

Monitoring the Eastern Alboran using Combined Altimetry, *In Situ* and Temperature Data

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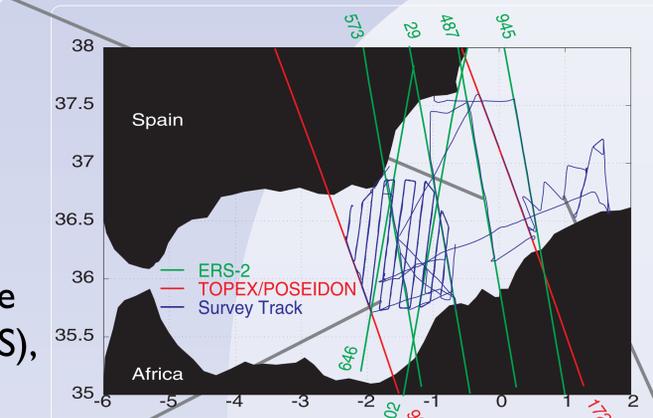
<http://www.soc.soton.ac.uk/JRD/OMEGAindex.html>

The second OMEGA cruise took place in Nov. 1996-Jan. 1997 onboard *RRS Discovery*, in the region of the Almería-Orán Front in the Western Mediterranean

During the cruise, several large scale surveys were carried out, part of which lay along TOPEX/POSEIDON altimeter ground tracks.

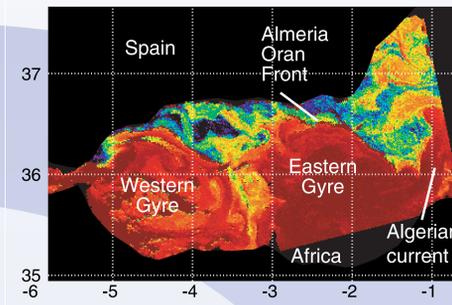
In addition, a fine scale survey (FSS), designed to be oriented along ERS ground tracks, was repeated five times.

An error in planning led to an offset between the ERS tracks and the FSS tracks. To overcome this the hydrographic data and ADCP currents were interpolated along the front before calculating the absolute geostrophic



Hydrographic data from an undulating, towed CTD and absolute current profiles from an Acoustic Doppler Current Profiler (ADCP) referenced

by a Global Positioning System were collected continuously along these survey tracks.



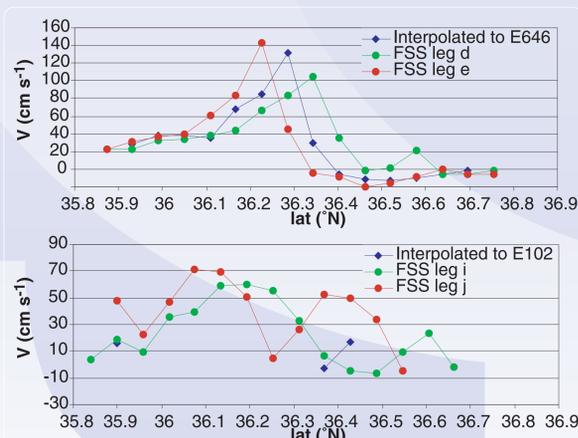
This Along Track Scanning Radiometer (ATSR) image for 2 December 1996 shows the surface circulation

pattern at the start of the cruise. Atlantic water flows round two Alboran gyres before forming the Algerian current.

This is a typical state of the circulation of the Alboran.

Vertical geostrophic shear from the SeaSoar data was merged with the

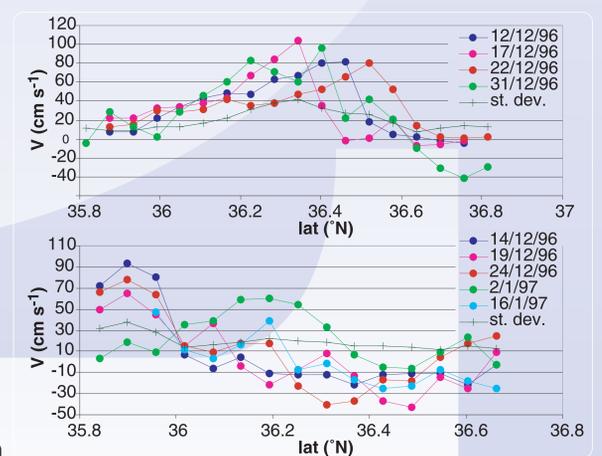
absolute vertical shear from the ADCP. This gives an absolute surface geostrophic current profile for each section of survey track.



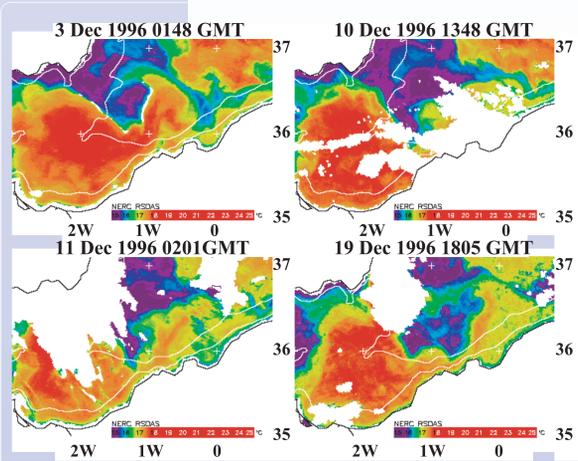
The effect of interpolation can be seen here for ERS tracks 646 and 102. The profiles for "leg e" etc. are for

the two closest survey legs to each altimeter track, less than 20 km apart.

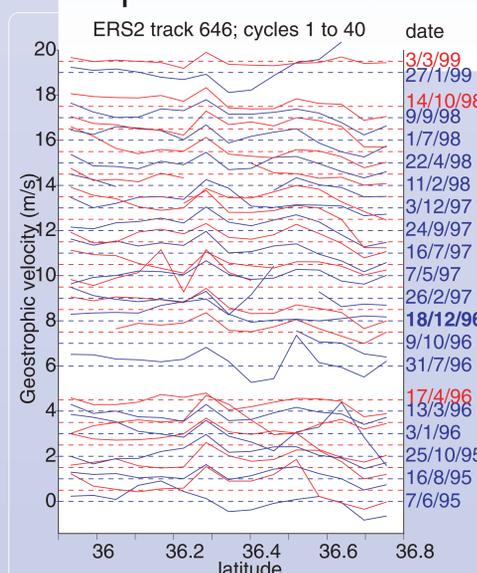
Some error is also due to the time difference between surveys of the two legs- 18 hours in total. The change in currents over a single ERS cycle is given by the profiles from the five repeats of the FSS.



The meander seen in this time series of AVHRR images



moves along the front and into the Algerian current and is the cause of the second peak in velocity along leg j. Merging the altimetry with temperature data would aid in interpreting the one-dimensional altimeter velocity values.



The absolute surface geostrophic current for any altimeter overpass is found by adding the one-time survey value to velocity from the altimeter relative to the survey time (here 18 December 96).



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