## Calculating the Aridity Index from meteorological time series

### 1-2-2301 2 CREDITS

Guided reading and hands-on calculations course

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The objective of the course is to acquaint students with the theoretical basis and the practical calculations of the Aridity Index based on standard meteorological data, by calculating the potential evapotranspiration ($ET_o$) according to the FAO-56 protocol.

This is a hybrid course combining reading of the theoretical aspects, and hands-on calculations of $ET_o$ from meteorological data. The syllabus is based on the manual developed by FAO[1]. By the end of the course students will be able to calculate the Aridity Index from standard meteorological data at different time-steps (hourly, daily, monthly, and annualy).

1. Introduction to evapotranspiration
   1.1. Evapotranspiration process
        1.1.1. Evaporation
        1.1.2. Transpiration
        1.1.3. Evapotranspiration (ET)
   1.2. Units
   1.3. Factors affecting evapotranspiration
        1.3.1. Weather parameters
        1.3.2. Crop factors
        1.3.3. Management and environmental conditions
   1.4. Determining evapotranspiration
        1.4.1. ET measurement
        1.4.2. ET computed from meteorological data
        1.4.3. ET estimated from pan evaporation
2. FAO Penman-Monteith equation
   2.1. Formulation of the Penman-Monteith equation
   2.2. Reference surface
   2.3. Meteorological factors determining ET
   2.4. Atmospheric parameters
   2.5. $ET_o$ calculated with different time steps
3. Calculating the Aridity Index

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[1] Allen R.G., Pereira L.S., Raes D., Smith M. 1998. FAO Irrigation and Drainage Paper No. 56, Crop Evapotranspiration. Food and Agriculture Organization of the United Nations, Rome, Italy. ISBN 92-5-104219-5.