A WMO Sand & Dust Storm Warning Advisory & Assessment System

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Abstract: Airborne dust affects social, economic and environmental systems and influences weather and climate. The serious consequences have encouraged more than 40 nations to recommend action by the World Meteorological Organization to develop a better understanding of dust storms, the mechanisms for dust entrainment and dispersion in the atmosphere, and a world-wide system to detect, monitor and predict them. A draft Implementation Plan for an International Sand and Dust Storm Warning Advisory and Assessment System is under review. The Plan calls for research, observations, and advisories, all in support for national weather services and other potential users worldwide. A federated system of regional centres form the core of the new SDS-WAS, providing several nodes for state of the science information on current conditions for sand and dust storms around the globe.

Introduction

◆ 2 billion people live on the arid 34 percent of Earth's land surface, routinely exposed to airborne dust, increasing risk of cardiovascular and respiratory disease. People a continent or ocean away are exposed by this dust, borne by the winds, along with hitchhiking molds, spores and bacteria. Air and land transportation safety, human and veterinary health, and food and water security are threatened, and linked to the global economy. Weather, climate and air quality are affected by the 17 billion tons of dust suspended in our atmosphere at any given time.

Activities

◆ Detect, Monitor, Simulate, Predict Storms & Consequent Air Quality

◆ Inform through Web Portals, Educational Outreach, Technical Training, Conferences etc.

◆ Partner WMO, GEO, WHO, FAO, and other UN organizations & their member nations & agencies

Two (of four) Centres Established

◆ N. Africa, Middle East, Europe Node
    ◆ Hosts: National Institute of Meteorology, Barcelona Supercomputing Centre, National Research Council

◆ Asia, Central Pacific Node
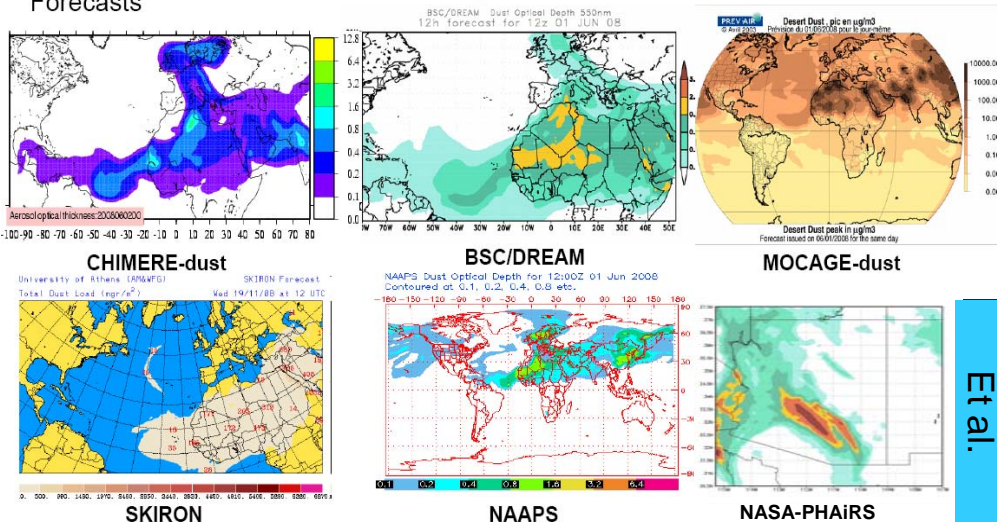   ◆ Host: China Meteorological Administration

Centres & Node System Architecture
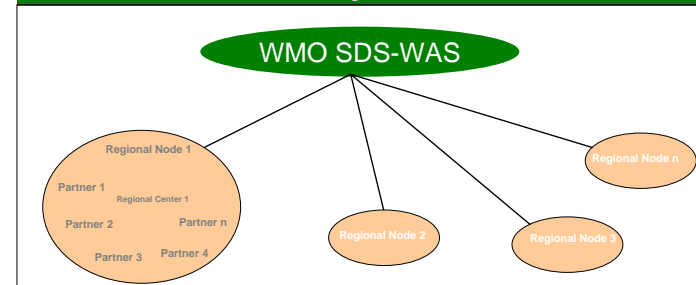
Sample Product

SDS WAS Common Web Page
Forecasts

For example …

CHIMERE-dust

BSC/DREAM

MOCAGE-dust

SKIRON

NAAPS

NASA-PHAiRS

Et al.

Implementation 2009-10

◆ Regional Partnerships through CAS & CBS SDS

◆ Monitoring with Current Forecast, Observation & Product Capabilities

◆ Near real-time Verification System

◆ User Information Portals in Two Regions … linked to GEONetcast

◆ SDS Warnings through National Met Services

Implementation 2011-13

◆ Model Intercomparisons & Joint Verification

◆ Data Assimilation & Ensemble Forecasting

◆ Applications Development & Partnerships in Human Health, Air & Traffic Safety, etc

◆ Research (source identification, saltation/emission process; size distribution etc.)

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