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GlobPermafrost – how space supports understanding of permafrost?

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The GlobPermafrost project (2016-2019) develops, validates and implements information products to support the research communities and related international organisations like IPA and CliC in their work on understanding permafrost better by integration of EO data.
Permafrost cannot be directly detected from space, but many surface features of permafrost terrains and typical periglacial landforms are observable with a variety of EO sensors ranging from very high to medium resolution in various wavelengths. Prototype cases will cover different aspects of permafrost by integrating in situ measurements of subsurface permafrost properties (active layer depth, active layer and permafrost temperatures, organic layer thickness, liquid water content in the active layer and permafrost), surface properties (vegetation cover, snow depth)and modelling to provide a better understanding of permafrost today. The techniques will extend point source process and permafrost monitoring to a broader spatial domain, to support permafrost distribution modelling and mapping techniques implemented in a GIS framework and will complement active layer and thermal observing networks.
Initial user requirements have been gathered at the DUE-IPA-GTNP-CliC workshop in Frascati in February 2014, which have been further consolidated within the Permafrost community during 2014 in request of the WMO Polar Space Task Group. A subset of these requirements will be demonstrated within GlobPermafrost and assessed by user organisations:
-Circumpolar permafrost extend
-Permafrost dedicated land cover class prototype
-Local investigations around long term monitoring sites
-Regional transects for “hot spot” identification
-Mountain permafrost areas
The initial observation scenario is presented, discussing challenges in methods as well as data availability.