



## **BASIC RADAR ALTIMETRY TOOLBOX & TUTORIAL**

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The Basic Radar Altimetry Toolbox is an "all-altimeter" collection of tools, tutorials and documents designed to facilitate the use of radar altimetry data, including the next mission to be launched, CryoSat.

It has been available from April 2007, and had been demonstrated during training courses and scientific meetings. About 900 people downloaded it (January 2009), with many "newcomers" to altimetry among them. Users' feedbacks, developments in altimetry, and practice, showed that new interesting features could be added. Some have been added and/or improved in version 2. Others are ongoing, some are in discussion.

The Basic Radar Altimetry Toolbox is able:

- to read most distributed radar altimetry data, from ERS-1 & 2, Topex/Poseidon, Geosat Follow-on, Jason-1, Envisat, Jason- 2, and the future CryoSat and Saral missions,
- to perform some processing, data editing and statistic,
- and to visualize the results.

It can be used at several levels/several ways:

- as a data reading tool, with APIs for C, Fortran, Matlab and IDL
- as processing/extraction routines, through the on-line command mode
- as an educational and a quick-look tool, with the graphical user interface

As part of the Toolbox, a Radar Altimetry Tutorial gives general information about altimetry, the technique involved and its applications, as well as an overview of past, present and future missions, including information on how to access data and additional software and documentation. It also presents a series of data use cases, covering all uses of altimetry over ocean, cryosphere and land, showing the basic methods for some of the most frequent manners of using altimetry data.

Version 2 has been released in April 2009, including, among other improvements, a Mac OS X version, River&Lake data reading capability, full waveform processing and plotting, new plotting capabilities, export in GeoTiff, including a Google Earth export feature, easier export in Ascii, a rethinking of the Graphical user interface and of the software packaging, to make it easier to use. New developments are ongoing, with e.g. improvements of the Display tool (mainly for maps), the inclusion of processing algorithms within the Toolbox. Other developments are envisioned, with particular focus on coastal and hydrology applications. Yet the main incentive stays the users' needs, so all feedbacks are welcomed.

BRAT is developed under contract with ESA and CNES. It is available at <http://www.altimetry.info> and <http://earth.esa.int/brat/>