

## CLIMAGRI – Climate Change and Agriculture

### FAO/UCEA CLIMAGRI*med* PROTOCOL FOR COLLABORATION

#### Development of a network in the Mediterranean region on climate change and agriculture

##### Technical component (iv)

Development of a land evaluation system useful for defining climatic risk for agriculture due to climate variability and climate change in the Mediterranean area at local and national scale

#### Report of the First Mission from Turkey

**Duration:** 5-12 June, 2004

**Place:** Sassari (Italy)

##### Collaborative Institutions:

- Agrohydrology Research and Training Centre (ARTC) Menemen/IZMIR, P.O. Box 35660, Menemen/IZMIR, Turkey.
- Soil and Water Research Institute of Rural Services, Research Institute of General Directorate of Rural Services (MRI), P.O. Box 35660, Menemen/IZMIR, Turkey.
- CNR-IBIMET, Institute of Biometeorology, National Research Council of Italy
- SAR-Sardegna, Agrometeorological Service of Sardinia
- ARPA-SMR, Regional Agency for Prevention and the Environment of the Emilia-Romagna Region

##### National Experts from Turkey:

- Orhan **ODEN**, Director of ARTC, Soil Fertility expert, E-mail: [orhanoden@yahoo.com](mailto:orhanoden@yahoo.com)
- Dilek **KAHRAMAN**, ARTC, Agricultural Engineer, E-mail: [dkahraman2000@yahoo.com](mailto:dkahraman2000@yahoo.com)
- Ulfet **OZSOY**, MRI, Soil and Land Fertility Expert, E-mail: [ulfetozsoy@hotmail.com](mailto:ulfetozsoy@hotmail.com)

##### Italian Experts participating to the meeting:

- Pierpaolo **DUCE** (CNR-IBIMET, Institute of Biometeorology, National Research Council of Italy); E-mail: [duce@ibimet.cnr.it](mailto:duce@ibimet.cnr.it)
- Andrea **MOTRONI** (SAR-Sardegna, Agrometeorological Service of Sardinia); E-mail: [motroni@sar.sardegna.it](mailto:motroni@sar.sardegna.it)
- Gabriele **ANTOLINI** (ARPA-SMR, Regional Agency for Prevention and the Environment of the Emilia-Romagna Region); E-mail: [gantolini@smr.arpa.emr.it](mailto:gantolini@smr.arpa.emr.it)

##### Objectives of the mission:

In the framework of the CLIMAGRI*med* project, the first meeting with international consultants from Italy was held the 14-21 November, 2003 in Menemen, Izmir, Turkey. This meeting was the starting point of studies for Turkey in the CLIMAGRI*med* project. During the meeting:

- The agricultural areas where to apply Land Evaluation analysis for climate risk in agriculture were determined as approximately 30 000 km<sup>2</sup>;
- The methods that should be used to calculate Bioclimatic indexes based mainly on growing degree days and a simplified water balance model were discussed.

As the Turkish team in the CLIMAGRI*med* project we had sufficient experience on the establishment of meteorological datasets and the calculation of bioclimatic indexes at that point. However, the main problem for our team was that we did not have any experience in Geographic Information System (GIS) and the software to manage and analyze data.

After the first meeting we selected 44 meteorological stations in the project area. The meteorological data were obtained from the State Meteorological Works. The soil data of the project area were obtained from the General Directorate of Rural Services.

The growing degree days and a simplified water balance model were calculated and maps were produced by using the ArcMap (time limited version) program.

#### **Summary of the meeting:**

The meeting was very useful to compare the methodology that we used to complete missing data, to calculate bioclimatic indexes and to produce climatological and pedological maps with those of the CLIMAGRI project.

Our team presented the results of the works that have been done between the first and second meeting. A detailed discussion on pedological LCA maps, Climatic LCA classification and reconstruction of meteorological data took place. The international consultants transferred the methodology of the CLIMAGRI project to our team.

Before the meeting our team had had some difficulties in data spatialisation using the ArcMap program. The explanations that were made during the meeting make this process clearer.

#### **Work Plan and Schedule of Activities:**

1. Reconstruction of Data:
  - The meteorological stations in the project area will be re-evaluated to confirm whether the data from the meteorological stations used in our previous analysis are available for our work or not.
  - The meteorological data will be reconstructed by using optimum interpolation which is called the minimum variance method.
  - The interpolation will be based on the altitude, distance from the sea and distance between stations. To reconstruct the dataset a Digital Elevation Model (DEM) of the project area will be obtained (250 m or 1000 m).
  - After reconstruction of the dataset, bioclimatic indexes will be calculated for each grid cell.
  - Climatic LCA classification and Cluster Analysis will be done
2. Mapping:
  - Pedological LCA classification map will be produced.
  - Climatic LCA classification will be produced before the third meeting in Turkey.

As examples, the precipitation and evapotranspiration maps of the project area are given below.

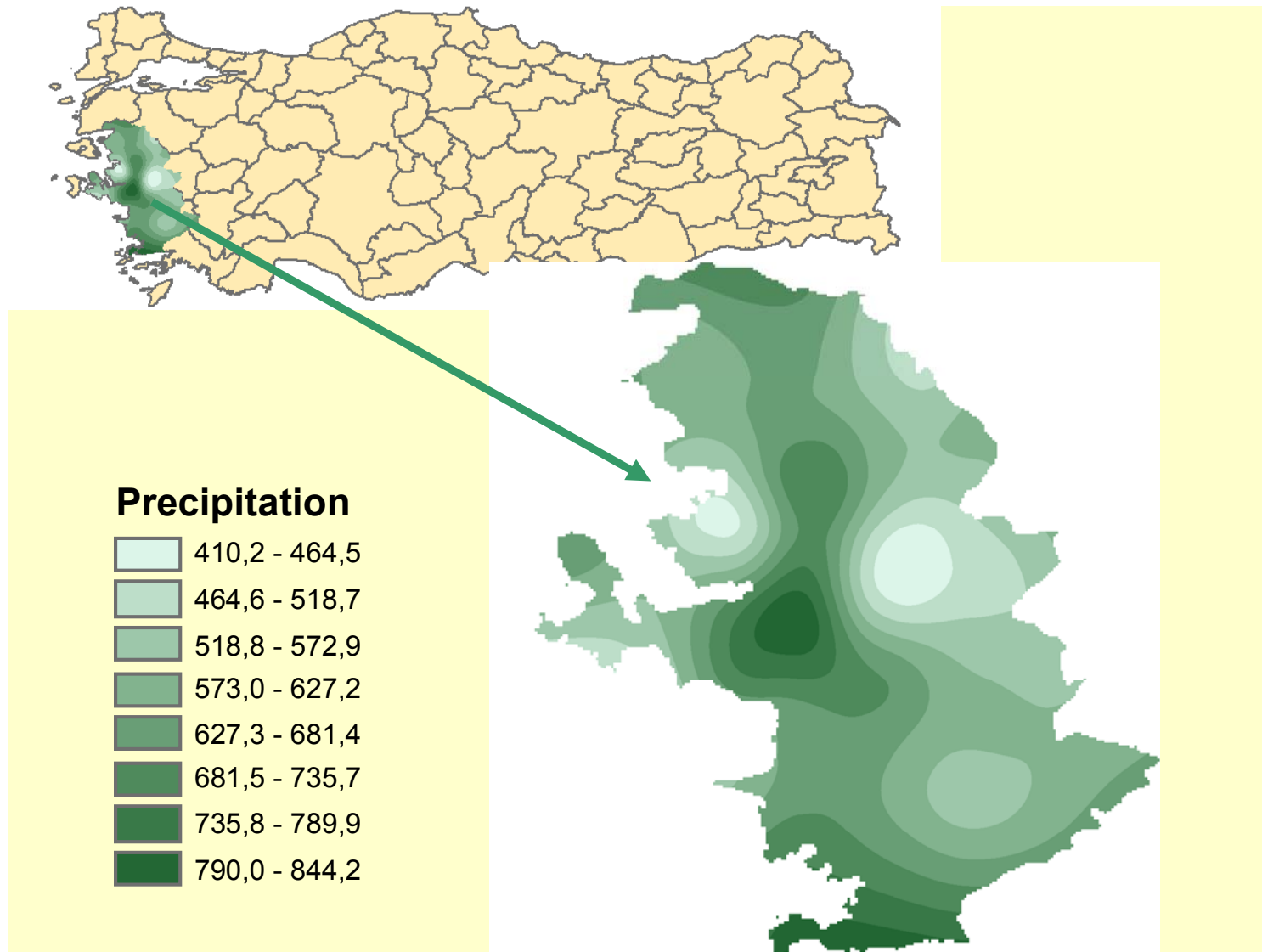


Figure 1. Precipitation Map of the Project Area in the Aegean Region

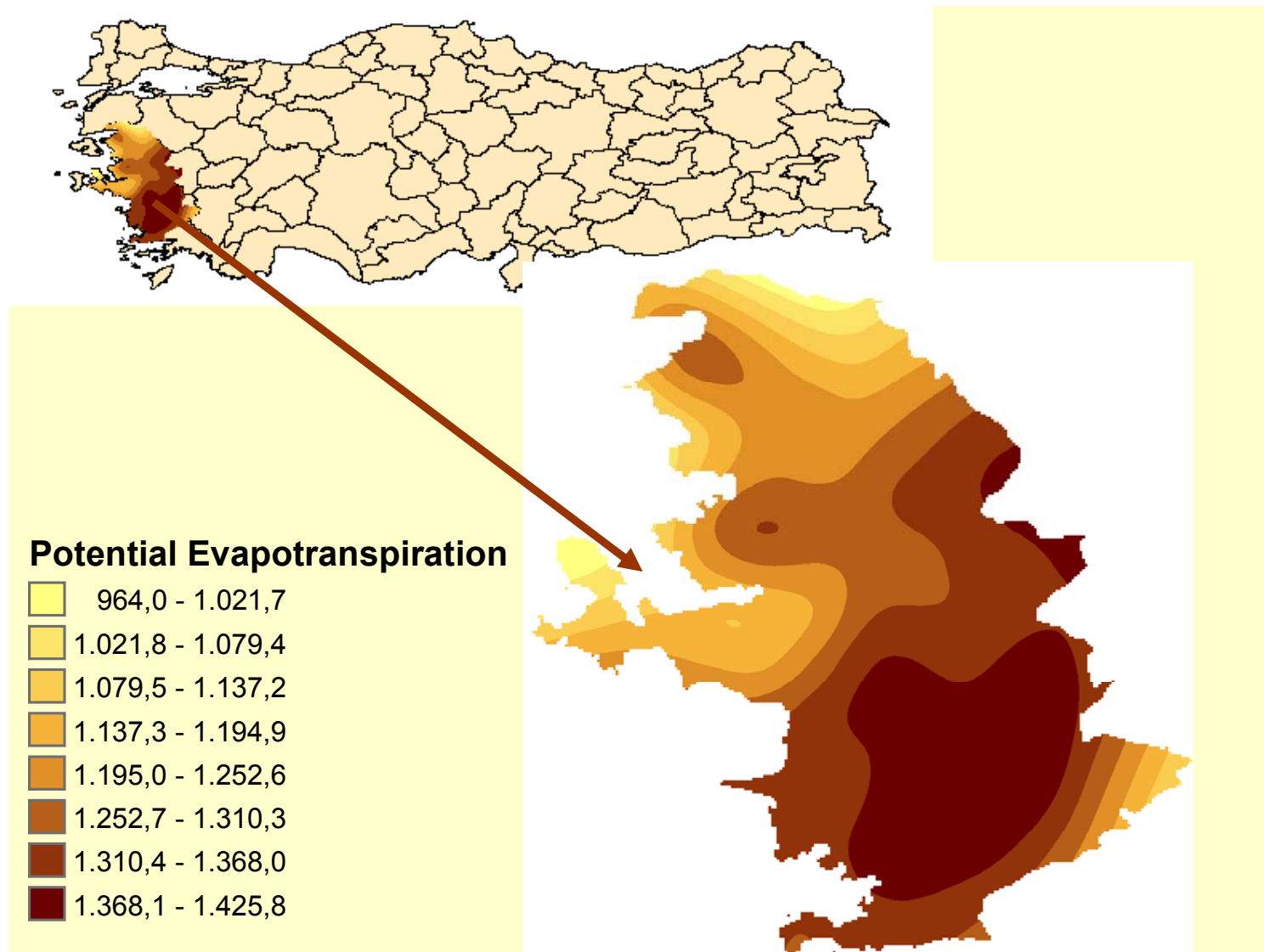


Figure 2. Evapotranspiration Map of the Project Area in the Aegean Region