PAGE21
Project ID: 282700
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Changing Permafrost in the Arctic and its Global Effects in the 21st Century

From 2011-11-01 to 2015-10-31, closed project | PAGE21 Website

**Objective**

Permafrost is defined as ground that remains continuously at or below 0°C for at least two consecutive years; some 24% of the land surface in the northern Hemisphere is classified as permafrost. In the Northern high latitudes, strong warming has been observed over the recent decades, and climate models project strong future warming. A projected decline in the extent of permafrost will have a major impact on the Earth system, affecting global climate through the mobilization of carbon and nitrogen stored in permafrost.

PAGE21 aims to understand and quantify the vulnerability of permafrost environments to a changing global climate, and to investigate the feedback mechanisms associated with increasing greenhouse gas emissions from permafrost zones. This research makes use of a unique set of Arctic permafrost investigations performed at stations that span the full range of Arctic bioclimatic zones. The project brings together the best European permafrost researchers and eminent scientists from Canada, Russia, the USA, and Japan.

In a truly original approach we combine field measurements of permafrost processes, pools, and fluxes, with remote sensing data and global climate models at local, regional and, for the first time, pan-Arctic scales. The output from this research will help to advance our understanding of permafrost processes at multiple scales, resulting in improvements in global numerical permafrost modeling and the ensuing future climate projections, as well as in the assessment of stabilisation scenarios.

These outputs will feed into global assessments and international monitoring programs, in which most of the consortium members are already actively participating in leading roles. This project will, in particular, provide projections on a pan-Arctic scale of greenhouse gas releases from the projected thawing of permafrost terrain during the 21st century, with direct implications for global policy discussions on emission reduction targets.

**Related information**

| Result In Brief | A better understanding of permafrost |
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Subjects

Environmental Protection

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