Dataset for validation and long term referencing

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| Land: Soil moisture  | 1.0 |  |  |  |
| Land: Snow water | 1.0 |  |  |  |
| Ocean: Ocean | 1.0 |  |  |  |
| Ocean: Coastal | 1.0 |  |  |  |
| Ocean: Polar | 1.0 |  |  |  |

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Dataset for validation and long term referencing

# Data description

This document describes reference and validation datasets for the various sub themes including both multi-mission altimetry data and in situ data. The individual reference datasets are described below for each sub theme.

# Land - river and lakes

This section describes reference and validation data sets for inland water. The table below gives an overview of the different datasets for each test area. The individual data set contains a header except Envisat and Saral/Altika data, which is described below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Area** | **Data name** | **Data type** | **Data descript**  | **Datum** | **Reference** |
| Denmark | REF\_1\_LAN\_DK | Satellite altimetry | Envisat GDR, 18Hz | WGS 84 | ESA |
|  | REF\_2\_LAN\_DK | Satellite altimetry | Altika SGDR, 40Hz | Topex/Poseidon | AVISO |
|  | REF\_3\_LAN\_DK | Airborne laser data | Average lake levels for selected Danish lakes | DVR 90 | <http://gst.dk/> |
|  | REF\_4\_LAN\_DK | Lake gauges | Daily time series for 2013 for Arresø and Furresø  | Unknown local reference | Naturstyrelsen |
| Brahmaputra | REF\_1\_LAN\_BRAHM | Satellite altimetry | Envisat GDR, 18 Hz | WGS 84 | ESA |
|  | StationsNugeshaNuxia.xlsx | In-situ discharge and water level | 2 stations in Tibet, data for high flow seasons 2005 - 2007 | WGS 84 | ICIMOD: http://southasianfloods.icimod.org/saf/reports/ |
|  | RatingCurveBahadurabad.xlsx | Rating curve | Rating curve based on literature data (see attached file Mirza2003.pdf) | ? | Mirza, M. M. Q.: The Choice of Stage-Discharge Relationship for the Ganges and Brahmaputra Rivers in Bangladesh, Nord. Hydrol., 34(4), 321–342, doi:10.2166/nh.2003.019, 2003. |
|  | StationBahadurabad.xlsx | Station discharge data | Station discharge data for Bahadurabad, ~3hourly, 2002 – 2007  |  | ? |
|  | LandsatRiverMasks | Water masks | Water masks derived from Landsat NDVI imagery, showing minimum water coverage in each of the years 2010 – 2013  |  | Raw data from NASA, processing own work (Raphael Schneider) |
|  | SRTMRiverLine | River line | Shapefile with SRTM derived river line of the Brahmaputra |  | SRTM v4.1, own processing |
|  |  | DEM | SRTM 90m Digital Elevation Database v4.1 | WGS84 | Downloadable from http://www.cgiar-csi.org/data/srtm-90m-digital-elevation-database-v4-1 |
|  |  | Satellite altimetry | Envisat virtual station time series over the Brahmaputra, from River & Lake project |  | Downloadable from http://tethys.eaprs.cse.dmu.ac.uk/RiverLake/continent/asia |
|  | ModelDischargeBahadurabad.xlsx | Hydrological model results | Results (discharge) from a hydrological model of the Brahmaputra basin at Bahadurabad (outlet of the basin, shortly before confluence with Ganges), 2002 - 2013 |  | Own work, DHI and DTU |
| Amazon | REF\_1\_LAN\_AM | Satellite altimetry | Altika SGDR, 40Hz | Topex/Poseidon | AVISO |
| Thailand | REF\_1\_LAN\_THAI | Satellite altimetry | Envisat GDR, 18 Hz | WGS 84 | ESA |
|  | REF\_2\_LAN\_THAI | Satellite altimetry | Altika SGDR, 40Hz | Topex/Poseidon | AVISO |
|  | REF\_3\_LAN\_THAI | River gauges | Daily time series  | MSL | Hydro and Argo Informatics Institute, Thailand |
| Lake Vänern, Sweden | REF\_1\_LAN\_VS | Lake gauge | Daily time series | RH 00 | Swedish Meteorological and Hydrological Institute |
| Lake Okeechobee, FL, US | REF\_3\_LAN\_OFU | Lake gauge | Daily time series | NGVD 1929 | <http://waterdata.usgs.gov/nwis> |

## Description of Envisat data

|  |  |
| --- | --- |
| **Column name** | **Column description** |
| Orbit No |  |
| Latitude |  |
| Longitude |  |
| Time | Seconds since January 1 2000 |
| H\_Ice1 | Surface elevation in m relative to WGS 84 based on the Ice1 retracker |
| H\_Ice2 | Surface elevation in m relative to WGS 84 based on the Ice2 retracker |

## Description of Altika data

|  |  |
| --- | --- |
| **Column name** | **Column Description** |
| Cycle No |  |
| Orbit No |  |
| Year |  |
| Month |  |
| Day |  |
| DecYear | Decimal years |
| Latitude |  |
| Longitude |  |
| H\_Ice1 | Surface elevation in m relative to Topex/Poseidon based on the Ice1 retracker |
| H\_Ice2 | Surface elevation in m relative to Topex/Poseidon based on the Ice2 retracker |

# Land - soil moisture

# Land - Snow water equivalent

# Ocean - Open Ocean

# Ocean - Coastal

# Ocean - Polar Ocean