



Recent ENSO-associated decline in precipitation in the eastern Mediterranean and its impacts on tree growth

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Evidence is presented of a recent drying in the Eastern Mediterranean, based on weather and tree-ring data for Samos, an island of the Eastern Aegean Sea. The last decade of the 20th century marked an exceptional situation, a current extreme end point of a trend that started in the early 1970s of a rapid rainfall decline. It is also after the early 1970s that low annual precipitation extremes became much more frequent. ENSO events matched with these extremes or with below average rainfall, linking this trend with a larger scale climatic shift, as was predicted by climate models. This reduction in precipitation coincides with a clear reduction in the growth of *P. brutia* trees from habitats without any access to the ground water table. Also, as precipitation decreased drier habitat trees became increasingly dependent on longer periods of water supply and were possibly utilizing, additional moisture from deeper soil horizons stored during rainfall of several previous years, exceeding even five years of precipitation prior to and including the year of tree-ring formation. Such long-term integration periods of tree growth responses to precipitation signals have not been reported previously. Furthermore, in late summer 2000 moisture reserves became exhausted, and a substantial fraction of low altitude pines died, including some 80-year-old trees. These findings provide empirical support to model predictions of a northward shift of the Saharan climate.