TripleA — *PML's planned use of altimetry in the Arctic, Atlantic and Agulhas regions*

OSTST Proposal 2017-2020

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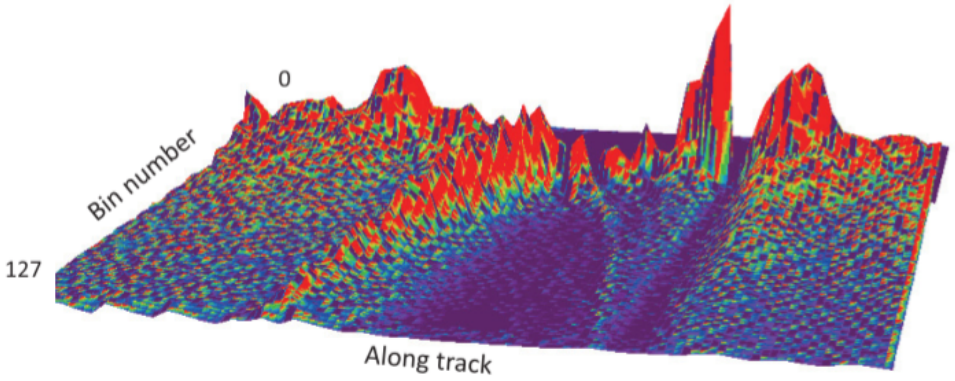
PML | Plymouth Marine Laboratory

TripleA: Arctic

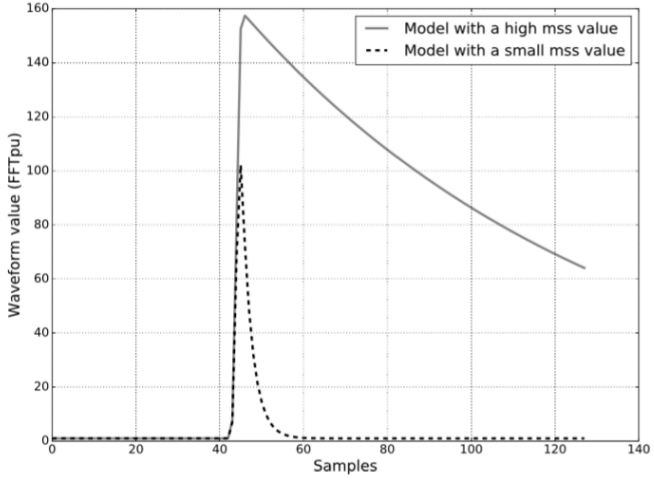
CLS
COLLECTE LOCALISATION SATELLITES

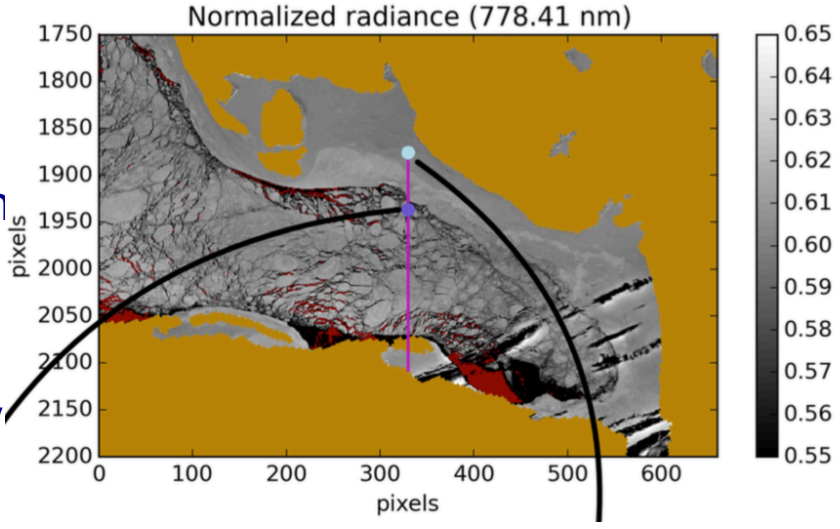
Arctic Atlantic Agulhas



Working with CLS on Sea Level CCI:

- Assessed Envisat waveform classification using simultaneous MERIS
- Developed an "adaptive retracker", with waveform model fitting both sea-ice and leads (extra parameter for anisotropy)
- Analysed Arctic sea level variability
- Wrote review paper on Arctic altimetry processing





Poisson, J.C. et al.. 2018, Development of an ENVISAT altimetry processor ensuring sea level continuity between open ocean and Arctic leads, Trans. Geosci. Rem. Sens.

Quartly, G.D.et al., 2019. Retrieving sea level and freeboard in the Arctic: A review of current radar altimetry methodologies and future perspectives. Remote Sens..

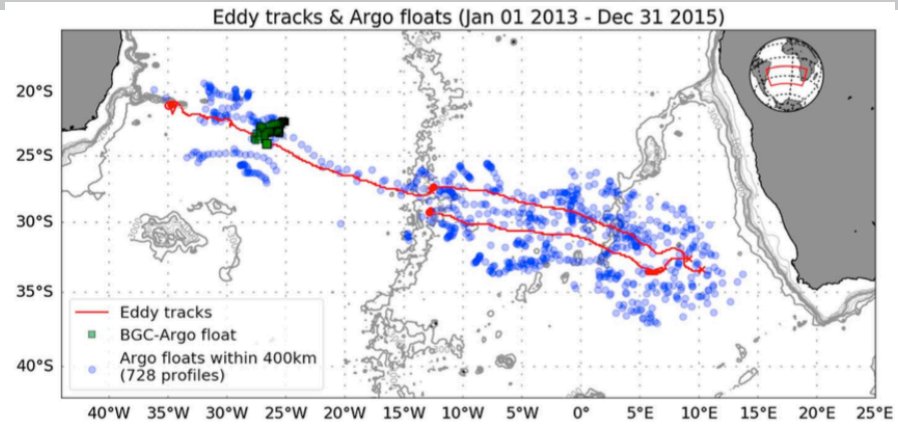
TripleA: Atlantic

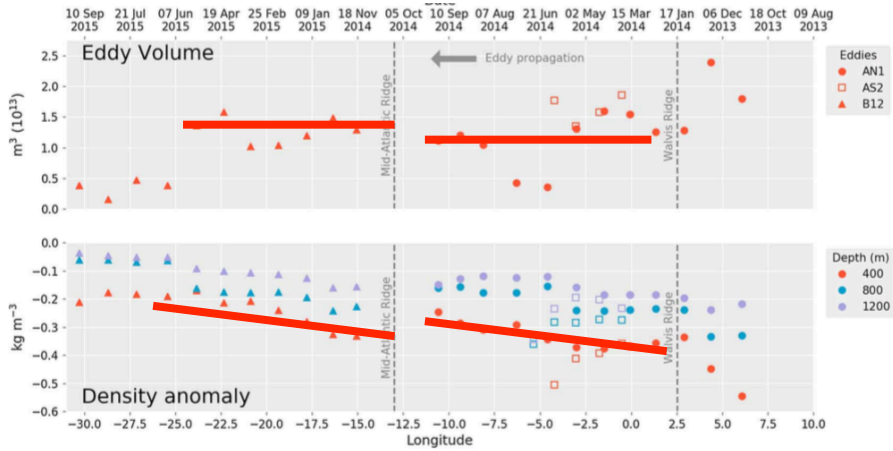
Combining Altimetry & Argo:

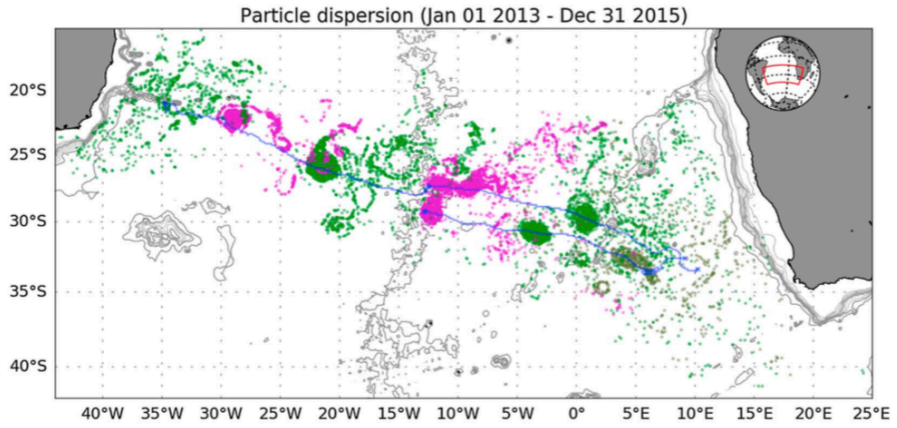
♦ Eddies tracked on 3-year journey across South Atlantic, nearby Argo profiles read and eddy volume and density anomaly calc'd

♦ Between Walvis & MAR, eddies maintain volume but |anomaly| decreases, indicating cross-eddy exchanges

♦ Virtual particle seeding every 6 months: only a little loss on journey after Walvis Ridge, but all scattered on reaching South America

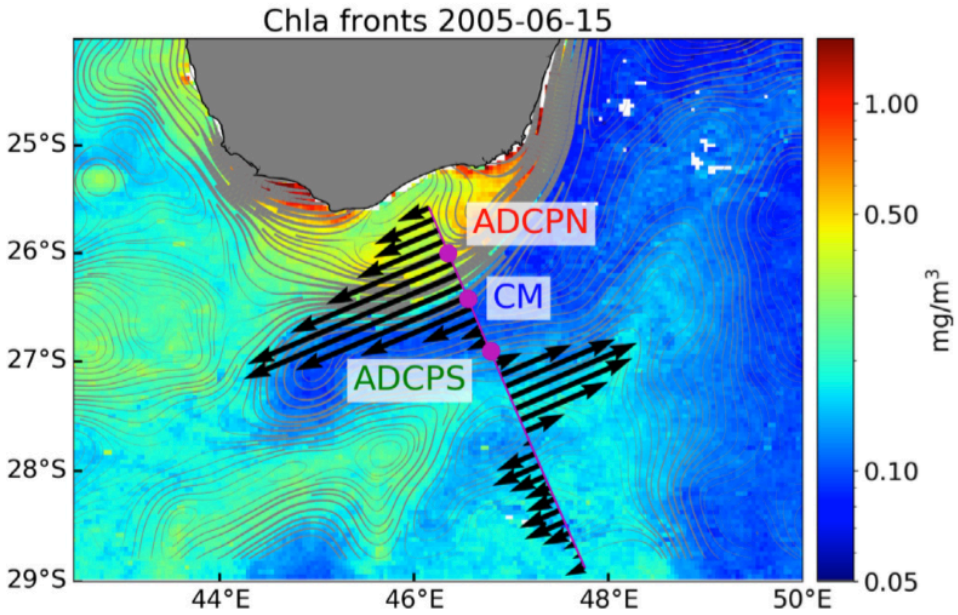






Nencioli, F., et al., 2018. Agulhas ring transport efficiency from combined satellite altimetry and Argo profiles, J. Geophys. Res.

TripleA: Agulhas



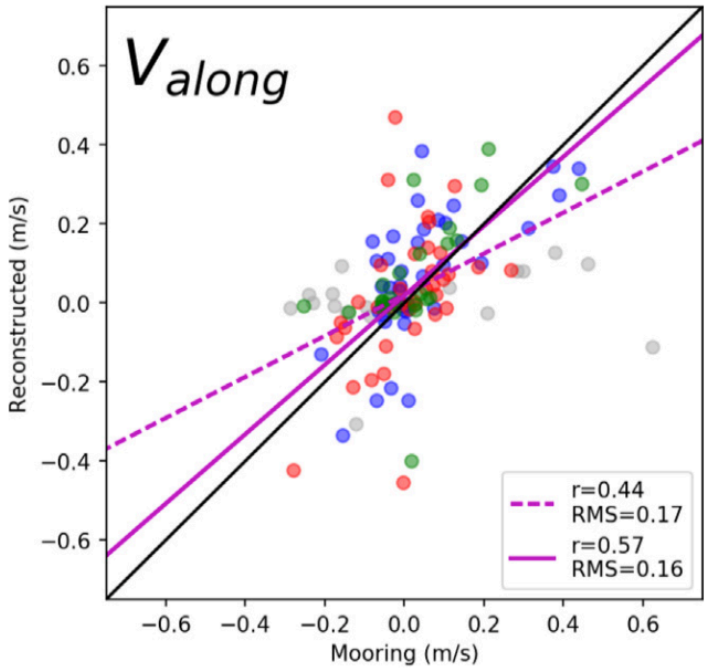
Combining Altimetry and Optical data

(study area is East Madagascar Current)

♦ Derived orientation of main SST and ocean colour fronts

♦ Calculated V_{across} from Jason-1 track, and then infer V_{along} so that resulting total velocity has same direction as the observed fronts

♦ Assessed V_{along} using 3 moorings on Jason-1 track -> r.m.s. error =0.16 ms^{-1}; r=0.57

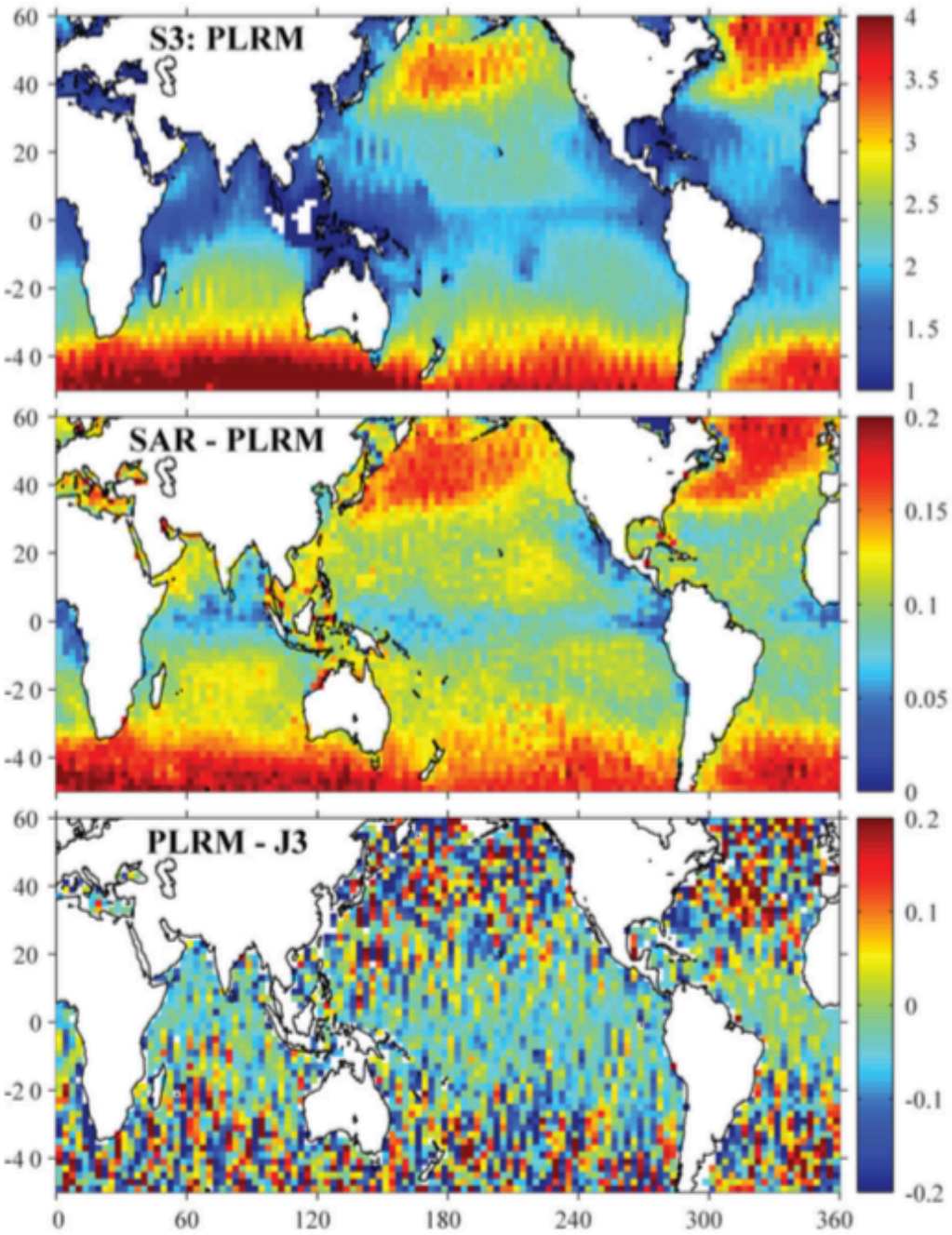


Nencioli, F., and G.D. Quartly, 2018. Exploring the synergy between along-track altimetry and tracer fronts to reconstruc surface ocean currents, Remote Sens. Env.

TripleA: Global

Examining consistency of SAR and (P)LRM values of Hs and σ^0

- Annual mean Hs: SAR reads higher in high wave locations
- Comparison of S3A PLRM and J3 (LRM) shows minimal bias)
- Work ongoing to look at σ^0



Quartly, G.D., et al., 2020. The roles of the S3MPC: Monitoring, validation and evolution of Sentinel-3 altimetry observations, Remote Sensing.