



# Mean flow and eddies on the Azores

## Current zone: Topography interactions

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Direção Regional dos Assuntos do Mar

U. PORTO

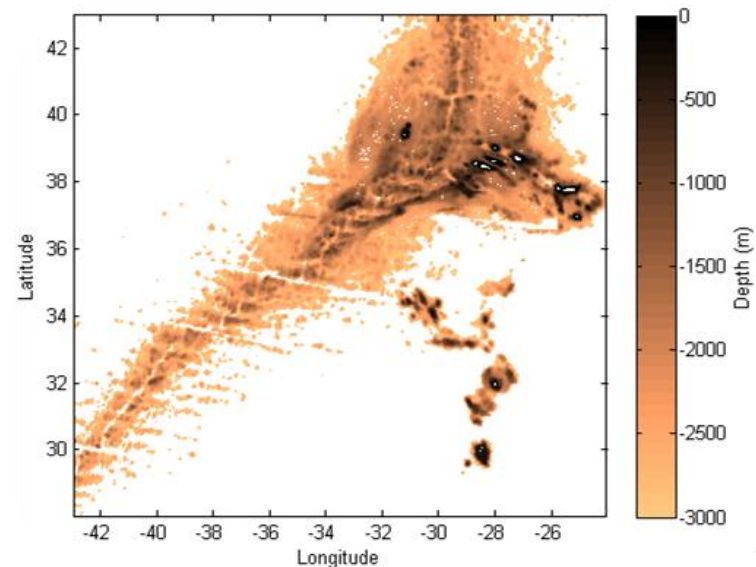
IPL

Observatório do Mar



# Objectives

- Study the mean circulation features;
- Eddies and mesoscale structure;
- Understand the interaction of flows and eddies with the main topographic features;
- Develop a regional model.



# Data

- Surface velocity program drifters;
- ARGO subsurface floats;
- RAFOS, MARVOR, sub-surface floats;
- Satellite Altimetry (+ eddy tracks);
- Current meter moorings.



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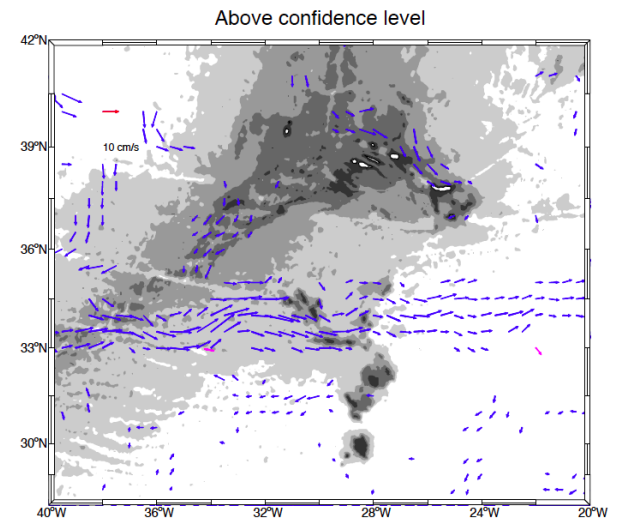
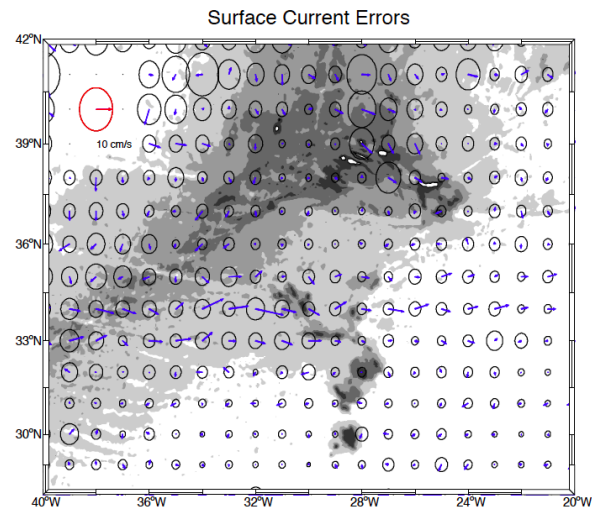
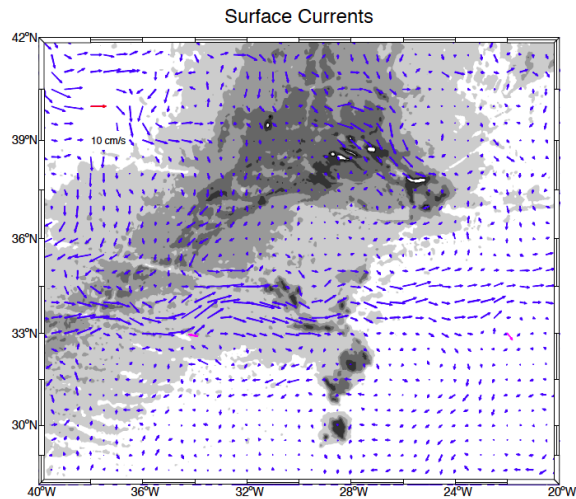
# MEAN CURRENTS

Surface  
Currents

1000m  
Currents

Mean Flow  
and Eddies

Azores  
Promontory  
Contour  
Flow



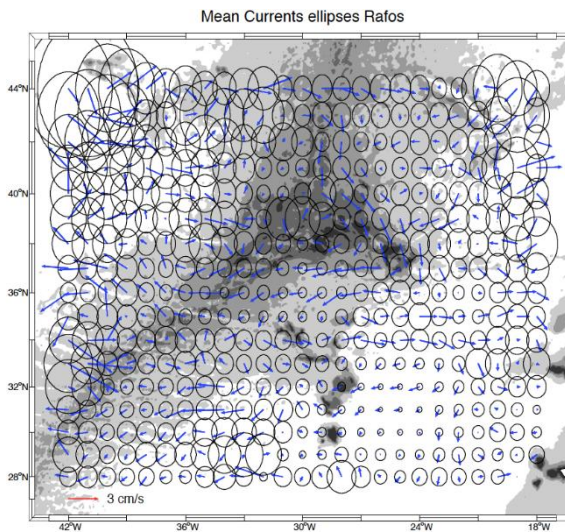
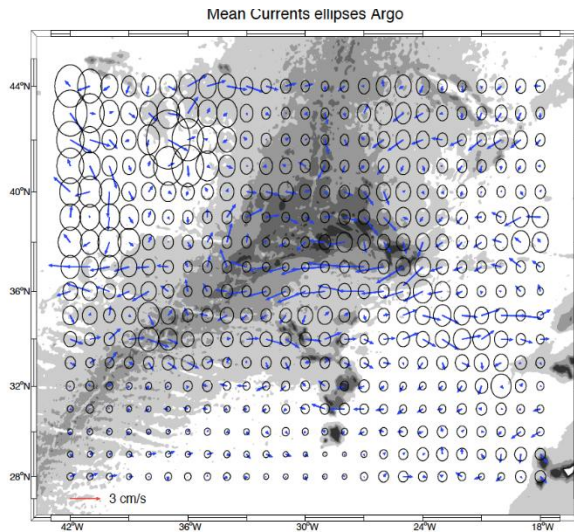


Surface  
Currents

1000m  
Currents

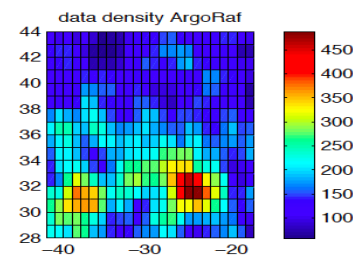
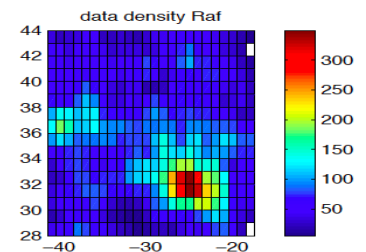
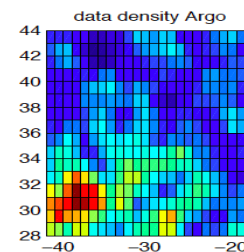
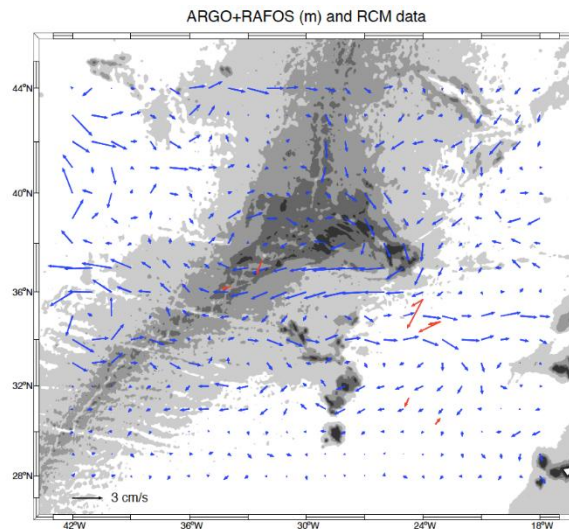
Mean Flow  
and Eddies

Azores  
Promontory  
Contour  
Flow



Rafos

Argo



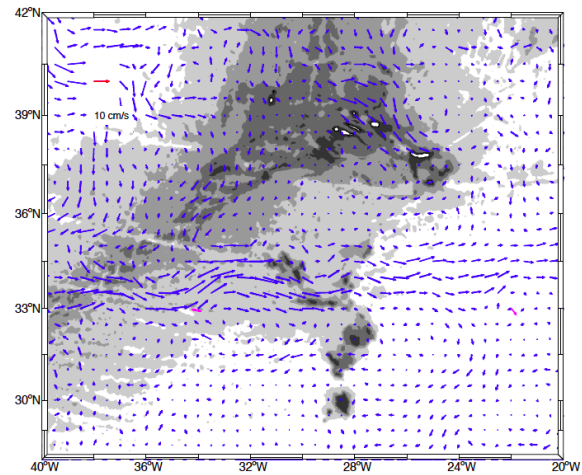
Surface  
Currents

1000m  
Currents

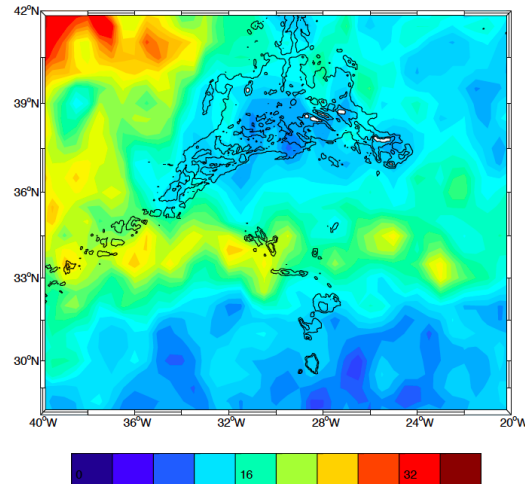
Mean Flow  
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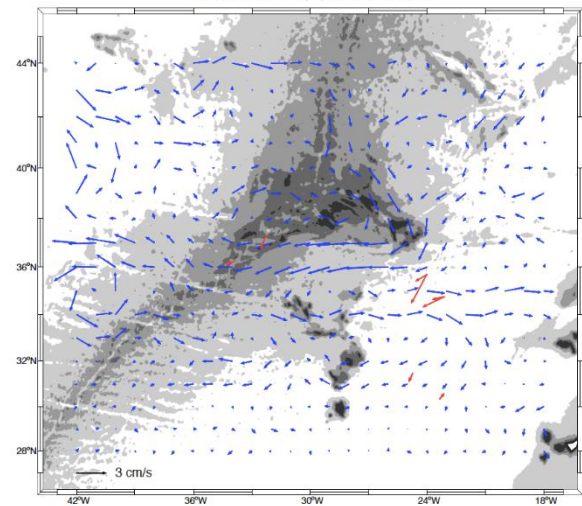
Surface Currents



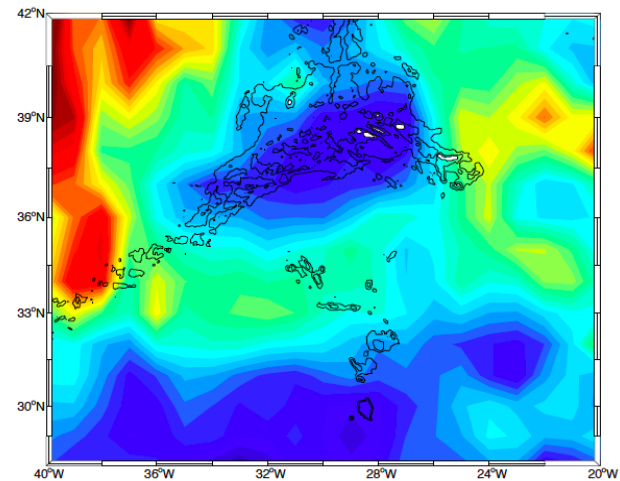
Eke



ARGO+RAFOS (m) and RCM data



Eke 1000m

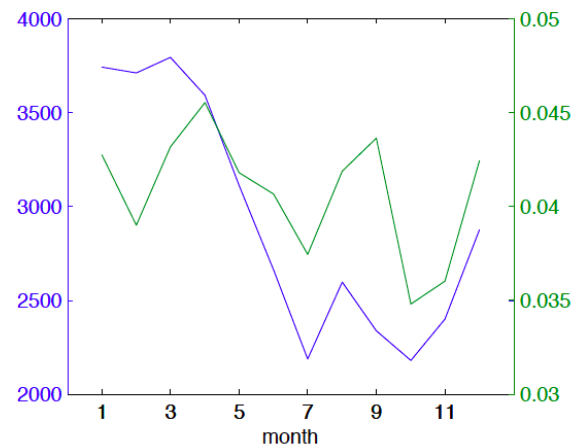
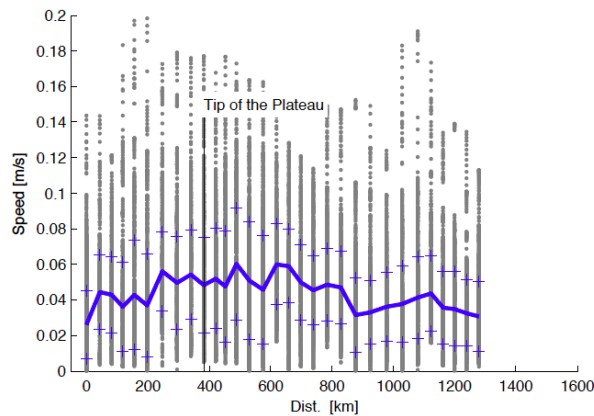
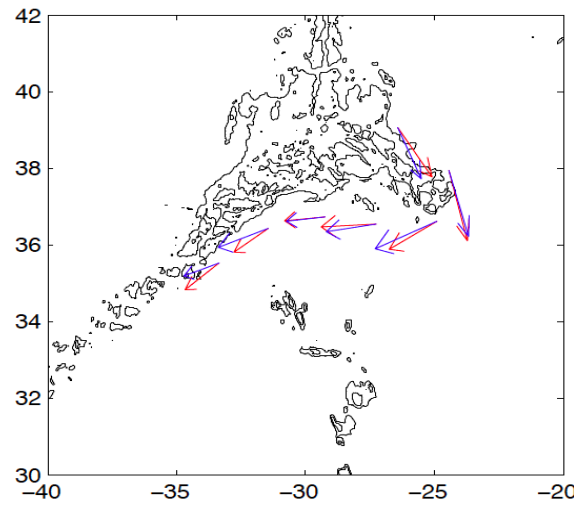
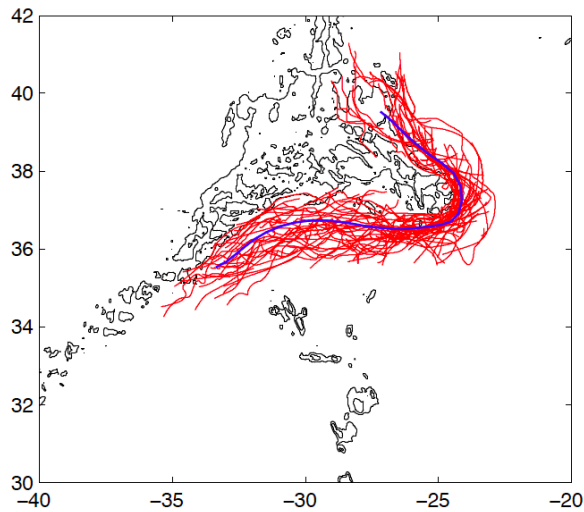


Surface  
Currents

1000m  
Currents

Mean Flow  
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Promontory  
Contour  
Flow







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# EDDY INTERACTION WITH MAR

~1 month < Lifetime interaction < more than 1 year

Crossing

by streamer/  
merge/split

~ isolated  
structure

Extinction  
above MAR

Migration  
along MAR

~1 month < Lifetime interaction < more than 1 year

Crossing

by streamer/  
merge/split

~ isolated  
structure

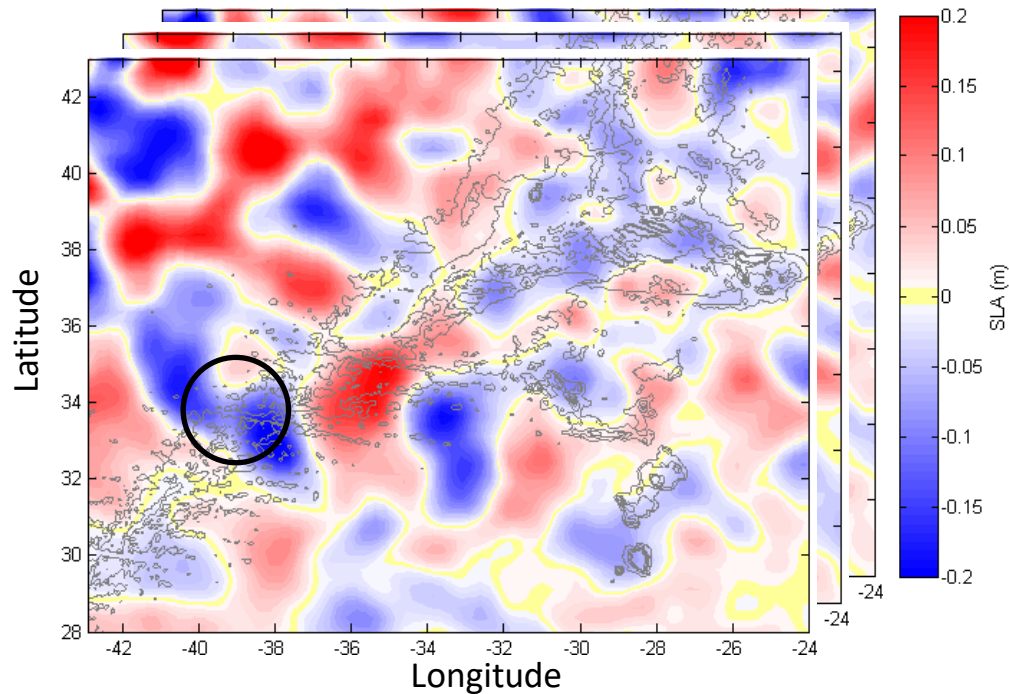
Extinction  
above MAR

Migration  
along MAR

13/06/99

13/08/99

25/10/99



~1 month < Lifetime interaction < more than 1 year

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~ isolated  
structure

Extinction  
above MAR

Migration  
along MAR

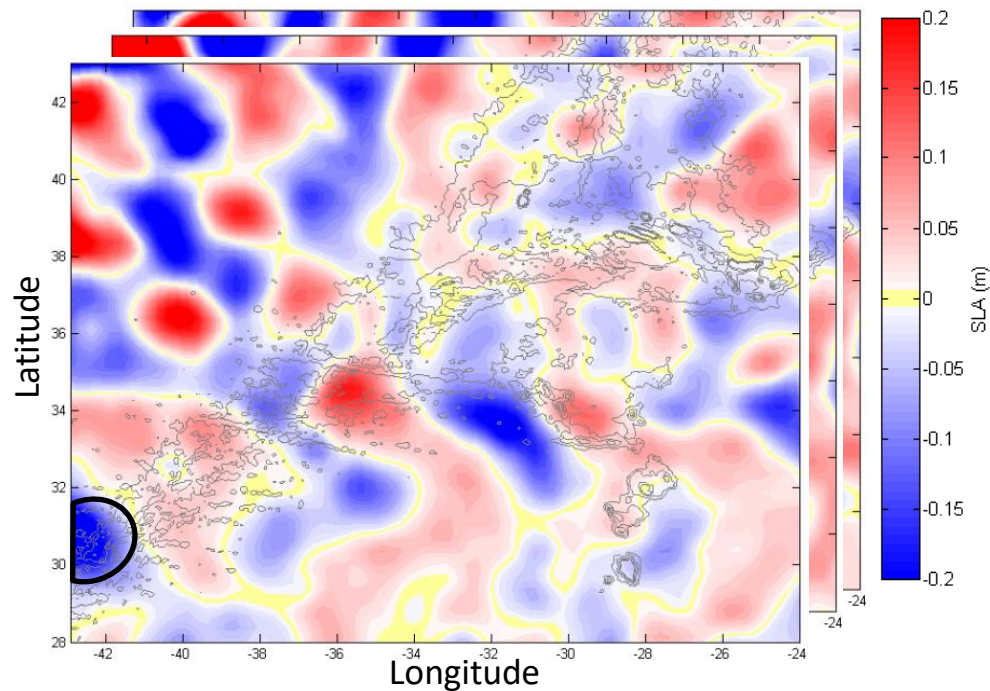
11/12/10



11/01/11

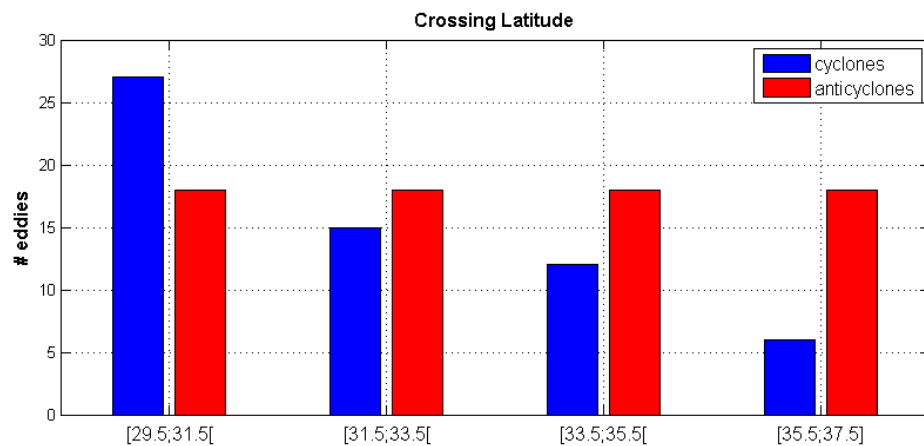
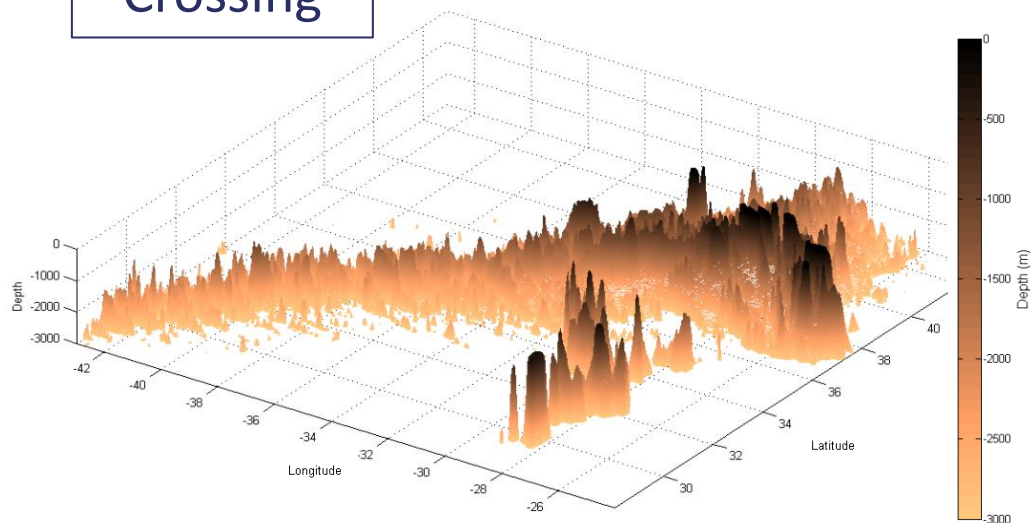


22/02/11

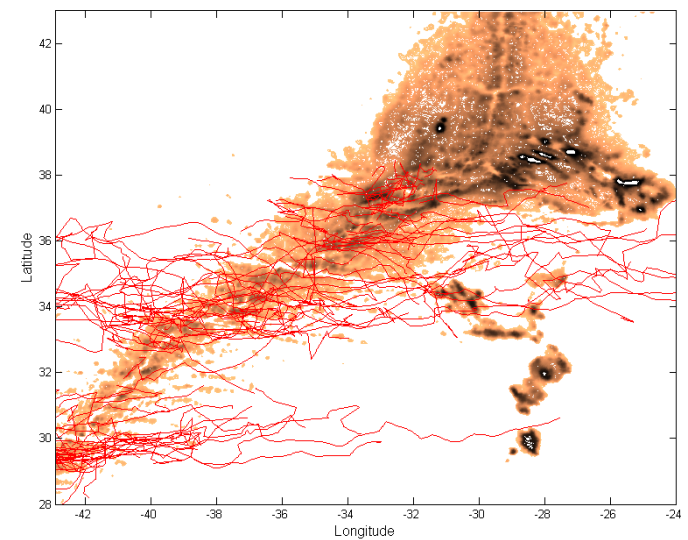
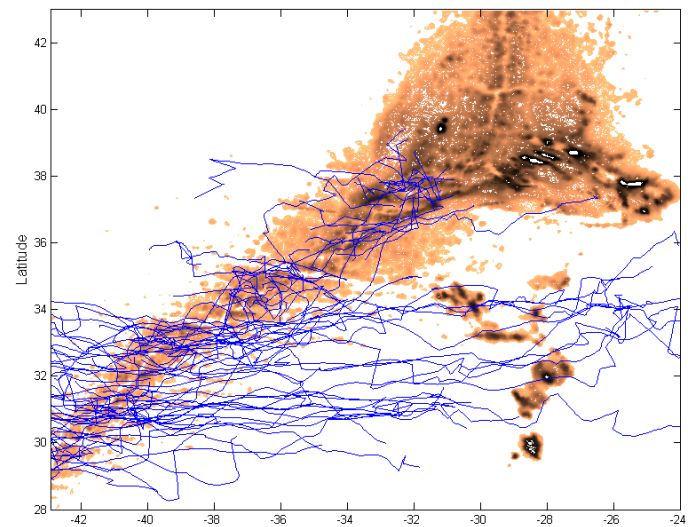




# Crossing



Data from 1993 to 2011



~1 month < Lifetime interaction < more than 1 year

Crossing

by streamer/  
merge/split

~ isolated  
structure

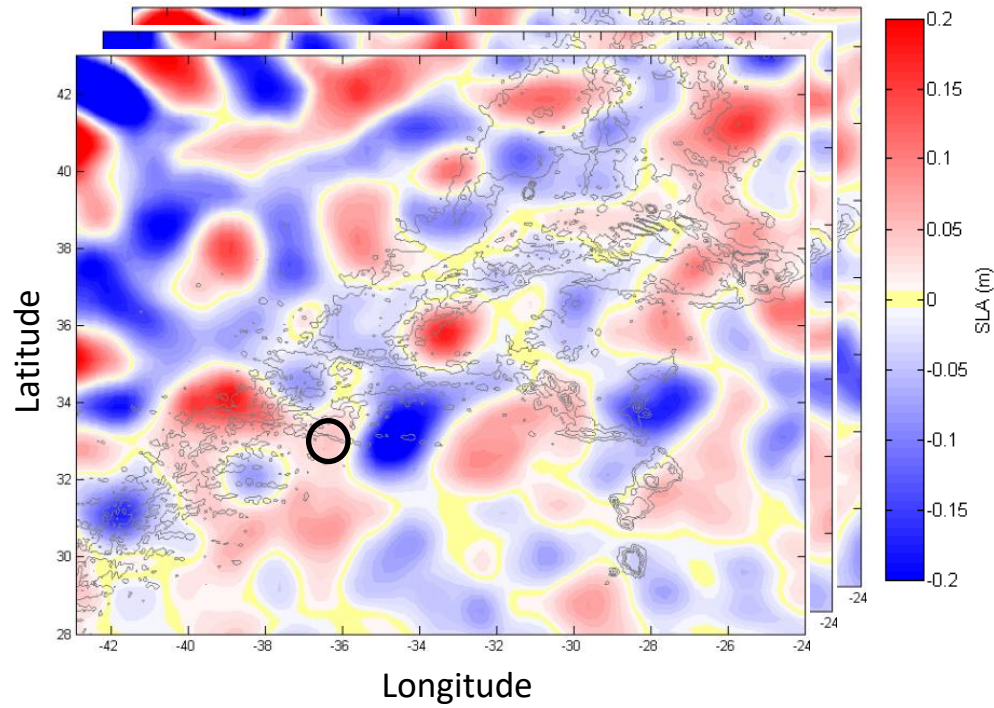
Extinction  
above MAR

Migration  
along MAR

07/03/11

18/04/11

22/06/11



~1 month < Lifetime interaction < more than 1 year

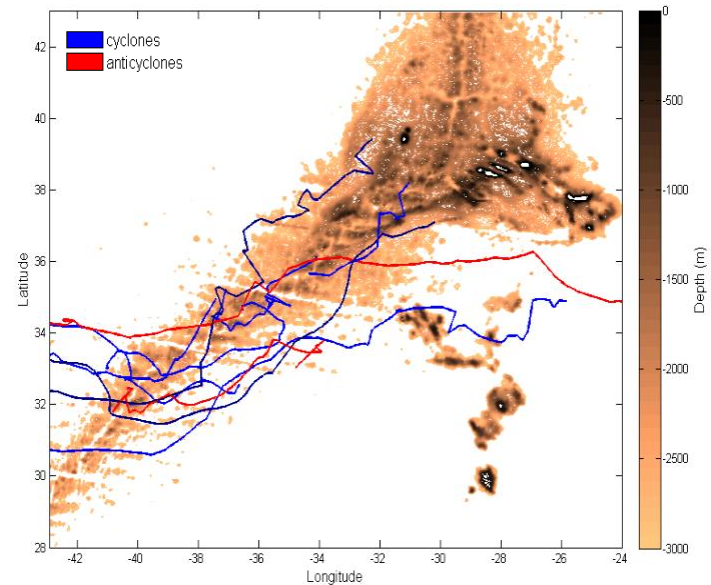
Crossing

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structure

Extinction  
above MAR

Migration  
along MAR







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# PRELIMINARY CONCLUSIONS



- Evidence of time-mean closed circulation over AP. No seasonality.
- No clear Azores Counter Current on the north. But clear recirculations on the south.
- The AC changes Across Meteor-ridge: Deeper on the east, more intense on the west.
- Most of the eddies interact clearly with MAR.
- The ridge may constrain the flow.



# Thank You



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