

Atmospheric observing station at the Ebre River Delta – NW Mediterranean area

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Abstract

The Institut Català de Ciències del Clima (IC3) has established a network of eight monitoring stations across Spain (ClimaDat) with the aim of studying climatic processes in different ecosystems. One of these stations, DEC, is located in the Ebre River Delta (ERD), in the Spanish Mediterranean coast about 200 km SW of Barcelona. DEC is included in the InGOS network of atmospheric observing stations.

The ERD represents one of the most important wetland areas in the Mediterranean (320 km²). The dominant land-use in the ERD is agriculture (with a clear predominance of rice) although natural wetlands are also present. The ERD has a typical Mediterranean climate. Indeed, high temperatures, drought and humid S-SE winds are present in summer. Winters are mild without excessive cold or much rain, and with dominant dry N-NW winds.

Since late 2012 continuous in-situ atmospheric observations of greenhouse gases (GHG) (CO₂, CH₄, N₂O), together with several tracers (²²²Radon, CO) are being performed at the 10 m height tower of the DEC station.

Time series obtained so far from operating instrumentation (including a gas chromatograph, a cavity ring-down spectrometer, an atmospheric radon monitor, net radiometers and a meteorological tower) are presented. These series are analyzed (mean diurnal and seasonal variations) taking into consideration the fact that agronomic practices performed annually during the rice growing season influence atmospheric gases concentrations. Typical diurnal and synoptic variability of the GHG and related tracers at DEC will be illustrated by considering several study cases.