Climate Change in the Mediterranean Sea

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Oceanic sub basins like the Mediterranean Sea are especially sensitive recorders of paleoclimate histories because their smaller size and partial isolations from the global ocean can magnify the impacts of climate change Continuous sediment records recovered from the Mediterranean Sea during ODP Legs and have revealed new high resolution information about past climate and its variability These results are significant because much of human evolution occurred around the Mediterranean region and was probably influenced by climate The present Mediterranean has a negative water balance in which evaporation exceeds the delivery of water by rivers and rain Any climate changes that modified the hydrologic balance would have radically impacted environmental conditions on land altered regional marine productivity and left an amplified imprint in the form of the sapropel layers that are common in the sedimentary records of this sea

Sapropels are layers of dark colored organic carbon rich sediment that correspond to past periods of wetter than present Mediterranean climate ODP drilling discovered that individual sapropel layers can be traced from the Levantine Basin to the Alboran Basin – the entire east west extent of the Mediterranean Sea – which means that the changes to wetter climate simultaneously encompassed the whole region The changes lasted thousand years during times of greater summer winter climate differences that recurred at precessional (thousand year) cycles most recently to thousand years ago The drill legs also yielded evidence showing that the climate changes were expressed differently at different precessional intervals In fact some sapropels are interrupted which indicates that climate temporarily reverted to near modern dry conditions for several centuries during the seasonal difference peaks before becoming wet again The high resolution paleoclimate proxy records reveal that climate around the Mediterranean Sea has varied repeatedly since at least million years ago meaning that inhabitants of this region had to adapt to a continually changing environment

An interrupted sapropel from Site in the Tyrrhenian Basin