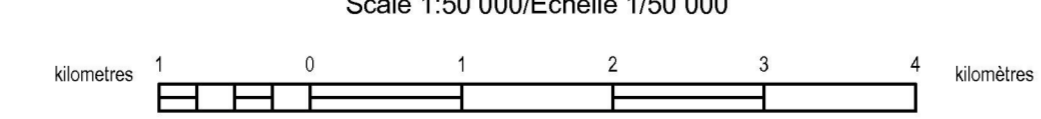


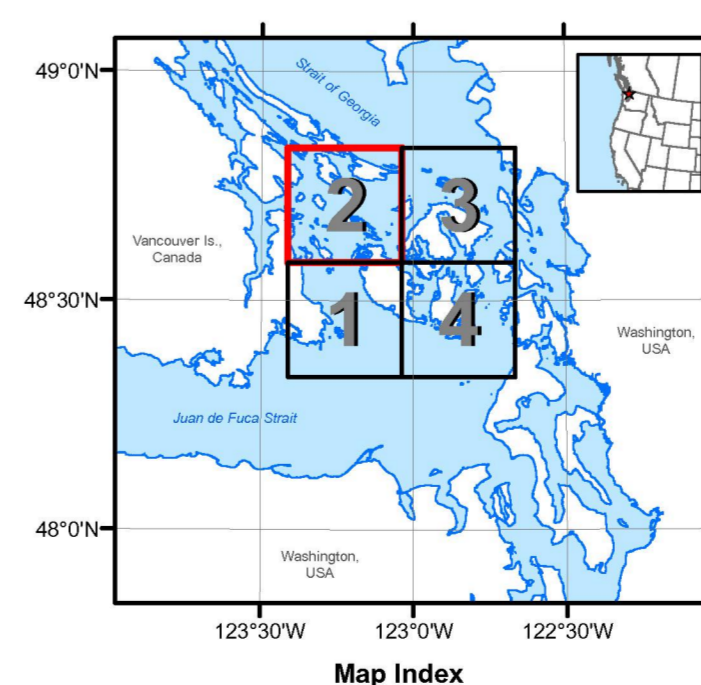
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OPEN FILE 6627
SHADED SEAFLOOR RELIEF
SOUTHERN GULF ISLANDS AND SAN JUAN ARCHIPELAGO
CANADA AND U.S.A.
Sheet 2: southern Gulf Islands
Scale 1:50 000/Echelle 1/50 000



Universal Transverse Mercator Projection, Zone 10 North American Datum 1983
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This map is not to be used for navigational purposes.



DESCRIPTIVE NOTES

A pilot mapping project was undertaken in 2000 where a series of disparate "postage stamp size" (Davis Point, Cattle Pass, Neck Point, Pike Point, Turn Island, and Lawson Reef) areas within the San Juan Archipelago were mapped using a pole-mounted Reson 8101 SeaSwath (240 kHz swath (150 swath coverage) multibeam echosounder (MBES) mounted aboard the R/V MacGillivray. The data was collected under contract with the Seafloor Mapping Lab of California State University Monterey Bay through the Center for Habitat Studies, Moss Landing Marine Laboratories (MLML). Positioning was acquired using a differential global positioning system (DGPS). Altitude information such as heave, pitch, and roll, were recorded using a heading motion sensor (HMS) with the data logged and integrated using Triton Elcom International ISIS and Coastal Oceanographic Hyapak software. Water column sound velocity profiles were collected daily at each site using an AML SV+ sound velocity profiler. In addition, tidal information was obtained from local tide stations.

From 2001 through 2008, the Canadian Coast Guard Research Vessels (CCGS) Otter Bay, Revisor, R.B. Young and Vector, under the direction of the Canadian Hydrographic Service (CHS) in cooperation with the Geological Survey of Canada (GSC) and MLML, Center for Habitat Studies/Tombolo/SeaDoc Society, acquired extensive high-resolution bathymetric datasets of the watersways surrounding the Southern Gulf Islands and the San Juan Archipelago.

The MBES Simrad EM 1002 (95 kHz frequency) and EM 3000-3002 (300 kHz frequency) systems were used for deep (>80 m) and shallow (<80 m) waters respectively. The systems covered both an arc of 120 degrees and in most of the areas, the tracks were positioned so as to insure 100% of the seafloor with a 100% overlap, providing 200% coverage. Positioning was accomplished using a broadcast Differential Global Positioning System (DGPS), providing positional accuracy of ± 3 m. MBES data were corrected for motion using a POS/MV attitude sensor and for sound speed variations in the stratified water column using frequent sound speed casts measured from a moving vessel profiler MVP30.

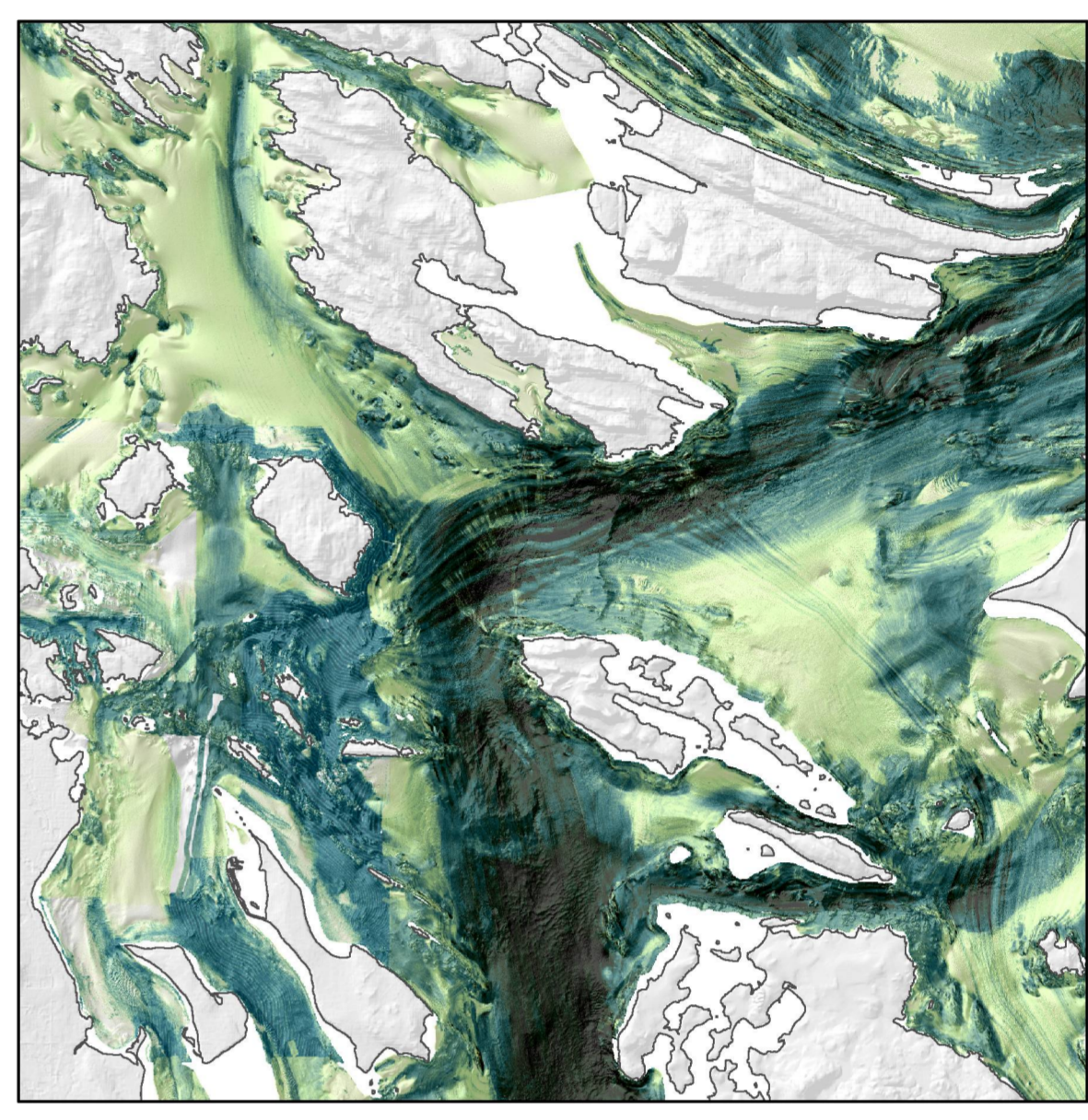
The bathymetric data collected from the early pilot project and the extensive surveys by CHS were processed independently by each agency. Both, however, used CARIS Hydrographic Information Processing Software (HIPS) to process the data. Soundings were corrected for vessel motion and water column sound velocity, and adjusted to mean lower low water (MLLW) using predicted or observed tides, if available, for the San Juan and the Southern Gulf Islands. Erroneous soundings were removed in CARIS HIPS through both automated filtering and manual editing. After merging the data (depths/depths/navigation), HIPS Subset module cleaning was completed and beam-weighted mean base surfaces (grid) were generated and then exported to an ASCII format as XYZ triplets, which were later converted into ESRI ArcGIS rasters by the GSC.

REFERENCES

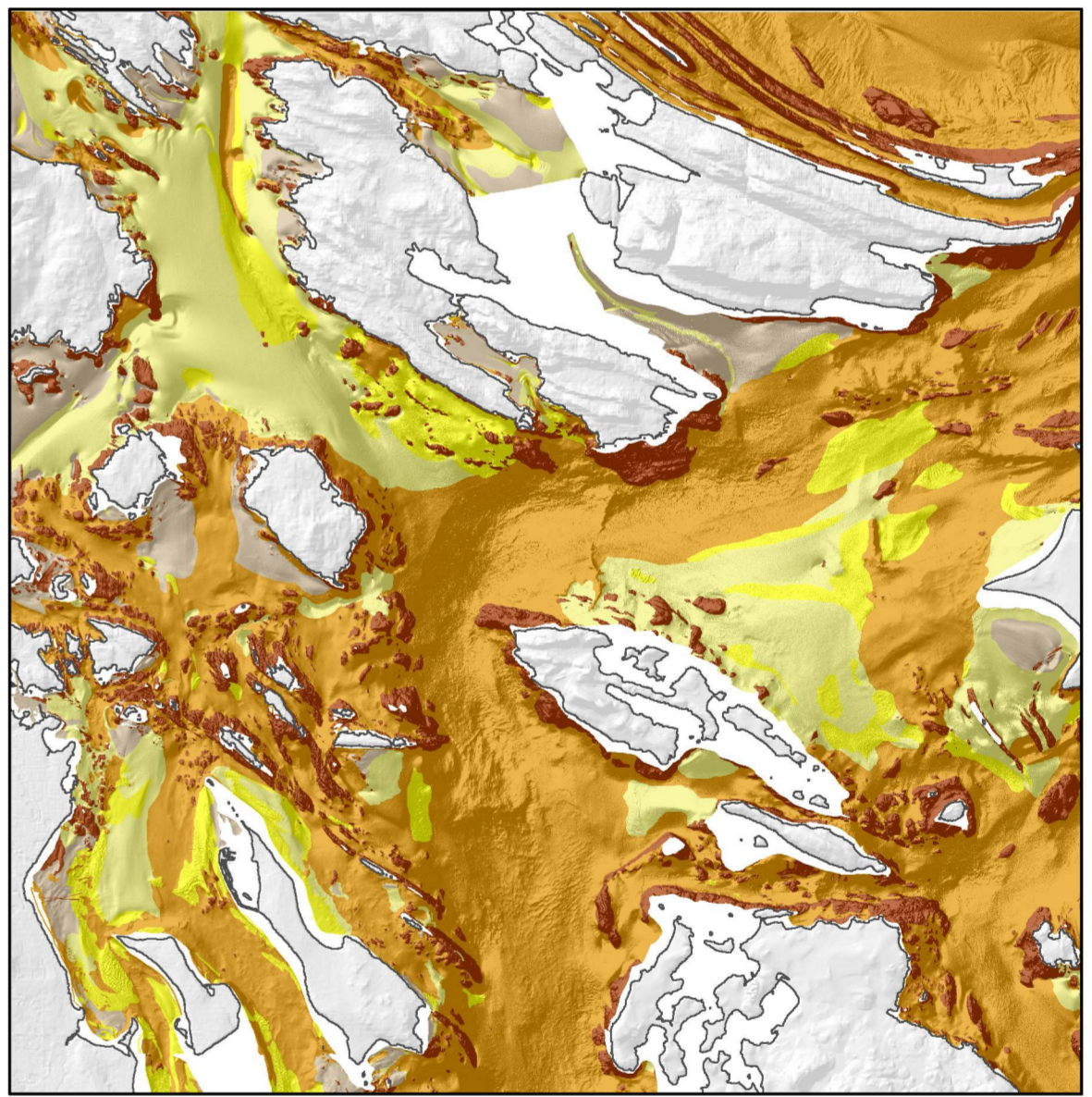
Greene, H.G. (ed.), and Barrie, J.V. (ed.), 2011a. Backscatter strength and shaded seafloor relief, southern Gulf Islands and San Juan Archipelago, Canada and U.S.A. Geological Survey of Canada, Open File 6627, 4 sheets.

Greene, H.G. (ed.), and Barrie, J.V. (ed.), 2011b. Potential marine benthic habitats and shaded seafloor relief, southern Gulf Islands and San Juan Archipelago, Canada and U.S.A. Geological Survey of Canada, Open File 6625, 4 sheets.

Backscatter strength and shaded seafloor relief (Greene and Barrie (Eds), 2011a)



Sediment Type



The sediment type was derived using a combination of the backscatter strength and bathymetry-derived data. Where no backscatter strength data was available, the interpretation was done using only the bathymetry data and knowledge from the surrounding areas. For more details, see Greene and Barrie (Eds, 2011b).

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