

Digitization of the IBCM (First Edition)

INTERNATIONAL BATHYMETRIC CHART OF THE MEDITERRANEAN

Published in 1981 by the Head Department of Navigation and Oceanography, St. Petersburg, Russia on behalf of the IOC.

The IBCM project was conceived in 1972 by participants in the joint IOC/ICSEM/FAO Programme of Cooperative Investigations in the Mediterranean (CIM) and was coordinated by the IOC/ICSEM/FAO Operational Unit for CIM in Monaco. The work was progressed from 1974 to 1978 under the guidance of an 'Ad-hoc Group of Experts on Bathymetric Charts of the Mediterranean'. This group was subsequently reshaped into the 'IOC Editorial Board for the IBCM'.

One of the principles adopted in the preparation of IBCM was to accept only precision soundings, with accurate navigation by satellite or comparable techniques, read from echo-sounder records corrected for the speed of sound. Most of the data selected were navigated using Loran C, with the positional accuracy varying from +/-100m in central areas (e.g. the Tyrrhenian Sea) to +/-600m in peripheral areas. The soundings were compiled on 1:250,000 British Admiralty plotting sheets for oceanic soundings, and the contours were drawn directly on these sheets before being reduced to 1:1 million. The contours were drawn by scientists specialised in morphology and charting of the sea floor.

The bulk of the data available for the IBCM First Edition was collected on marine geophysical surveys undertaken by three institutions. Between 1961 and 1965, 112,000 km of track were surveyed by the Osservatorio Geofisico Sperimentale (OGS) of Trieste in cooperation with the Saclant ASW Research Centre in La Spezia. Then, between 1965 and 1972, the OGS acquired another 217,500 km of track, primarily in the western and central Mediterranean but also including a reconnaissance of the eastern Mediterranean. In the eastern Mediterranean, east of 20°E, the Department of Geodesy and Geophysics of Cambridge University carried out a regional bathymetric survey with another 220,000 km of track. These 550,000 km of track comprised 80% of all the data available for the First Edition of the IBCM.

The cartography of the First Edition of IBCM was carried out by the Head Department of Navigation and Oceanography, St. Petersburg and they published the complete series in 1981 under the auspices of the IOC. It consists of 10 sheets on Mercator projection at a scale of 1:1 million (at 38°N) and covers an area 30°N to 46°N; 6°W to 36.5°E. The Black Sea is included at a scale of 1:2 million for the area 40°N to 47.5°N; 26.5°E to 42.5°E. Most sheets depict contoured bathymetry at 0m(coastline), 20m, 50m, 100m, and 200m, and at 200m intervals thereafter, although the actual contours displayed vary slightly from sheet to sheet. The published sheets also include land contours as well as sounding control showing the position of echo-sounding tracks and areas of detailed surveys.

The IBCM coastline was taken from the original bathymetric plotting sheets, except for Corsica, Sardinia and the area of Alexandria, where the coastline shown on the plotting sheets differed significantly from that on the nautical charts and topographic charts

available at the time IBCM was in preparation. The coastline was taken from the latter for these areas.

In 1983, the bathymetric contours and coastlines depicted on the IBCM First Edition were digitised by a commercial company from polyester transparencies of the ten 1:1 million master sheets. The digitisation was carried out by manual curve following on a digitising table, according to the specification that a) ninety percent of the digitised points should fall within 0.3mm of their position on the source map, with no point to exceed 1.0mm from that position and b) the maximum distance between successive digitised points should be 1.0mm.

In 1988, a detailed review and editing of the digitised data was carried out by the British Oceanographic Data Centre on behalf of the IOC. After removal of some minor digitising errors, the review confirmed that, in general, the digitisation accuracy was within the line thickness (0.3mm) of the plotted out digitised contours. The standard of digitisation of the 1:2 million chart of the Black Sea was found to be slightly inferior to that of the other sheets, although still within 1 chart mm.

All bathymetric contours and coastlines present on the published sheets are included in the digital data set where they are expressed in vector form in geographic coordinates. The digitised data set does not include the land contours or the underlying track control information.