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The objective of the Parisfog field experiment (SIRTA Observatory, 20 km South Paris, 2006-2007 winter) was to document the radiative, thermodynamics and dynamics processes during the fog life cycle, which depend and modify the microphysical properties of the atmospheric particles, from the Aitken and accumulation mode aerosols to the fog droplets. The radiative processes concern the extinction of light and the radiative cooling of the surface atmospheric layer. The dynamics and thermodynamics processes design the advection, the turbulence in the surface atmospheric layer, and the condensation of water vapour on the atmospheric particles. The experimental set-up was composed by 2 visibilimeters, a telemeter, 4 optical particle counters, a pyrgeometer, a pyranometer, as well as sonic anemometers, thermometers and humidity sensors mounted on a meteorological mast. Fog life cycle is described and interactions are observed between particle concentration, horizontal visibility, radiative cooling, advection and turbulent kinetic energy. The dense and extended fog of the 18-19 February night, one of the best documented during ParisFog, is the case study.

