

Production and Validation of QuikSCAT Climate Data Product, and Extension of Climate Data Record with OceanSat-2 at Jet Propulsion Laboratory

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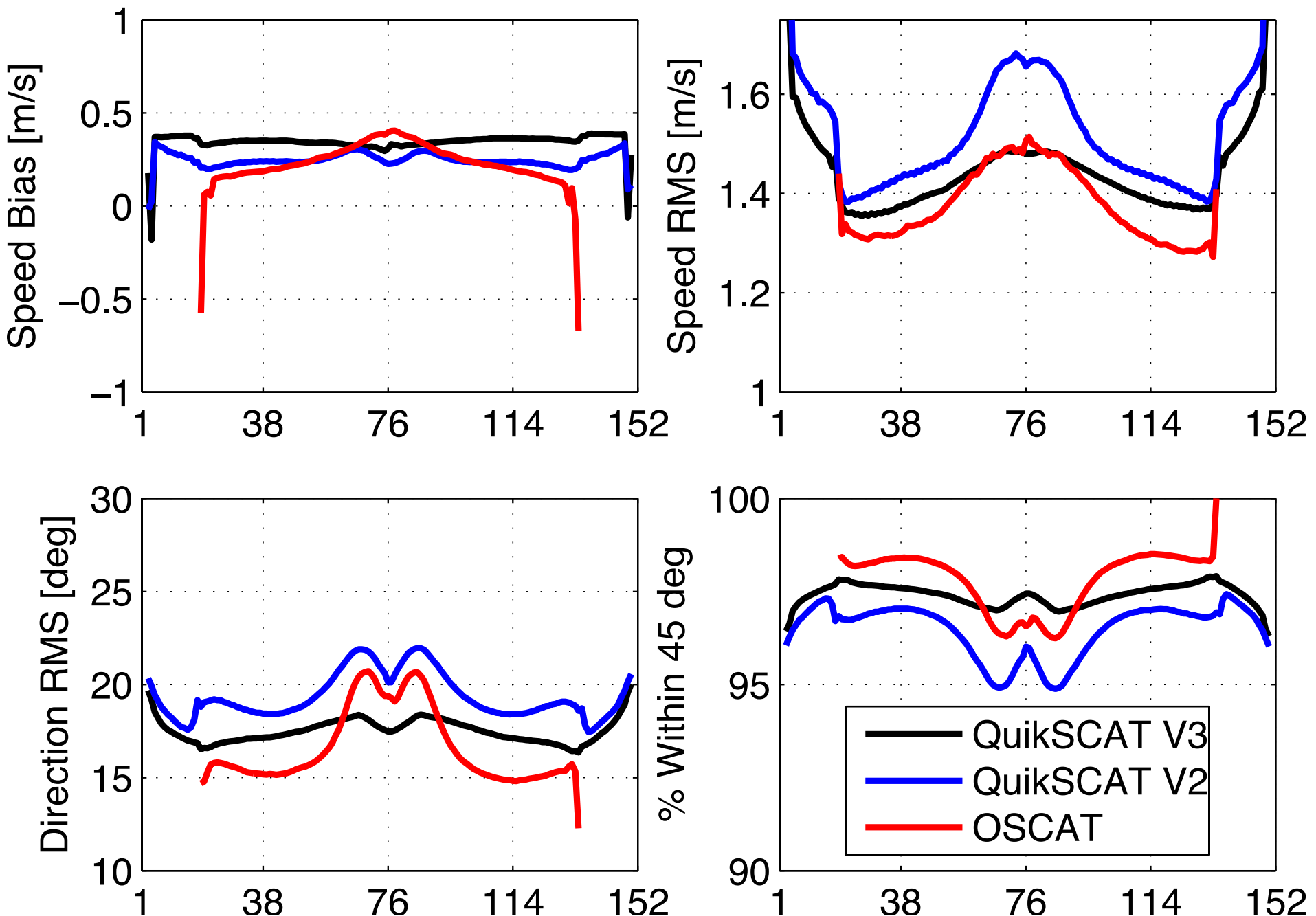
QuikSCAT / OSCAT Data Available at PODAAC

- QuikSCAT V3 L2B on 12.5 km grid (public release 4th April 2013):
 - <ftp://podaac.jpl.nasa.gov/OceanWinds/quikscat/L2B12/v3/>
 - Over 10 years of data: 1999-300 to 2009-325
 - Final QuikSCAT L2B data product.
- SCAT on OceanSAT-2 L2B on 12.5 km grid (public release 28th March 2013):
 - <ftp://podaac.jpl.nasa.gov/OceanWinds/oceansat2/L2B/oscat/jpl/v2/>
 - Over 3 years of data: 2010-016 to 2013-091
 - *New data added monthly.*
 - Processing algorithms are still in development.
- Both products use nearly-identical NetCDF file formats and dataset names – if you can use one, you already know how to use the other!

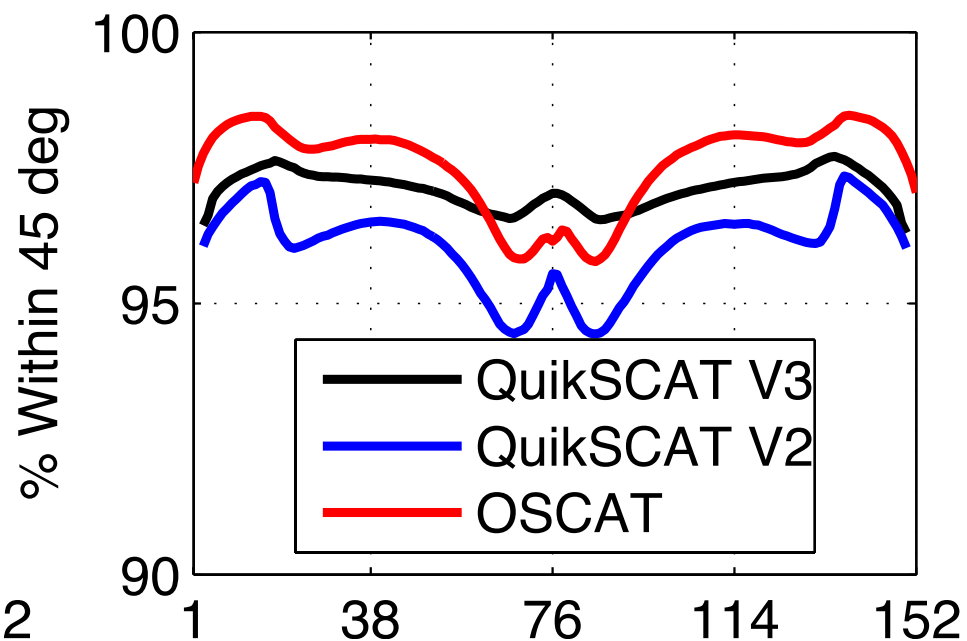
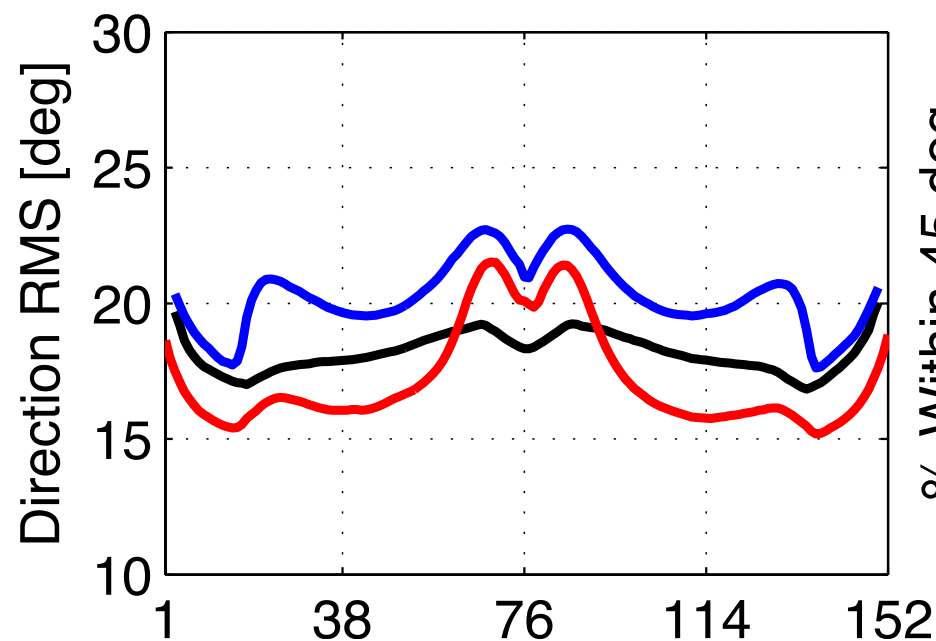
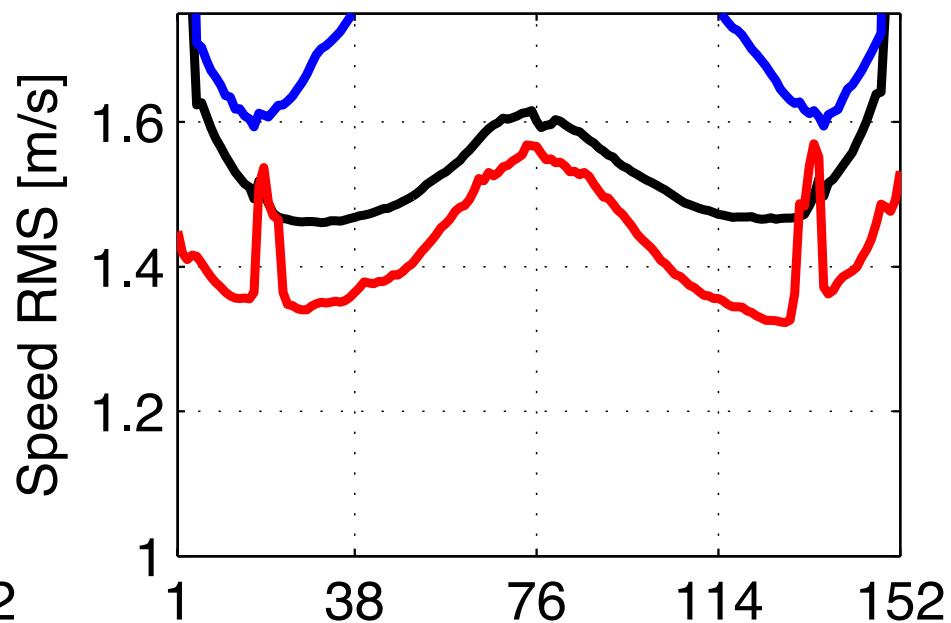
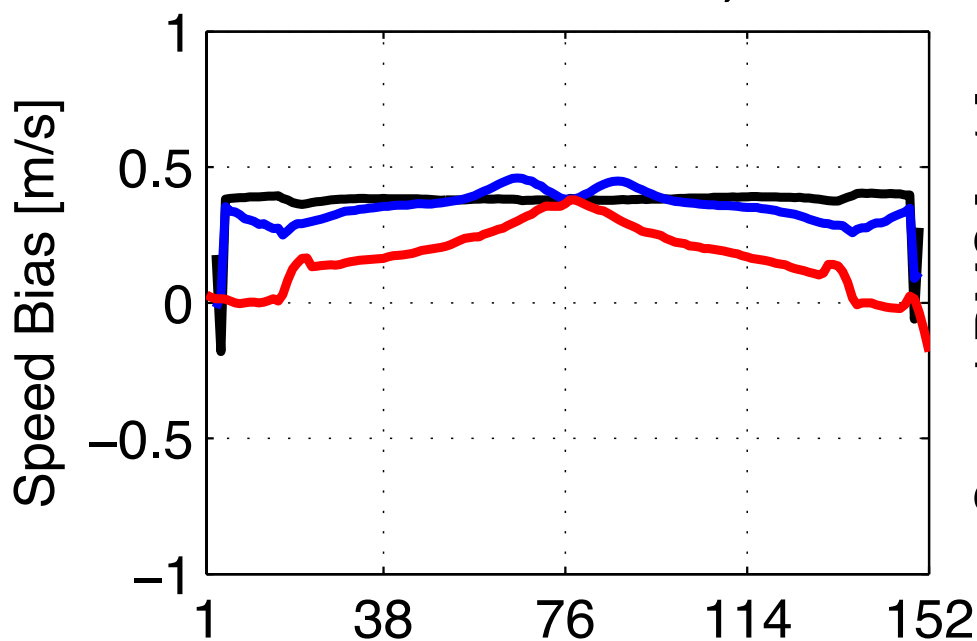
QuikSCAT / OSCAT Processing Chain

- Improved processing algorithms and model functions:
 - Use of overlap gridding at the L1B to L2A level.
 - New model functions (Ku2011 for QuikSCAT, repointed QuikSCAT for OSCAT).
 - Neural Network based rain impact estimation and speed bias correction.
- All improved algorithms have been published in peer-reviewed journals:
 - Fore et al, “Point-Wise Wind Retrieval and Ambiguity Removal Improvements for the QuikSCAT Climatological Data Set,” IEEE TGARS, accepted Feb 2013.
 - Stiles and Dunbar, “A Neural Network Technique for Improving the Accuracy of Scatterometer Winds in Rainy Conditions,” IEEE TGARS, vol 48, no 8, pp 3114-3122, Aug 2010.

Data Flagged as Rain-Free; ECMWF in 3 to 30 m/s



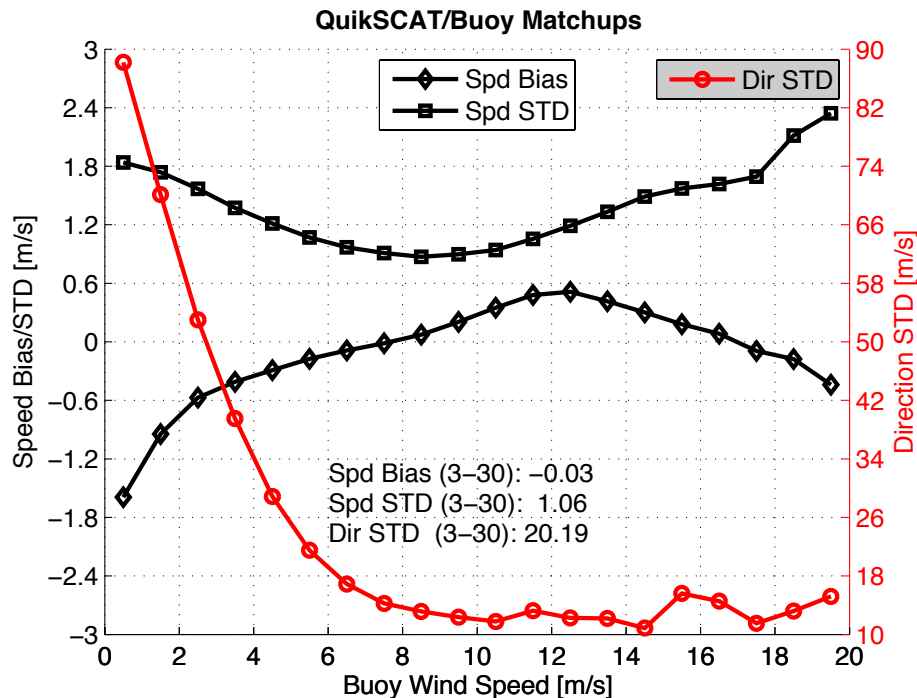
All Data; ECMWF in 3 to 30 m/s



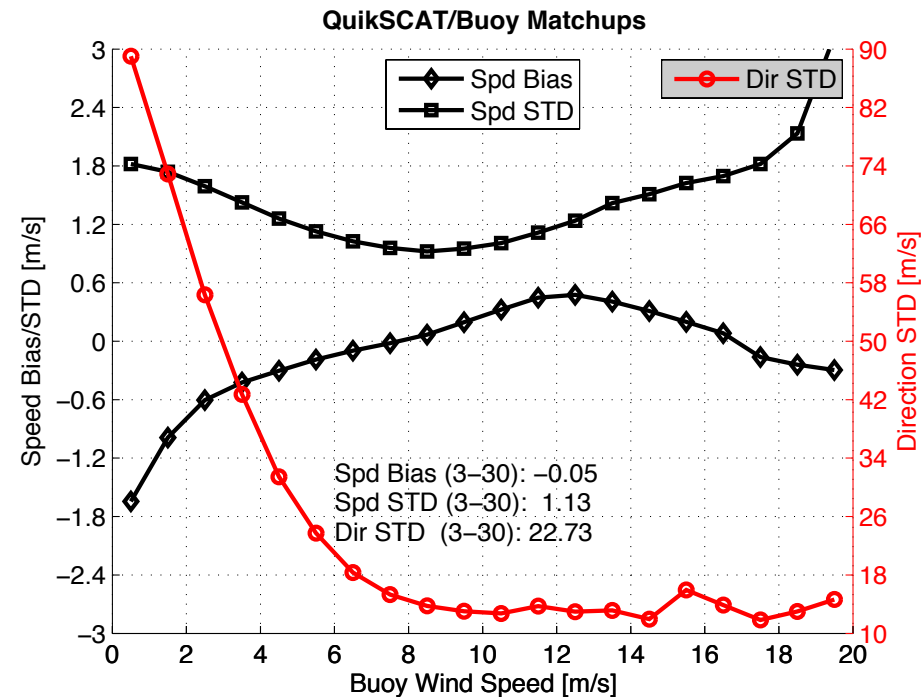
QuikSCAT L2B Buoy Matchups

- Use all NDBC/TAO/PIRATA/RAMA in 2000-2009
- 5.1 million in 10 years: Within 25 km, 30 minutes; flagged as rain-free and land-free.

Only Trusted Buoys



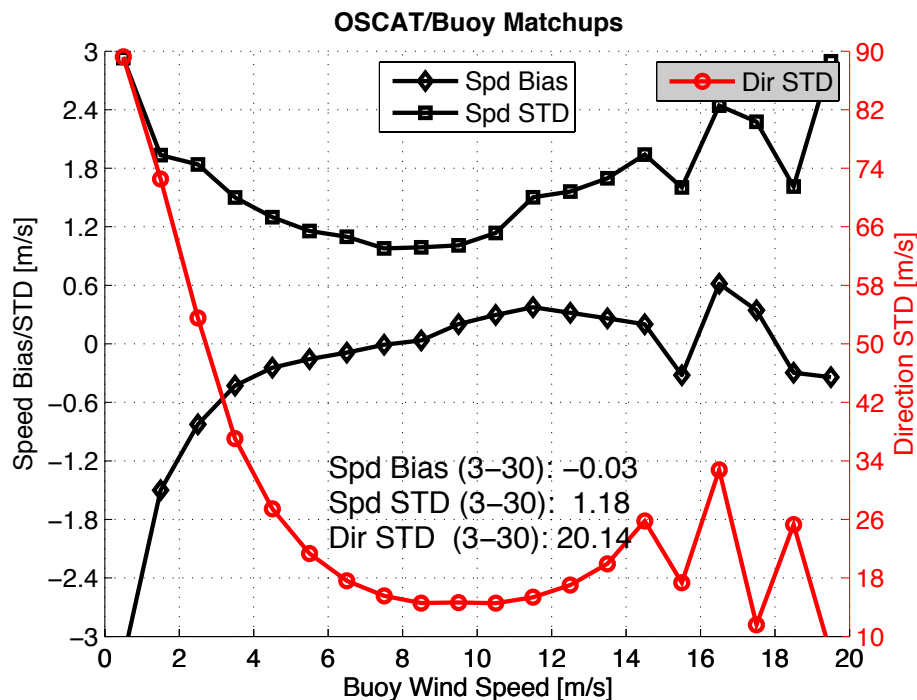
All Buoys



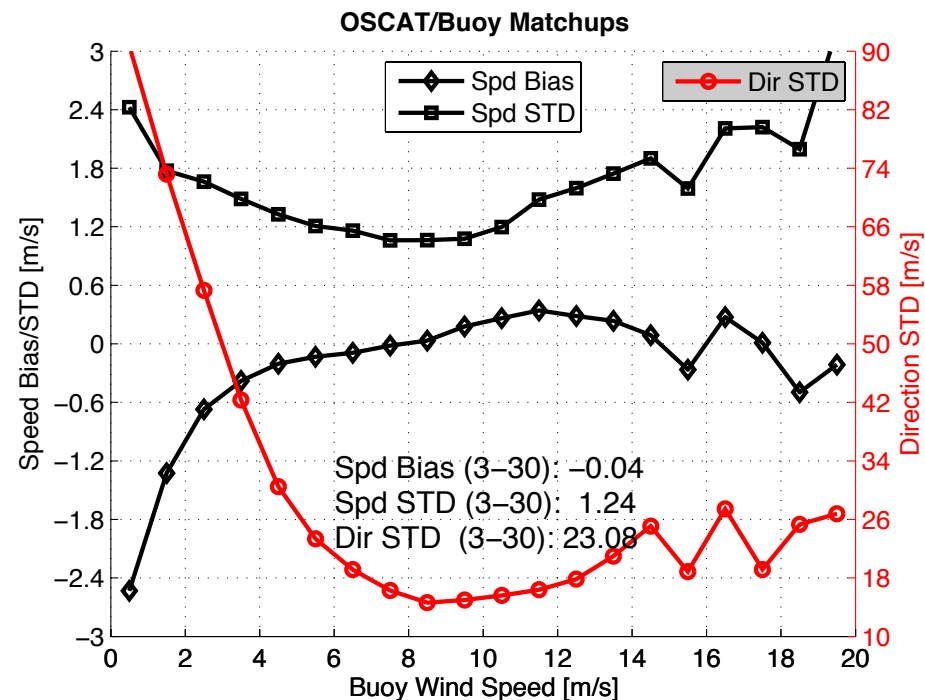
JPL/OSCAT Buoy Matchups

- Use all NDBC/TAO/PIRATA/RAMA in 2010-2012
- 600 thousand in 3 years: Within 25 km, 30 minutes; flagged as rain-free and land-free.

Only Trusted Buoys



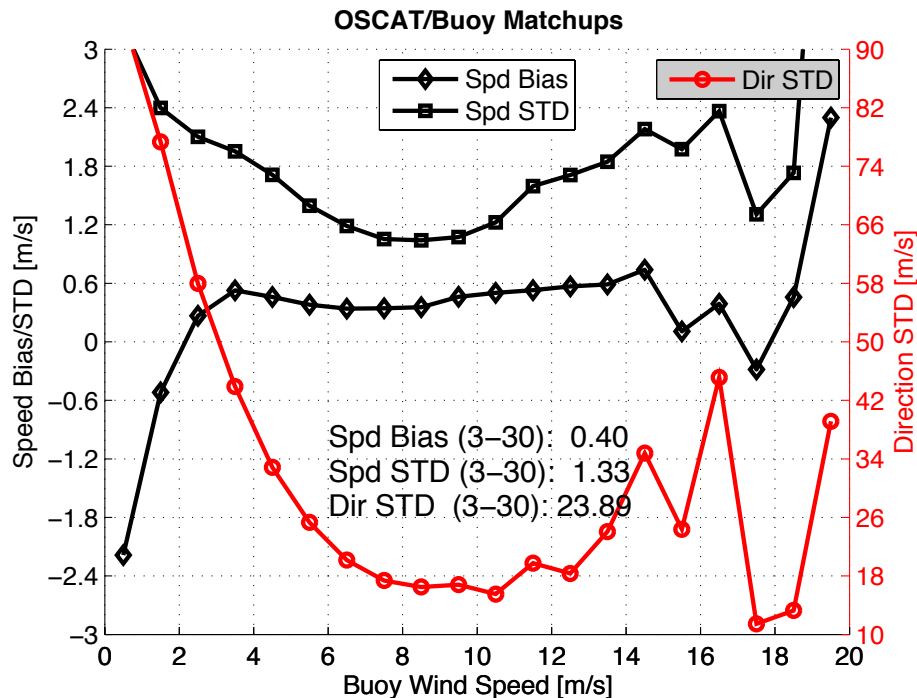
All Buoys



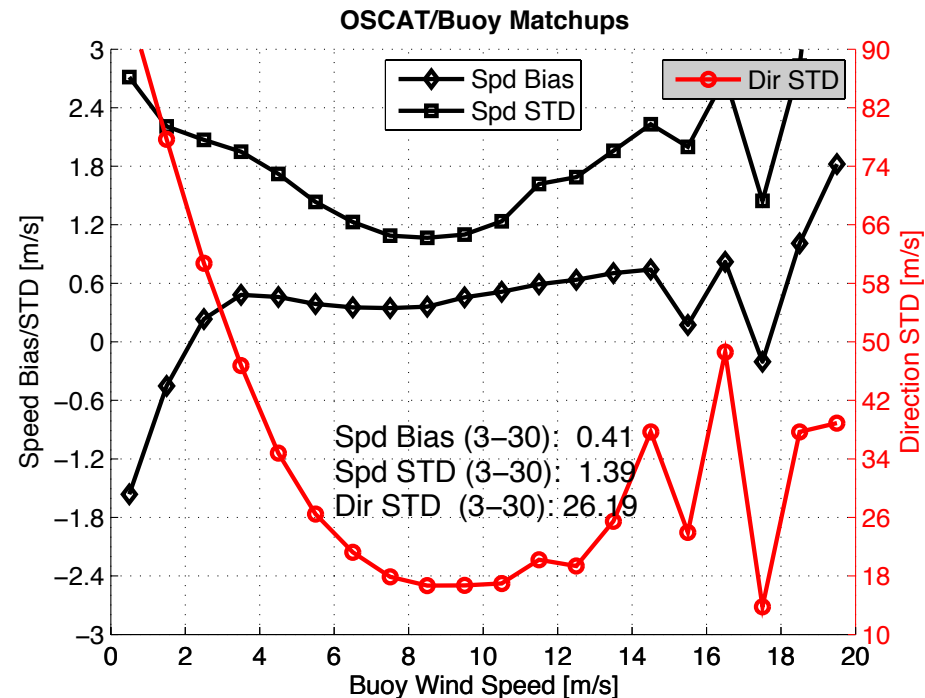
ISRO/OSCAT Buoy Matchups

- Use all NDBC/TAO/PIRATA/RAMA in 2010-2012
- 780 thousand in 3 years: Within 50 km, 30 minutes; flagged as rain-free and land-free.

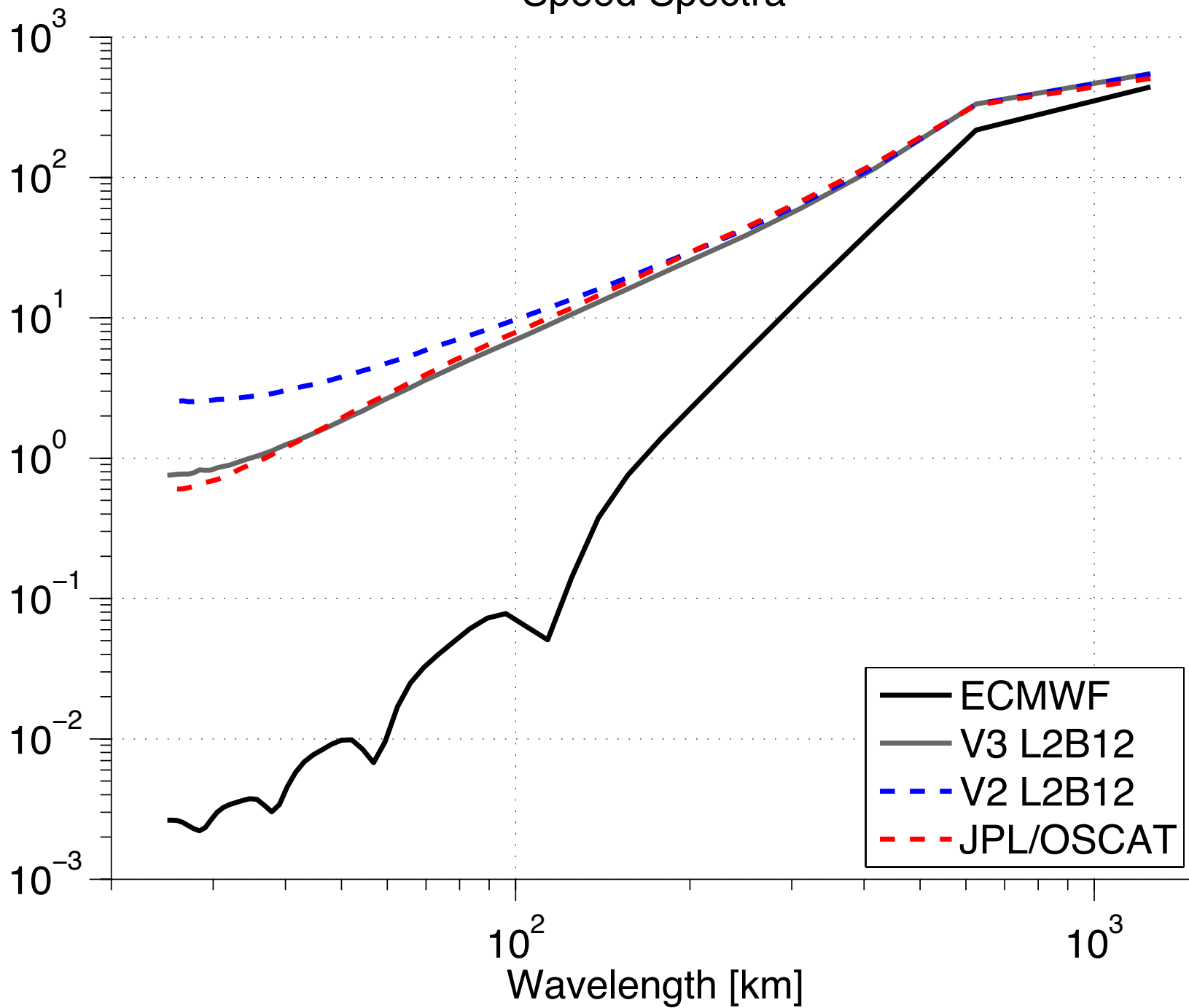
Only Trusted Buoys



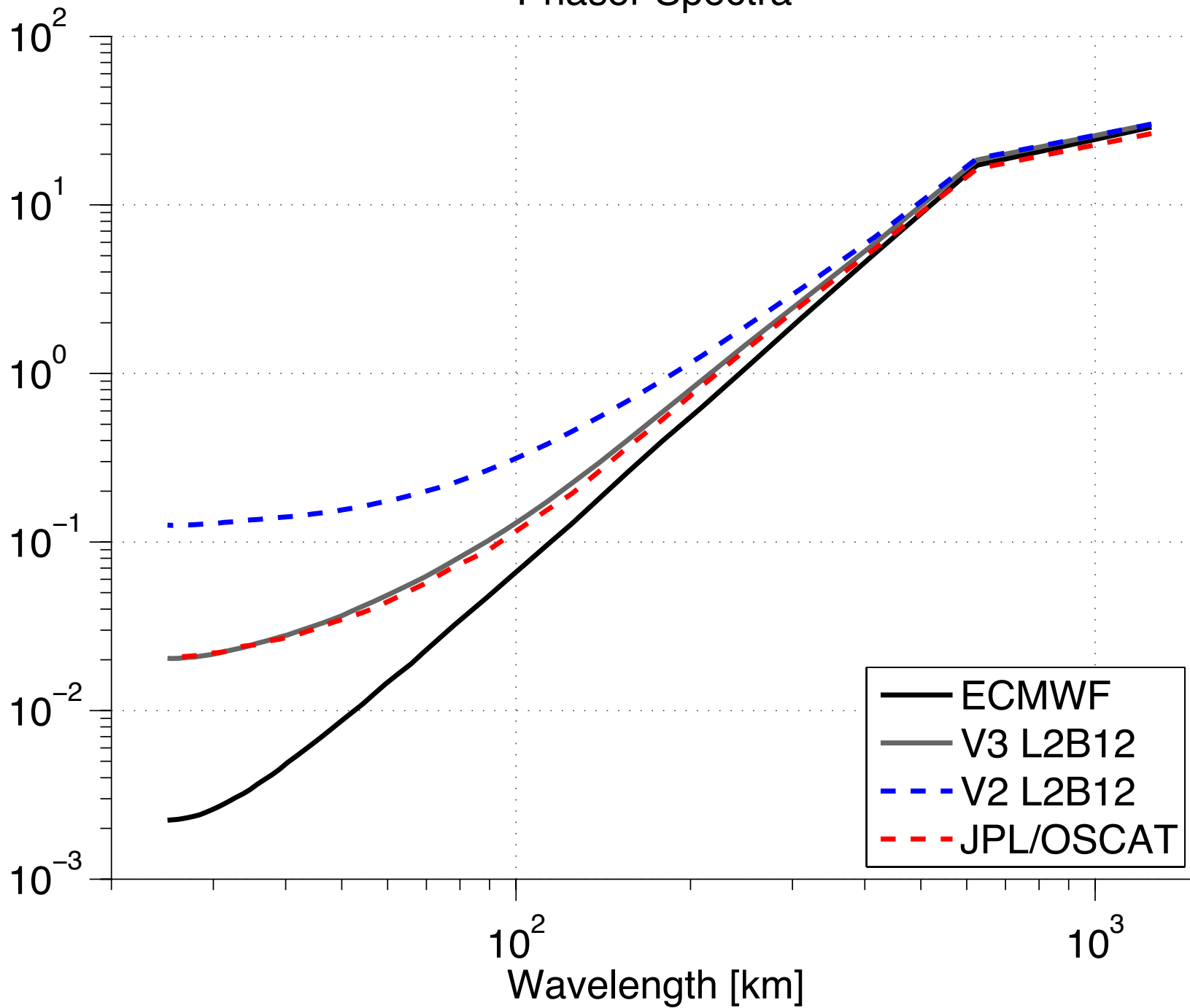
All Buoys



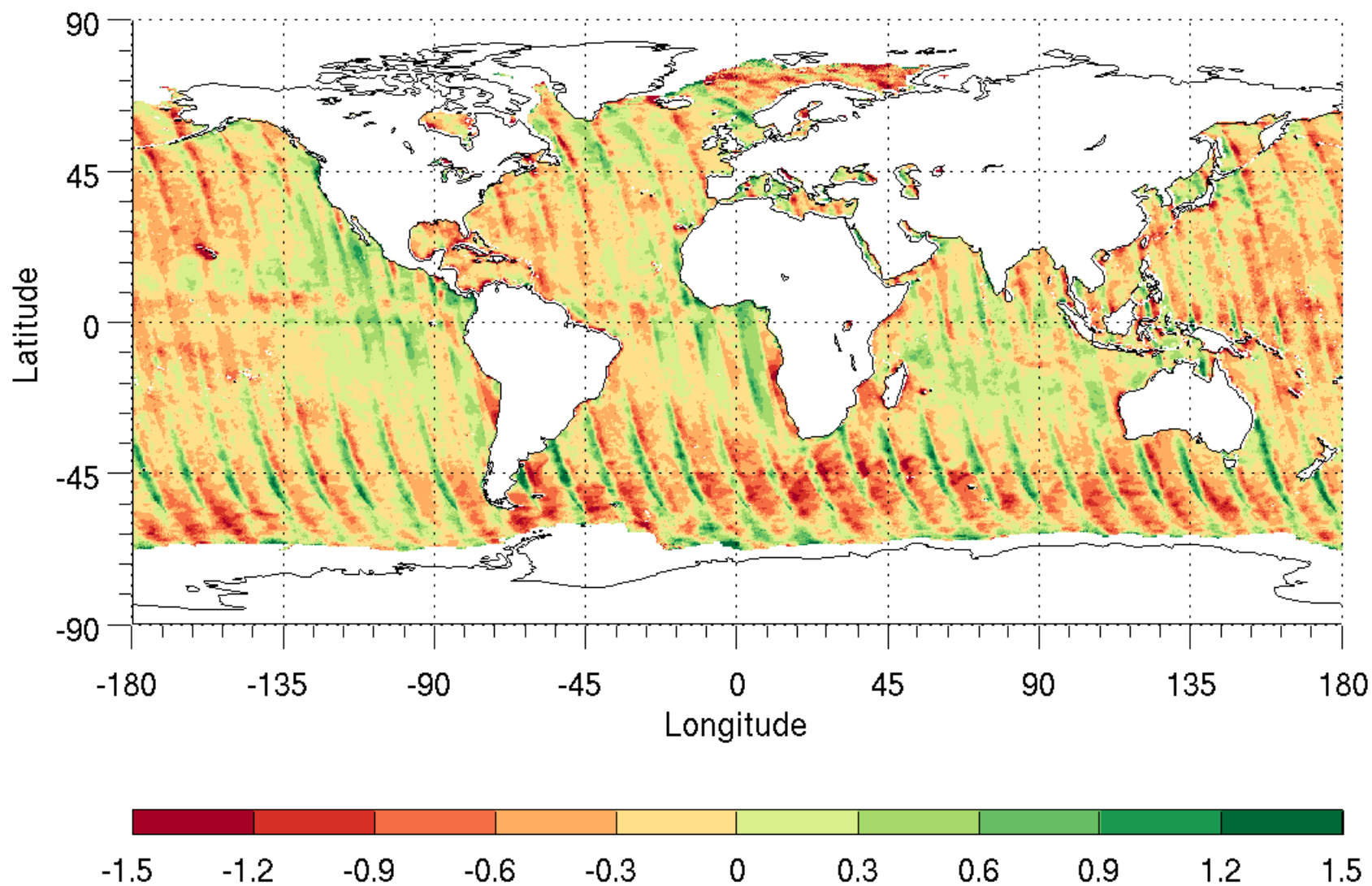
Speed Spectra



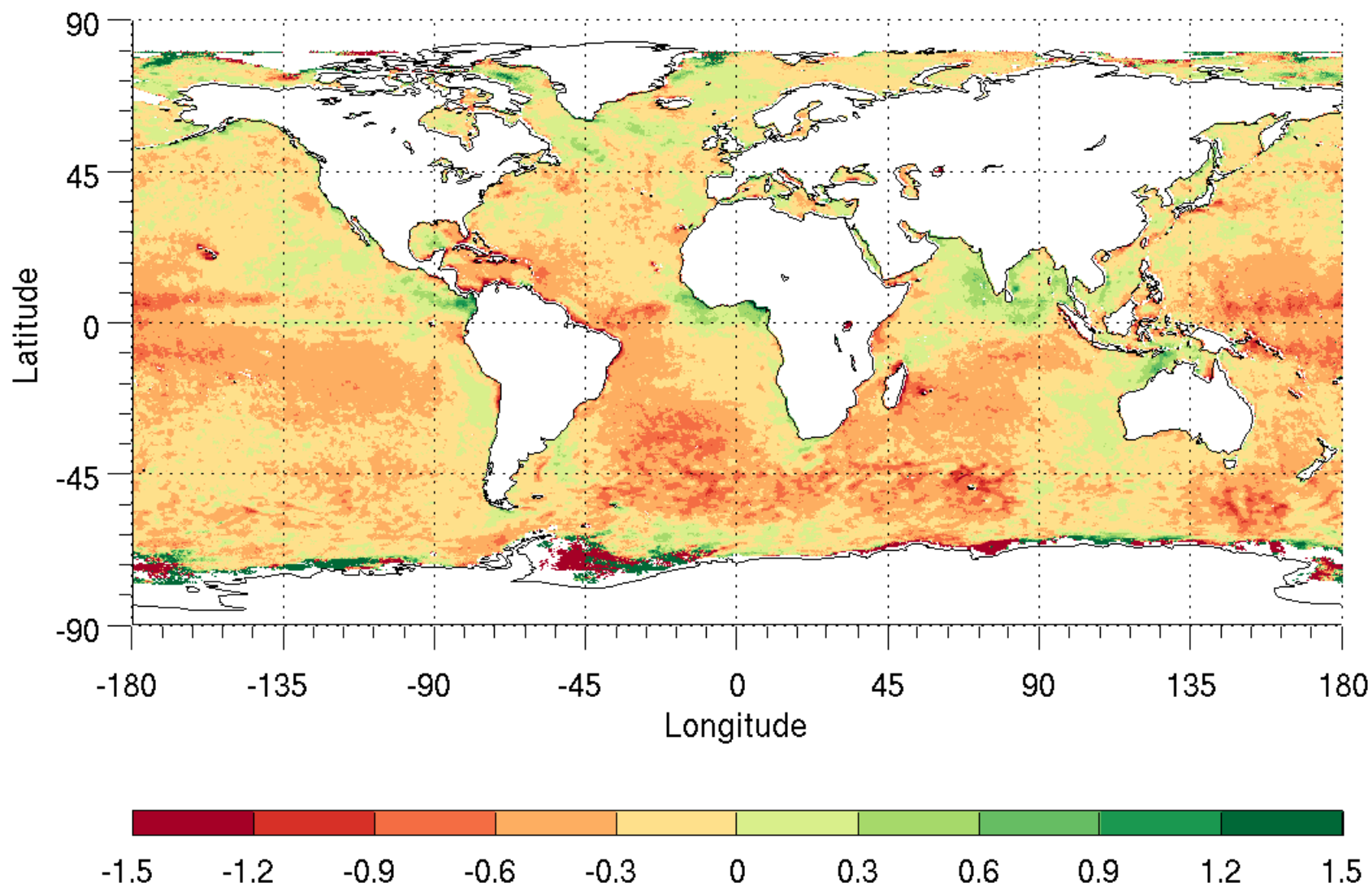
Phasor Spectra



Example of Problem: 2012 OSCAT Zonal Bias w.r.t ECMWF; Ascending

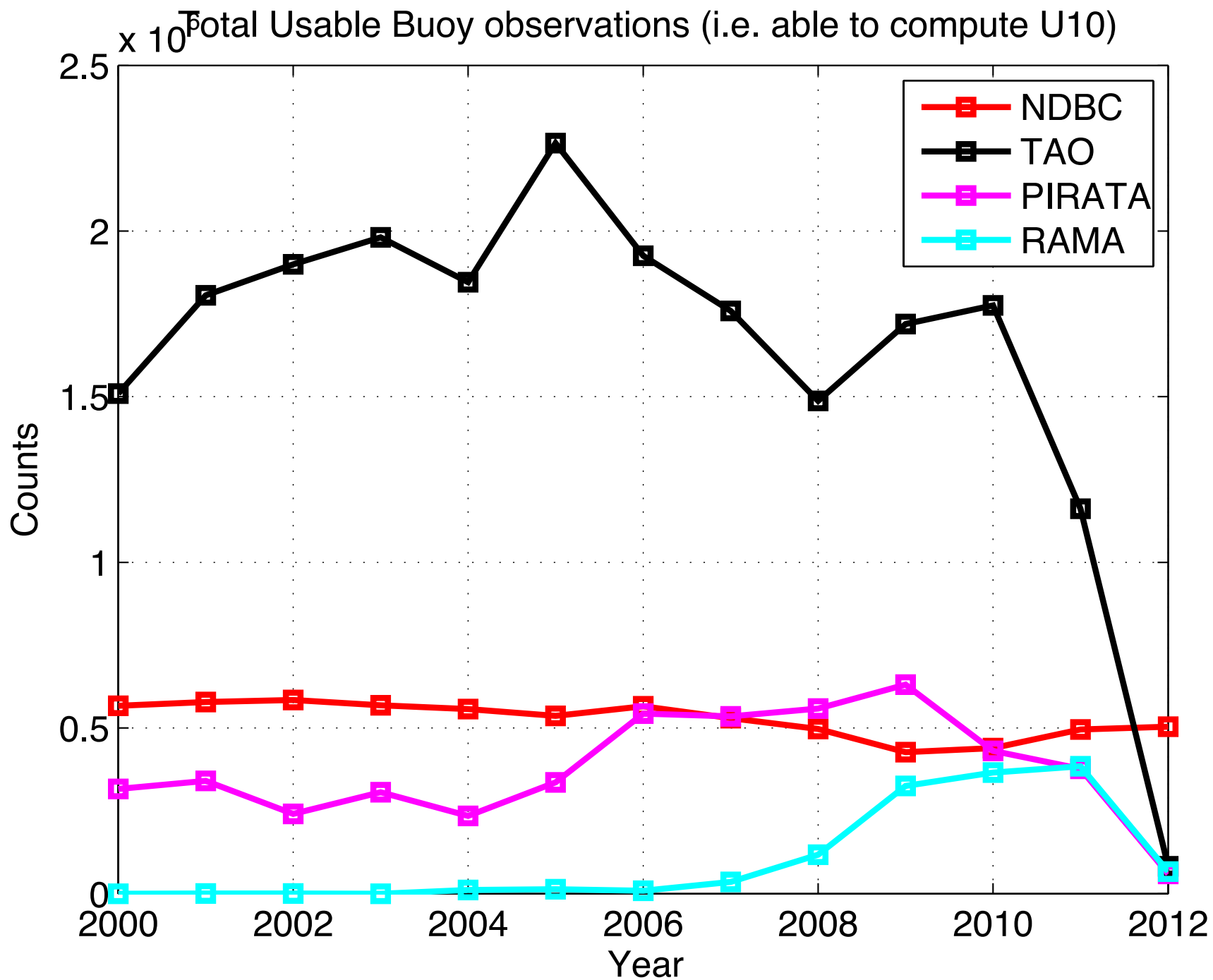


2008 QuikSCAT Zonal Bias w.r.t ECMWF; Ascending

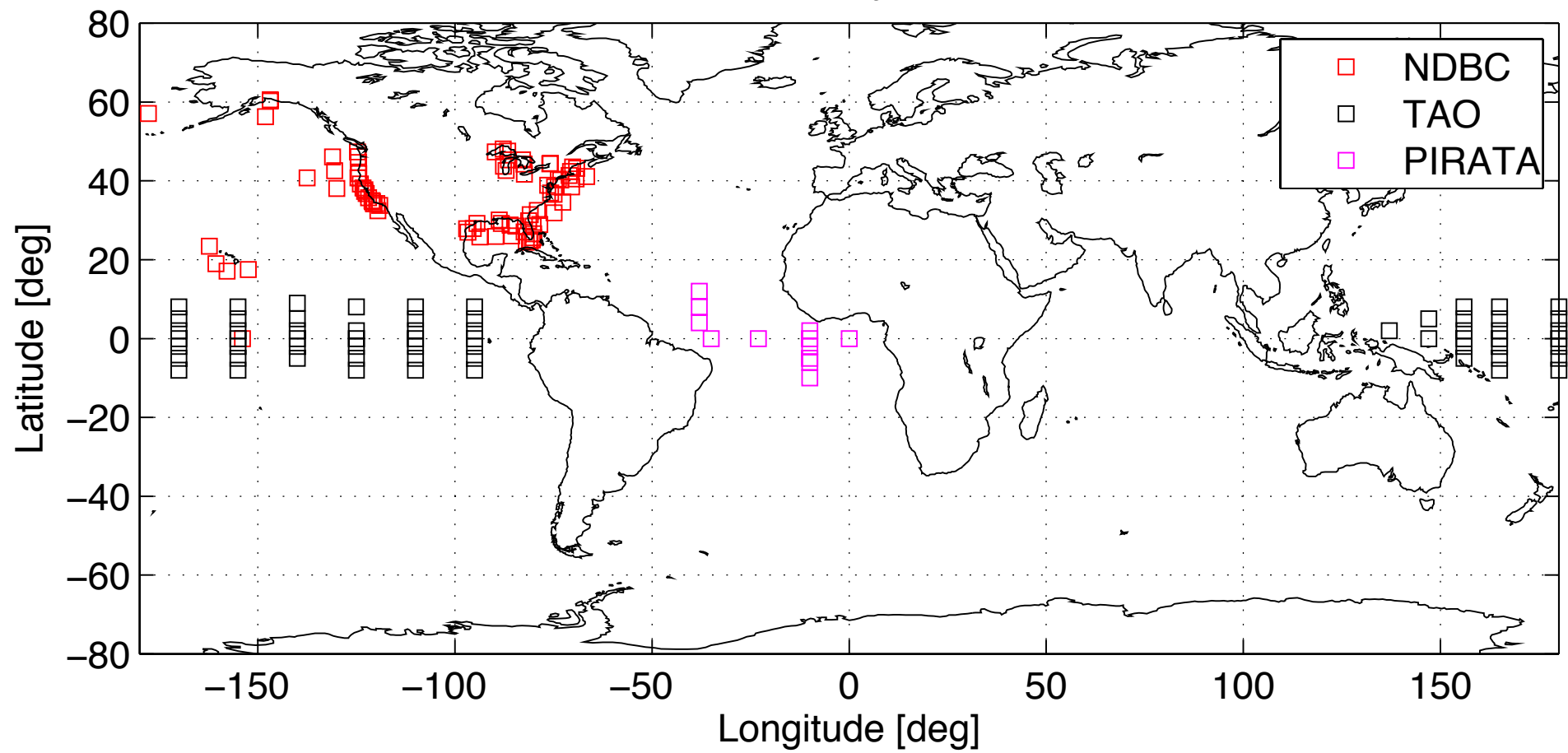


Summary

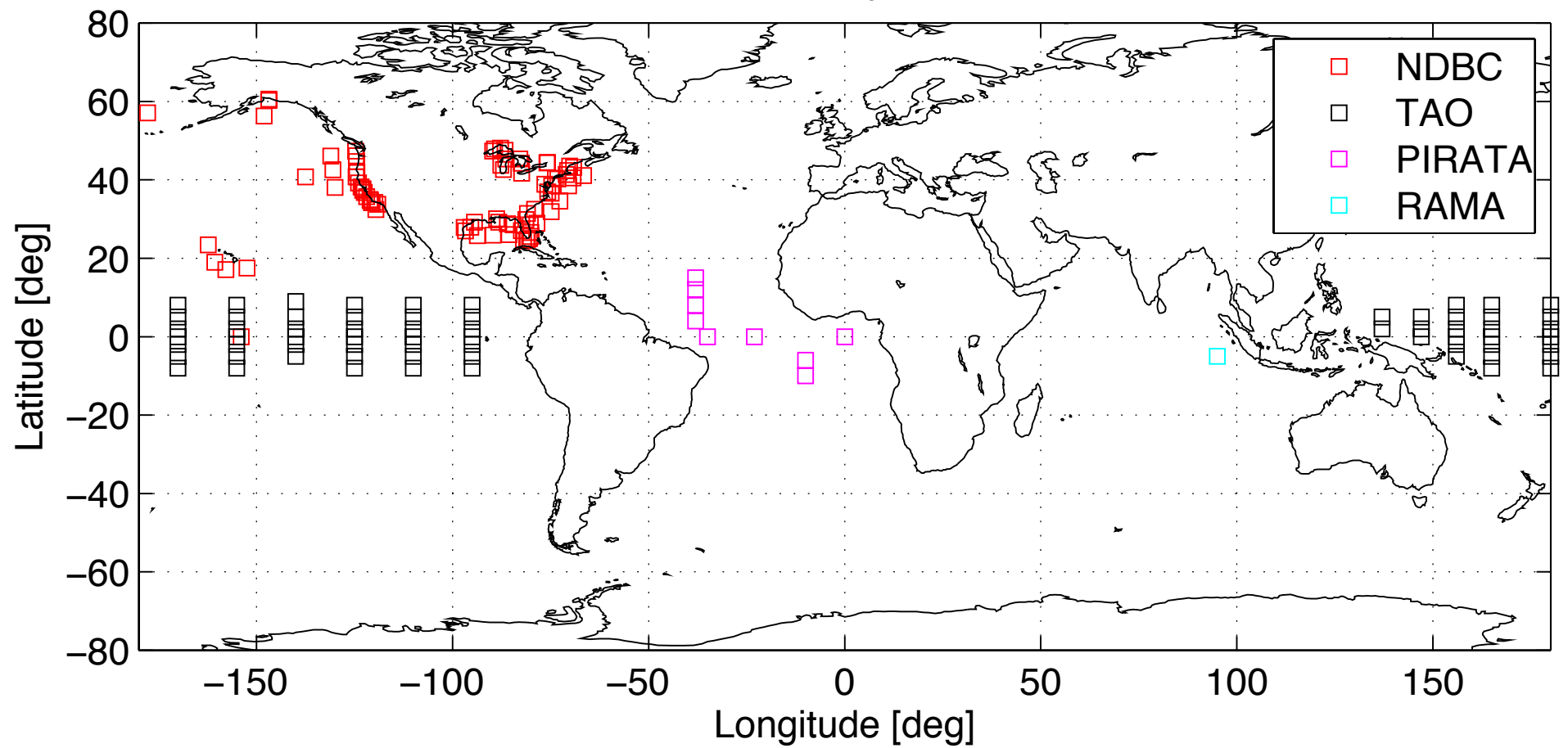
- 10 years of QuikSCAT data are available:
 - <ftp://podaac-ftp.jpl.nasa.gov/allData/quikscat/L2B12/v3>
 - Data are extensively calibrated and validated.
- More than 3 years of OSCAT data are available:
 - <ftp://podaac-ftp.jpl.nasa.gov/allData/oceansat2/L2B/oscat/jpl/v2>
 - Data is of comparable quality to QuikSCAT.
 - *Algorithms not finalized.*
- Future Work
 - Continued improvement of OSCAT data.
 - Reduction of swath-based artifacts due to instrument calibration issues.



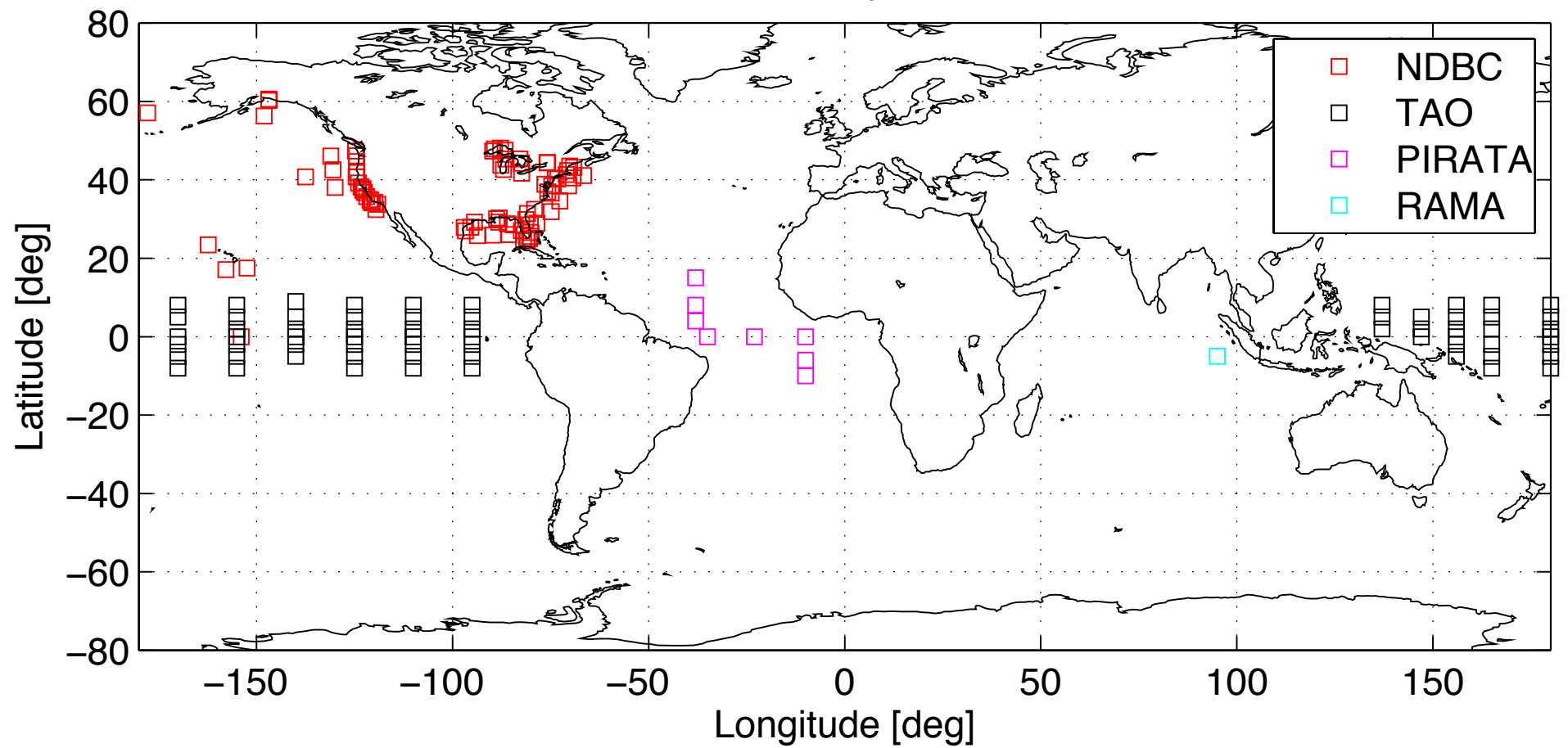
Useable Buoys in 2000



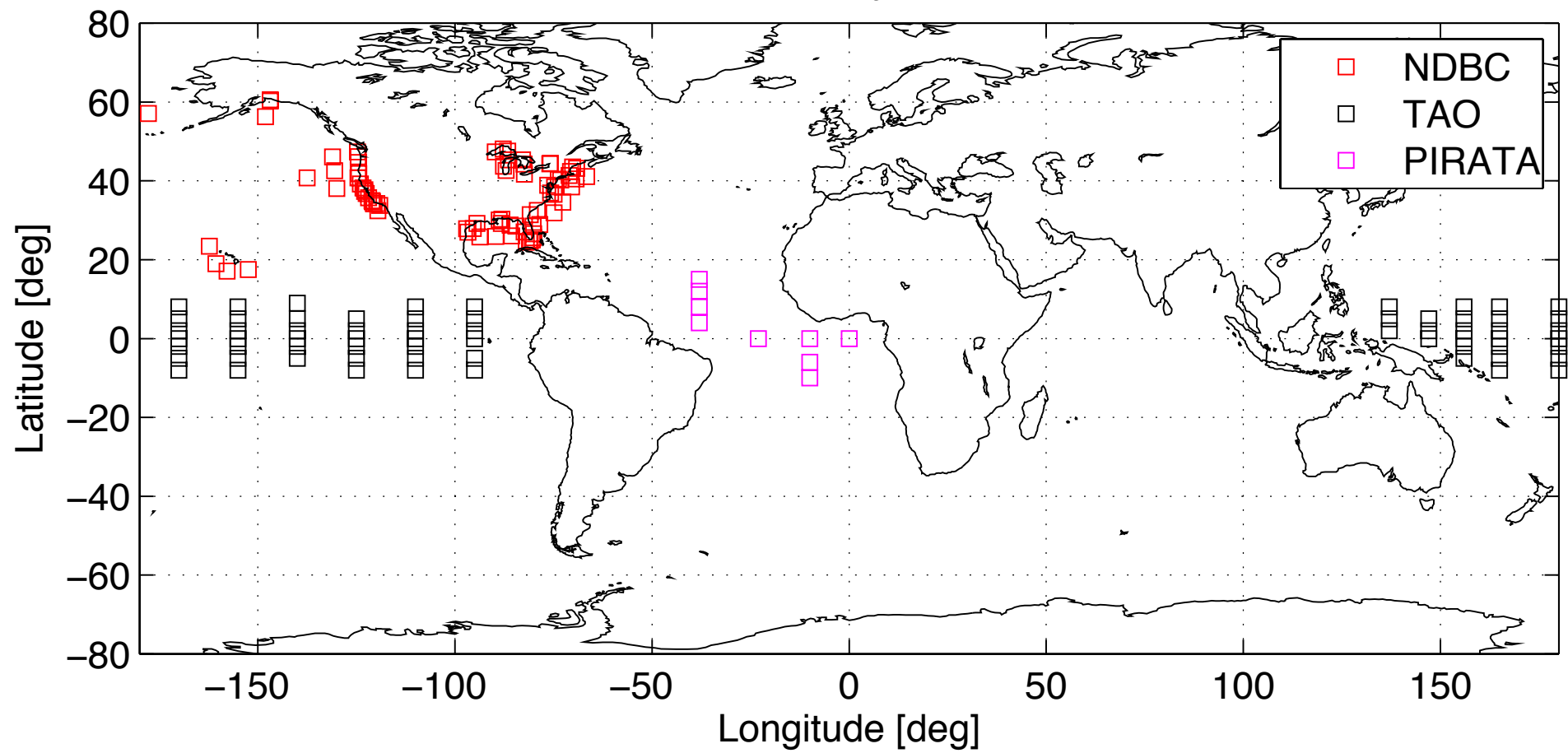
Useable Buoys in 2001



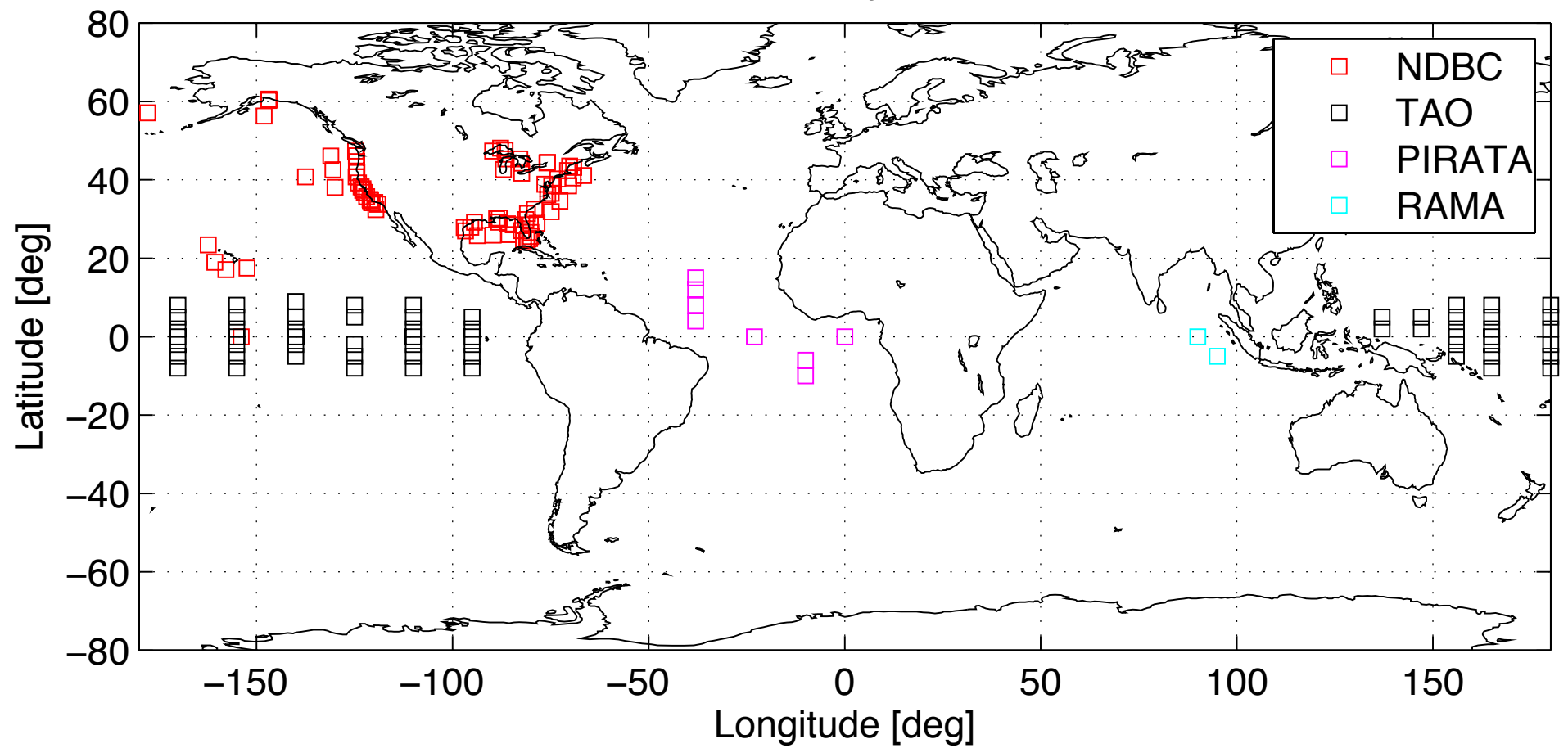
Useable Buoys in 2002



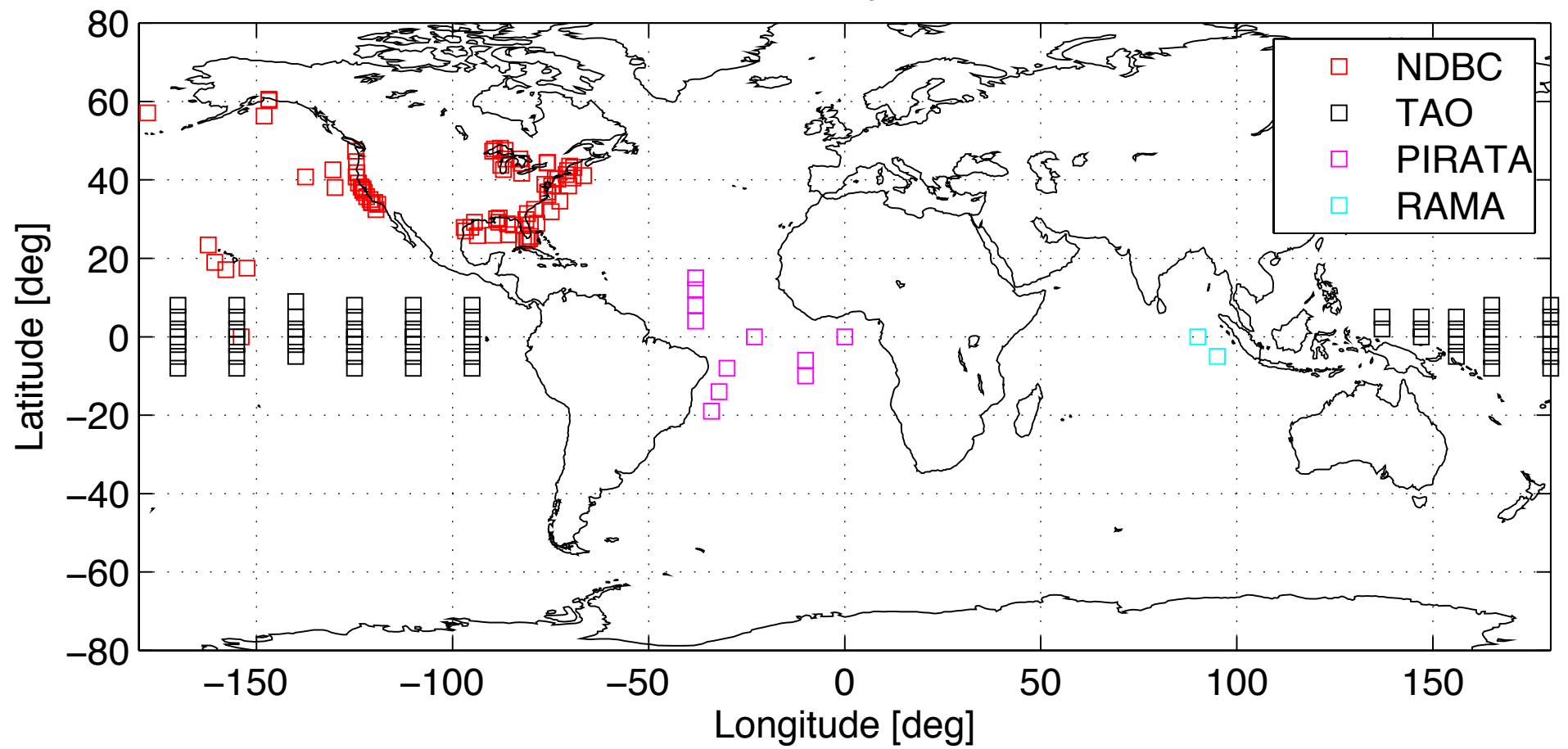
Useable Buoys in 2003



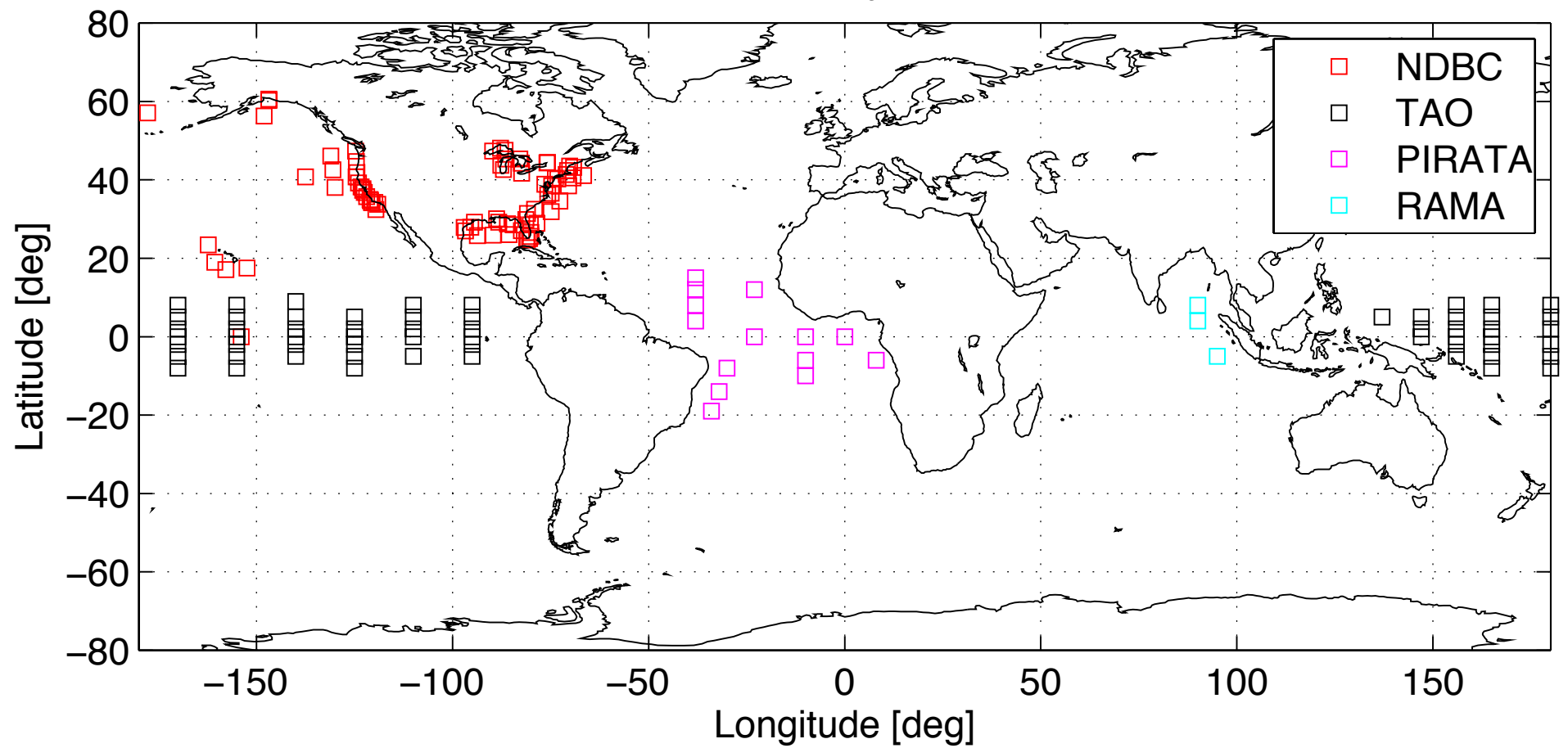
Useable Buoys in 2004



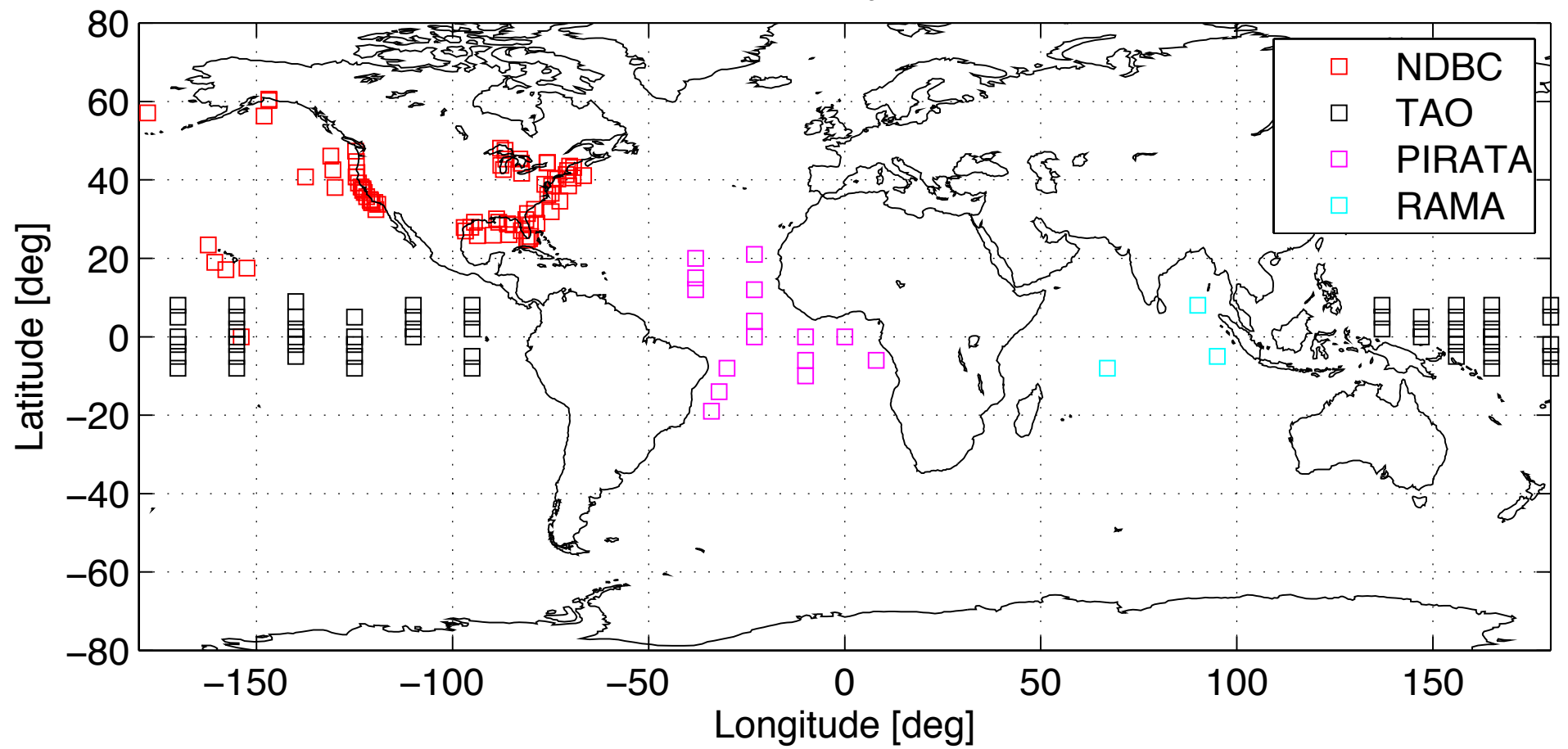
Useable Buoys in 2005



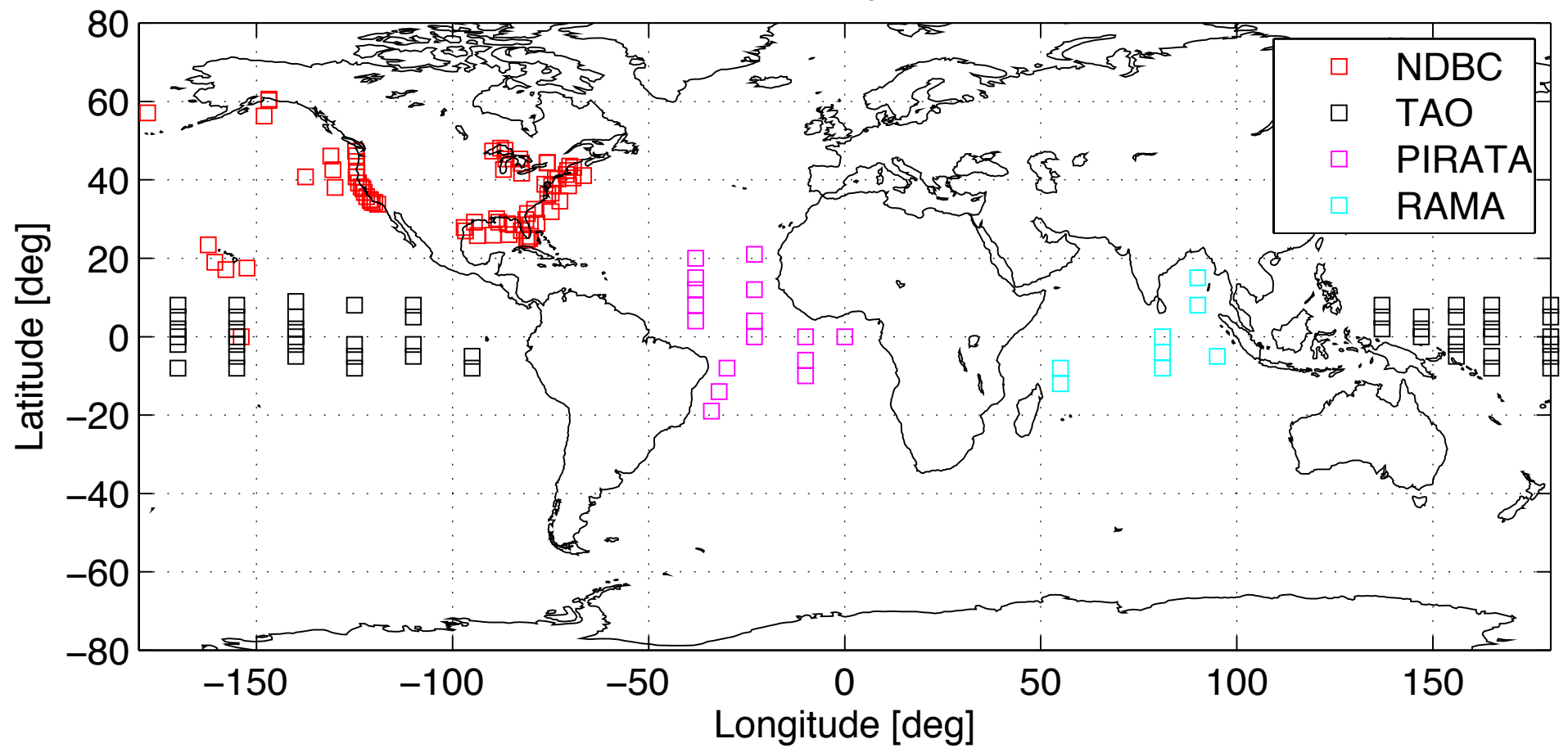
Useable Buoys in 2006



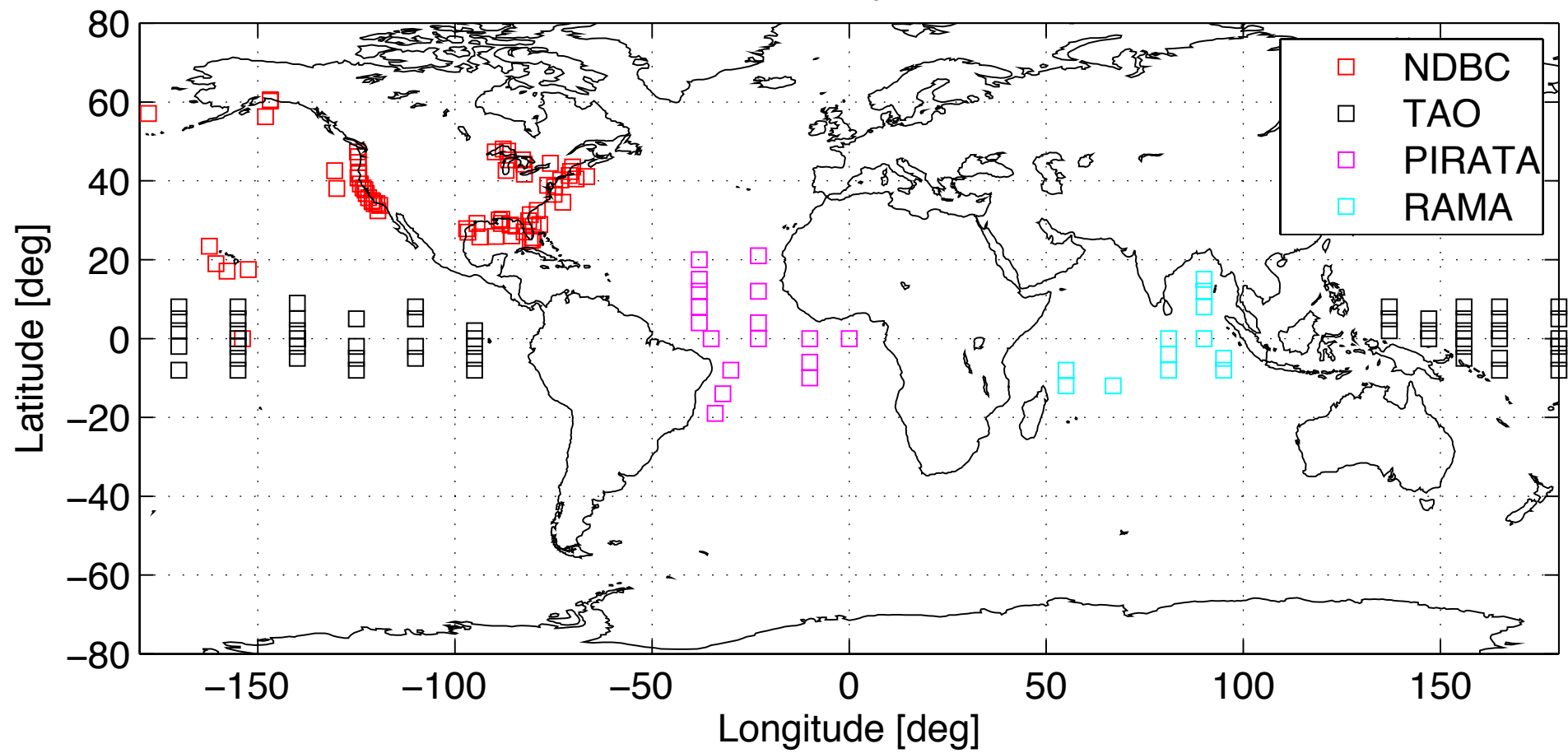
Useable Buoys in 2007



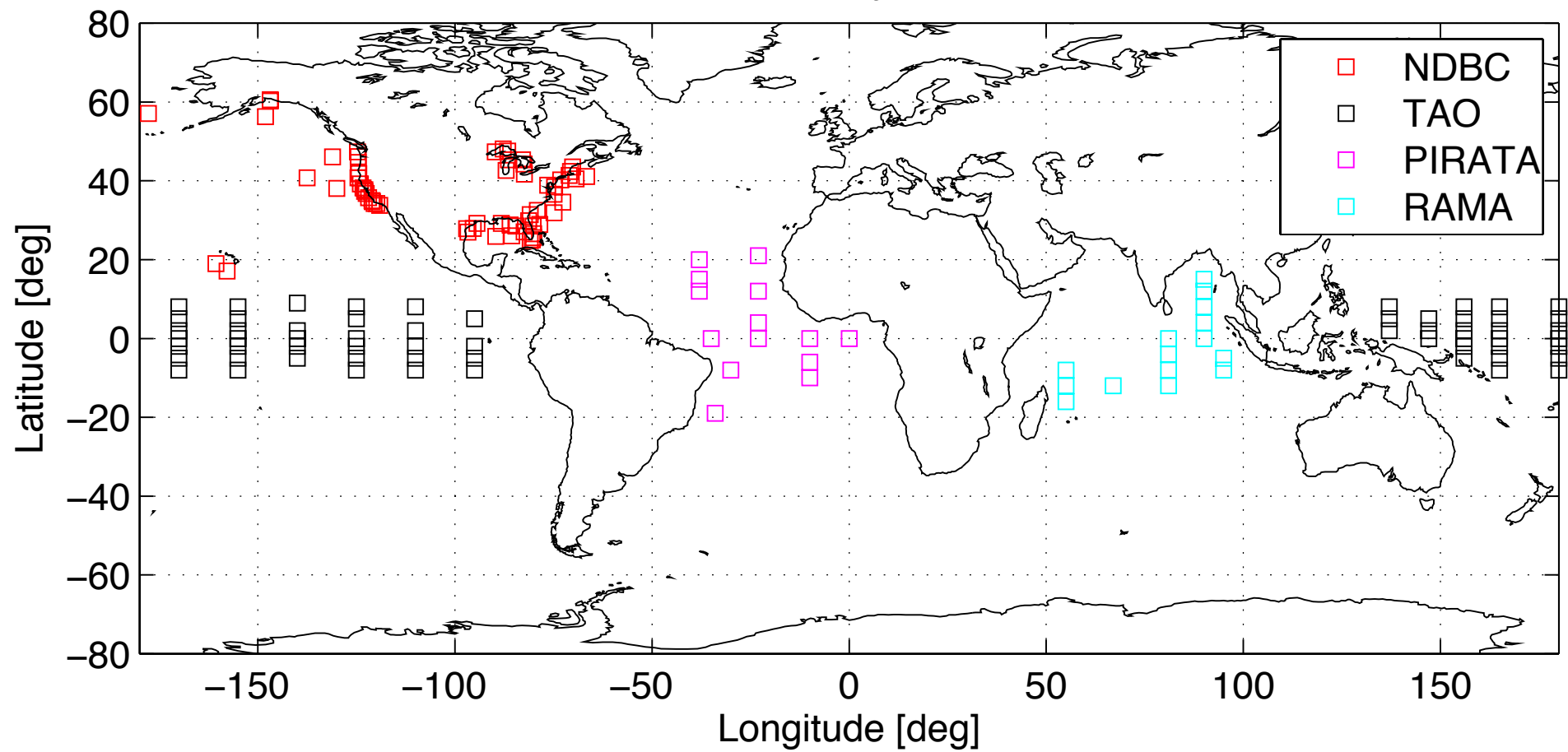
Useable Buoys in 2008



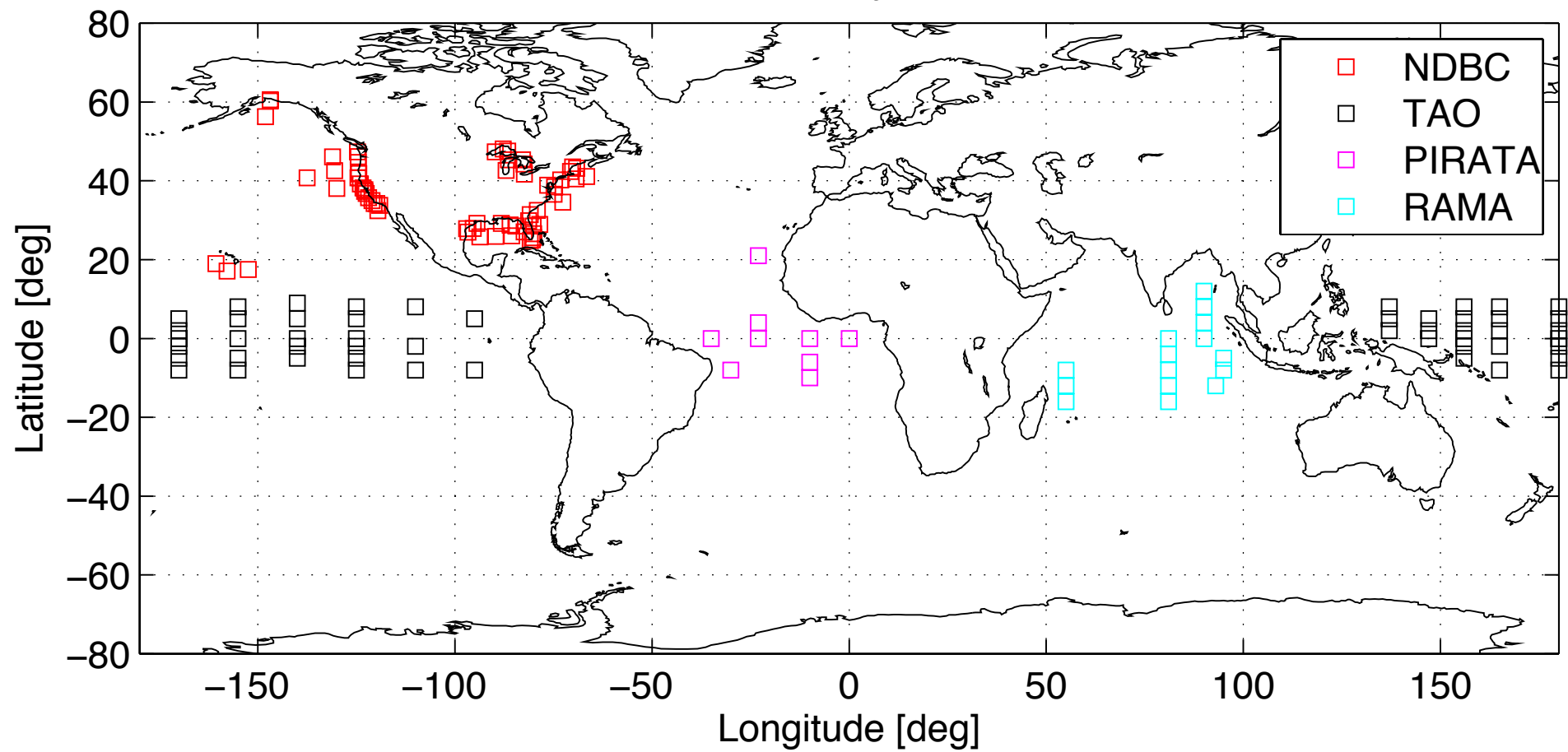
Useable Buoys in 2009



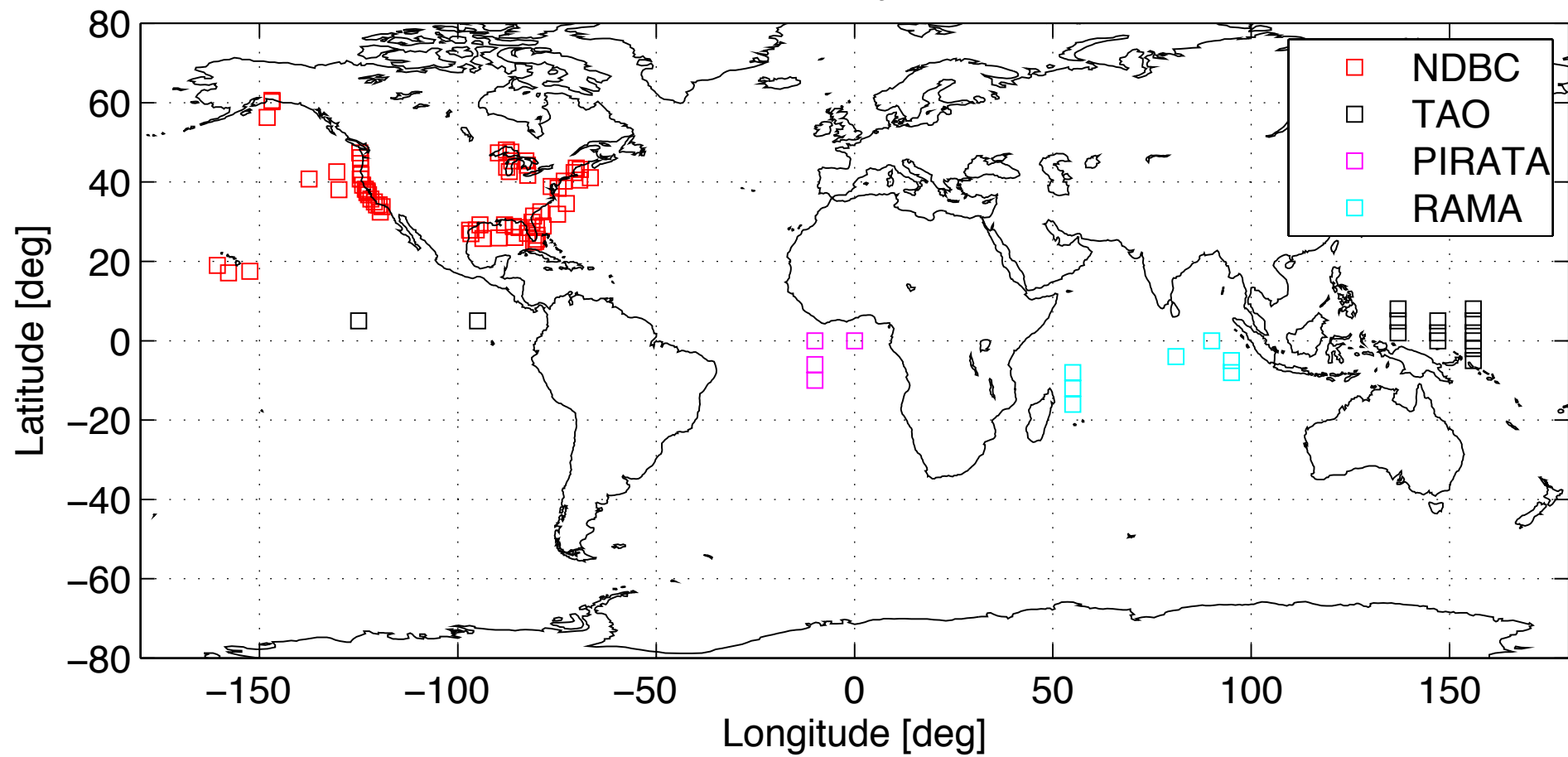
Useable Buoys in 2010



Useable Buoys in 2011



Useable Buoys in 2012



Data Flagged as Rainy; ECMWF in 3 to 30 m/s

