

EGYPT (Eddies and GYres Paths Tracking) programme
EGYPT -1 campaign / cruise FS Poseidon P335
Messina (Italy) 8 Apr. 2006 – Heraklion (Crete/Greece) 26 Apr. 2006

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The aim of the **EGYPT (Eddies and GYres Paths Tracking)** programme is to study the circulation of the water masses in the eastern basin of the Mediterranean. The surface circulation is that of the (lighter) water of Atlantic origin (Atlantic water: AW) that enters at Gibraltar. Surprisingly this circulation is fiercely debated yet. Recent studies in the 1990s (POEM) claim that the AW crosses the basin in its central part, as a jet meandering across the basin: the so-called "Mid-Mediterranean Jet" (MMJ). This is the schema widely accepted nowadays. On the other hand historical (1910s) and our most recent studies claim that the circulation is constrained along the continental slope, flowing counter-clockwise at basin scale. In the southern part of the basin the AW flow that forms the Libyo-Egyptian current is unstable. It generates meanders and (anticyclonic) eddies (50-150km diameter) that propagate eastward at ~1-3 km/day, and that are responsible for spreading AW offshore. As for the circulation at intermediate (Levantine Intermediate Water: LIW) and deep layers, very little is known due to the lack of data.

Satellite infrared images were transmitted on board in near-real time to get the main circulation features, locate and track the eddies.

Due to problems with permission for work off Egypt we had to shift our sampling and mooring array to the West, off Libya, and modify the mooring lines accordingly. Thus on our way from Messina we have first chosen a longer route to sample the eddies in the southern Ionian with XBTs (Fig.1). Then we have deployed for ~2 years a network of 7 moorings (bottom ranging from 2500 to 3500m) with currentmeters and hydrological probes. Finally we carried out a dense CTD survey of 125 stations (1000m casts alternating with casts down to ~50-100m of the bottom), completed with XBTs, 5 autonomous CTD profilers (PROVORs) and 19 surface drifters. Sampling included the eddies E5 (induced by the instability of the Libyo-Egyptian current) and Ierapetra (induced Southeast of Crete by the Etesian winds during the previous summer). The survey crossed the whole basin and extended as close as possible to the continental slopes to check the alongslope circulation, using a sampling interval of ~5 miles to assess correctly the mesoscale variability and resolve any alleged mid-basin jet. The synoptic and fine picture we got of the situation will allow us to draw some definitive conclusions regarding the general circulation, the structure of the eddies and their role in spreading the water masses.

More on <http://www.ifremer.fr/lobtln>

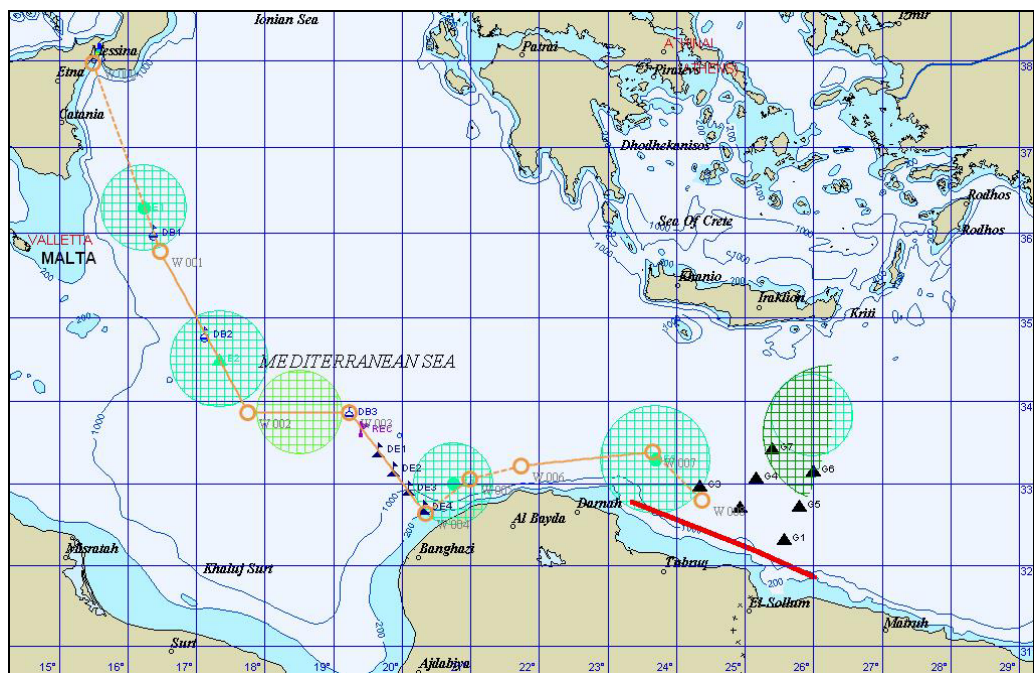


Figure 1: EGYPT-1 route and sampling from 8 to 12 April 2006 (eddies are schematised in green, drifters by flags, and mooring positions by black triangles).

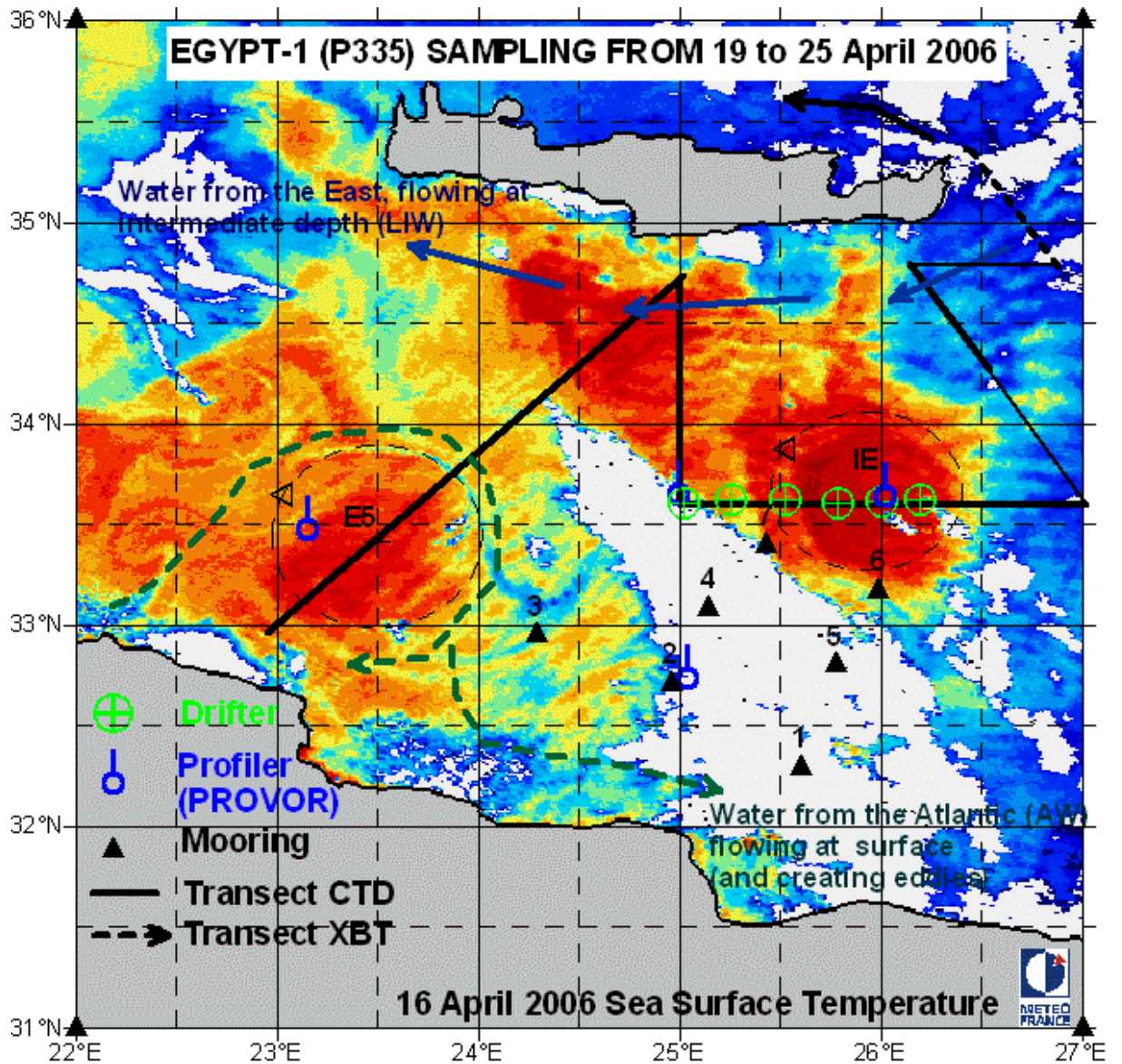


Figure 2: EGYPT-1 route and sampling from 19 to 25 April 2006, superimposed on the sea surface temperature image of 16 April 2006.