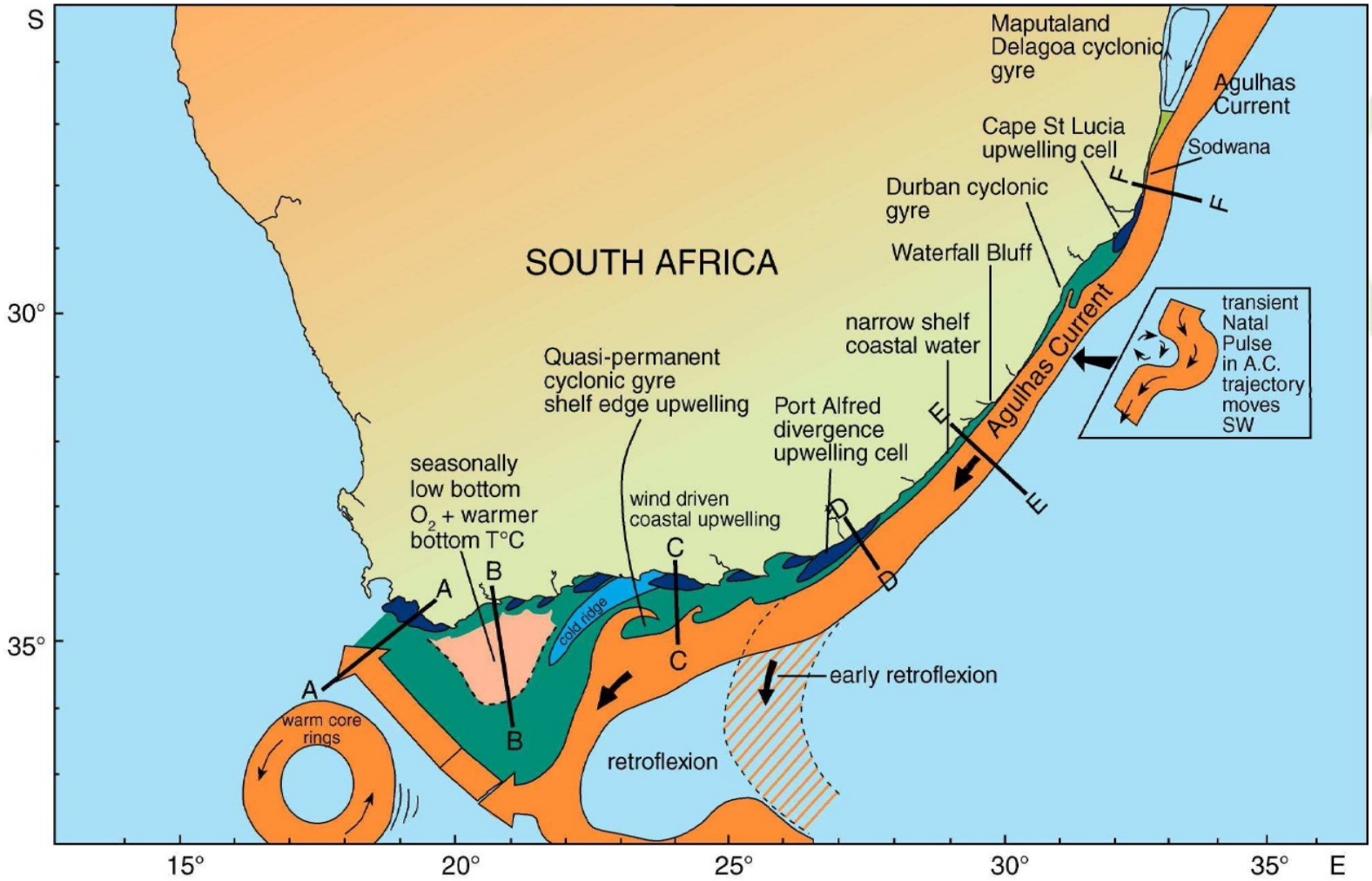
Buoy's that simply loves The South African Waters

A buoy story…

Shine Lithakazi Mkatshwa & Johan Stander



- Traditionally, looked at the South Atlantic ocean monitoring westward moving weather patterns - Lost focus on the coastal scale, but reporting from VOS provided valuable data
- Dynamic region with major western boundary current and strong air-sea interconnections

Taken from Mike Roberts

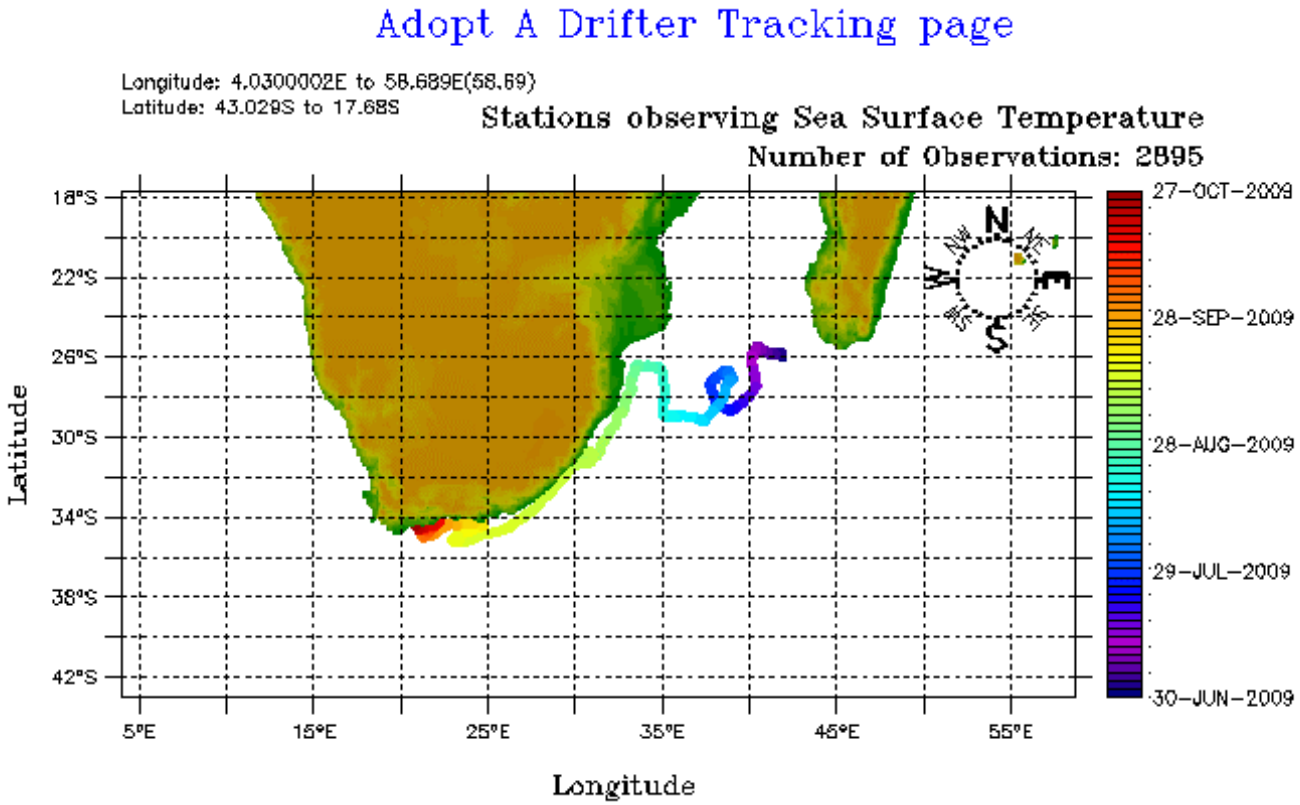
Background

- Studies have began to uncover the role of the Agulhas Current System in weather and climate i.e. Agulhas Current Air-Sea Exchange eXperiment (ACASEX) 1995
- Statistical results demonstrated that heat losses from the current system play an important role in regulating weather and climate of Southern Africa
- The average latent and sensible heat fluxes of the Agulhas Current less than those of other western boundary currents but show greater seasonal variation
  - Surface moisture fluxes within the marine boundary layer over the Agulhas current shown to be double those found over the colder inshore water

- Study (Crimp, Lutjehjarms & Mason 1998) conducted on the role of the Agulhas Current on severe storm and flood event
- Many of South Africa's rainfall producing weather systems track across the strong SST gradient – existence of current plays significant role
  - Increased moisture transfer to atmosphere
  - Data suggests that low-level moisture input from Agulhas Current played major role
- Resulted from the interaction between continental low, south western Indian Ocean anticyclone & mid-level trough approaching from west
- Heavy rainfall and tornadoes in various locations
- An area of relevance for South African weather systems and climate
- Insufficiently monitored by buoys, but accounting for the Agulhas current in forecasts could prove helpful

14550

- On June 25th, SVP-B 14550 (Argos 83507) was deployed from the vessel Osiris
- Drifted across Mozambique Channel, down east coast before running aground on the Cape south coast in October



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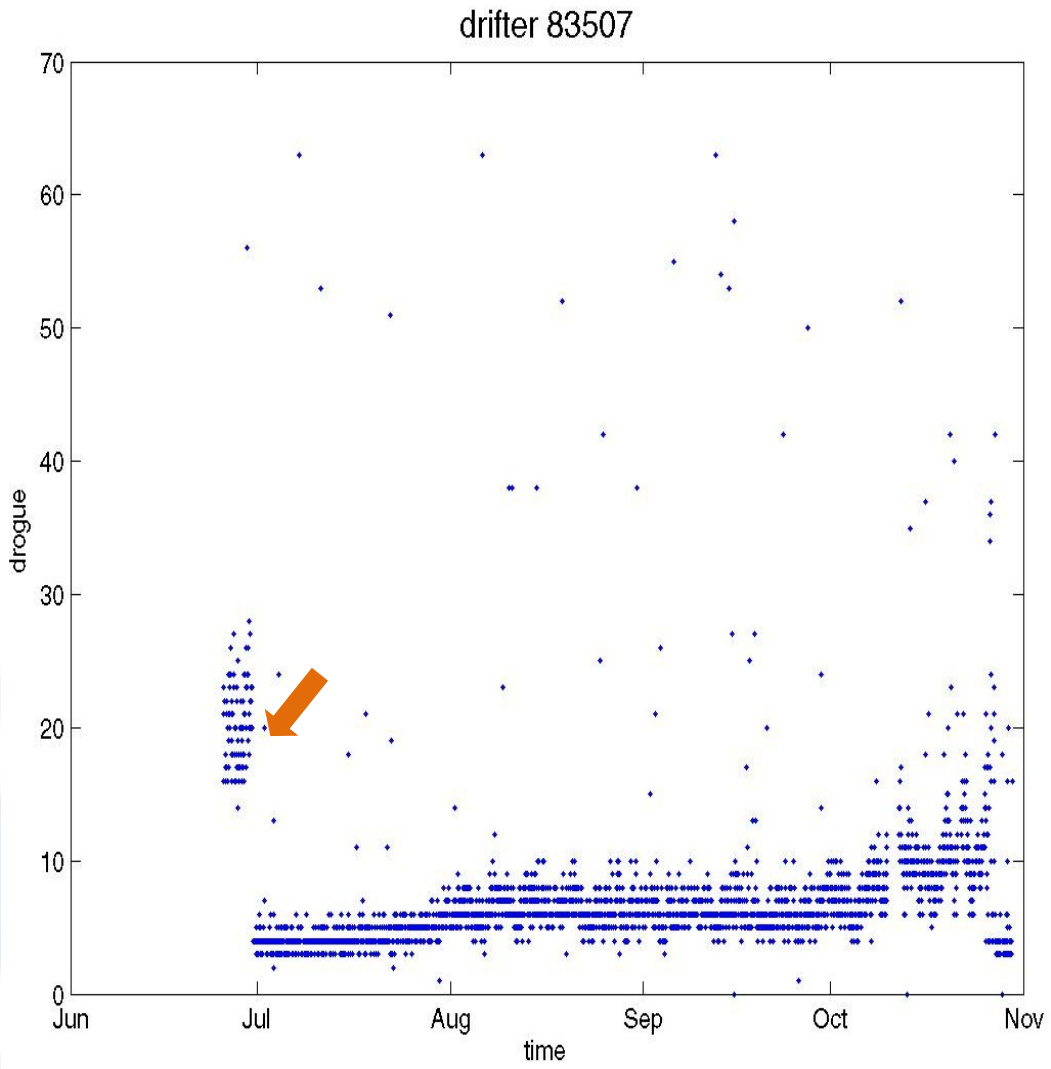
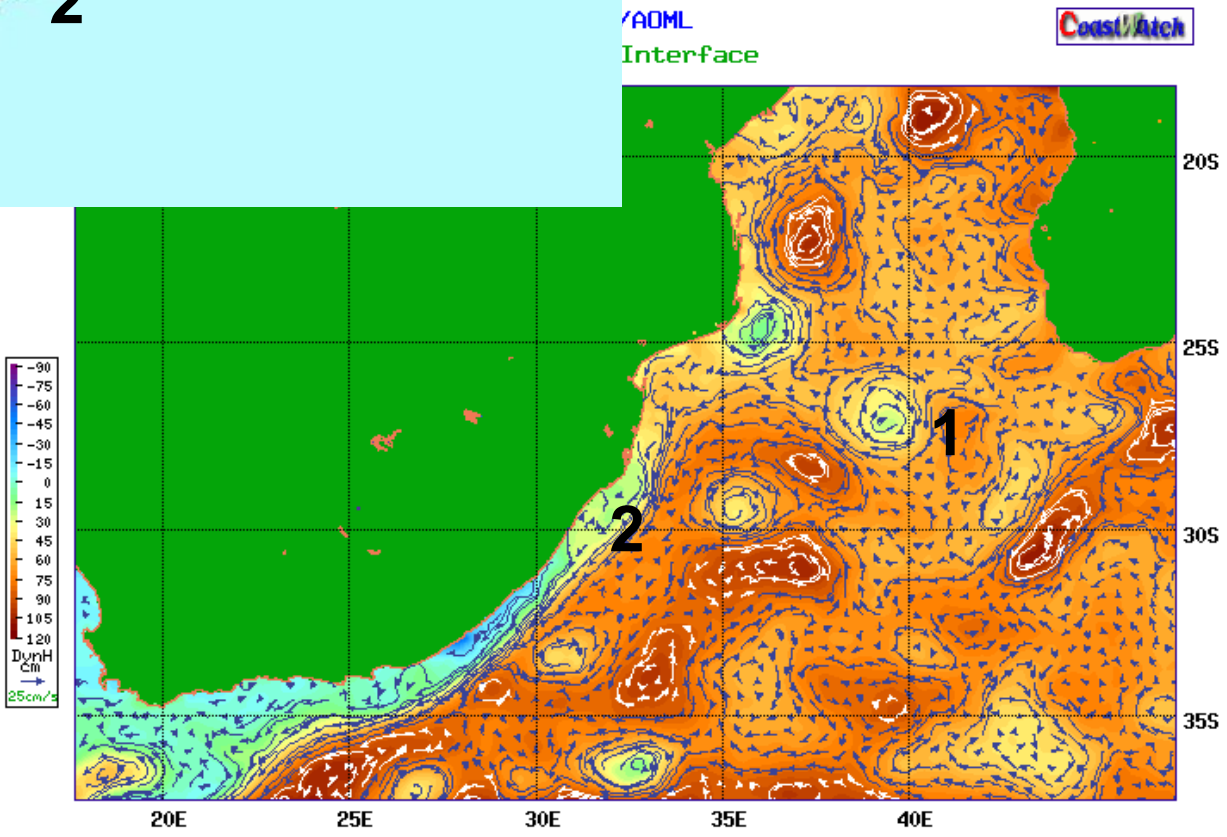
- Drogue lost after only 5 days!



Buoy trajectory corresponds to flow indicated by satellite altimetry data

1. Cold core cyclonic eddy
2. Cyclonic eddy generated in Natal bight
3. Quasi-permanent meander on the Agulhas Bank



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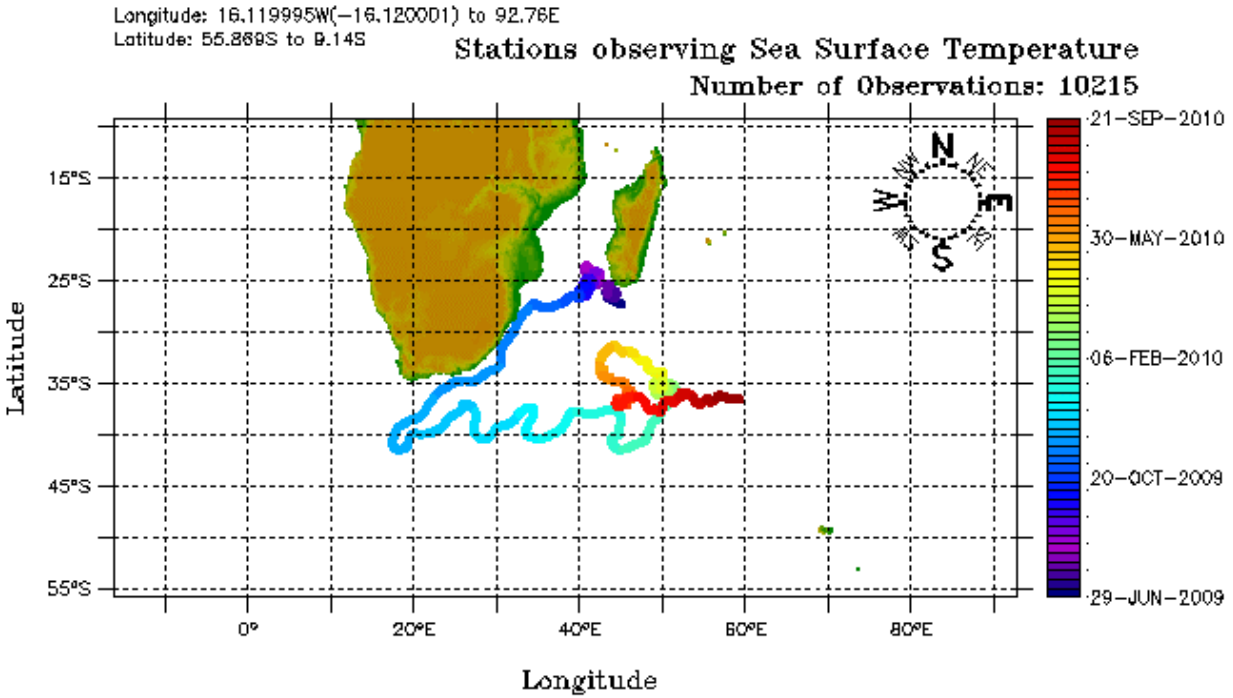
Adopt A Drifter Tracking page



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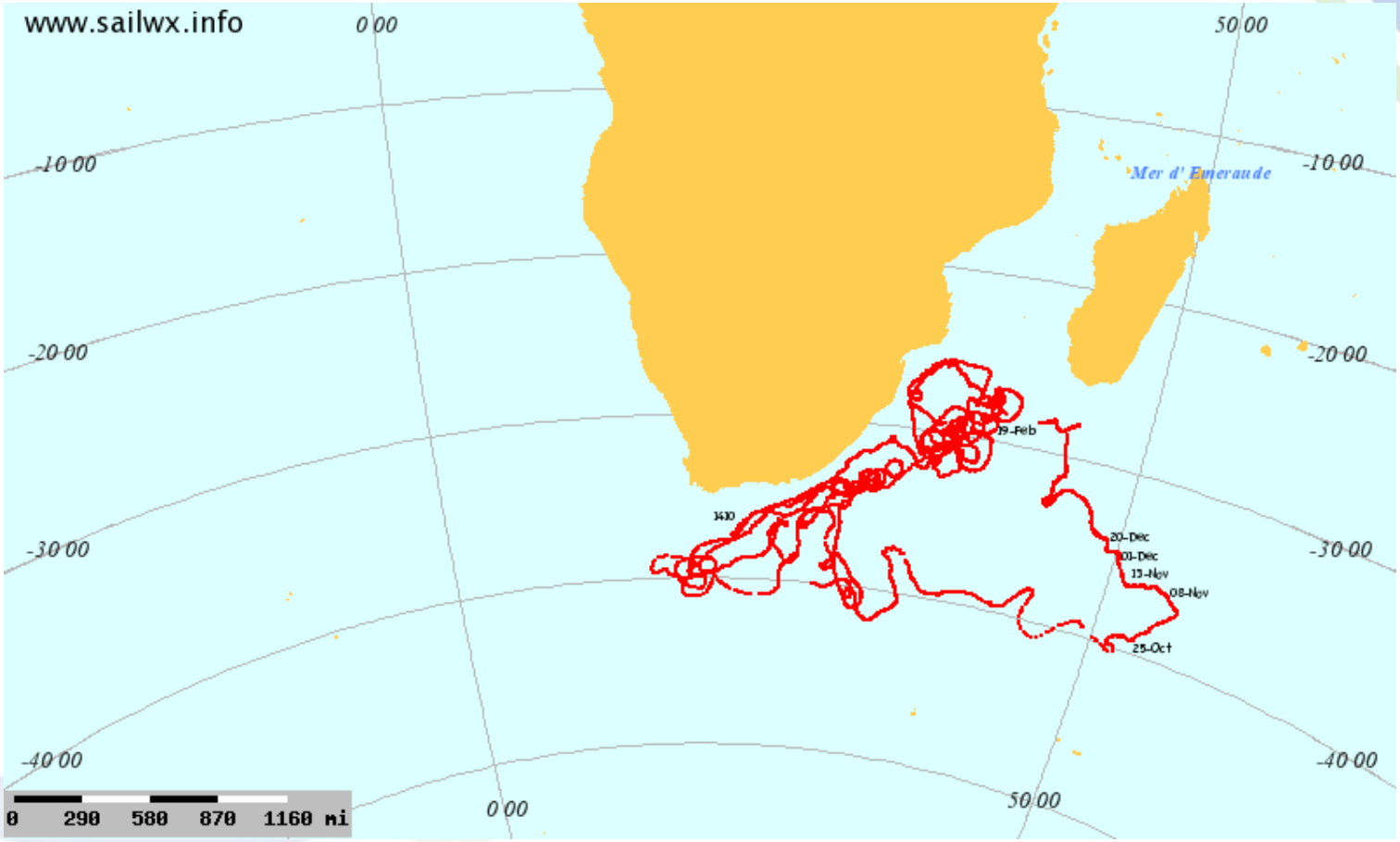
- Deployed October 2007 and still transmitting! Resident in the SWIO



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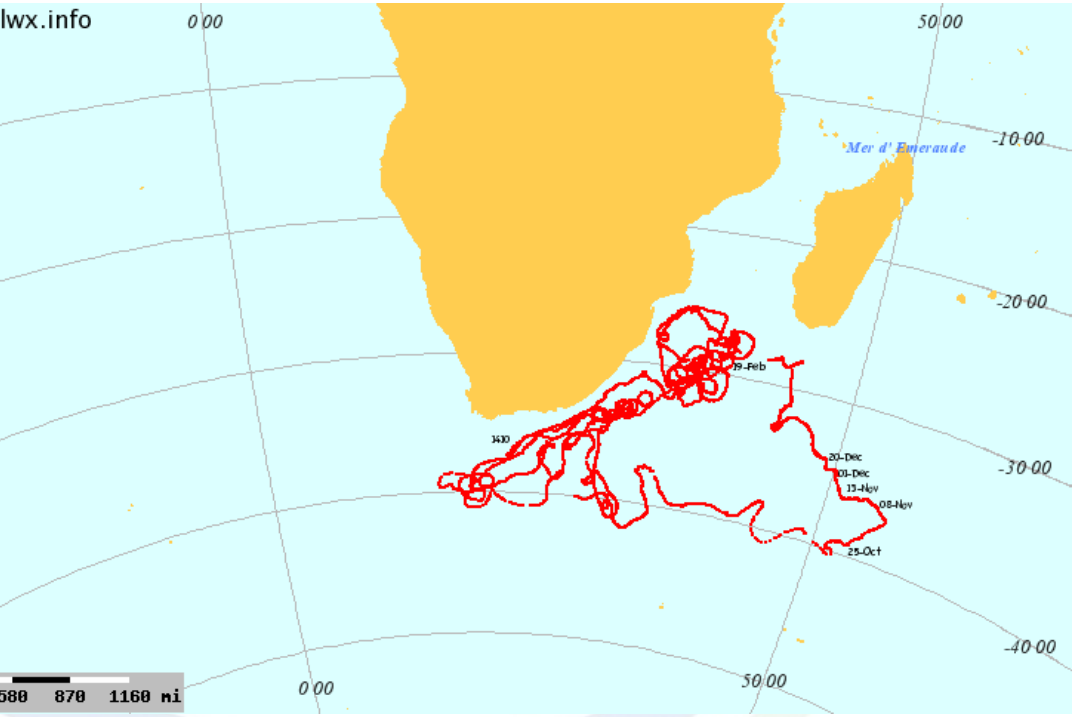
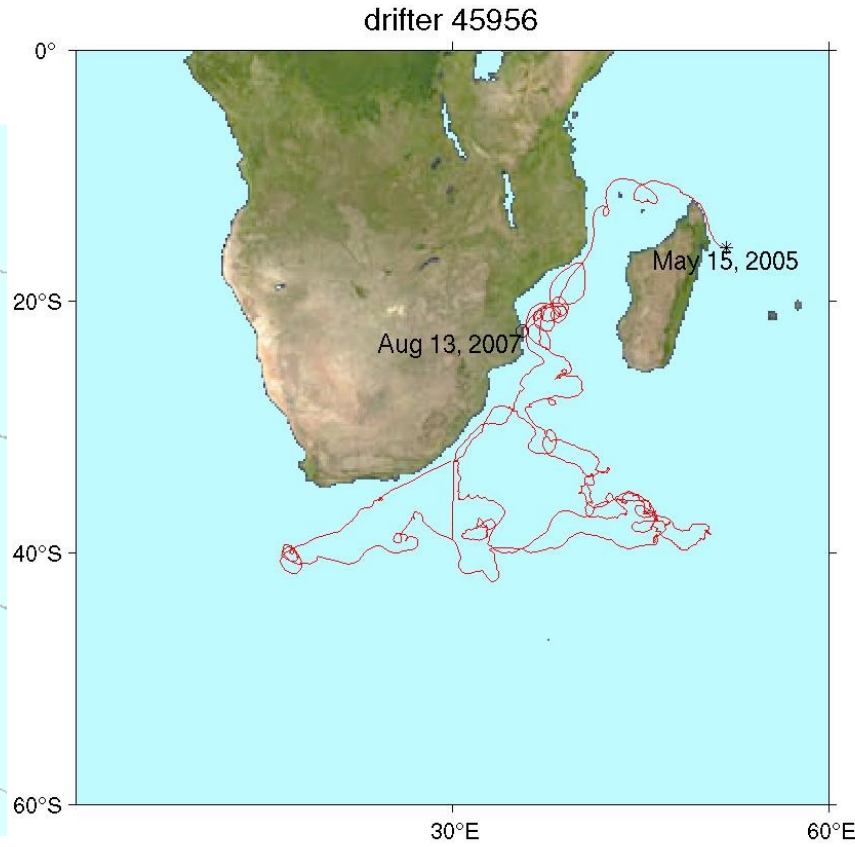
Comparable trajectories: perhaps indicative of a tendency to retain buoys





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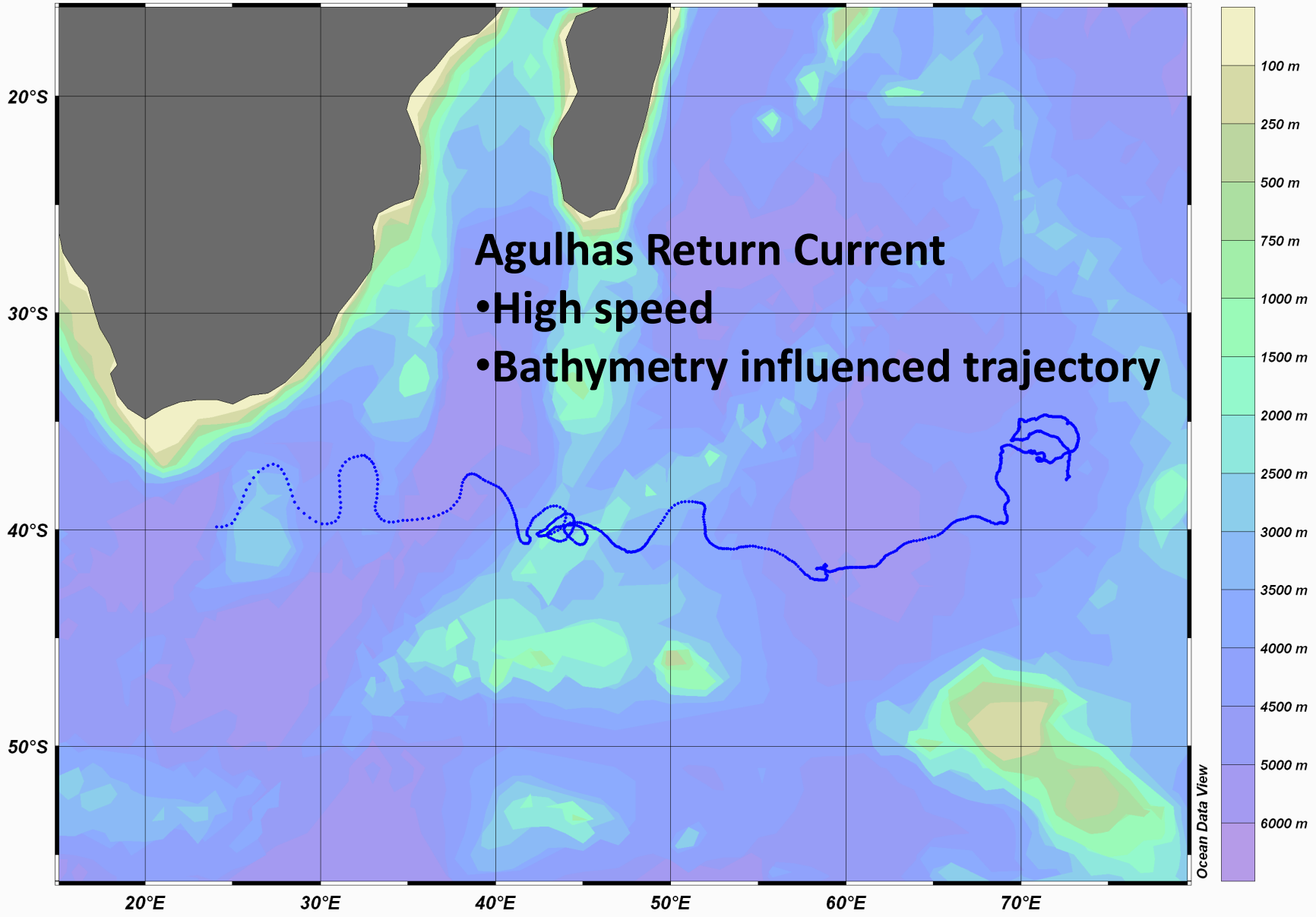
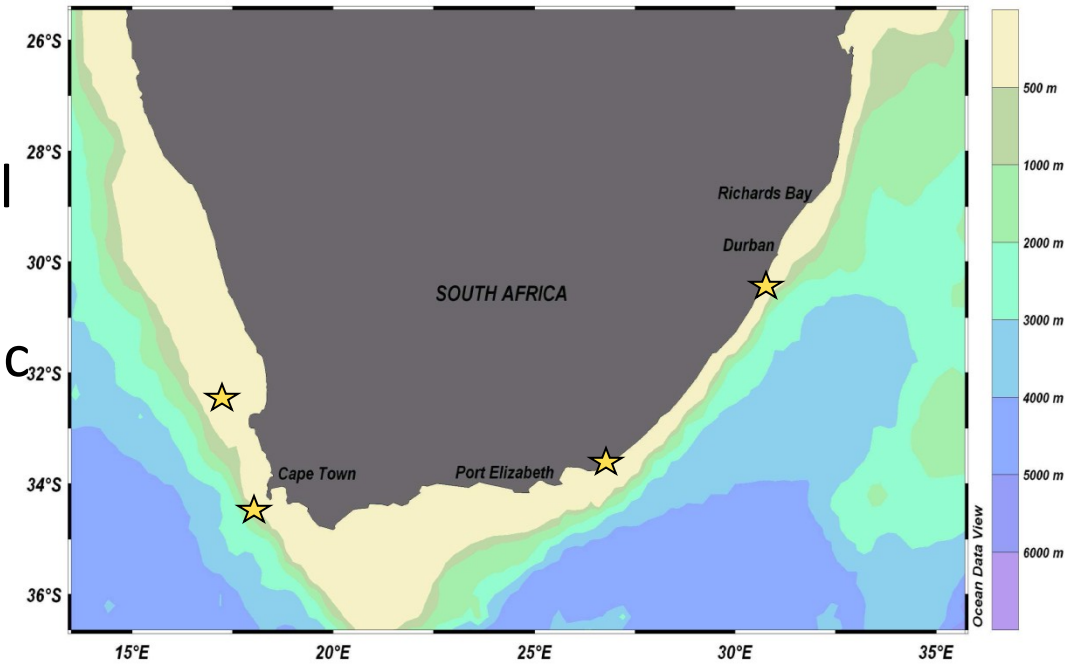

Agulhas Return Current
•High speed
•Bathymetry influenced trajectory
20°S
30°S
40°S
50°S
20°E
30°E
40°E
50°E
60°E
70°E
100 m
250 m
500 m
750 m
1000 m
1500 m
2000 m
2500 m
3000 m
3500 m
4000 m
4500 m
5000 m
6000 m
Ocean Data View

Future plans

- Collaboration with Directorate: Oceans and Coasts on metocean coastal moorings
- O&C carrying oceanographic sensors, eg. temps, salinity, currents
- SAWS to fit meteorological sensors
- Complementary datasets for metocean monitoring of the coupled system.
- Cost sharing



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