

John Lillibridge¹, Shailen Desai², Bruce Haines² and Melissa Soriano²

¹ NOAA Laboratory for Satellite Altimetry, Silver Spring, MD USA

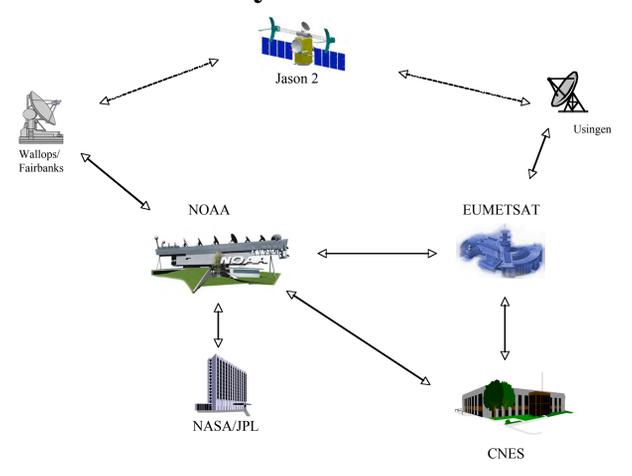
² Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA USA

Abstract

The Jason-2/OSTM mission, scheduled for a June 2008 launch, is a four-way partnership between NASA, CNES, NOAA and EUMETSAT. The two operational partners, NOAA and EUMETSAT, will share responsibility for production and dissemination of the near real-time (NRT) altimetry data sets. The NRT product, the Operational Geophysical Data Record (OGDR), will have the same format as the interim and final offline GDRs. The OGDR will have a latency of 3-5 hours, and will be based on orbits generated by the onboard DORIS/DIODE orbit determination package. By using simplified on-ground waveform retracking and forecast weather model inputs, this short latency product will be able to satisfy both oceanographic and meteorological (wind/wave) requirements.

As part of NOAA's role in production of the OGDR, a quality assessment (QA) system is being developed which is based on JPL's QA system for the Jason-1 IGDRs and GDRs. To work in near real time the OSTM OGDR QA system is being modified to automatically generate parameter plots and statistics on a telemetry "dump" basis, rather than per pass/cycle, and will be streamlined to run within the 3-5 hour timeliness constraint. We will present the status of the OSTM OGDR QA system and illustrate some of the analyses that will be performed in near real time for operational monitoring of the OGDRs.

OSTM System Overview



Status of Quality Assurance System

The QA system is being developed and tested on a computer with a Linux operating system.

The QA system is composed of:

- One C-program to read the satellite altimeter data products and to compute statistical metrics (altvalstats.c).
- Open source Python-based plotting modules (matplotlib)

Modification of the system to analyze the OSTM OGDR, or any other satellite altimetry data product, only requires the addition of a new function to the C-program that reads that product and translates its data into the general form that is used by the main C-program.

We have demonstrated end-to-end functionality of the QA system on the primary altimetric parameters that are used to derive measurements of sea surface height, wind speed, and wave height, using the Jason-1 interim geophysical data records (IGDRs).

The QA system is completely automated and adopts the following approach.:

- Query a directory for recently available altimeter data files.
- Generate statistical metrics individually on each new data file for each altimetric parameter. Statistical metrics include mean, median, standard deviation, count of flagged values, count of defaulted values, count of points falling outside a 3-sigma window about the mean.
- Generate plots of the statistics using the open source Python-based plotting package matplotlib.
- Generate html pages for display of statistical metrics via plots and tables.
- Push (copy or ftp) the html pages to the web host.

The design of the system enables simple evaluation of a predetermined list of altimetric parameters, without any changes to the scripts that have already been developed.

The user specifies the required parameters to evaluate through an input deck that specifies:

- The parameter to evaluate
- The value of the data product flags that should be used to edit the data
- The parameters (title, plot range) to adopt for the plots
- The parameters to adopt for the tables

Future work to be performed includes:

- Adding orbit error estimation from sea surface height anomaly
- Adding functionality to generate hard copy reports.
- Testing that anticipated error conditions are handled gracefully.
- Development of a script to install the system at NOAA.
- General testing under various conditions
- Addition of plots and maps to web pages.

NOAA's Role in OSTM

- Command and Control Jason-2
- Monitor Jason-2 Satellite
- Collect Telemetry (TM)
- Provide path for Tele Command (TC)
- Provide NOAA Data Communications Network (DCN)
- Produce and Distribute NRT Products
- Archive raw data and core products and make them available to the user community

Prototype Jason-2/OSTM Quality Assurance System Plots

