

The OCAPI collaborative platform: study of two particle pollution episodes in 2016 in Paris

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Air pollution and its impacts are subject to an expanded interest since the middle of the 20th century, especially in urban areas which gathered an important part of emission sources. These polluted urban air masses are composed by a complex mixture of gases and aerosols coming from various emission sources (vehicular traffic, industries, residential heating, agricultural activities, natural sources) or chemical processes. To efficiently reduce this pollution and its impacts on population, it is important to understand its drivers, its sources and its impact on human health.

To get some insights in Paris air pollution, a collaborative measurement platform called OCAPI ("Observation de la Composition Atmosphérique Parisienne de l'IPSL") has been built and implies several Parisian research laboratories of IPSL institute (CEREA, LSCE, LMD, LISA, LATMOS, LERMA and METIS) as well as public agencies and institutes in charge of Paris air pollution monitoring (AIRPARIF, INERIS). OCAPI platform aims at gathering skills and instruments of these laboratories to measure the composition and dynamics of Paris atmosphere.

In this framework, multi-site measurements were performed during two intense particle pollution episodes which occurred in March 2016 and between November and December 2016. These two episodes were characterized by different meteorological conditions and different type of emission sources. Indeed, March episode was related to intense agricultural activities and high ammonium nitrate contribution to aerosol composition; while end of year episode was related to low wind speed, cold conditions and thin boundary layer which favoured the stagnation of locally emitted pollutants. This latter episode was characterized by large contribution of organics in aerosol composition.

In this presentation, a study of these two episodes will be presented. We will first present the context and the OCAPI platform. Then, first results of dynamics and aerosol composition measurements will be shown to discuss the drivers of these two episodes. Finally conclusions will be drawn and perspectives will be given by presenting the objectives of the forthcoming EPPI project which will deal with the OCAPI platform measurement device.