



Large-scale response of the Adriatic thermohaline circulation to African monsoon intensification during the Holocene

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Historical investigations represent an extraordinary benchmark against which the Mediterranean response towards climate changes can be evaluated. Here, we explore the stagnation of the water column in the Adriatic basin during the sapropel S1 event (ca. 7-10 ky BP, early-mid Holocene). Our high-resolution (decadal-centennial) analysis aims to reconstruct the oceanographic regime under which the weak ventilation developed. Our multifaceted dataset based on integrated ecological, organic and inorganic parameters revealed that the weakening of the Northern Adriatic Deep Water hampered the deep-water ventilation resulting in oxygen-poor bottom waters. The emerging picture suggests a chain of events in which the intensification of monsoon precipitation over North Africa (i.e. enhanced Nile river discharge) followed by the weakening of the Levantine Intermediate Water ultimately suppressed the Northern Adriatic Deep Water formation which, consequently, hampered the ventilation of the southern Adriatic and the formation of the Eastern Mediterranean Deep Water. Our results highlight the implicit interdependence among the major eastern Mediterranean water masses whose climate-induced destabilization exerted first-order control over oxygen concentration, benthic life and marine geochemistry.