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1. INTRODUCTION

In order to help in designing ozone abatement policy, development of combined photochemical and dynamical models is essential to better understand and forecast air pollution events over urbanized and rural areas. There is presently an important effort in developing and improving meso-scale chemistry-transport models, the more advanced ones involving an aerosol scheme. Preliminary works confirm the important contribution of the regional scale processes on the pollutant concentrations observed at the local scale. This is particularly true for ozone whose concentration depends on reservoir species likely to be transported over long distances. Thus, comparisons of model output against field measurements require a detailed 4-D data base of primary pollutants emission together with the dynamics and chemical composition of the atmosphere. The ESCOMPTE field campaign has been designed to provide us with this database for some pollution events. The main characteristics of the ESCOMPTE programme can be found at the URL <http://medias.obs-mip.fr/escomppte>.

2. THE ESCOMPTE AREA AND PERIOD

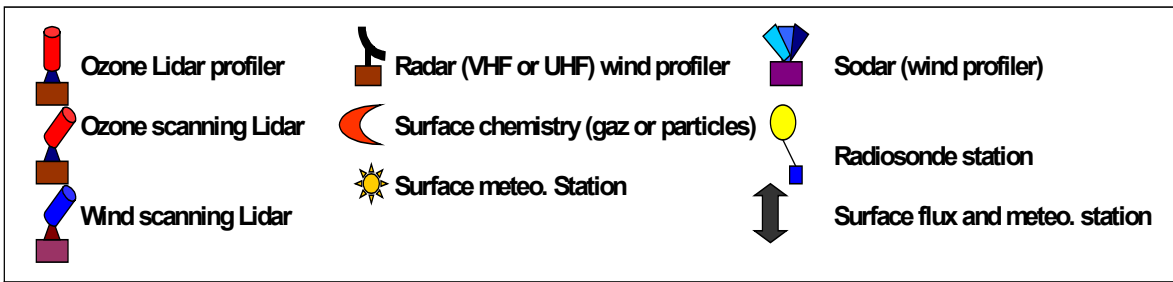
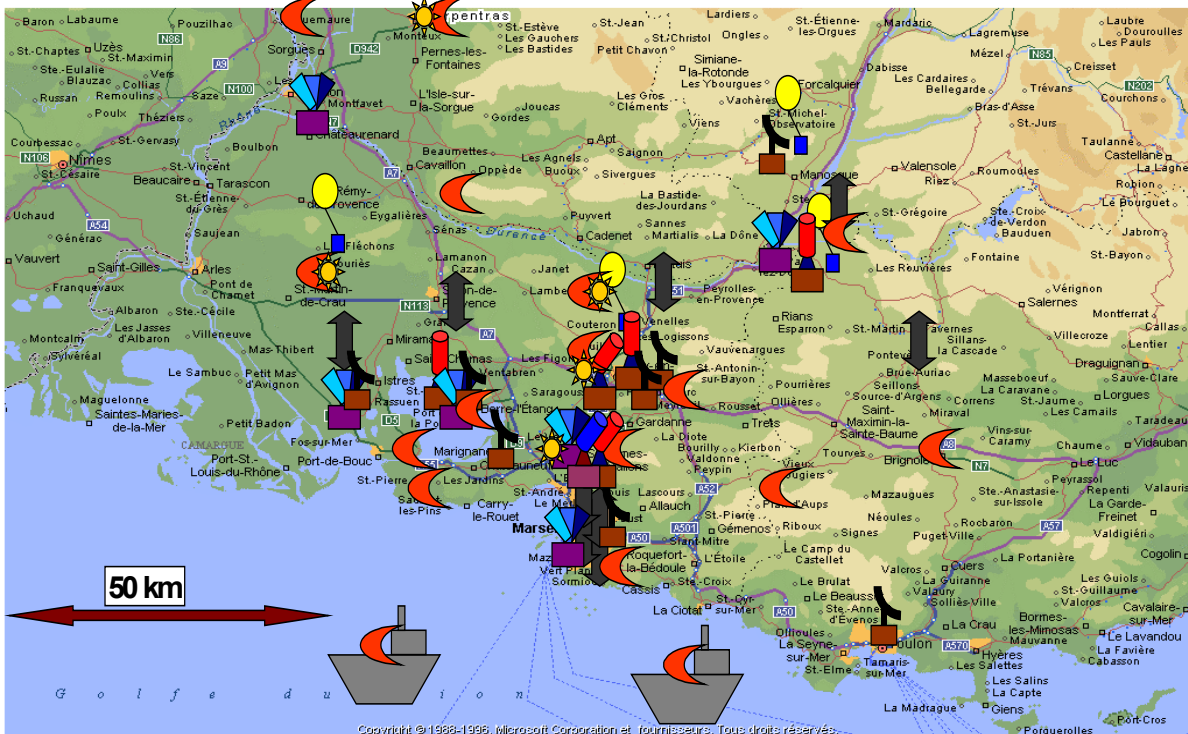
An area around the Marseille city and Berre pond, in the Southeastern part of France, has been selected to host the ESCOMPTE field campaign. This site of 120kmX120km fulfills most of the conditions required for the project : strong pollutant sources (urban and industrial) within the experimental area and high occurrence of

photochemical pollution events ; existence of a dense, operational pollution monitoring network ; a channeling of pollutant plumes by sea-breeze circulations and terrain features. The experiment was conducted between June 4th and July 16th, 2001.

3. EXPERIMENTAL SET UP

The ground-based platforms, specifically deployed for the experiment, are represented on the figure below. They involve 20 stations, equipped for gas (ozone, nitrogen oxides, VOCs, ...) and/or particles measurements ; among them, two were installed on ships, and two mobile stations (cars, not indicated on the figure) were placed according to the plume locations. The surface energy budget was measured on 9 sites to cover the landscape variety in the area ; among them, four were in the urbanized area of Marseille (see Mestayer and Durand, 3.1) ; at some sites, fluxes of trace gases (ozone, NOx) were also measured for emission/deposition velocities computation. The meteorological basic parameters (wind, temperature, moisture and radiation) were measured on the 9 abovementioned and on 5 complementary sites. Wind profile was continuously measured on 12 sites by 7 sodars, 4 UHF and 4 VHF radars. A scanning Doppler Lidar measured the 3-D wind field over the Marseille agglomeration (see 3.1). 3 upward pointing, and 2 scanning ozone lidars were set-up on a SW-NE axis (main breeze axis) through the domain. 4 radiosonde systems, 2 of them capable of ozone profiling, were activated during the Intense Observing Periods (IOPs). During these IOPs, the pollutants plumes were tracked by 33 constant-volume balloons, launched in the boundary layer from the emission areas (Marseille city or Berre

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pond) ; they were equipped with radiosondes, some of them with an ozone probe. 7 aircraft were flown during pollution episodes ; 4 (DO 128 from IMK, FRG ; Fokker 27 from INSU, France ; Merlin 4 and Piper Aztec 23 from Météo-France) were able to in situ document dynamics and chemistry ; a ULM from IFU (FGR) measured Ozone, aerosol and UV radiation ; the Falcon 20 from DLR (FRG) embarked the Doppler lidar WIND ; and a Piper Aztec 28 embarked an IR camera for surface temperature characterization over the Marseille area (see 3.1).

4. THE CAMPAIGN PROGRESS

The first week was devoted to a QC/QA operation. This was completed by wing-to-wing flights performed at the end of the campaign. 5 IOPs for a total of 15 days were documented, two of them corresponding to breeze circulation with high pollution levels, and two characterized by a

“plume regime”, with a channeling of the pollutants towards the Eastern part of the domain.

5. ACKNOWLEDGEMENTS

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6. REFERENCES

Mestayer, P.G. and P. Durand : The UBL/CLU-Escompte experiment : description and first results. *Proc. 4th symposium on Urban Climatology*, may 2002, Norfolk, VA (Paper 3.1)