



{Causes of variability in the Mediterranean Sea: straits and salt/fresh water advection}

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Observations of SST, T and S, spanning several decades, show that the Mediterranean Sea is subjected to a large range of variability from interannual to multidecadal scale. Moreover, these scale of variability is also detected in the basin circulation and on the related processes and characteristic of water mass formation that Mediterranean hosts, like for example the Eastern Mediterranean Transient (EMT) event.

With regard to this, numerical models have proved to be a valuable instrument to assess the distinct, though concurrent, roles of external forcing (i.e. fresh water, wind stress) and basin natural internal variability.

In particular our contribution regards, using several numerical simulations, two different, though concurrent, source of variability. First the role of the straits in the Mediterranean circulation: in particular how the Gibraltar Strait regulates the fresh water supply from the Atlantic Ocean and some internal physical processes like deep water formation; secondly the role of the advective-convective feedback on the variability in the intermediate and deep water formation, like EMT and deep water formation in the Gulf of Lyon.

As a future follow-up of this work, the role of the Mediterranean Sea on nearby and remote regions will be discussed in the context of present and future climate.