



## **IsoNose - Isotopic Tools as Novel Sensors of Earth Surfaces Resources – A new Marie Curie Initial Training Network**

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The Marie Curie Initial Training Network »Isotopic Tools as Novel Sensors of Earth Surfaces Resources – IsoNose« is an alliance of eight international partners and five associated partners from science and industry. The project is coordinated at the Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences and will run until February 2018.

In the last 15 years advances in novel mass-spectrometric methods have opened opportunities to identify “isotopic fingerprints” of virtually all metals and to make use of the complete information contained in these fingerprints. The understanding developed with these new tools will ultimately guide the exploitation of Earth surface environments. However, progress in bringing these methods to end-users depends on a multi transfer of knowledge between (1) isotope Geochemistry and Microbiology, Environmental Sciences (2), Economic Geology and (3) instrument developers and users in the development of user-friendly and new mass spectrometric methods.

IsoNose will focus on three major Earth surface resources: soil, water and metals. These resources are currently being exploited to an unprecedented extent and their efficient management is essential for future sustainable development. Novel stable isotope techniques will disclose the processes generating (e.g. weathering, mineral ore formation) and destroying (e.g. erosion, pollution) these resources. Within this field the following questions will be addressed and answered:

- How do novel stable isotope signatures characterize weathering processes?
- How do novel stable isotope signatures trace water transport?
- How to use novel stable isotope as environmental tracers?
- How to use novel stable isotope for detecting and exploring metal ores?
- How to improve analytical capabilities and develop robust routine applications for novel stable isotopes?

Starting from the central questions mentioned above the IsoNose activities are organized in five scientific work packages:

1. Making soil from rock
2. Dissolved metals in the global water cycle
3. Human influence on metal cycling
4. Innovations in metal ore exploration
5. New analytical tools

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