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### Scientific Software – Publish, Cite, and get Credit for your Code

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#### Abstract Text:

Scientific software takes on an increasingly prominent role in research. In particular in the sciences software has become an indispensable element in the research process. The way we handle software has a significant influence on the quality of research results, their traceability and reproducibility.

In order to strengthen the recognition of scientific results achieved by software and to improve its visibility, the scientific community is actively working on concepts and solutions enabling researchers to publish software, cite it and be credited for it.

For software to be a valuable and citeable contribution to science, the publication of scientific software must meet the quality criteria of the scientific discourse. As with data publication, defined processes and persistent identifiers should be used to make the results of research reproducible. Also, the specific needs of research have to be addressed and joined with experience gained in the field of development of free and open source software. A common understanding of handling scientific software with defined processes must be developed jointly. These processes have to address questions regarding quality assurance, versioning and documentation, traceability, reproducibility and reusability. Furthermore, the archiving of source code and executables, the use of persistent identifiers, and metrics measuring productivity, impact, and recognition have to be addressed.

Especially when looking at software in the context of scientific publications only insufficient solutions exist to date. Even though it is possible to mint DOIs to identify archived source code copies, quality ensured by reviews is not addressed properly. But deserving credit for a software publication requires measures assessing the value of the published software. Subject-specific reviews paired with software-specific expertise would open up new possibilities leveraging interdisciplinarity and the interplay of complementary scientific fields such as geosciences and computer science. Thus software publications and properly arranged reviews would foster the exchange in order to establish best practices from computer science in geosciences and to enhance subject-specific software successively after its original publication.

**Session Selection:** Enabling Science Through Reuse of Data and Free and Open Source Software

**Title:** Scientific Software – Publish, Cite, and get Credit for your Code

**Submitter's E-mail Address:** martin.hammitzsch@gfz-potsdam.de

**Preferred Presentation Format:** Assigned by Program Committee (Oral or Poster)

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