

Salient Results: “Studies of Ocean Surface Tides and Internal Tides with Satellite Altimetry”

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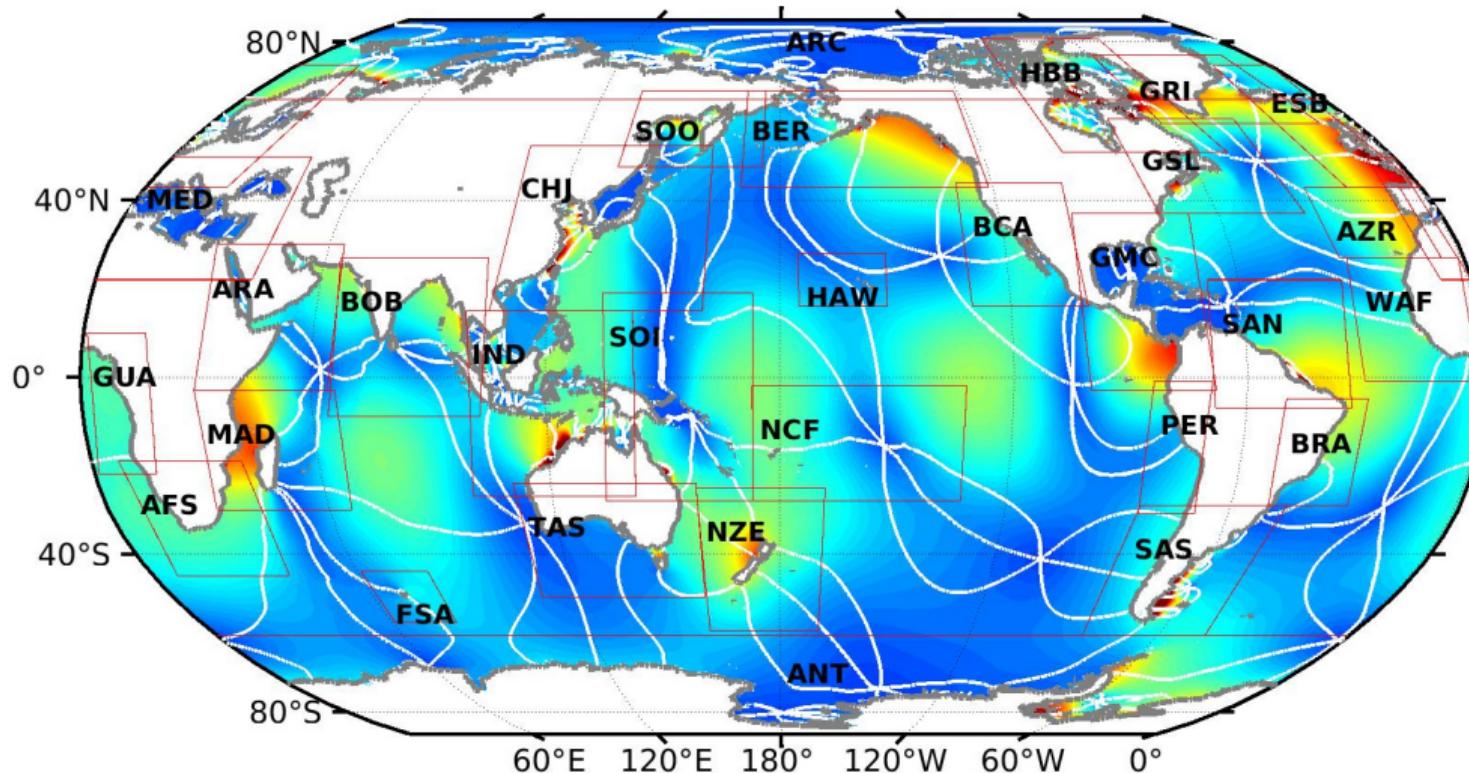
OSTST 2020 Virtual Meeting

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TPXO9-ATLAS

Gary Egbert, Lana Erofeeva, CEOAS, OSU

- TPXO9-atlas is fully global updateable solution, combined of 1/6° resolution base global solution and 30 1/30° resolution coastal solutions;
- TPXO9-atlas-v2 (released Apr 1, 2020) Improvements in areas with larger along track residuals on Topex tracks by solving at 1/60° for smaller nested into 1/30° patches;
- TPXO9-atlas-v3 (coming soon) Improvements in ANT, using SRTM15 bathymetry and SCAR Antarctic Digital Database coast line; ARC, HBB, ESB, IND, SAN, using SRTM15 bathymetry and Natural Earth coastline version 4.1.0



Barotropic tides – TPXO9.x and GOT4.x (almost GOT5):

- Ray, R. D., B. D. Loomis, S. B. Luthcke, and K. E. Rachlin (2019) “Tests of ocean-tide models by analysis of satellite-to-satellite range measurements: an update”, *Geophysical Journal International*, 217 (2), 1174–1178.
- Zaron, E. D. (2018) “Ocean and ice shelf tides from CryoSat-2 altimetry”, *J. Phys. Oceanogr.*, 48:975–993.

Baroclinic tides – HRET8.1

- Zaron, E. D. (2019) “Baroclinic tidal sea level from exact-repeat mission altimetry”, *J. Phys. Oceanogr.*, 49(1):193–210.
- Zaron, E. D. and R. D. Ray (2017) “Using an altimeter-derived internal tide model to remove tides from in-situ data”, *Geophys. Res. Lett.*, 44:1–5.
- Zaron, E. D. (2017) “Mapping the non-stationary internal tide with satellite altimetry”, *J. Geophys. Res.*, 122(1):539–554.

Work with numerical models

- Nelson, A., B. Arbic, E. D. Zaron, A. Savage, J. Richman, M. Buijsman, and J. Shriver (2019) “Towards realistic baroclinic semidiurnal tide nonstationarity in hydrodynamic models”, *J. Geophys. Res.*, 124:6632–6642.
- Zaron, E. D. (2019) “Predictability of non-phase-locked baroclinic tides in the Caribbean Sea”, *Ocean Sci.*, 15:1287–1305.

Miscellaneous

- Zaron, E. D. and R. D. Ray (2018) “Aliased tidal variability in mesoscale sea level anomaly maps”, *Journal of Atmospheric and Oceanic Technology*, 35 (12), 2421–2435.
- Ray, R. D. and G. D. Egbert (2017) “Tides and satellite altimetry.” In: *Satellite Altimetry over Oceans and Land Surfaces*, Eds.: D. Stammer and A. Cazenave, CRC Press, Chapter 13, pp. 427–458.
- Egbert, G. D. and R. D. Ray (2017) “Tidal prediction.” In: *The Sea: The Science of Ocean Prediction*, special issue of *Journal of Marine Research*, 75, 189–237.