



MACCLIMA

Sistema de observación meteorológica y oceánica como herramienta para el fomento de la resiliencia y adaptación al cambio climático en el espacio de cooperación (MAC-CLIMA)

(MAC2/3.5b/254)

Reunión de partenariado

Presentación seguimiento de actividades y resultados:
AEMET

12, 13 y 14 octubre, 2022

Reunión presencial, Funchal (Madeira)

PROYECTO COFINANCIADO AL 85% POR LA UNIÓN EUROPEA





INDEX

01

Introduction

02

SDS WAS for West Africa
Countries

03

SDSWAS:
product &
methodol
ogy

04

Instrumentation

05

Workshops

06

Cabo Verde Update





01

Introduction: AEMET and the WMO SDS-WAS



AEMET

Meteorological State
agency of Spain

Izaña Atmospheric
Research Center (CIAI)

The main goal of **AEMET** is the development, implementation and provision of **meteorological services** within the competence of the State and support for the exercise of other public policies and private activities, contributing to the **safety of people and property**, and the **well-being** and **sustainable development** of Spanish society.

AEMET supports international development cooperation programs that promote the institutional strengthening of the NMHS, capacity building and service delivery. As an example, in 2007 AEMET established the **Conference of Directors of the Services Meteorological and Hydrological of West Africa (AFRIMET)** in which 16 countries of the region are integrated, to coordinate AEMET's cooperation program in Africa.

The Izaña Atmospheric Research Center (CIAI) of AEMET conducts observations and research related to atmospheric constituents that are **capable of forcing change in the climate of the Earth** and play key roles in **air quality** from local to global scales. The IARC has contributed to the **WMO Global Atmosphere Watch (GAW)** Programme since its establishment in 1989.



WMO SDS-WAS

Sand and Dust
Storm Advisory and
Assesement System

Barcelona Dust
Regional Center
(BDRC)

The WMO SDS-WAS mission is 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.

Barcelona Dust Regional Center, jointly managed by **AEMET** and the **BSC-CNS** (Barcelona Supercomputing Center- Centro Nacional de Supercomputación), coordinates the activities of the WMO SDS-WAS for the **NAMEE** region (North Africa, Middle East and Europe) and provides daily SDS forecast and observational products for the NAMEE region.



AEMET and MAC-CLIMA:

Objective and Activities

Specific Objective 1:

Promote and develop a joint strategy that allows the climate change phenomenon to be monitored in a coordinated and precise manner within the cooperation space and to promote the production of scientific knowledge that helps to understand this phenomenon with the utmost precision.

Activity 2.1.2:

Increase the technical and human training of the actors responsible for the meteorological and oceanographic observation of the climate change phenomenon in the cooperation space.





02 SDS Warning Advisory System for West Africa Countries: Senegal, Mauritania and Cape Verde





MAIN TASKS

- 1 Development and Evaluation of an SDS Warning System for Senegal, Mauritania and Cape Verde
- 2 Installation of a PM sensor and measurements with a hand-held sun-photometer
- 3 Online training workshops





03

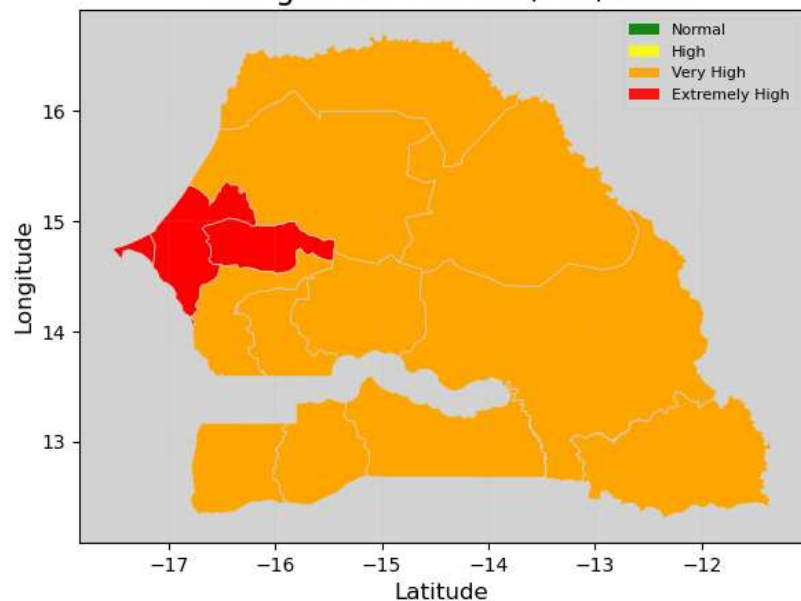
SDS WAS: product and methodology



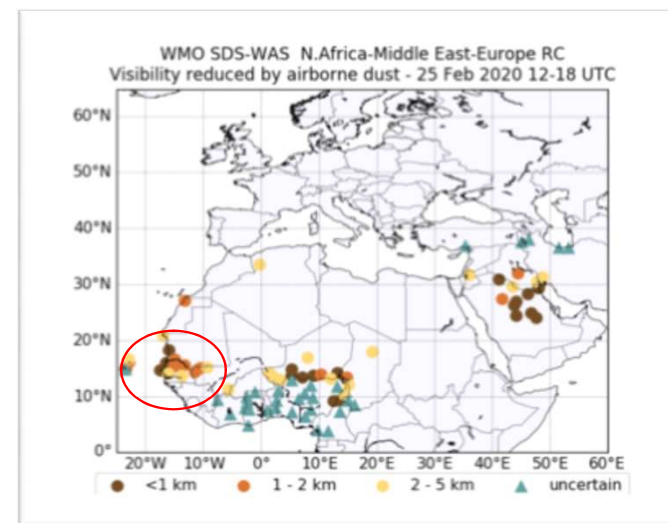
SDS-WAS: Operational phase!



Senegal SDS-WAS: 25/Feb/2020



Warning Advisory System



Visibility reduction: SYNOPSIS and METARS

- Thresholds for the 1st Administrative Division
- Calculated from time series of the multimodel median: percentile approach

	Diourbel	Fatick	Kaffrine	Kaolack	Kedougou	Kolda	Louga	Matam	Saint Louis	Sedhiou	Tambacounda	Thies	Ziguinchor
50% méd.	236	202	206	177	146	150	403	392	465	147	243	201	159
80% Jaune	383	320	316	274	235	245	590	577	677	233	372	340	246
90% Orange	488	424	425	356	302	296	728	717	819	295	463	441	309
97.5% Rouge	661	566	560	491	430	420	969	969	1061	421	613	638	425



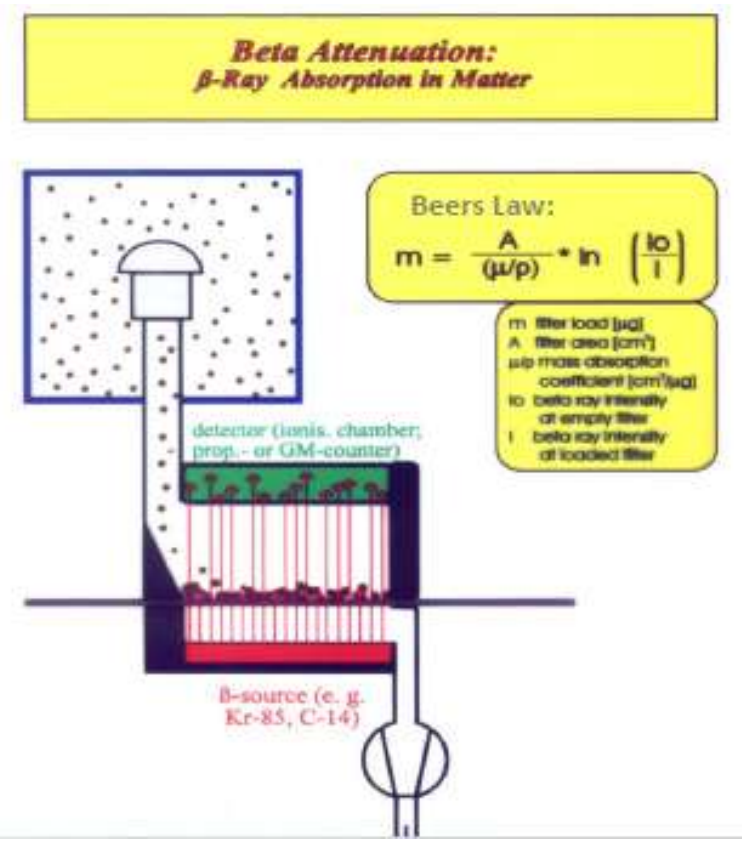


04

PM10 sensor and solar photometer Calitoo



IMDS PM10 sensor: calibration and installation (Izaña CIAI)

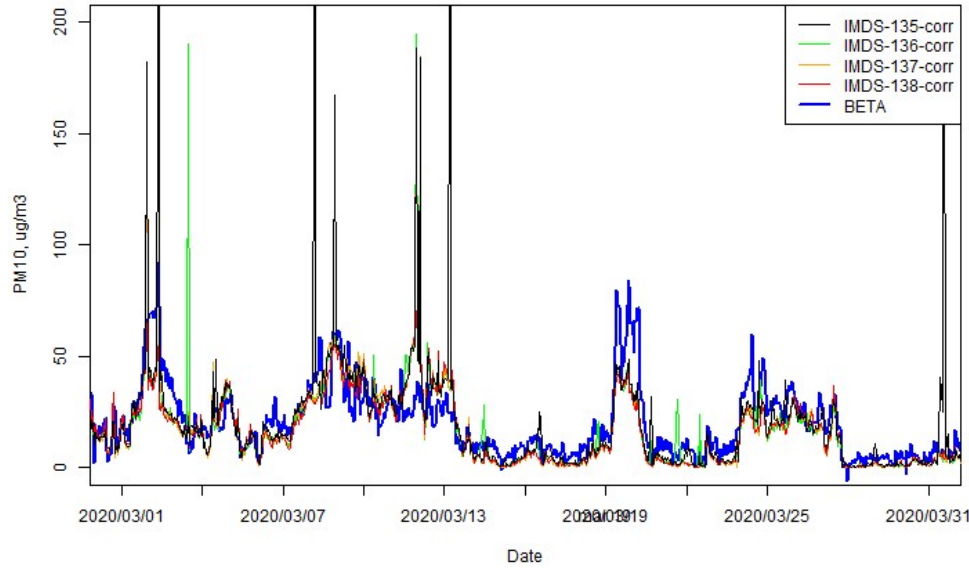


IMDS sensor installed on ANACIM Headquarters (Dakar)

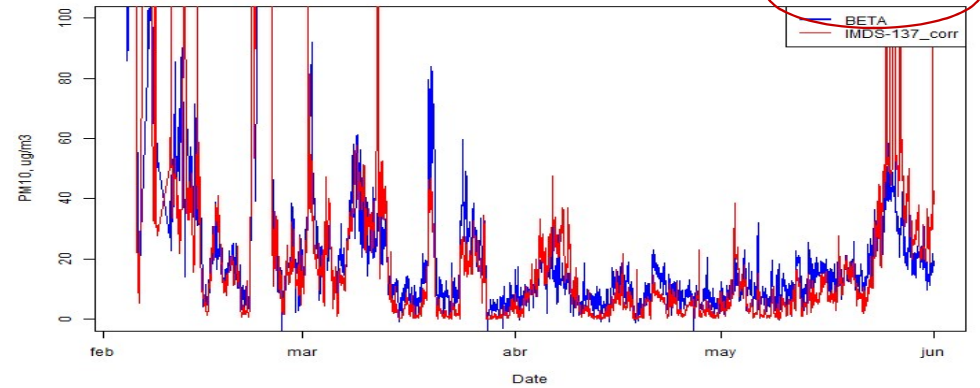
Example comparison with correction (March 2020): WORK in PROGRESS!



PM10 IMDs - BETA at SCO WITH correction (20200301-20200331)



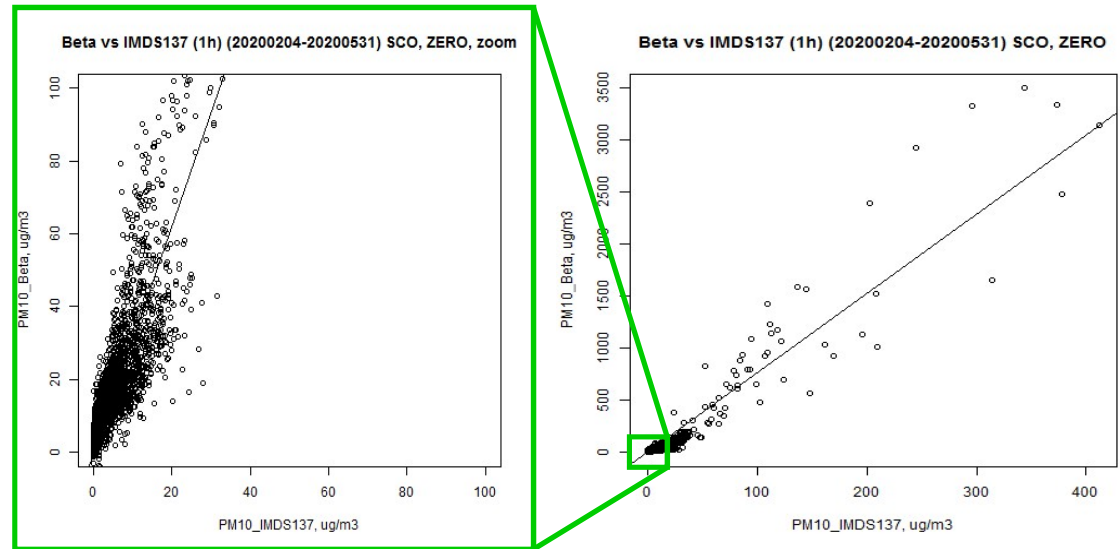
PM10 IMDS137 - BETA at SCO WITH correction (20200501-20200531) for IMDS137 > 20 ug/m3



PM10 IMDS137	Y=Ax	R2
Caja 2 Senegal	(PROVISIONAL)	
< 20 ug/m3	3.056273	0.8082672
> 20 ug/m3	7.986222	0.9107489
Without filter	7.616111	0.8836679



In principle, we will use the adjustment of all data, without filters





05

Workshops



Online Workshop: Senegal



<h2>Atelier SDS-WAS Afrique de l'Ouest Sénégal, 3-4 Mars 2021</h2>			
	Mercredi 3 Mars – Produits & Guide Prévision SDS		Jeudi 4 Mars – Instrumentation
9-10	Introduction WMO SDS-WAS	9-10	*Installation et utilisation d'instrumentation 1
10-11	Produits & Guide Prévision SDS	10-11	*Installation et utilisation d'instrumentation 2
11-11:30	<i>Pause</i>	11-11:30	<i>Pause</i>
11:30-12:30	*Méthodes d'observation	11:30-12:30	*Installation et utilisation d'instrumentation 3
12:30-13:30	*Vérification Produits	12:30-13:30	*Tutoriel et doutes

8 Attendants:

- Weather forecasters
- Technicians

*Cours en anglais



Online Workshop: Mauritania



Atelier SDS-WAS Afrique de l'Ouest La Mauritanie, 26 Janvier 2022	
9-10	Produits Prévission SDS
10-11	Méthodes d'observation et Utilisation instrumentation: Calitoo *
11-12	Questions

*Cours en anglais

Atelier SDS-WAS Afrique de l'Ouest La Mauritanie, 27 Juin 2022	
9-10	Produits Prévission SDS et Système d'alerte
10-11	Évaluation Produits Prévission SDS et Système d'alerte
11-12	Méthodes d'observation et Utilisation instrumentation: Calitoo *

*Cours en anglais

9 Attendants:

- Weather forecasters
- Technicians



Workshop: Forecast Products



Barcelona Dust Regional Center

WMO SDS-WAS Regional Center for Northern Africa, Middle East and Europe, conducting research and providing operational products

Daily Dust Forecast

Forecast for the next 72 hours for Northern Africa, Middle East and Europe

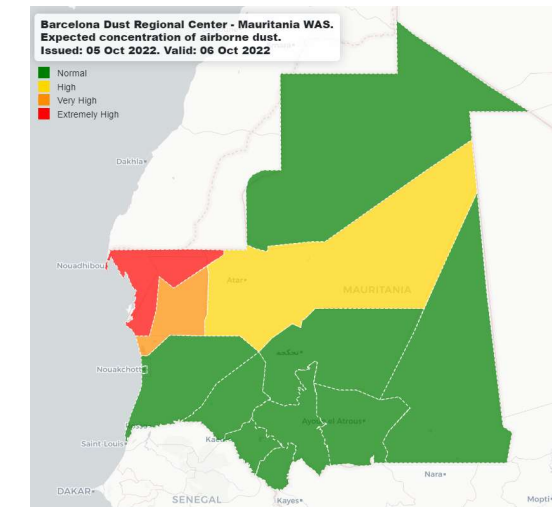
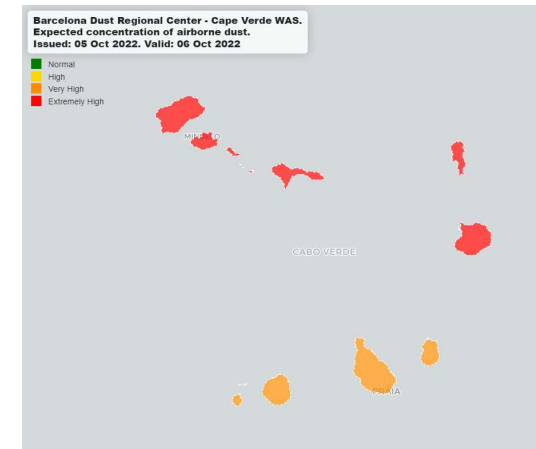
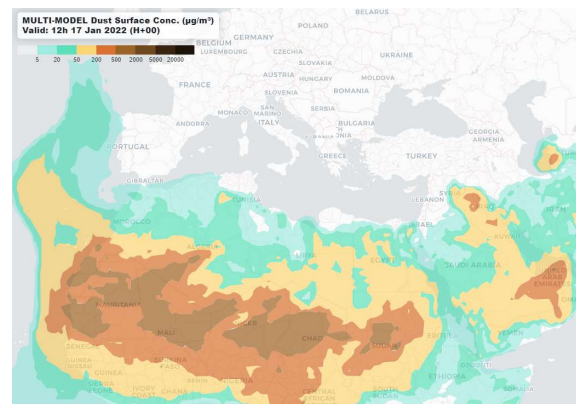
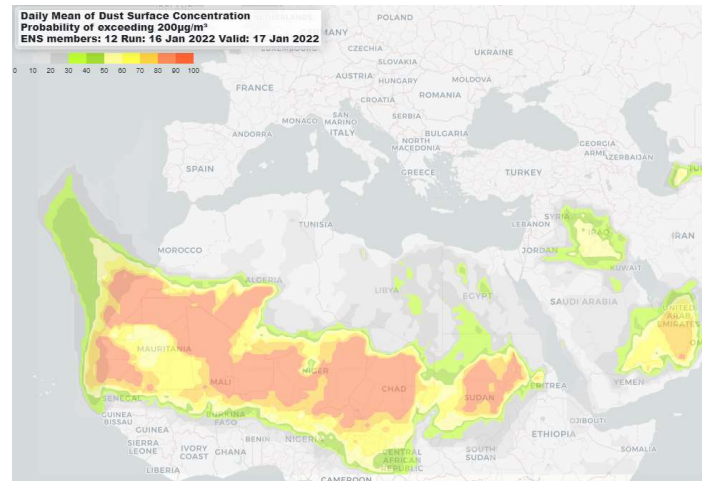
EXPLORE FORECAST

Dust Products

The WMO Barcelona Dust Regional Center offers a wide range of dust products that serve the need for detailed dust information on a regional scale.

EXPLORE ALL

- Daily Dust Products: Dust forecasts and dust-related observational products
- Dust Products Catalogue: Inventory of available dust observational and modeling products
- Data Download: Access and download the numerical data of dust forecasts



<https://dust.aemet.es/products/daily-dust-products>



Workshop: Equipment

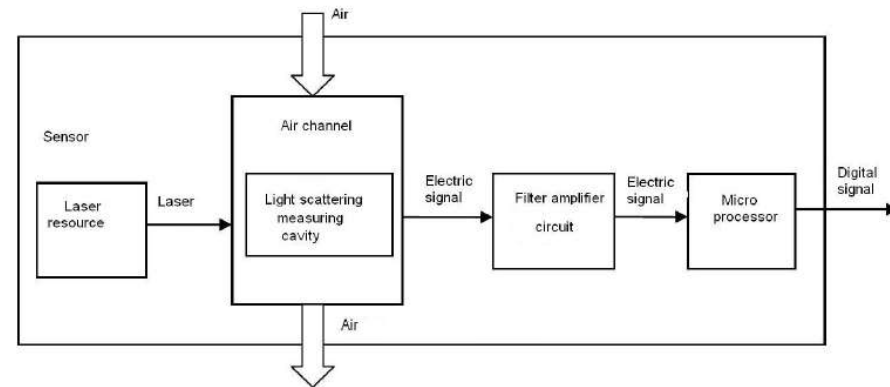
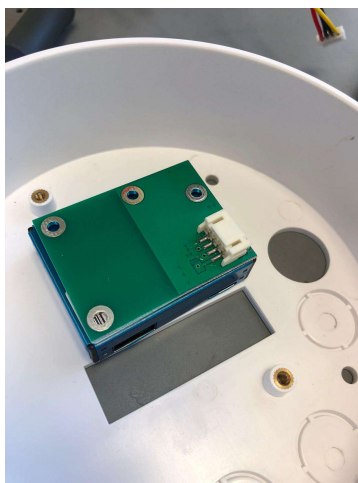
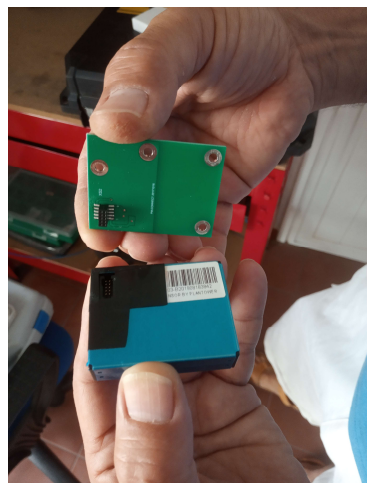
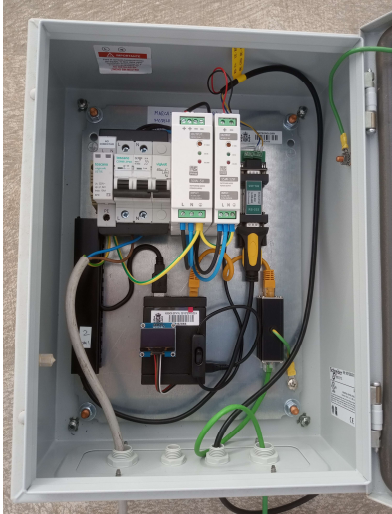


Figure 1 Functional block diagram of sensor



Calitoo
Sunphotometer:
AOD measurements
three times a day





05

Cabo Verde Update



05 Cape Verde update

Cape Verde:

- PM10 sensor and Calitoo received and installed (08/06/2022)
- Workshop: data to confirm (Dec 2022-Jan 2023)

IMDS sensor installed on INMG (Sal Cabo Verde)





Gracias

Obrigado

Merci Beaucoup

THANK YOU

