



Sea levels of Israel, east Mediterranean, in two highstand periods; MIS5.5 and the Holocene, using different proxies

SEMINAR PRESENTED BY THE CENTRE FOR ARCHAEOLOGICAL SCIENCE (CAS)

DATE: FRIDAY 25TH AUGUST

TIME: 3:30-4:30PM

VENUE: 41.G03A, UOW

PRESENTER: PROF. DORIT SIVAN

I graduated my PhD on 1996 in the Institute of Earth Sciences, Department of Geology, The Hebrew University of Jerusalem, Israel. Over the last decades I have focused mainly in two intimately connected subjects: a) The reconstruction of the Israeli coastal environment in the late Pleistocene. b) Indications of sea-levels over the two last highstands: the MIS 5.5 and the Holocene: with the emphasis on the last 2-3 millennia and the last 1,000 years. For the Holocene, we use mainly archaeological indications for the past sea levels. Lately, we enlarged this discipline to Cyprus and Greece for more regional understandings.

SEMINAR OVERVIEW:

The coast of Israel contains field indications for the last two highstands: the MIS 5.5 and the Holocene. The last Interglacial indications are coastal sedimentary units that are exposed only in the northern coasts: in the Galilee as presented here and in the Carmel coast as previously published. The Galilee coast study uses stratigraphic, sedimentological, and palaeontological characteristics of 3 main units for indicating MIS 5.5 sea levels with the lowermost unit containing the Mediterranean diagnostic gastropod *Strombus bubonius* (Lamarck). Glacial isostatic adjustment (GIA) modelling using multiple ice histories was carried out for the Galilee coast, suggesting that GIA corrections are small, ranging between about -1.8 m and +5.4 m for this period. Unlike the last Interglacial, for the Holocene, archaeological evidence becomes the main source for reconstructing past sea level. This proxy is used when human-built coastal structures can be well dated with well-understood relations to past sea level. Each archaeological indicator has its own uncertainties, some are “index points” while others are only constrains for RSL. The Israeli coast is tectonically stable with low isostatic activity of ≥ 2 m calculated for the Holocene and this stability strengthens data reliability. Unlike the Early-Holocene observations that derive from fully submerged Pre-Pottery Neolithic–Chalcolithic sites off the Carmel coast of Israel, the last 2,500 years of archaeological index points are mainly coastal. The Israeli data shows RSL reaching within 1m of present level between 4,000 and 3,600 years ago, with ongoing fluctuations. Since then, the record shows some stability with fluctuations of about -0.50 m occurred at the start of the last millennium (late Fatimid and Crusader period) rising gradually to present elevation. The two datasets: from the last Interglacial and the Holocene, indicating rising sea to slightly higher levels with indications to levels up to about +3.0 m for most of the period, and rising pattern to present levels, respectively, indicating mainly the eustatic component.



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