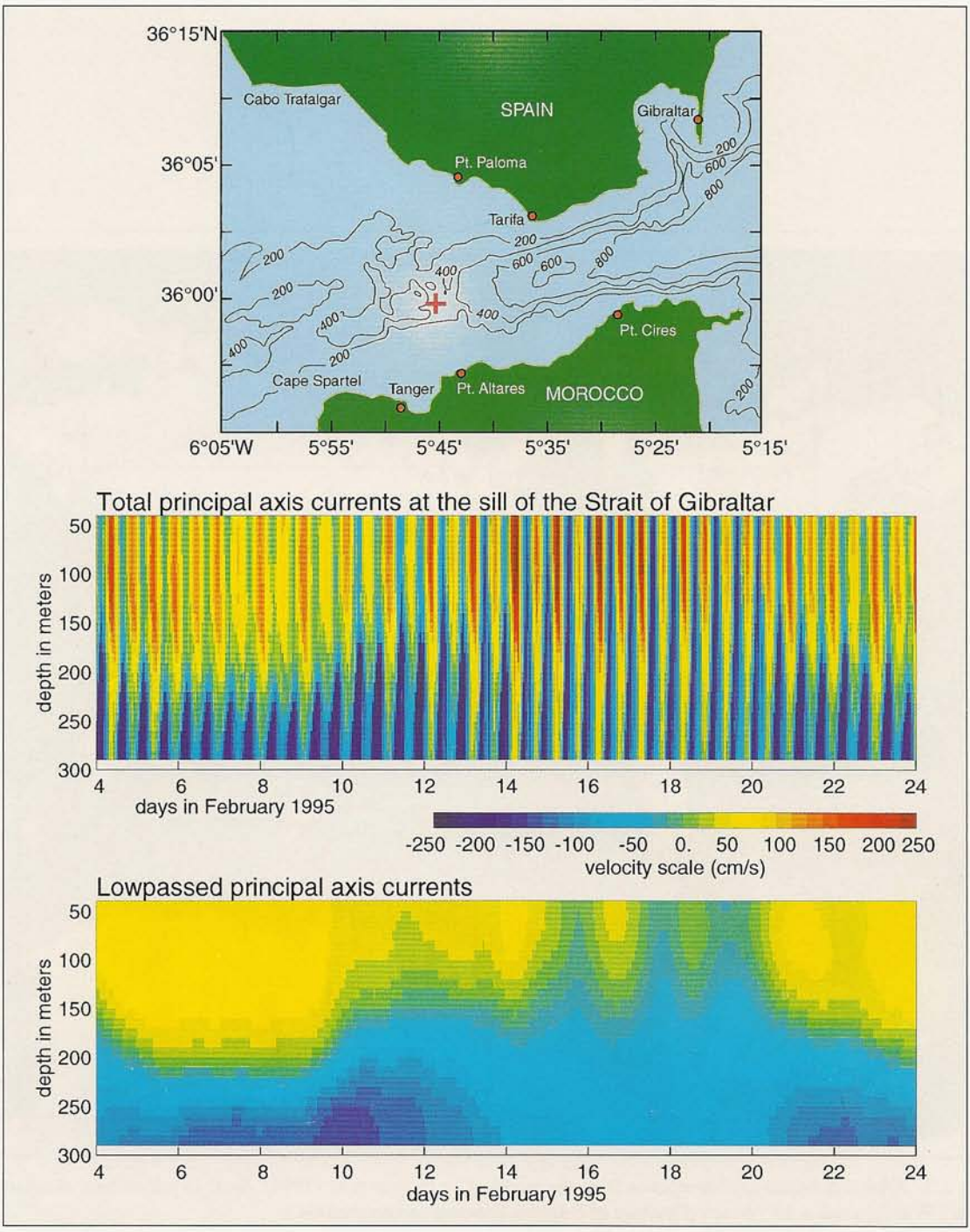

Fig. 3.2. Currents through the Strait of Gibraltar during 20 days in February 1995 measured by a bottom-mounted acoustic Doppler current profiler at 300 m depth on the Strait's main sill. The upper map of the Strait of Gibraltar indicates the location of the measurements (+). The middle panel shows the total measured current profile as a function of time. Currents were measured every 15 minutes with a vertical resolution of 10 m. The currents have been rotated to coincide with their principal axis of variability at each depth which varies from 85°(geographic) at 30 m depth to 60° at 280 m. Negative currents are westward (i.e., out of the Mediterranean Sea). The peak of the spring tide period occurs between February 14 and 18. At spring tides the current reverses throughout the water column at each tidal period, irrespective of the baroclinic exchange flow configuration. The lower panel shows the detided current profiles for the same time period. The broken white line indicates the zero current interface between shallow eastward-flowing Atlantic water and deep westward-flowing Mediterranean water. It is clear from the plot that even the subinertial barotropic flow can be strong enough to arrest the baroclinic exchange at times.