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**A Message from the Director of ESSL Pieter Groenemeijer:**



*"As the year draws to a close, it's a good time to look back at ESSL developments in 2023. I am very grateful to work for the fantastic ESSL team which has accomplished a lot in the last year. One of the highlights for me was the European Conference on Severe Storms in Bucharest in May, where we welcomed almost 200 participants to the Institute of Statistics in the heart of the city in collaboration with our Romanian counterparts. In addition to the*

*many excellent scientific contributions, I will not easily forget the conference dinner with Romanian music and dancing! The summer then brought us a very active storm season in Europe, with an incredible episode in mid/late July in which the European record for the size of hailstones was broken twice, the last time with a stone 19 cm in diameter in north-eastern Italy. The many questions that arise in connection with these extreme events reinforced our efforts in planning a long field campaign TIM (Thunderstorm Intensification from Mountains to Plains) coordinated by the ESSL in the coming years, and in 2023 many researchers have joined us. Among them are researchers from our new member Météo-France, where Director of Operations Alois Holzer and I were very kindly welcomed for a scientific visit last month. I can't wait to see how TIM will evolve in 2024, a year that will certainly bring many new opportunities and challenges, alongside some great developments we are already anticipating, such as testbeds with real Meteosat Third Generation data, automated medium term storm forecast guidance, and more insight into the connection between severe storms and climate change coming out of our research projects. In a happy and grateful mood I wish you a Merry Christmas and a great New Year."*



## **ESSL visits METEO FRANCE**

On 20 and 21 November 2023, ESSL's Director **Pieter Groenemeijer** and ESSL's Director of Operations **Alois M. Holzer** paid a working visit to **METEO FRANCE** at its headquarter in Toulouse, France. The ESSL delegation was warmly welcomed by officials such as **François Bouttier, Directeur de l'équipe de recherche DESR/CNRM /GMME/PRECIP**. On the occasion of the visit, a one and a half day meeting program was organized by METEO FRANCE and led by **Clotilde**

**Augros.** While ESSL presented not only its history, organization and members but also news about its ESWD, research, testbeds, courses and TIM field campaign activities, METEO FRANCE reported on its Meso-NH and AROME models, hail detection and climatology, mesocyclones detection, crowdsourcing, nowcasting activities, lightning data, and MCS studies, to name just a few topics. The meeting and its lectures attracted a total of around 30 participants.



At the end of the visit, both METEO FRANCE and ESSL expressed their interest in further exploring cooperation opportunities. Groenemeijer and Holzer thanked the organizers of the meeting for their hospitality and the excellently organized event. Earlier this year, METEO FRANCE became a full institutional member of the European Severe Storms Laboratory. One of METEO FRANCE's main interests is to use the European Severe Weather Database for research and verification purposes.

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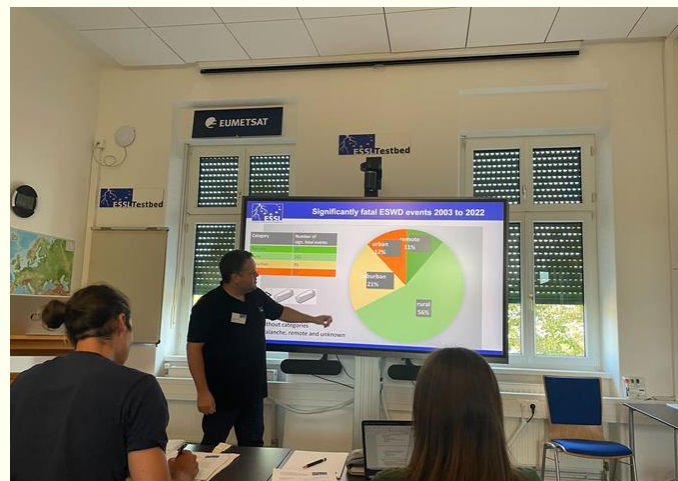
## **Retrospect: ESSL Expert Workshop on Severe Weather Warnings**

From 16 to 18 October 2023, 14 participants from different European Countries attended the first ESSL Workshop on Severe Weather Warnings at the ESSL Research and Training Centre in Wiener

Neustadt, Austria. The extended title, **“from Expectations via Physical Ingredients to Impact-based Warnings and Beyond”** suggests a wide range of workshop topics. And in fact, not only meteorological factors were discussed, but a number of boundary conditions that lead to successful user uptake of warnings:

- organizational or even administrative hurdles slowing down and influencing the issuance process,
- the ability to use different formats for different qualities and certainties of information,
- the role and ability of meteorologists in the process of translating meteorological quantities into expected impacts,
- new analysis pointing towards a negative correlation between population density and weather-related fatalities,
- the availability of seamless and user-tailored warning products.

A judge laid out the legal liability framework warners and, more broadly, experts should be aware of. A philosopher opened the minds of participants by exploring the “history of ideas” related to warnings and the role of warning entities and individuals.





Participants in the warning workshop concluded that a follow-up workshop was highly desirable. While psychological effects should be given greater consideration in the warning process, a number of pressing issues need further discussion: defining the role and required skills of forecasters/warners, clarifying warning type terminology which seems to be far from harmonized, and when to switch from one type to another type of warning, identifying the types of events eligible for push-messages (alarms via the cell-broadcast system), challenging the unwritten law of population density used as a predictor of the risk of fatalities in severe weather conditions, the value and institutionalized role of impact experts in the warning process, the often exaggerated expectations regarding the point probability of predicted events (by both forecasters and recipients) and how to manage such expectations via public communication and towards specific user groups. Related to the this: how probable an event needs to be point-wise to qualify for (different types of) warnings, maybe depending on the potential magnitude of meteorological quantities and impacts?

ESSL plans to continue its engagement in constructive discussions with interested weather services. A follow-up workshop in a similar format is planned for 2025.

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## **Status of preparations for the TIM Field Campaign**

ESSL is currently leading efforts to form a consortium for a major field campaign in Europe. The aim is to collect high-density data to better encrypt the mechanisms responsible for the

frequently observed intensification of thunderstorms in the transition zone between mountain ranges and adjacent lowland areas – an important question given the complex topography we face in many parts of Europe. The current plan is for the field campaign to enter a preparatory phase in 2025 and be in full swing with field activities from 2026 to 2028.

Our initiative sparked a lot of interest within the modelling community. NWP developers seek high-resolution data for assimilation experiments of super-high-resolution convection-permitting models, to name just one application. There is also interest in the campaign from the remote sensing community, for example to test and ideally demonstrate the added value of different measuring systems. In general, the ESSL aims to shed more light on the small-scale processes that lead to thunderstorms of extreme intensity, like the ones we saw on the southern edge of the Alps this summer - with hail up to 19 cm in diameter. A better physical understanding will lead to better models and ultimately better warnings.

ESSL is currently collecting “Letters of Intent” from interested institutions. Alois Holzer, who leads the effort within ESSL, says: “I am positively surprised by the high interest in the TIM Field Campaign. So far we have received expressions of interest from more than 20 institutions from France to Slovakia and from Germany to Greece. We are currently working on formalizing the consortium and creating a solid scientific basis for the campaign in the form of a TIM Whitepaper.” For the TIM Whitepaper, ESSL receives external writing support from Jannick Fischer, who is primarily affiliated with the KIT in Germany. Previously, he worked with Johannes M. L. Dahl at the Texas Tech University in Lubbock, USA.

For the organizational development of the field

campaign, the ESSL received a start-up research fund from the science fund of the Government of Lower Austria worth half a position for two years. Stefan Eisenbach, who brings experience from past field campaigns and project development from the private sector, will fill this position from January 2024. His tasks primarily include partner communication, fundraising, and logistics concepts for the field campaign.

We invite interested institutions to contact us and become part of the campaign. ESSL would also be grateful for financial support for the campaign. Holzer comments on the funding: "Since the ESSL will be responsible for the stable and reliable core of the field campaign on which all connected partners must rely, we are actively looking for suitable financing options and are also open to non-public donors with a strong interest in sparkling science. If this resonates with you, please approach us and help enable a high-density meteorological field campaign in Europe, focused on the high-end cases of convective events and thunderstorms."

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**Wishing you a joyous holiday season and a prosperous New Year from all of us at ESSL!**

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## **ESSL event calendar**

<b>Date</b>	<b>Activity</b>
15 – 19 April 2024	Course Forecasting Severe Convection
22 – 26 April 2024	Course Aviation Forecasting of Severe Convection (spring edition)
13 – 17 May 2024	ESSL-EUMETSAT Testbed 2024 – week 1
3 – 7 June 2024	ESSL-EUMETSAT Testbed 2024 – week 2 (at EUMETSAT headquarters in Darmstadt, Germany)
17 – 21 June 2024	Regular week ESSL Testbed 2024
24 – 28 June 2024	Expert week ESSL Testbed 2024
1 – 5 July 2024	ESSL-EUMETSAT Testbed 2024 – week 3
9 – 13 September 2024	ESSL-EUMETSAT Testbed 2024 – week 4
16 – 20 September 2024	ESSL-EUMETSAT Testbed 2024 – week 5
7 – 11 October 2024	ESSL-EUMETSAT Testbed 2024 – week 6
25 – 29 November 2024	Course: Aviation Forecasting of Severe Convection (autumn edition)
Autumn 2025	12th European Conference on Severe Storms

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Unsure which course to attend? [Try our online quiz!](#)

For further information about the registration for these events, please contact us at: [events@essl.org](mailto:events@essl.org)



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