

**PARALLEL SESSION B : FRONTIER DOWNSCALING TOOL  
B1: VERY HIGH RESOLUTION MODELLING**

**Estimation of sensitivity and added value of climate simulations for the Israeli region  
using COSMO-CLM with three nested domains**

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In this analysis, we evaluate the capabilities of different configuration of the regional climate model COSMO-CLM in reproducing the average and extreme climate patterns over the Israeli region located in the near-coastal eastern Mediterranean area. COSMO-CLM is the climate version of the operational non hydrostatic mesoscale weather forecast model COSMO-LM. The model version used in this work offers, in particular, the possibility to easily exchange data sets of aerosol optical depth (AOD) and surface albedo. Model configuration has been chosen on the basis of a previously performed sensitivity analysis, aimed to ascertain model performances with respect to changes in physical and tuning parameters. Three simulations driven by ERA Interim reanalysis data for 1979-2011 have been performed using the 0.44 deg 0.22 deg and 0.0715 deg horizontal resolutions (respectively about 50 km, 25 km and 8 km). The CORDEX-MENA domain has been employed for the simulation at resolutions 0.44 and 0.22 deg, while the simulation at the highest resolution is performed considering a smaller geographical domain covering the Israeli region, adopting a nesting procedure.

The response for the three different configurations to the increase in the horizontal resolution has been analyzed, for monthly 2-m temperature, precipitation and a subset of climate indicators defined by the Expert Team on Climate Change Detection and Indices (ETCCDI) for temperature and precipitation. These indices highlight various characteristics of extremes, including frequency, amplitude and persistence and are widely used to assess the ability of global and regional model to simulate extremes and to assess future changes. The results have been then extensively inter-compared and evaluated against the observational data available.

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