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The Basic Radar Altimetry Toolbox for Sentinel 3 Users

Bruno Lucas (1), Vinca Rosmorduc (2), Sander Niemeijer (3), Emilie Bronner (4), Salvatore Dinardo (5), and Jérôme Benveniste (6)

(1) Deimos/ESA/ESRIN, Frascati, Italy, (2) CLS, Ramonville StAgne, France, (3) Science & Technology, Delft, Netherlands, (4) CNES, Toulouse, France, (5) Serco/ESA/ESRIN, Frascati, Italy, (6) ESA, Frascati, Italy

The Basic Radar Altimetry Toolbox (BRAT) is a collection of tools and tutorial documents designed to facilitate the processing of radar altimetry data.
This project started in 2006 from the joint efforts of ESA (European Space Agency) and CNES (Centre National d'Etudes Spatiales). The latest version of the software, 3.1, was released on March 2012. The tools enable users to interact with the most common altimetry data formats, being the most used way, the Graphical User Interface (BratGui). This GUI is a 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. The BratDisplay (graphic visualizer) can be launched from BratGui, or used as a stand-alone tool to visualize netCDF files – it is distributed with another ESA toolbox (GUT) as the visualizer.
The most frequent uses of BRAT are teaching remote sensing, altimetry data reading (all missions from ERS-1 to Saral and soon Sentinel-3), quick data visualization/export and simple computation on the data fields. BRAT can be used for importing data and having a quick look at his contents, with several different types of plotting available. One can also use it 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 BratGui 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 (MSS, -SSH, MSLA, editing of spurious data, etc.).
The documentation collection includes the standard user manual explaining all the ways to interact with the set of software tools but the most important item is the Radar Altimeter Tutorial, that contains a strong introduction to altimetry, showing its applications in different fields such as Oceanography, Cryosphere, Geodesy, Hydrology among others. Included are also "data use cases", with step-by-step examples, on how to use the toolbox in the different contexts.
The upcoming release that is on the forge will focus on Sentinel 3 Surface Topography Mission that is build on the successful heritage of ERS, Envisat and Cryosat. The first of the two sentinel is expected to be launched in 2014. It will have on-board a dual-frequency (Ku and C band) advanced Synthetic Aperture Radar Altimeter and will provide measurements at a resolution of $\sim$300m in SAR mode along track. Sentinel 3 will provide exact measurements of sea-surface height along with accurate topography measurements over sea ice, ice sheets, rivers and lakes.
The future version will 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 made them aware of the great potential of SAR altimetery for coastal and inland applications.
The BRAT software is distributed under the GNU GPL open-source license and can be obtained, along with all the documentation (including the tutorial), on the webstite: http://earth.esa.int/brat