**Cosmo24- Workshop description**

Monday 20.5.24, Cologne University

**Workshop on the production and delivery of meteoric cosmogenic nuclides**

The past years have seen a renaissance in applications of meteoric cosmogenic 10Be and the 10Be(meteoric)/9Be(stable) ratio in the terrestrial, oceanic, and magneto-helio-atmospheric realms. Terrestrial applications include quantifying soil residence times and soil ages, soil movement, catchment-wide erosion, weathering and denudation rates - all of which rely on knowing the meteoric 10Be depositional flux F10Bemet, often assumed to be constant through time. Conversely, the 10Be/9Be ratio in marine and ice core archives is used to reconstruct geomagnetic field and solar activity intensities that modulate the production of cosmogenic nuclides in the atmosphere, and thus F10Bemet.

Over recent decades, substantial efforts on modelling and observation have been made to advance our knowledge of 10Be deposition over a range of temporal and spatial scales. These efforts mainly include:

1. Atmospheric production and delivery models (GCM) that include physics-based 10Be production functions
2. Precipitation collection
3. 10Be inventories from independently dated soil profiles

Each approach has its own advantages and disadvantages, for example precipitation collections being dependent on measurement interval. The picture that currently emerges is that GCM-derived 10Be fluxes exceed those from soil profiles because these models rely on nuclide production functions possibly being too high, while surface erosion, low pH and insufficient sampling depth render soil-derived fluxes too low.

It is the aim of this workshop to bring together the different communities to identity gaps in knowledge and future research needs that are required to generate consistent data and laws of 10Be production and depositional flux. We invite current and future practitioners in field approaches, but we specifically welcome experts from the field of atmospheric cosmic ray physics and global atmospheric modelling.

With best regards,

Hella Wittmann (GFZ Potsdam), Friedhelm von Blanckenburg (FU Berlin), and Joseph Graly (Northumbria University).