EOs adding value to historical water availability and quality information services

Upscaling water services from national to global scales

Summary

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Sponsor	Project	Solution provider	User
The e-shape project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 82085	e-shape		

Taxonomy

- Water run-off
- Water quality
- Surface soil moisture
- Waterbody
- Hydrological network and catchment areas (water catchment)

User profile

The Geologicla Survey of Sweden, SGU, is the expert agency for issues relating to bedrock, soil and groundwater in Sweden. The agency aims **to meet society's need for geological information**. SGU is also responsible for the Good-Quality Groundwater objective, which also involves reducing the use of natural gravel.

The Swedish Agency for Marine and Water Management, SwAM, is a government agency that works for flourishing seas, lakes and streams. SwAM is responsible for managing **the use and preventing the overuse of Sweden's marine and freshwater environments**, taking into consideration the requirements of the ecosystem and people, both now and in the future.

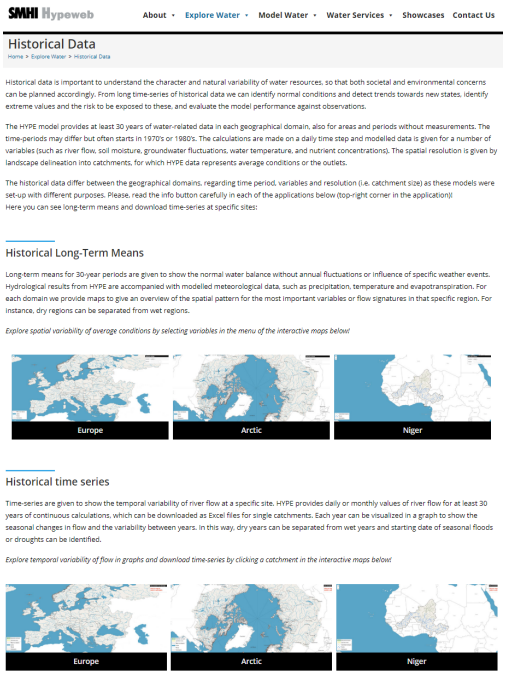
SGU Geological Survey of Sweden

Swedish Agency for Marine and Water Management

Service description

The Swedish Meteorological and Hydrological Institute, SMHI, provides new information, forecasts and knowledge of water resources in Sweden and world-wide, covering different spatial and temporal scales and a broad range of users. The information is used in decision support for a safe and sustainable society, water management, environmental protection, and building of infrastructure.

SMHI's service is based on **integrating EO data mainly from open sources with existing operational hydrological models and services**. The sustainability of the service developed thus depends mainly on the usefulness to provide improved water information, the capacity of the users to make use of this information, and the future request from the users.



Customer experience

They current users are within the **Swedish geographical domain**; however the upscaling of the service from national to global leads to its **higher usability**. Input received from the users are:

SwAM: "We are particularly interested in services that can support development, application and review of **environmental quality criteria**."

SGU: "The development of this service is of our interest to improve our methods to assess and forecast the groundwater quantity status in Sweden. We have recently initiated a government commission to expend and improve our national monitoring and to develop forecasting services on groundwater quantity status, and so we are delighted to **co-design a service** relevant to developing our groundwater-level modelling **on national scale**."

Need

- Compare and correlate a number of hydro-climatic variables (snow water storage, evapotranspiration, soil moisture) from the hydrological model and in-situ observations to their corresponding EO-based variables to better understand model setup limitations (linked to location and physiographic characteristics) and assess added-value from EOs.

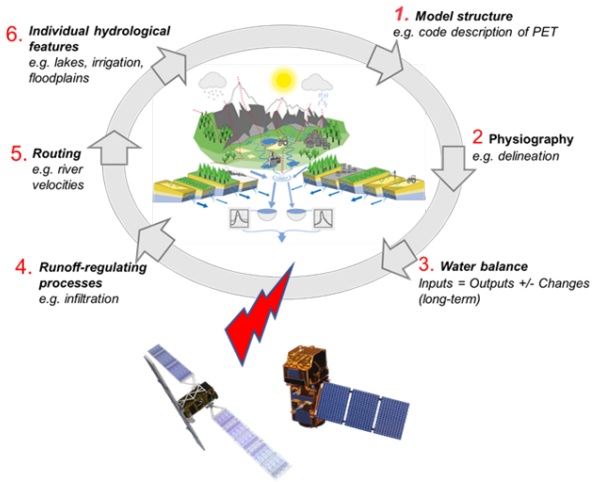
Challenges

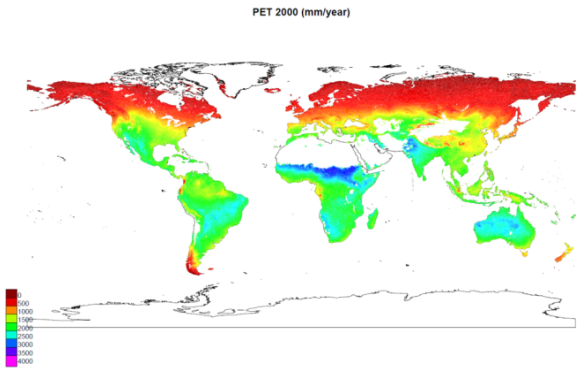
- Couple the EO maps to the HYPE model setups, which have been developed with the main focus on simulating correctly the water flows and water balance (precipitation, snow accumulation and melt, infiltration, evapotranspiration, runoff and river discharge) at different geographic domains and spatial resolution.
- Availability of in-situ observations (river and lake water level, river discharge) with matching EO-based observations (Sentinel-3 track, Flood extent mapping) and matching HYPE model representation

Results

- Get access to a set of hydrologically relevant EO datasets, which after post-processing can be used for water resources management applications
- Contribute to an improved set of HYPE hydrological model output data: River discharge, Water balance (precipitation, evapotranspiration, runoff), and total and key water storages (snow, soil, lakes, rivers)

- Improved water availability and quality information will be published at the SMHI dissemination web-based platform (http://hypeweb.smhi.se)
- Enable and motivate water-related users by providing accurate and reliable long historical records of hydro-climatic information over Sweden and the globe





References

Learn more about the service: https://hypeweb.smhi.se/explore-water/historical-data/

Learn more about e-shape: www.e-shape.eu

A question? Contact the Helpdesk: https://helpdesk.e-shape.eu

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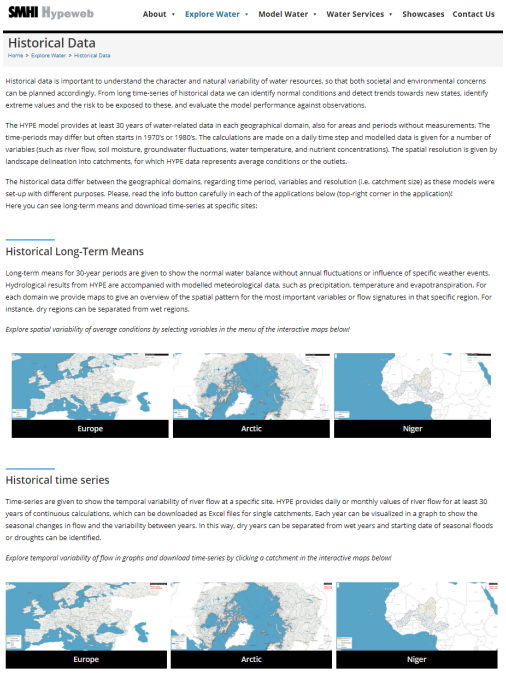
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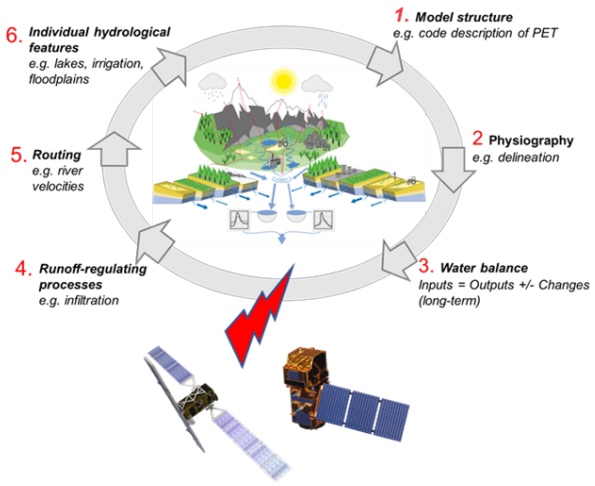
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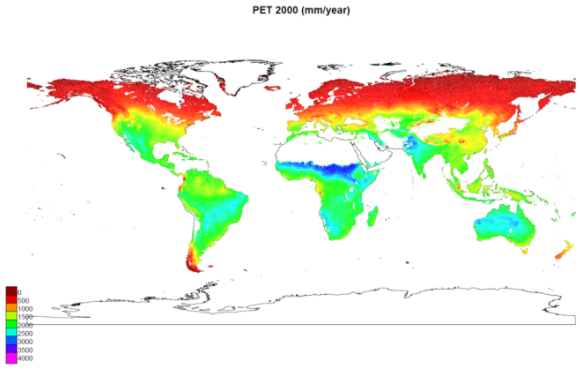
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