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Monitoring air pollution and climate change in the Eastern Mediterranean Middle East (EMME) region: Challenges and opportunities

Almost 400 million people live in the Eastern Mediterranean Middle East (EMME); a region where climate change is already evident (the number of extremely hot days has doubled in the region since 1970). In the near future, this region could become so hot that human habitability is compromised. The goal of limiting global warming to less than 2 °C, agreed at the 2015 Conference of Parties (COP21) of the United Nations Framework Convention on Climate Change in Paris will not be sufficient to prevent this scenario. In combination with increasing air pollution and windblown desert dust, the environmental conditions could become intolerable and may force people to migrate. The lack of constrains by accurate in-situ atmospheric data of key climate forcers has been identified as a major limitation for the validation/performance of climate models over the EMME. This may have a strong impact in the design of efficient regional/national Climate Change Mitigation and Adaptation strategies, which are usually fed by high-resolution regional climate projections. In this context, the rapid implementation of a regional atmospheric network with high quality data following international standards appears as a high priority for the entire EMME region. With the support of the ACTRIS pan-European Research Infrastructure, the Cyprus Institute is currently putting unprecedented efforts to establish the first ever long-term observations of climate forcers (greenhouse gases, aerosols, clouds, reactive gases) in the EMME region. This infrastructure gathers a ground-based supersite and a fleet of Unmanned Aerial Vehicles equipped with miniaturized sensors to scrutinize the vertical distribution of air pollutants in the first 5 km of the atmosphere. This infrastructure is seen as the first step towards a regional coordinated atmospheric network that is still missing in the Middle East.

Biography

Jean Sciare is the Director of the Energy Environment and Water Research Center of the Cyprus Institute, Cyprus. His main expertise covers the experimental characterization of atmospheric pollutants; addressing issues related their impacts on air quality, health and climate. He is currently leading the development of several major research infrastructures in Cyprus, contributing to the long-term observation of key climate forcers in the Eastern Mediterranean Middle East region. He has co-authored more than 100 international refereed publications and more than 200 presentations at international conferences devoted to atmospheric chemistry and physics.

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