WMO Sand and Dust Storm Warning Advisory and Assessment System

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WMO-WWRP/GAW Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS)

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.
Why SDS-WAS

- **Human Health** (asthma, infections, meningitis in Africa, valley fever in the America’s)
- **Agriculture** (negative & positive impacts)
- **Marine productivity**
- **Aviation** (air disasters)
- **Ground Transportation**
- **Industry** (Semi-conductor, Tourism, etc)

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Brief SDS-WAS history

2004: Beijing, China: International Symposium on SDS & a WMO Experts Workshop on SDS.

- 2005: More than 40 Member countries indicated interest to cooperate in SDS-WAS.

- 2007: the 14th WMO Congress endorsed launching of the SDS-WAS.

- 2008: the 60th EC of WMO welcomed the establishment of the two SDS-WAS regional centres in China and Spain in support of the corresponding SDS-WAS nodes.

- 2009-2015: A series of workshops within the SDS-WAS in: Barcelona (Spain), Niamey (Niger), Ankara (Turkey), Antalya (Turkey), Tsukuba (Japan), Seoul (Korea), Teheran (Iran), Belgrade (Serbia), Kuwait City (Kuwait), Manama (Bahrain), Castellaneta Marina (Italy), Casablanca (Morocco), ...

- 2014: Opening the Barcelona Dust Forecast Centre - 1st WMO Operational Dust Prediction Centre
Dust forecasting systems
SDS-WAS Activity Nodes:

- 3 Regional Nodes, 15 organizations providing forecast
- WMO WWRP/GAW Global Coordination: Steering Committee and Trust Fund
- Regional coordination through regional activity nodes
- SDS-WAS Science & Implementation Plan approved
WMO Supported Aerosol and Weather Prediction Research

Forecast Models

System Components:

- 30-hr forecast as of 18 UTC, 7 May 2012

NASA A-Train MODIS CALIPSO & Geostationary Satellite IR Obs

- Surface-based LIDAR
- Surface-based AOD

GAW/AERONET/SKYNET

European PM10

GALION

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SDS-WAS Research and Development activities - Highlights 2015

Science and Implementation Plan 2015-2020

- Accepted by SSC7
- Trust Fund requested
- Research plan updated

SDS Science and Implementation Plan 2015-2020

High resolution modelling

Models vs. lidars (GALION)

Tehran June 2014 SDS

Using satellite data

Phoenix Jul 2011 “haboob”

SDS-WAS studies/projects / Model intercomparison and validation

Asian IDDI image from FY-2D satellite
WMO SDS-WAS: from Research to Operations

- SDS-WAS Science and Implementation Plan for 2015-2020
- Procedure for designation of a Regional Specialized Meteorological Center with specialization on Atmospheric Sand and Dust Forecasting (RSMC-ASDF)
- **Spain (AEMET-BSC) became the first designated RSMC-ASDF**
- China shows interest to host the Asian RSMC-ASDF
Designation Process of RSMC ASDF
- Annex 1 of SDS-WAS Science Implementation Plan -

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**STEP 1:** SDS-WAS Regional Steering Group
**STEP 2:** President of the Regional Association
**STEP 3:** SDS-WAS Steering Committee (SC)
**STEP 4:** Scientific Steering Committee of World Weather Research Programme
**STEP 5a:** President of the Commission of Atmospheric Science
**STEP 5b:** President of the Commission of Basic Systems

**STEP 6:** ET-ERA - Expert Team on Emergency Response Activity
**STEP 7:** Presentation at CBS Session
**STEP 8:** WMO Congress or Executive Council
**STEP 9:** Formal designation as RSMC ASDF
SDS-WAS Implementation and Research Issues

- Global coordination of the regional SDS-WAS nodes
- Pan-America node development and establishing the West Asian sub-node
- Model validation and intercomparisons
- Dust reanalysis
- High-resolution dust modelling (1-3 km) – towards non-hydrostatic and cloud-resolving scales
- Observation network and NRT data access
- Data assimilation
- Dust interaction with radiation and clouds and impacts to weather and climate => online coupled models
- Chemical and physical characterization of dust and impacts
- Health effects: Dust and meningitis & valley fever
- Closer collaboration with UN programmes for DSS policies and adaptation/preventive measures
Plans for SDS-WAS West Asia Node:

- Joint WMO-UNEP study in 2013
- Published report =>
- Recent discussions with several countries
- Need further efforts to realise
- To be discussed on this workshop

Thank you!

WMO SDS-WAS web-site:

http://www.wmo.int/pages/prog/arep/wwrp/new/Sand_and_Dust_Storm.html