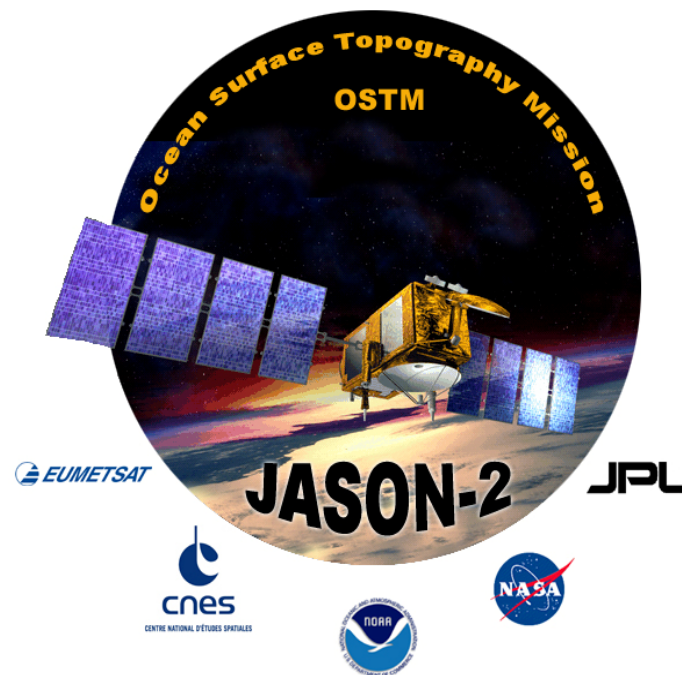



# Jason-2/OSTM OGDR: Data Delivery and Issues



*John Lillibridge - NOAA Project Scientist*

# Jason-2/OSTM Level-2 Products

	OGDR Family	IGDR Family	GDR Family
Reduced 1Hz	OGDR-SSHA	IGDR-SSHA	GDR-SSHA
1Hz + 20Hz	OGDR OGDR-BUFR*	IGDR	GDR
1Hz + 20Hz + Waveforms		S-IGDR	S-GDR
Latency:	3-5 Hours	1-2 Days	~ 60 Days
Application :	Wind, Wave, Disasters	Hurricanes, Fisheries, El Niño	Climate, GSLR

Size & Complexity



\* All files in NetCDF format except OGDR-BUFR, which contains no 20-Hz data

Latency  
Accuracy



# Altimetric Applications

- **Wind & Wave**
  - ◆ **Validation/Assimilation in Global Wave Models**
    - NOAA WaveWatch-III
    - ECMWF WAM
  - ◆ **High Seas Hazards Monitoring**
- **Sea Surface Height & Ocean Currents**
  - ◆ **Hurricane Intensity Forecasting**
  - ◆ **Assimilation in Operational Ocean Models**
    - Real-Time Ocean Forecast System (Gulf Stream)
    - Navy Layered/Coastal Ocean Models (NLOM/NCOM)
    - Mercator (N. Atlantic/Mediterranean)
- **Multi-Mission Altimetry**
  - ◆ **DUACS**
  - ◆ **NRL Real-Time Ocean Environment**
- **Fisheries, Marine Transport, ...**

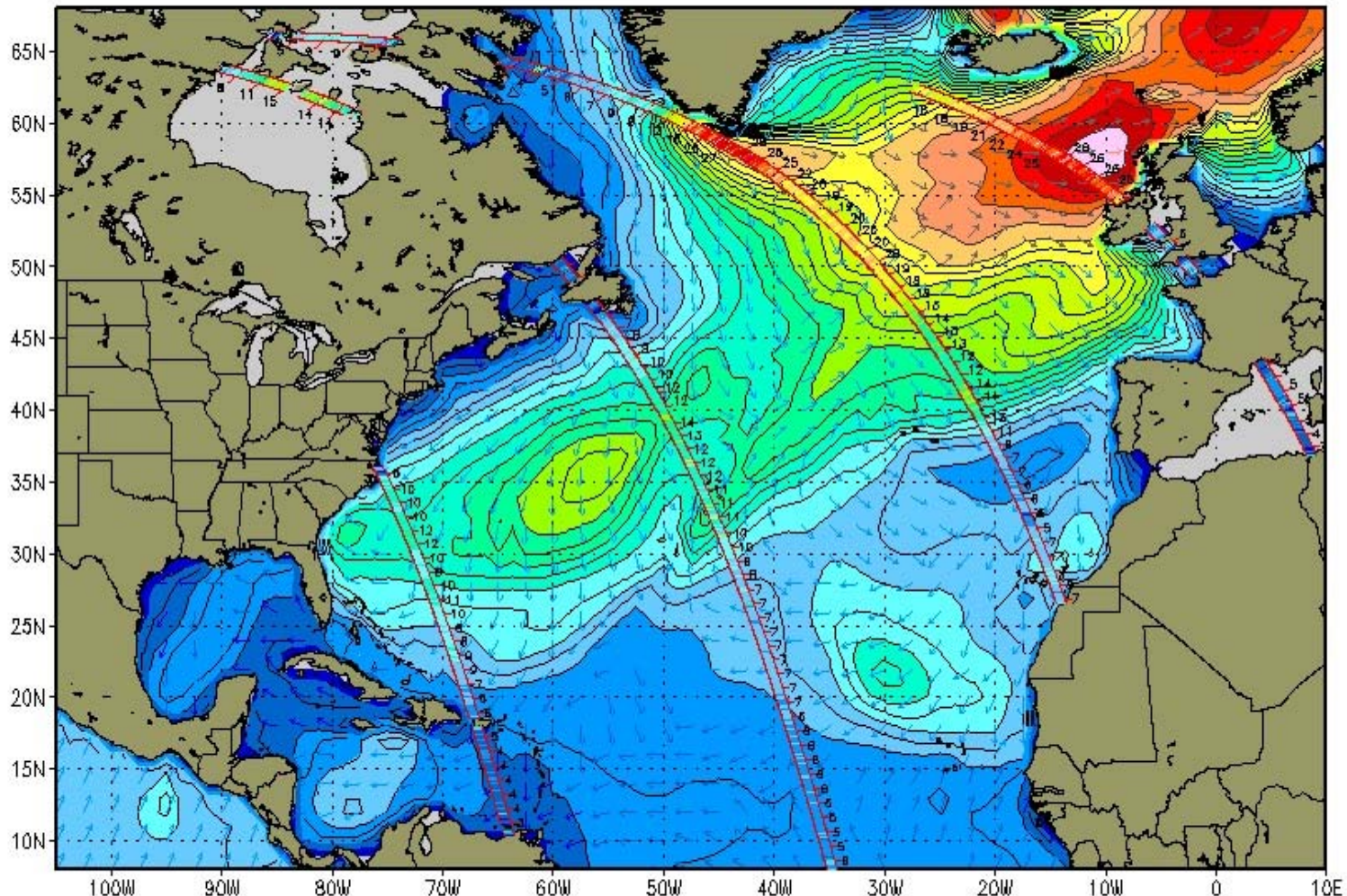
# Big Wave Surf Forecasting



JASON-1 Altimetry Overlay  
Initialized: 00Z25OCT2008

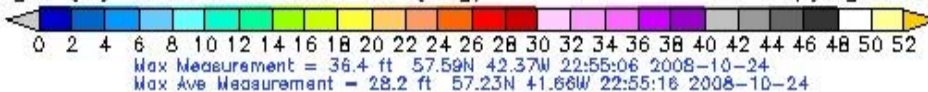
STORMSURF  
00Z Hindcast

Significant Wave Ht (+/- 3 hr)  
Forecast: 00Z Sat 25OCT08



WW3 Sig. Wave Height (ft) and Prime Wave Dir (deg)

Copyright 2008 Stormsurf



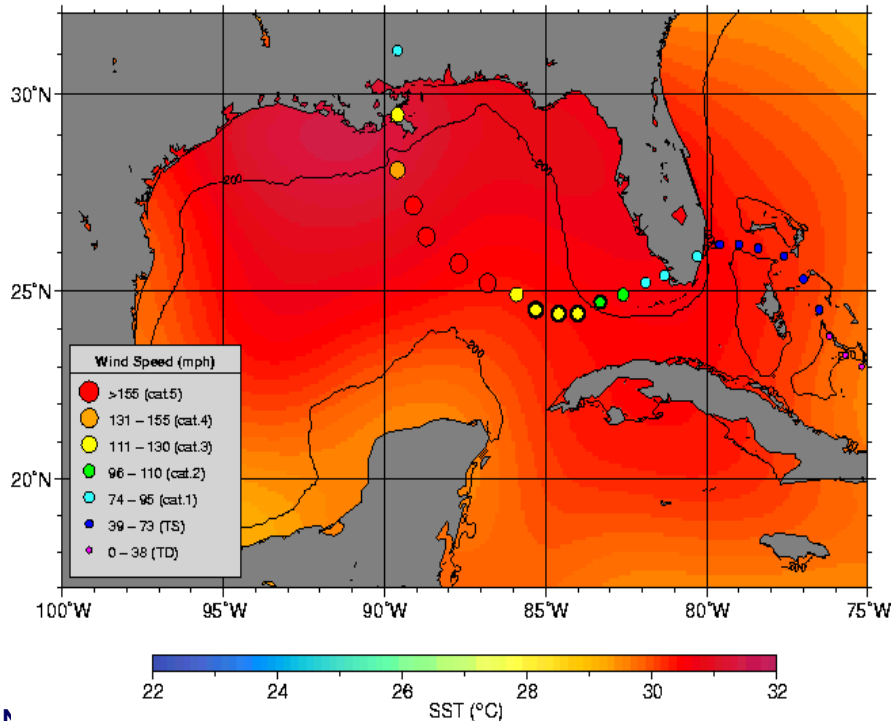


# Hurricane Intensity Forecasting - Katrina

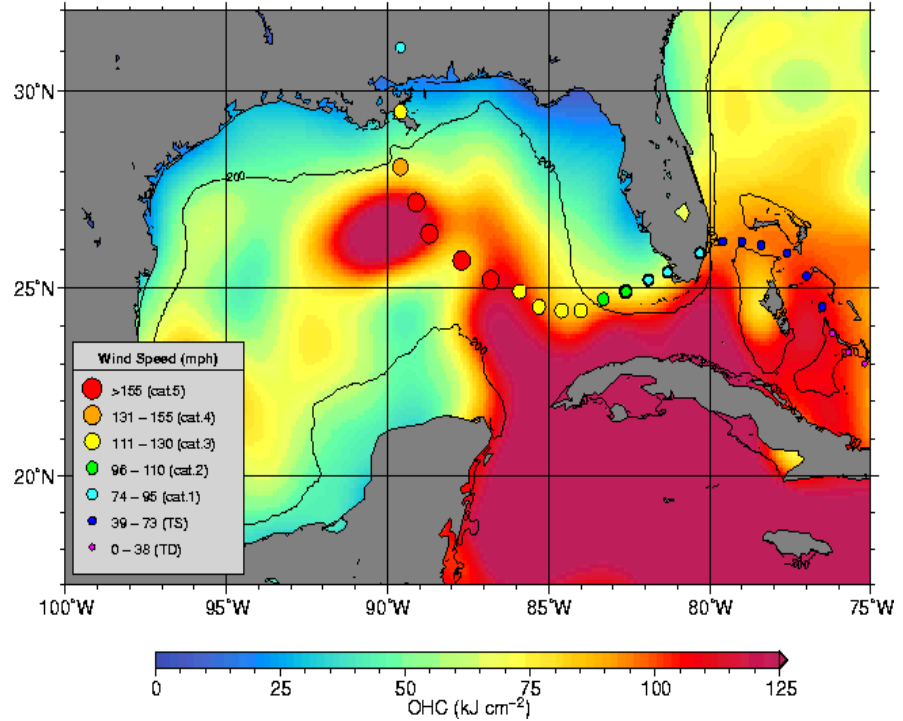
**Ocean Heat Content** – estimates the amount of heat available over a depth of warm water. The greater the depth the more available heat that can be potentially converted to energy.



Sea surface temperature (SST) 08/27/2005



Ocean heat content (OHC) 08/26/2005



**Sea Surface Temperatures** only provide a view of the very top layer of the ocean.



Courtesy G. Goni (NOAA)

# ECMWF & WAM Wind/Wave Model Validation

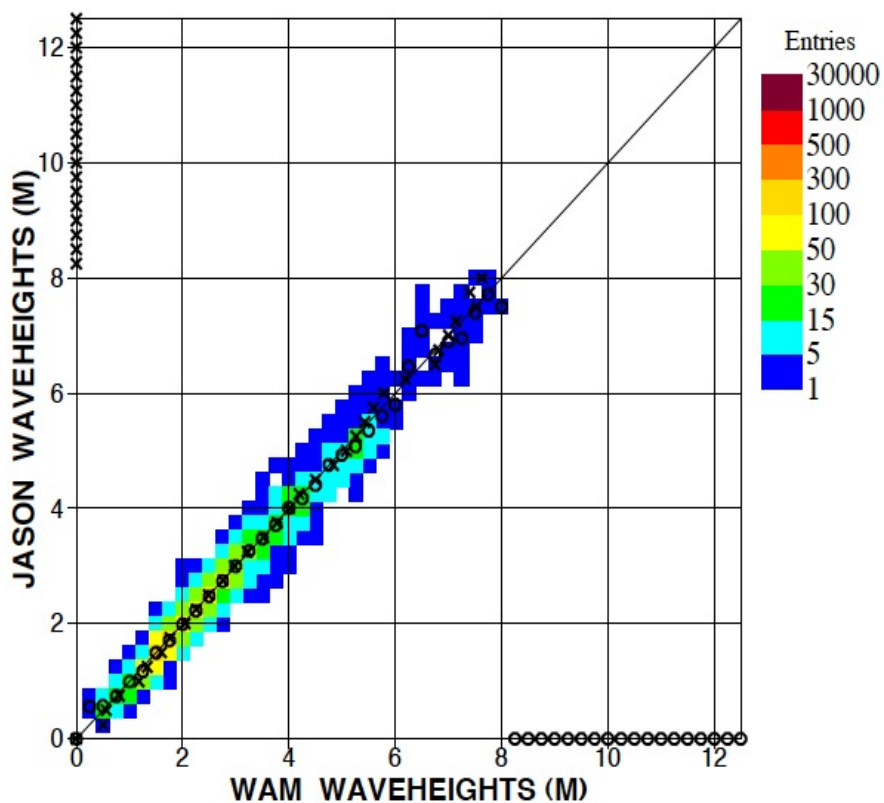
WAM Model (0001-4V) / JASON Comparison

Altimeter Waveheights

GLOBAL 0.5° JUL 2008

(Exp. Ver.: 0001, Model Field: 4V)

20. 7. 9:00 UTC to 21. 7. 9:00 UTC

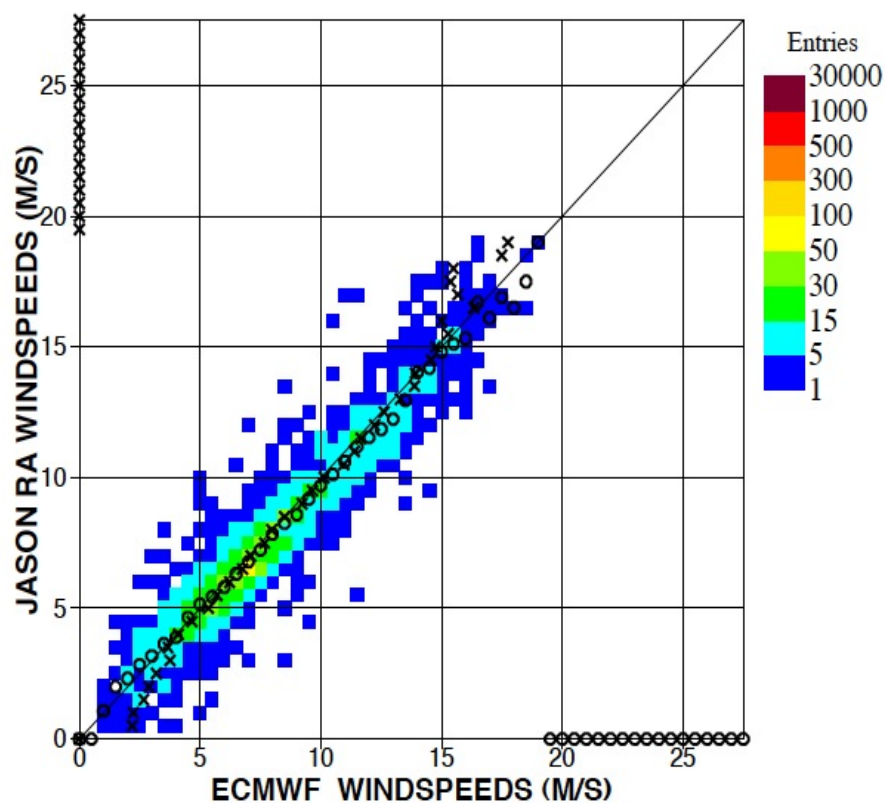


ECMWF Model (0001) / JASON (RA) Comparison

Altimeter Windspeeds

GLOBAL 0.5° JUL 2008

20. 7. 9:00 UTC to 21. 7. 9:00 UTC



# OGDR Data Access

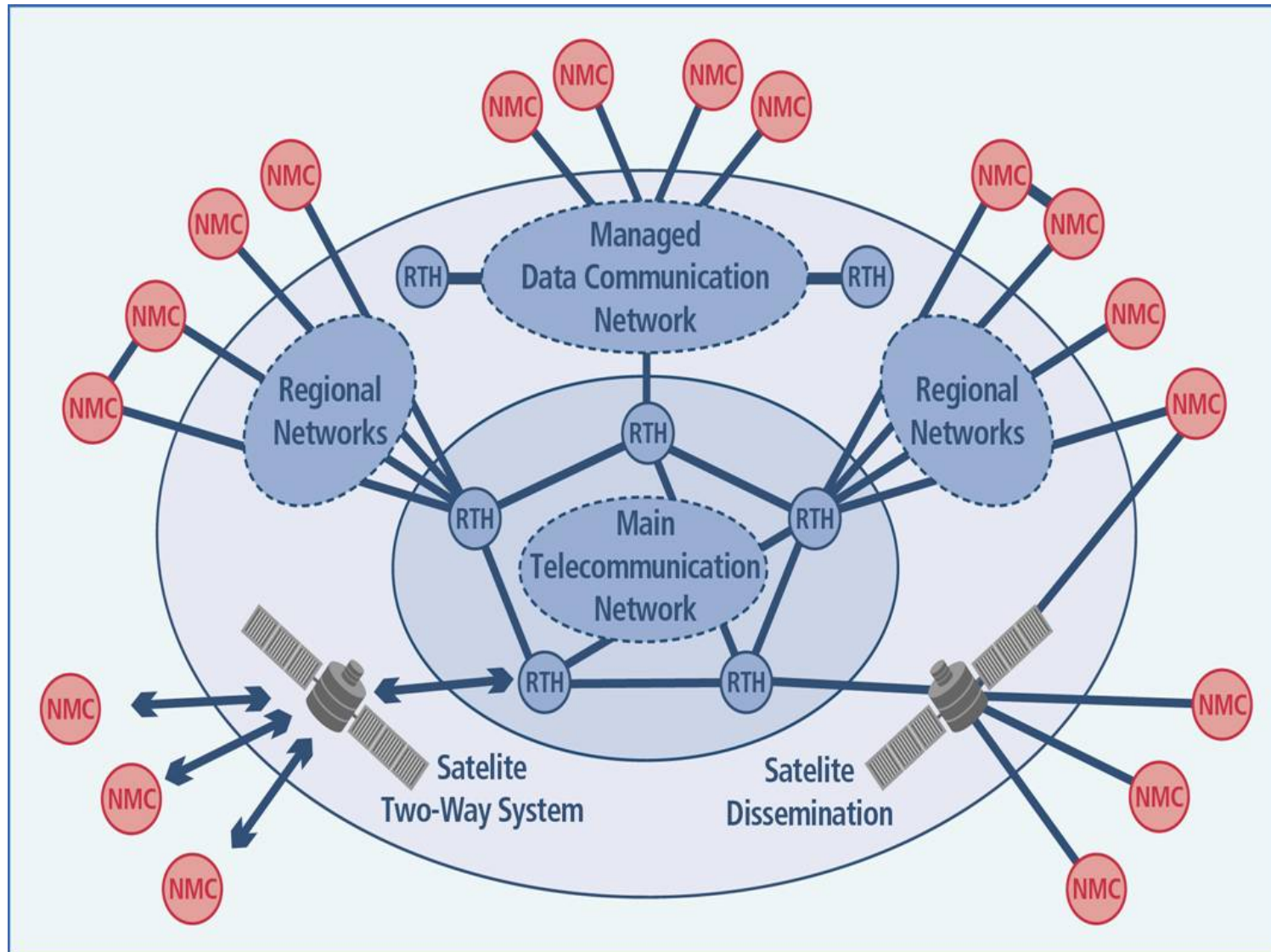
## ■ OGDR-BUFR

- ◆ **Global Telecommunication Network (Met. Offices)**
  - OGDR-BUFR injected by NOAA & EUM for their respective products
- ◆ **EUMETCast/GeoNetCast satellite broadcast**
- ◆ **ftp from NOAA/DDS**

## ■ OGDR, OGDR-SSHA & OGDR-BUFR

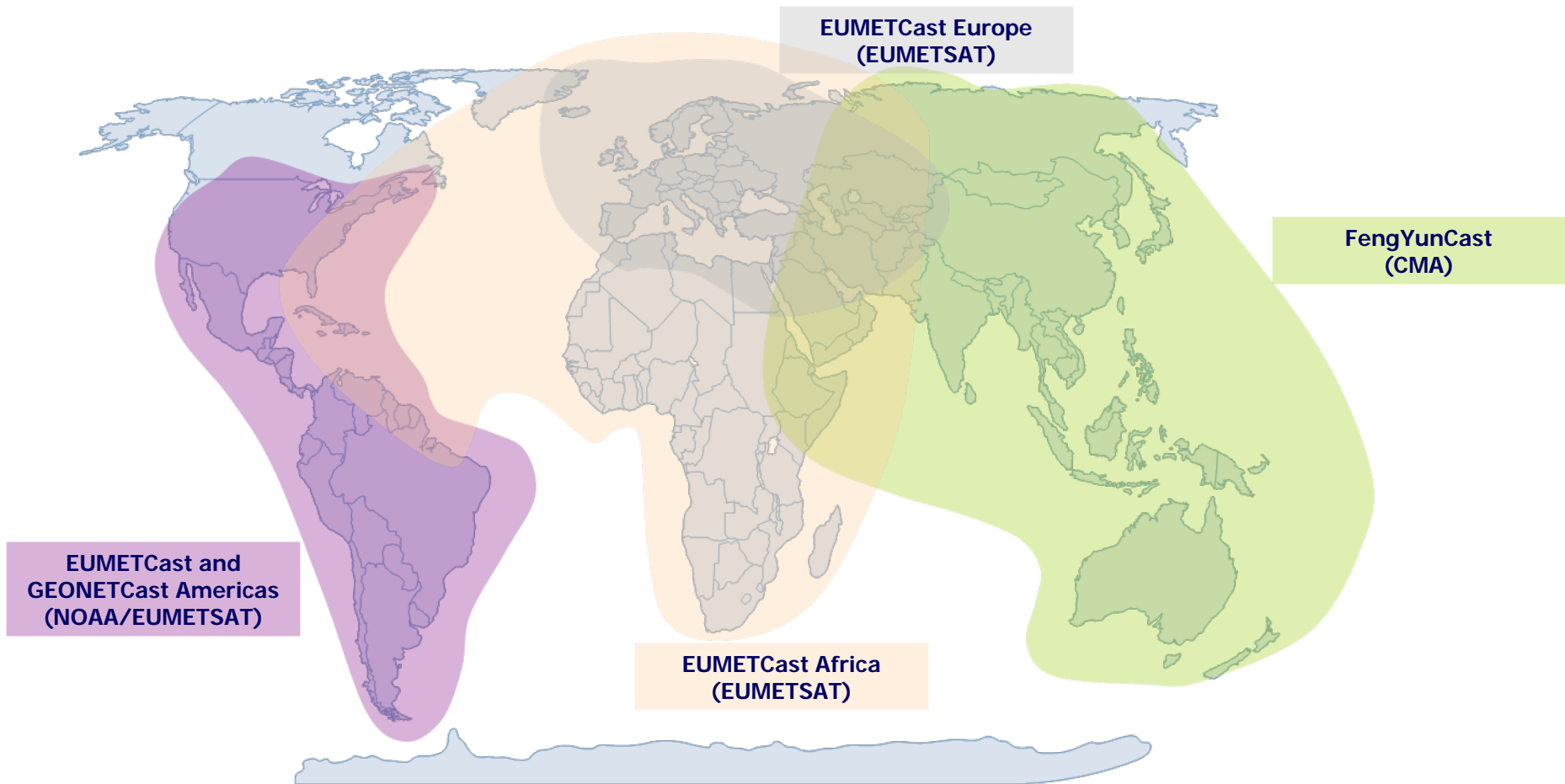
- ◆ **ftp from EUMETSAT/UMARF & NOAA/DDS**
- ◆ **archive available from NOAA/CLASS or CNES/AVISO**

# Global Telecommunication System





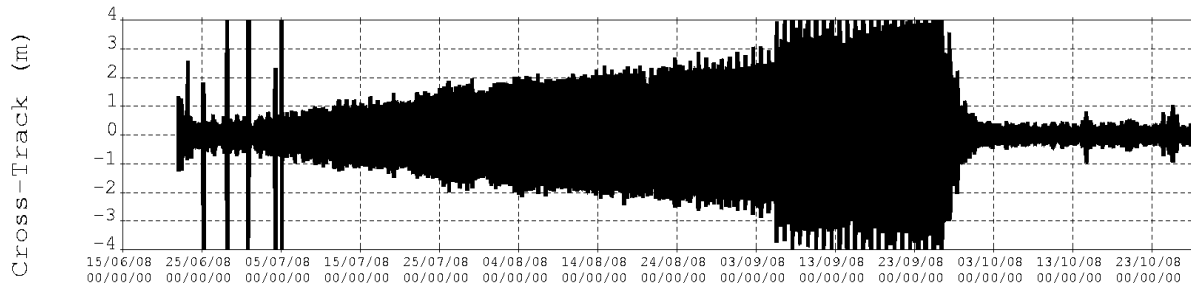
# GEONETCast Coverage



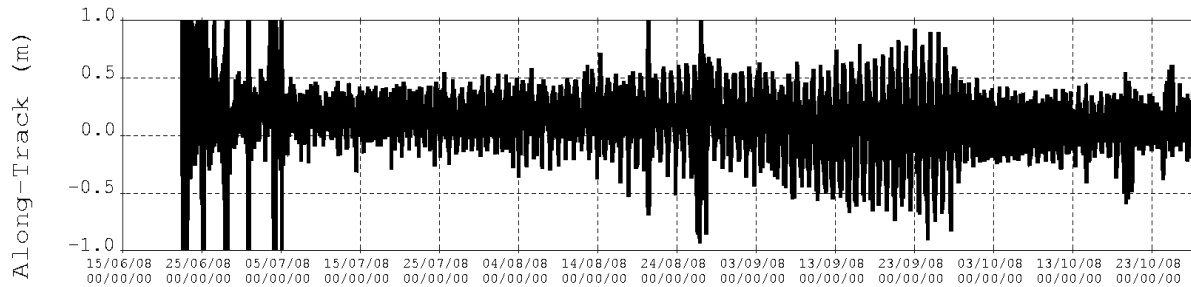


# DIODE orbits compared with DORIS MOE

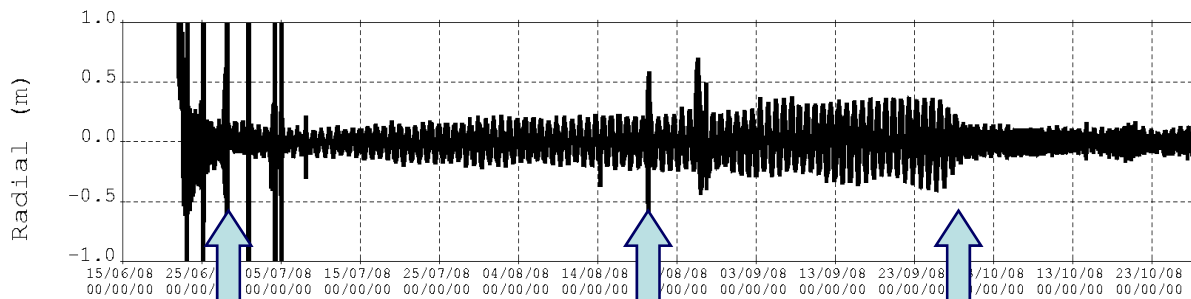
DIODE DGXX bord // MOE JASON2 21/06 - 27/10 2008



**(Cross-Track is less observable)**



**Slow secular degradation understood and fixed**



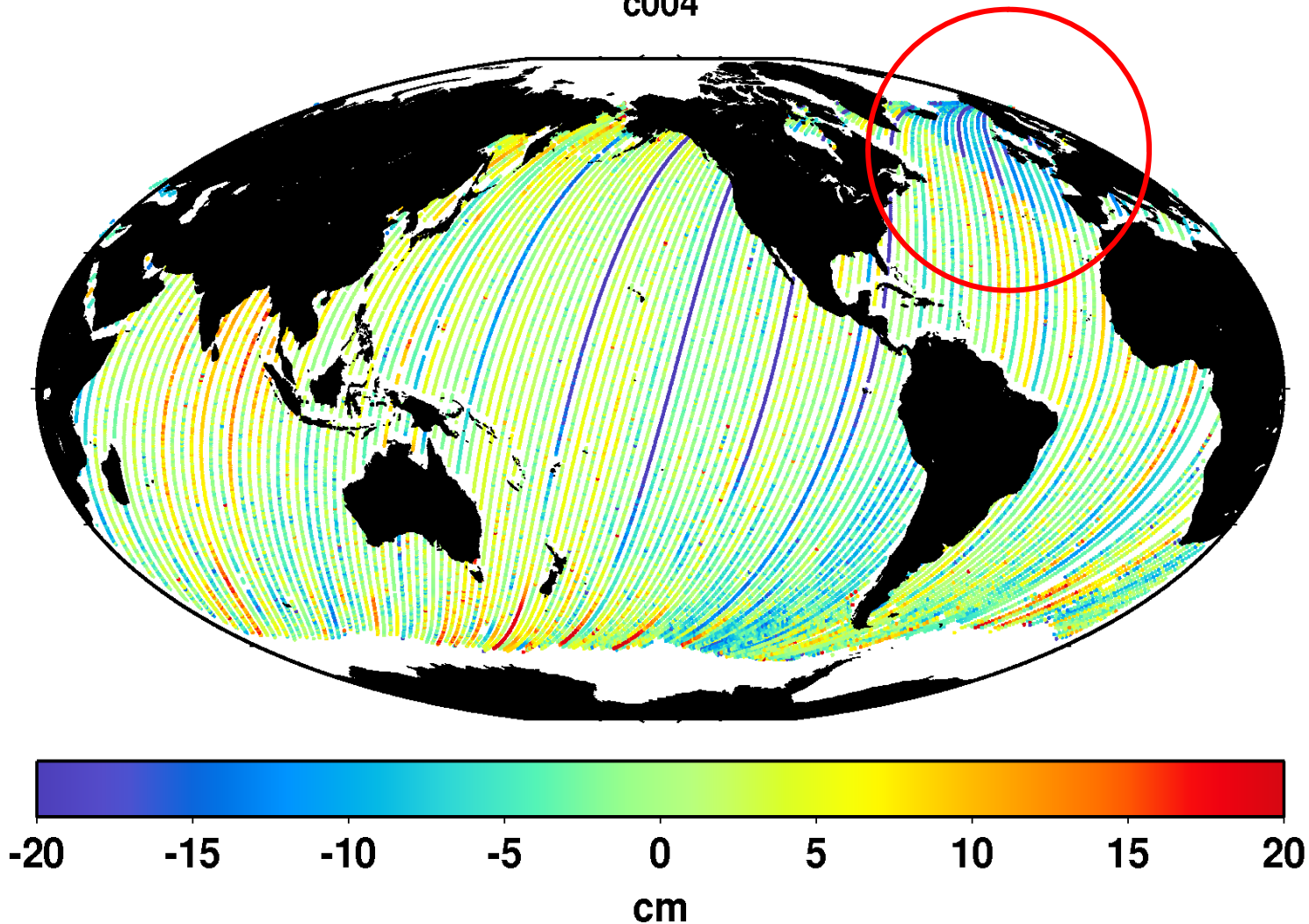
**Effects of large orbit acquisition maneuvers**

**Yaw transitions: an "error" in DIODE software**

**Pole covariance changed (and attitude model used)**  
Courtesy C. Jayles (CNES)

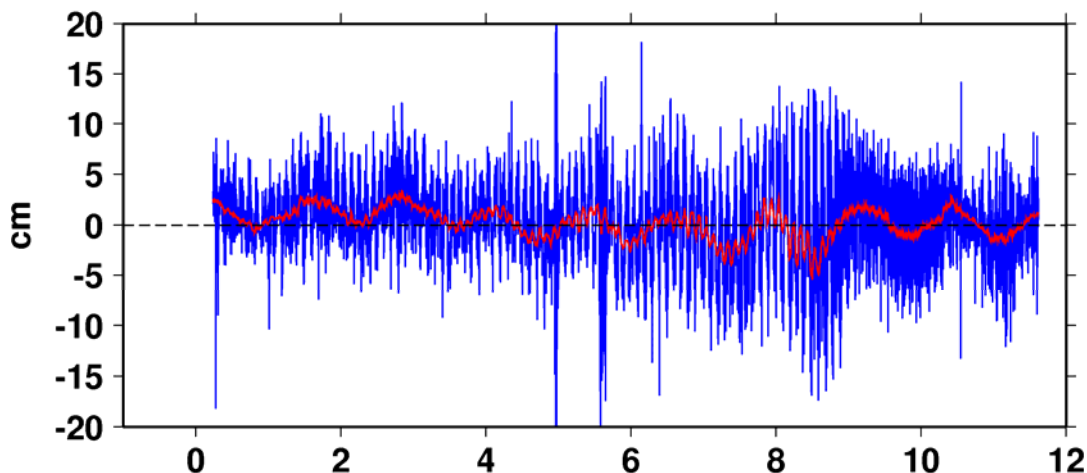
# Jason-2 OGDR vs. IGDR

J2 OGDR-IGDR relative bias  
c004



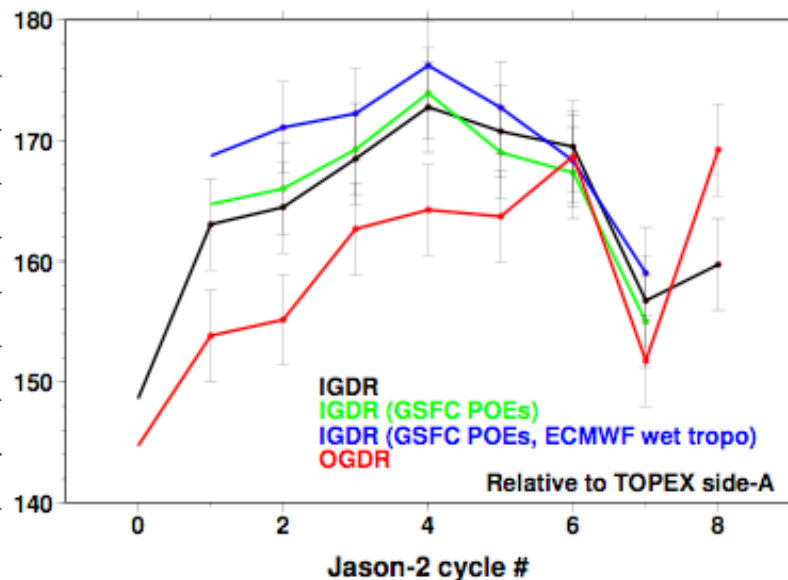
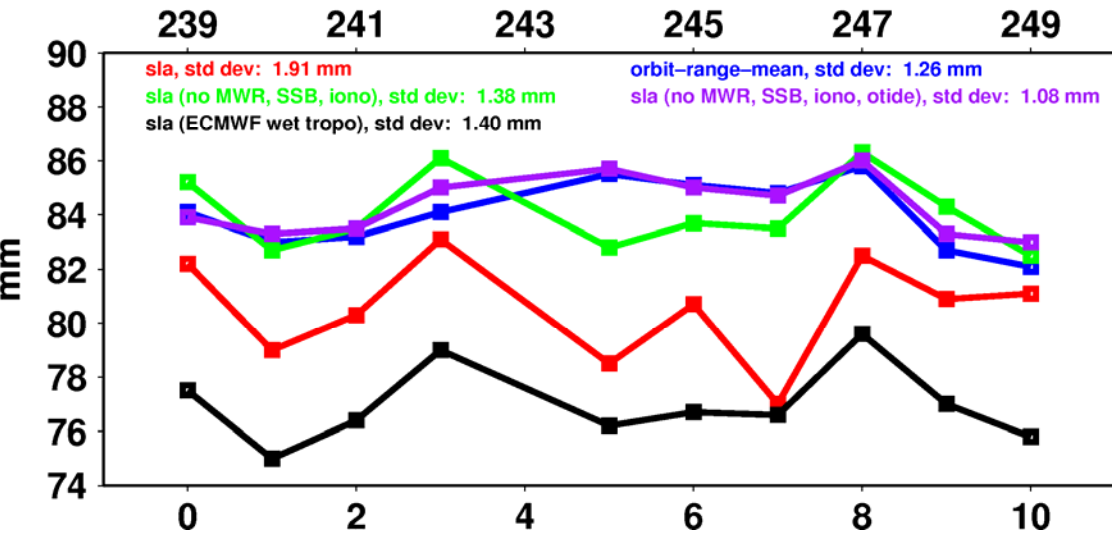
# IGDR vs. OGDR Ca/VaI

Mean 1-second orbit-range differences (J2 IGDR-J2 OGDR)



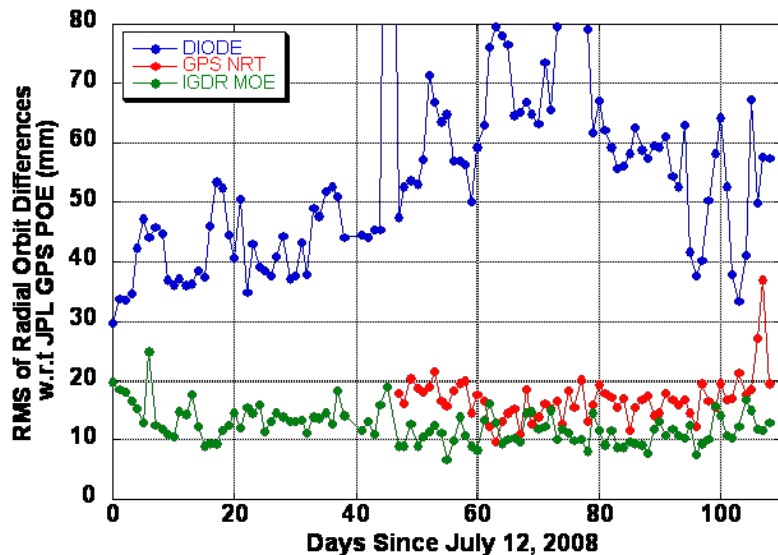
Mean 1-second differences (J2-J1)

Tide gauge calibration, Jason-2

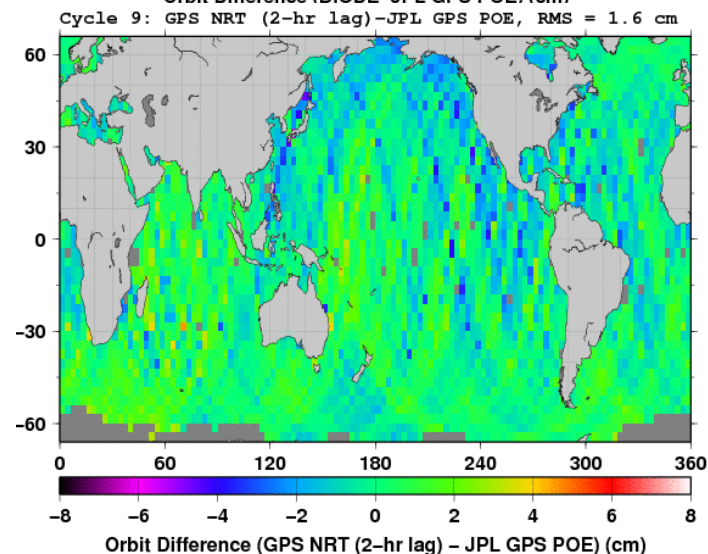
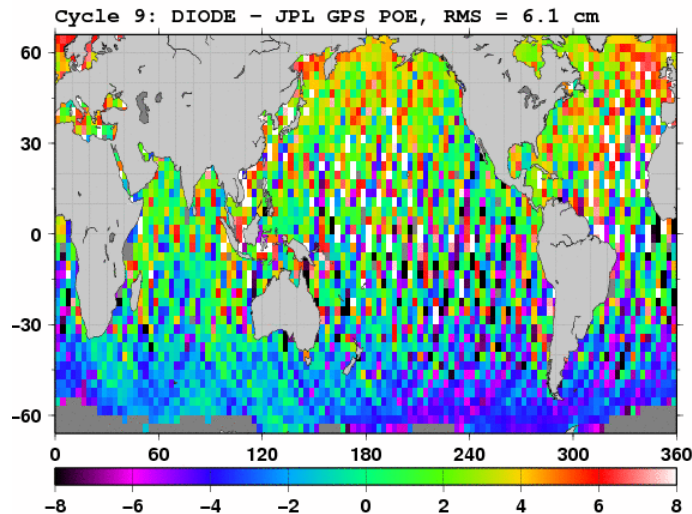




# Near Real Time GPS-Based Orbit Determination for OGDRs

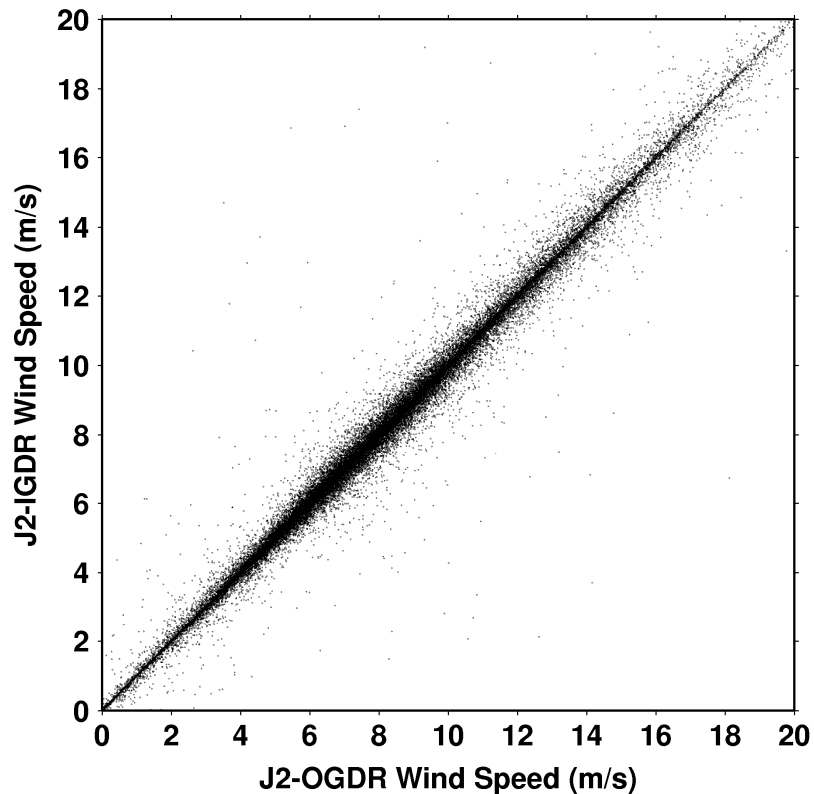


- JPL will generate a GPS-based OGDR-SSHA research product beginning in February 2009
  - ◆ Distributed through PO-DAAC
- Will add two fields to project OGDR:
  - ◆ SSHA derived from GPS-based NRT orbit
  - ◆ GPS-based NRT orbit altitude
- RMS radial orbit differences of GPS NRT & POE orbits < 2.0 cm

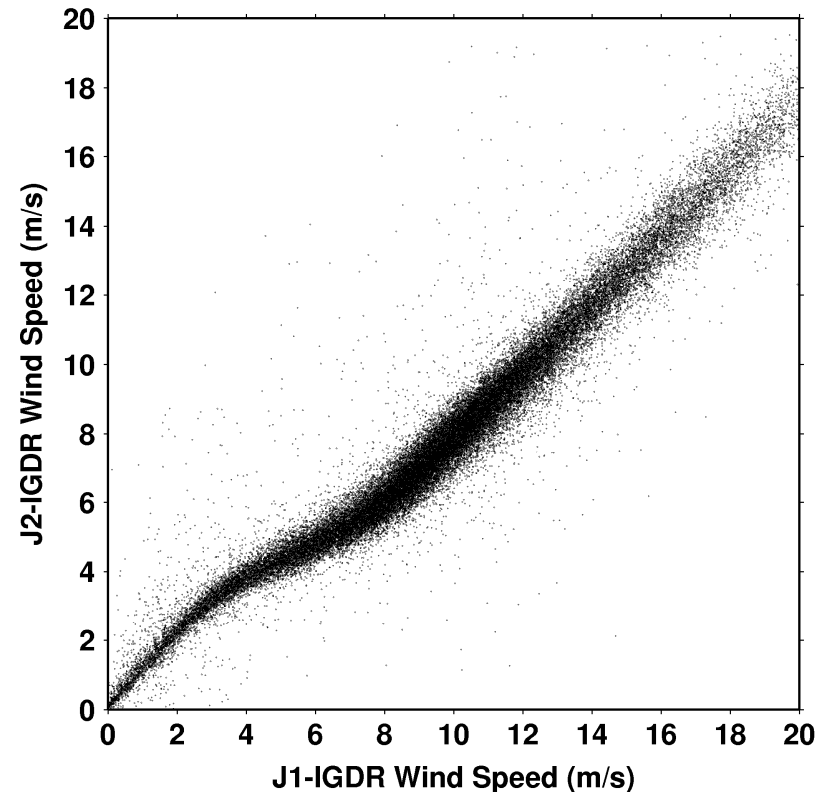


# Wind Speed Comparisons

Jason-2 Cycle 10



J2 Cycle 10 vs. J1 Cycle 249



# How Many OGDR Users?

- **NOAA DDS/CLASS access:**
  - ◆ NOAA/NCEP
  - ◆ NAVY/NRL+NAVO
  - ◆ NOAA CoastWatch
- **EUMETSAT/UMARF access:**
  - ◆ ECMWF Wind/Wave
  - ◆ UKMO
  - ◆ ...
- **Cal/Val Abstracts at Nice 2008 OSTST:**
  - ◆ Phillips & Pujol IGDR/OGDR Cal/Val
  - ◆ Lillibridge IGDR/OGDR Cal/Val
  - ◆ Jayles NRT-DIODE orbits
  - ◆ Desai NRT-GPS Orbits
  - ◆ Griffin - NOT

# Release of OGDR to Public

- Nice OSTST = Near Real-Time Verification Workshop
- New OGDR Product Spec. V2.3 to be released to NOAA/EUM soon
- We COULD begin public release when V2.3 ready BUT:
- NOAA & EUM will NOT be officially operational until early 2009
- Will we reprocess earlier OGDRs (Cycles 0-14...) to V2.3?