Geophysical Research Abstracts
Vol. 21, EGU2019-16776, 2019
EGU General Assembly 2019

Establishing quality control criteria for stable isotope measurement results

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In many applications and scientific studies, stable isotope measurement results obtained in different laboratories and in different years need to be compared and different data sets combined. Analytical data have to be of high quality and data should be fit for purpose. For variety of analytical methods, metrological institutes work on developing advanced method validation procedures and related approaches. However, university and research laboratories making stable isotope measurements are typically not in a position to perform a comprehensive method validation, establish formal Quality System and be accredited. It was recognized that simple and robust approaches and recommendations for estimating quality of measurement results are currently needed [1].
We suggest that simple, clear and understandable approaches and performance criteria to be developed and established. Simplified uncertainty estimation is one of critical steps. At the meeting we will discuss major components of uncertainty and evaluation of combined uncertainty, how to estimate bias(es) and evaluate overall performance as based on available reference materials used as quality control samples. Simplified flow-chart (what to do, step by step) will be presented.

References:
[1] IAEA, 2016: Report of Technical Meeting on the Development of IAEA Stable Isotope Reference Products, 21-25 November 2016, IAEA, Vienna, Austria. The meeting “Summary and recommendations” are available at Rapid Communications in Mass spectrometry, 32(10), 827-830; full report available at:
https://nucleus.iaea.org/rpst/referenceproducts/Analytical_Methods/Stable_Isotope_Reference_Laboratory/StabIso_TM_REPORT_2016.pdf