

## DUSTFALL – IMPACT OF SAHARA DUST ON AIR QUALITY FORECASTS IN AUSTRIA

MARION ROTHMÜLLER (1)\*, ANNETT BARTSCH (1), CLAUDIA FLANDORFER (1), ANNE KASPER-GIEBL (2), MARCUS HIRTL (1), GRIŠA MOČNIK (3,4), GERHARD SCHAUER (1), STANA SIMIC (5), WOLFGANG SPANGL (6)

(1) Central Institute for Meteorology and Geodynamics (ZAMG), Vienna, Austria, (2) Technical University of Vienna, Institute of Chemical Technologies and Analytic, Vienna, Austria, (3) Aerosol d.o.o., Ljubljana, Slovenia, (4) Jozef Stefan Institute, Ljubljana, Slovenia, (5) University of Natural Resources and Life Sciences, Institute for Meteorology, Vienna, Austria, (6) Environment Agency Austria, Vienna, Austria

\*Marion.rothmueller@zamg.ac.at

Aerosolized Particulate Matter (PM) has an important influence on the radiation budget, cloud physics and cloud properties, the visibility, but also on air quality and consequently on health. PM in urban regions is mostly of anthropogenic origin (traffic, burning of fossil and biomass fuels, industrial pollution) whereas natural sources contribute the majority of PM on a global scale, e.g. mineral dust from the Sahara. The Saharan dust (SD) is episodically transported over thousands of kilometers with synoptic wind patterns towards Europe and reaches Austria about 20 to 30 days per year. This can cause an increase of the PM-concentration and in extreme cases also limit value exceedances far away from the region of origin.

Forecast of PM and consequently air quality is important in the context of protecting the population from its adverse effects. Therefore, the Central Institute for Meteorology and Geodynamics (ZAMG) computes forecasts for the SD-concentration in the atmosphere as well as forecasts for ground-level PM-concentrations twice a day which are published on the ZAMG-homepage

(<http://www.zamg.ac.at/cms/de/umwelt/luftqualitaetsvorhersagen>). Besides these forecasts, also air quality for the same and the following day is presented on the homepage in form of the “Common Air Quality Index (CAQI)”. Since forecasts tend to underestimate actual PM-concentrations, the models have to be evaluated and improved regularly.

The recently started project focuses on the detection and quantification of the intensity of Sahara dust events (SDEs) at the high altitude meteorological observatory at Mount Sonnblick (SBO). To include information from monitoring sites of the Austrian air quality networks, an optical method for the determination of SDEs on PM<sub>10</sub> filter samples will be evaluated, and subsequently used to identify regional differences in the occurrence and intensity of SDEs. We will compare the actual ground level measurements with the ZAMG forecasts for SD-PM. Forecasts of the SD-concentration in the atmosphere are evaluated with spectral UV-measurements and the resulting Aerosol Optical Depth (AOD).

The overall aim of the project is an improvement of the detection of SDEs as well as an improvement of the insights and processes concerning the long-range transports of SDEs. Consequently, this allows an improvement of model forecasts of PM-concentrations and an improvement of the air quality forecast during SDEs.