THIS ISSUE

This issue on cosmogenic nuclides illustrates a frontier area that is fast moving thanks to improvements in analytical instrumentation. It is interesting to see that theoretical developments in particle physics have found applications in our effort to understand today's landscapes. And I can only salute the technological prowess needed to measure these rare nuclides—one atom in a million billion—as laid out in the Toolkit article. Guest editors Friedhelm von Blanckenburg and Jane Willenbring, together with the cast of authors they assembled, chose to illustrate how cosmogenic nuclides can help us understand Earth-surface processes.

2013 IMPACT FACTOR = 4.5

*Element*s' impact factor climbed from 3.156 in 2012 to 4.5 in 2013. As a reminder the 2013 impact factor measures the number of citations articles published in 2011 and 2012 received during 2013. Thus, *Elements*' articles are well cited, oftentimes in journals outside the mineralogy–geochemistry –petrology community. The 335 articles published in *Elements* up to the end of 2013 received 1555 citations in 2013, giving an average of 4.6 citations per article.

The issues that have been most cited since the time of publication are:

V3n1 – Zircon (534 citations up to June 2014)
v2n2 – Arsenic (368)
V4n5 – CO_2 Sequestration (275)
V1n5 – Large Igneous Provinces (270)
V2n6 – The Nuclear Fuel Cycle (240)

ERRATUM

In the August issue of *Elements*, in the article by Larter and Head [Larter SR, Head IM (2014) Oil sands and heavy oil: Origin and exploitation, Elements 10: 277-284], the cost of the Manhattan Project should have read US$22 billion instead of US$22 million (page 282, right column, line 14). This error has been corrected in the online version.

In the same article, some symbols in Figure 1a did not transfer when the files were transmitted to the printer. Please refer to the online version of the article at www.elementsmagazine.org.

ELEMENTS AT IMA

Kevin Murphy (right) with BSc honours geology students from the University of Limpopo. From left to right, Mr M. M. Langa, Ms K. A. Ramakadi, Mr L. F. Ledwaba, Ms P. M. Masapa, Mr M. E. Mogale. PHOTO CREDIT: JOHN DUNLEVEY

Many thanks go to Kevin Murphy who oversaw *Elements*' presence at the recent IMA meeting in Johannesburg, South Africa, and to everyone who spent time at the booth. Kevin reports the following from his experience:

"The *Elements* societies' booth at IMA was, as the name suggests, a joint affair and staffed by a range of representatives from several of the societies involved. One of the good things about the joint effort was that there was much of interest to attract delegates to the booth. A large selection of back issues of *Elements* on the table prompted lots of comments, from "oooh, that's my favourite one" to "I'd really like to get this magazine for myself." Also on display were sample copies of *Geochemical Perspectives*, *Mineralogical Magazine*, *Clay Minerals*, *Clays and Clay Minerals*, the CMS Workshop Lecture Series, the EMU Notes in Mineralogy series and the Reviews in Mineralogy & Geochemistry series. The booth was busy throughout the five days and especially so at break times. *Elements* representatives visited all of the other display stands to talk about possible advertising in *Elements* and to thank those who already support our magazine by doing so. At the end of the conference, left-over display material was donated to the relatively new University of Limpopo – they have gone to a good home."

Pierrette Tremblay, Executive Editor

EDITORIAL *Cont'd from page 323*

For Earth scientists, particularly those investigating questions in field settings, modern or ancient events can never be identically repeated, much less replicated. Whether one researches long-term processes or discrete events, such as storms, earthquakes, and eruptions, the Earth does not comply! Thus, true replication cannot be achieved. Our approach must be to collect data using well-designed protocols that include sufficient replications for meaningful statistical analysis and a detailed log of accompanying observations.

While there is no single way to conduct an experiment, a good place to begin is a thoughtful assessment of whether a research question should be tackled with an exploratory or hypothesis-based approach. Earth environments and the systems that we study are so complex that there always seem to be yet-unrecognized variables. Thus, I have come to think that much of what we do in the Earth sciences is exploratory, despite our best intentions to strictly test hypotheses. By accepting the limitations that each type of research can yield, we begin with a stronger framework for interpreting and predicting without overstatement.

At the end of the day, this must be a community-wide endeavor. The responsibility is shared governance with other researchers, reviewers, funding agencies, editors, and publishers. This is already underway. For example, journal editors are contributing to reproducibility by allowing more space for authors to describe their methods, by providing online repositories, and by selecting articles that provide an unusually excellent treatment of the data (Russell 2013).

The benefits are many. First, we must invest limited time and research money with utmost care. Second, the public nature of the reproducibility discussion affirms the strength of our scientific system because it is there for all to see. It upholds the validity and legitimacy of the scientific method. This is particularly important during an era when scientific findings and recommendations are sometimes treated with cynicism. Iron-clad data collection, replication, error analysis, and documentation are critical. We must be mindful when making claims of findings and their implications. In the long run, our diligence will build, not erode, public confidence.

Patricia M. Dove, Virginia Tech
Principal Editor

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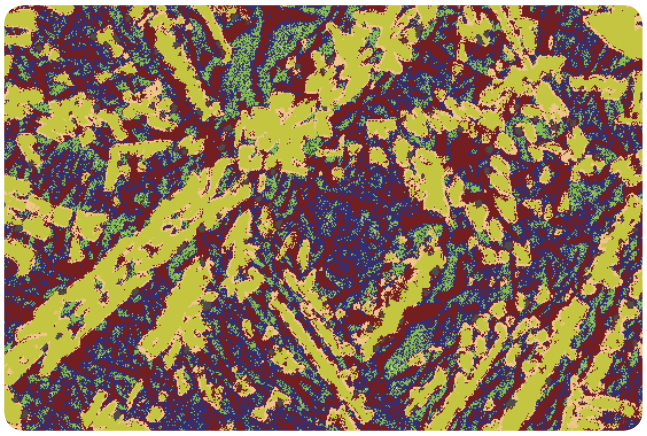

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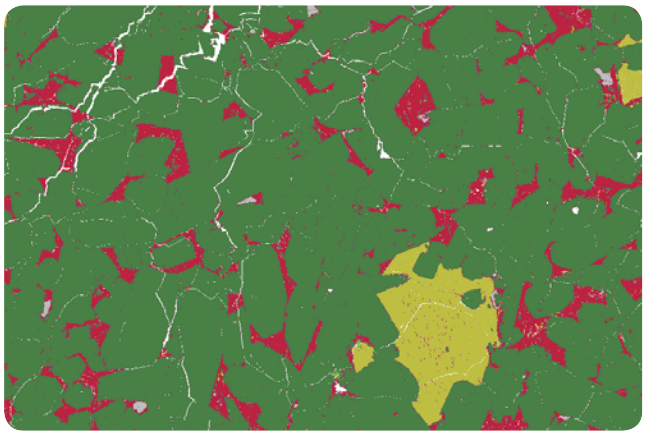

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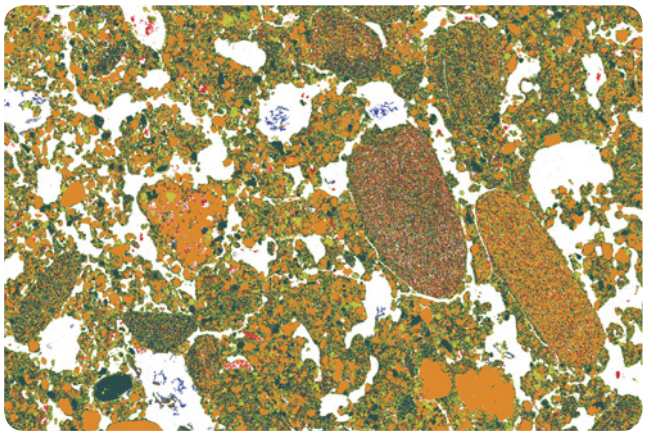
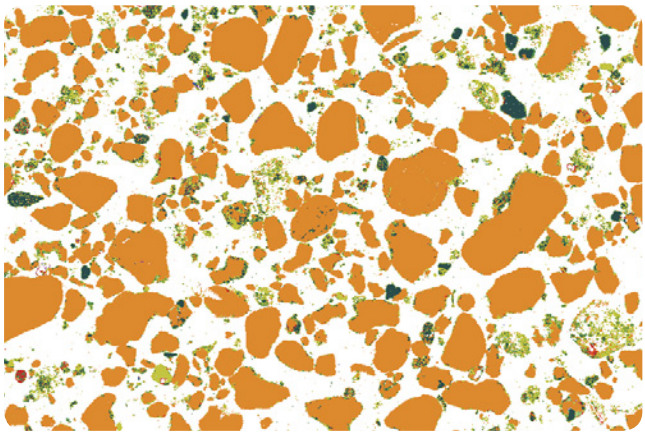


Earth



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