



## UFZ-Seminar

Research Unit



## Water Resources and Environment



20 May 2019, 10 a.m.

Room E 01, Theodor-Lieser-Straße 4, Halle/Saale

### Federica Tamburini

Group of Plant Nutrition, ETHZ, Zurich, Switzerland

will give a talk on:

### **Oxygen in phosphate: understanding P cycling and fluxes in the environment using a stable isotopic approach**

Phosphorus (P) is a major nutrient for all living organisms. In the terrestrial environment, P is considered a double-edged sword. In some areas, agricultural production is strongly limited by the low soil P availability, while in others, P inputs in excess of plant needs have resulted in pollution of water bodies. For these reasons, tracing P in the environment and understanding its cycle have always been a priority for environmental researchers, despite the complexity of the task. Indeed, once that P is dissolved as orthophosphate, the source of the phosphate molecule cannot be determined. A relatively new isotopic tool, the isotopic signature of oxygen bound to P in phosphate ( $^{18}\text{O-P}$ ), has been successfully used to determine the impact that biological and abiotic processes have on P cycling in soils and waters. There are only few  $^{18}\text{O-P}$  based studies tracing P and trying to apportion its sources in the environment. They have shown that under high concentrations of P, this isotopic tool has the potential of pinpointing P sources of environmental pollution. In this talk, the theory behind the use of  $^{18}\text{O-P}$  will be presented and few examples on its use shown.