ITC CONFERENCE GRANT
SCIENTIFIC REPORT

This report is submitted for approval by the grant to the MC Chair.

Action number: CA16202
Conference title: Title 27th GLOREAM Workshop
Conference start and end date: 01/04/2019 to 03/04/2019
Conference attendance start and end date: 01/04/2019 to 03/04/2019

Grantee name: Ana Filipa Isidoro Ascenso

ACTIVITIES DURING YOUR ATTENDANCE AT THIS CONFERENCE:

(**max**.500 words)
During the 27th GLOREAM Workshop, held in the Swedish Meteorological and Hydrological Institute, in Norrköping, from 1 to 3 of April 2019, I had the opportunity to present our work titled “How can dust episodes influence ozone peaks?” under the topic of Tropospheric Ozone Production.

Since the ozone is a photochemical pollutant, which depends on the radiation and temperature, we wanted to assess how the presence of dust in the atmosphere can influence the ozone pollutant concentration. My communication showed the preliminary results from this exercise. The case study presented was a heat wave and dust event episode from August 2018. The ECMWF-CHIMERE modelling system was applied considering one domain with horizontal resolution of 0.25° x 0.25° (over North Africa and Europe). Three different runs with the CHIMERE 2013β model version (recently developed and still in tests) were produced: i) without dust; ii) with dust but without condensation of HNO3 onto dusts and iii) with dust and HNO3 condensation. The modelling results showed that the inclusion of HNO3 condensation improves O3 and PM simulation result, and O3 concentrations decrease approximately 3% (5 μg/m^3) (Figure 1). Overall, the modelling system had a good performance during the dust episode for PM10 and PM2.5, but O3 simulation can be improved, perhaps by using the WRF-CHIMERE online version.

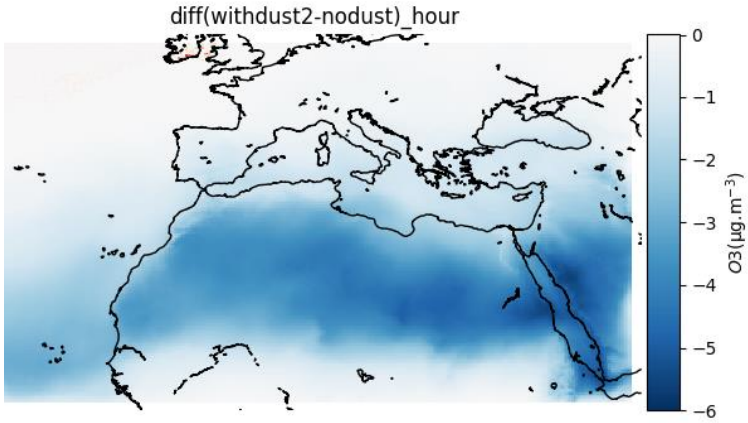


Figure 1. Average spatial differences of hourly ozone concentrations during the dust episode, obtained by subtracting the simulation with HNO3 condensation onto dust from the simulation without dust.

My presentation gave rise to many questions, after presenting the work, and later during coffee breaks, that showed the interest of the community to this subject and highlighted the importance of the study. Moreover, I was able to discuss results concerning recent developments in tropospheric chemical transport modelling, from global to urban scales. Several aspects were also discussed and planned with the CHIMERE devlopers team (which were participating also in the GLOREAM workshop), in order to try to improve model results and prepare a potential publication.

IMPACT ON YOUR RESEARCH AND FUTURE COLLABORATIONS (if applicable)

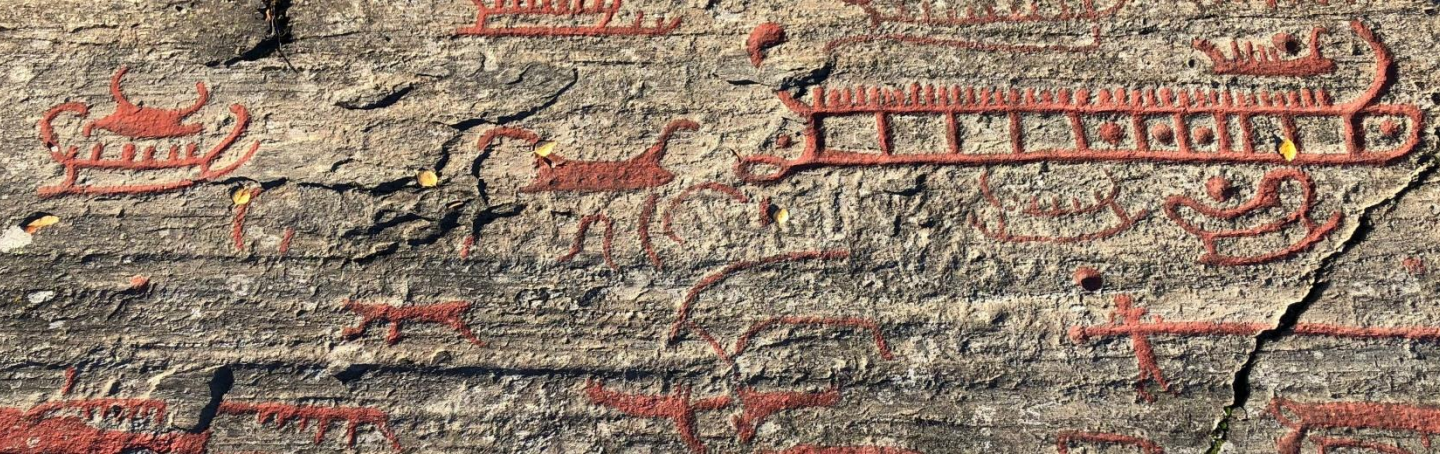
(**max**.500 words)

The presented oral communication is related to the objectives of the InDust COST Action (CA16202), throughout the exploitation of dust forecast/modelling services and products, covering both WG2 (modelling) and WG3 (through the dissemination of dust effects and its research benefits).

I was able to meet the co-authors of my presentation, which was very useful to discuss future work and consolidate our collaboration. In line with the InDust objectives, we intend further investigate how the dusts episodes that occur frequently during summer periods over the Mediterranean region can influence the ozone episodes associated to these summer periods. This can be particularly relevant when heat waves can occur simultaneously with dust intrusions. We intend to run more tests to evaluate how air quality models are reproducing this influence, since several chemical and physics processes in the atmosphere need to be well represented in the models. Thus, we will continue to deactivate the process involving dust, one by one, until we can see no effect of dust onto ozone and therefore identify the importance of each of these processes. Moreover, we decided to continue this work with the new online model WRF-CHIMERE. We expect to improve our results by considering the feedback between dust concentrations and meteorology.

Additionally, I learn about NordicWelfair project that developed a high-resolution emission inventory for the Nordic countries that will be very useful to my PhD thesis since Tampere (Finland) is one of my case studies. I will be in contact with the team and hopefully they will be able to provide me with this information. My PhD topic is related with the Nature Based Solution impact on air quality, so in the future could be interesting to investigate if this solutions have an important impact on air quality improvement during dust events.

In summary, the GLOREAM workshop provided an amazing environment for young researchers to present their work, learn about the current, and future, challenges and opportunities of air quality modelling and make acquaintances with great researchers from all over Europe. I was able to learn a lot and make important contacts. Therefore, I think that my participation in this workshop will have a positive impact on my future research work.



27th GLOREAM workshop

Certificate of participation

This certificate is hereby awarded to Ana Ascenso for her participation in the 27th GLOREAM workshop, held on 1-3 April 1-3 2019 in the Swedish Meteorological and Hydrological Institute in Norrköping.

Norrköping, 5 April 2019

Isabel Javkadon Ribeiro

(On behalf of the local organizers)

Hosted and organized by SMHI