

Complementary explanations by Dr Jim Gardner, email to SCUFN Sec. dated 13 April 2017

Dear Yves,

I've generated almost all the various files you asked for.

But first, I should emphasize that the data I collected on this seamount are multibeam bathymetry data, not single-channel profiler data. The multibeam system (Kongsberg Maritime EM122) collects a swath of highly accurate position and depth of each sounding within a swath of soundings collected by each ping. The sound speed in the water was measured throughout the cruise whenever the sound speed at the transducer varied by 0.5 m/s or more with respect to the value from the sound speed profile at the depth of the transducers. Our navigation was integrated to an Applanix POS/MV model 320 version 4 inertial motion unit (IMU) (with TrueHeave) and interfaced to a C&C Technologies, Inc. CNAV model 3050 that provided differential corrections that provided position fixes with an accuracy of ~0.5 m. The IMU provides roll, pitch and yaw at accuracies of better than 0.1° at 1 Hz. The MBES system can incorporate transmit beam steering up to ±10° from vertical, roll compensation up to ±10° and can perform yaw corrections as well. All horizontal positions were georeferenced to the WGS84 ellipsoid and vertical referencing was to instantaneous sea level.

I discovered this seamount on a transit from Tahiti to Honolulu, so the seamount is mapped from a single swath with soundings less than 50 m apart.

You asked for a general “bathymorphological” map around the seamount. I clipped out the surrounding area from the satellite-derived bathymetry of Sandwell and Smith, v. 18.1. These data have a spatial resolution of 1850 m/pixel compared to my data with a 50 m/pixel resolution. But the Sandwell and Smith data are the only data available for this area of the Pacific, other than random multibeam lines which do not cover this area.

You asked for a couple of cross-vertical sections so you can see the entire feature. I've provided you with four vertical profiles at 45° angles across the seamount, each profile passing through the summit.

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We finally got the GIS server up and running and I've put the SHAPEFILE for the basal polygon as well as a POINT file for the summit depth in a folder named “shape files” on that same FTP server.