

The Development of the QuikSCAT Ground System and Data Products

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Abstract

First, it must be noted that this development was carried out by a team of over twenty skilled engineers. Furthermore, the current availability of data products is based on the work not only of the development team but also of the Calibration and Validation team. This group included members of the Ground System, the Sensor Verification Team, Project Engineering, and the Science Team. We are simply providing an overview of these teams' efforts.

The QuikSCAT (QSCAT) Ground System, like the QSCAT instrument, was developed in only about one year. This was made possible by the work already underway for SeaWinds on ADEOS-II. The system will be enhanced to support this mission with its late 2000 launch. Key approaches that allowed the rapid development of the QSCAT Ground System included

1. A small team environment with direct involvement of management and tailoring of development processes to the job at hand.
2. Maximum use of NSCAT heritage in both personnel and algorithms.
3. Close cooperation, including use of deliverable code, between algorithm and software developers.
4. Use of a CASE tool to provide a direct link between code and product documentation.

Key features of the QSCAT Ground System include

1. Extensive use of COTS software for file transfer and data management.
2. Semi-automated operation based on file registration at many stages of processing.
3. In-line quality assurance of data products.

QSCAT data at two levels will be routinely made available to the Science Team and user community. The products are in HDF in order to be flexible and self-documenting. The two fundamental products are

- L2B – ocean vector winds in a 25 km swath grid. All ambiguities are reported with the selected ambiguity indicated. Size ~ 8.6 MB per rev (~125 MB/day).
- L2A – the sigma0 data used to derive the winds. The data are organized by wind vector rows with indices to show the individual wind vector cells (wvc). This organization is necessary because the number of sigma0s in a wvc varies significantly across the swath. Size ~ 182 MB per rev (~2.6 GB/day).

A major feature of the QSCAT instrument which added to the complexity of the development and which adds to the volume of the data products is the high resolution mode in which antenna footprints are cut into “slices” by use of a chirped signal that provides range resolution.