# SPICAV-SOIR mesospheric aerosols observations and modelling

V. Wilquet(1), A. Picialli (2,3), F. Daerden(1),  R. Drummond(1), A. Mahieux(1),
S. Robert(1), A.C. Vandaele(1), F. Montmessin(2,3), J.L. Bertaux(2,3)

(1) Planetary Aeronomy, Belgian Institute for Space Aeronomy, 3 av. Circulaire, B-1180 Brussels, Belgium; (2) LATMOS, 11 Boulevard D'Alembert, 78280 Guyancourt, France ; (3) IPSL, Université UVSQ, 78 Saint-Quentin en Yvelines, 78280 Guyancourt, France.

The SPICAV-SOIR instrument on-board VEX performs coordinated solar occultation measurements with SPICAV-UV (118–320 nm), SPICAV-IR (0.65–1.7 µm,) and SOIR (2.2 - 4.4  m) and is able to target the layer of aerosols above the clouds at the terminator. From independent retrievals for each channel, it has been postulated that the upper haze on Venus includes, in some instances, a bimodal population, one type of particles with a radius comprised between ~0.1 and 0.3 µm and the second type, detected in the IR, with a radius varying between ~0.4 and 1 µm. In addition, a high temporal variability in the aerosol loading was inferred from SOIR observations over 4 years, as well as a latitudinal dependency.

We propose to refine the size distribution retrieval of aerosols based on the Mie theory and on the observed spectral dependence of light extinction in the spectra through a unique retrieval procedure combining the data from the 3 channels of the instrument. We will also search for a dependence on altitude of the aerosol particles size distribution and of aerosol composition and compare the variations in aerosol loading to other key parameters retrieved such as water and SO2 composition or temperature.

We also aim at developing a microphysical model to calculate the time dependent haze particle size distributions assuming an initial size distribution of background aerosols. The model would simulate the formation, growth, evaporation, and sedimentation of particles. Results of this on-going research will be presented and discussed.