



# Database for Hydrological Time Series of Inland Waters (DAHITI)

Christian Schwatke, Denise Dettmering, and Eva Börgens

Deutsches Geodätisches Forschungsinstitut der Technischen Universität München (DGFI-TUM), München, Germany,  
(christian.schwatke@tum.de)



## Introduction

The **Database for Hydrological Time Series of Inland Waters (DAHITI)** has been developed by the Deutsches Geodätisches Forschungsinstitut der Technischen Universität München (DGFI-TUM) since 2013. It provides water level time series of about over 300 lakes, reservoirs, rivers, and wetlands derived from multi-mission satellite altimetry which can be downloaded after a short registration process from the DAHITI website at <http://dahiti.dgfi.tum.de>.

The processing strategy of DAHITI is based on an extended outlier detection and a Kalman filter approach for the estimation of water level time series of inland waters. Here, data from altimeter missions such as Topex, Jason-1, Jason-2, ERS-2, Envisat, SARAL/AltiKA, and Cryosat-2 are used. The methodology and processing strategy is described in detail in Schwatke et. al, 2015.

In this poster, we present the “new” DAHITI website and their functionality. In detail, information about the data holding of DAHITI and the provided data sets are shown.



Figure 1:  
Website “Home” of DAHITI

## Data Holding

DAHITI as a global database, provides namely, 302 water level time series distributed over all continents, except Antarctica. Africa (37 time series), Asia (53), Australia (3), Europe (11), North America (54), and South America (144).

The water level time series in DAHITI are free available and can be downloaded after a short registration process. The number of water level time series is increasing permanently.

All targets are presented as map and list view on the DAHITI website. Thereby, a preview of the water time series can be displayed by clicking on the map.

The data access of inland water bodies is divided in to “public” which are immediately available after registration and “request” which require an additional approval.

All virtual stations can be listed globally or ordered by continent. Information such as DAHITI-Id, target name, location, software version, last update and data access are shown.

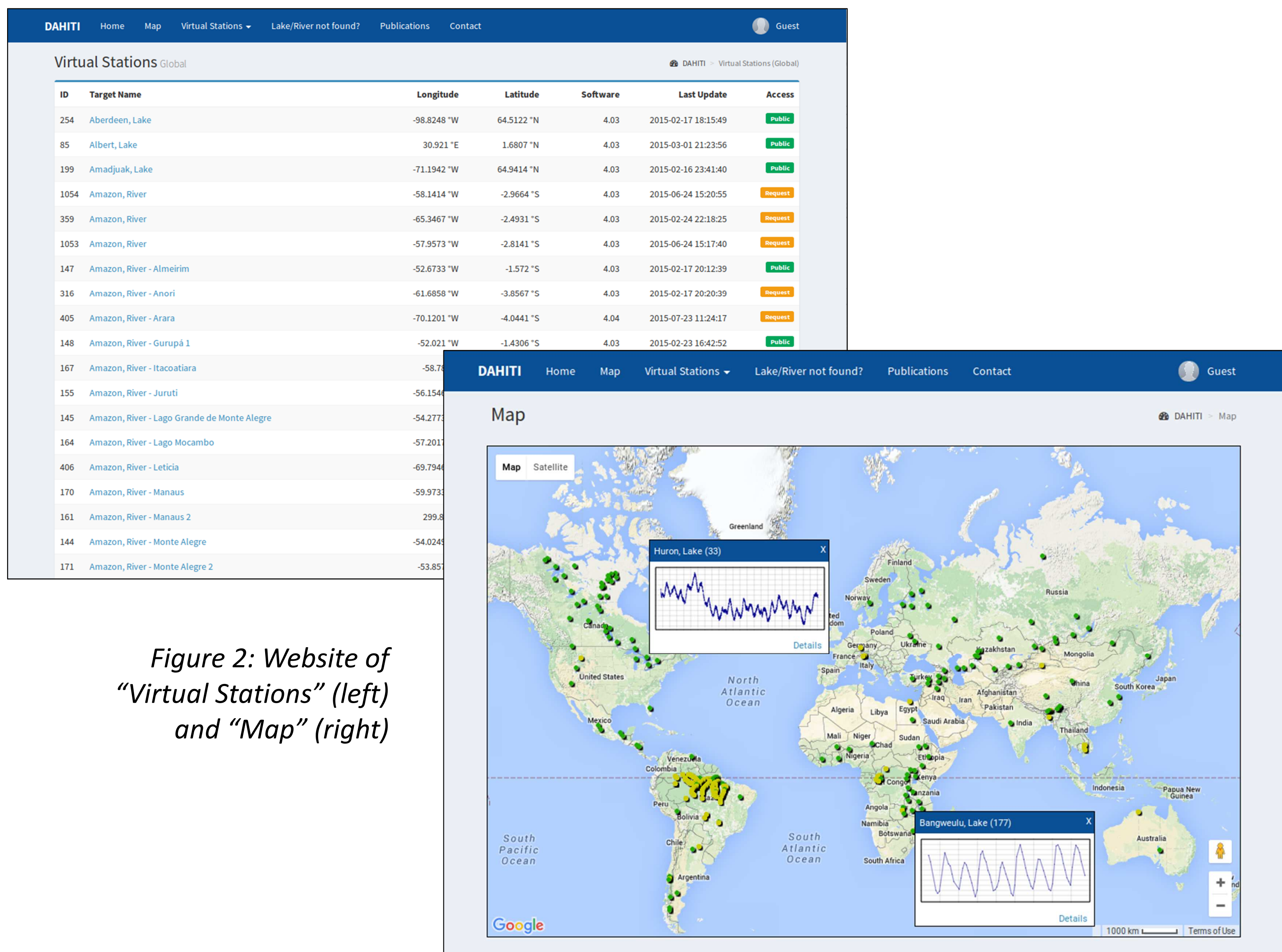


Figure 2: Website of  
“Virtual Stations” (left)  
and “Map” (right)

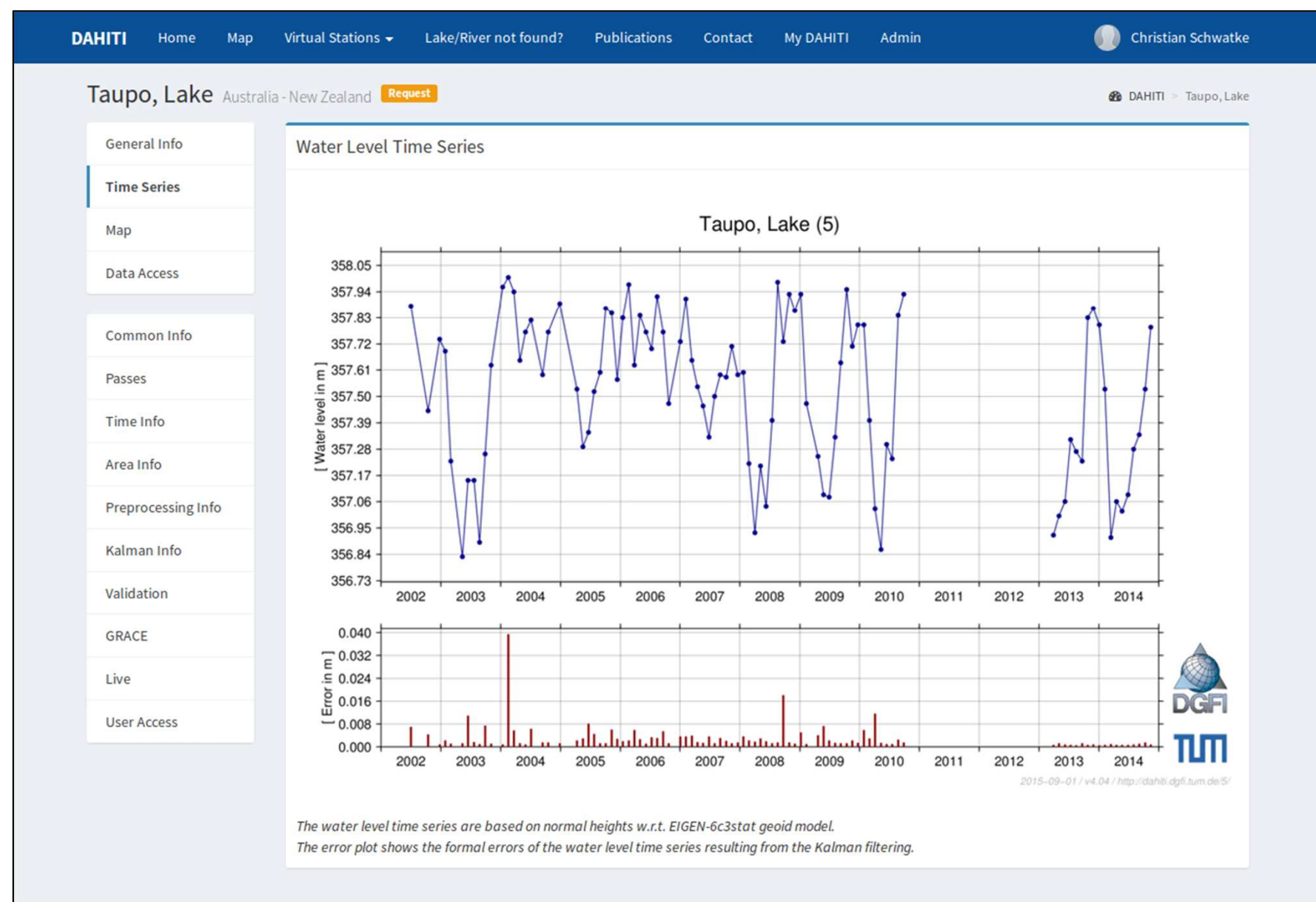
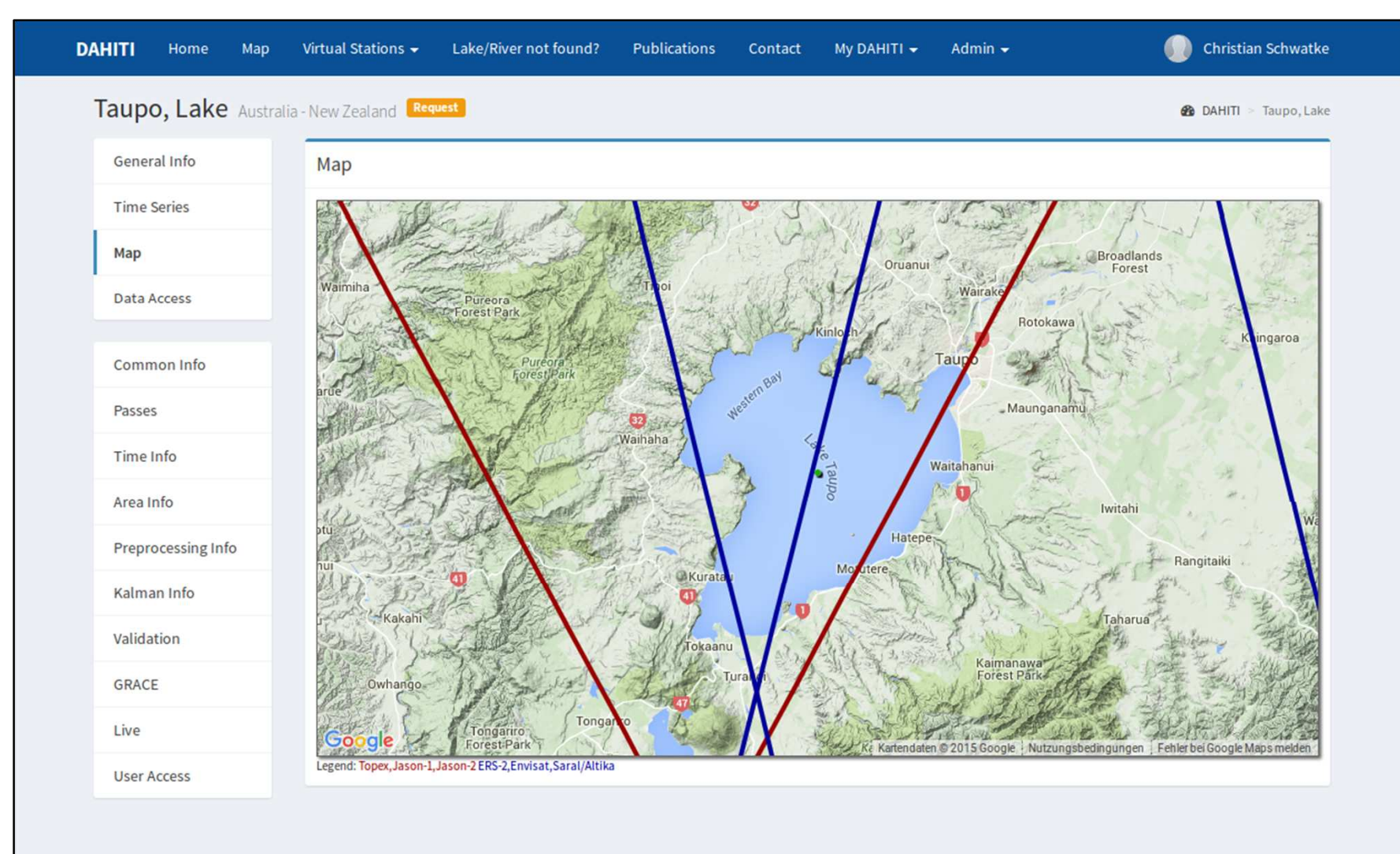
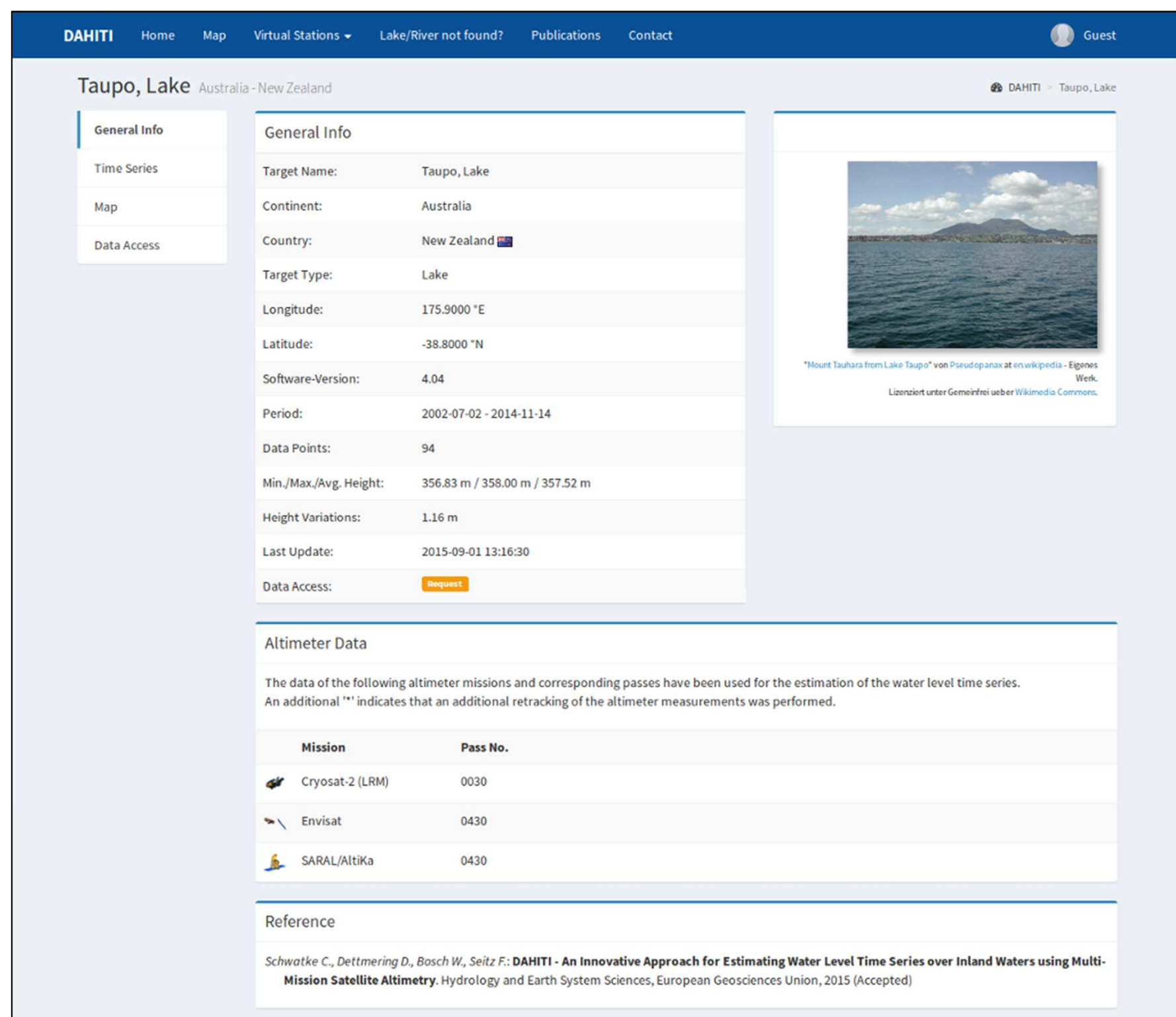
## Detail View of Inland Water

The DAHITI website provides a detailed view for each inland water body. First, general information about the water body (e.g. country, continent, type, location, etc.) and the resulting time series (e.g. period, data points, etc.) are presented. Furthermore, information regarding the used altimeter data are shown in detail. This includes pass numbers and if an additional retracking was applied.

For each inland water, also a map is provided which shows the location of the water body. Moreover, altimeter tracks crossing the water body are displayed.

Finally, the water level time series of an inland water and the corresponding formal errors are plotted.

Figure 3: Websites of  
“General Info” (top),  
“Map” (middle) and  
“Time Series” (bottom)

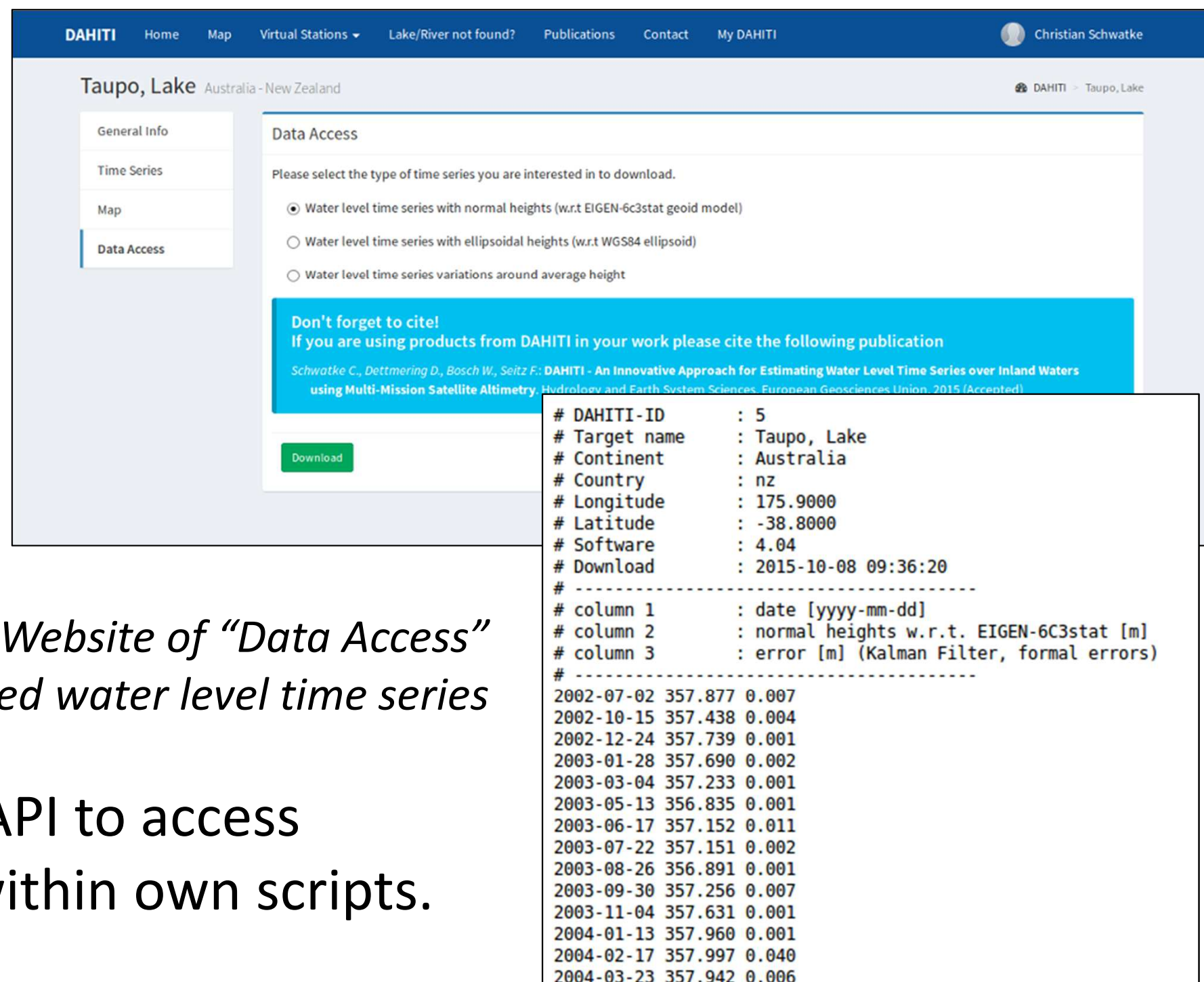


## Data Access

The main product of DAHITI are water level time series which can be downloaded as ASCII files. Here, the user has the possibility to select between the following types of data.

- **Normal heights (w.r.t. EIGEN-6C3stat)**
- **Ellipsoidal heights (w.r.t. WGS84)**
- **Variations around the mean value**

Figure 4: Website of “Data Access”  
and downloaded water level time series



In near future, there will be also an API to access the data holding of DAHITI directly within own scripts.

## User Community

In general, DAHITI addresses to all users who are interested in using water level time series for their hydrological applications. The visitors of the DAHITI website come from 65 countries in which the most visitors are from USA, China, Germany, France, and Brasil. The user community of DAHITI consists of hydrologist and geodesists primarily but also other disciplines are represented.

## References

Förste, C., Bruinsma, S., Flechtner, F., Marty, J., Lemoine, J., Dahle, C., Abrikosov, O., Neu10 mayer, H., Biancale, R., Barthelmes, F., and Balmino, G.: **A preliminary update of the Direct Approach GOCE Processing and a new release of EIGEN-6C**, 3–7 December 2012, G31B-0923, 2012. 4820, 4843

Schwatke C., Dettmering D., Bosch W., Seitz F.: **DAHITI - An Innovative Approach for Estimating Water Level Time Series over Inland Waters using Multi-Mission Satellite Altimetry**. Hydrology and Earth System Sciences, European Geosciences Union, 2015 (Accepted)

## Acknowledgement

Products of DAHITI are based on altimetry missions operated by CNES/NASA (TOPEX, Jason-1), ESA (ERS-1/2, Envisat, Cryosat-2), USNavy/NOAA (GFO), CNES/NASA/Eumetsat/NOAA (Jason-2), and ISRO/CNES (SARAL/AltiKA). The original data sets are disseminated by AVISO, ESA, NOAA, and PODAAC.