

EO-PERSIST: A cloud-based remote sensing data system for promoting research and socioeconomic studies in arctic environments

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Abstract
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Abstract

In today's changing climate it is of key importance to understand the adverse impacts of climate change to the local and regional Arctic natural environments, infrastructures and industries. To this end, Earth Observation (EO) is the way forward, as it is extremely challenging to obtain long-term continuous ground observations. Recent advances in EO sensors, cloud-computing, geographical information systems (GIS) and in the field of socioeconomics provide unique opportunities to promote research and socioeconomic studies in the Arctic. Yet, despite their plethora, EO data are provided in a dispersed and unconnected way through several web platforms and in diverse formats, making their use difficult.

In this presentation we introduce EO-PERSIST, an EU-funded project under the MSCA Staff Exchanges scheme, providing a detailed overview of the research aims and objectives for its 4 years duration. EO-PERSIST proposes the development of a single cloud-based system that will allow in a unique way the availability of the collection, management and exploitation of the available EO data suitable to permafrost studies. The system leverages existing services, datasets and novel technologies to: a) create a continuously updated ecosystem with EO datasets suitable for permafrost studies, b) promote methodological advances in permafrost studies by exploiting the huge volume of EO datasets and c) provide indicators directly connected with socioeconomic effects to permafrost dynamics. Experimental analysis will also be carried with the system to showcase its use via five carefully selected and innovative Use Cases, that will serve as Key Performance Indicators of the system.

EO-PERSIST brings together a strong inter-sectoral experienced research team of 5 academic and 5 industrial partners, establishing a unique fertile collaborative research and innovation environment to promote pioneering research and socioeconomic studies implementation in the Arctic.



“A Cloud-based Remote Sensing Data System For Promoting Research And Socioeconomic Studies In Arctic Environments”

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Overview

The EO-PERSIST project is a 4 years Marie Skłodowska-Curie Actions staff exchanges project funded by the EU aiming to leverage existing services, datasets, and novel technologies to create a continuously updated ecosystem with Earth Observation (EO)-based datasets suitable for permafrost applications. EO-PERSIST aims to establish a fertile environment for staff exchanges knowledge sharing, and know-how transfer.

The project will promote methodological advances in the field of permafrost by exploiting the huge volume of remote sensing (RS) datasets and providing indicators directly connected with socioeconomic effects from permafrost dynamics. The project will perform experimental analysis through five use cases, which will also serve as Key Performance Indicators (KPIs) of the system.

EO-PERSIST brings together staff from academia and industry via a series of carefully-designed secondments, establishing a unique fertile collaborative research and innovation environment to promote pioneering research and socioeconomic studies implementation in the Arctic.

EO-PERSIST's Use Cases



UC 1: Land degradation



UC 2: Temperature anomalies



UC 3: Coastal monitoring and modeling



UC 4: Active layer freeze-thaw cycle monitoring using TSInSAR

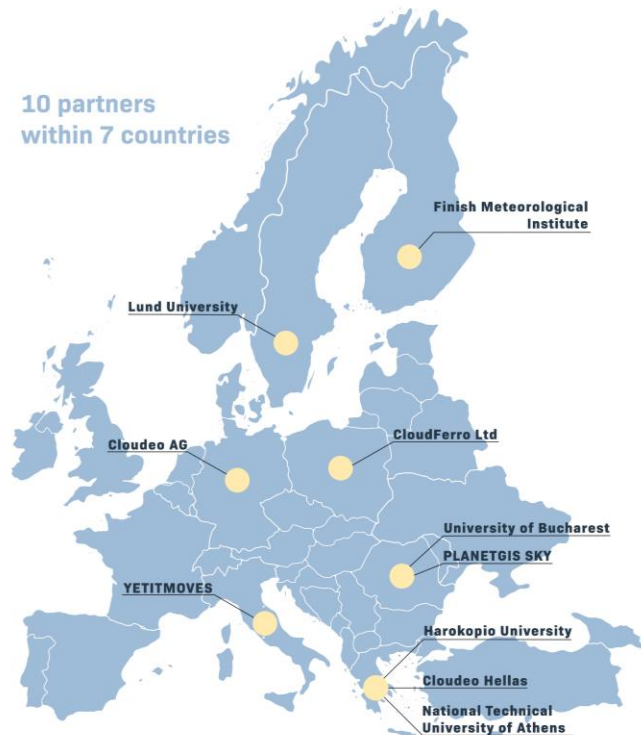


UC 5: Exploitation of low frequency SAR

EO-PERSIST's Consortium

EO-PERSIST's consortium consists of 10 partners from 7 different countries covering different disciplines (Remote Sensing, Cloud computing, GNSS, socioeconomics, snow modeling)

10 partners
within 7 countries



EO-PERSIST's Technology



Cloud Computing



EO



GIS



GNSS



Data Fusion



Big Data

Publications

Hu, J.; Wu, J.; Petropoulos, G. P. et al., (2023). Temperature and Relative Humidity Profile Retrieval from Fengyun-3D/VASS in the Arctic Region Using Neural Networks. <https://doi.org/10.3390/rs15061648>

Project Information



<https://eo-persist.eu/>



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