



An upwelling filament west of Cape St. Vincent in late October 2004

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The present paper describes the physical characteristics of an upwelling filament off Cape St. Vincent (southern Iberia) in October 2004, based on remote sensing, hydrographic, ADCP and wind data. It was associated with a meandering jet similar to eastern Pacific or Canary filaments, though its dynamical features were weaker as a result of the surface-trapped (top 100 m) and weak horizontal density gradients. The filament transported 0.9 Sv of coastal water offshore, of which 8% was due to Ekman transport; it formed following the destabilisation of an alongshore equatorward upwelling jet close to the cape. The filament was structurally asymmetric, with anticyclonic geostrophic vorticity to the north and more strongly cyclonic to the south, as a result of the meanders and existing eddies. The filament comprised a sequence of cold, sub-mesoscale (~ 30 km diameter) cyclones. Vertical velocities of $\pm 15 \text{ m} \cdot \text{d}^{-1}$ were associated with meanders of the jet. The surface and subsurface circulation was coupled. At middepths (90-150 m) anticyclonic recirculation of northern water was associated with a separated, older upwelling jet. Mediterranean Water (MW) was present below 350 dbar as a topographically-steered undercurrent and a meddy-cyclone dipole. These undercurrents added a contribution to the formation of the October filament through baroclinic instability associated with the enhanced vertical shear.