



The influence of organic and inorganic gases during New Particle Formation (NPF) events at the Mediterranean remote site of ERSA in Cape-Corsica during the summer of 2013.

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As part of the CHARMEX (Chemistry Aerosol Mediterranean Experiments) project, more than one hundred organic and inorganic gaseous compounds were measured in the summer of 2013 at the Mediterranean remote site of ERSA in Cape-Corsica. During this period, New Particle formation (NPF) events were identified from July 31st to August 2nd when air masses originated from the North-eastern sector (Southern Europe). The results were compared to a non-NPF event from July 21st to July 23rd for which the same wind sectors were identified. They showed that the particles number [10-20 nm] measured by SMPS (Scanning Mobility Particle Sizer) were more correlated with carbon monoxide (CO) during non-NPF events indicating an influence of more polluted and more aged air masses (residence time of CO of ~60 days). Sulfuric acid (H₂SO₄) and sulfur dioxide do not show a significant influence in the formation of nucleation events. On the other hand, biogenic Volatile Organic Compounds (BVOCs) such as isoprene, and mono-terpenes as well as their oxidation products (e.g. MACR+MVK, MTOP) showed good correlation during NPF-events in the range of (r from 0.45 to 0.59) higher than the ones reported during non-NPF events (0.11-0.34) highlighting the importance of these BVOCs on NPF days. The comparison of measured vs calculated reactivity (Zannoni et al, 2016) showed that during NPF-events, the missing part of OH reactivity was higher. It indicates that unmeasured species like sesquiterpenes, organo-nitrates, or oxygenated compounds may play a significant role in such events.