Decadal climate variability and change in the Mediterranean region

Annarita Mariotti, NOAA

The Mediterranean region is among the “Hot Spots” projected to experience major climatic changes in the twenty-first century as a result of the global increase in greenhouse gas (GHG) concentrations. However, the way in which these changes may initially become manifest in the Mediterranean will also depend on internal decadal variability and its impacts on climate in this region. Here, we present an analysis of the main decadal climate variations that have influenced past climatic conditions in the Mediterranean/South Europe region since the mid-nineteenth century. Decadal variability is discussed in the context of forced climatic changes from increased GHG.

Results point to significant connections between Mediterranean climate and decadal and multi-decadal variability in the Atlantic. Namely, a significant influence of the North Atlantic Oscillation on Mediterranean precipitation and a relationship between regional temperatures and the Atlantic Multi-decadal Oscillation which may imply a certain degree of decadal regional predictability. CMIP3 projections indicate that in the longer term “forced” regional climatic changes from GHG increases would bring significantly drier conditions over land and major changes in Mediterranean Sea water cycle.