

Name of research institute or organization:

Eawag Dübendorf

Title of project:

^7Be and ^{10}Be in monthly precipitation

Project leader and team:

Prof. Jürg Beer, project leader
Silvia Bollhalder

Project description:

^7Be ($T_{1/2}$: 53.2 days) and ^{10}Be ($T_{1/2}$: 1.4 million years) are produced continuously by the interaction of cosmic rays with the atmosphere. They represent a kind of a natural neutron monitor. Instead of counting the neutrons the Be-atoms are counted. Since these atoms are stored in natural archives such as ice sheets and sediments, ^{10}Be offers the unique opportunity to trace back the past cosmic ray intensity for many millennia. An important aspect in the interpretation of the archived ^{10}Be signal is the “noise” introduced by the transport of Be from the atmosphere where it is produced to the site where it is archived. Simultaneous monitoring of ^{10}Be and ^7Be at two stations (Jungfraujoch and Dübendorf) provides the means to better understand the transport and deposition processes. A new topic of interest which was brought up during an ISSI team meeting is the question to what extent cosmogenic radionuclides can be used to trace back in time very large solar flares or strong gamma ray bursts. A monthly monitoring program as carried out at Jungfraujoch has the potential to answer this question. In addition, the fact that we have now an almost continuous record over more than 2 solar cycles makes this program unique.

Key words:

^{10}Be , ^7Be , long-term cosmic ray record, atmospheric transport processes, solar energetic particles, gamma ray bursts

Collaborating partners/networks:

K. G. McCracken, Australia

Address:

Eawag
Überlandstrasse 133
CH-8600 Dübendorf

Contacts:

Jürg Beer
Tel.: +41 58 765 51 11
Fax: +41 58 765 52 10
e-mail: beer@eawag.ch
URL: http://www.eawag.ch/organisation/abteilungen/surf/schwerpunkte/radio/index_EN