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Application of a multi scale approach over the area of Caen (Normandy, France) to analyse the influence of local aerology on photooxidant pollution dynamics on coastal areas

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On coastal areas, the photooxidant pollution has a complex behaviour. The polluted air mass is differently influenced by the land-sea-breeze system across spatial and time scales. At a microscale, topographical and land use characteristics are the major factors controlling the dynamics of the local aerology. However, even if, at a mesoscale, the regular French network of "Météo France" enables us to define conditions which favour sea breeze arrival, the stations are not sufficiently dense to analyse the influence of local factors. To fill this gap, measurements were performed with a new strategy.

Two intensive observation periods during summer were carried out in order to understand the strength and direction, the hours of appearance and the spatial extent of the sea breeze. These episodes have been documented through Davis stations. But, during the night, the air fluxes are too weak (less than $1 m.s^{-1}$) to be detected by the stations. Some itinerant measurements with a balsa wind vane were carried out. The aim was to measure these fluxes in a better way, and mainly to take into account the topoclimatic effects. Indeed, in radiative situation (weak wind and clear sky), microscale air fluxes depend on topographical conditions. Exploratory results highlight an overlapping night-breezes system with land-breezes, slope-breezes and stream channelled breezes. Using the data obtained, a map of local aerology is proposed over the area of Caen.

The application of meso-micro scales measurements provides informations about sea-

breeze characteristics and about the interrelations between several air fluxes during the night. These results may explain part of the photooxidant pollution dynamics with a land-sea-breeze system on coastal areas.