Web: zircon.geology.union.edu/Fleischer.html

Fletcher, John M.
Departamento de Geología
Centro de Investigación Científica y de Educación Superior de Ensenada
Km 107 Carr. Tijuana - Ensenada. Ensenada, B.C., México P.O. Box 430222, San Diego, CA 92143-0222, USA
Phone: +1 174 50 50 26031
Fax: +1 174 50 50 26021
E-mail: jfletche@cicese.mx
Web: geologia.cicese.mx/jfletche/jfletche.htm

Foland, Sara S.
Amoco Production Company
P.O. Box 800, Denver, CO 80201, USA
E-mail: sfoland@geosociety.org

Foster, David A.
Department of Geology
University of Florida
P.O. Box 112120, Gainsville, FL 32611-2120, USA
Phone: +1 352 392 2231
E.mail: dafoster@ufl.edu
Web: www.clas.ufl.edu/users/dfoster

Fowler, Andrew
Dept of Earth Sciences
University of Melbourne
Victoria 3010, Australia
Phone: +61 3 8344 7675
Fax: +61 3 8344 7761
E-mail: a.fowler@pgrad.unimelb.edu.au

Franks, Daniel
University of Queensland
St Lucia Brisbane QLD 4072, Australia
E-mail: danielfranks@hotmail.com

Fügenschuh, Bernhard
Geologisch Paläontologisches Institut
Universität Basel
Bernoullistrasse 32, Basel BS CH-4056, Switzerland
Phone: +41 61 267 86 10
Fax: +41 61 267 36 13
E-mail: bernhard.fuegenschuh@unibas.ch
Web: www.unibas.ch/earth/tecto/people/fuegenschuh.html

Galbraith, Rex F.
Department of Statistical Science
University College London
Gower Street, London, WC1E 6BT, UK
Phone: +44 20 7679 1859
Fax: +44 20 7383 4703
E-mail: rex@stats.ucl.ac.uk
Web:www.ucl.ac.uk/geolsci/research/fissiontrack/Personal/Rexpage/Rex.html

Gallagher, Kerry
Department of Earth Sciences and Engineering
Imperial College of Science, Technology and Medicine
Exhibition Road, London, SW7 2BT, UK
Phone: +44 20 759 46424
Fax: +44 20 759 46444
E-mail: kerry@ic.ac.uk; k.l.gallagher@ic.ac.uk
www.huxley.ic.ac.uk/research/Comp&Geophys/Geophys/maintext.php3

Ganzawa, Yoshiro
Hokkaido University of Education
1-2 Hachiman-cho, Hakodate, 040, Japan
Phone: +81 0138 41 1121
Fax: +81 0138 42 3982

Garver, John I.
Department of Geology
Union College
Schenectady, NY 12308-2311, USA
Phone: +1 518 388 6517
Fax: +1 518 388 6789
E-mail: garverj@union.edu
Web: zircon.union.edu/FT/FThome.html

George, Annette
University of Western Australia
Department of Geology and Geophysics
Nedlands WA 6907, Australia
Phone: +61 (08) 9380 1923
Fax: + +61 (08) 9380 1037
E-mail: ageorge@geol.uwa.edu.au
Web: www.geol.uwa.edu.au/~ageorge/ageorge.html

George, Pete
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Web: www.geo.utexas.edu

Gibson, David
CRC LEME/AGSO
P.O. Box 378, Canberra ACT 2601, Australia
Phone: +61 2 6249 9748
Fax: +61 2 6249 9930
E-mail: dave.gibson@agso.gov.au
Web: leme.anu.edu.au

Gibson, Helen
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.au

Giegengack, Robert
Department of Earth and Environmental Science
University of Pennsylvania
Philadelphia, PA 19104-6316, USA
Phone: +1 215 898 5191
Fax: +1 215 573 9145
E-mail: gieg@sas.upenn.edu
Web: www.sas.upenn.edu/earth/giegenga.html

Giles, Melvin R.
EPT-HM, Volmerlaan 8, Rijswijk, The Netherlands
E-mail: gilesm@siep.shell.com

Glasmacher, Ulrich
Forschungsstelle Archaeometrie
Heidelberger Akademie der Wissenschaften
Saupfercheckweg 1, 69117 Heidelberg, Germany
Phone: +49 6221 516 321
Fax: +49 6221 516 633
E-mail: ua.glasmacher@mpi-hd.mpg.de
Web: www.haw.baden-wuerttemberg.de

Gleadow, Andrew J. W.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9866
Fax: +61 3 8344 7761
E-mail: gleadow@unimelb.edu.au
Web: web.earthsci.unimelb.edu.au/Gleadow/Gleadow.html

Gräfe, Kirsten
Geoforschungszentrum Potsdam
Telegrafenberg, Gebäude C122, D-14473 Potsdam, Germany
Phone: +49 331288 1315
Fax: +49 331288 1370
E-mail: graefe@gfz-potsdam.de
Web: www.gfz-potsdam.de/pb3/pb31/index-pb-en.html

Green, Paul F.
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.au

Grimmer, Jens C.
Institut für Geologie
Technische Universität Bergakademie Freiberg
Bernhard-von-Cottastrasse 2, D-09596 Freiberg, Germany
Phone: +49 3731 394599
Fax: +49 3731 393597
E-mail: jens.grimmer@geo.tu-freiberg.de
Web: www.geo.tu-freiberg.de/tektono

Grist, Alexander M.
Department of Earth Sciences
Dalhousie University
Halifax, Nova Scotia, B3H 3J5, Canada
Phone: +1 902 494 2372
Fax: +1 902 494 6889
E-mail: agrist@is.dal.ca
Web: meguma.earthsciences.dal.ca/staff/grist.htm

Grivet, Manuel
Laboratoire de Microanalyses Nucléaires
U.F.R. des Sciences et des Techniques
Université de Franche-Comté
16 route de Gray, F-25030 Besancon Cedex, France
Phone: +33 3 81 66 65 01
Fax: +33 3 81 66 65 22
E-mail: manuel.grivet@univ-fcomte.fr
Web: www.univ-fcomte.fr

Guedes de Oliveira, Sandro
Departamento de Raios Cósmicos e Cronologia
Instituto de Fisica Gleb Wataghin
Universidade Estadual de Campinas
Caixa Postal 6165, CEP 13083-970 UNICAMP,
Campinas, SP, Brazil
Phone: +55 19 788 5522
Fax: +55 19 788 5512
E-mail: guedes@ifi.unicamp.br
Web: www.ifi.unicamp.br/~turtelli/www0.htm

Guglielmetti, Alessandra
Instituto di Fisica Generale Applicata
Università degli Studi di Milano
Via Celoria 16, 20133 Milano, Italy
Phone: +39 02 266 6259
Fax: +39 02 266 5717
E-mail: guglielmetti@mi.infn.it
Web: albinoni.brera.unimi.it/istituto/istituto.htm

Gunnell, Yanni
Laboratoire de géographie physique
Universite Denis Diderot, Paris VII
1 Place Aristide Briand, 92195 Meudon Cedex, France
Phone: +33 1 4507 5552
E-mail: gunnell@paris7.jussieu.fr
Web: www.sigu7.jussieu.fr

Hadler Neto, Julio Cesar
Departamento de Raios Cósmicos e Cronologia
Instituto de Fisica Gleb Wataghin
Universidade Estadual de Campinas
Caixa Postal 6165, CEP 13083-970 UNICAMP,
Campinas, SP, Brazil
Phone: +55 19 788 5522
Fax: +55 19 788 5512
E-mail: hadler@ifi.unicamp.br
Web: www.ifi.unicamp.br/~turtelli/www0.htm

Hansen, Kirsten
Geologisk Centralinstitut
Oster Volgrade 10, DK-1350, Kobenhavn K, Denmark
Phone: +45 31 42 18 94
Fax: +45 33 14 84 33
E-mail: kirstenh@geo.geol.ku.dk

Harrison, Mark T.
Department of Earth and Space Sciences
University of California, Los Angeles
595 Charles Young Drive East, Los Angeles, CA 90095-1567, USA
Phone: +1 310 825 7970
Fax: +1 310 825 2779
E-mail: tmh@argon.ess.ucla.edu
Web: www.ess.ucla.edu/faculty/harrison

Hasebe, Noriko
Department of Earth Sciences
Kanazawa University
Kanazawa, 920-1192, Japan
Phone: +81 76 264 5727
Fax: +81 76 264 5746
Web: earth.s.kanazawa-u.ac.jp/chronology/EnglishPage/indexE.html
London Fission Track Research Group
Research School of Geological Sciences
University and Birbeck Colleges
London WC1E 6B, UK
Phone: +44 207 679 7704
Fax: +44 207 813 2802
E-mail: hasebe@kenroku.kanazawa-u.ac.jp
www.ucl.ac.uk/geolsci/research/fissiontrack/Indexpage/index.html

Hashemi-Nezhad, Reza S.
Department of High Energy Physics
School of Physics, University of Sydney
A28 Sydney, NSW 2006, Australia
Phone: +61 2 9351 5964
Fax: +61 2 9351 7727
E-mail: reza@physics.usyd.edu.au
Web: www.physics.usyd.edu.au/hienergy/index.html

Hayashi, Masao
Kyushu Sangyo University
Fukuoka 813, Japan
Phone: +81 92 673 5883
Fax: +81 92 673 5899
Web: www.ip.kyusan-u.ac.jp/e/ksu-e.html

Hegarty, Kerry A.
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.au

Hejl, Ewald R.
Institut für Geologie und Paläontologie
Universitat Salzburg
Hellbrunnerstraße 34/III, A-5020 Salzburg, Austria
Phone: +43 662 8044 5437
Fax: +43 662 8044 621
E-mail: ewald.hejl@sbg.ac.at
Web: www.sbg.ac.at/gew

Hendriks, Bart W.H.
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 4447397
Fax: +31 20 6462457
E-mail: henb@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Hill, Kevin C.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9708 /7675
Fax: +61 3 8344 7761
E-mail: kevin.hill@unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Himeno, Osamu
Department of Mining Engineering
Kyushu Sangyo University
Hakozaki, Fukuoka 812-81, Japan
Phone: +81 92 642 3635
E-mail: himeno@mine.kyushu-u.ac.jp

Hobro, James W. D.
Bullard Laboratories, Department of Earth Sciences
University of Cambridge
Madingley RoadCambridge CB3 0EZ, UK
Phone: +44 1223 337 191
Fax: +44 1223 360 779
Email: hobro@esc.cam.ac.uk
Web: bullard.esc.cam.ac.uk/~hobro

Honda, Teruyyki
Atomic Energy Research Laboratory
Musashi Institute of Technology
Kawasaki 215, Japan
Web: atomsun2.atom.musashi-tech.ac.jp

Hoshino, Hidehiro
Kanazawa University
Kakuma town, Kanazawa City, Ishikawa Pref. Japan
E-mail: hide43@nihonkai.kanazawa-u.ac.jp

House, Martha
Division of Geological and Planetary Sciences
California Institute of Technology
Caltech MS 100-23, Pasadena CA 91125, USA
Phone: +1 626 395 6023
Fax: +1 626 568 0935
E-mail: mhouse@gps.caltech.edu
Web: www.gps.caltech.edu/%7Emhouse

Huigen, Yvette
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 4447397
Fax: +31 20 6462457
E-mail: huiy@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Hungerbühler, Dominik
Department Erdwissenschaften
ETH-Zentrum
CH-8092, Zurich, Switzerland
Web: www.erdw.ethz.ch

Hulver, Michael L.
Saudi Aramco
Box 9279, Dhahran 31311, Saudi Arabia
E-mail: hulverml@mail.aramco.com.sa
Web: www.saudiaramco.com

Hurford, Anthony J.
London Fission Track Research Group
Department of Earth Sciences
University College London
London WC1E 6B, UK
Phone: +44 20 7679 7704
Fax: +44 20 7813 2802
E-mail: t.hurford@ucl.ac.uk
Web:www.ucl.ac.uk/geolsci/research/fissiontrack/Indexpage/index.html

Indrelid, Sarah
Petroleum Development Oman
E-mail: sarah.sl.indrelid@pdo.co.om
Web: www.pdo.co.om

Iriarte, Sergio
Servicio Nacional de Geologia y Mineria
Av. Sta. Maria 0104, Casilla 10465, Providencia, Santiago de Chile
Phone: +56 2 737 5050
Fax: +56 2 777 1906
E-mail: SIriarte@sernageomin.cl
Web: www.sernageomin.cl/prototipo/index.htm

Issler, Dale R.
Natural Resources Canada
Geological Survey of Canada
3303-33rd St., NW Calgary, Alberta, T2L 2A7, Canada
Phone: +1 403 292 7172
Fax: +1 403 292 5377
E-mail: dissler@nrcan.gc.ca
Web: www.nrcan.gc.ca/gsc/calgary/index_e.html

Ito, Hisatoshi
Central Research Institute of Electric Power Industry
1646 Abiko, Abiko city, Chiba, 270-1194, Japan
Phone: +81 471 82 1181 ext. 8525
Fax: +81 471 83 3182
E-mail: ito_hisa@criepi.denken.or.jp
Web: criepi.denken.or.jp;
wwwsoc.nacsis.ac.jp/jseg/index-e.html

Iunes, P.J.
Departamento de Raios Cósmicos e Cronologia
Instituto de Fisica Gleb Wataghin
Universidade Estadual de Campinas
Caixa Postal 6165, CEP 13083-970 UNICAMP,
Campinas, SP, Brazil
Phone: +55 19 788 5522
Fax: +55 19 788 5512
E-mail: iunes@ifi.unicamp.br
Web: www.ifi.unicamp.br/~turtelli/www0.htm

Iwano, HidekiIwano, Hideki
Kyoto Fission-Track Co., Ltd.
44-4 Minamitajiri-cho, Omiya, Kita-ku
Kyoto 603-8832, Japan
Phone: +81-75-493-0684
Fax: +81-75-493-0741
E-mail: kyoto-ft@mb.neweb.ne.jp

Iwano, Hidekic
Kyoto Fission Track Co. Ltd.
44--4 Minamitajiri-cho, Omiya, Kita-ku,
Kyoto 603-8832, Japan
Phone: +81 75 493 0684
Fax: +81-75 493 0741
E-mail: kyoto-ft@mb.neweb.ne.jp

Jacobs, Joachim
Fachbereich 5, Geowissenschaften
Universität Bremen
Postfach 330440, D-28334 Bremen, Germany
Phone: +49 421 218 3993
Fax: +49 421 218 3995
E-mail: jojacobs@geopol.uni-bremen.de
Web: www.joachimjacobs.de/index.htm

Johnson, Kit
London Fission Track Research Group
Department of Geological Sciences
University College London
London WC1E 6B, UK
Phone: +44 20 7594 6542
Fax: +44 20 7594 6464
E-mail: k.johnson@ic.ac.uk

Jolivet, Marc
Laboratoire Dynamique de la Lithosphère
UMR 5573, CNRS, UMII, Cc060
Université Montpellier II, 5, Pl. E. Bataillon
34095 MONTPELLIER cédex 05, FRANCE
Phone: +33 (0)4 67 14 37 28
Fax: +33 (0)4 67 52 39 08
E-mail: jolivet@dstu.univ-montp2.fr

Jonckheere, Raymond
Geologisches Institut
Technische Universität - Bergakademie Freiberg
Bernhard-von-Cotta-Straße 2
D-09599 Freiberg (Sachsen) Deutschland
Phone: +49 3731 393160
Fax: +49 3731 393597
E-mail: raymond.jonckheere@geo.tu-freiberg.de

Juez-Larre, Joaquim
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 444 7395
Fax: +31 20 646 2457
E-mail: juej@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Kamp, Peter J.J.
Department of Earth Sciences
University of Waikato
Private Bag 3105, Hamilton 2001, New Zealand
Phone: +64 7 838 4876
Fax: +64 7 856 0115
E-mail: p.kamp@waikato.ac.nz
Web: sci.waikato.ac.nz/cgi-bin/dynapage.pl?pagename=erth

Keay, Sue
Department of Earth Sciences
University of Queensland
St Lucia, Brisbane QLD 4072, Australia
Phone: +61 7 3365 8248
Fax: +61 7 3365 1277
E-mail: s.keay@earth.uq.edu.au
Web: www.earth.uq.edu.au

Ketcham, Richard A.
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Phone: +1 512 471 0260
Fax: +1 512 471 9425
E-mail: richk@maestro.geo.utexas.edu
Web: www.geo.utexas.edu/scientist/ketcham.htm

Kelley, Shari A.
Department of Earth and Environmental Sciences
New Mexico Institute of Mining and Technology
801 Leroy Place, Socorro, NM 8780, USA
Phone: +1 505 661 6171
E-mail: sakelley@ix.netcom.com
Web: www.ees.nmt.edu/faculty/kelley.html

Kendrick, Dan
Department of Earth Sciences
La Trobe University
Bundoora, VIC 3083, Australia
Phone: +61 3 479 1273
Fax: +61 3 479 1272
E-mail: geordk@luff.latrobe.edu.au
Web: www.latrobe.edu.au/pesa/Research-ltu/Irian.html

Kim, Joong Wook
Department of Science Education
Taegu National University of Education
Daemyung-2 Nam-gu, Taegu, 705-715, Korea
Phone: +82 53 620 1343
Fax: +82 53 620 1340
E-mail: jwkim@taekyo.taegu-e.ac.kr
Web: soback.kornet.net/~jwkim5/g-hi.html

Kohn, Barry P.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 7217 /7675
Fax: +61 3 8344 7761
E-mail: b.kohn@unimelb.edu.au
Web: www.agcrc.csiro.au/people/KohnBarry

Koshimizu, Satoshi
Yamanashi Institute of Environmental Sciences
5597-1 Kenmarubi, Kamiyoshida, Fujiyoshida, Yamanashi 403-0005 Japan
Phone: +81 555 72 6194
Fax: +81 555 72 6206
E-mail: koshi@yies.pref.yamanashi.jp
Web: www.yies.pref.yamanashi.jp/eigo/english.htm

Kounov Alexandre
Geology Institute
ETH-Zentrum
Sonneggstrasse 5, 8092, Zurich, Switzerland
Phone: +41 1632 3639
Fax: +41 1632 1080
E-mail: Kunov@eurasia.ethz.ch
Web: www.erdw.ethz.ch

Kowallis, Bart Joseph
Department of Geology
Brigham Young University
Provo, UT 84602, USA
Phone: +1 801 378 2467
Fax: +1 801 378 2265
E.mail: bkowallis@byu.edu; bart_kowallis@byu.edu
Web: geologyindy.byu.edu/faculty/bjk

Krochmal, Michael
Autoscan Systems Pty. Ltd.
P.O. Box 112, Ormond, VIC 3204 Australia
Phone: +61 39 596 8065 /8092
Fax: +61 39 596 8369
E-mail: autoscan@autoscan.com.au
Web: members.ozemail.com.au/~autoscan/index.html

Krummei, Gerhard
Geological Society of Australia Incorporated
Victoria Division
GPO BOX 2355, Melbourne Vic 3001, Australia
Web: www.vic.gsa.org.au

Kumar, Devender
Scientist, Letter Box no. 11
National Geophysical Research Institute (NGRI)
Uppal Road, Hyderabad - 500 007 India
Phone: +91-40-27170141/27174433 extn: 2346/2347
Fax: +91-40-27171564/27170491
E-mail: devender@ngri.res.in, devngri@rediffmail.com

Laken, Garey
Autoscan Systems Pty. Ltd.
P.O. Box 112, Ormond, VIC 3204 Australia
Phone: +61 39 596 8065 /8092
Fax: +61 39 596 8369
E-mail: autoscan@autoscan.com.au
Web: members.ozemail.com.au/~autoscan/index.html

Lal, Nand
Department of Earth Sciences
Kurukshetra University
Kurukshetra 136119, India
Phone: +91 1 744 20410
Fax: +91 1 744 20277

Lange, Jan-Michael
Museum für Mineralogie und Geologie
Staatliche Naturhistorische Sammlungen Dresden
Königsbrücker Landstraße 159, D-01109 Dresden, Germany
Phone: +49 351 892 6403
fax: +49 351 892 6404
E-mail: lange@snsd.de
Web: www.snsd.de

Larsen, Ian
Autoscan Systems Pty. Ltd.
P.O. Box 112, Ormond, VIC 3204 Australia
Phone: +61 39 596 8065 /8092
Fax: +61 39 596 8369
E-mail: autoscan@autoscan.com.au
Web: members.ozemail.com.au/~autoscan/index.html

Laslett, Geoff
CSIRO Mathematical and Information Sciences
Private Bag 10, Clayton South MDC Vic 3169, Australia
Phone: +61 3 9545 8018
Fax: +61 3 9545 8080
E-mail: geoff.laslett@cmis.csiro.au
Web: www.cmis.csiro.au/Geoff.Laslett/index.htm

Lee, Yong I.
School of Earth and Environmental Sciences
Seoul National University, Korea
E-mail: lee2602@plaza.snu.ac.kr
Web: sees.snu.ac.kr/bken/index.html

Lewis, Cherry L.E.
History of Geology Group
The Geological Society of London
Wells Cottage, 21 Fowler Street, Macclesfield, Cheshire SK10 2AN, UK

Phone: +44 1625 260049
Fax: +44 1625 523690
E-mail: clelewis@aol.com
Web: www.geolsoc.org.uk

Lim, Hyoun Soo
School of Earth and Environmental Sciences
Seoul National University, Korea
E-mail: limhs@plaza1.snu.ac.kr
Web: sees.snu.ac.kr/bken/index.html

Link, Katharina
Institut für Mineralogie, Petrologie und Geochemie
Albert-Ludwigs-Universität
Albertstrasse 23b, 79104 Freiburg, Germany
Phone: +49 761 203 6425
Fax: +49 761 203 6396
E-mail: kalink@uni-freiburg.de
Web: www.uni-freiburg.de/minpet/welcome.html

Linn, Jon
Technical Applications and Geographic Information Systems Unit
West Virginia Department of Environmental Protection
10 McJunkin Rd, Nitro, WV 25143, USA
Phone: +1 304 759 0519
Fax: +1 304 759 0565
E-mail: jlinn@crimson.osmre.gov
Web: www.dep.state.wv.us/ito/tagis.html

Lisker, Frank
Fachbereich 5, Geowissenschaften
Universität Bremen
Postfach 330440, D-28334 Bremen, Germany
Phone: +49 421 218 3994
Fax: +49 421 218 3993
E-mail: flisker@uni-bremen.de
Web: www.palmod.uni-bremen.de/FB5/agpolar/englisch/index1.htm

Liu, Shunsheng
Changsha Institute of Geotectonics
Academia Sinica
Changsha 410013, Hunan Province, PR China
Phone: +86 731 885 9165
Fax: +86 731 885 9137
E-mail: liuss@ms.csig.ac.cn
Web: www.csig.ac.cn

Lopez, Arturo
Departamento de Estudios del Ambiente
Instituto nacional de investigaciones Nucleares
Apartado Postal 18-1027,México, D.F. 11801, Mexico
E-mail: arturo.lopez@mpi-hd.mpg.de
Web: www.inin.mx

Lorencak, Matevz
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9669 /7675
Fax: +61 3 8344 7761
E-mail: m.lorencak@pgrad.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Lovering, John
School of Earth Sciences
University of Melbourne
66A Molesworth Street, Kew Victoria 3101, Australia
phone: +61 3 9853 2868
Fax: +61 3 9853 3640
E-mail: fitzlove@alphalink.com.au

Lutz, Timothy M.
Department of Geology and Astronomy
West Chester University
West Chester, PA 19383, USA
Phone: +1 610 436 3498
E-mail: tlutz@wcupa.edu
Web: geology.wcupa.edu

Märk, E.
Hohrere technische Bundeslehr- und Versuchsanstalt
Anichstrasse 26-28
A-6020 Innsbruck, Austria

Märk, T. D.
Abteilung für Kernphysik und Gaselektronik
Institut für Experimentalphysik
Leopold Franzens Universität
A-6020 Innsbruck, Austria

Mahon, Keith I.
Exxon Production Research Company
P.O. Box 2189, Houston, TX 77252-2189, USA
Phone: +1 713 965 7036
Fax: +1 713 965 2779
E-mail: kmahon@dialaccess.com

Maksaev, Victor
Department of Geology
University of Chile
Casilla 13518, Correo 21, Santiago de Chile
Phone: +56 2 678 4112
Fax: +56 2 696 3050
E-mail: vmaksaev@tamarugo.cec.uchile.cl
Web: www.cec.uchile.cl/~geologia

Marshallsea, Susan
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.

Maze, Will B.
Exxon Production Research
P.O. Box 2189, Houston, TX 77252-2189, USA
Phone: +1 713 965 7223
Fax: +1 713 965 7951

McCorkell, Robert
CANMET, Mineral Technology
Energy, Mines and Resources
555 Booth Street, Ottawa, Ontario K1A 0G1, Canada

McCulloh, Thane H.
7136 Aberdeen, Dallas, TX 75230, USA
Phone: +1 214 691 6809

McInnes, Brent
CSIRO Exploration and Mining
P.O. Box 136, North Ryde NSW 1670, Australia
Phone: +61 2 9490 8597
Fax: +61 2 9490 8921
E-mail: b.mcinnes@dem.csiro.au
Web: www.dem.csiro.au

Miller, Elizabeth L.
Department of Geology and Environmental Sciences
Stanford University
Stanford, CA 94305-2115, USA
Phone: +1 650 723 1149
E-mail: miller@pangea.stanford.edu
Web: pangea.Stanford.EDU/structure/projects/fission_track.html

Miller, Jack A.
Department of Earth Sciences
University of Cambridge
Downing Street, Cambridge CB2 3EQ, UK
Phone: +44 1223 337 184
Fax: +44 1223 333 450
E-mail: jam2@esc.cam.ac.uk
Web : www.esc.cam.ac.uk

Moore, Marilyn
Geotrack International Pty. Ltd.
37 Melville Road, West Brunswick, VIC 3055, Australia
Phone: +61 3 9380 1077
Fax: +61 3 9380 1477
E-mail: mail@geotrack.com.au
Web: www.geotrack.com.au

Mora, Jorge
Escuela de Geologia, Minas y Geofisica
Facultad de Ingenieria
Universidad Central de Venezuela
Caracas, Venezuela
Web: www.ing.ucv.ve/depgeo.htm

Moser, Franz
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2975 240
Fax: +49 7071 5059
E-mail: franz.moser@uni-tuebingen.de
Web: homepages.uni-tuebingen.de/franz.moser

Most, Thomas
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2975 240
Fax: +49 7071 5059
E-mail: thomas.most@uni-tuebingen.de
Web: homepages.uni-tuebingen.de/thomas.most

Murakami, Masaki
Department of Geology and Mineralogy
Division of Earth and Planetary Sciences
Graduate School of Science, Kyoto University
Sakyo-ku, Kyoto 606-8502, Japan
E-mail: s30x1176@ip.media.kyoto-u.ac.jp
Web: terra.kueps.kyoto-u.ac.jp/index_eg.html

Murphy, John M.
Department of Geology and Geophysics
University of Wyoming
P.O. Box 3006, Laramie WY 82071, USA
Phone: +1 307 766 5435
Fax: +1 307 766 6679
E-mail: geojm@uwyo.edu
Web: home.gg.uwyo.edu

Murrell, Glen
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Phone: +31 20 444 7310
Fax:. +31 20 646 2457
E-mail: murg@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Murtazaev, Khatam
General Physics Sub-Faculty
Khujand State University,
735700, Khujand, Tajikistan
Phone: (+992 3422) 53212, 23775
E-mail: murtaza@hotam.khj.td.silk.org
murtaza@khj.tajik.net

Naeser, Chuck
Naeser, Nancy
U.S. Geological Survey
926a National Center, Reston, VA 20192, USA
Phone: +1 703 648 6964 (C)
Phone: +1 703 648 5328 (N)
Fax: +1 703 648 6953
E-mail: cnaeser@usgs.gov (C)
nnaeser@usgs.gov (N)
Web:greenwood.cr.usgs.gov/capabilities/gronemtrac/geochron/fission/contacts.html

Neumann, Reinhard
Materials Research
Gesellschaft für Schwerionenforschung
Planckstrasse 1, D-64291 Darmstadt, Germany
Phone: +49 6159 71 2172
Fax: +49 6159 71 3266
E-mail: r.neumann@gsi.de
Web: www-wnt.gsi.de/mr

Nishimura, Susumu
Department of Geology and Mineralogy
Division of Earth and Planetary Sciences
Graduate School of Science, Kyoto University
Sakyo-ku, Kyoto 606-8502, Japan
Phone: +81 75 753 4150
Fax: +81 75 753 4189
Web: terra.kueps.kyoto-u.ac.jp/index_eg.html

Noble, Wayne P.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9788 /7675
Fax: +61 3 8344 7761
E-mail: w.noble@earthsci.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Oddone, Massimo
Dipartimento di Chimica Generale
Università degli Studi di Pavia
Viale Taramelli, 12, 27100 Pavia, Italy
Phone: +39 382 507 334
Fax +39 382.528 544
E-mail: oddone@ipv36.unipv.it
Web: chifis1.unipv.it/genchem.htm

Ohira, Hiroto
Department of Geoscience
Shimane University
1060 Nishikawatsu, Matsue 690-8504, Japan
Phone: +81 852 32 6465
Fax: +81 852 32 6469
E-mail : ohira@riko.shimane-u.ac.jp
Web: terra.riko.shimane-u.ac.jp

Olesch, Martin
Fachbereich 5, Geowissenschaften
Universität Bremen
Postfach 330440, D-28334 Bremen, Germany
Phone: +49 421 218 3940
Fax: +49 421 218 3993
E-mail: olesch@geopol.uni-bremen.de
Web:www.palmod.unibremen.de/FB5/agpolar/englisch/index1.htm

Omar, Gomaa I.
Department of Earth and Environmental Science
University of Pennsylvania
240 South 33rd Street, Philadelphia, PA 19104-6316, USA
Phone: +1 215 898 6908
Fax: +1 215 898 0964
E-mail: gomar@sas.upenn.edu
Web: www.sas.upenn.edu/earth/omar.html

Ono, Masako
Department of Earth and Planetary Materials Science
Faculty of Science, Hokkaido University
Kyoyo-chigaku, N17-W8, Kita-ku, Sapporo, 060, Japan
Phone: +81 11 716 2111 ext. 5309
Fax: +81 11 736 3290
E-mail: mo@epms.hokudai.ac.jp
Web: www.ep.sci.hokudai.ac.jp/epms/index_e.htm

Osadetz, Kirk
Energy and Environment
Geological Survey of Canada
3303-33rd St., NW Calgary, Alberta, T2L 2A7, Canada
Phone: +1 403 292 7022
Fax: +1 403 292 7159
E-mail: kosadetz@nrcan.gc.ca
Web: www.nrcan.gc.ca/gsc/calgary/index_e.html

O'Sullivan, Paul
Apatite to Zircon, Inc.
1521 Pine Cone Road, Moscow, ID 83843, USA
Phone: +1 208 892-1493
Fax: +1 208 875-8881
E-mail: OSullivan@apatite.com
Web: http://www.apatite.com

Pagel, Maurice
Laboratoire de Géochimie
Faculté des sciences d'Orsay
Université Paris Sud XI
Bâtiment 504, F-91405 Orsay-Cedex, France
Phone: +33 1 6915 6755
Fax: +33 1 6815 4882
E-mail: pagel@geol.u-psud.fr
Web: geosciences.geol.u-psud.fr/recherch/weblab/pagel.html

Pagliuca, Renato
Dipartimento di Scienze della Terra
Università degli Studi di Pavia
Via Ferrata 1, 27100 Pavia, Italy
Phone: +39 382 505 839
Fax: +39 382 505 890
E-mail: ullayu@tin.it
Web: manhattan.unipv.it

Pain, Colin
Cooperative Research Centre for Landscape Environments & Mineral Exploration (CRC LEME)
GPO Box 378
Canberra, ACT 2601, Australia
Tel: (02) 6249 9469 - International: 61 2 6249 9469
Fax: (02) 6249 9930 - International: 61 2 6249 9930
Mob: 0409 225 008 - International: 61 0409 225 008
Email: Colin.Pain@ga.gov.au
Web: http://leme.anu.edu.au/staff/pain.html

Pan , Yun
Department of Geological Sciences
State University of New York at Albany
DEAS - ES351, Albany, NY 12222, USA
E-mail: ypan@spsu.edu; ynatl@bellsouth.net

Parand, Simon
Geological Survey of Iran
Meraj Blvd., Azadi Sq., P.O. Box 13185-1494 Tehran, Iran
Fax: +98 21 600 9338
Web: www.gsi-iran.org

Paul, Tracy A.
Department of Chemistry
Arizona State University
Tempe, AZ 85287-1404, USA
E-mail: agtxp@asu.edu

Pengji, Zhai
Institute of High Energy Physics
Academia Sinica
P.O. Box 2732, Beijing 100080, PR China
Web: www.ihepa.ac.cn

Perelygin, Vladimir P.
Flerov Laboratory of Nuclear Reactions
Joint Institute for Nuclear Research
Post Office Box 79, 101 000 Moscow, Russia
Phone: +7 096 216 2102
Fax: +7 096 216 5955
E-mail: pergam@cv.jinr.ru
Web: sungraph.jinr.dubna.su/cap/index.html

Perez De Armas, Jaime G.
Department of Earth Science
Rice University
6100 Main St, Houston, TX 77005-1892, USA
Phone: +1 713 348 4880
Fax: +1 713 348 5214
E-mail: jaime@rice.edu
Web: terra.rice.edu

Petford, Nick
Centre for Earth and Environmental Science Research
School of Earth Sciences and Geography
Kingston University
Penrhyn Road, Kingston on Thames, Surrey, KT1 2EE, UK
Phone: +44 208 547 7518
Fax: +44 208 547 7497
E-mail: n.pet@kingston.ac.uk
Web: www.king.ac.uk/geog

Poupeau, Gerard R.
Centre de Recherche Physique Appliquée à l'Archéologie
Université Michel de Montaigne Bordeaux III
Maison de l'Archéologie, Esplanade des Antilles, 33607 Pessac, France
Phone: +33 5 5712 4547
Fax: +33 5 5712 4553
E-mail: gerard.Poupeau@montaigne.u-bordeaux.fr
Web: www.montaigne.u-bordeaux.fr/Rech/page12.html

Prashad, Rajinder
Fission Track Laboratory
Keshav Deva Malaviya Institute of Petroleum Exploration
Oil and Natural Gas Corporation
Dehradun, India
Web: www.ongcindia.com/r&d/oiis/kdmipe

Price, P. Buford
Department of Physics
University of California
Berkeley, CA 94720, USA
Phone: +1 510 642 4982
Fax: +1 510 643 8497
E-mail: bprice@uclink4.berkeley.edu; price@lbl.qov
Web: physics.berkeley.edu/research/price

Puch, Thomas
Institut für Geologie und Paläontologie
Karl-Franzens Universität
Heinrichstraße 26, A-8010 Graz, Austria

Qvale, Henning
Institute for Energy Technology
P.O. Box 40, N 2007, Kjeller, Norway
Phone: +47 6380 6122
Fax: +47 6381 5553
E-mail: hq@varney.ife.no
Web: www.ife.no/english

Raab, Matthias
Göttinger Zentrum für Geowissenschaften
Georg-August-Universität Göttingen
Goldschmidtstrasse 3, D-37077 Göttingen, Germany
Phone: +49 551 399 707
Fax: +49 551 399 700
E-mail: mraab@gwdg.de

Meinert Rahn
HSK
5232 Villigen-HSK
Switzerland
phone: +41 56 310 39 03
fax: +41 56 310 49 03
E-mail: rahn@hsk.psi.ch

Ramachandran, T.V.
Environmental Assessment Division
Bhabha Atomic Research Center
Mumbai 400 085, India
E-mail : tvr@apsara.barc.ernet.in

Ratschbacher, Lothar
Tektonophysik - Institut für Geologie
Technische Universität Bergakademie Freiberg
Bernhard-von-Cottastrasse 2, D-09596 Freiberg, Germany
Phone: +49 3731 393 758
Fax: +49 3731 393 295
E-mail: lothar@geo.tu-freiberg.de
Web: www.geo.tu-freiberg.de/tektono

Ravenhurst, Casey E.
Department of Geology and Geography
University of Massachusetts
Amherst, MA 01003, USA
E-mail: cravenhu@geo.umass.edu
Web: www.geo.umass.edu

Rawling, Tim
Australian Crustal Research Centre
Monash University
Wellington Road, Clayton VIC 3800, Australia
Fax: +61 3 9905 5062
E-mail: timr@mail.earth.monash.edu.au
Web: www.earth.monash.edu.au/agcrc/people/tim_rawling

Raza, Asaf
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9977 /7675
Fax: +61 3 8344 7761
E-mail: asaf@unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Rebetez, Michel
Laboratoire de Microanalyses Nucléaires
U.F.R. des Sciences et des Techniques
Université de Franche-Comté
16 Route de Gray, 25030 Besancon Cedex, France
Phone: +33 3 81 66 65 01
Fax: +33 3 81 66 65 22
E-mail: michel.rebetez@univ-fcomte.fr
Web: www.univ-fcomte.fr

Redfield, Thomas F.
Technical Exploration Services
5 Frost Court, Mill Valley, CA 94941, USA

Reinecker, John
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Fax: +49 7071 5059
E-mail: john.reinecker@gpi.uni-karlsruhe.de
Web: www.uni-tuebingen.de/geo/gpi

Reiners, Peter
Department of Geology and Geophysics
Yale University
P.O. Box 208109, New Haven, CT 06520-8109, USA
Phone: +1 203 432-3761
E-mail: peter.reiners@yale.edu
Web: www.geology.yale.edu/~reiners/

Rielly, Jane
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 7673 /7675
Fax: +61 3 8344 7761
E-mail: j.rielly@pgrad.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au

Riley, Brook
Department of Geological Sciences
University of Texas at Austin
Austin, TX 78712, USA
Fax: +1 512 471 9425
E-mail: bcdr@mail.utexas.edu
Web: www.geo.utexas.edu

Ring, Uwe
Institut für Geowissenschaften
Johannes Gutenberg Universität
Becherweg 21, D-55099 Mainz, Germany
Phone: +49 6131 392 2164
Fax: +49 61 31 392 4372
E-mail: ring@mail.uni-mainz.de
Web: www.uni-mainz.de/~ring

Roden-Tice, Mary, K.
Center for Earth and Environmental Science
State University of New York Plattsburgh
101 Broad Street, Plattsburgh, NY 12901, USA
Phone: +1 518 564 2019
Fax: +1 518 564 3152
E-mail: mary.rodentice@plattsburgh.edu
Web: faculty.plattsburgh.edu/mary.rodentice

Ruiz, Geoffrey
Isotope Geochemistry
Faculty of Earth and Life Sciences
Vrije University Amsterdam
De Boelelaan 1085
1081 HV AMSTERDAM, The Netherlands
Phone: +31-(0)20-44-47-326
Mobile: +31-(0)6-11-02-81-54
Fax: +31-(0)20-64-62-457
E-mail: ruig@geo.vu.nl

Saini, Hari Singh
Department of Radiometric Dating
Birbal Sahni Institute of Palaeobotany
53 University Road, Lucknow 226 007, India
Web: www.bsip-india.org

Sandhu, Amanjit
Environmental Sciences, Physical Sciences Division
University of Toronto
Scarborough Campus, 1265 Military Trail, Scarborough,
ON M1C 1A4, Canada
Fax: +1 416 287 7279
E-mail: amanjitsandhu@usa.net
Web: glacier.scar.utoronto.ca

Schäfer, Thorsten
Fachbereich 5, Geowissenschaften
Universität Bremen
Postfach 330440, D-28334 Bremen, Germany
Phone: +49 421 218 3994
Fax: +49 421 218 3993
E-mail: postgrad@geopol.unibremen.de
Web: www.palmod.uni-bremen.de/FB5/agpolar/englisch/index1.htm

Schierl, Heimo
Institut für Geologie und Paläontologie
Universitat Salzburg
Hellbrunnerstraße 34/III, A-5020 Salzburg, Austria
Phone: +43 662 8044 5437
Fax: +43 662 8044 621
Web: www.sbg.ac.at/gew

Schuller, Volker
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2975 240
Fax: +49 7071 5059
E-mail: volker.schuller@uni-tuebingen.de

Web: www.uni-tuebingen.de/geo/gpi/ag-frisch/mitarbeiter/schuller

Schwab, Martina
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2974 703
Fax: +49 7071 5059
E-mail: martina.schwab@uni-tuebingen.de
Web: www.uni-tuebingen.de/geo/gpi/index.html

Schwabe, Erika
Heroy Geology Laboratory
Department of Earth Sciences
Syracuse University
Syracuse, New York 13244-1070 USA
Phone: +1 315 443 3828
Fax: +1 315 443 3363
E-mail: eschwabe@syr.edu
Web: su-thermochronology.syr.edu

Sekyra, Gerd
Institut für Geologie und Paläontologie
Universitat Salzburg
Hellbrunnerstraße 34/III, A-5020 Salzburg, Austria
Phone: +43 662 8044 5437
Fax: +43 662 8044 621
Web: www.sbg.ac.at/gew

Sélo, Madeleine
Laboratoire de Minéralogie
Museum d'Histoire Naturelle
61 Rue Buffon, 75231 Paris Cedex 05, France
Fax : +33 1 40 79 35 24
E-mail: selo@mnhn.fr
Web: www.mnhn.fr/mnhn/mineralogie

Seward, Diane
Institute of Geology, Department of Earth Sciences
ETH-Zentrum
Sonneggstrasse 5, 8092, Zürich, Switzerland
Phone: +41 1 632 3675
Fax: +41 1 632 1080
E-mail: diane.seward@erdw.ethz.ch; diane@erdw.ethz.ch
Web: www.erdw.ethz.ch

Shane, Phil
School of Environmental and Marine Sciences
University of Auckland
Tamaki, Private Bag 92019, Auckland, New Zealand
Phone: +64 9 373 7599 ext. 6821
Fax: +64 9 373 7042
Web: sems.auckland.ac.nz

Siddall, Ruth
Fission Track Research Group
Department of Earth Sciences
University College London
London WC1E-6B, UK
Phone: +44 20 7679 2758
Fax: +44 20 7813 2802
E-mail: r.siddall@ucl.ac.uk
Web:www.ucl.ac.uk/geolsci/research/fissiontrack/Personal/Ruthpage/RS.html

Singh, Gurinder
Department of Physics
Guru Nanak Dev University
Amritsar 143005, India

Sobel, Edward
Institut für Geowissenschaften
Universität Potsdam
Postfach 60 15 53, D-14415 Potsdam, Germany
Phone: +49 331 977 5403
Fax: +49 331 977 5060
E-mail: sobel@rz.uni-potsdam.de
Web: wwwgeo.uni-potsdam.de/Personal/personal.html

Sohrabi, Mehdi
Radiation Protection Department
Atomic Energy Organization of Iran
P.O. Box 14155-4494, Tehran, Iran
Fax: +98 21 690 6095
Email: aeoicom@dci.iran.com

Soloviev, Alexie
Institute of the Lithosphere of Marginal and Inland Seas
Russian Academy of Sciences
Staromonetny per. 22, Moscow, 109180, Russia
Web: isir.ras.ru/en

Sorkhabi, Rasoul B.
Geology and Geochemistry Section
Technology Research Center
Japan National Oil Corporation
2-2 Hamada, 1-Chome,Mihama-ku, chiba-shi 261-0025, Japan
Phone: +81 43 276 4420
Fax: +81 43 276 4062
E-mail: rasoul@jnoc.go.jp
Web: www.jnoc.go.jp/english

Spiegel, Cornelia
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia

Spikings, Richard
Section des Sciences de la Terre
University of Geneva
13 Rue des Maraichers
1211 Geneva 4, Switzerland
Phone: Lab +41 22 702 6639
Office +41 22 702 6826
Fax: +41 22 320 5732
E-mail: Richard.Spikings@terre.unige.ch

Stapel, Gerco
Department of Isotope Geochemistry
Faculty of Earth sciences
Vrije Universiteit Amsterdam
De Boelelaan 1085, Amsterdam 1081 HV, The Netherlands
Fax:. +31 20 646 2457
E-mail: stag@geo.vu.nl
Web: www.geo.vu.nl/~isotopen

Steckler, Michael S.
Lamont-Doherty Earth Observatory
Columbia University
Palisades, NY 10964, USA
Phone: +1 914 365 8479
Fax: +1 914 365 8179
E-mail: steckler@ldeo.columbia.edu
Web: www.ldeo.columbia.edu

Stiberg, Jan-Petter
Fission and Vision AS
Ammerudgrenda 271, 0960 Oslo, Norway
E-mail: fission@online.no

Stockli, Daniel
Department of Geology
University of Kansas
1475 Jayhawk Boulevard
120 Lindley Hall
Lawrence, KS 66045-7613
E-mail: stockli@ku.edu
(785) 864-4995 (Lindley office)
(785) 864-7714 (IGL office)
(785) 864-7709 (lab)
(785) 864-5276 (fax)
Web: http://www.people.ku.edu/~stockli/

Stockmal, Glen S.
Institute of Sedimentography and Petroleum Geology
Geological Survey of Canada
3303-33rd Street, N.W., Calgary, Alberta T2L 2A7, Canada
Phone: +1 403 292 7173
Fax: +1 403 292 5377
E-mail: gstockma@nrcan.gc.ca
Web: www.nrcan.gc.ca/gsc/calgary/staff/stockmal_e.html

Stone, John
Department of Geological Sciences
University of Washington
P.O. Box 351310, Seattle Washington 98195-1310, USA
Phone: +1 206 685 9514
Fax: +1 206 543 3836
E-mail: stone@geology.washington.edu
Web: www.geology.washington.edu/faculty/stone-bio.html

Storzer, Dieter
Laboratoire de Minéralogie
Museum d'Histoire Naturelle
61 Rue Buffon, 75231 Paris Cedex 05, France
Fax : +33 1 40 79 35 24
E-mail: storzer@mnhn.fr
Web: www.mnhn.fr/mnhn/mineralogie

Stump, Edmund
Department of Geological Sciences
Arizona State University
Box 871404, Tempe, AZ 85287-1404, USA
Phone: +1 480 965 3971
Fax: +1 480 965 8102
E-mail: ed.stump@asu.edu
Web: geology.asu.edu/people/faculty/stump/index.html

Stüwe, Kurt
Institut für Geologie und Paläontologie
Karl-Franzens Universität
Heinrichstraße 26, A-8010 Graz, Austria
Phone: +43 316 380 5682
Fax: +43 316 380 9870
E-mail: kurt.stuewe@kfunigraz.ac.at
Web: wegener.kfunigraz.ac.at

Sumii, Tomoaki
Geochemistry Department
Geological Survey of Japan
1-1-3 Higashi, Tsukuba, 305, Japan
Phone: +81 298 54 3558
Fax: +81 298 54 3533
E-mail: sumii@gsj.go.jp
Web: www.aist.go.jp/gsj/dgc/chemtop.htm

Summerfield, Michael A.
Department of Geography
School of Earth Sciences
University of Edinburgh
Edinburgh EH8 9XP, UK
Phone: +44 131 650 2519
Fax: +44 131 650 2524
E-mail: mas@geo.ed.ac.uk
Web: www.geo.ed.ac.uk/home/geoghome.html

Suzuki, Masao
Rikkyo University
34-1 Nishi Ikebukuro, 3-Chome, Toshima-ku,
Tokyo 171, Japan
Web: www.rikkyo.ne.jp/~koho/englishpages.htm

Suzuki, Tatsuo
Department of Geology
Faculty of Education, Kagoshima University
Korimoto 1-20-6, Kagoshima 890-0065, Japan
Phone: +81 99 285 7807
Fax: +81 99 285 7807
E-mail: t_suzuki@edu.kagoshima-u.ac.jp
Web: www.edu.kagoshima-u.ac.jp/english.html

Tagami, Takahiro
Department of Geology and Mineralogy
Kyoto University
Kitashirakawa Oiwakecho, Sakyo-ku, Kyoto, 606-8502, Japan
Phone: +81 75 753 4153
Fax: +81 75 753 4189
E-mail: tagami@terra.kueps.kyoto-u.ac.jp
Web: www.kueps.kyoto-u.ac.jp/~tagami/

Talbot, James
K/T GeoServices Inc.
P.O. Box 126, Argyle, TX 76226-0126, USA
Phone: +1 214 403 6342
Fax: +1 940 387 9980
E-mail: james@ktgeo.com
Web: www.ktgeo.com/tCI.html

Tamanyu, Shiro
Geothermal Resources Research Group
Institute for Geo-resources and Environment
National Institute of Advanced Industrial Science and Technology
Central 7, 1-1-1 Higashi, Tsukuba, 305-8567, Japan
Phone: +81 298 61 3941 /3737
Fax: +81 298 61 3717
E-mail: s.tamanyu@aist.go.jp
Web: unit.aist.go.jp/georesenv/English/index.html

Tello Sáenz, Carlos A.
Departamento de Raios Cósmicos e Cronologia
Instituto de Fisica Gleb Wataghin
Universidade Estadual de Campinas
Caixa Postal 6165, CEP 13083-970 UNICAMP, Campinas, SP, Brazil
Phone: +55 19 788 5522
Fax: +55 19 788 5512
E-mail: saenz@ifi.unicamp.br
Web: www.ifi.unicamp.br/~turtelli/www0.htm

Thomson, Stuart
Institut für Geologie, Mineralogie und Geophysik
Fakultät für Geowissenschaften
Ruhr-Universität Bochum
Postfach 102148, D-44721 Bochum, Germany
Phone: +49 234 32 23236
Fax: +49 234 32 14572
E-mail: stuart.n.thomson@ruhr-uni-bochum.de
Web: homepage.ruhr-uni-bochum.de/Stuart.N.Thomson/Index.html

Tingate, Peter
National Centre For Petroleum Geology and Geophysics
Thebarton Campus
University of Adelaide
Adelaide SA 5005, Australia
Phone: +61 8 8303 4296
Fax: +61 8 8303 4345
E-mail: peter.tingate@adelaide.edu.au
Web: www.ncpgg.adelaide.edu.au/staff/peter_tingate.htm

Tonk, Christian
Museum für Mineralogie und Geologie
Staatliche Naturhistorische Sammlungen Dresden
Königsbrücker Landstraße 159, 01109 Dresden, Germany
Phone: +49 351 892 6424
fax: +49 351 892 6404
E-mail: tonk@snsd.de
Web: www.snsd.de

Toro Villegas, Gloria E.
Departamento de Geologia
Escuela de Administración, Finanzas y Tecnologías
Universidad EAFIT
A.A. 3300, Medellin, Colombia
Phone: +57 4 26 60 500 Ext. 352
E-mail: gtoro@eafit.edu.co; gtoro@sigma.eafit.edu.co

Web: www.eafit.edu.co/departamentos/geologia

Trautmann, Christina
Materials Research
Gesellschaft für Schwerionenforschung
Planckstrasse 1, D-64291 Darmstadt, Germany
Phone: +49 6159 71 2716
Fax: +49 6159 71 3266
E-mail: c.trautmann@gsi.de
Web: www-wnt.gsi.de/mr

Trautwein, Britta
Institut für Geologie und Paläontologie
Eberhard Karls Universität Tübingen
Sigwartstrasse 10, D-72076 Tübingen, Germany
Phone: +49 7071 2974 702
Fax: +49 7071 5059
E- mail: britta.trautwein@uni-tuebingen.de
Web: www.uni-tuebingen.de/geo/gpi/ag-frisch/mitarbeiter/trautwein

Van den haute, Peter
Geologisch Instituut
Universiteit Gent
Krijgslaan 281 (S8), B-9000 Gent, Belgium
Phone: +32 9 264 4592
Fax: +32 9 264 4984
E-mail: peter.vandenhaute@rug.ac.be
Web: allserv.rug.ac.be/~fmees/mineralogy.htm

van der Beek, Peter
Labo de Géodynamique des Chaînes Alpines
Observatoire des Sciences de l'Univers Grenoble
Université Joseph Fourier
Maison des Géosciences, BP 53, 38041 Grenoble, France
Phone: +33 476 514 062
Fax: +33 476 514 058
E-mail: pvdbeek@ujf-grenoble.fr
Web: www.univ-savoie.fr/labos/lgca/perso/cherc/pvand/pvand.htm

Van der Wateren, F. M.
Department of Isotope Geochemistry
Faculteit Aardwetenschappen
Vrije Universiteit Amsterdam
De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands
Fax: +31 20 646 2457
Web: www.geo.vu.nl/~isotopen

Vasconcelos, Paulo
Department of Earth Sciences
University of Queensland
St Lucia, Brisbane QLD 4072, Australia
Phone: +61 7 3365 2297
Fax: +61 7 3365 1277
E-mail: p.vasconcelos@earth.uq.edu.au; paulo@bgc.org
Web: www.earth.uq.edu.au

Ventura, Barbara
Fachbereich 5, Geowissenschaften
Universität Bremen
Postfach 330440, D-28334 Bremen, Germany
Phone: +49 421 218 3994
Fax: +49 421 218 3993
E-mail: bventura@geopol.uni-bremen.de
Web:www.palmod.unibremen.de/FB5/agpolar/englisch/index1.htm

Vidal, Olivier
Laboratoire de Géodynamique des Chaînes Alpines
Université Joseph Fourier, Maison des Géosciences
1381 Rue de la Piscine, 38400 St-Martin d'Hères, France
Phone: +33 4 76 63 59 24
Fax : +33 4 76 51 40 58
E-mail : Olivier.Vidal@ujf-grenoble.fr
Web:www.univsavoie.fr/labos/lgca/perso/cherc/ovid/ovid.htm

Viola, Giulio
Dep. of Geological Sciences
University of Cape Town
7701 Rondebosch
South Africa
Phone: 0027-21-6502928
Fax: 0027-21-6503783
E-mail: gviola@geology.uct.ac.za
www:http://www.uct.ac.za/depts/geolsci/giulio/webpage.htm

Virk, H. S.
Department of Physics
Guru Nanak Dev University
Amritsar 143005, India

Wadatsumi, Kiyoshi
Department of Geosciences
Osaka City University
3-3-138 Sugimoto, Sumiyoshi-ku, Osaka 558 Japan
Phone: +81 6 605 2593
Fax: +81 6 605 3071
E-mail: h1602@ocugw.cc.osaka-cu.ac
Web: www.sci.osaka-cu.ac.jp/geos/english/geoeng.html

Wagner, Martin
Institut für Petrographie und Geochimie
Universität Karlsruhe
Kaiserstrasse 12, D-7500 Karlsruhe, Germany

Wagner, Günther A.
Max-Planck-Institut für Kernphysik
Postfach 103980, D-69029 Heidelberg, Germany
Phone: +49 6221 516 289
Fax: +49 6221 516 633
E-mail: g.wagner@mpi-hd.mpg.de
Web: www.mpi-hd.mpg.de/english/index.html

Walgenwitz, Frederic
CSTJF Elf Aquitaine Production
Avenue Larribau, 64018 Pau Cedex, France
E-mail: frederic.walgenwitz@elf-p.fr

Walker, J. Douglas
Department of Geology
University of Kansas
120 Lindley Hall, Lawrence, KS 66045-2969, USA
Phone: +1 785 864 2735
Fax: +1 785 864 5276
E-mail: jdwalker@ukans.edu
Web: www.ukans.edu/~geology

Walker, Robert M.
McDonnell Center for Space Sciences
Physics Department
Washington University
1 Brookings Drive, St. Louis, MO 63130-4899, USA
Phone: +1 314 935 6257
Fax: +1 314 935 4083
E-mail: brw@wuphys.wustl.edu
Web: www.physics.wustl.edu/fac/walker.html

Wallace, Wesley K.
Department of Geology and Geophysics
University of Alaska
Fairbanks, AK 99775-5780, USA
Phone: +1 907 474 5386
Fax: +1 907 474 5163
E-mail: wes.wallace@gi.alaska.edu
Web: www.gi.alaska.edu/tsrg/people/wallace

Walter, Robert
Institute of Human Origins
1288 Ninth Street, Berkely, CA 94709-1211, USA
Phone: +1 510 525 0500
Fax: +1 510 525 0668
E-mail: bwalter@iho.org

Wang, Shicheng
Institute of High Energy Physics
Chinese Academy of Sciences
P.O. Box 2732, Beijing 100080, P.R. China
E-mail: wangshch@ihepa.ac.cn
Web: www.ihep.ac.cn/english/index.htm

Waraich, R. S.
Fission Track Laboratory
Keshav Deva Malaviya Institute of Petroleum Exploration
Oil and Natural Gas Corporation
Dehradun, India
Web: www.ongcindia.com/r&d/oiis/kdmipe

Watanabe, Hiroaki
Department of Earth Sciences
Kanazawa University
Kanazawa, 920-1192, Japan
Fax: +81 76 264 5746
E-mail: hiro741@kenroku.kanazawa-u.ac.jp
Web: earth.s.kanazawa-u.ac.jp/chronology/EnglishPage/indexE.html

Watanabe, Koichiro
Department of Mining
Faculty of Engineering
Kyushu University
36 Hakozaki, Higashi-ku, Fukuoka 812-8581, Japan
Phone: +81 92 642 3634
E-mail: wat@mine.kyushu-u.ac.jp
Web: www.eng.kyushu-u.ac.jp/index-e.html

Weber, Ursula D.
School of Earth Sciences
University of Melbourne
Parkville, Victoria 3010, Australia
Phone: +61 3 8344 9669 /7675
Fax: +61 3 8344 7761
E-mail: u.weber@pgrad.unimelb.edu.au
Web: www.earthsci.unimelb.edu.au/~udw

Westgate, John A.
Environmental Sciences, Physical Sciences Division
University of Toronto
Scarborough Campus, 1265 Military Trail, Scarborough, ON M1C 1A4, Canada
Phone: +1 416 287 7234
Fax: +1 416 287 7279
E-mail: westgate@scar.utoronto.ca
Web: glacier.scar.utoronto.ca

Willet, Sean D.
Department of Geological Sciences
University of Washington
P.O. Box 351310, Seattle Washington 98195-1310, USA
Phone: +1 206 543 8653
Fax: +1 206 543 3836
E-mail: swillett@u.washington.edu
Web: www.geology.washington.edu/~willett

Wu, Qianhong
Changsha Institute of Geotectonics
Academia Sinica
Changsha 410013, Hunan Province, P.R. China
Phone: +86 731 885 9165
Fax: +86 731 885 9137
E-mail: wqh@ms.csig.ac.cn
Web: www.csig.ac.cn

Wyatt, Bruce
Stockdale Prospecting Ltd.
60 Wilson Street, Box 126, South Yarra, Vic 3141 Australia
Fax: +61 8 9378 0020
Email: bruce@spl.oz.au

Xu, Ganqing
Department of Earth Sciences
University of Waikato
Private Bag 3105, Hamilton 2001, New Zealand
Phone: +64 7 838 4024
Fax: +64 7 856 0115
E-mail: xu1@waikato.ac.nz
Web: sci.waikato.ac.nz/cgi-bin/dynapage.pl?pagename=erth

Yamada, Ryuji
Nagaoka Institute of Snow and Ice Studies
National Research Institute for Earth Science and Disaster Prevention
9400082 Suyoshi, Nagaoka, Niigata, Japan
Phone: +81 258 35 7522
Fax: +81 258 35 0020
E-mail: ryamada@nagaoka.bosai.go.jp
Web: www.bosai.go.jp/ad/Eng/division.htm

Yamashita, Tohru
Kyoto Fission-Track Co., Ltd.
44-4 Minamitajiri-cho, Omiya, Kita-ku
Kyoto 603-8832, Japan
Phone: +81-75-493-0684
Fax: +81-75-493-0741
E-mail: kyoto-ft@mb.neweb.ne.jp

Yang, Tsanyao Frank
Department of Geology
National Taiwan University
245 Chou-shan Road, Taipei 106-17, Taiwan
Phone: +886 2 2369 5568
Fax: +886 2 2363 6095
E-mail: tyyang@ccms.ntu.edu.tw
Web: www.gl.ntu.edu.tw/english_mode

Yegingil, Zehra
Physics Department
Cukurova University
P.O. Box 171, 01330 Adana, Turkey
E-mail: zehra@cu.edu.tr
Web: www.cu.edu.tr/fakulteler/fef

Yoshioka, Tetsu
Kyoto Fission-Track Co., Ltd.
44-4 Minamitajiri-cho, Omiya, Kita-ku
Kyoto 603-8832, Japan
Phone: +81-75-493-0684
Fax: +81-75-493-0741
E-mail: kyoto-ft@mb.neweb.ne.jp

Yuan, Wanming
Institute of High Energy Physics
Chinese Academy of Sciences
P.O. Box 2732, Beijing 100080, P.R. China
E-mail: yuanwm@ihepa.ac.cn
Web: www.ihep.ac.cn/english/index.htm

Yuexing, Feng
Department of Earth Sciences
University of Queensland
St Lucia, Brisbane QLD 4072, Australia
Fax: +61 7 3365 1277
E-mail: feng@earthsciences.uq.edu.au
Web: www.earth.uq.edu.au

Zattin, Massimiliano
Dipartimento di Scienze Geologiche
Universita di Bologna
Via Zamboni 67, 40127 Bologna, Italy
Phone: +39 51209 4579
Fax: +39 51209 4522
E-mail: zattin@geomin.unibo.it
Web: www.geomin.unibo.it

Zeitler, Peter K.
Department of Earth and Environmental Sciences
Lehigh University
31 Williams Drive, Bethlehem, PA 18015, USA
Phone: +1 215 758 3671
Fax: +1 215 758 3677
E-mail: peter.zeitler@lehigh.edu

Web: www.ees.lehigh.edu

Zentilli, Marcos
Department of Earth Sciences
Dalhousie University
Halifax, Nova Scotia, B3H 3J5, Canada
Phone: +1 902 494 3873
Fax: +1 902 494 6889
E-mail: marcos.zentilli@dal.ca
Web: meguma.earthsciences.dal.ca/staff/zentilli/zentilli.htm

Zhao, Yunlong
Beijing Geological Research Institute of Nuclear Industry
P.O.Box 9818 Beijing, P.R. China
Fax: +86 010 6491 7143
Web: www.cnnc.cn.net

Zhou, Zuyi
Department of Marine Geology and Geophysics
Tongji University
1239 Siping Road, 200092 Shanghai, China
Phone: +86 21 6598 2358
Fax: +86 21 6502 6278
E-mail: zzydmg@tju.ihep.ac.cn
Web: www.tongji.edu.cn/lib_english/enindex.htm

Zuffa, Gian Gaspare
Dipartimento di Scienze Geologiche
Universita di Bologna
Via Zamboni 67, 40127 Bologna, Italy
Phone: +39 51209 4540
Fax: +39 51209 4522
E-mail: zuffa@geomin.unibo.it
Web: www.geomin.unibo.it

Zwingmann, Horst
CSIRO Petroleum Resources
P.O. Box 136, North Ryde NSW 1670, Australia
Phone: +61 2 9490 8666
Fax: +61 2 9490 8902
E-mail: h.zwingmann@dpr.csiro.au
Web: www.dpr.csiro.au/research/tbe.html

Call for Contributions

The next issue of On Track is scheduled for September 2003 and we are looking for contributions. On Track welcomes contributions of virtually any kind, including scientific articles, news, gossip, job openings, descriptions of new lab techniques, reviews of useful products, ravings about what the other labs are doing wrong, meeting announcements, cartoons and descriptions of what you are doing in your research.

If you would like to contribute, please send the final document no later than **August 30, 2003**. If you intend to submit a substantial article, please let the editor know as soon as possible.

On Track includes a list of recent and forthcoming fission-track papers. If you know of a paper that was published recently or is in press and should appear in the list, please let me know so that it can be added to the list. Also, if you happen to change location due to a change in jobs or finishing off the thesis and graduating, please inform the editor. Thesis abstracts are particularily encouraged!

On Track is also happy to print advertisements. Please contact the editor for advertising rates.

Send contributions to:

Ed Sobel
Institüt für Geowissenschaften,
Universität Potsdam,
Postfach 601553,
D-14415 Potsdam
Germany
Phone: +49 331 977 5403
Fax: +49 331 977 5060
E-mail: sobel@rz.uni-potsdam.de