



# JPL Gridded Altimetry Products

V. Zlotnicki<sup>(1)</sup>, Zheng Qu<sup>(2)</sup>, J. Willis<sup>(1)</sup>  
 (1)JPL (2)Raytheon Corp.

## 1 Method & Data

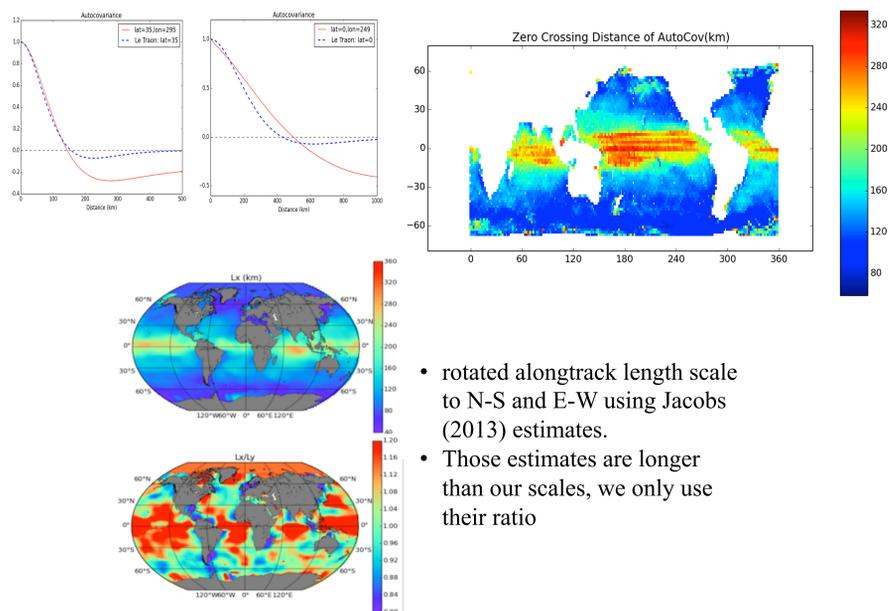
**Method:** Krigging ~ objective mapping

- $Cov = var * b * \exp(-a * r - (dt/Lt)^2)$ 
  - $a = 3.3369$ ,  $b = 1 + r + r^2/6 - r^3/6$
  - $r = \sqrt{((dx-Cx*dt)/Lx)^2 + ((dy-Cy*dt)/Ly)^2}$
  - $var = \text{squared rms of alongtrack data}$
- spatial decorrel. from alongtrack data, Search: **400/1250km**
- time decorr: gaussian, **10 days** in 5S to 5N, going to **15d** beyond 10°.
- Search: **45/15 days**
- propagation of corr: computed from correl between 1<sup>st</sup> pass successive maps computed without propagation
- Jason-2 (**4cm noise**, 0 LW) and Envisat (**6cm noise**, 3 LW). LW=alongtrack correlated error.
- 1/6°, 5 day maps
- **quality and parameter choices assessed by withholding data for 1 day and comparing with maps made from surrounding day's data.**

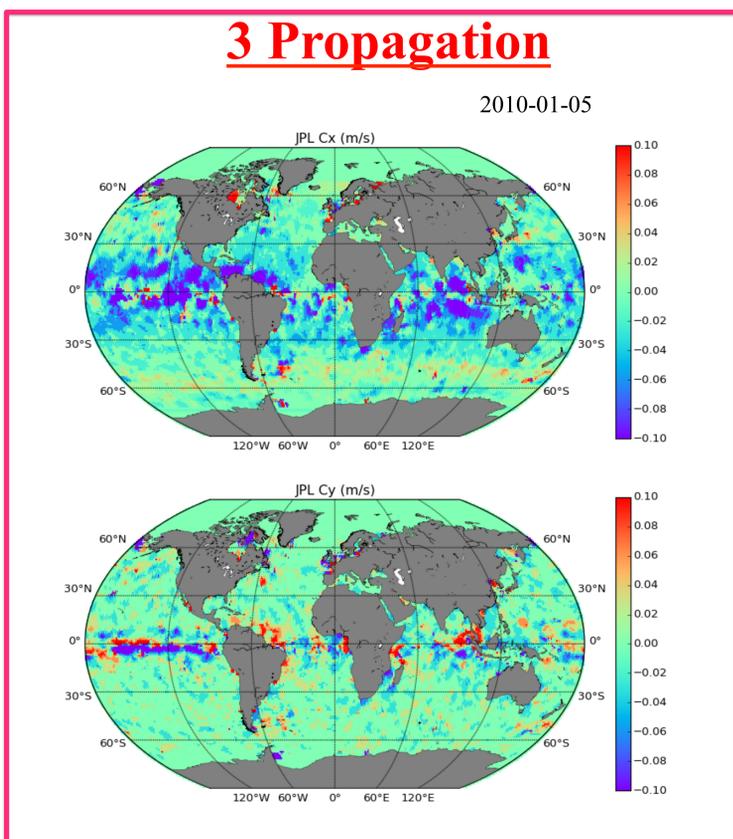
**Data**

TP/J1/J2: from GSFC MEASURES v3.0 released 9/30/2015  
 ERS/ENVISAT/ALTIKA: RADS, rev 9/15/2015

## 2 Length scales

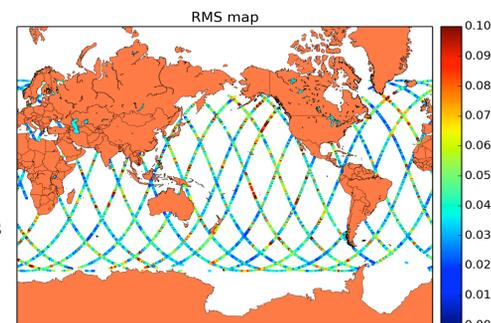


## 3 Propagation

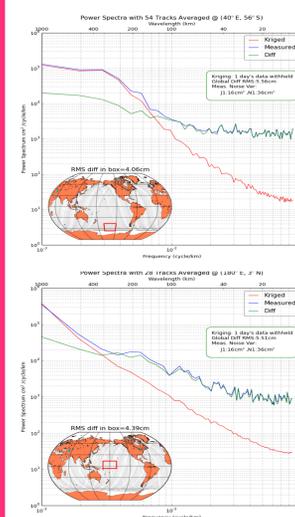


## 4 Tests: difference RMS

The map shows the difference between the map for 2012-01-08 and the Jason-2 data for that day, which had been withheld from the interpolation. Values are RMS over 15 secs alongtrack



## 5 Tests: difference spectra

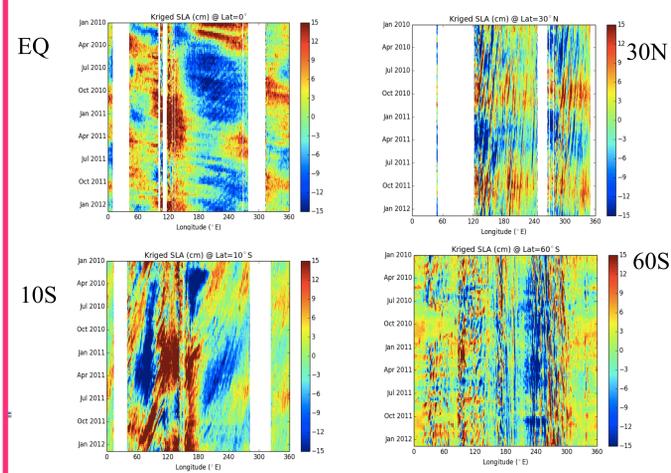


Spectra of the alongtrack data, the map interpolated alongtrack, and their difference. Data from the track considered were NOT used to generate the map.

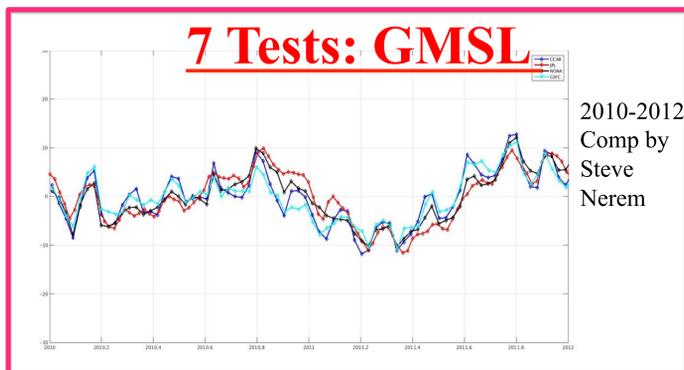
ACC: wavelengths longer than ~180km are resolved.  
 RMS diff 4.9cm

Equator: wavelengths longer than ~350km are resolved.  
 RMS diff 4.4cm

## 6 Tests: propagation



## 7 Tests: GMSL



## Next Steps

- Complete the time series (1993-2015)
- Release through <http://podaac.jpl.nasa.gov> and <http://sealevel.jpl.nasa.gov/data>
- Improve time correlation from J2/Envisat crossovers (Fu and Ubelmann, 2013)
- Explore Dynamic Interpolation (Ubelmann et al 2014)