



UNIVERSIDAD DE CÓRDOBA

# CLIMATIC INPUT VARIABLES IN AQUACROP

THEORY



ITALIAN AGENCY  
FOR DEVELOPMENT  
COOPERATION

# OBJECTIVES

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**1. Required weather data for AquaCrop**

**2. Agroclimatic data collection and processing**

**3. Climate files in AquaCrop**

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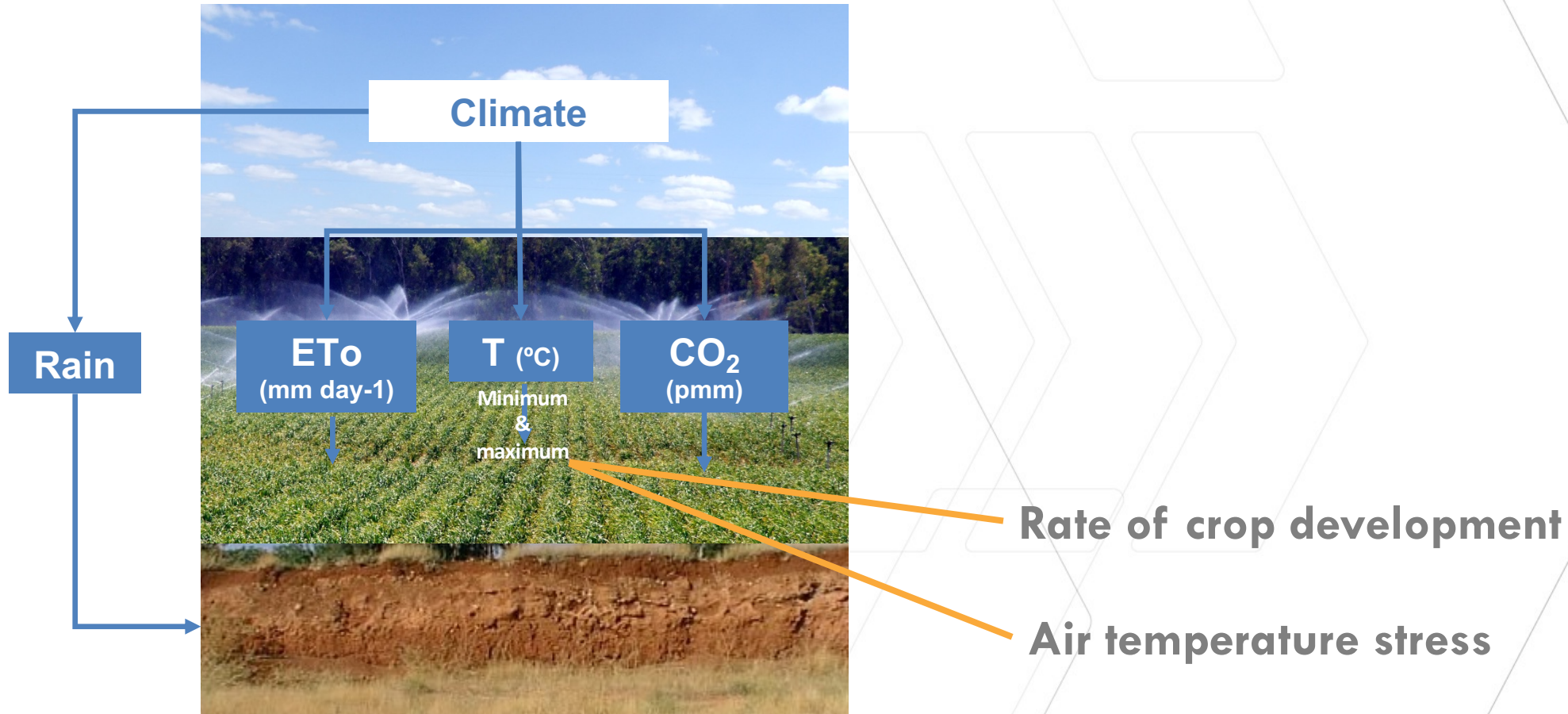


**1. Required weather data for AquaCrop**

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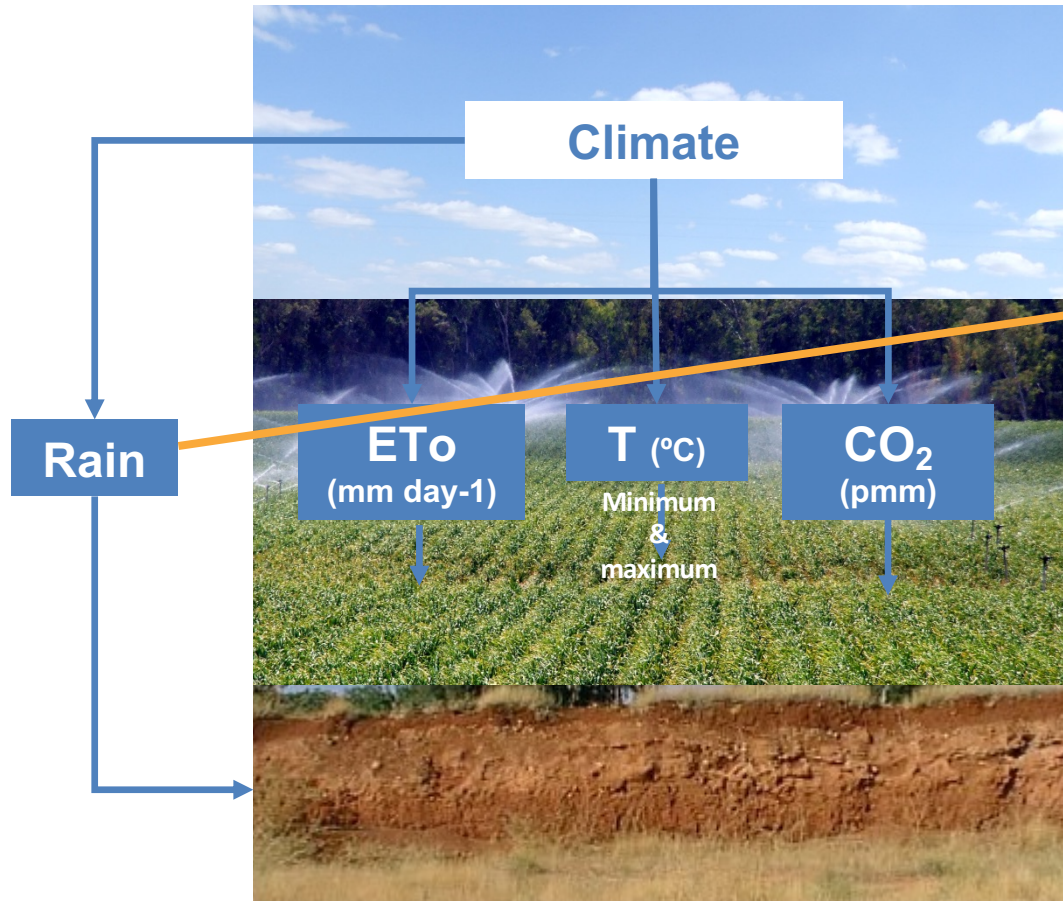
**3. Climate files in AquaCrop**

# 1. REQUIRED WEATHER DATA FOR AQUACROP



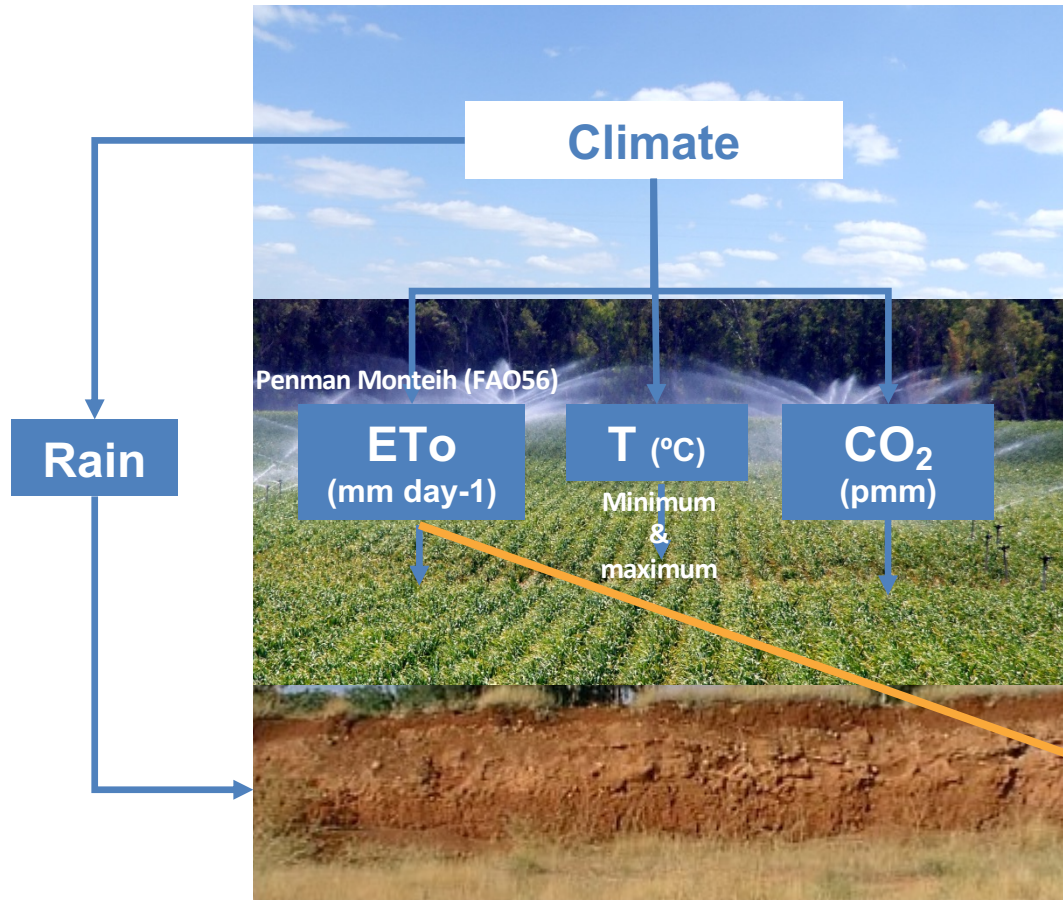


# 1. REQUIRED WEATHER DATA FOR AQUACROP



Water balance

# 1. REQUIRED WEATHER DATA FOR AQUACROP

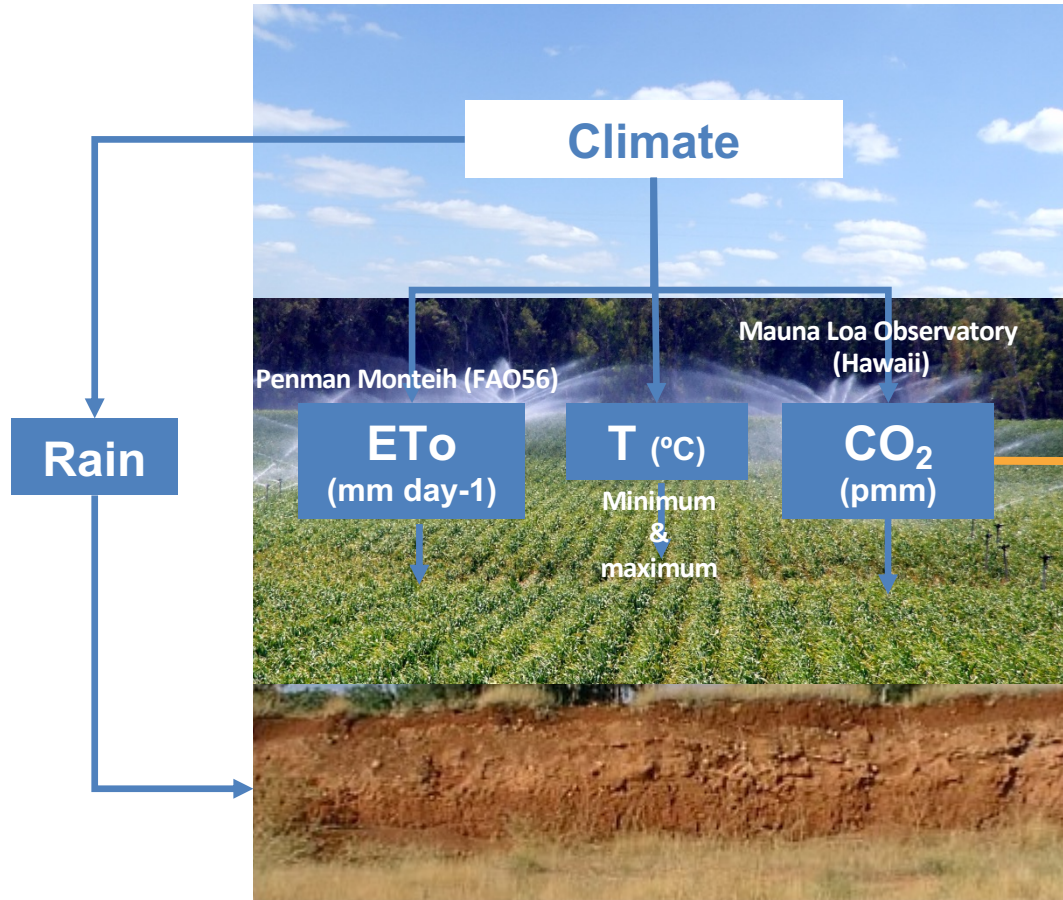


- Radiation
- Air temperature
- Air humidity
- Wind speed

$$ET_0 = \frac{0.408 \Delta (R_n - G) + \gamma \frac{900}{T + 273} u_2 (e_s - e_a)}{\Delta + \gamma (1 + 0.34 u_2)}$$

Water balance

# 1. REQUIRED WEATHER DATA FOR AQUACROP

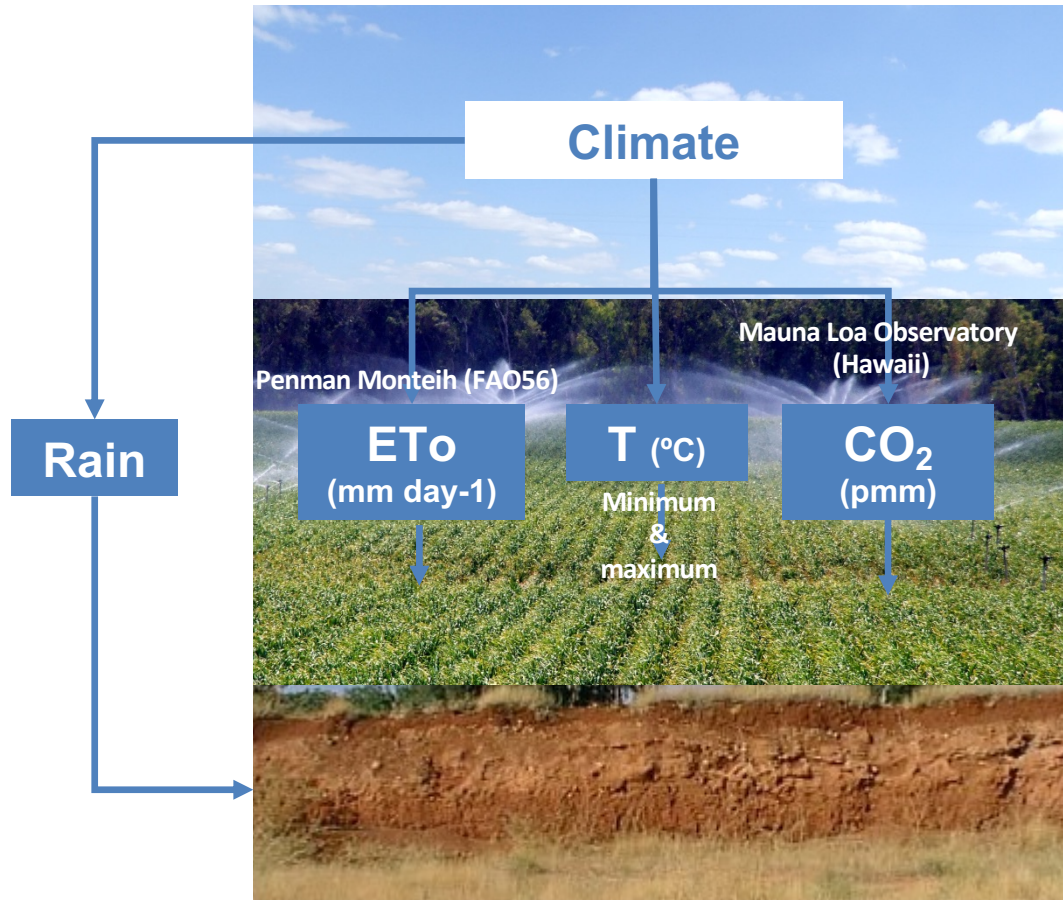


Adjustment of  $WP^*$

$$WP_{adj}^* = f_{CO_2} WP^*$$



# 1. REQUIRED WEATHER DATA FOR AQUACROP



**Daily or 10-day or monthly data**

The larger the time aggregation  
the less reliable is the outcome

**Simulation – Daily time step**



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## 2. AGROCLIMATIC DATA COLLECTION AND PROCESSING



Meteorological data recorded in local weather station

Humidity and temperature sensors



Anemometer (2m)

Pyranometer



Photos: JAJ Berni

## 2. AGROCLIMATIC DATA COLLECTION AND PROCESSING



### Meteorological databases

The screenshot displays the POWER Data Access Viewer interface. The main map shows the Mediterranean basin, including parts of Europe, North Africa, and the Middle East. A search bar at the top center contains the text "ArcGIS World Geocoding Service". On the left side, a panel titled "POWER Single Point Data Access" is open, showing the following options:

- 5. Select Output File Formats**
  - Select All
  - ASCII
  - CSV
  - GeoJSON
  - NetCDF
- 6. Select Parameters** (Limit 20 parameters)
  - The Climatology temporal period has the most parameters. Double-click folders to expand and show available parameters.
  - Search Parameters: [input field]
  - Meteorology (Moisture and Other)**
    - Precipitation
    - Specific Humidity at 2 Meters
    - Relative Humidity at 2 Meters
    - Surface Pressure
  - Meteorology (Temperature)**
  - Meteorology (Wind)**
  - Sizing and Pointing of Solar Panels and for Solar Thermal Applications**
    - Solar Cooking
    - Thermal Infrared Parameters

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### 3. CLIMATE FILES IN AQUACROP

