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Primary production trends and response of terrestrial environments in SE Aegean core NS-14: A multiproxy approach

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The 400cm-long high sedimentation rate NS14 gravity core was collected (R/V Aegeo,HCMR) in the vicinity of Nisyros Island in SE Aegean Sea at 505m depth. Stratigraphic framework was based on radiocarbon dating. Additionally Z2 Santorini tephra layer, sapropel S1, and a thick pumice layer are well represented. An interruption in S1 sapropelic sequence has been observed in-between 69-88cm of the core. The basal part of core NS14 represents turbiditic deposits and intense material flux in the glacial period, with an AMS provided age of not more than18240 yrs BP_{nc}. The determination of marine biogeochemical conditions is performed with the quantitative and qualitative study of the organic biomarkers (sterols/ long chain alkenones/ alkandiols/

ketols/ isoprenoid derivatives/ n-alkanes/ n-alkanols). SST is derived from alkenone estimations. These results are combined with the determination of algal biomarkers, calcareous nannofossils and dinoflagellates as tools to investigate paleoproductivity trends. Finally, the direct correlation with pollen assemblages permits to evidence major responses of the terrestrial environment to climatic change.

Warm and stratified conditions during S1a are characterized by abundance of calcareous nannofossil *F.profunda*, suggesting the presence of DCM. The organic biomarkers loliolide and isololiolide possibly suggest bottom water dysoxia/anoxia. Pollen assemblages indicate high moisture and warm summers. SST falls dramatically at the base of S1 interruption. Towards the upper part of S1b calcareous nannofossils imply severe reduction of stratification caused by great influx of less saline waters most probably from the Black Sea. This is accompanied by decrease in temperature and presence of relatively colder dinoflagellate species associations. Pollen analysis suggests an expansion of mountainous conifer forest. Above S1, at approximately 5-5.5kyrsBP, calcareous nannofossils suggest increase in productivity. SST is also increased followed by an increase of terrestrial input, and organic biomarkers mainly produced by dinoflagellates. A second interval is observed just above the Santorini tephra layer. During this interval SST is decreasing. However brassicasterol mainly associated with prymnesiophyceae/coccolithophorids is increased, showing higher productivity which is now due to the increase of *Emiliania huxleyi* as it is confirmed by the nannofossil assemblages.

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