

Spatial and temporal distribution patterns of deep-sea mesozooplankton in the eastern Mediterranean - indications of a climatically induced shift?

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Zooplankton samples from the eastern Mediterranean were collected in April/May 1999 with a multiple opening and closing net (mesh size 333 μm) to examine the distribution and taxonomic composition of mesozooplankton, mainly Calanoida (Copepoda), some years after the onset of the Eastern Mediterranean Transient (EMT), a climatically induced shift in hydrography. The samples from seven stations on a transect from the Ionian Sea to the eastern part of the Levantine Basin were collected at closely spaced vertical intervals from the surface to water depths of 4250 m. Data from January 1987, June 1993, January 1998 and October 2001 from the main site of investigation, south of Crete, were used to describe the temporal evolution before (1987), during (1993) and after (1998-2001) the EMT.

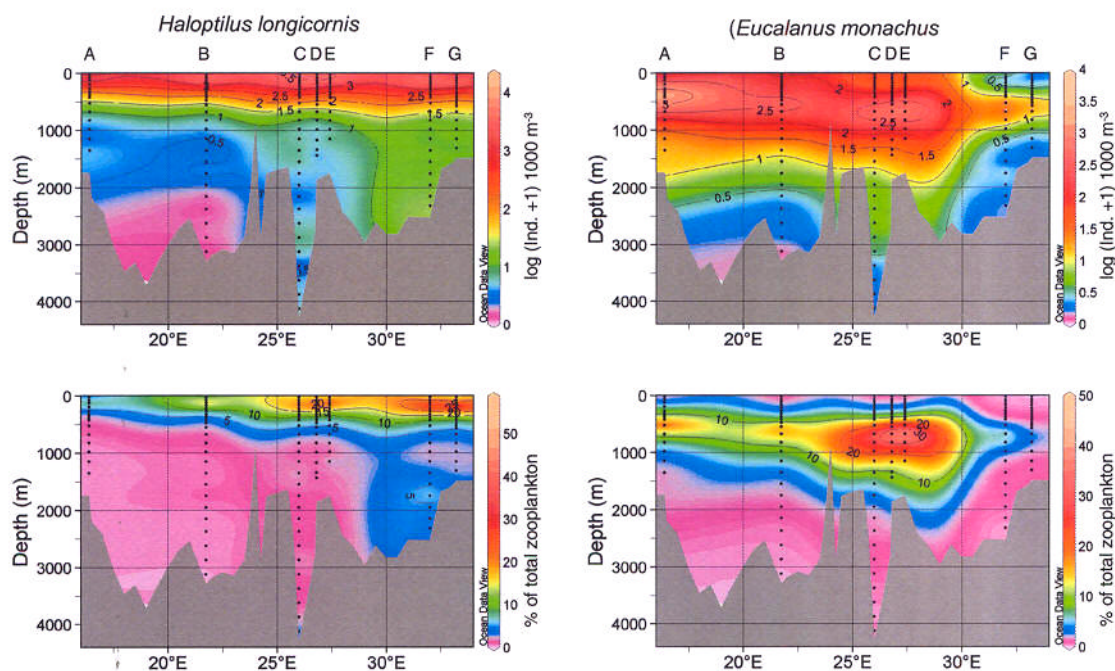


Fig.1: Distribution of *Haloptilus longicornis*, *Eucalanus monachus*, (absolute and relative abundance) on a transect in the eastern Mediterranean in April/May 1999. The dots indicate the mean sampling depths of the nets at the sites of sampling from the Ionian Sea (A,B) to the Levantine Sea (C-G).

The eastern Mediterranean mesozooplankton fauna is dominated by three Calanoida species along the west-east transect, with varying abundances in different depth-zones: *Haloptilus longicornis* in the epipelagic zone, *Eucalanus monachus* in the mesopelagic zone, and *Lucicutia longiserrata* in the bathypelagic zone. A drastic change in mesozooplankton composition and abundance occurred at the main site during the EMT, whereupon

increased abundances of *Candacia elongata* and *Lucicutia longiserrata* were observed in the bathypelagic zone in the following years; *L. longiserrata* accounted for 43% of the total mesozooplankton in this zone.

The hypothesis is posed that the Mediterranean deep-sea ecosystem is able to respond quickly to changes in the environment and memorizes these changes over time. We claim that the biological effects of climatically induced changes can be easily monitored in the deep eastern Mediterranean Sea with the use of calanoid copepod key species due to the hydrographically extreme, but "simply structured" ecosystem.

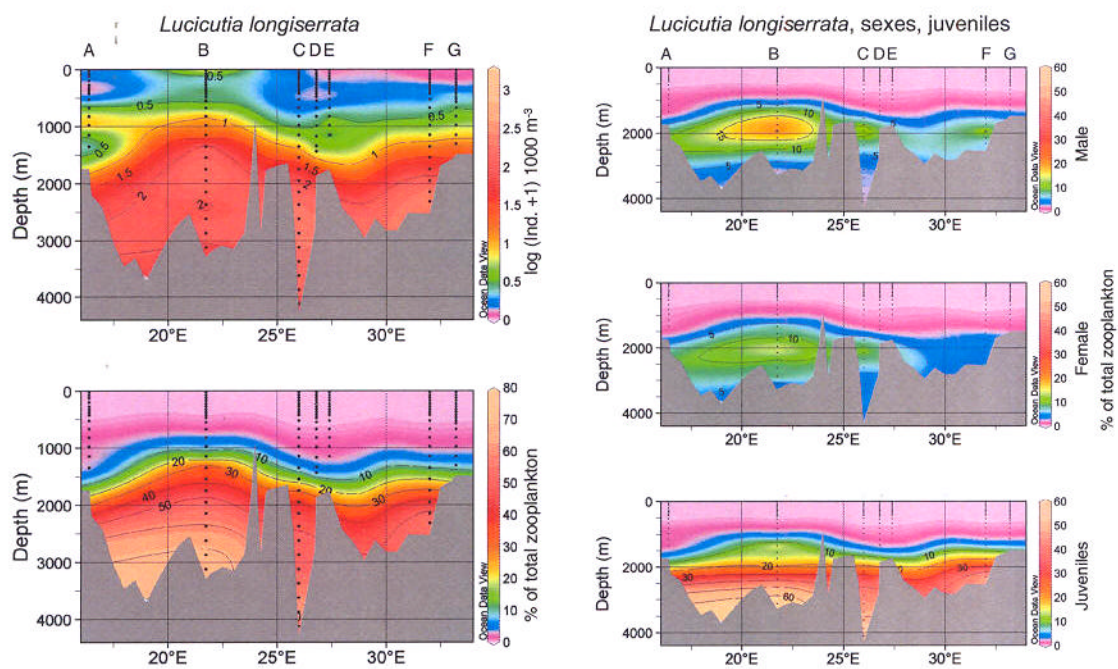


Fig.1 (Continued): Distribution of *Lucicutia longiserrata* sexes and juveniles (relative abundance) on a transect in the eastern Mediterranean in April/May 1999. The dots indicate the mean sampling depths of the nets at the sites of sampling from the Ionian Sea (A,B) to the Levantine Sea (C-G).