EMS Annual Meeting Abstracts
Vol. 11, EMS2014-236, 2014
14th EMS / 10th ECAC

Impact of 2c warming over the vulnerable areas of Africa region in the AFRICA-CORDEX simulations

Alessandro Dell'Aquila, Sandro Calmanti, and Paolo Michele Ruti
ENEA, UTMEA-CLIM, UTMEA-CLIM, Rome, Italy (alessandro.dellaquila@enea.it)

We analyse the foreseen climatic changes over the vulnerable areas of African Continent for the most relevant variable, taking advantage of the new regional simulations produced in the AFRICA-CORDEX framework available in the framework of IMPACT2C EU project activities.

The focus of the analysis is on the comparison of present climate condition with the period corresponding to +2°C (and +1.5°C) in the future scenario, providing information on the challenges and opportunities that the foreseen changes in hydrological cycle implied by global warming could create in vulnerable areas of African continent as Nile and Niger basins. We use simulations of the RCP4.5 and RCP8.5 scenarios that typically reach the + 2°C threshold during the next century.

Starting from the available climate projections we simulate potential future threats to food security by using a monitoring and risk assessment platform developed at WFP and ARC in a Climate Change Stress Test modality. In this case, the approach is to consider the outcome of rainfed agriculture as the prevalent resource for livelihoods in rural economy in the target areas.

The general impact of +2°C on hydrological droughts is quite varied depending on location and projection. The paradigm of incremental impact with a well-defined trend (such as in the case of global temperature) does not always apply.

In particular, most of west Africa and the Niger basin, faces increasing threats to food-security, except for the case of Niger, where periods of increasing number of drought-affected people alternate with periods of decreasing impact on food security. Such an oscillation between positive and negative periods is more evident in Eastern Africa and in the Nile basin. In particular, Ethiopia seems to show increasing number of drought affected at a moderate rate. Instead, in the case of Kenya and Tanzania, and initial phase of worsening conditions for food security is followed by a period of improving conditions.