Understanding Gulf Ocean Systems

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CPIES DATA — FALL 2020

Data from the UGOS-1 array of current and pressure recording inverted echo sounders (CPIES) in the deep eastern Gulf of Mexico were acquired via acoustic telemetry during R/V Pelican cruise PE21-05. These data are preliminary. Final data records will be available when the CPIES are recovered in 2021.

Time series records for individual sites

Bottom pressure for the URI and BOEM models were processed with a Godin filter by the CPIES to remove the diurnal and semidiurnal tidal signals. Bottom currents for the URI CPIES were similarly filtered by the CPIES. The current meters attached to the BOEM models are internally recording. Subsequently, the BOEM models do not have telemetered currents. Current data for those instruments will be available upon recovery. Data from the Sonardyne CPIES were low-pass filtered during post-cruise processing using a Butterworth filter with a 3-d cut-off period. The filter was run forward and backward to avoid phase shifting. Drift removal and leveling of the bottom pressures have not been performed at this time. Magnetic declination and sound speed corrections were applied to the velocities.

The time interval of the data is daily and is given at 1200 UT. To create the daily records, the URI and BOEM telemetered records (nominally at 2-day intervals) were interpolated and the Sonardyne records were subsampled. The data obtained during R/V Pelican cruise PE20-06 (Fall 2019) have been combined with the data collected during cruise PE21-05 to create records spanning from June 2019 to October 2020. Some gaps exist in the records due to either poor weather conditions or ship repositioning. Complete records will be available after the instruments are recovered.

Provided here is a link to the tar archive of Matlab format files, one file for each site. Date are stored in a structure named for the site (e.g., A02). The structure fields are described in the table below.

Table 1: Field descriptions. The time variable (dd) is a zero-based decimal day: Noon on 1 January is 0.5 (not 1.5).

Fields	Description	Units
site	CPIES site designator	
Model	CPIES model	URI, Sonardyne or BOEM
lon	longitude	decimal degrees
lat	latitude	decimal degress
dd	time relative to 1 January 2019	days
prs	bottom pressure anomaly	dbar
u	zonal velocity, eastward is positive	cm s^{-1}
v	meridional velocity, northward is positive	cm s^{-1}