Description of evolving Ferruginous Oxygen Minimum Zones from the Eastern Mediterranean during sapropel S1 - A potential predictor for modern climate change

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123

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Understanding the nature and evolution of past Oxygen Minimum Zones (OMZ), preserved in sapropels in the EMS shed light on expanding OMZs in the modern ocean. Here we present new data from two cores sampled off the Israeli coast (1200m and 1430m) analyzed for benthic foraminifera fauna (BF), redox sensitive trace metals (RSTM) and Fe and P speciation. The results show an evolving OMZ starting at ~500m and progressing downwards. This caused a peak in reactive Fe in the 1200/1450m cores, as the sediment was still just oxic beneath the anoxic OMZ. Once all oxygen in the overlying water was lost, (No BF and a peak of V/Al), the system became and remained ferruginous. After a short hypoxic interruption during the 8.2 ky global cooling event, a second period of Ferruginous OMZ occurred which was less intense and marked by a decreasing concentration of oxygen upwards. The OMZ's were due eastward water flow, downward flux of labile OM, and PP from the increased Nile flood.