REALISTIC (GA Nº 101086690)

Deliverable Nº: D2.2

Title: Minutes of the trans-disciplinary workshop with OSU-R labs

Project Reference Nº	101086690
Project acronym	REALISTIC
Project full name	centRe of Excellence in AerosoL remote rensIng technology and Science in The Indian oCean
H2020 call	HORIZON-WIDERA-2022-TALENTS-01
Project coordinator	Valentin Duflot
EC project officer	David Monteiro
Project website	https://lacy.univ-reunion.fr/activites/programmes-de-recherche/realistic
Deliverable Nº	D2.2
Deliverable title	Minutes of the trans-disciplinary workshop with OSU-R labs
Dissemination level	Public
Contractual delivery date	30/11/2023
Actual delivery date	27/11/2023

Creators: Valentin Duflot, Michaël Sicard

Affiliation: Université de la Réunion

Project abstract:
The overarching goal of REALISTIC is to develop a Centre of Excellence in aerosol remote sensing technology and science in the Indian Ocean, through the creation of a Chair, with La Réunion, a European Outermost region, as a strategic pivot point of the European Research Area. REALISTIC aims at attracting and maintaining a high-profile researcher (ERA Chair holder) to lead a high profile supporting team with excellent research and technical capabilities in the aerosol remote sensing domain. In particular, specific applications and research endeavours will be conducted in the area of quantifying the impact of wildfire and volcanic emissions on the tropical atmosphere composition and on the Earth-Atmosphere radiative balance. REALISTIC is designed to catalyse and maximise the impact of the ERA Chair in order to raise the research, technical and innovation excellence of the Laboratory of Atmosphere and Cyclones (LACy), the Observatory of Atmospheric Physics of La Réunion (OPAR), the Observatory of the Universe Sciences of La Réunion (OSU-R), and the University of La Réunion (UR) to a level that makes them unique and essential references in the local R&I ecosystem, at the Indian Ocean-level as well as to the overall international community, and thus filling the R&I gap on atmospheric systems. REALISTIC will contribute to better integrate UR within the European Research Area, and better align with European standards and priorities.

Last modified: 31-01-2023

Funded by the European Union

Table of content

Funded by the European Union

1. THE TRANS-DISCIPLINARY WORKSHOP WITH OSU-R LABS

The trans-disciplinary workshop was organized in physical mode on Wednesday, November 8th of 2023 with a remote option possible. The remote option was not necessary as every participant registered indicated a physical presence to the workshop.

1.1. ATTENDANTS

BEGUE	Nelson	LACy/UR
BONNET	Camille	LACy/UR
CHANE MING	Fabrice	LACy/UR
COMBEMALE	David	LACy/UR
DUFLOT	Valentin	LACy/UR
GANTOIS	Dominique	LACy/UR
SICARD	Michaël	LACy/UR
VAN BAELEN	Joël	LACy/UR
GRONDIN	Dominique	EnergyLAB/UR
MOREL	Béatrice	EnergyLAB/UR
CAMMAS	Jean-Pierre	OSU-Réunion
PAYEN	Guillaume	OSU-Réunion/UR
VEREMES	Hélène	Météo-France

1.2. AGENDA

1. Presentation of Valentin Duflot, general overview.
2. Presentation of Michael Sicard, scientific context & REALISTIC's strategic research programme and education plan
3. Presentation of Nelson Bègue, illustration of the project with some results
4. Open discussion with the audience

Funded by the European Union

2. MINUTES

Presentation of Valentin Duflot

Presentation of the global context of the project, the needs of Université de la Réunion the project responds to, the objectives of the project.
VD has been noticing that unfortunately the other laboratories of the OSU-Réunion are not here today. However, we are thankful to have EnergyLab.
VD thanks EnergyLab for their presence at this workshop.

Presentation of Michael Sicard

Presentation of the scientific context of the project, the team members so far, the foreseen activities of the future personnel on the project and their subject of work. Presentation of the tools used in the project in order to do the research : presentation of the Maïdo observatory instruments with objectives clearly stated : to keep the instruments labeled and to work towards the labeling of all instruments.

Presentation of the strategic research programme and education plan, in order to show the audience the tasks, work packages and have a global picture of the project. Presentation of

Presentation of Nelson Bègue

Nelson Begue's presentation was about explaining the transport of volcanic eruptions and biomass burning events and their influence on tropospheric and stratospheric composition.

Open discussion with the audience

Jean-Pierre CAMMAS wonders about marine aerosols and why they are not taken into account in the research scope of REALISTIC. These aerosols have a strong impact on the atmosphere as la Réunion is an island and is therefore surrounded by the Indian Ocean.
The Maïdo Observatory has two spectrometers that have been used in rather long campaigns. To sum up, Jean-Pierre Cammas underlines that REALISTIC is mostly about biomass burning aerosols and aerosols coming from volcanic eruptions, but there is no mention of marine aerosols.

Michael Sicard answers that marine aerosols, in the context of the project, are the background, which means the type of aerosol that gives the background signal continuously. It is likely that there have been some (small) variations of this background signal over the last twenty years.
In the coming simulations, when looking at the radiative budget at the regional scale, marine aerosols will be taken into account as background. Then the biomass burning aerosols will be taken into account because it is our focus of interest, along with the volcanic eruptions.

Michael Sicard suggests that the variation of the AOD could be due to regions in the southern hemisphere that are undergoing industrialization. Therefore faraway regions and long-distance transport of aerosols could result in a variation of the AOD in the region of La Réunion.

1st proposal of project with EnergyLab :

Michael Sicard proposes to EnergyLab a project to establish a handy way to estimate the aerosol radiative effects without having to go through a laborious parametrization of a radiative transfer model. The method consists in estimating the radiative efficiency of several aerosol regimes (e.g. sea salt, biomass burning, volcanic eruptions). It can be broken down as follows:

- Identification of aerosol regimes
- Identification of clear-sky cases
- Estimation of the radiative efficiency per aerosol type and solar zenith angle by plotting the net radiation at the surface vs. aerosol optical depth

Béatrice Morel (EnergyLab) says that radiation measurements from the BSRN network in Moufia Campus are available since 2017-2018, 2019. Non-BSRN measurements (only in the shortwave) are available since the 2000s.

Michaël Sicard says it is an easy way to get coefficients that allow quick calculations of direct effects.
EnergyLab says they are willing to participate in the solar radiation part.

Jean-Pierre Cammas draws attention to the fact that this would be an inter-laboratory project, not an interdisciplinary one. An interdisciplinary project would be, for example, the impact of aerosols on human health.

Dominique Grondin from EnergyLab then suggests the hypothesis to study the impact of aerosols on photovoltaic production. During biomass burning episodes, is there less energy available on the ground for the panels?

Dominique Grondin adds that offshore photovoltaic power plants are more and more studied. Therefore, those photovoltaic power plants would be subject to marine aerosols and the deposits on the panels could be studied.

Joël Van Baelen: how is it that you estimate the impact of aerosols on cyclones? Is it by the radiative effect or by the nucleation of aerosols into CCN?
Michael Sicard answers that the warming of the troposphere, with a thermally stable part of the lower atmosphere, could slow down the cyclone's convective development.
Joël Van Baelen: therefore, it would reduce the low-layer thermal gradient. This is not a CCN-type impact, which would have an impact on drop microphysics.
Michael Sicard agrees that it is a rather thermodynamic matter.

Guillaume Payen asks about the impact of forest fires on human health. Is it possible for example to visualize the wildfires in Africa with aerosols that come in the boundary layer?
In all logics, if an air quality alert had been activated by ATMO Réunion for the Ozone, then aerosols would have gone through the boundary layer as well. Could there be an impact of those wildfires in southern Africa on human health? On the Reunion population?

3. ANNEXES

3.1 COPY OF THE ATTENDANCE LIST

In the interests of confidentiality, the signatures have been deleted

D2.2_M12 Transdisciplinary workshop with OSU-R labs

List of participants

NAME	Firstname
BENNE	Michel
BONNET	Camille
CHANE MING	Fabrice
DUFLOT	Valentin
FONTAINE	Fabrice
GODINHO DOS REIS	Gabriela
GRONDIN	Dominique
MOREL	Béatrice
SICARD	Michaël
VAN BAELEN	Joël
VEREMES	Hélène
CONGÉ MLC	DAVID
GANTOIS	Dominique
LAMMAS	Jean Pierre
PAYEN	Guillaume
BEGUE	Nelson

3.2 COPY OF THE PRESENTATIONS GIVEN

A copy of the presentations given is available on this filesender link:

https://filesender.univ-reunion.fr/?s=download&token=2560b883-8df8-ab7f-3e01-81da62fc780f

Expiration date of the link: 27th December 2023.

Funded by the European Union