WEATHER CLIMATE WATER TEMPS CLIMAT EAU





WMO OMM

World Meteorological Organization Organisation météorologique mondiale Robert Stefanski Agricultural Meteorology Division Alexander Baklanov Atmospheric Research & Environment Branch

Commission of Agricultural Meteorology

- 17th Session held in Incheon (Republic of Korea) 18-20 April 2018
- Four Focus Areas

Focus Area 1: Weather and Climate Services for Agriculture Focus Area 2: Research and Technology Development in Agrometeorology Focus Area 3: Agrometeorological Risk Management Focus Area 4: Communications, Education and Capacity Development

- More than 180 World Experts involved
- Expert Team on Crop, Animal, and Pest/Disease Early Warning Systems
- Guidance material on animal/plant pest/disease applications modelling and early warning systems





- Beijing: China Meteorological Administration (CMA) / Bejing Climate Center (BCC)
- CPTEC: Center for Weather Forecasting and Climate Research / National Institute for Space Research (INPE), Brazil
- ECMWF: European Centre for Medium-Range Weather Forecasts
- Exeter: Met Office, United Kingdom
- Melbourne: Bureau of Meteorology (BOM), Australia
- Montreal: Meteorological Service of Canada (MSC)
- Moscow: Hydrometeorological Centre of Russia

Offenbach: Deutsher Wetterdienst

Wetter und Klima aus einer Hand

- Moscow: Hydrometeorological Centre of Russia
- Pretoria: South African Weather Services (SAWS)
- Seoul: Korea Meteorological Administration (KMA)
- Tokyo: Japan Meteorological Agency (JMA) / Tokyo Climate Center (TCC)
- Toulouse: Météo-France
- Washington: Climate Prediction Center (CPC) / National Oceanic and Atmospheric Administration (NOAA), United States of America





Airborne animal diseases – Ireland and EU

Food and mouth disease. Spread by contact and wind dispersion. Irish Met. Service Operational suite





Taken from K.Lambkin et al. TECO, Incheon April 2018

Mosquitos as vectors – Blue tongue virus

Taken from K.Lambkin et al. TECO, Incheon April 2018

Bluetongue Virus (BTV) – automated daily risk product



Roving Seminars. Training on the use of Climate and Weather Information for Goat Shepherds and Honey Producers- Argentina 2016

+ Experifice de Le Rene (presse Ver " Genelico Apropiedo (Recambio de Reiner) Plan Sanitation (Manitation Preventive- and & Sura pass planificas todas acti del sector tecnologies Llimentacion (Notorol - And f. c.al) a se la construire despues de mas de s Recargo de panales (3 par 10.40) deserver , exoter or us elmanages de pluse and to investion the specte of Cosecho de Miel- tare - propoleonpole chilse a les cilminos Aulliplication (Reines - Nucleos) Revision Primavetal - Otomol Categonicación I I I Control de peser dus Colondatio Apicula Unio 2017 might del calendario factores de names apisatis y icintes foresables y despourse estar + poher.





Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) supported by WMO World Weather Research Programme



Mission

To establish a coordinated global network of SDS research & forecasting centres and 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



Impacts – Crops & Livestock

- Loss of plant tissue and reduced photosynthetic activity as a result of sandblasting
- Burial of seedlings under sand deposits
- Delayed plant development
- Increased end-of-season drought risk
- Causing injury and reduced productivity of livestock



WMO SDS-WAS System Components



Dust forecasting systems



SDS-WAS Regional Nodes

- 3 Regional Nodes, 15 organizations providing forecast
- Regional coordination: Regional Steering Group (for Regional Nodes)
- Global Coordination: Global Steering Committee
- Strategic Plan: SDS-WAS Science & Implementation Plan for 2015-2020
- Implementation: Trust Fund through WMO WWRP/GAW



Global Assessment of Sand and Dust Storms



Global Assessment of Sand and Dust Storms



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Foreword



Large sand and dust storms, which result from a combination of strong winds and loose dry soil surfaces in arid and semihuman health, agricultural land infrastructure and transport. Every year, an estimated 2,000 million tons of dust is emitted into the

atmosphere. While much of this is a natural part of the biogeochemical cycles of the Earth, a significant amount is generated by human-induced factors, especially unsustainable land and water management.

However, there is considerable uncertainty about whether sand and dust storms are increasing in intensity and frequency and how much is due to human causes. There is also need for greater clarity on the role that climate change is playing and how changes in dust emissions due to land use and climate change may impact the atmosphere, climate and oceans in the future. Policymakers and other stakeholders need more information on what can be done to reduce the frequency and intensity of sand and dust storms and to protect infrastructure and human health from their effects.

The Global Assessment is a significant contribution to our understanding, synthesizing the latest scientific information on the causes of sand and dust storms and their consequences for human and environmental well-being. It summarizes the latest knowledge on predicting them and reducing their impact.

Given the dominance of natural sources of dust and uncertainty regarding future dust emissions, the report stresses the importance of protective measures,

which include enhancing monitoring, prediction and early warning systems, and improving preparedness and emergency response. To reduce anthropogenic sources of sand and dust storms, the Assessment recommends integrated strategies that promote arid areas, are detrimental to sustainable land and water management in cropland, rangelands, deserts and urban areas, and climate change mitigation.

> The report proposes a consolidated and coordinated global policy for responding to sand and dust storms, integrated and synergistic actions across sectors, and strengthened cooperation among global institutions. These measures are integral to the success of the 2030 Agenda for Sustainable Development. They can contribute to improved public health, more liveable towns and cities and more sustainable rural areas. They can help combat climate change, conserve oceans, and protect terrestrial ecosystems, thereby helping to reduce poverty and protect economic growth.

I commend this report to all Governments and stakeholders engaged in reducing the occurrence and impact of sand and dust storms and working to achieve the Sustainable Development Goals.

Ki Mow Ban

BAN Ki-Moon United Nations Secretary-General

GLOBAL ASSESSMENT OF SAND AND DUST STORMS

WMO Airborne Dust Bulletin



En: <u>https://library.wmo.int/opac/index.php?lvl=bulletin_display&id=3902</u> Fr: <u>https://library.wmo.int/opac/index.php?lvl=notice_display&id=19879</u> Ar: <u>https://library.wmo.int/opac/index.php?lvl=notice_display&id=19881</u> Ch: <u>https://library.wmo.int/opac/index.php?lvl=notice_display&id=19883</u>



SDS-WAS Dissemination

WMO SDS-WAS websites and reports:

http://www.wmo.int/sdswas

https://public.wmo.int/en/our-mandate/focus-areas/environment/sand-and-dust-storm

SDS-WAS Regional Nodes and Operational Forecasts:

for Northern Africa, Middle East and Europe: <u>http://sds-was.aemet.es</u>;

for Asia: http://eng.nmc.cn/sds_was.asian_rc;

for the Americas: http://sds-was.cimh.edu.bb/

Operational Barcelona Center: <u>http://dust.aemet.es/</u>



WMO SDS-WAS Video

Protecting People from Sand and Dust Storms

https://www.youtube.com/watch?v=IYXcpYYIm8I

Potential Agricultural Applications of a SDS-WAS

Tactical Applications (Warnings)

- Near-term alerts for agricultural communities to take preventive action such as
 - harvesting maturing crops (vegetables, grain),
 - sheltering livestock, and
 - strengthening infrastructure (houses, roads, crop storage) for the storm.



Potential Agricultural Applications of a SDS-WAS

Strategic Applications

- Improved SDS climatologies for long-term planning for agricultural communities such as:
 - Planning windbreaks and shelterbelts (direction, size, etc)
 - Planning infrastructure and crops



Potential Agricultural Applications of a SDS-WAS

Research Areas

- Forecasting locust movement
- Plant and animal pathogen movement and the relationship of SDS to disease outbreaks
- Archive of SDSWAS products (Forensic Use)





Sugarcane Rust (June 1978) Cameroon to Dom. Rep.

Coffee Leaf Rust (1970) Angola to Bahia, Brazil

Wheat stem Rust (1969) S. Africa to Australia



Source: Brown and Hovemoller Science. July 26 2002.

Other Diseases

- Foot and Mouth Disease (livestock)
- Soybean Rust (South America to North America)
- Wheat Stem rust (ug99)

• Policy makers need to know source of disease outbreaks (airborne or human transport) to take actions to minimize risk



WMO – OIE Collaborations

- Support of joint activities
- Participation in expert groups
- Development of joint projects
- Possible revision of OIE-WMO MOU



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