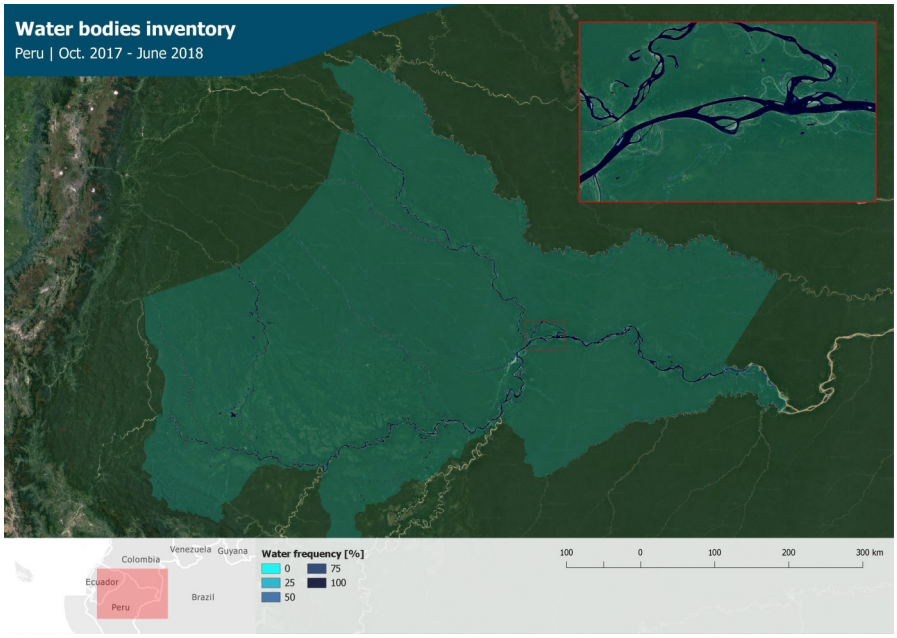
EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT

WATER BODIES INVENTORIES

An inventory of surface water resources is the building block for water resource management activities and understanding their variability in spatial extent over time is crucial in assessing their availability and nature. This service provides such an inventory on water bodies, including lakes and reservoirs, and a quantified assessment of their seasonal changes.

The availability of Earth Observation data at a high temporal frequency – predominately radar data - allows the mapping of the temporal behavior of water bodies, thereby identifying frequently and infrequently recurring water bodies. A water body that recurs frequently during rainy seasons has different implications for the ecology of a habitat than a water body that occurs only in relation to extreme rainfall events.



Detailed mapping and monitoring of surface water resources in Peru. The Water bodies inventory show the location, extent and seasonal dynamics of lakes, reservoirs and rivers within a given area (© Copernicus Sentinel data/GeoVille)

PRODUCT SPECIFICATIONS

CONTENT

- This service provides a detailed mapping and monitoring of open water bodies, including reservoirs and lakes, and their seasonal changes

GEOGRAPHIC COVERAGE

- Globally available

TEMPORAL COVERAGE

- Available since 2015. Small scale products may be available for earlier periods based on optical data (up to 1980´s)

SPATIAL RESOLUTION

- 10 – 500 m (regional to local scale)

FREQUENCY

- Daily (Regional) and 5-10 day (local).

LIMITATIONS

- One of the main impediments to a historical assessment of surface water extents using EO is the lack of medium to high resolution EO data, especially radar before 2000. Optical imagery is available for earlier periods but often compromised by persistent cloud cover. In-situ measurements improve the accuracy of the threshold-based approach to detecting water bodies.
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esa

water resources management
eo4sd

Assessing the amount of available water resources in a river basin including discharge and recharge is crucial for water resource management, the reduction of flood risks, and decision-making in water sensitive sectors. EO-derived information on surface water extent, both seasonal and long-term, can support regional to national water authorities and relevant basin commissions in these domains:

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Ungauged / poorly gauged basins

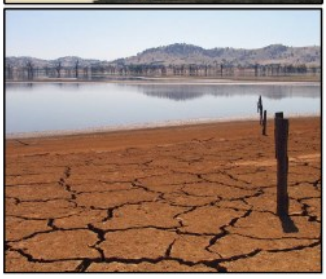
The service provides vital data on the basin hydrology over ungauged or poorly gauged watersheds.

Infrastructure

Supporting infrastructural development projects (e.g. planning and operation of dams for hydropower and irrigation water supply).

Livestock & Farming

Providing crucial knowledge for livestock watering and crop irrigation.



Monitor impact

Helping to monitor the impacts on vulnerable water -related ecosystems.

Delivery

The water bodies inventory can be delivered along with

- Geodata (GeoTIFF, ASCII, or similar)
- Metadata (INSPIRE or similar)
- Cartographic presentations (PDF, PNG or similar)

The derived maps and information from the water quality mapping service is typically made available in one or more of the following approaches:

- An **email** can be dispatched to relevant recipients whenever new information is generated.
- Data can be made available on a dedicated password protected **ftp server** ready for the client to pull/push the data.
- Data can be viewed online through a dedicated password-protected **web portal**. The system can be customized and scaled in complexity to include various online analysis options, time series plots, statistical plots as well as integration with user defined datasets.

SUMMARY

- Worldwide coverage
- Available in spatial resolutions from 10-500m resolution allo-wing local and regional analyses
- Updates available in near real-time
- Password-protected, web-based broadcast system provides access from a standard browser or a smart phone and email push to provide notifications to users

EO4SD — Earth Observation for Sustainable Development — is an ESA initiative started in spring 2016 and focusing on top-priority international development issues including water resource management. The overall objective is to achieve a step increase in the uptake of satellite-based information in the national, regional and global programs of International Finance Insititutions. Water Quality and temperature monitoring is one of the EO servicec being demonstrated under the EO4SD on water ressource management.

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