MARSU

Wahid Mellouki

Centre National de la Recherche Scientifique CNRS (France)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690958

The Project

Research and Innovation Staff Exchange (RISE)
Call: H2020-MSCA-RISE-2015

Marine Atmospheric Science Unravelled: Analytical and mass spectrometric techniques development and application

MARSU

4 years project: Feb 2016 – Feb 2020

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MARSU

https://marsu.h2020.org/

MARSU is a collaborative effort with the goal of gaining new knowledge and reducing the uncertainty about the effect of aerosols resulting from the air-sea exchange on Air Quality, Climate and atmospheric composition.

Major gaps of knowledge exist in relation to the organic matter present in aerosol particles, which originates from the organic microlayer at the surface of the ocean. **The characterization of the organic content of the aerosol particles, the evolution of the chemical and physical properties, and their effects on climate-related topics form the foci of this project.**

MARSU

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Project organization

Laboratory + Field + Modelling

WP0: Project management and coordination

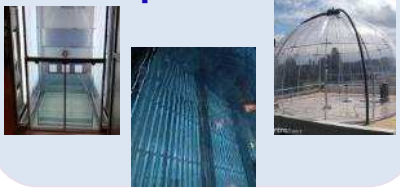
WP1: The surface microlayer composition and its relevance to the troposphere

WP2: Laboratory studies on processes of reactive species relevant for air/sea and pollution interactions

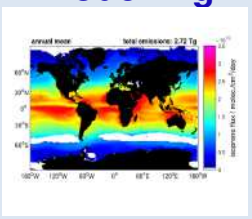
Laboratory studies

Field Observations

Simulation Chamber experiments



Modelling



WP3: Characterization components in marine aerosol and its mix with anthropogenic pollution

WP4: Analytical Developments

WP5: Field Experiments and Modelling

Training, Communication, Dissemination

- New kn[illegible] interactions
- Improve predictability of air quality& climate

The Partners

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France

Leipzig – **Germany**

Austria

Jinan

Shanghai

Xiamen

China

Centro de Investigaciones en Bionanociencias **Argentina**

Instituto Nacional de Meteorologia e Geofísica, **Cape Verde**

University Mohammed V Rabat – **Morocco**

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Example of achievements: focus on Morocco

https://atlasm5.org/

MARSU actions:

- **Development of a new Atmospheric Research Station (the only one in North Africa of this type)**

Atlas Mohammed V
Atmospheric Research Station
أطلس محمد الخامس – محطة لأبحاث الغلاف الجوي

Missions:

- To monitor long-term trends of atmospheric composition change, air pollution and climate variables at the Regional and global scales

- To promote knowledge transfer and education in the areas of atmospheric, air pollution and climate sciences

- To support policy development (Air Quality & Climate Change)

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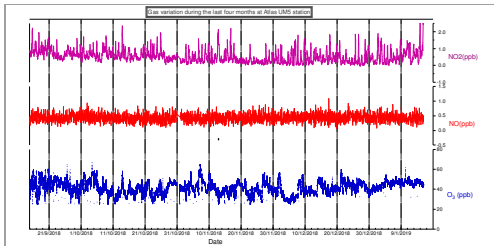
October 2016

July 2017

August 2017

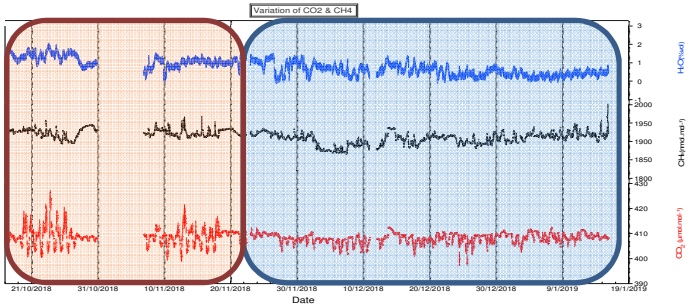
August 2017

First data for a series of pollutants (NO, NO_2 & O_3)

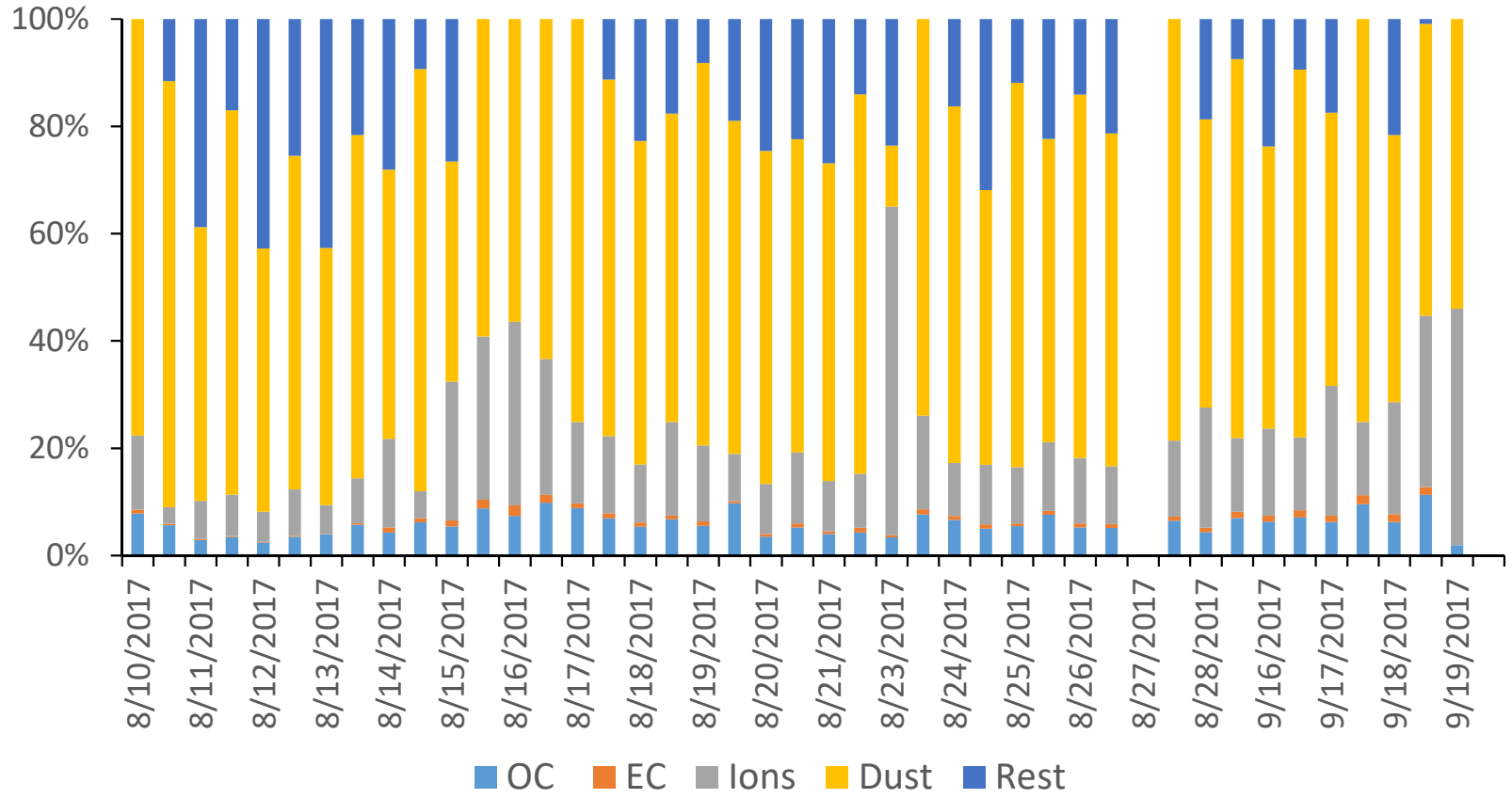


October 2018

First data on GHGs (CO_2 & CH_4)



Temporal variation of aerosol chemical components



- Mineral dust made up about 60% of aerosol mass and was the main dominant aerosol type during the investigated time frame
- Dust conc. ranged between 5 and 90 µg/m³ with avg. of 25 µg/m³

TROPOS

Education and Training:
Secondments and visits: (Morocco / France and Germany)

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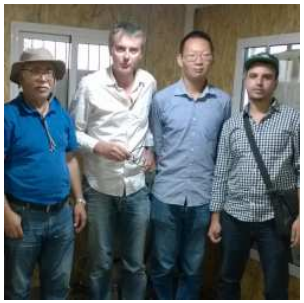
Ibrahim Ouchen, PhD student at University Mohammed V (Rabat), during his secondment at CNRS-ICARE (Orléans): **12 months**

Nabil Deabji, PhD student at University Mohammed V (Rabat), during his secondment at TROPOS (Leipzig): **6 months**

Najoua Labjar, Associate Professor at University Mohamed V of Rabat (Morocco) during her secondement at IRCELYON (Lyon, France).

Prof Hartmut Herrmann (TROPOS, Germany) guiding students at the Atlas-UM5 Atmospheric Research Station (Ifrane)

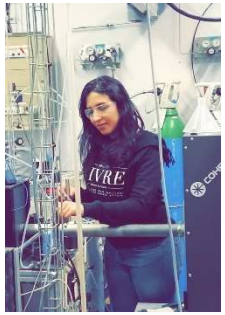


Roland Benoit, Research Engineer at CNRS-ICARE (Orléans-France) and **Liang Wen**, PhD student at CNRS-Orléans during their secondments at Atlas-Mohammed V Atmospheric Research Station: **2 months**

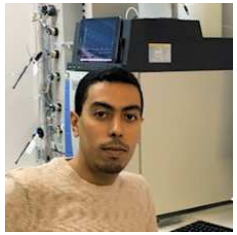
Minoun Harnafi, Professor at Mohamed V University (Rabat) during his secondment at ICARE-CNRS (Orleans)

Wadinga Fomba, Postdoc at TROPOS (Leipzig), during his secondment at University Mohammed V (Rabat)

Peter Mettke, PhD student at TROPOS (Leipzig-Germany), during his secondment at University Mohammed V (Rabat)



Hajar Elothmani, PhD at University Mohamed V of Rabat (Morocco) during her secondement at ICARE-CNRS (Orleans, France).



El Mehdi El Baramoussi, PhD student at University Mohammed V (Rabat) during his secondment at ICARE-CNRS (Orleans): **12 months**

Areas Open to Collaboration

https://atlasm5.org/

Integrate/Associate the Atlas Mohamed 5 Atmospheric Research Station (AMV, Ifrane) to the European Research Infrastructure ACTRIS

https://www.actris.eu/

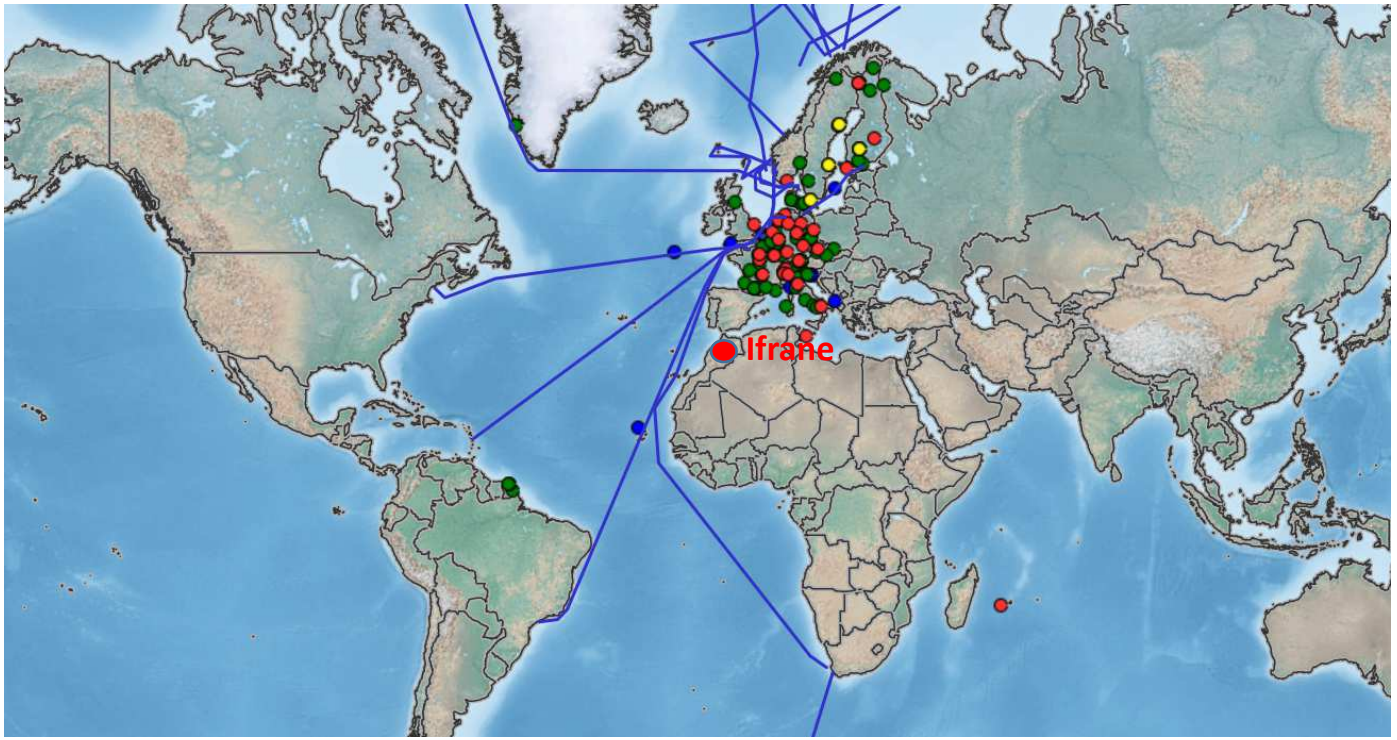
ACTRIS is the European **Research Infrastructure** for the observation of **Aerosol, Clouds and Trace Gases.** ACTRIS is composed of observing stations, exploratory platforms, instrument calibration centres, and a data centre. ACTRIS serves a vast community of users working on atmospheric research, climate and Earth system and air quality models, satellite retrievals, weather analysis and forecast systems by offering high quality data and research infrastructure services for atmospheric aerosols, clouds, and trace gases.

https://atlasm5.org/

Integrated **C**arbon **O**bservation **S**ystem
ICOS STATIONS NETWORK

https://www.icos-ri.eu/

ICOS is an organisation of twelve member countries and over 130 greenhouse gases measuring stations aimed at quantifying and understanding the greenhouse gas balance of the Europe and neighbouring regions.



Integrate the Atlas Mohamed 5 Atmospheric Research Station (AMV, Ifrane) to the ICOS Stations Network

https://atlasm5.org/

ICOS RI | ATLAS-MOHAMMED V

icos-atc.lsce.ipsl.fr/AMV

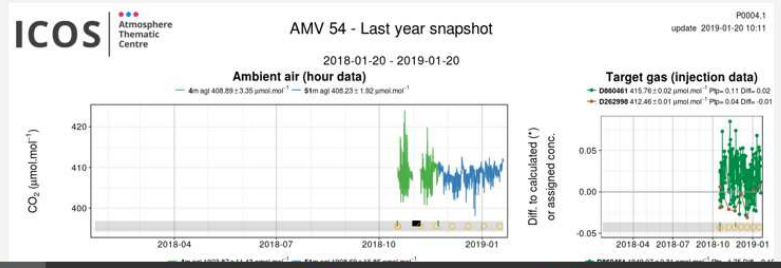
ICOS Atmosphere Thematic Centre

Home | ICOS ATM Network | Labelling | ATC Data Products | Documents | Links | People | Login

ATLAS-MOHAMMED V Atmospheric Research Station - Panel Board

The ATLAS-MOHAMMED V Atmospheric Research Station (ATLASM5) is operated by Mohammed V University (UM5) Rabat, Centre National de la Recherche Scientifique (CNRS-ICARE, Orléans) and Orléans University. It is a facility that has been continuously monitoring and collecting data related to atmospheric chemical composition since July 2017. It is located about 19 km south from downtown of the Ifrane at an altitude of about 2000 meters above sea level in a remote area with minimal influence of human activity which makes it ideal for monitoring constituents in the atmosphere that can cause climate change and alter air quality.

Instrument 54 | Diagnostic parameters



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https://atlasm5.org/

GAW GLOBAL STATIONS

- Integrate the Atlas Mohamed 5 Atmospheric Research Station (AMV, Ifrane) to the Global Atmospheric Watch (GAW) Global Stations
- Twining with Izana Obervatory (Tenerife)

https://atlasm5.org/

The near future plans

The Atlas Mountain Experiment (ATLAS2019)

September – October 2019

3 sites:

- **Fes city**
- **Ifrane**
- **East of Fes (30-50 km)**

More than 10 institutions

More than 30 participants

At least 4 countries

MARSU

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Thank you for your attention

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