The Israel National Bathymetric Survey Almost Completed

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Israel National Bathymetric Survey (NBS).
A cooperative project between the GSI, IOLR, and MAPI

Use of a Kongsberg Simrad EM1002 multibeam sonar to map the Israeli offshore
High Resolution Bathymetry of the Mediterranean off Northern Israel


1. Geological Survey of Israel, Jerusalem, Israel
2. Israel Oceanographic & Limnological Research Ltd., Israel
3. Survey of Israel, Tel Aviv, Israel
4. Tel Aviv University, Tel Aviv, Israel
5. Institut für Geophysik, Universität Hamburg, Germany

4218 km of track,
840.4 million soundings
Acoustic Backscatter at 95 kHz from the Seafloor off Northern Israel


1. Geological Survey of Israel, Jerusalem, Israel
2. Israel Oceanographic & Limnological Research Ltd., Israel
3. Survey of Israel, Tel Aviv, Israel
4. Tel Aviv University, Tel Aviv 69978, Israel
5. Center for Coastal & Ocean Mapping, University of New Hampshire, Durham, NH, USA

Geocoder backscatter - ~30 billion measurements
Kurkar 'ridges' off Jaffa Port – note pockmarks, and depressions found only north of the headland.
Modification of a UKHO-SOI Navigational Chart

The 4 m grids shown in the Haifa Bay poster were used to texturize a section of Chart 1585 in order to give the navigator a far superior representation of the seafloor.

Depths, sediment types and other information for piloting are still very discernable on the chart.

Simple Global Mapper 9.02 software was used to make this example.
Turning south to the northernmost Red Sea

Track Lines of the R/V Etziono, which transited through the Suez Canal especially for this survey.

MERC Eilat - Aqaba
Sparker/Multibeam/Magnetic Survey
Joint Jordanian-Israeli project  26 Oct - 21 Nov 2006 (12 Days)

Multibeam coverage is 400%. Land cover SPOT 5 2.5m pixels (Copr. Spot/CNES)
The backside of this laminated poster showed perspective views from the south (top), east (Jordan - middle), and west (Israel - bottom).

Copies of these laminated posters are available free of charge at the booth of the Survey of Israel.
The Dead Sea
Multibeam/Magnetic Survey
Joint Jordanian-Israeli project
9 Jan - 2 Feb 2007 (21 Days)

R/V Taglit (Discovery) at Ein Gedi - Built at the Dead Sea in 2004 - 60 tons, 23 m overall
The speed of sound in the Dead Sea is over 1,810 m/sec. The profile was measured with an industrial AML Ltd. SV2000 with measurement range of 500-2000 m/sec.

The ELAC 1055 firmware was tricked by indicating 30 instead of 38 degrees between the two transducer blocks. The result worked but no nadir beams were recorded...
Effects of Excessive Groundwater Seepage

Multibeam Survey of the
Sea of Galilee - Kinneret - 2008

TAHAL Survey - 1968
The survey lasted 7 weeks from end May to beginning of July 2008.

Track length was 1600 km. Some 38 million soundings were recorded.

325 hours of multibeam survey with an ELAC Seabeam 1180 with 126 beams at 180 kHz.

Depths from 5 to 40 m. Swath width about 5 times the depth under the transducer.

Sparker survey around the periphery - where gas does not produce an acoustic mirror.

Cesium magnetometer towed throughout.

The recent survey of the freshwater Sea of Galilee (Lake Kinneret)

Over a 7 week period in May and June 2008 a detailed survey was carried out in the Sea of Galilee (Lake Kinneret). Above the aluminium jet-boat (R/V Lillian).
A sparker survey was carried out on a tight grid, along with multibeam with a rented ELAC SeaBeam 1180 system, and Geometrics Cesium magnetometer.

As with the Dead Sea survey, there was a certain degree of professional videography to document the work.
The work day began at 5AM, and after a break during the windy afternoon, continued until late at night. Here the R/V Lillian is seen against the mountains above Tiberias.
Poster of the Sea of Galilee

Land is a SPOT image with 2.5 m pixels, texturized with 4 m DTM of the Survey of Israel.

The mostly smooth lake floor is based on a 5 m multibeam DTM.
Birkhat Ram Maar (Volcanic Crater) – view from the north

Birkhat Ram Maar (Volcanic Crater) – view from the east

Single Beam Remapping of Birkhat Ram – 2009?
Eastern Mediterranean Situation
Background is the 1:5 Million version of the International Bathymetric Chart of the Mediterranean (and Black) Seas (IBCM).

My 1978-82 Eastern Mediterranean Compilation

The MediMap Group’s Mediterranean Multibeam Coverage Posters combined

The IHO-IoC IBCM-II 0.1’ Bathymetric Grid for the Mediterranean (and Black) Sea
Dr. John K. Hall - Geological Survey of Israel (Retired)
Vice Chairman, IBCM - International Bathymetric Chart of the Mediterranean
Editor - IBCM-II bathymetric/topographic grid at 0.1’
(The Late) Prof. Carlo Morelli - Università degli Studi di Trieste, Trieste, Italy
Chairman, IBCM - International Bathymetric Chart of the Mediterranean
The latest 2008 version of the MediMap compilation which was accompanied by both 1000 and 500 m grids. The partners do not want to release finer grids.

At this time the swath mapped areas constitute about 50% of the Mediterranean and less of the Black Sea.

My principal task will be generating a 0.1’ grid of the shallow areas from soundings and surveys for navigational charts. There is some 46,000 km of shoreline, along which the SRTM data on land needs to be clipped and then merged in with the soundings from the continental margins.
The other “puddles” that I take responsibility for, under the 105 year old GEBCO (General Bathymetric Chart of the Oceans) project, which recently became Google OCEAN.
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Thank you for your attention