



## Late Quaternary climate changes shown by palynological records from Marmara Sea

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Pollen analysis was carried out on three cores collected from the Marmara Sea. The gravity

cores DM 13, DM 18 and KL 97 were collected during the cruises of R/V Sismik1 and R/V Meteor, respectively. The core DM 13 and DM 18 were collected from the western ridge of the Marmara Sea at a water depth of 710 m, with sediment recoveries of 300 cm and 420 cm, respectively. KL 97 was collected from the Eastern Basin of the Marmara Sea at a water depth of 1094 m and it has a length of 540 cm.

Pollen records of deep basin sediments from the Marmara Sea reveal four pollen zones.

The highest total pollen sums in the cores corresponds to the sapropelic layers, partly due to the favorable preservation condition during bottom water stagnation, and possibly due to increased terrigenous sediment (Mudie et al., 2002). The characteristic pollen assemblages often found in sapropels are dominated by the moisture-demanding trees and herbs, such as *Quercus*, *Cedrus*, *Fagus* and *Abies*, and are associated with interglacial conditions.

Pollen distribution in the deep Marmara Sea sediments is mainly dominated by AP, suggesting that the source area was characterized by altitudinal-controlled vegetational belts

Pollen assemblages display slightly different composition in the eastern and western parts of the Marmara Sea. *Artemisia* exists in the cores KL 97 and DM18 but does not occur in core DM 13. In addition, *Picea* points to woodland vegetation more like

the present moister mountain forest in the Southern Black Sea where it occurs on the north slopes of the mountains. Cores DM18 and DM 13 from the Central basin, show different stratigraphic distributions of major pollen species.

In pollen zone D, NAP reaches their highest values in the lower part of core DM 13. Zone D covers the LGM interval from  $\sim 18$  to 14 ka BP and shows a predominance of conifer (*Pinus* increase towards this zone and *Abies*, occurs in core DM 18) tree pollen suggest fluctuating moister and drier conditions.

*Artemisia* reaches highest values (up to 50%) and its maximum marks the Younger Dryas between  $\sim 11$  and 10 ka BP. *Picea* also reach its highest values in Zone C of cores DM 18 and KL 97.

*Pinus-Cedrus* and *Abies* which indicate interglacial condition, occur between 325-290 cm where there is a sapropelic layer in core DM 18 . The sapropelic layer is dated between  $\sim 11$  and 5 ka BP in Zone B of cores DM18 and DM13. In contrast, the sapropelic layer has an age of 11 ka to 9 ka BP in core KL 97. In Zone A of cores DM13 and DM18, the distribution patterns of the most dominant AP pollen species, such as *Quercus* and *Juniperus*, do not show significant fluctuations, whereas the less abundant species decrease towards the surface. All the cores clearly show evidence of human occupation commencing after 4 ka BP.