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Continuous monitoring of atmospheric aerosols by LIDAR remote sensing technics in the south-east of France at the Observatoire de Haute Provence and Marseille Longchamp sites in the framework of ACTRIS-France and of the ANR COoL-AMmetropolis project.

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Since 2018, the continuous monitoring of atmospheric aerosols by remote sensing technics was developed in the Aix-Marseille area, south-east of France. Two complementary sites located about 70 kilometers from each other, the first one at the Observatoire de Haute Provence (OHP) in a rural area and the second one in an urban environment at Longchamp site in the Marseille city center, were equipped with automatic aerosols Lidars (CIMEL CE376) and photometers (CIMEL CE318-T). The OHP site is part of the ACTRIS-France infrastructure for the long-term monitoring of aerosols, water vapor and reactive trace gases. The Longchamp one, that belongs to the regional air quality agency ATMOSUD, should join this infrastructure soon as well and is supported by the ANR COoL-AMmetropolis project for the present study. The ACTRIS-Fr data are hosted in the national AERIS/ICARE database. Furthermore, two other sites are equipped with remote sensing facilities : a ceilometer (Vaisala CL31) at Marignane, 25 km west of Marseille center, and radiosoundings at Nimes, about 70 km away. The datasets collected at the four sites allow us to study the boundary layer height variability in this coastal area, which is characterized by complex atmospheric dynamics and a tortuous topography. The boundary layer height is a key parameter to understand the variability of greenhouse gases and pollutants and its determination will be of great help for air quality and climate related studies. Also, our Lidars datasets are exploited to study the long-range transport of aerosols plumes outcoming from different sources (pyrogenic, volcanic, desertic...) and to characterise the optical properties of such aerosols, which play a role on air quality and climate that needs to be better characterized. An overview of the results obtained so far will be presented.

