

PROBE NEWS SPRING 2021

SPRING PROBE NEWSLETTER!

Here you will find the latest updates on the topic of Profiling the Atmospheric Boundary Layer (ABL) at European scale.

PROBE
COST
ACTION

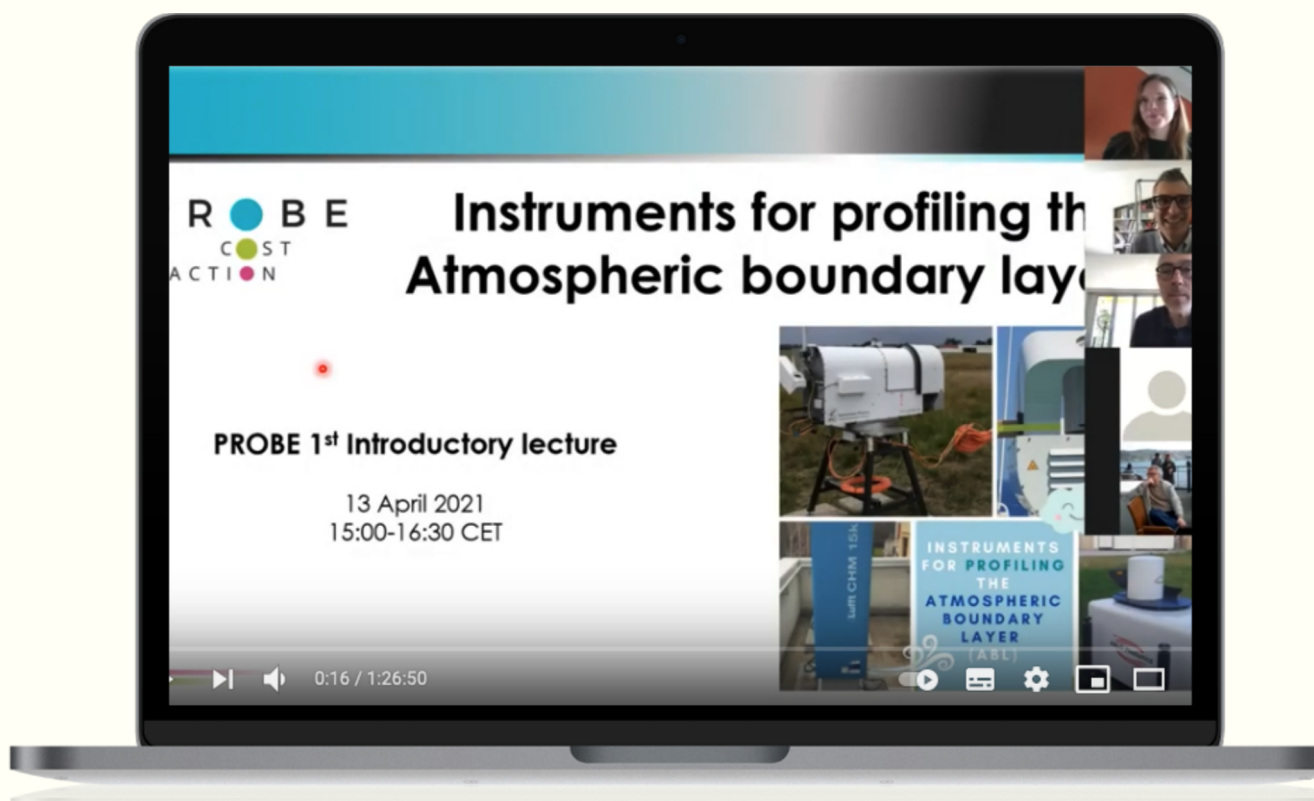
FLASH NEWS

- First PROBE Intro Lecture on ABL profiling instruments attracted more than 100 participants. Check out our upcoming events!
- More than 150 visitors at virtual opening of the new CEO TERRA observatory in Bucharest, Romania
- PROBE experts engaged in the FESSTVaL campaign and spring school

The first PROBE Introductory Lecture attracted more than 100 participants. Our experts gave an overview on the instruments used for profiling the atmospheric boundary layer.

Missed the lecture? - check out the video recording on the PROBE Youtube channel!

Want to access the material and Q&A summary? All available in our user space on the PROBE website!



FESSTVAL CAMPAIGN UPDATES (& LECTURES)



Too small to be predicted by the weather forecast (they "fall through the grid" of the simulation), **summer heat thunderstorms** can cause quite some damages to your car or house almost out of the blue. What is making these huge white mushrooms grow and eventually destroy your car with hail? The [FESSTVaL meteorological campaign](#) is taking a closer look at the physics behind these extreme events so that, in the future, we will be able to predict them precisely. In spring/summer 2021, a network of ~100 small weather stations and many remote sensing devices will observe the atmosphere in the region south-east of Berlin. Microwave radiometers and Doppler wind lidars will measure profiles of the atmosphere in three different locations (supersites). Uncrewed airborne vehicles will be flying in the boundary layer where the physical processes driving summer heat thunderstorms occur. **Want to learn more about the campaign?** [Check out the website!](#) **Want to learn more about the physics of summer extreme weather events or the best ways to observe them?** [Come along to the FESSTVaL Lecture series!](#)

NEW CEO-TERRA RESEARCH INFRASTRUCTURE IN ROMANIA



In April 2021, **152 participants** from **15 countries across Europe** celebrated the new **Research Centre for the environment and Earth Observation (CEO-TERRA)** of Romania's National Institute of Research & Development Optoelectronics (INOE). During a virtual workshop, CEO-TERRA opened its doors for a **virtual tour of the laboratories** and shared the project vision and scientific program. **CEO-TERRA is a state-of-the-art research infrastructure trying to characterize the environment using advanced observation techniques, including lidar, radar, and chemical speciation monitors.** It also supports various activities of the [European Space Agency](#) and the pan-European research infrastructure ACTRIS (Aerosol, Clouds, and Trace Gases Research Infrastructure). Particularly the Lidar Calibration Centre adds novel measurement capabilities to ACTRIS required for quality assurance and quality control of aerosol remote sensing.

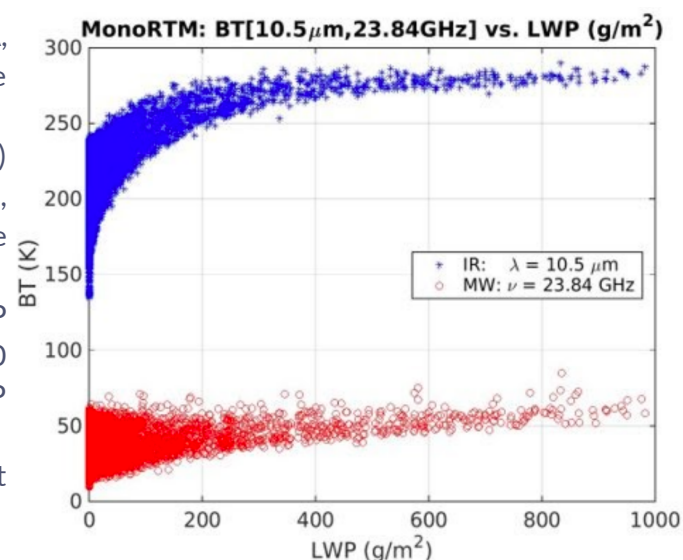
UPDATES FROM SHORT-TERM SCIENTIFIC MISSION (STSM)

Donatello Gallucci, an early career investigator from CNR-IMAA, Italy, collaborated with Pauline Martinet, CNRM, France, in the context of the SOFOG3D campaign.

The columnar content of liquid water (i.e., Liquid Water Path - LWP) can be very low and hard to measure for many clouds worldwide, such as in fog conditions. Combining infrared (IR) and microwave (MW) frequencies improves ground-based LWP retrievals in fog.

The IR channel (in blue in Figure) is much more sensitive to low LWP values, spanning a range of almost 80 K for LWP smaller than 100 g/m². The MW channel (red) is much less sensitive in the same LWP range, showing a linear increase in brightness temperature (BT).

Microwave-infrared synergy is exploited to reduce the measurement uncertainty of low liquid water path (LWP) values!



ABL PRODUCT DEVELOPMENT

A wide range of **advanced products** can be derived from ground-based remote sensing profile observations. To support algorithm development of high-level products, PROBE has conducted an **inventory of existing products and their uncertainties**.

It is our goal to improve current methods and create novel products based on close collaborations between various PROBE experts.

Want to participate? [Join the subgroup working on the field of interest!](#)

STANDARD OPERATING

PROCEDURES AND NETWORKS

We are working on a summary of European boundary layer profiling networks! Want to learn more about state-of-the-art guidelines on best practices for sensor operations, data formats and quality control? [Check out the recordings of the Introductory Lecture on Instrument Network](#)

PLAYING AROUND WITH DATA ONLINE: THE FUTURE IS HERE!



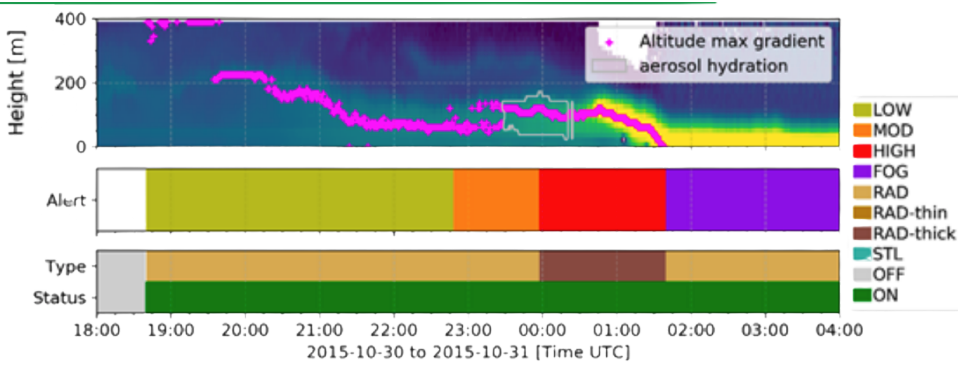
How many times in your life as scientists have you been dreaming about a faster, friendlier, visual system to find the best case study in the data from your last measurement campaign? Or maybe you are passionate about weather just curious about what people measure but you have no idea how to see that stuff...

Forget about tapes, hard disks, USB; now, it is all just one click away.

The [EUREC4A campaign](#) took place in Jan-Feb 2020 and intensively measured cumulus clouds forming in the tropics using a multitude of instruments deployed on aircraft, ships, at sea, on balloons, and on island. To cope with such a massive dataset, some EUREC4A people developed a beautiful, flexible tool called the "How to EUREC4A"

[executable book project](#): it contains chapters for the datasets available online and some ideas on how data should be interpreted, and examples on how to plot them. The book also includes advice on pitfalls to avoid, **and you don't have to download anything!** So, for example, you can check online the track of the ship while the radar on it was observing some clouds, and check at the same time aircraft segments or radiosondes. **Cool, no? give it a try and spread the word if you like the tool**

RECENT PUBLICATIONS



JEAN-FRANÇOIS RIBAUD, MARTIAL HAEFFELIN, JEAN-CHARLES DUPONT, MARC-ANTOINE DROUIN, FELIPE TOLEDO, AND SIMONE KOTTHAUS

PARAFOG V2.0: A NEAR REAL-TIME DECISION TOOL TO SUPPORT NOWCASTING FOG FORMATION EVENTS AT LOCAL SCALES

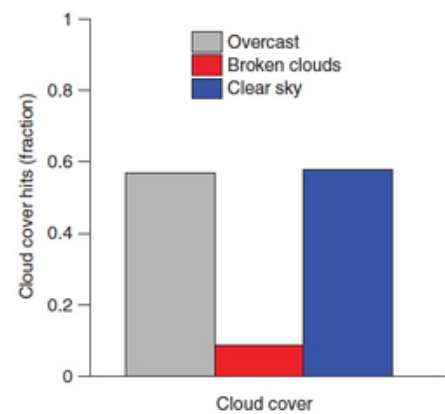
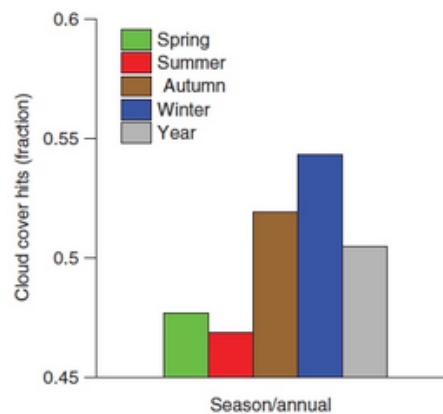
[HTTPS://DOI.ORG/10.5194/AMT-2021-99](https://doi.org/10.5194/amt-2021-99)

GRYNING, S-E, BATCHVAROVA, E, FLOORS, R, MÜNDEL, C, SKOV, H, SØRENSEN, LL.

OBSERVED AND MODELLED CLOUD COVER UP TO 6 KM HEIGHT AT STATION NORD IN THE HIGH ARCTIC.

INT J CLIMATOL. 2021; 41: 1584- 1598.

[HTTPS://DOI.ORG/10.1002/JOC.6894](https://doi.org/10.1002/joc.6894)



BECOME INVOLVED!



There are several ways for you to get engaged with the action:

- We want to support a diverse user community. Tell us about your needs - become a PROBE user!
- We want to learn from each other. Short-term scientific missions (STSM) are a great way to foster collaborations across Europe. Apply for one!
- Are you an early-career investigator (ECI) from an Inclusiveness Targeted Country (ITC)? Apply for funding for international conferences, even online!
- We are actively working to enlarge instrument networks, improve performances, as well as to enhance sensor synergy for new and better profiling products. You want to contribute? Join one of the four PROBE working groups (WG)!

WHAT IS PROBE? PROBE is a new European COST action aiming at strengthening and harmonizing methods and procedures to yield high quality observational data of the atmospheric boundary layer (ABL). It will broaden the bridge between a wide range of user needs and the science and technology expertise residing in industry and academia. For more details see Cimini et al. 2020, BAST



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Acknowledgement

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COST description

COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

Weblink

www.cost.eu

