Diurnal cycles of near-surface ocean velocities at five moorings across the tropical Pacific

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PME

Diurnal trapping plays an important role in the transfer of momentum from the wind to the ocean interior.

There have been very few sustained mooring observations of ocean surface velocities.

The **TPOS enhanced mooring pilot project** fills this observational blind spot by experimenting with ADCPs that are:

- upward-looking
- transmitting in real-time
- at the surface boundary layer
- accompanied by extra meteorological and shallow T/S data



TPOS Enhanced mooring pilot project:



TPOS Enhanced mooring pilot project:



Five analyzed sites:



Example data: 0º 155ºW point current meter comparison



Wind, current anomaly w.r.t. current at 68 m, and temperature anomaly at 0º 155ºW:











TPOS Enhanced mooring pilot project:





What do these results mean for TPOS?

- 1) If we want to monitor the impact of **systematic** diurnal warm jets, near-surface mooring enhancements are necessary in HIGH SHEAR REGIONS in the Eastern/Central equatorial Pacific.
- 2) If we are interested in **episodic** jets, near-surface enhancements should also be placed to capture WWB events, TIW frontal events...where else?



Beyond the diurnal cycle: what are other near-surface phenomena worth observing and/or monitoring in the long term?