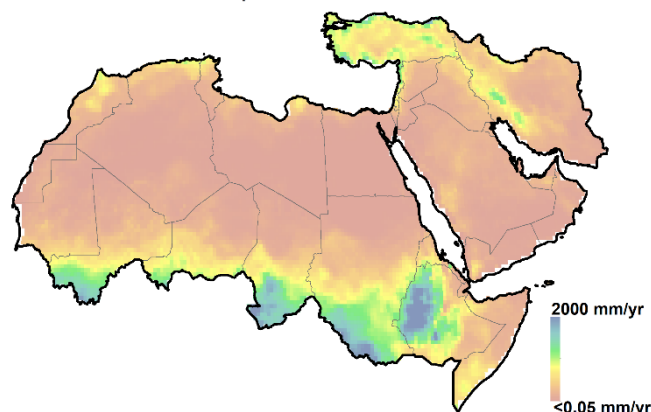


# Faster Drying of the Drylands of MENA under a Changing Climate.

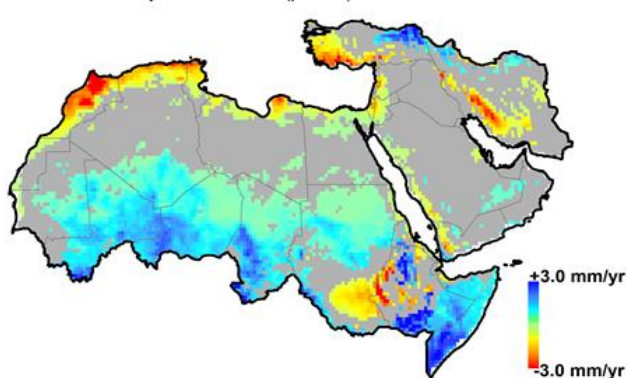
The Middle East and North Africa (MENA) region represents a substantial area of the terrestrial land surface encompassing several countries and ecosystems. This is a region highly vulnerable to climate change which in turn drives increasing socio-economic challenges. Here, a greater share of water resources is used for food production than in any other region globally. In this Region, along with water scarcity exacerbated by climate change, food production is challenged by the demand from rapidly growing populations, challenging policies, and lower crop productivity, leading to heavy dependence on food imports. Agriculture and agri-food systems remain fragile and a radical transformation is necessary to meet future needs under a changing climate.

MENA Precipitation Distribution

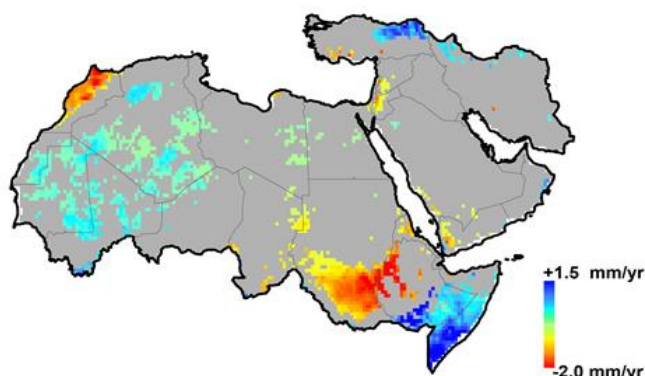


Spatial variability of the mean annual precipitation in the MENA region. The region is already dry and there is a climatologically dynamic zone on both sides of the Sahara desert, which is highly vulnerable.

Annual Precipitation Trends ( $p < 0.05$ ) RCP 8.5



Annual Precipitation Trends ( $p < 0.05$ ) RCP 4.5



Spatial distribution of the Statistically significant trends in precipitation in the MENA region. The figure shown in this panel is the long term climate change trend 1980-2100 under the two IPCC scenarios. The data used in the analysis is an ensemble of 3 GCM outputs.

ICARDA experts have already understood the dynamics of climate in the region as shown in the facing panel. Outputs of three GCMS (CNRM, GFDL and EC-EARTH) that were downscaled and bias-corrected (1980-2100) for different climate change scenarios (RCP 4.5 and RCP 8.5) were strategically analyzed and the precipitation dynamics of the MENA region was studied. There is very high statistical confidence that the Mediterranean region in the MENA (Morocco, Algeria, Libya, Levant, and Turkey) will have a substantial precipitation reduction trends to a tune of upto 3mm/yr from their 1980 values. This means a reduction of rainfall up to 365mm by the end of the century. Although RCPs 4.5 and RCP 8.5 differ in the climate impact, there is convergence in the fact that Morocco is drying at a very rapid rate. On the other hand, the Horn of Africa (especially the Somalia and Eritrea) region shows an increasing precipitation trend. There is already strong evidence and statistical confidence that temperature is increasing across the MENA but precipitation trends were always speculative.

The CGIAR Research Program Climate Change, Agriculture and Food Security (CCAFS) and ICARDA are proposing the Two Degree Initiative to address issues related to climate change and its impact on Agriculture and to identify and scale up optimal adaptation practices in the region.