Project: **943**
Project title: **LOCLIM3**
Project leader: Prof. Dr. Sahar Sodoudi
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One of the goal of LOCLIM3 project is to estimate the local climate change in Cairo, Istanbul, and Nairobi till 2090 using the regional climate model COSMO-CLM. This study on climate change adaptation in cities is intended to offer mayors and other city officials, in developing countries. Therefore it is necessary to selected the Urban Heat Island (UHI) for these cities. The advances of LOCLIM3 is to analyze and simulate the microclimate for Istanbul, Nairobi and Cairo in real time as well as for the future with a high spatial resolution regarding different adaption strategies. For the city of Cairo, simulations with CCLM were analysed for the year 1985-2005 (Fig.1, grid points for Cairo city). Figure 2 shows an example of 12km resolution for Cairo up to 2.8km resolution of the historical run 1985-2005 and Fig.3 shows the mean temperature for Cairo city for January.

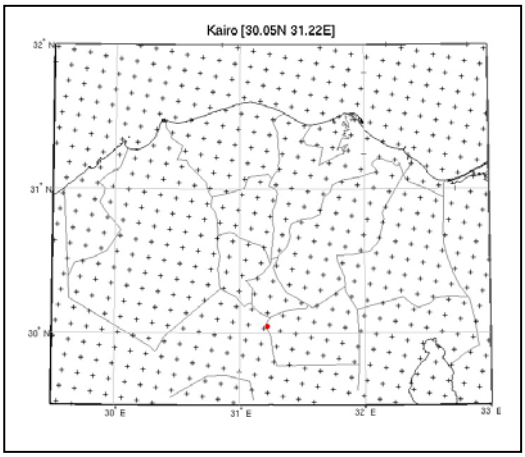

Fig. 1 Grid points for Cairo city.

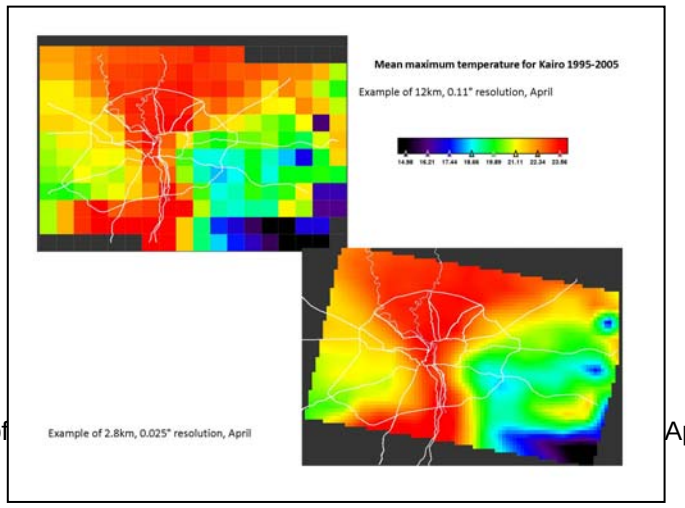

Figure 2 Example of April of 12 km and 2.8km resolution.

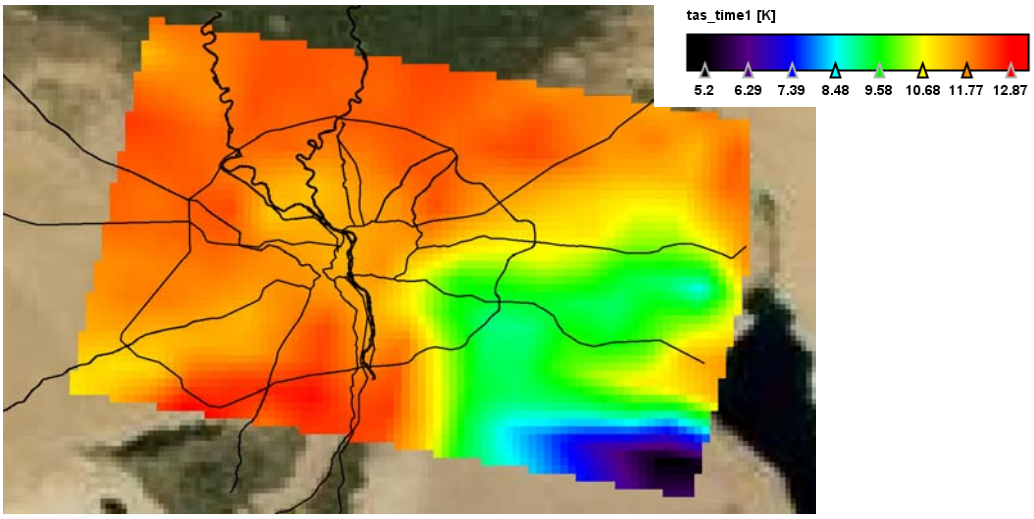

Fig. 2 Mean Temperature for January of Cairo city 1985-2005.

Climate change, whether driven by natural or human forgings, can lead to changes in the likelihood of the occurrence or strength of extreme weather and climate events such as extreme temperatures. An extreme weather event is one that is rare at a particular place and/or time of year. Definitions of ‘rare’ vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile of a probability density function. The probability of occurrence of values of a climate variable can be described by a probability density function (PDF) that for some variables (temperature) is shaped similar to a Gaussian curve (Fig. 3). For illustration a simple case of normal distribution that is shifted towards the warm end. The probability of occurrence, or frequency, of extremes is denoted by the shaded areas (Fig. 3 in red and blue). The temperatures increase (shifting the bell curve to the right) and become more variable (flattening the bell curve). The result is a significant increase in extremely hot temperature and to the left side it shows less change for cold weather.

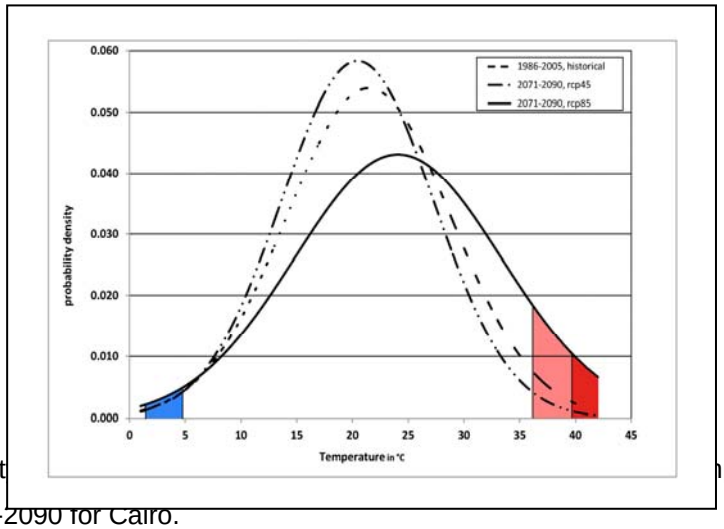

Fig.3 Probabilit nperature of 3 scenarios for time series of 2071-2090 for Cairo.