

Deriving accurate, empirical vertical modes of KE using wire-following profiler data

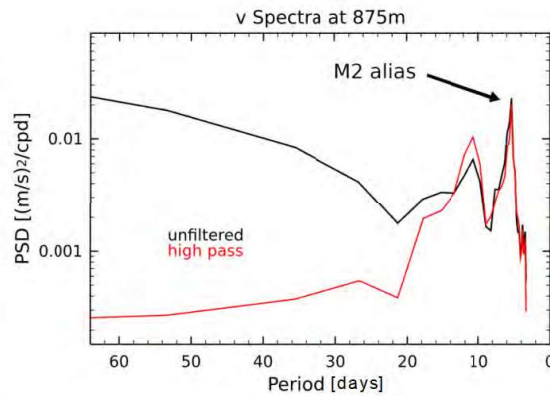
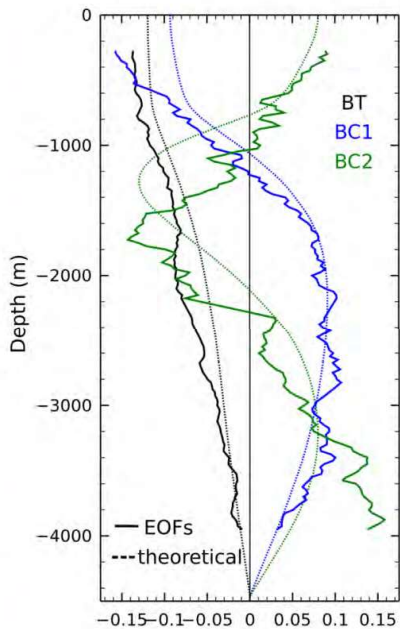
With modified (spectral) EOF analysis it is possible to derive high-resolution vertical profiles that accurately partition horizontal KE into normal modes.

$$\sigma_{xy}(\tau) \equiv \int_{-\infty}^{\infty} \tilde{X}(f) \tilde{Y}^*(f) e^{if\tau} df$$

i.e. the covariance evaluated for a given time lag is equivalent to the cross spectra (amplitude) of the same two time series

Possible uses:

- Infer what modes are most apparent in satellite altimetry data
- Better understand how parameters, such as frequency, may alter vertical modes
- Perform retrospective studies, (in)validating assumptions made with sparse, fixed mooring data



*data from Southern Ocean Array

