Climate variability and prediction over the South Caucasus

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South Caucasus is a territory of the Caucasian isthmus south from the Main Caucasian Range and includes 3 countries - Armenia, Azerbaijan and Georgia. The geographical location of the South Caucasus complicated mountainous terrain, and other factors shape the wide diversity of the climate. The South Caucasus has various climate zones starting with everlasting snowcaps and glaciers to warm humid subtropical forests and humid semi-desert steppes. Various hazardous meteorological and hydrological phenomena, such as droughts, floods, avalanches, etc. are observed over the region. It is anticipated that the frequency of occurrence of extreme weather and climate events will increase due to the climate change. However, there are no systematic studies on the variability of climate over this region. In this study an attempt has been made to examine the intra-seasonal and inter-annual variability of climate over this region using observed data. NCEP-NCAR reanalysis-2 data (daily and monthly mean), along with CMAP pentad and monthly mean data have been used for this study. In addition North-Atlantic Oscillation (NAO) index has been used to represent Northern Hemisphere large-scale climate variability index. Impact of tropical sea surface temperature variability is represented by the NINO-3. It is seen that climate variability in the South Caucasus region is caused both by the North Atlantic Patterns, as well as variability in the tropics. Tropical intra-seasonal variability in 30-60 days has large impact on weather and climate variations in this region. When convection is active/weak over the Indian Ocean, the South Caucasus region seem to get affected through Rossby wave response. It is found that a shift in the intensity and position of the Jet in the Jet entrance region occurs affecting the region of interest. Results of some global climate models have been analyzed to examine the predictability of temperature and precipitation for this region. A simple regression-based prediction scheme has been developed to predict the climate variability of the region. A detailed study on this aspect will be presented in the Conference.