

Training Workshop on Sand and Dust Storms in West and Northern Africa

Last year, during the 9th International Workshop on Sand and Dust Storms held in La Laguna (Tenerife), the **SDS-WAS NAMEE Regional Center** (Sand and Dust Storm Warning Advisory and Assessment System for Northern Africa, Middle East and Europe) was asked to organize a Training Workshop on mineral airborne dust forecast and observational products aimed to western and northern African countries.

To satisfy this request, **AEMET** is pleased to announce this **Training Workshop on Sand and Dust Storms in West and Northern Africa** that will be held in **Dakar, Senegal from 9th to 11th December 2019** in collaboration with the **WMO** (world Meteorological Organization), **BSC-CNS** (Barcelona Supercomputing Center), **EUMETSAT** (European Organization for the Exploitation of Meteorological Satellites) and **CSIC** (Spanish National Research Council).



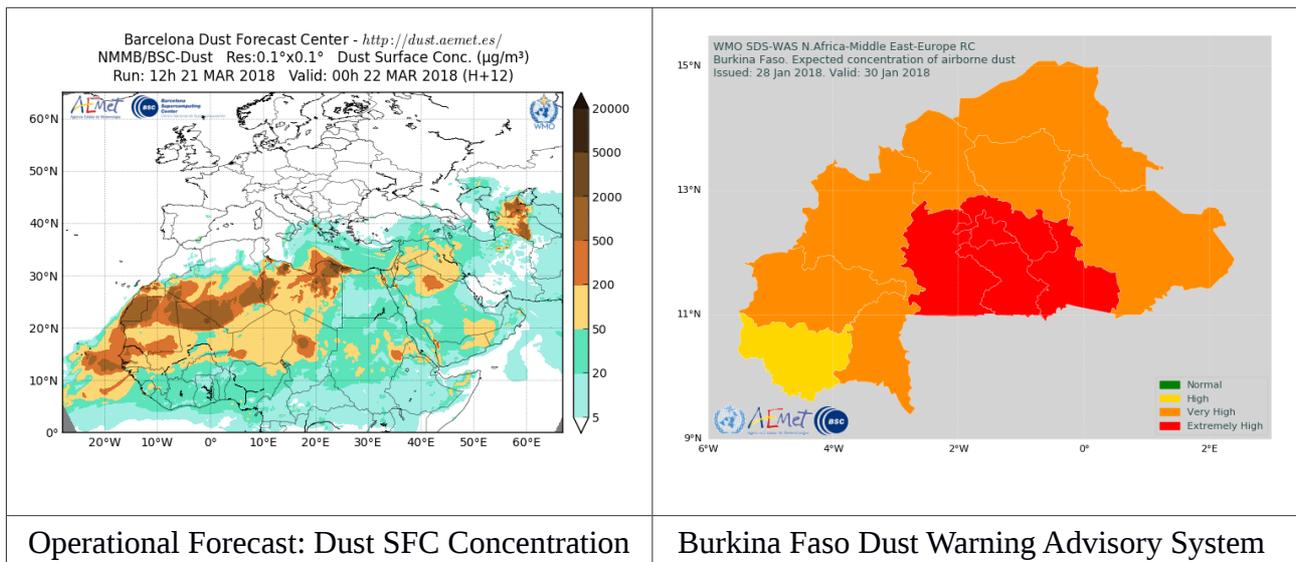
Background

More than 500 million people live in West and Northern Africa, a region stretching from the Gulf of Guinea in the west to the Red Sea in the east and covering areas such as the Sahara desert and the Sahel. The Sahara is the most extensive desert on Earth and the main emission source of mineral dust into the atmosphere. Airborne dust does not only affect the desert itself, but, especially in winter and spring, is dragged to densely populated areas of the Sahel and the Gulf of Guinea, where it causes a deep deterioration of air quality and triggers serious health problems. High concentrations of dust also affect agriculture, aviation, due to the drastic reduction in visibility, and other socio-economic sectors.

Objectives

The objectives of the workshop would be to:

- Enhance the understanding of the physical processes involved in the dust cycle and the impacts of airborne dust on air quality, health, aviation and diverse socio-economic sectors.
- Enhance the technical capacities of operational meteorologists from West and Northern Africa on the analysis and prediction of sand and dust storms, including the use of ground and satellite observations, as well as available dust predictions. Both forecast and observational products available on our websites will be explained as well as the dust Warning Advisory System (WAS) for Burkina Faso developed by the SDS-WAS NAMEE RC and its ongoing expansion plans in other Northern African countries.



Participants

The expected participants would be operational meteorologists from West and Northern African National Meteorological Services.

Language

The workshop will be conducted in English.

Support

This activity will be supported by:

- **AEMET** through the cooperation funds of **AFRIMET** and **ACMAD**
- **EUMETSAT**



WORLD
METEOROLOGICAL
ORGANIZATION

WMO SDS-WAS mission background

Airborne dust presents serious risks for human health. Particles larger than 10 μm are not breathable, thus can only damage external organs –mostly causing skin and eye irritation, conjunctivitis and enhanced susceptibility to ocular infection. However, inhalable particles, those smaller than 10 μm , often get trapped in the nose, mouth and upper respiratory tract, thus can be associated with respiratory disorders such as asthma, tracheitis, pneumonia, allergic rhinitis and silicosis. Moreover, finer particles may penetrate the lower respiratory tract and enter the bloodstream, where they can affect all internal organs and be responsible for cardiovascular disorders.

Some infectious diseases have also been associated with airborne dust. Meningococcal meningitis, a bacterial infection of the thin tissue layer that surrounds the brain and spinal cord, can result in brain damage and, if untreated, death in 50% of cases. Outbreaks occur worldwide, yet the highest incidence is found in the “meningitis belt”, a part of sub-Saharan Africa extending from Senegal to Ethiopia and including the entire territory of Burkina Faso. These outbreaks have a strong seasonal pattern –many studies have linked environmental conditions, such as low humidity and dusty conditions, to the time and place of infections. Researchers believe that inhalation of dust particles in hot dry weather may damage nose and throat mucosa creating favorable conditions for bacterial infection.

Airborne dust has also many negative impacts on agriculture, including reducing crop yields by burying seedlings, causing loss of plant tissue, reducing photosynthetic activity and increasing soil erosion. Indirect dust deposit impacts include filling irrigation canals, covering transportation routes and affecting river and stream water quality.

The Sahara is the major source on Earth of mineral dust, accounting for about half of the 1000-3000 Tg/yr of dust particles emitted globally into the atmosphere. Especially in winter and spring, a large amount of such particles is transported southwards by trade winds, known as Harmattan, affecting mainly the Sahel, but sometimes also regions bordering the Gulf of Guinea.

In 2007, owing the societal needs for monitoring and forecasting dust events, and for assessing and mitigating their negative impacts, World Meteorological Organization (WMO) launched the Sand and Dust Storm -Warning Advisory and Assessment System (SDS-WAS, <http://www.wmo.int/sdswas>) with the mission to enhance the ability of countries to deliver timely and quality sand and dust storm forecasts, observations, information and knowledge to users through an international partnership of research and operational communities.

In 2013, in view of the demand of many national meteorological services and the good results obtained by the SDS-WAS, which prove the feasibility and the need to begin developing operational services beyond the scope of R&D, the WMO Executive Council designated the consortium formed by the State Meteorological Agency of Spain (AEMET) and the Barcelona Supercomputing Center (BSC) to create in Barcelona the first Regional Specialized Meteorological Center with activity specialization on Atmospheric Sand and Dust

Forecast SDSWAS-NAMEE-2018-0013 (RSMC-ASDF). The Center began operating in February 2014 with the name of Barcelona Dust Forecast Center (<https://dust.aemet.es>). It generates and distributes dust predictions for Northern Africa (north of equator), Middle East and Europe.