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High-resolution record of Dansgaard-Oeschger variability in the Adriatic Sea (Central Mediterranean)

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The record of high frequency Daansgard-Oeschger climate variability was first defined in the stable isotope record of Greenland ice cores, and later in marine cores from the North Atlantic. More recently, evidence of these short-term oscillations was found also in the Western Mediterranean (Alboran Sea and Gulf of Lions) marine records while their definition further eastwards remained more elusive in the marine record but evident in lacustrine sediments. The multi-proxy study of very expanded successions of marine sediments within EC-EUROSTRATAFORM and EC-PROMESS1 projects from the Adriatic basin allows, for the first time in this basin, recognition of high frequency oscillations during the Last 70ka. The semi-enclosed, land-locked nature of the Adriatic Sea plays a key role in amplifying the intensity of the climate variations, making them very evident. This Daansgard-Oeschger cyclicity is visible from records located in different water depths by several and independent proxies, such as planktic and benthic foraminifera, oxygen stable isotopes (which consistently wiggle-match with the GISP2 ice-core record), XRF logs (in particular Ca/Ti and K/Ti ratios), sediment-lightness logs, pollen data, total rock mineralogy and tephrostratigraphy. Most of these proxies, as well as several ^{14}C AMS dates, also contribute in refining

the chronological framework, well consistent with GISP2 ice core D-O events. The paleoenvironmental meaning of these Adriatic oscillations is particular significant, considering the important role of this basin in ventilating the Eastern Mediterranean through the production of dense water masses. Interestingly, a weakened deep-water production seems to characterise all D-O stadial intervals, along with weakened vertical mixing of the water column and lower oxygenation of the sea floor.

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