



Projected changes in the Caspian Sea level for the 21st century based on AOGCM and RCM simulations

N. Elguindi (1), F. Giorgi (2)

(1) Météo France, Toulouse, France, (2) International Centre for Theoretical Physics, Trieste, Italy

The Caspian Sea level (CSL) is highly sensitive to variations in the hydrologic budget of the basin. In the past, CSL has undergone rapid and significant shifts in response to multi-decadal climate variability. During the past century, these drastic changes have had devastating effects on the economy and environment of the region. Under projections of future climate change, it is likely that the CSL will undergo even larger, more dramatic changes. Thus it is imperative that we make efforts aimed at understanding regional future climate change in the Caspian basin in order to project how the CSL will respond.

Here we present results from global climate changes simulations with seven Atmosphere Ocean General Circulation Models (AOGCMs) to assess possible changes in the Caspian Sea basin hydrologic budget and corresponding changes in the CSL. While most models project an increase in precipitation over the Volga river basin, where most of the runoff into the Caspian Sea is generated, a steady decline in the CSL is mostly estimated due to the large increase in evapotranspiration over land and the sea surface. In addition, we present results from a future climate simulation using a high-resolution (50 km) regional climate model (RCM) nested in a time-slice AOGCM simulation. By the end of the 21st century, both the RCM and the AOGCMs ensemble average based estimates suggest a significant drop in the CSL on the order of several meters. This can be potentially devastating for the surrounding region if no adaptation or mitigation measures are taken.