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WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS): Research Implementation Status

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Strong winds cause lifting of large amounts of sand and dust from bare, dry soils into the atmosphere. For countries in and downwind of arid regions, airborne sand and dust presents serious risks to the environment, property and human health. Impacts on health include respiratory and cardio-vascular problems, eye infections and in some regions, diseases such as meningitis and valley fever. Dust can efficiently carry irritating spores, bacteria, viruses and persistent organic pollutants. It can also efficiently transport nutrients to parts of the world oceans and affect marine biomass production. Other impacts include negative effects on the ground transport, aviation, agriculture and visibility. The Inter-governmental Panel on Climate Change (IPCC) recognizes dust as a major component of the atmospheric aerosol that is an essential climate variable. Dust aerosol has important effects on weather through feedback on atmospheric dynamics, clouds and precipitation formation.

Approximately 15 centres around the world provide sand and dust research operational forecasts. Many are operated by national meteorological services of the World Meteorological Organization (WMO). Sand and dust storm models can substantially reduce risk by providing dust concentration predictions for several days in advance. Numerical weather prediction systems that drive these models use complex parameterizations and assimilation of satellite, and surface-based observations to predict winds, clouds, precipitation and dust mobilization, transport, and removal from the atmosphere. Sand and dust forecast products contribute to the mitigation and reduction of risk through research based advances in understanding and forecasting products. Observations of sand and dust are made by many agencies and some of them are being coordinated globally through the WMO Global Atmosphere Watch (GAW) programme.

In 2006, WMO and partners initiated the implementation of the Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) in order to improve the capabilities of countries affected by dust to reduce risks associated with airborne sand and dust. This project is in response to the desire of more than 40 WMO member countries to improve capabilities for more reliable sand and dust storm forecasts. The project has strong crosscutting features: it relies on real-time delivery of products; it integrates research communities (modelling, observation groups, and effects) and communities of practice (e.g. medical, aeronautical, agricultural users). There are two already established SDS-WAS nodes (Asian and North-Africa-Europe-Middle East) that coordinate implementation of the project objectives at regional levels. This presentation will review current status and future steps in the project implementation.