DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NAVAL UNDERSEA RESEARCH AND DEVELOPMENT CENTER
DEPARTMENT OF THE NAVY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-879

The bathymetric map of the Aleutian-Bering Sea region was compiled to provide a regional base map for the plotting of geological and geophysical data. The scale of this base, 1:2,500,000, matches that of the Alaska Map E, U.S. Geological Survey. The map projection of the Aleutian–Bering Sea base is the slightly modified transverse Mercator used by Nichols and Perry (1966) for their charts covering the Aleutian arc east of 170° E. The Aleutian–Bering Sea map lacks uniform data quality because it represents a collection of information extracted from charts of differing scale, projection, contour interval, and depth notation; it also incorporates echogram information gathered by the Lamont-Doherty Geological Observatory; Scripps Institution of Oceanography; University of Washington, Department of Oceanography; U.S. Geological Survey; and U.S. Navy Undersea Research and Development Center.

In general, the isobaths drawn on the Aleutian–Bering Sea map are based on velocity-uncorrected soundings (that is,one-way reflection time multiplied by an acoustic velocity of 1,463 m/sec.). However, inadvertently, some of the depth information included velocity-corrected data – a circumstance not realized until the drafting was virtually completed. Corrected soundings were contoured for that sector of the map east of 172° E. and north of the Aleutian Trench. Corrected depths are about 0.6 percent deeper than uncorrected soundings for depths less than 2,000 m, 1.5 percent deeper for depths of 2,000–4,000 m, 2.5 percent deeper for depths of 4,000–5,500 m, and 3.5 percent deeper for depths greater than 5,500 m. Because these differences are small at the scale of the map, the positions of velocity-corrected isobaths that delineate the Aleutian arc and the Beringian continental margin can be regarded as equivalent to those drawn through uncorrected soundings. However, the positions and lateral continuity of velocity–corrected and uncorrected contours that define the flat abyssal floors of the Bering Sea and the Aleutian Trench differed significantly east and west of 172° E. This unacceptable data dislocation, amounting to about 50 m for the Bering Sea basin (average uncorrected depth near 3,600 m), and 240 m for the Aleutian Trench (average uncorrected depth near 6,800 m) was removed by shifting the eastern isobaths to their velocity–uncorrected positions.

The map projection used for this chart is especially useful in that one scale is generally applicable throughout the map. A disadvantage is that hand plotting of data is difficult because coordinates curve or converge. The projection is not mathematically rigorous although it is similar to the Lambert conformal and Universal Transverse Mercator projections. Computer-assisted plotting routines for the Aleutian–Bering Sea base are available.

DATA SOURCES

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Nichols, Haven, and Perry, R. B., 1966, Bathymetry of the Aleutian arc, Alaska: U.S. Environmental Sci. Services Admin., Mon. 3, 6 charts, scale 1:400,000.

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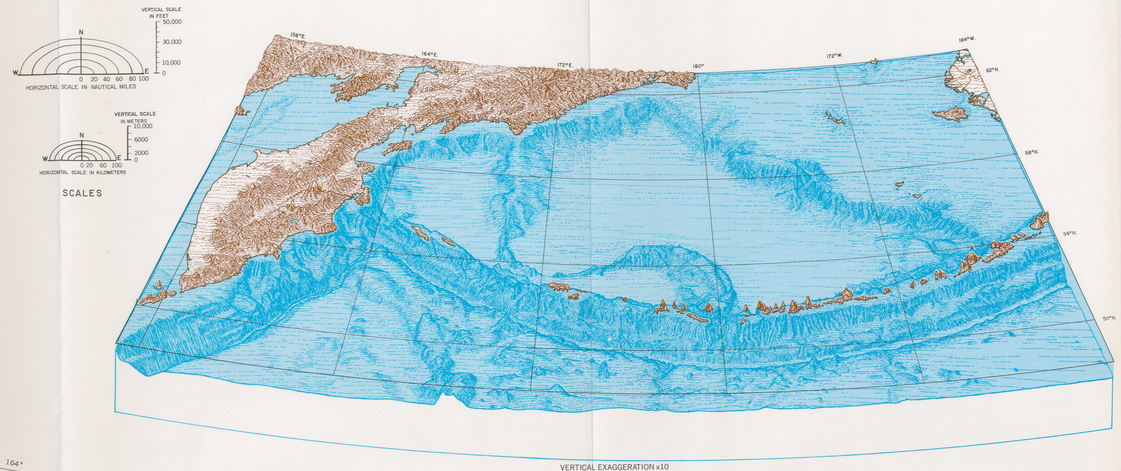
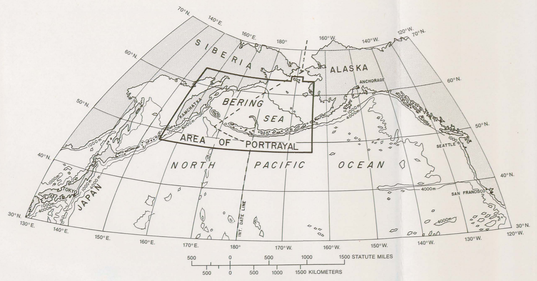
Yanshin, A. L., ed., 1966, Tectonic map of Eurasia: Moscow, Akad. Nauk SSSR Geol. Inst., scale 1:5,000,000. (In English and Russian.)



SCALES

VERTICAL EXAGGERATION x10

ORTHOGRAPHIC DRAWING



INDEX MAP

Modified transverse Mercator projection

SCALE 1:2 500 000

50 0 50 100 150 200 250 MILES

50 0 50 100 150 200 250 300 350 KILOMETERS

CONTOUR INTERVAL 400 METERS
SPOT ELEVATIONS IN METERS
CONTOUR INTERVAL BELOW SEA LEVEL STARTS AT 200 METERS
TICKS SHOW DIRECTION OF SLOPE

BASE MAP OF THE ALEUTIAN–BERING SEA REGION

By
David W. Scholl, Tau Rho Alpha, Michael S. Marlow,
and Edwin C. Buffington
1974

For sale by U.S. Geological Survey, Fairbanks, Alaska 99701; Denver, Colo. 80225; or Reston, Va. 22092, price 75 cents