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Development and adaptation of sensors and samplers for vertical profiling using fixed-wing drones in the context of the Cooperation to Unravel the RolE of Atmospheric Aerosols over the Amazonian Basin (CURE-3AB).

Maximilien Desservettaz[1], Christos Keleshis[1], Panayiota Antoniou[1], Panagiotis Vouterakos[1], Yunsong Liu[1], Christos Constantinides[1], Agapios Agapiou[1], Roland Sarda-Esteve[1,2], Dominique Baisne[2], Greg Kok[3], and Jean Sciare[1]

[1]The Cyprus Institute, Climate and Atmosphere Research Centre, Aglantzia, Cyprus (m.desservettaz@cyi.ac.cy)

[2]Laboratoire des Sciences du Climat, France

[3]Environmental Science, Colorado, USA

The Cooperation to Unravel the Role of the Atmospheric Aerosol over the Amazon Basin using drones (CURE-3AB) project has yielded new technical solutions to perform high quality in-situ atmospheric observations in the lower troposphere (0-2 km) with Unmanned Aerial Vehicles (UAVs). An Ozonesonde (EN-SCI ECC, Model 2Z), designed for regular O3 radio sounding, has been adapted to perform on-line measurements of Ozone onboard the drone. A 3D printed low-cost pollen/spore collector has been developed to replicate reference instruments (VPPS2000) and adapted to perform onboard our UAV. Finally, an optical particle counter (AlphaSense) and a custom-made drying system have been fitted on a third drone. The three vehicle/instrument tandems will be deployed in the proximity of the Amazonian Tall Tower Observatory during the CURE-3AB campaign (delayed due to pandemic). We present the instrumental developments, setups, and preliminary test results performed with our UAVs at the Cyprus Institute private airspace.