

Wind Field Distribution within Hurricane Force Extratropical Cyclones over North Pacific and Atlantic using QuikSCAT Scatterometer Measurements

Story of Successful Transitioning of Research Data into NOAA Operations

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Motivation



"...As with many of these types of things, the training investment by NWS has been slim to none when the data are first made available. Initiatives/technologies like this always seem to be on the internet first and then some day it shows up in AWIPS. Then when we get it, only some use it. We see that data can be useful but also that it has problems and we have no knowledge to sort through them. We should actually make it part of our daily briefing procedure, but have not yet done so..."





 Scatterometers are microwave radar instruments specifically designed to measure near surface ocean wind speed and direction

•Scatterometers are places on low-orbit polar orbiting satellites





- Issue marine warnings, forecasts, and guidance (text and graphical)
- Customers : commercial mariners, fishermen, recreational sailors, the USCG and the U.S. Navy.
- Mission: safety at sea, protection of life and property



QuikSCAT Ocean Surface Vector Wind Data Operational Impacts Ocean Prediction Center (OPC)



- QuikSCAT OSVW data introduced in OPC operations 6 months after QuikSCAT satellite launch (Jan 2000)
- QuikSCAT 1800km wide swath, large wind speed retrievable range and NRT data access:
 - Revolutionized wind WARNING and forecast process
 - Introduced HURRICANE FORCE WIND WARNING for extreme ocean storms (Dec 2000)
 - QuikSCAT winds were used daily by OPC
 - to:
 - make warning decisions,
 - determine frontal and wind field structure of cyclones, and
 - diagnose and examine the validity of numerical weather prediction model analyses and
 - short-term forecast fields
 - **User Impact Study**
 - http://manati.orbit.nesdis.noaa.gov/
 - SVW_nextgen/SVW_workshop_report_final.pdf







Use of OSVW Data for Hurricane Force Extratropical Cyclone Wind Warnings







NORR LAND AMOSPHERE 7

HF Extratropical Cyclone Best Track Database

- 6 hourly oceanic surface analyses
- Forecaster assigns appropriate warning category (based on all data)
- Study examined the forecaster decision in post mortem
- Catalog events
 - Similar to NHC "best track"



















Impact on Maritime Commerce



- Present level of warning/forecast services to 48 hours w/QuikSCAT
 - \$135 million per year savings in reduced damage / cargo loss for container and bulk commerce (Kite-Powell, 2009)

Kite-Powell, Hauke, 2009: Benefits to Maritime Commerce from Ocean Surface Vector Wind Observations and Forecasts, Maritime Economics and Logistics. Available online at: http://manati.orbit.nesdis.noaa.gov/SVW_nextgen/ QuikSCAT_maritime_report_final.pdf





























Cultural Change



"... QuikSCAT has revolutionized operational marine warning, analysis and forecasting especially for most severe extratropical cyclones.."

 USER EDUCATION and TRAINING was a KEY for successful transitioning of research data into operations

"... To maintain the significant improvements in operational weather forecasting and warning capability that have been realized from QuikSCAT OSVW data continuity of the OSVW data stream at a level that is equivalent to or better than that provided by QuikSCAT is required..."

 To secure this EDUCATING our POLITICIANS will be the KEY

Future workshop on "How to make our science make impact on our Policy Makers" ?