

Volcano Imaging on Montserrat," focuses on this project, its setting in the West Indies, and the ongoing eruption of Soufrière Hills volcano (see [http://www.agu.org/journals/gl/special\\_sections.shtml?collectionCode=CALIPSO2&journalCode=GL](http://www.agu.org/journals/gl/special_sections.shtml?collectionCode=CALIPSO2&journalCode=GL)).

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# MEETING

## Improving Consistency in Laser Ablation Geochronology

**Workshop on Data Handling in LA-ICP-MS U-Th-Pb Geochronology; San Francisco, California, 12–13 December 2009**

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The use of uranium-thorium-lead (U-Th-Pb) laser ablation–inductively coupled plasma mass spectrometry (LA-ICP-MS) geochronology involves rapid analysis of U- and Th-rich accessory minerals. It routinely achieves 1–2% precision for U-Th-Pb dates constituting detrital mineral age spectra and for dating igneous and metamorphic events. The speed and low setup and analysis cost of LA-ICP-MS U-Th-Pb geochronology has led to a proliferation of active laboratories. Tens of thousands of analyses are produced per month, but there is little agreement on how to transform these data into accurate U-Th-Pb dates. Recent interlaboratory blind comparisons of zircon samples indicate that resolvable biases exist among laboratories and the sources of bias are not fully understood. Common protocols of data reduction and reporting are essential for scientists to be able to compare and interpret these data accurately.

Members of the international community met prior to the 2009 AGU Fall Meeting in San Francisco to address these issues. Funded by the U.S. National Science

Foundation (NSF), this collaboration between the Working Group on LA-ICP-MS U-Th-Pb Geochronology of the International Association of Geoanalysts (IAG) and the EARTHTIME and EarthChem communities was attended by 34 scientists from nine countries and multiple geochronological specialties. Attendees sought to compare and contrast the wide array of data reduction software currently used, agree on a common data reduction strategy and reporting protocol, and discuss funding agency-driven initiatives to create community databases for the wealth of data produced.

A major goal of the workshop was to better understand the variable intercomparability of results among laboratories. Differences are due both to the utilization of a wide range of instruments with varying analytical capabilities and to the use of in-house software packages with proprietary data reduction strategies. Participants distilled the common elements of their approaches into accepted algorithms and agreed upon which uncertainties should be propagated and reported.

Ten U-Th-Pb data processing packages were demonstrated during an evening

session. Comparing and contrasting user interfaces and data reduction approaches provided the software authors in attendance with information on how to improve their packages. Operator subjectivity while conditioning input data was found to produce significant differences in output dates, even when using the same software package.

A community-supported system for long-term digital archiving of LA-ICP-MS geochronology data was introduced by NSF-funded EarthChem colleagues at the meeting as a model for an international aggregation of databases accessible to the Earth science community. Control of quality for data entered into databases, as well as their use in interpretations, was recognized as a key requirement.

A summary document of discussions and agreed-upon actions from the workshop can be viewed along with the community Web forum now established at <http://cirdles.org/>. This forum will be used to host debate on some of the key topics and inform the LA-ICP-MS U-Th-Pb community and other interested researchers of current and forthcoming activities, how to participate in some of the required experimental activities identified, and the likely timing of future workshops.

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