



## Broadview Radar Altimetry Toolbox

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The universal altimetry toolbox, BRAT (Broadview Radar Altimetry Toolbox) which can read all previous and current altimetry missions' data, incorporates now the capability to read the upcoming Sentinel-3 L1 and L2 products.

ESA endeavoured to develop and supply this capability to support the users of the future Sentinel-3 SAR Altimetry Mission. BRAT is a collection of tools and tutorial documents designed to facilitate the processing of radar altimetry data.

This project started in 2005 from the joint efforts of ESA (European Space Agency) and CNES (Centre National d'Etudes Spatiales), and it is freely available at <http://earth.esa.int/brat>. The tools enable users to interact with the most common altimetry data formats. The BratGUI is the front-end for the powerful command line tools that are part of the BRAT suite. BRAT can also be used in conjunction with MATLAB/IDL (via reading routines) or in C/C++/Fortran via a programming API, allowing the user to obtain desired data, bypassing the data-formatting hassle. BRAT can be used simply to visualise data quickly, or to translate the data into other formats such as NetCDF, ASCII text files, KML (Google Earth) and raster images (JPEG, PNG, etc.). Several kinds of computations can be done within BRAT involving combinations of data fields that the user can save for posterior reuse or using the already embedded formulas that include the standard oceanographic altimetry formulas.

The Radar Altimeter Tutorial, that contains a strong introduction to altimetry, shows its applications in different fields such as Oceanography, Cryosphere, Geodesy, Hydrology among others. Included are also "use cases", with step-by-step examples, on how to use the toolbox in the different contexts. The Sentinel-3 SAR Altimetry Toolbox shall benefit from the current BRAT version. While developing the toolbox we will revamp of the Graphical User Interface and provide, among other enhancements, support for reading the upcoming S3 datasets and specific "use-cases" for SAR altimetry in order to train the users and make them aware of the great potential of SAR altimetry for coastal and inland applications. As for any open source framework, contributions from users having developed their own functions are welcome.

The Broadview Radar Altimetry Toolbox is a continuation of the Basic Radar Altimetry Toolbox. While developing the new toolbox we will revamp of the Graphical User Interface and provide, among other enhancements, support for reading the upcoming S3 datasets and specific "use-cases" for SAR altimetry in order to train the users and make them aware of the great potential of SAR altimetry for coastal and inland applications. As for any open source framework, contributions from users having developed their own functions are welcome.

The first Release of the new Radar Altimetry Toolbox was published in September 2015. It incorporates the capability to read S3 products as well as the new CryoSat-2 Baseline C.

The second Release of the Toolbox, planned for March 2016, will have a new graphical user interface and some visualisation improvements.

The third release, planned for September 2016, will incorporate new datasets such as the lake and rivers or the envissat reprocessed, new features regarding data interpolation and formulas updates.