



## Two years of near real-time observations of the chemical composition of submicron aerosols in Cape Corsica obtained by Q-ACSM

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As part of the MISTRALS/ChArMEx (Mediterranean Integrated Studies at Regional And Local Scales/the Chemistry-Aerosol Mediterranean Experiment; <http://www.mistrals-home.org>; <http://charmex.lsce.ipsl.fr>) and the CORSiCA (<http://www.obs-mip.fr/corsica>) programs, 2-year continuous observations of near real-time chemical composition of submicron aerosols were performed between June 2012 & July 2014 at the Cape Corsica atmospheric supersite (<http://gaw.empa.ch/gawsis/reports.asp?StationID=2076203042>), a remote marine site in the Western Mediterranean.

Submicron organic aerosols (OA) and the major inorganic salts (sulfate, ammonium, nitrate) were monitored every 30 min using a Quadripole Aerosol Chemical Speciation Monitor (Q-ACSM; Aerodyne Res. Inc. MA, USA). Quality control of this large dataset (24-month continuous observations) was performed through closure studies (using co-located SMPS and TEOM-FDMS measurements), direct comparisons with other on-line / off-line instruments running in parallel (filter sampling, OPC, nephelometer ...), and large intercomparison of 13 Q-ACSM performed within the EU-FP7 ACTRIS program (<http://www.actris.net/>).

Source apportionment of OA was then performed on a monthly basis using the SourceFinder software (SoFi, <http://www.psi.ch/acsm-stations/me-2>) allowing the distinction between hydrogen- and oxygen-like organic aerosols (HOA and OOA, respectively). This monthly resolved source apportionment was first compared with co-located real-time tracer measurements (NO<sub>x</sub>, BC, CO, VOC ...) available at the Cape Corsica station. Seasonal patterns of the various properties of (secondary) OOA (O<sub>Sc</sub>, O/C ratio ...) were then investigated from monthly resolved source apportionment results (monthly OOA mass spectra) obtained over the period June 2012 - July 2014.

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