Understanding Gulf Ocean Systems
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CPIES DATA

Three datasets are provided from an array of 24 current and pressure recording inverted echo sounders moored in the central Gulf of Mexico between June 2019 and May 2021: bottom pressure and temperature, near-bottom currents, and vertical acoustic travel time. The data are hourly and in NetCDF format.

Bottom Pressure and Temperature

Data Parameters and Units:
Time relative to 00:00:00 1 January 2019 (days), bottom pressure (decibars), instrumental pressure drift (decibars), and temperature (degrees Celsius)

Methods:
Bottom pressure and temperature data were acquired with URI and Sonardyne current and pressure recording inverted echo sounders (IES). Data were processed with URI's IES processing package version 4. Hourly averages were calculated from six measurements taken at 10 minute intervals. An exponential-linear curve was fitted to determine instrumental drift. The drift curve was subtracted from the measurements.

Instruments:
URI and Sonardyne current and pressure recording inverted echo sounders (IES). The Paroscientific pressure sensor is housed inside the IES glass sphere. The IES is moored in a rigid anchor stand.

Sampling Scales and Rates:
Pressure and temperature measurements were taken at 10 minute intervals.

Near-Bottom Currents

Data Parameters and Units: Time relative to 00:00:00 1 January 2019 (days), eastward velocity, u (cm/s), northward velocity, v (cm/s), temperature (degrees Celsius) and magnetic declination (degrees)

Methods: Near-bottom current and temperature data were acquired with Doppler current sensors attached to URI and Sonardyne pressure recording inverted echo sounders (IES). Data were processed with URI's IES processing package version 4. Hourly averages were calculated from measurements taken at 30 minute intervals.

Instruments: Aanderaa Data Instruments Doppler current sensors and Nortek Aquadopp current sensors were tethered 50 m above URI and Sonardyne pressure recording inverted echo sounders (IES). Temperature sensors were located within each type of current sensor. The IES is moored in a rigid anchor stand.

Sampling Scales and Rates: Current and temperature measurements were taken at 30 minute intervals.

Vertical Acoustic Travel TIme

Data Parameters and Units: Time relative to 00:00:00 1 January 2019 (days) and vertical acoustic travel time (seconds)

Methods: Vertical acoustic travel time data, round trip from the sea floor to the sea surface, were acquired with URI and Sonardyne current and pressure recording inverted echo sounders (IES). Data were processed with URI's IES processing package version 4. Twenty-four pings obtained each hour were windowed to remove large outliers. Additional data spikes were removed. For URI IES, hourly values were obtained as the average of a few pings around the first quartile of the remaining pings. For the Sonardyne IES, the hourly values were calculated as the median of a few pings around the first quarltile of the remaining pings.

Instruments: URI and Sonardyne current and pressure recording inverted echo sounders (IES). The IES is moored in a rigid anchor stand.

Sampling Scales and Rates: Travel time sampling rate was 4 pings every 10 minutes.

Provided here are links to the tar archives of netcdf files, one file for each site.