



## **The new Mediterranean background monitoring station of Ersa, Cape Corsica: A long term Observatory component of the Chemistry-Aerosol Mediterranean Experiment (ChArMEx)**

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The Chemistry-Aerosol Mediterranean Experiment (ChArMEx, <http://charmex.lsce.ipsl.fr/>) is a French initiative supported by the MISTRALS program (Mediterranean Integrated Studies at Regional And Locals Scales, <http://www.mistrals-home.org>). It aims at a scientific assessment of the present and future state of the atmospheric environment in the Mediterranean Basin, and of its impacts on the regional climate, air quality, and marine biogeochemistry. The major stake is an understanding of the future of the Mediterranean region in a context of strong regional anthropogenic and climatic pressures. The target of ChArMEx is short-lived particulate and gaseous tropospheric trace species which are the cause of poor air quality events, have two-way interactions with climate, or impact the marine biogeochemistry.

In order to fulfill these objectives, important efforts have been put in 2012 in order to implement the infrastructure and instrumentation for a fully equipped background monitoring station at Ersa, Cape Corsica, a key location at the crossroads of dusty southerly air masses and polluted outflows from the European continent. The observations at this station began in June 2012 (in the context of the EMEP / ACTRIS / PEGASOS / ChArMEx campaigns). A broad spectrum of aerosol properties is also measured at the station, from the chemical composition (off-line daily filter sampling in PM<sub>2.5</sub>/PM<sub>10</sub>, on-line Aerosol Chemical Speciation Monitor), ground optical properties (extinction/absorption/light scattering coeff. with 1- $\lambda$  CAPS PMex monitor, 7- $\lambda$  Aethalometer, 3- $\lambda$  Nephelometer), integrated and vertically resolved optical properties (4- $\lambda$  Cimel sunphotometer and LIDAR, respective), size distribution properties (N-AIS, SMPS, APS, and OPS instruments), mass (PM<sub>1</sub>/PM<sub>10</sub> by TEOM/TEOM-FDMS), hygroscopicity (CCN), as well as total insoluble deposition. So far, real-time measurement of reactive gases (O<sub>3</sub>, CO, NO, NO<sub>2</sub>), and off-line VOC measurements (cylinders, cartridges) are also performed. A Kipp and Zonen system for monitoring direct and diffuse broadband radiative fluxes will also be in operation soon, as well as an ICOS/RAMCES CO<sub>2</sub> and CH<sub>4</sub> monitoring instrument.

Through this unprecedented effort and with the support from ChArMEx, ADEME, and CORSiCA programs (<http://www.obs-mip.fr/corsica>), this observatory represents so far the most achieved French atmospheric station having the best set of instruments for measuring in-situ reactive gases and aerosols. It stands out as the station of not one laboratory but of a large number (see list of co-authors). It provides "real time" information useful to the local air quality network (Qualitair Corse, <http://www.qualitaircorse.org/>) concerning EU regulated parameters (O<sub>3</sub>, PM<sub>x</sub>). This station aims providing quality controlled climatically relevant gas/aerosol database following the recommendations of the EU-FP7 ACTRIS infrastructure, EMEP and WMO-GAW programs. Atmospheric datasets are currently available at the MISTRALS database (<http://mistrals.sedoo.fr/ChArMEx/>) and soon at the ACTRIS & GAW databases.

After a brief presentation of the Cape Corsica Station (location, climatology, instrumental settings . . . ), we present here the first months of aerosols properties (optical / chemical / particle size) obtained at this station.

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