# MERGED CLIMATE DATASET FOR THE MEDITERRANEAN

To enhance scientific knowledge on the past climate variability, as depicted by the variation of essential climate variables (ECV; air temperature, precipitation and air pressure), and increase vital historical climate datasets availability over the Mediterranean region, long and high-quality climate time-series for southern and Middle East Mediterranean countries are being developed by using a two-steps approach. First, a data rescue effort is being carried out in order to digitise the un-digitised historical data from different sort of data sources (station-based observations) and, second, a data coordination and exchange effort between EURO4M through the WMO/MEDARE Initiative and the relevant Mediterranean National Meteorological Services (NMSs) is under discussion. The later will ensure the combination of the past rescued/digitised data with recently measured data in the targeted NMSs, which will make possible to undertake an homogenisation exercise that ensure longer, more complete and homogenised time-series . Picture 1 shows the locations for which temperature, precipitation and air-pressure time-series are being developed.
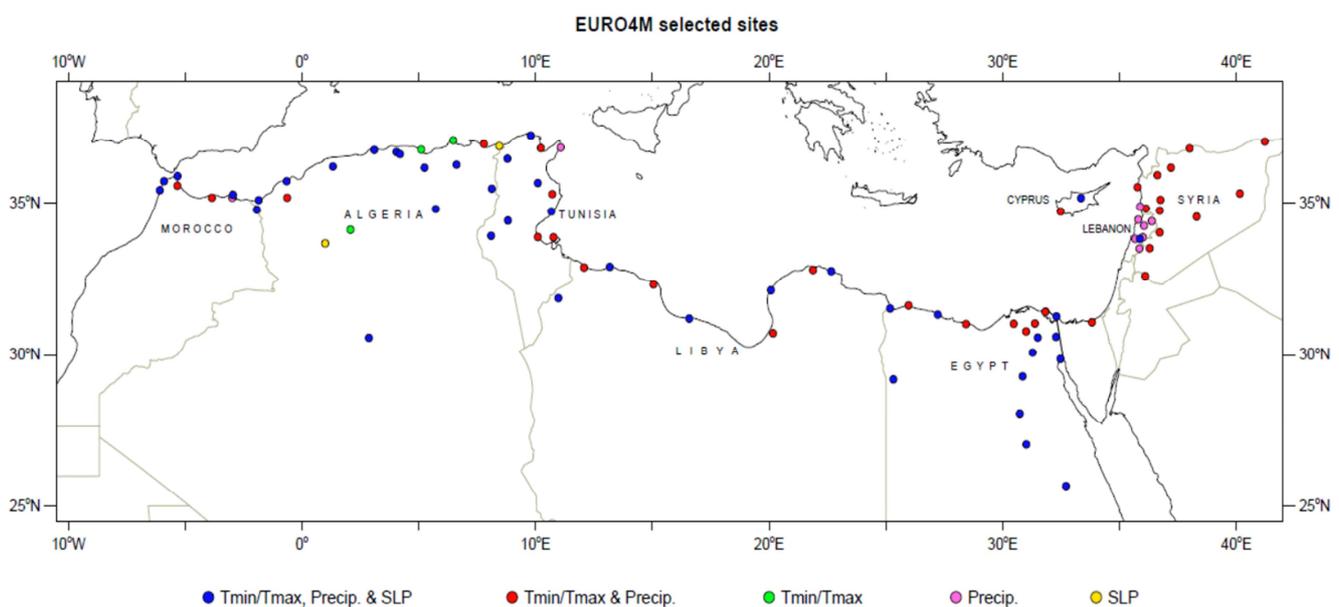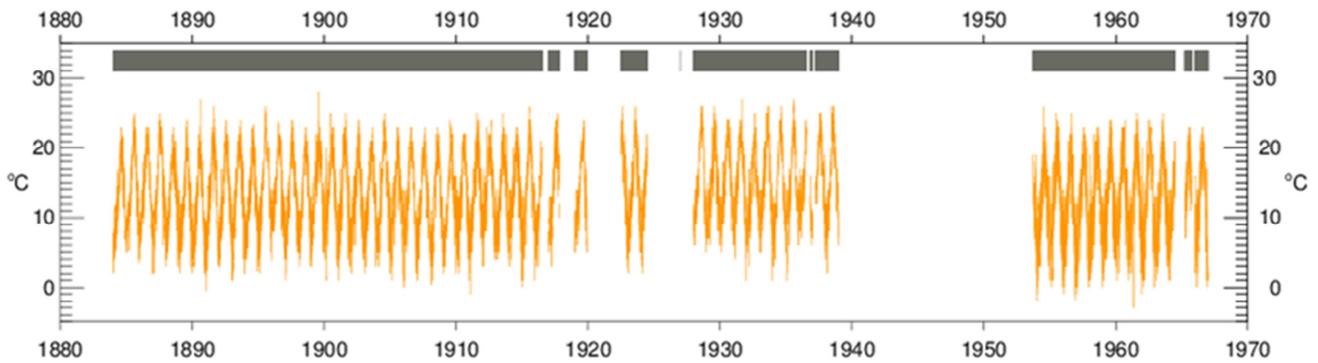

Picture 1: Locations of Mediterranean stations whose climatic time series are being reconstructed

Infobox

SPECIFICATIONS

Output data sets
Daily Maximum Air Temperature
Daily Minimum Air Temperature
Daily Precipitation
Daily/Subdaily Air Pressure

Data
Spatial resolution: station-based
Temp. resolution: daily & subdaily
Format: ASCII

Availability
Area: South Mediterranean & Middle East
1850s–1970s (based on station)
scheduled for Spring 2013
Subjected to a public and non-public categories (public: all data digitised/recovered under EURO4M and those considered so by data providers; non-public: restricted to data owners policy)

Validation
Quality validation with dedicated software and by cross-comparing with contemporary data from nearby stations

Outlook
Further validation / evaluation by
EURO4M and users
Improvement
(WMO/MEDARE in charge of future improvements)
Releases (every 12 months)

Description and Validation
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Examples of usage: Daily time series of observational records in the 1880–1970 period

Picture 3: Daily minimum temperature for Oran (Algeria); data availability is indicated by the grey bar in the upper section of the plot.
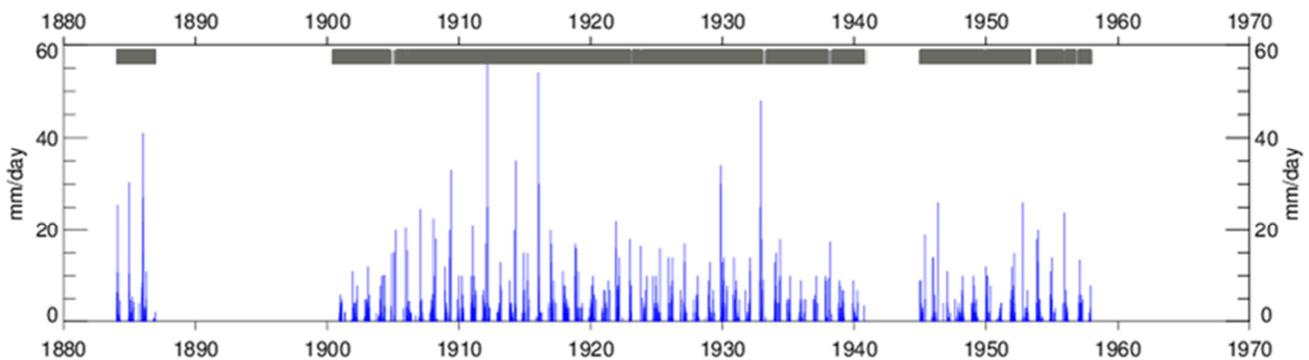
Picture 4: Daily precipitation for Port Said (Egypt); data availability is indicated by the grey bar in the upper section of the plot.

Validation methods, consistency and uncertainty:

Method overview for time-series quality control:

To validate the accuracy of the daily data assembled from various data sources, the digitised data are being subjected to two kinds of quality control procedures. First, a visual cross-checking between data sources and the digitised data is being undertaken, in order to ensure consistency between stations, variables and calendar dates shown in the data sources and in the digitised data. Second, an enhanced version of the RClimDex software (http://cccma.seos.uvic.ca/ETCCDI/software.shtml), the RClimDex_extraQC developed by Centre for Climate Change (C3) is being past on the digitised data, in order to avoid non-systematic bias in the time-series and label suspicious values. Contemporary data from nearby stations (wherever available), along with expert judgement and original sources examination, are being used for guiding the validation/rejection of the labelled values by the automatic procedure. In some cases, the description of the general meteorological setting (wind, rain, pressure maps) is also consulted to make decisions on the reliability of suspicious values.

Method overview for time-series homogenisation:

Several novel relative homogenisation methods will be past on the merged time-series whenever possible (i.e. if the exchange exercise between EURO4M and the relevant NMSs is verified) for ensuring the climatic records are free of systematic biases. The new software HOMER developed under the COST Action HOME- ES0601 will be used, along with the ACMANT procedure, a free software for homogenising monthly temperature series (http://www.c3.urv.cat/members/softpeter.html) and the C3 application of the Standard Normal Homogeneity Test.