Geophysical Research Abstracts
Vol. 12, EGU2010-5546, 2010
EGU General Assembly 2010

Recent changes in Mediterranean Sea water cycle

Annarita Mariotti (1,2)

(1) ENEA, Rome, Italy (annarita.mariotti@casaccia.enea.it, 39 06 30484264), (2) Earth System Science Interdisciplinary Center, College Park, United States (amariott@essic.umd.edu, 1 301 4058468

An observational analysis of Mediterranean Sea water cycle variability based on recently available datasets provides new insights on the long-term changes which affected the region since the 1960s. Results indicate an overall increase in evaporation during 1958-2006, with a decrease up until the mid-1970s and an increase from thereon. Precipitation variability is characterized by substantial interdecadal variations and a negative long-term trend. Evaporation increase, primarily driven by SST variability, together with precipitation decrease resulted in a substantial increase in the loss of fresh water from the Mediterranean Sea toward the overlying atmosphere. An increase in fresh water deficit is consistent with observed Mediterranean Sea salinity tendencies and has broad implications for the Mediterranean water cycle and connected systems. These observational results are in qualitative agreement with simulated Mediterranean Sea water cycle behavior from a large ensemble of CMIP3 models. However, simulated anomalies are about one order of magnitude smaller than observed.