



Flow encountering abrupt topography

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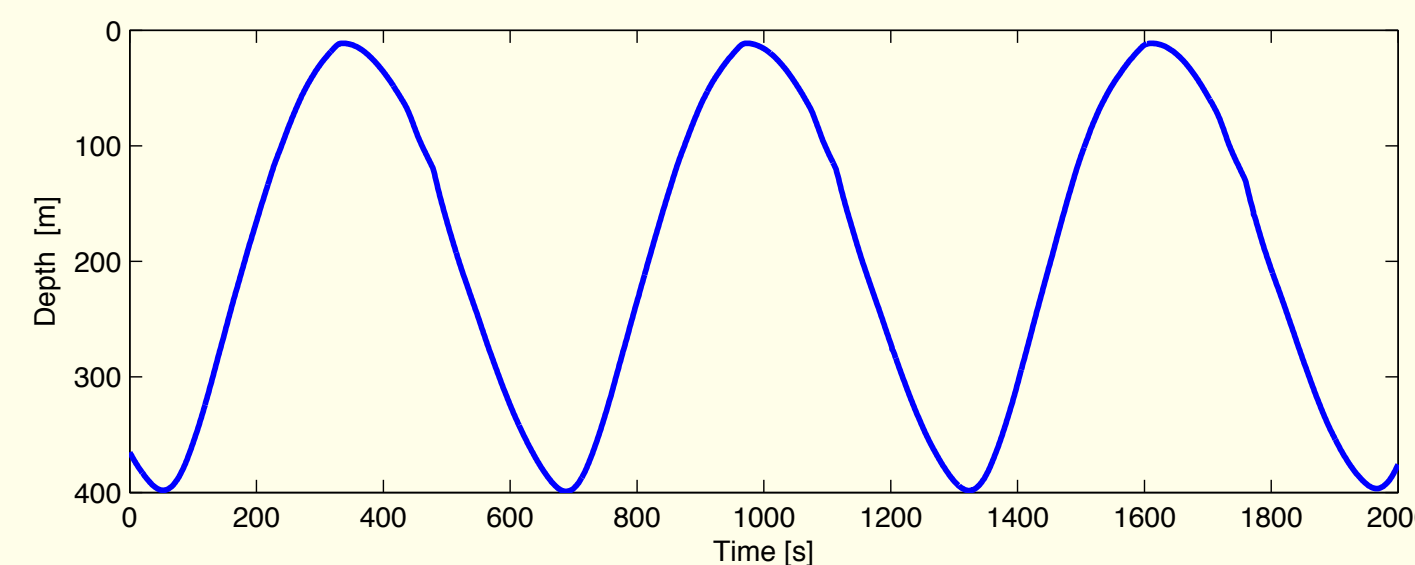
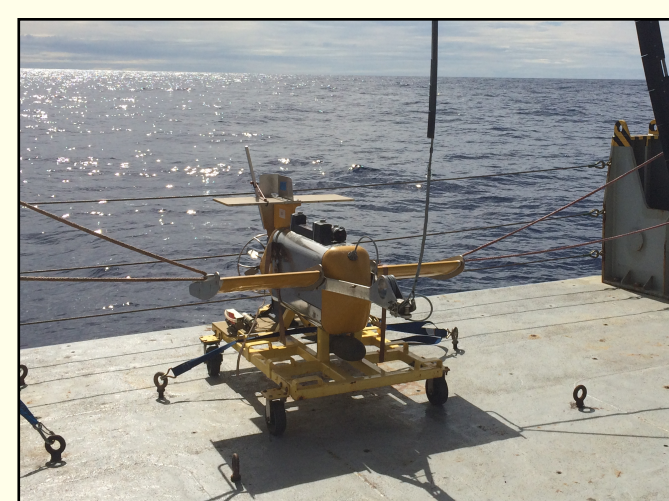
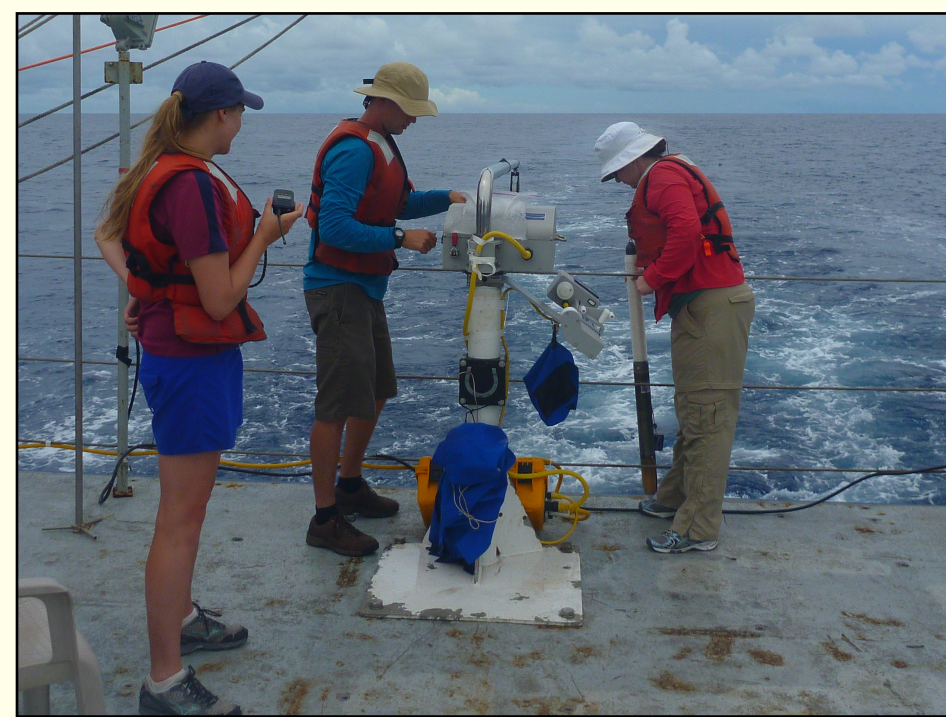


Summary

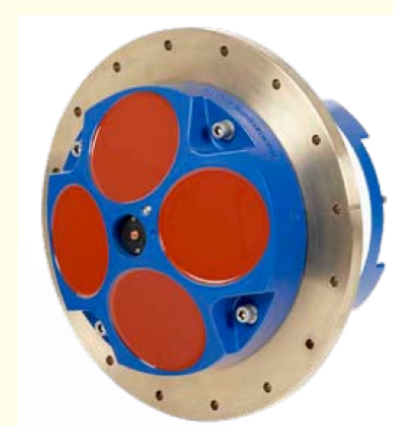
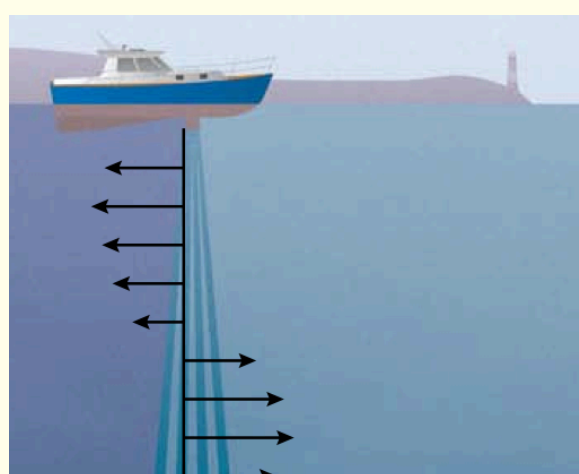
- *current encounters a large island* (main islands of Palau)
 - basin-scale currents are driven by winds
 - strong boundary currents like Gulf Stream
 - Palau has a boundary current
- *current encounters a small island* (Helen Reef & Merir)
 - flow goes around like Venturi: constricted, low pressure, faster flow
 - upwelling on upstream side
 - wake and turbulence on downstream side
- *current encounters submarine ridge* (near Merir)
 - internal waves
 - gravity waves like surface waves, but propagate in 3D
 - cause most of the mixing in the ocean

Instruments

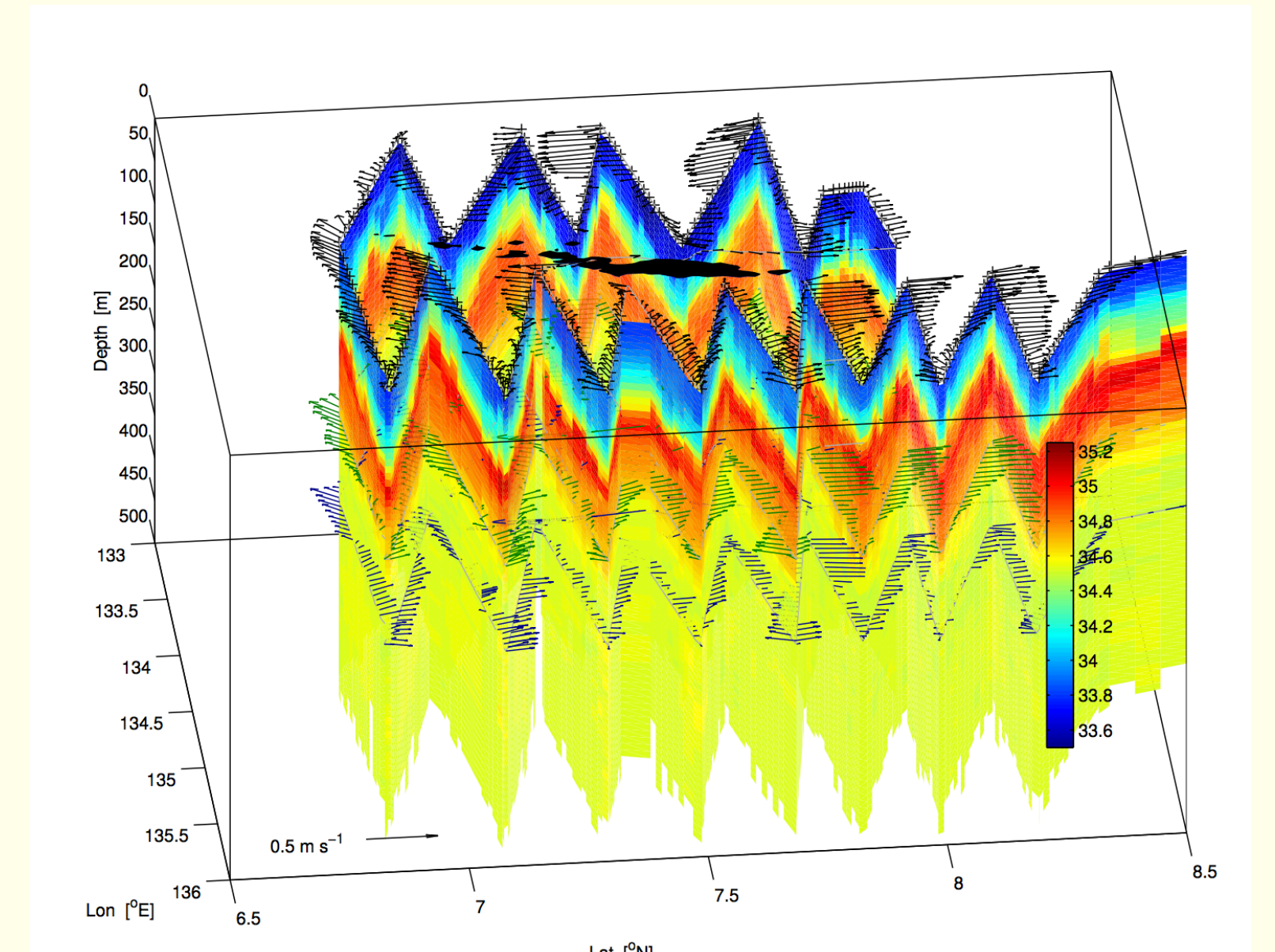
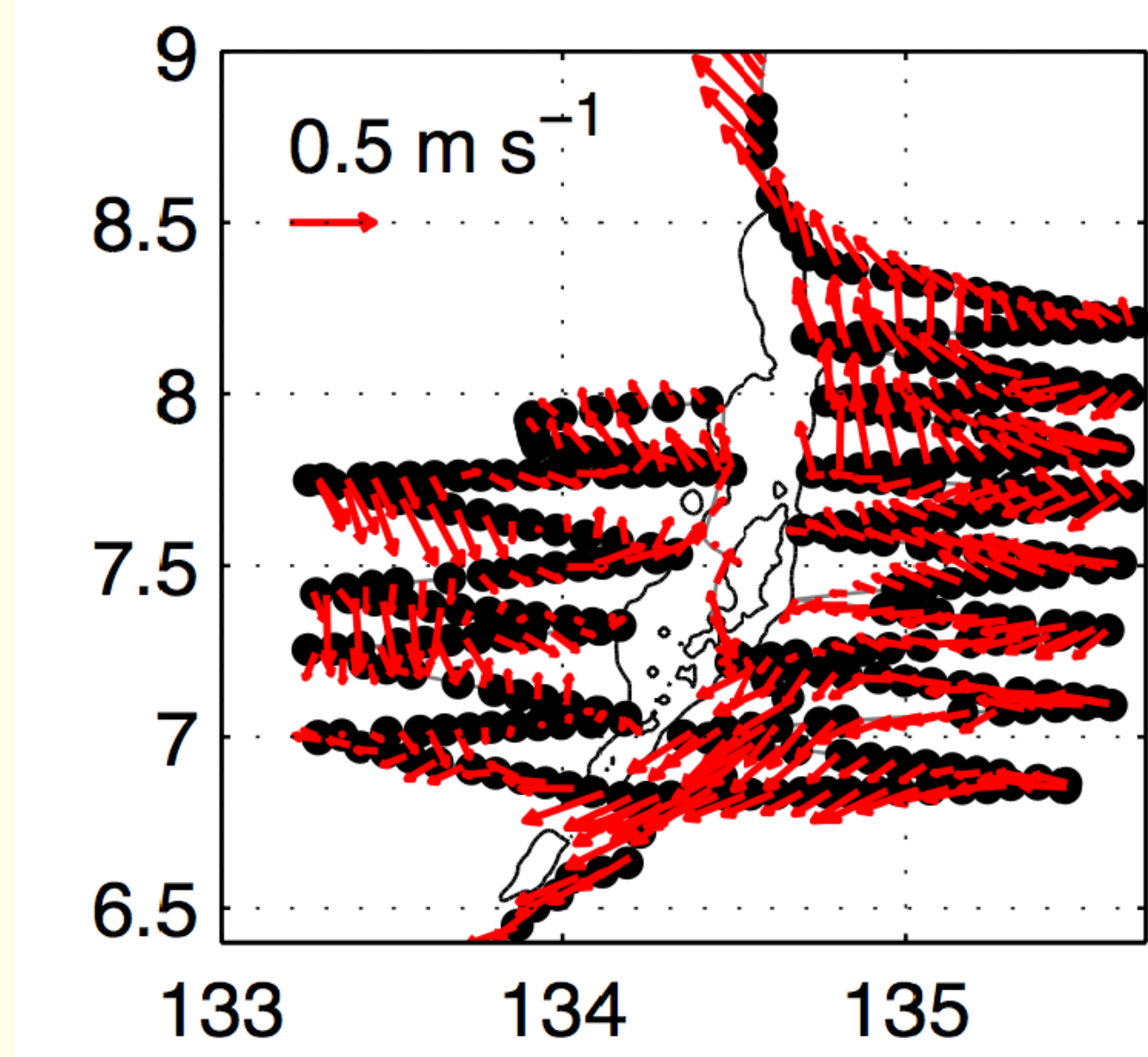
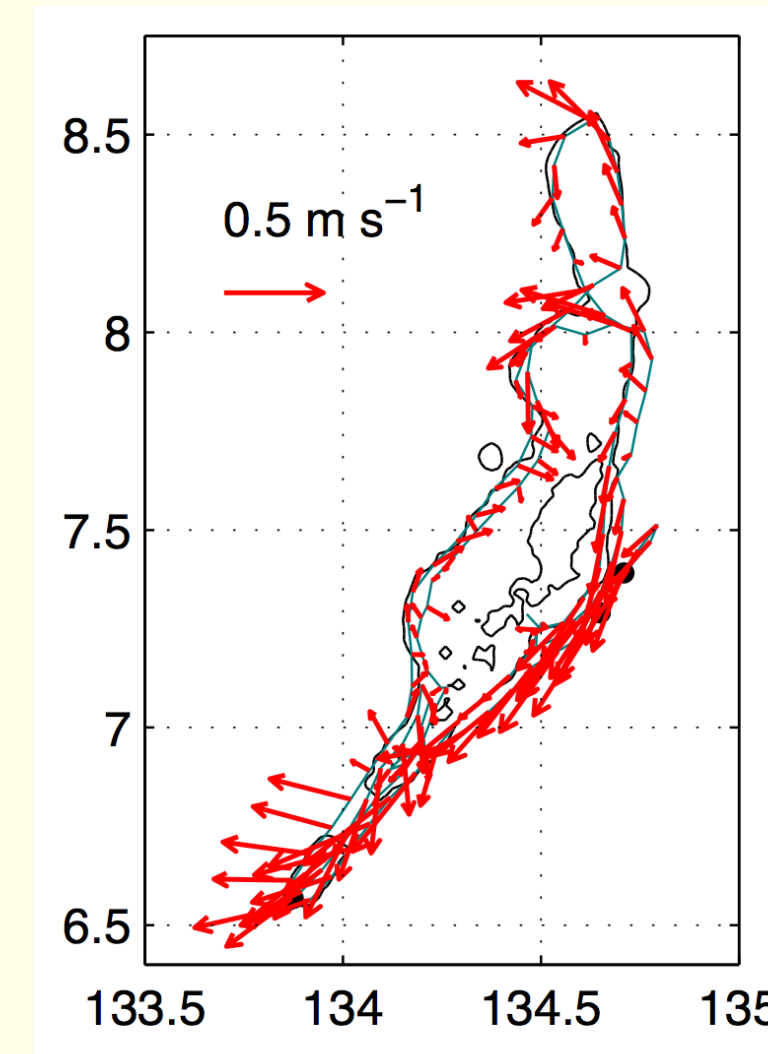
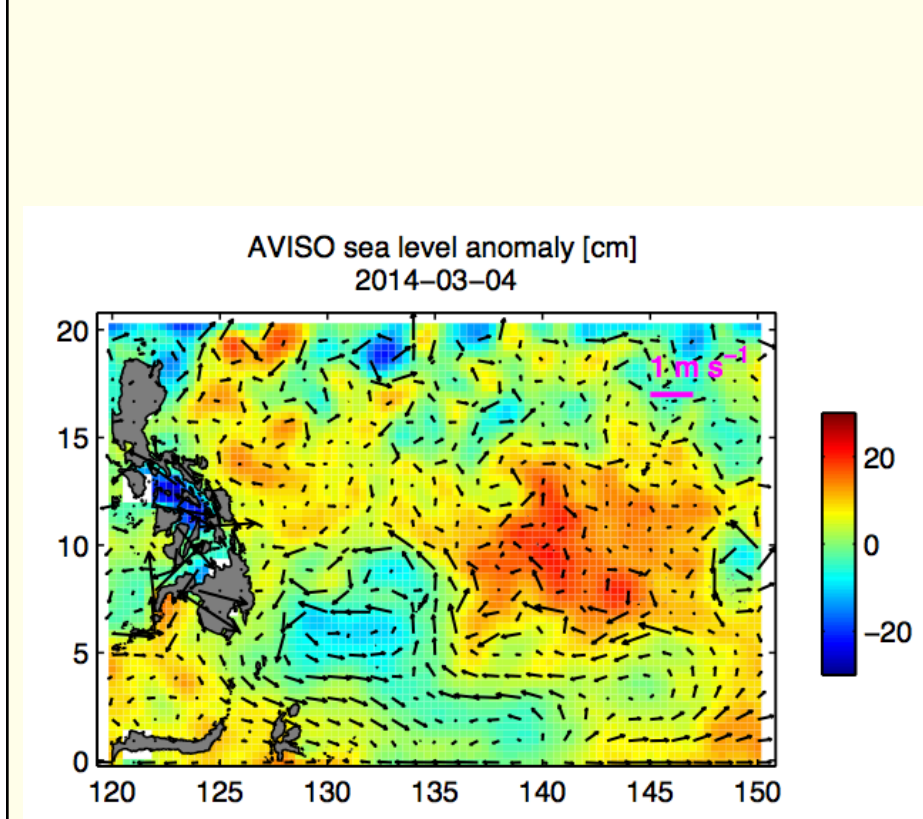
- temperature, salinity, and density from a CTD (conductivity-temperature-depth) instrument



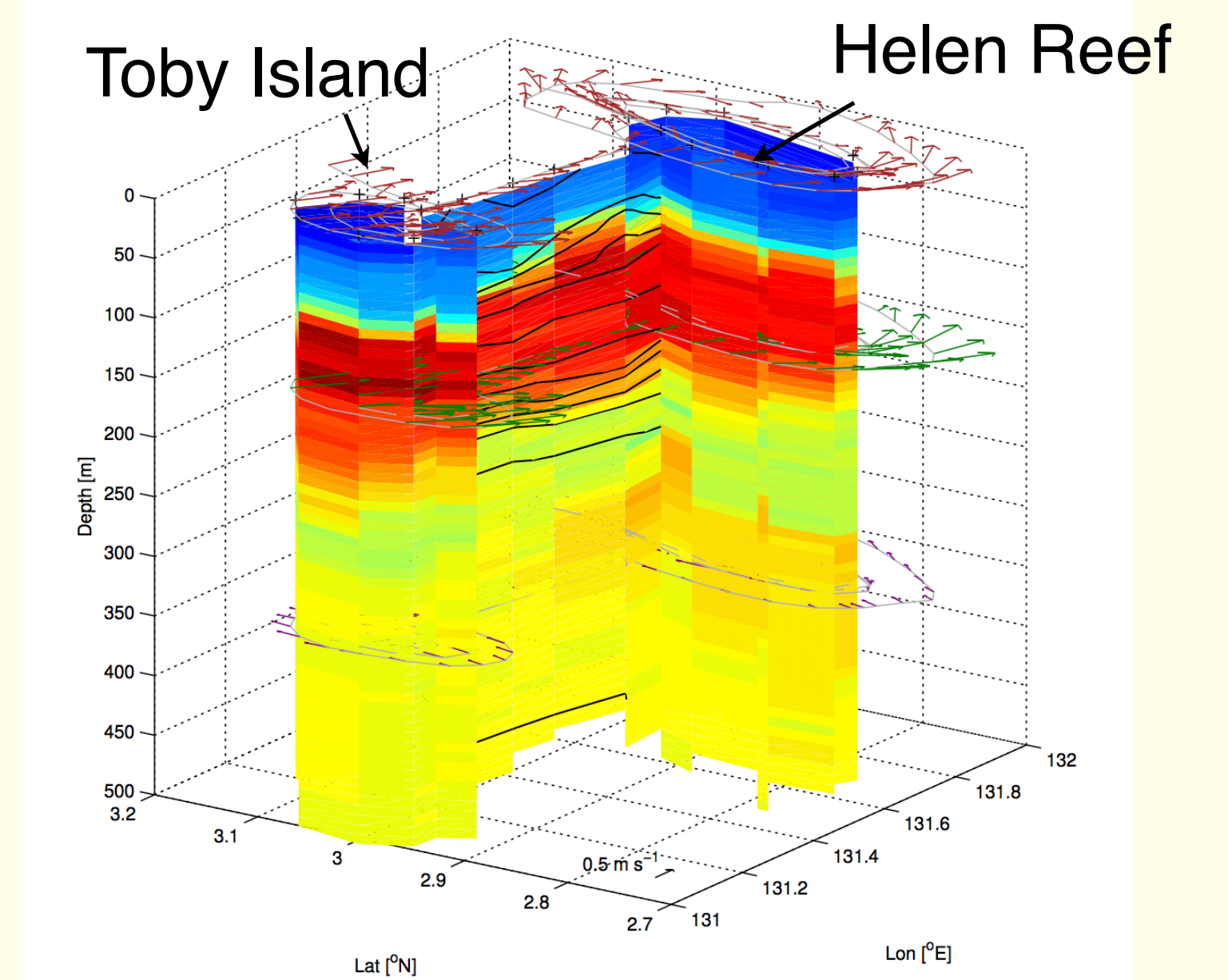
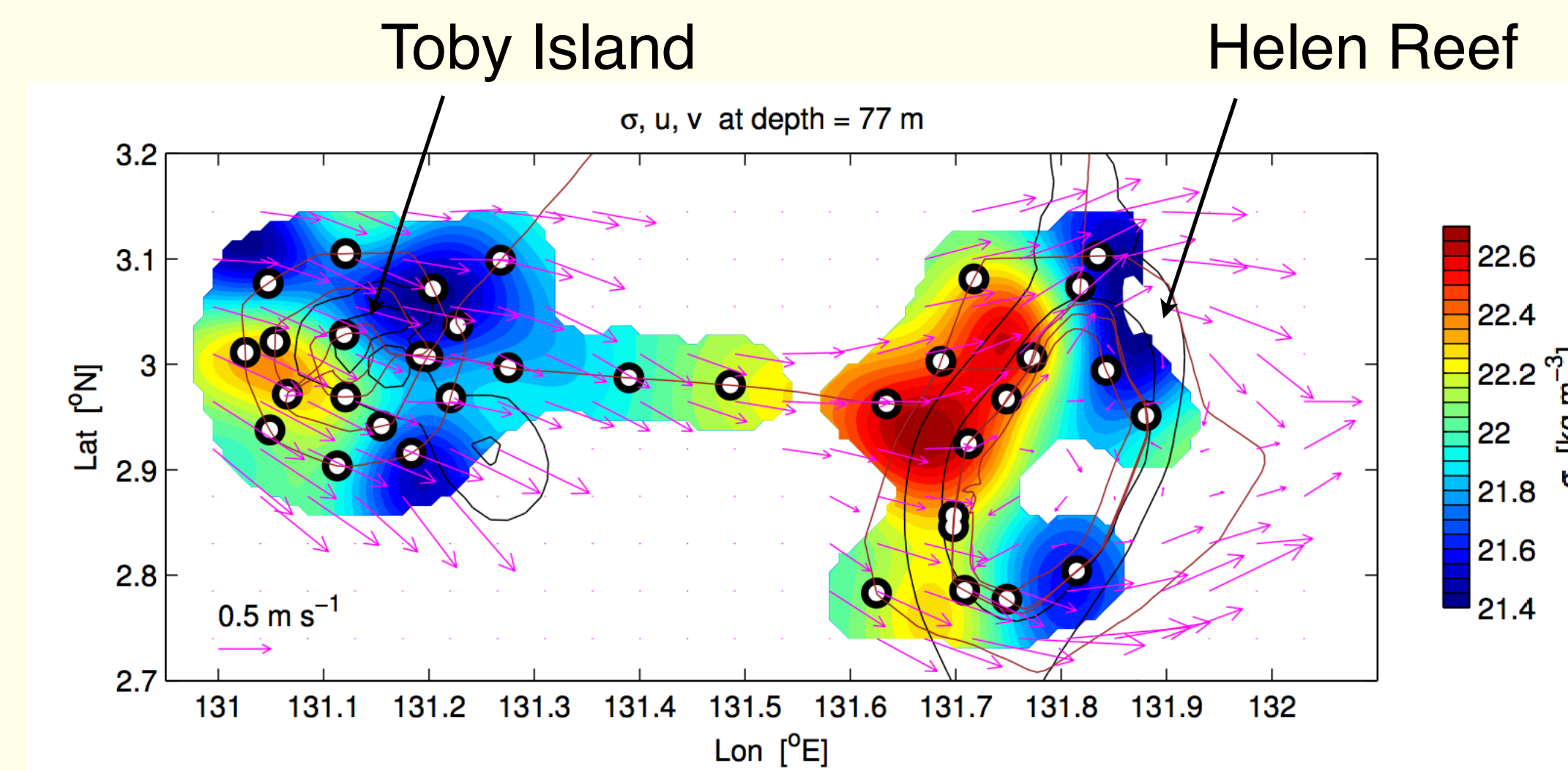
- currents with acoustic Doppler current profilers (ADCP)



Boundary current



Flow around an island

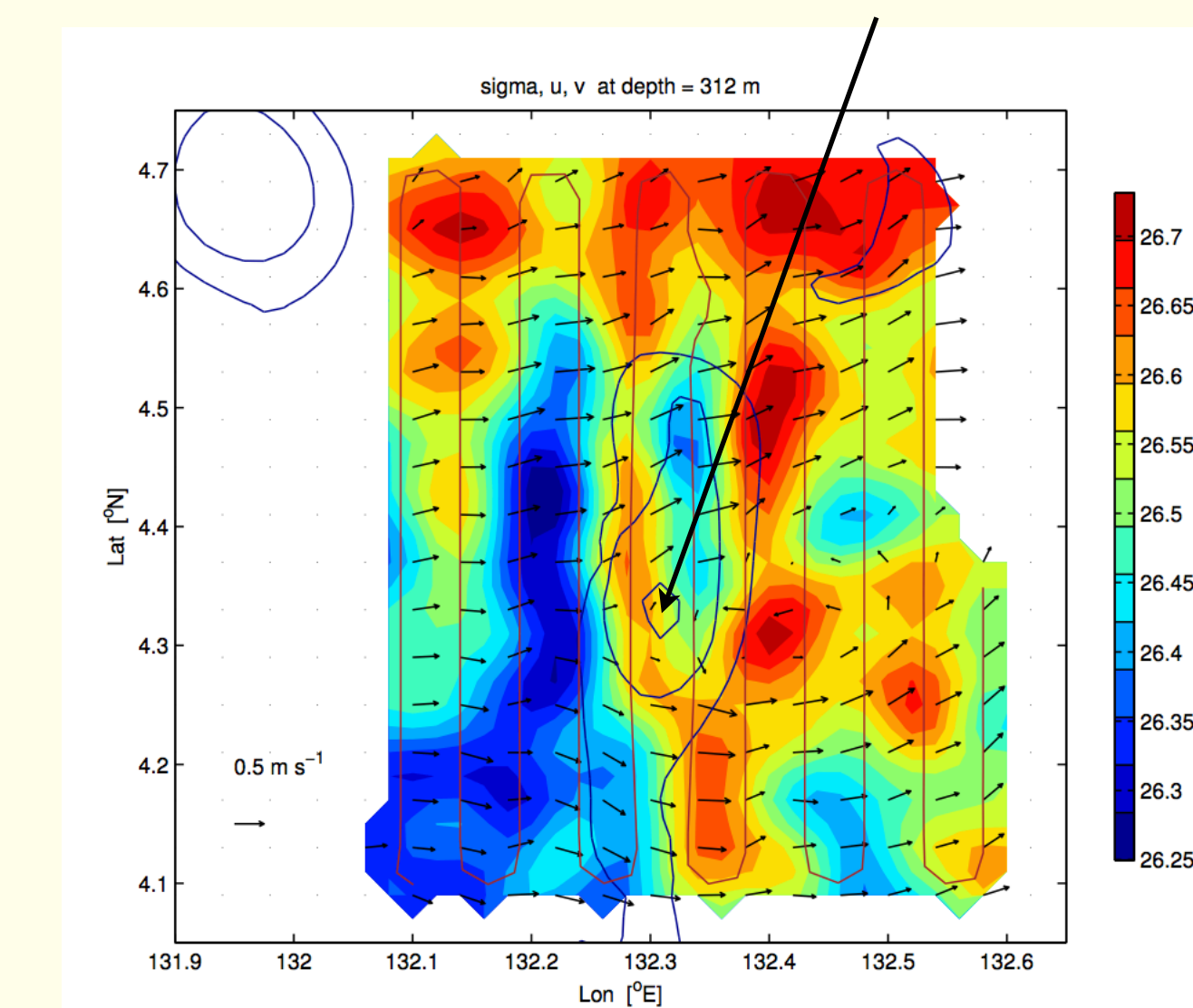


Flow over a submarine ridge



Flow convergence due to internal waves in straight lines extending for kilometres

Merir Island



Slice along 4.4°N

