

Layer Names: Ocean Thermal Resources in Hawaii (Temperature differences between water depths of 20m and 1000m in Celsius and Signal Amplitude for the period July 1, 2007 and June 30, 2009).

Layer Type: ESRI GRID, Line

Status: Complete

Geog. Extent: Main Hawaiian Islands

Projection: Universal Trans Mercator, Zone 4 (Meters)

Datum: NAD 83 HARN

Please note - if you are using data in the [State's web services](#) or downloading from the [State's geoportal](#), the data is served and exported in WGS84 coordinates, although it is stored internally in UTM coordinates.

Description (** = Available from State GIS download sites):

- 1) Ocean_temp_am: Yearly amplitudes of ocean temperature differences between 20m and 1000m water depths for the period July 1, 2007 and June 30, 2009; pixel value = amplitude of ocean temperature differences (°C)
- 2) **Ocean_temp_am_contour: Contour Lines of amplitudes of ocean temperature differences derived by 0.05°C intervals.
- 3) Ocean_temp_av: Average ocean temperature differences between 20m and 1000m water depths for the period July 1, 2007 and June 30, 2009; pixel value = average ocean temperature difference (°C).
- 4) **Ocean_temp_av_contour: Contour Lines of average ocean temperature differences derived by 0.1°C intervals.

Source: Gerard C. Nihous, Dept of Ocean and Resources Engineering, University of Hawaii, 2010. For more information, see "Mapping available Ocean Thermal Energy Conversion resources around the main Hawaiian Islands with state-of-the-art tools," JRSE_GCN_Published_online.pdf.

History: Steps used to create this layer:

1. ArcMap, add xy coordinates to create point feature class from the original text files.
2. Saved points to shapefile using WGS1984 Geographic Coordinate System.
3. Removed all points with values = -10000000000
4. Spatial Analyst IDW Tool to create GRID surface.
5. Created a mask layer by digitizing around points with No Data and creating a donut hole layer.
6. Extracted by Mask using donut hole layer to remove areas with No Data on the GRID surface.
7. Projected GRID files to UTM, Zone 4, NAD83.
8. Created Contour Lines using Spatial Analyst. 0.1°C interval for Average Temperature Difference and 0.05°C interval for Signal Amplitude.

Note: Apr 2024 – Hawaii Statewide GIS Program staff removed extraneous fields that had been added as part of the 2016 GIS database conversion and were no longer needed.

Attributes:	Pixel Value (ocean_temp_am):	signal amplitude value (°C)
	Pixel Value (ocean_temp_av):	avg temp difference value (°C)
	Contour (ocean_temp_am_contour):	signal amplitude contour (°C)
	Contour (ocean_temp_av_contour):	avg temp difference contour (°C)

Contact: Statewide GIS Program
Office of Planning, State of Hawaii
PO Box 2359, Honolulu, HI 96804
Phone: (808)587-2846
Email: gis@hawaii.gov