Potential implications of Lagrangian coherent structures for fisheries

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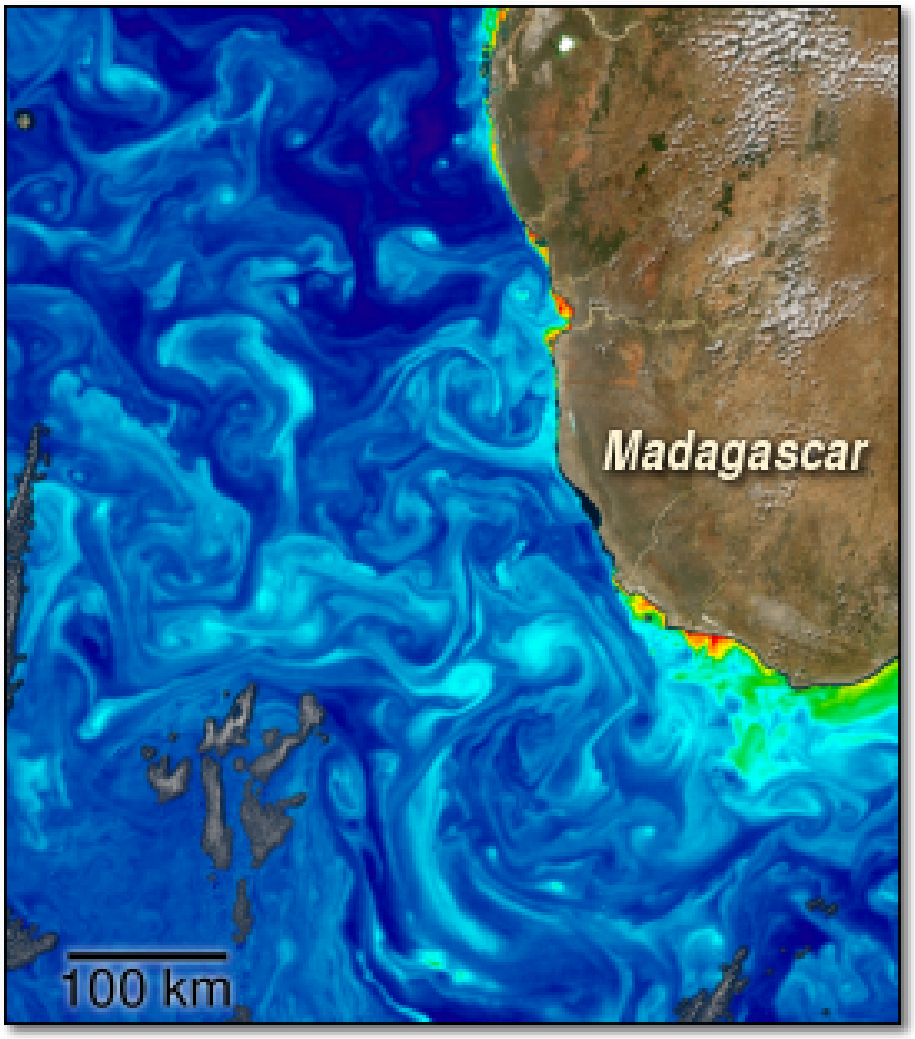
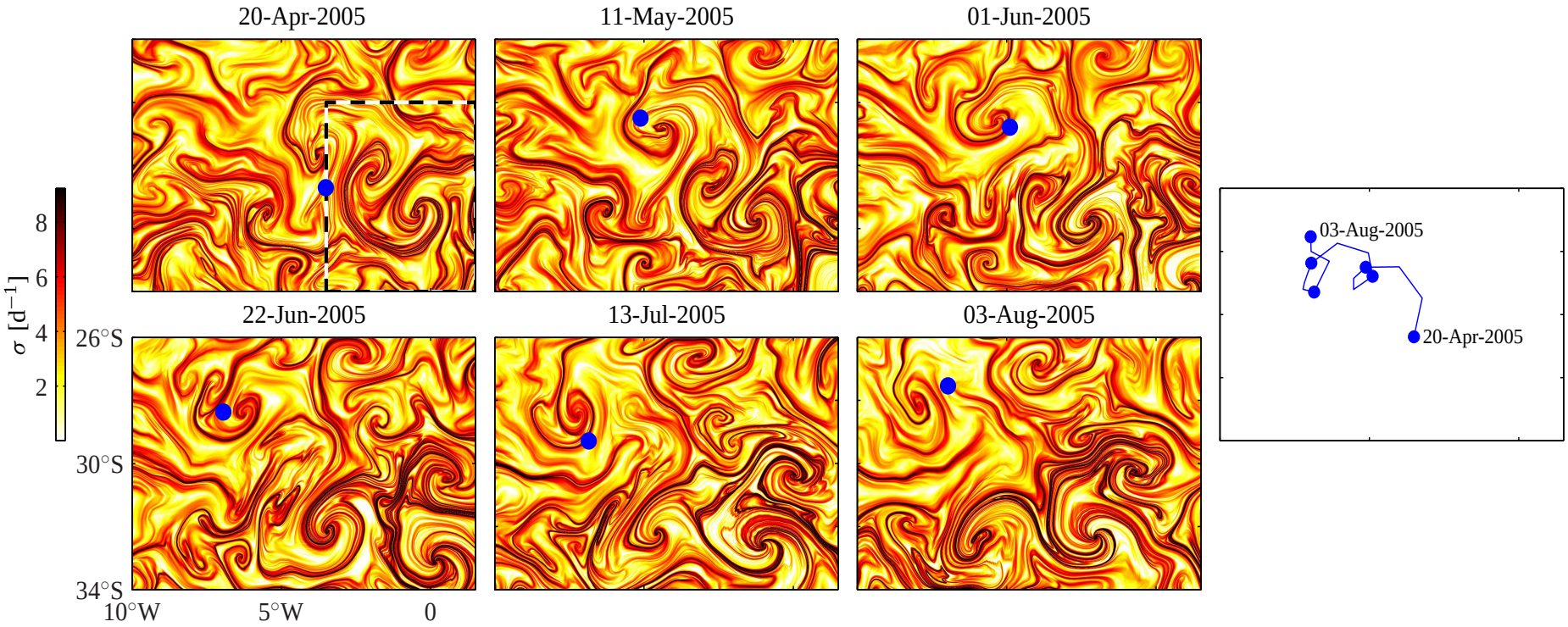
LCSs sometimes apparent in ocean color imagery



MODIS true color image from http://seadas.gsfc.nasa.gov.

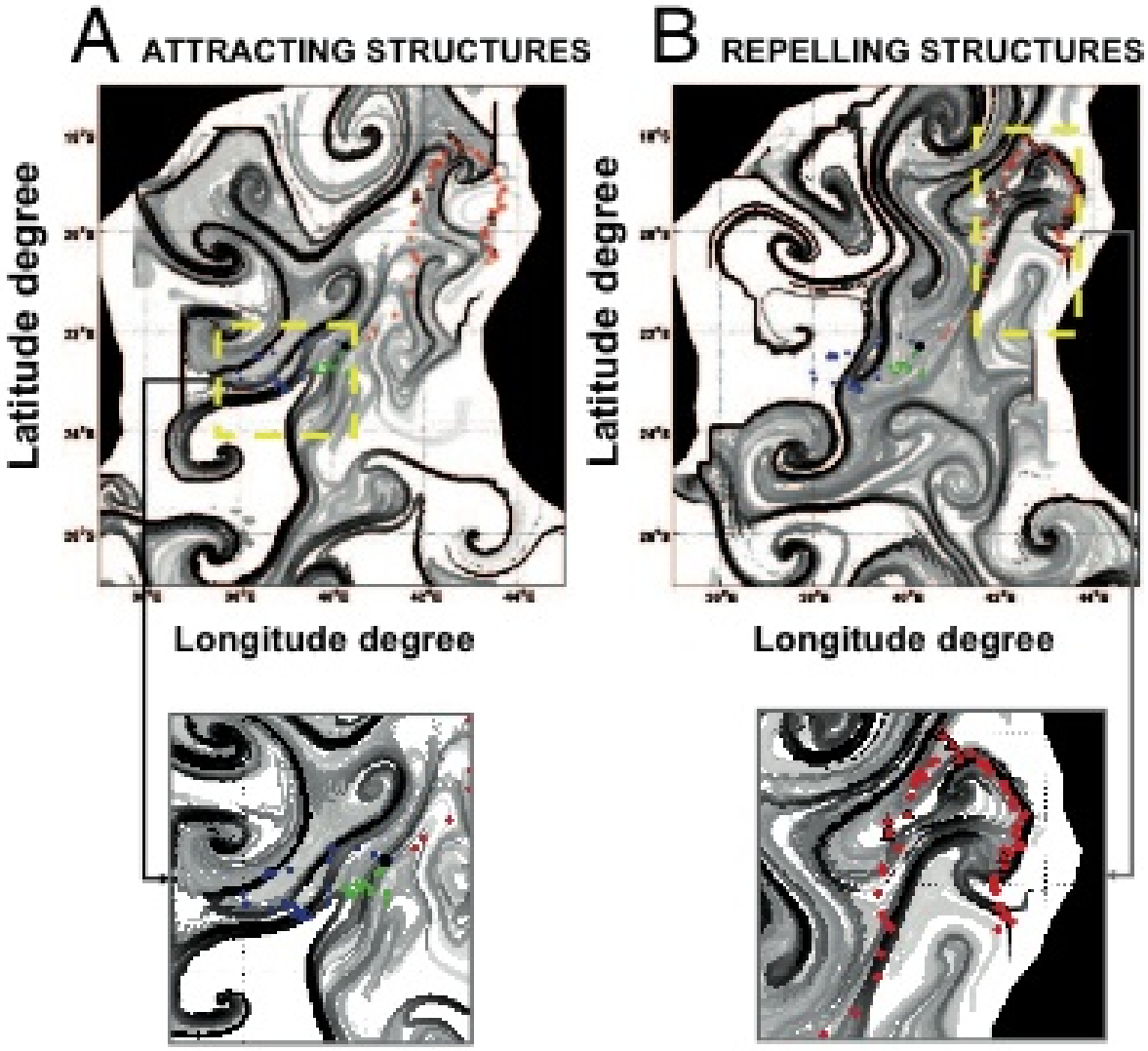
LCSs can be inferred from altimetry-derived currents



From Beron-Vera et al. (2008).

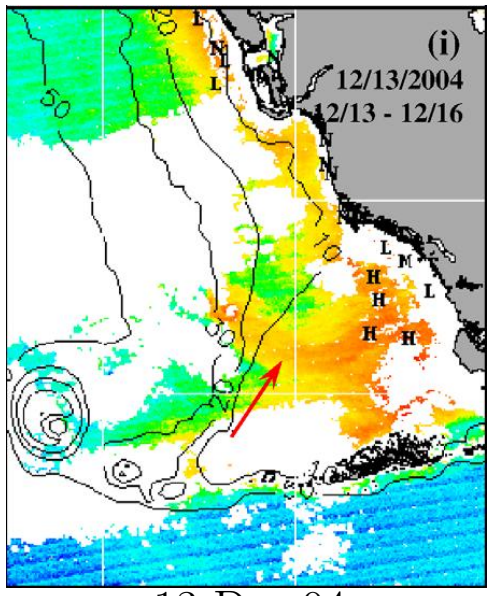
- Transparent to naked eye inspection of current maps.
- Wholly control motion of passive tracers.

Top marine predators track LCSs

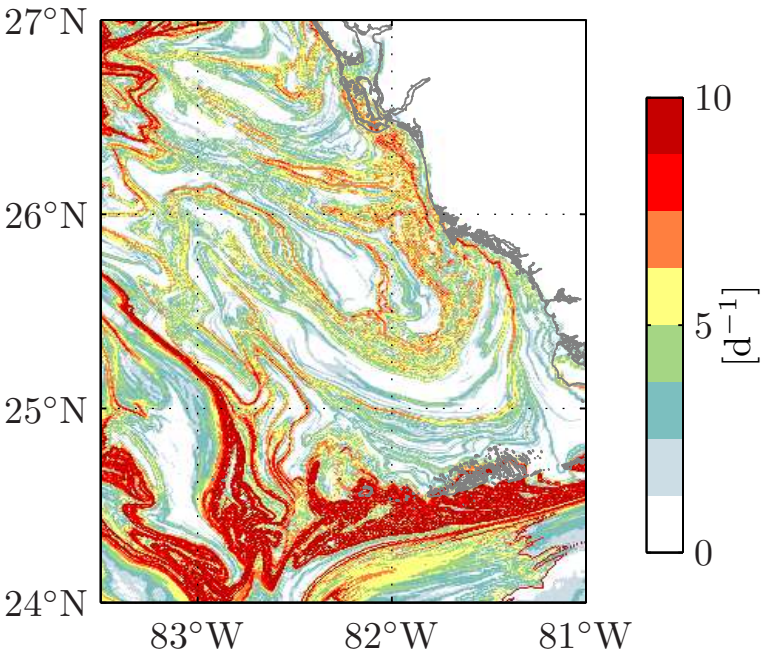


Great Frigatebird paths overlaid on LCSs (Kai et al. 2009).

Red tides strongly tied to LCSs

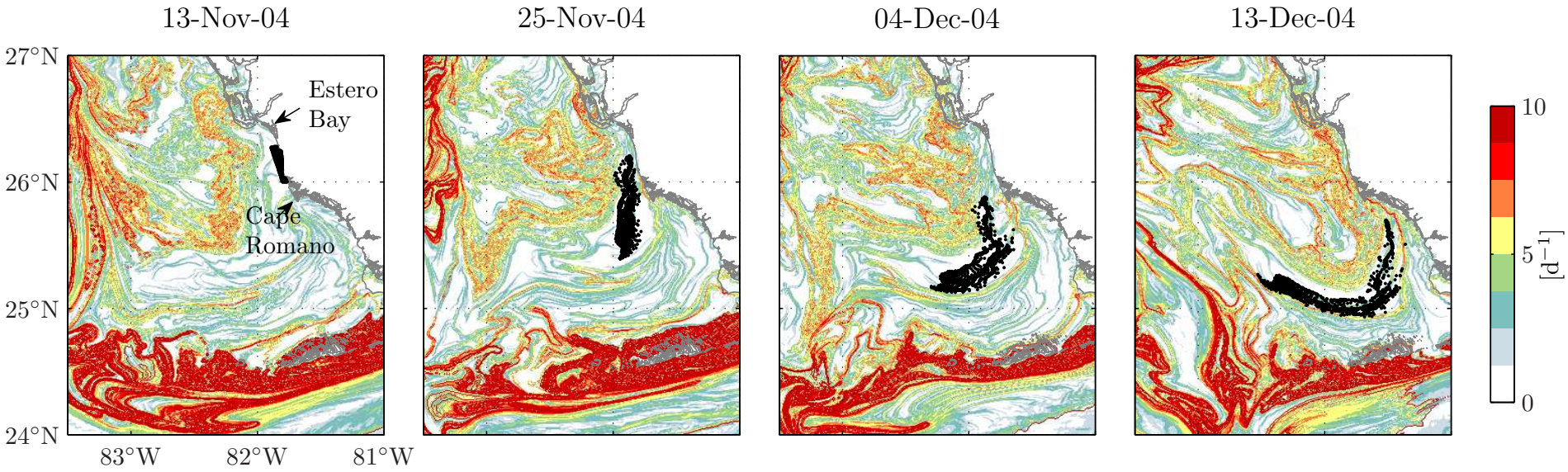


MODIS image showing a *K. brevis* red tide on the West Florida Shelf. Note banana-shaped distribution acquired by the red tide.

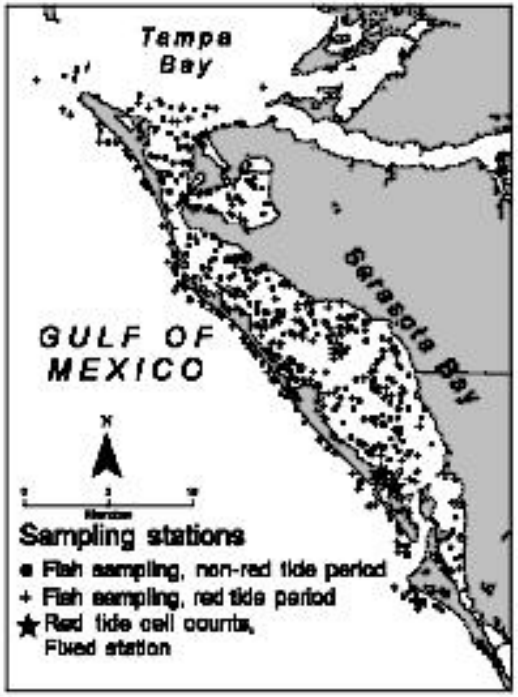


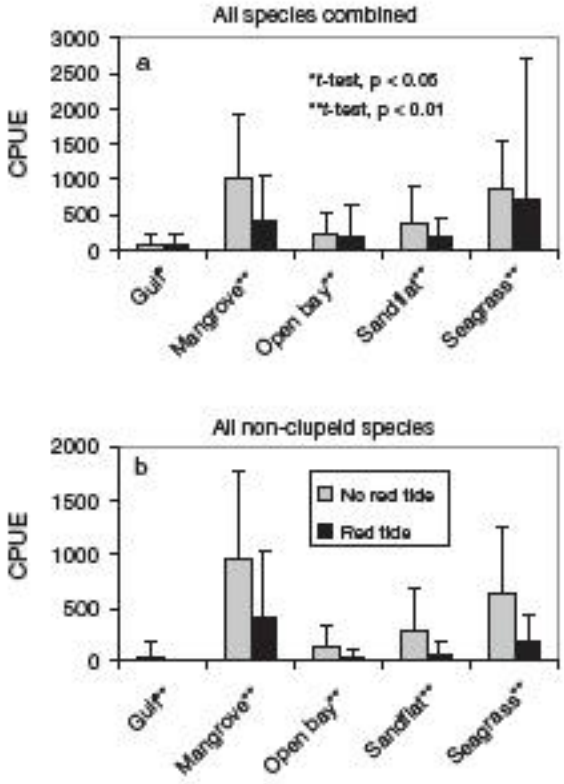
Simulated LCSs by Olascoaga et al. (2008). Note banana-shaped LCSs in near identical position as observed red tide. Constitutes *pathway* for red tide evolution.

Red tides strongly tied to LCSs



How K. Brevis affect nearshore fish communities?





From Gannon et al. 2009

- Fish abundance.
- Diversity.
- Community structure.

Collaboration possibilities

- Computation of LCSs based on altimetry-derived currents to help locate fish schools. (paper from Kai et al. 2009)
- Computation of LCSs based on simulated currents (e.g., HYCOM currents) to help detect red tides. (paper from Gannon et al. 2009)