International Network to Encourage the Use of Monitoring and Forecasting Dust Products

inDust

COST Action CA16202

Sara Basart (sara.basart@bsc.es, Spain, BSC) on behalf of the inDust

Now at WMO, Switzerland, sbasart@wmo.int

cost EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

BSC Barcelona Supercomputing Center Centro Nacional de Supercomputación

www.cost-indust.eu

#COSTinDust


Almería, Spain, 2022


Switzerland, 2022


Türkiye, 2020

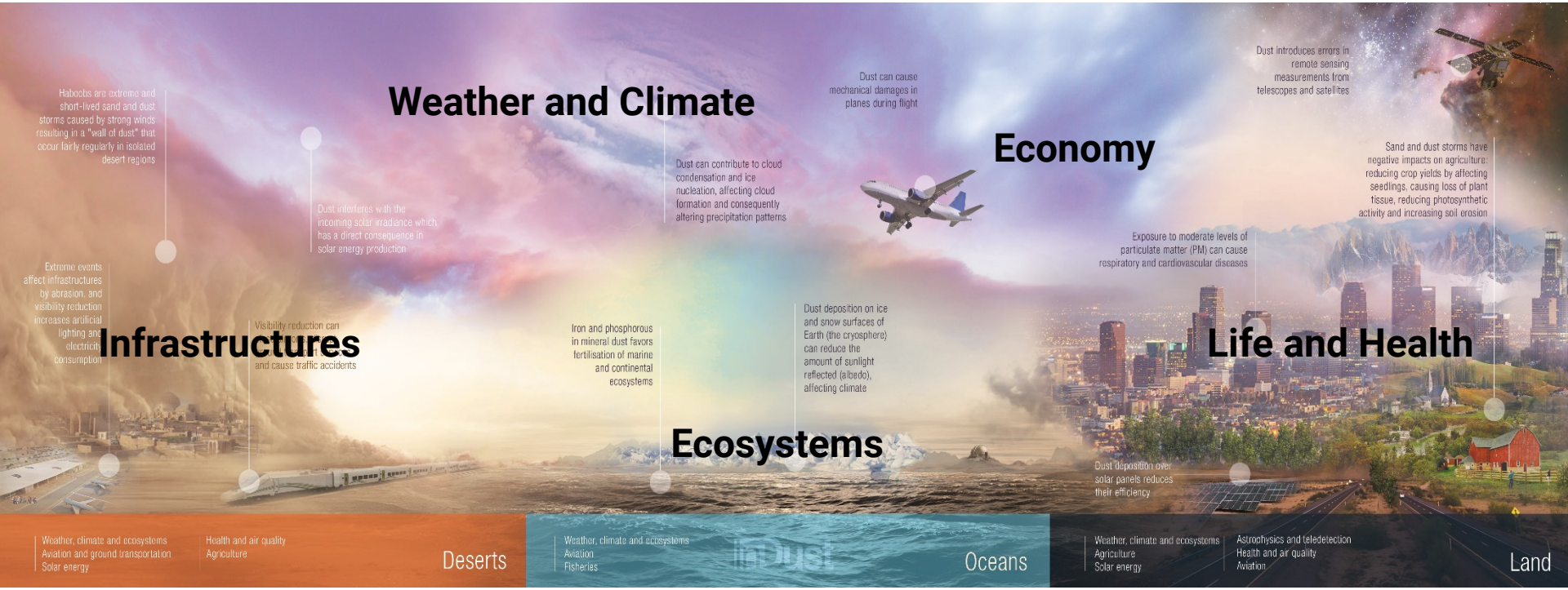

Crete, 2018


Paris, 2021


Tenerife 2020

Our Objective

To understand the user's needs in risky sand and dust storm environments for the development of tailored products



inDust Leaflet available in www.cost-indust.eu/media-room

https://www.cost.eu/long-read-indust/

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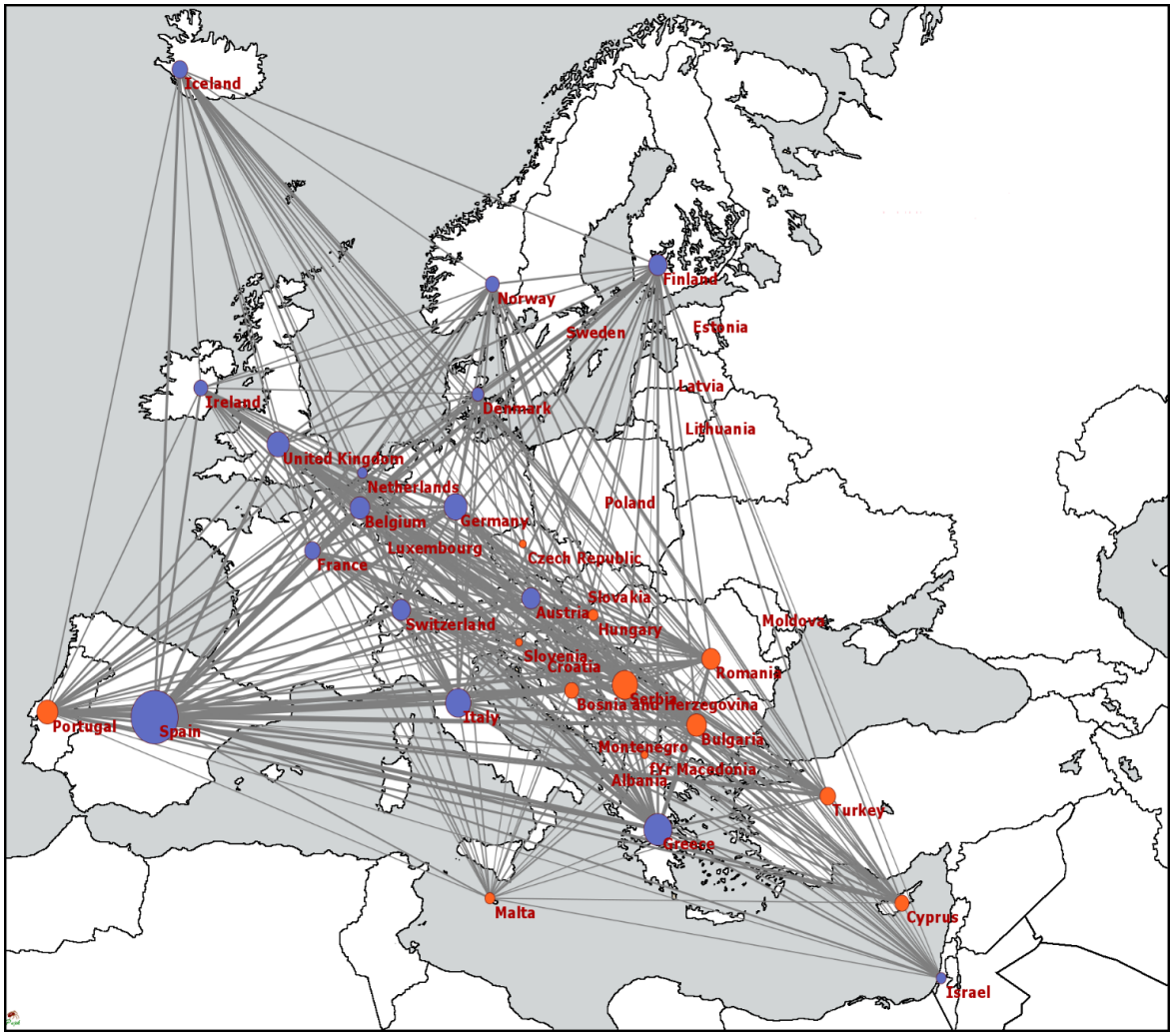
inDust members - November 2017

1st inDust MC meeting, Barcelona, Spain, March 2018

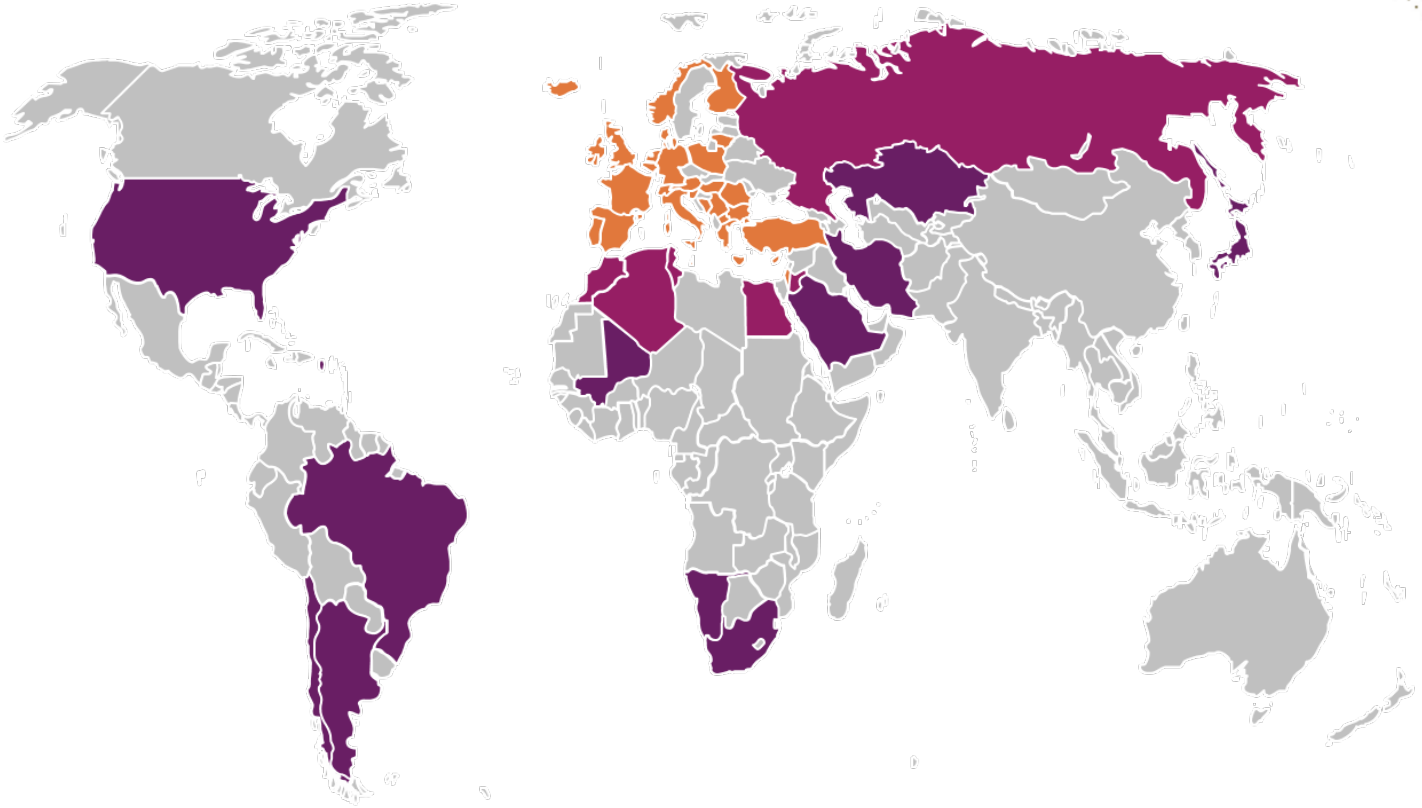
inDust Movements - October 2019



And the COVID appears in our lives…

More than 300 participants at the end

The network extension



- COST countries (29 countries)
- Near-Neighbour Countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia and Russia)
- International Partner Countries
  International Organisations (WMO, ECMWF, WHO)

more than 300 participants around the world

USER ENGAGEMENT: Why?

We **need** potential users to enroll them into the process of the **design** of the tailored product.

Users will help on the identification of **impacts** and in ideas for **risk mitigation.**
This means that we need to understand their needs.

USER ENGAGEMENT: How?

We **need** to create **interest** in the topic

WORKSHOPS AND MEETINGS

User Workshop on Solar Energy - Soiling (DE)

WG on Modelling Activities (RS)

Meeting on Dataviz and Communication (RO)

User Workshop on products for Aviation (UK)

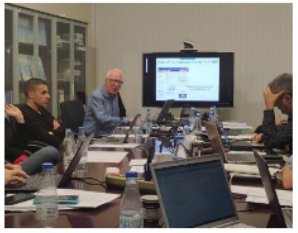
User Workshop on products for Air Quality (IT)

User Workshop on products for Solar (DE)

Workshop on High Latitude Dust (IS)

Training School on Dust Products, Aveiro (PT)

User Workshop on products for Health (ES)



DISSEMINATION MATERIALS

in which **key stakeholders from different sector (health, transportation, energy, …) as well as EC and National agencies** are taking part

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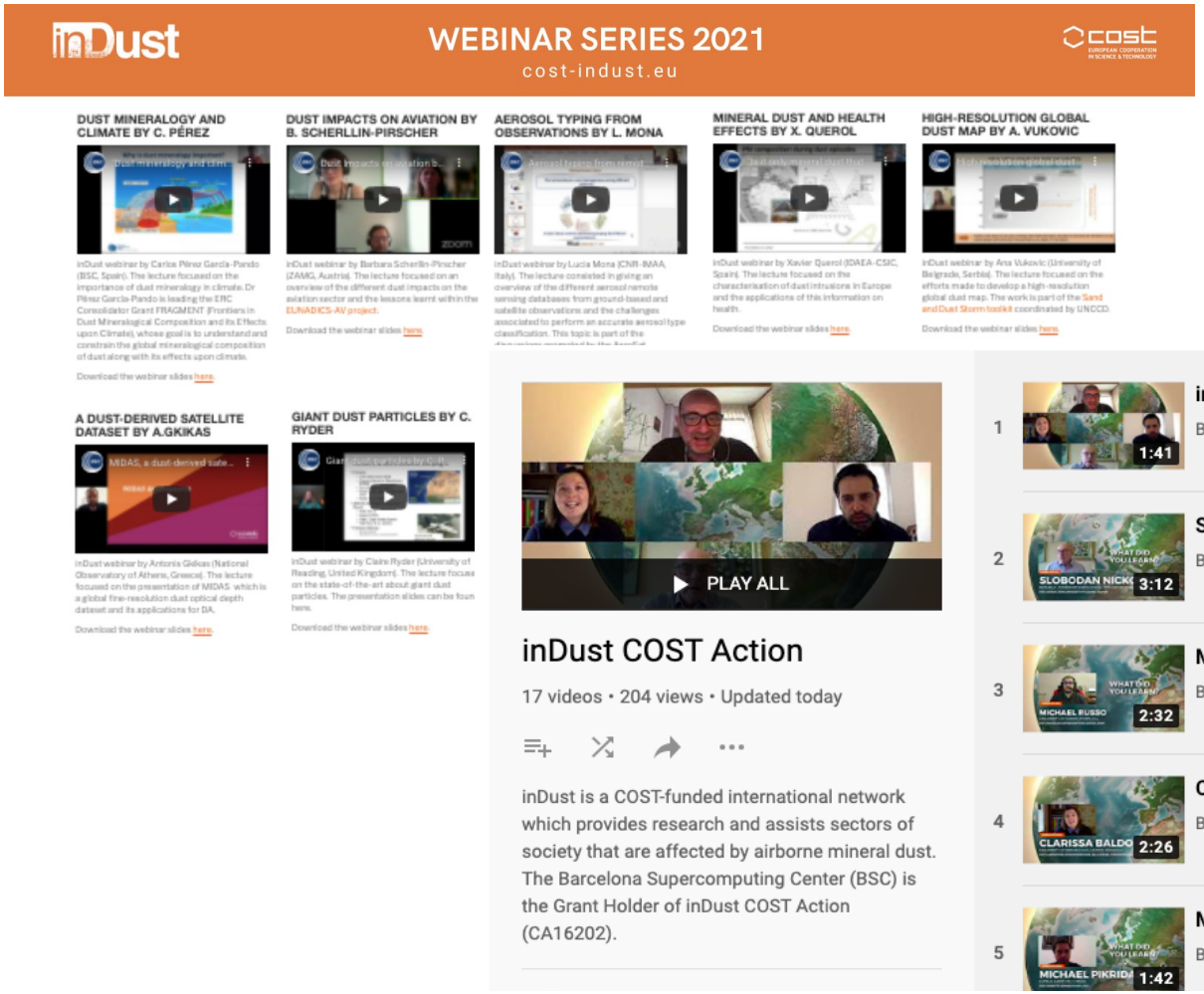
USER ENGAGEMENT: How?

and promote **collaborations** for **deeping** in the topic and **build capacity**



USER ENGAGEMENT: How?

and promote **collaborations** for **deeping** in the topic and **build capacity**

More than **20 publications** and
launch of **an Special Issue in ATM/ACP**

inDust

THE ACTION | PEOPLE | GRANTS | EVENTS | MEDIA ROOM | GET IN TOUCH | MEMBERS AREA

- Varga, G., Dagsson-Walhauserová, P., Gresina, F. and Helgadottir, A. (2021) Saharan dust and giant quartz particle transport towards Iceland, *Sci Rep* **11,** 11891 (2021). https://doi.org/10.1038/s41598-021-91481-z
- Nickovic, S., Cvetkovic, B., Petković, S., Amiridis, V
  aviation safety. *Sci Rep*, **11,** 6411, doi: https://doi.
- Vandenbussche, S., Callewaert, S., Schepanski, K
  based on 3D dust aerosol distributions, surface v
  20-15127-2020.
- Gkikas, A., Proestakis, E., Amiridis, V., Kazadzis, S.
  AeroSol (MIDAS): a global fine-resolution dust op
  https://doi.org/10.5194/amt-14-309-2021.
- Soupiona, O., Papayannis, A., Kokkalis, P., Foskinis
  Samaras, S., Groß, S., Mamouri, R.-E., Alados-Arb
  the northern Mediterranean region (2014–2017)
  https://doi.org/10.5194/acp-20-15147-2020.

EGU European Geosciences Union

Atmospheric Chemistry and Physics

ARTICLES & PREPRINTS | SUBMISSION | POLICIES | PEER REVIEW | EDITORIAL BOARD | ABOUT | EGU PUBLICATIONS

Articles / Special issues

Search

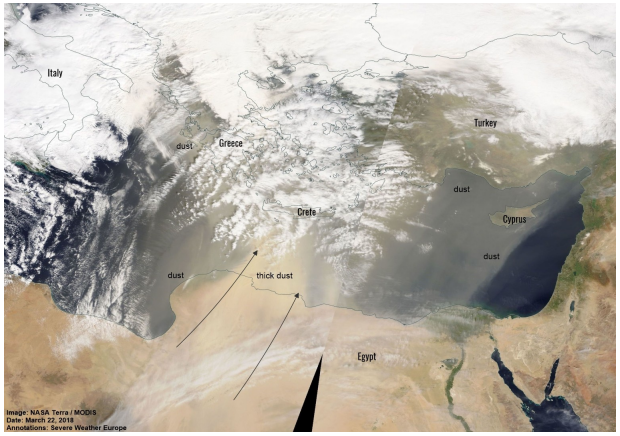
Dust aerosol measurements, modeling and multidisciplinary effects (AMT/ACP inter-journal SI)

Editor(s): ACP co-editors | Coordinators: Nikos Hatzianastassiou and Stelios Kazadzis | Co-organizers: Sarah Basart and Lucia Mona
Special issue jointly organized between Atmospheric Measurement Techniques and Atmospheric Chemistry and Physics

More information

IMPACTS OF A STRONG DUST EPISODE OVER SOUTHEASTERN EUROPE

On 22nd March 2018, a large part of the Mediterranean Eastern countries experienced a very intense episode of African dust, **one of the most important of recent years. (Monteiro et al., STOTEN, 2022)**



- Increase (3 times) of emergencies responses and hospital admissions.
- Reduction of visibility caused aircraft traffic disruptions in Crete.
- Reduction of solar energy production is estimated on ~10 MW.
- Lower bounded cost in Crete about **3.4-3.8 million EUR**

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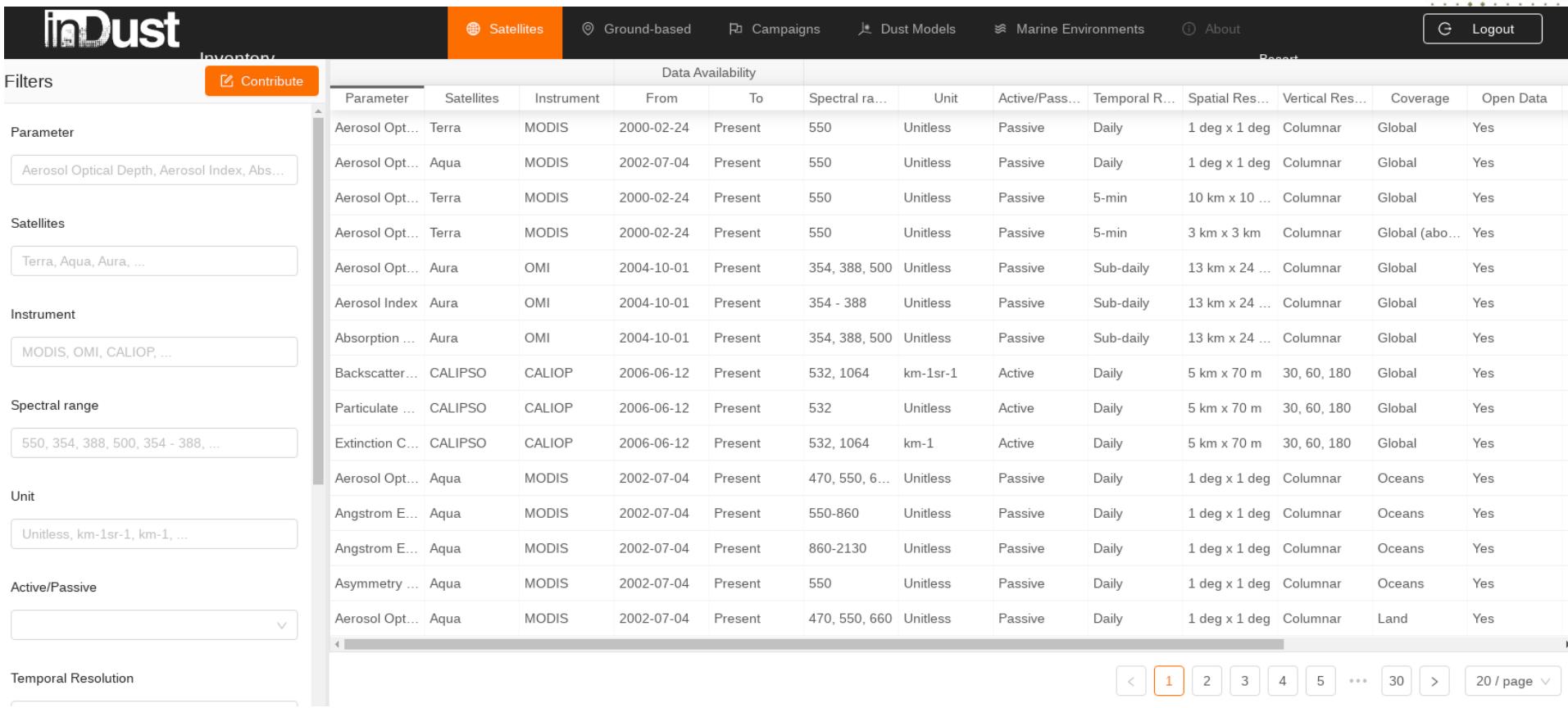
Dust catalogue

Interactive dust information catalogue that includes observations and forecast



ATTENTION: It will be available in the Barcelona Dust Regional Center website.

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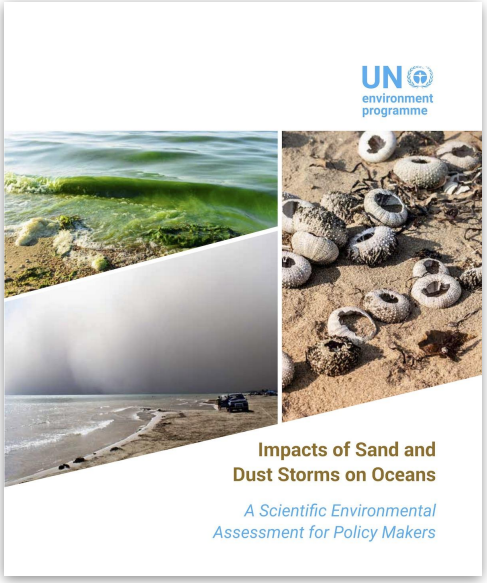
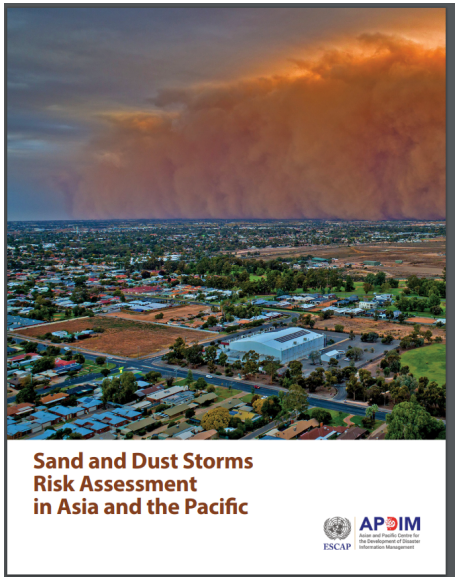
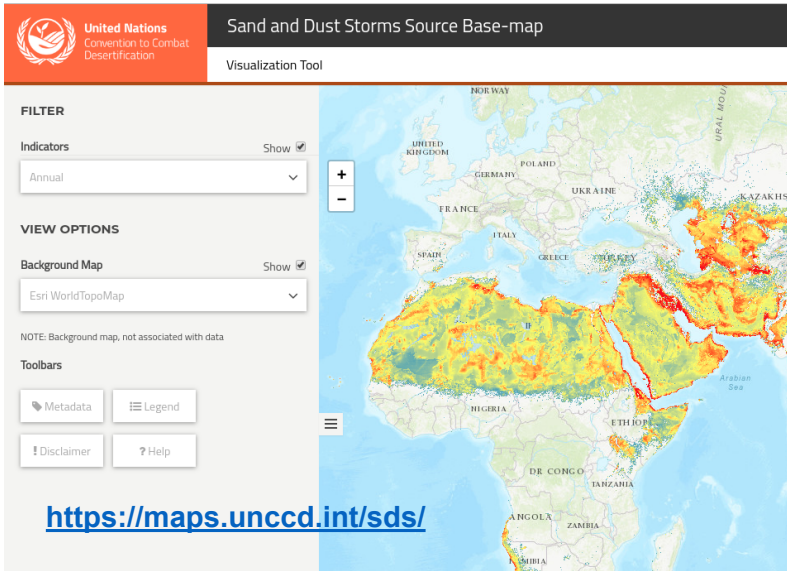
Policy Impact

inDust members are part of scientific expert committees of several **UN and EC agencies and initiatives**

- FAIRMODE (European Commission)
  - Running National projects in Bulgaria, Iceland and Turkey
- ADPIM/ESCAP
- UNEP
- UNCCD
- WHO (AQ Guidelines 2021 incorporates a sections on mineral dust)
- WMO (through the SDS-WAS)
- UN Coalition for Combating Sand and Dust Storms







inDust finishes on 30th October 2021

But this was not the end, we are still promoting **tailored dust information** through

Barcelona Dust Regional Center

@Dust_Barcelona
https://dust.aemet.es/

This WMO Regional Center is coordinating the efforts of the **SDS-WAS Regional Node** for **Northern Africa, Middle East and Europe** that considers a large contribution of researchers, data providers and (*thanks to inDust*) **user communities**

WMO Barcelona Dust Regional Center is coordinating the WMO SDS-WAS activities Northern Africa, the Middle East and Europe

The WMO Barcelona Dust Regional Center is managed by AEMET and BSC

https://dust.aemet.es/

@Dust_Barcelona

More than 10,000 visits per month in the website

and more than 500 new Twitter followers in the last year (at present 4,072 followers in total)

Dust Products

Barcelona Dust Regional Center

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Products | Research | Resources | News & Events | About Us

Products

Overview

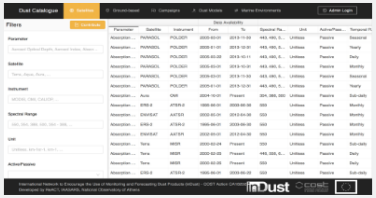
The WMO Barcelona Dust Regional Center provides access to high-quality dust information for the benefit of society. This information is useful to predict the occurrence of Sand and Dust Storms (SDS), as well as to manage their effects and impacts. In this context, the Center offers a wide range of dust products, both models and observations, that serve the need for detailed dust information on a regional scale.
A detailed description of all the products offered on the Center's website can be found in the User Guide.

USER GUIDE

Daily Dust Products

Dust forecasts and dust-related observational products

EXPLORE PRODUCT



Dust Products Catalogue

Inventory of available dust observational and modelling products

EXPLORE PRODUCT

Data Download

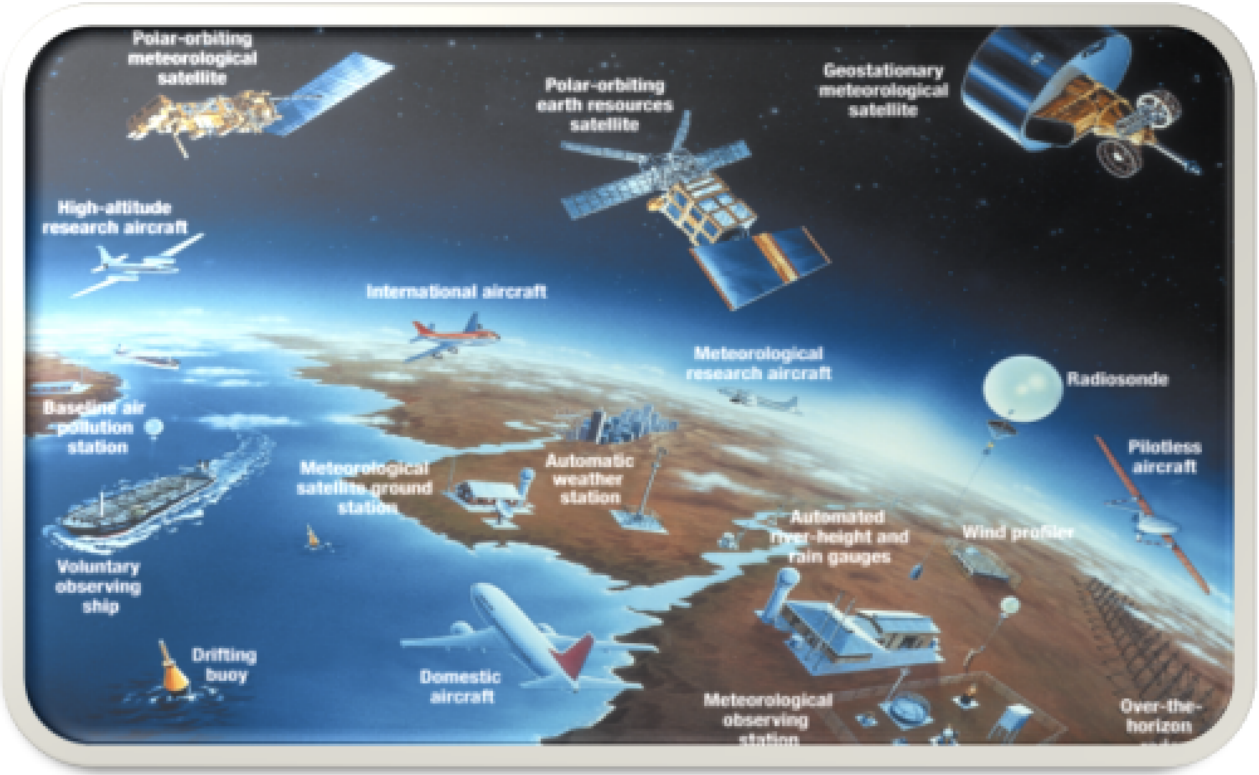
Access and download the numerical data of dust forecasts

EXPLORE PRODUCT

https://dust.aemet.es/

World Meteorological Organization (WMO)

- UN specialized agency on weather, climate and water.
- It's supported by 193 Members and the headquarters is in Geneva (Switzerland).
- Coordinates work of > 300,000 national experts from meteorological and hydrological services, academia and private sector.
- Co-Founder and host agency of IPCC.



WMO OMM

Global Atmosphere Watch (GAW)

Research Enabling Atmospheric Composition Services

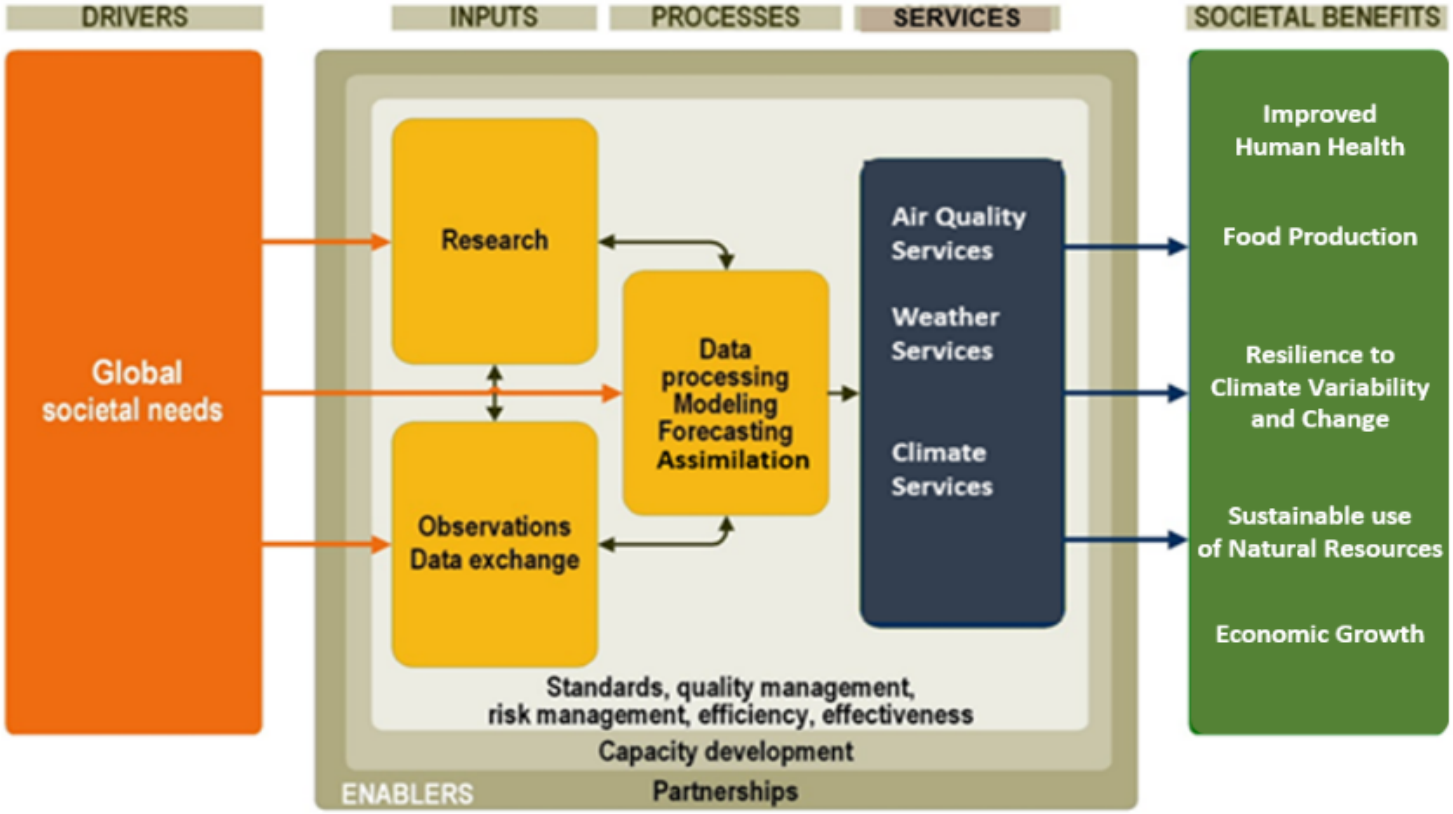
*Advance and enhance **science, services and infrastructure** related to atmospheric composition, and support policies for society through applied research aimed at improving the understanding of the roles of aerosols, reactive gases, stratospheric ozone and greenhouse gases and their interactions in the Earth System.*

Drivers: Global societal needs

WMO OMM

Global Atmosphere Watch (GAW)

Achieving a comprehensive atmospheric composition observing and analysis infrastructure by closely linking operations and research



More than 300 experts from MetServices, universities and research centres

WMO OMM

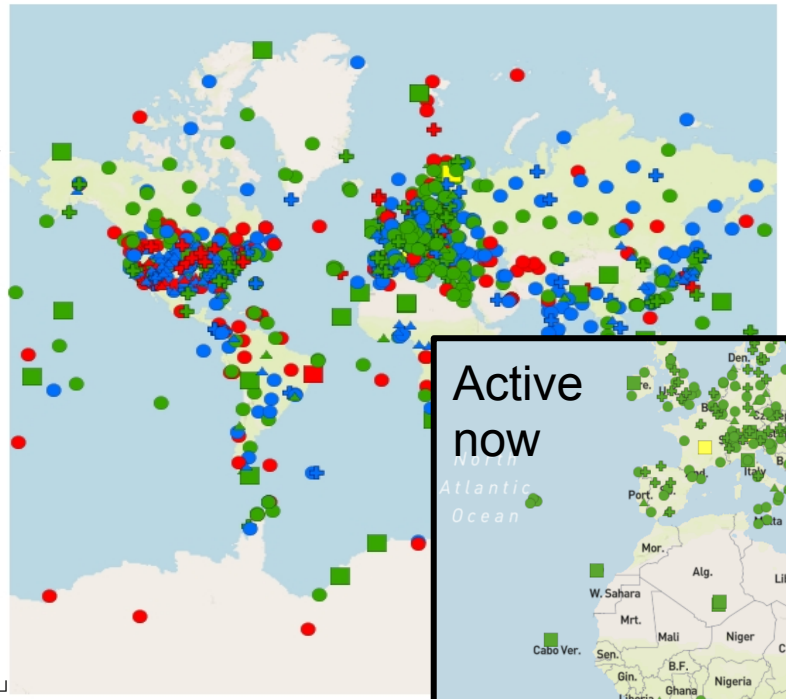
https://community.wmo.int/en/activity-areas/gaw

Global Atmosphere Watch (GAW)

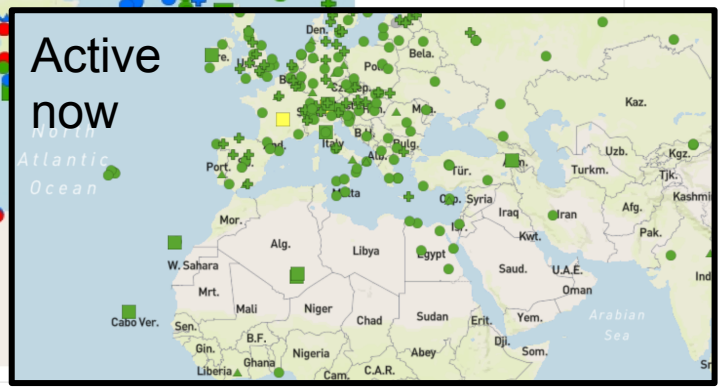
Observational (research) Infrastructure

Strengthen the atmospheric composition measurement and data infrastructure and contribute to ***understanding trends and variability and extremes.***

- More than 200 parameters
- Intercomparisons
- Measurement guidelines
- World Data Centers



Filling gaps:
National AQ networks, LCS and satellites recomendations



Open access

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

Global	Operational
Regional	Partly operational
Contributing networks	Non-reporting
Local	Closed
Other networks	Planned
	Pre-operational
	Stand-by

GAW Station Information System (**GAWSIS**) part of OSCAR https://gawsis.meteoswiss.ch/GAWSIS/#/

Global Atmosphere Watch (GAW)

Activities World map

Monitoring

746 active global/regional/urban/ stations in 112 countries

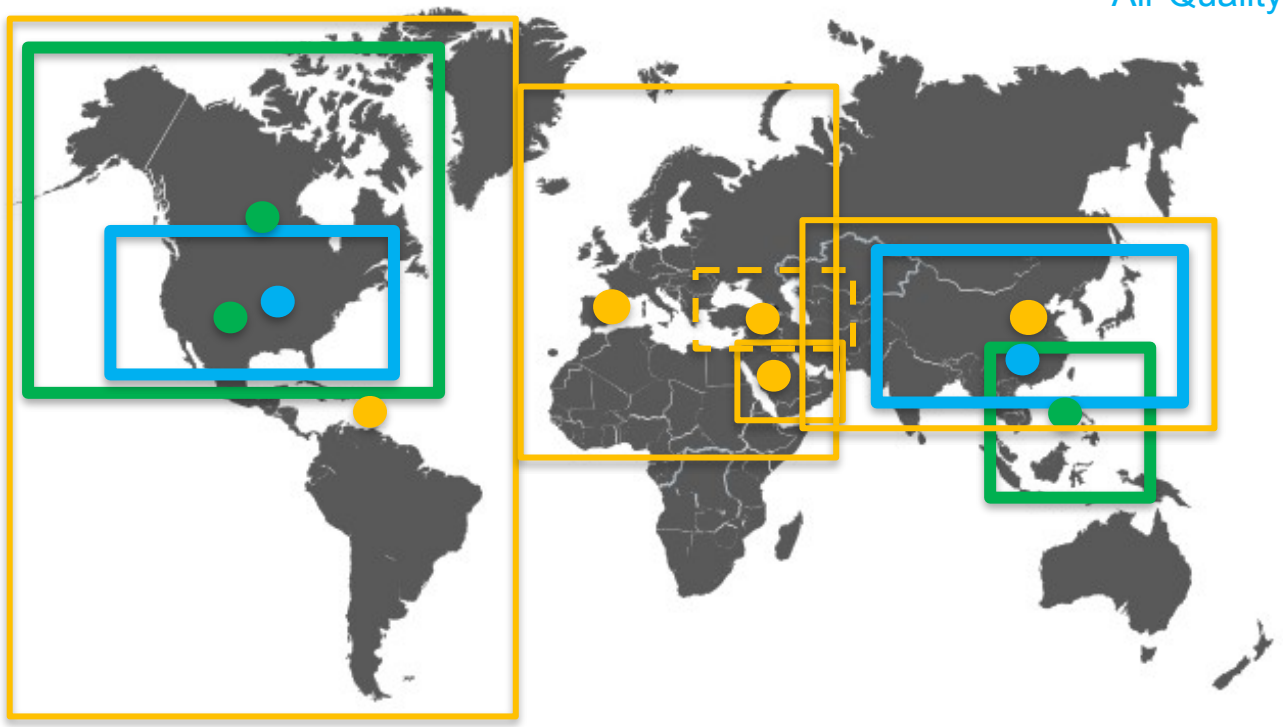
Central Facilities

13 countries are hosting GAW central facilities

Forecasting

21 countries providing daily forecasts

Model Intercomparisons
Sand and Dust Storms
Wildfires
Air Quality

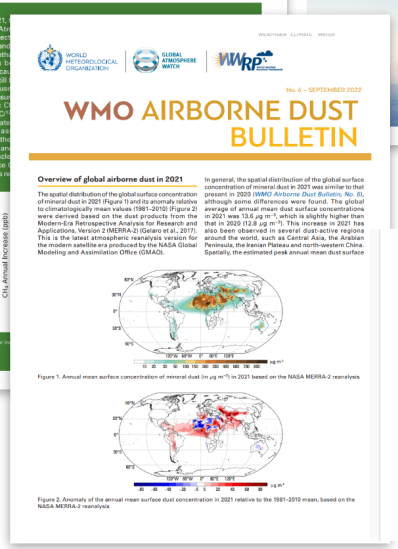


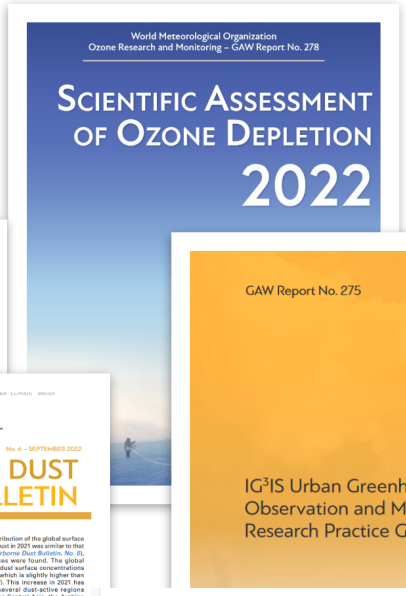
WMO INFRASTRUCTURE - GDPFS
Regional Specialized Meteorological Center with activity specialization on Atmospheric Sand and Dust Forecast (RSMC-ASDF)

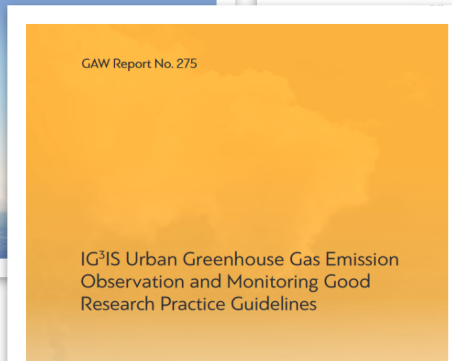
WMO OMM

Global Atmosphere Watch (GAW)

Achievements







Article Type: Research Article

Global Atmospheric Composition Observations: The Heart of Vital Climate and Environmental Action

Gregory R. Carmichael, Oksana Tarasova, Øystein Hov, Leonard Barrie, and James H. Butler

WMO OMM

https://community.wmo.int/en/activity-areas/gaw

Final remarks

- Sand and Dust Storms (SDS) play a significant role in different aspects of weather, climate and atmospheric chemistry and represent a **serious hazard** for life, health, property, environment and economy.
- Understanding, managing and mitigating **SDS risks** and effects requires fundamental and cross-disciplinary knowledge.
- **inDust** focused to build a community of researchers and users that support the design of the strategy to develop **dust services**.
  - *WMO Barcelona Dust Regional Center is supporting this downstream service platforms.*

Tehran, Iran, June 2014

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#COSTinDust

Thanks a for you attention

My special thanks to **inDust** Core Group and the participants.
The work presented here it is possible thanks to the support of collaboration of the active members of the **WMO SDS-WAS** and particularly to the NAMEE Regional Node partners.
Also, thanks to the associated researchers from NASA (i.e. AERONET, MODIS), EUMETSAT, ACTRIS, and CAMS.

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https://dust.aemet.es/

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