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Air mass characterization during the DAURE field campaign by PTR-TOF

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Volatile organic compounds (VOCs) are emitted into the atmosphere from a wide variety of biogenic and anthropogenic sources. Although some of the sources are well characterized, many uncertainties remain about the fate of these compounds in the atmosphere and their role in organic aerosol formation.
Here we present measurements using Proton Transfer Reaction Time-of-Flight (PTR-TOF) Mass Spectrometry during the DAURE field campaign ("Determination of the sources of atmospheric Aerosols in Urban and Rural Environments in the western Mediterranean") obtained during February and March 2009. Measurements were performed at a rural mountain site located in the Montseny Natural Park 40 km to the NNE of the city of Barcelona, and 25 km from the Mediterranean coast. Volatile organic compounds where identified and quantified using PTR-TOF with 1 minute time resolution. The instruments mass resolving power of 4000 - 5000 and a mass accuracy of 5 ppm allows for the unambiguous sum-formula identification of e.g. hydrocarbons (HCs) or oxygenated VOCs (OVOCs). The high time resolution allows separating out on site pollution events.
Air masses impacted by biomass-burning, urban, marine and vegetation emissions are characterized using tracers like acetonitrile, aromatics, dimethyl sulfide or biogenic compounds (terpenoids) and the degree of photochemical processing is inferred from the data.