

ABSTRACT

Topobathymetric model of Yaquina Bay, Oregon Produced by U.S.EPA
PCEB Newport Oregon

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Bathymetric and topographic data compiled using the Topogrid command in ArcInfo workstation 7.2.1.

The United States Environmental Protection Agency (U.S.EPA) contracted with the United States Army Corps of Engineers (U.S.ACE) to obtain intertidal and subtidal bathymetric soundings of Yaquina Bay between Poole Slough and the South Beach Marina in 2002 in order to provide data needed to replace an existing National Ocean Service (NOS) bathymetric digital elevation model (DEM) of Yaquina Bay that lacked intertidal detail and was generated from soundings taken no later than 1953. The goal of this effort was to provide digital bathymetric data to aid and enhance benthic habitat mapping and estuarine ecological studies. See:

<http://catalog.data.gov/dataset/yaquina-bay-or-p210-bathymetric-digital-elevation-model30-meter-resolution-derived-from-source->

Data obtained from the U.S.ACE contract were compiled with U.S.ACE subtidal soundings from 1999, 1998, 2000 (produced in conjunction with dredging activities), National Ocean Service soundings from 1953 (1953 data was only used for the small area called the Port Docks and used by fishing boats) and terrestrial elevation data to create the model. Major intertidal channels were digitized from aerial photography acquired at extreme low tide were also used without elevation values in the interpolation as “streams”. The use of both point and linear features in the interpolation was possible through the use of the ArcInfo 7.3 TOPOGRID tool (implemented as Topo to Raster 3D Analyst tool in Arcmap 9+), an interpolation method specifically designed for the creation of hydrologically correct DEMs based on the ANUDEM program developed by Michael Hutchinson . See:

http://www.ncgia.ucsb.edu/conf/SANTA_FE_CD-ROM/sf_papers/hutchinson_michael_dem/local.html

Initial iterations of the model exhibited marked nonuniform spatial distribution surface properties or “anisotropy” where sounding tracks crossed channels. Models immediately previous to the final iteration were contoured and select contours were generalized and input into the final iteration to smooth the anisotropic effects.

Data from an independent survey conducted with a high precision electronic/optical surveying instrument (total station) of an intertidal area of Yaquina Bay at extreme low tide was used to evaluate the vertical accuracy of the model generally showing the bathymetry to be accurate +/- 0.25m.