European Severe Storms Laboratory

ESSL Newsletter 2021-4

September 2021

ESSL–EUMETSAT partnership on using next-generation satellite data in severe convective storm forecasting

ESSL is delighted to announce that it has entered into a contract with **EUMETSAT** for three years to train forecasters of the national (hydro-)meteorological services of its member states. The training focuses on the use of products from the next-generation satellite missions **Meteosat Third Generation** (MTG) and EUMETSAT **Polar System–Second Generation** (EPS-SG) for the analysis and nowcasting of severe convective storms.

EUMETSAT

EUMETSAT and ESSL have started this contract on 1 June 2021 that is intended to pave the way for longer-term collaboration in support of the European meteorological community.

ESSL will organize training testbeds for operational forecasters of Europe's weather services, introducing proxy, and later real, data from EUMETSAT's next-generation missions with a focus on severe convective storm forecasting. The aim is to totally train about 10–15% of the operational meteorological workforce in European weather services, or about 200–300 forecasters.

The testbeds will mainly be organized at ESSL's Research and Training Centre in Wiener Neustadt (Austria), but can also be hosted by weather services with suitable facilities upon their request. Optionally, testbeds can be held online as well.

Besides the testbeds, expert workshops will be organized for a small number of people that include senior forecasters, product experts, senior trainers, science-to-operations staff, and experts from EUMETSAT. The aim of these workshops is to better understand novel capabilities for severe storm analysis and prediction, such as with the new 0.9 mm and 2.25 mm bands, the Lightning Imager, and the Infrared Sounder, and to develop training concepts and material.

The first such workshop will be planned during the first months of 2022. For more information, contact **Pieter Groenemeijer** (pieter.groenemeijer@essl.org) or **Stephan Bojinski** (stephan.bojinski@eumetsat.int).

Annual Review 2020 – Tornadoes

In 2020, a total number of **850** tornadoes were reported in the countries covered by the ESWD. **325** tornadoes (38 %) occurred over land and **525** events (62 %) developed and remained over water. Compared to the previous year, 2019 (798 tornado reports), the total number of tornadoes increased by 52 events (+9 %).

The month with most tornadoes in 2020 was August (159 reports), followed by September (154) and June (124), while the least tornadoes occurred January (11), April (11) and March (24).

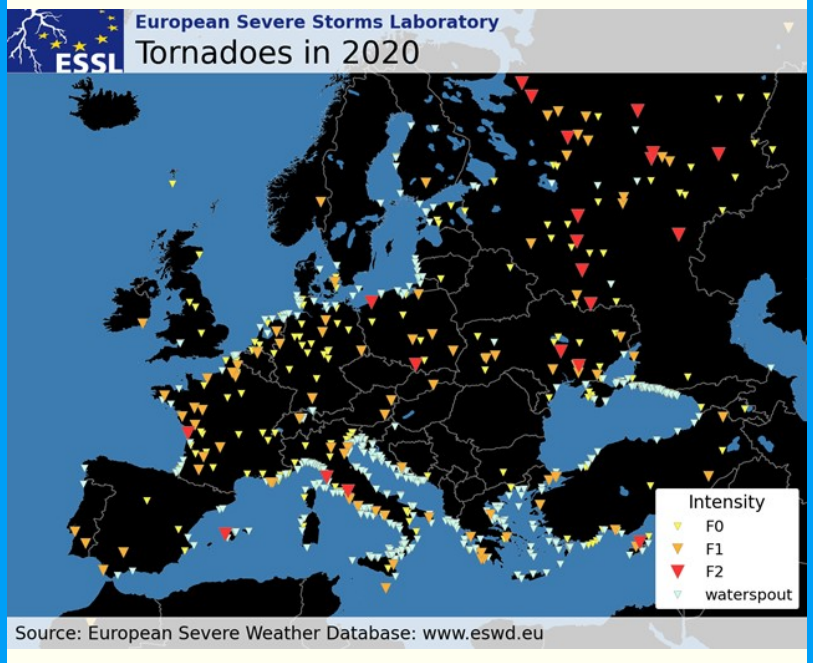


Fig.1: Tornado reports in 2020. European Severe Storm Laboratory, ESSL.

The top five countries with most tornado reports (land and water) in 2020 were Italy (226 reports), Russian Federation incl. Central Asia (147), Greece (96), France (72) and Germany (47).

In total, 44 people were injured in tornado-related incidents. There were no fatalities reported in 2020. Of all 325 tornadoes which occured (partially) over land, an intensity was assigned to 268 events or 83%.

Out of 268 rated tornadoes, 138 events (52%) were rated F0, 103 events (38%) were rated F1 and 27 events (10%) were rated F2. There were no tornadoes rated F3 or higher in 2020, which is unusual.

Month | Int.	F0	F1	F2	F3	F4	F5	Total	LAND	WATER
JAN	5	1	-	-	-	-	11	6	5
FEB	2	7	-	-	-	-	33	9	24
MAR	2	2	-	-	-	-	24	5	19
APR	5	2	-	-	-	-	11	7	4
MAY	22	8	3	-	-	-	57	36	21
JUN	28	28	10	-	-	-	124	80	44
JUL	18	7	7	-	-	-	102	52	50
AUG	19	7	2	-	-	-	159	43	116
SEP	13	17	3	-	-	-	154	38	116
OCT	12	13	1	-	-	-	91	25	66
NOV	1	2	1	-	-	-	35	4	31
DEC	11	9	-	-	-	-	49	20	29
Total	138	103	27	0	0	0	850	325	525

Fig.2: Tornado distribution by month, surface type and intensity in 2020.

ESWD User Guide Document now available online

Within this document, you can find a basic advice on using the European Severe Weather Database (ESWD), based on our own experiences and frequently asked questions to our User Support at eswd@essl.org.

10th anniversary of the ESSL Testbed

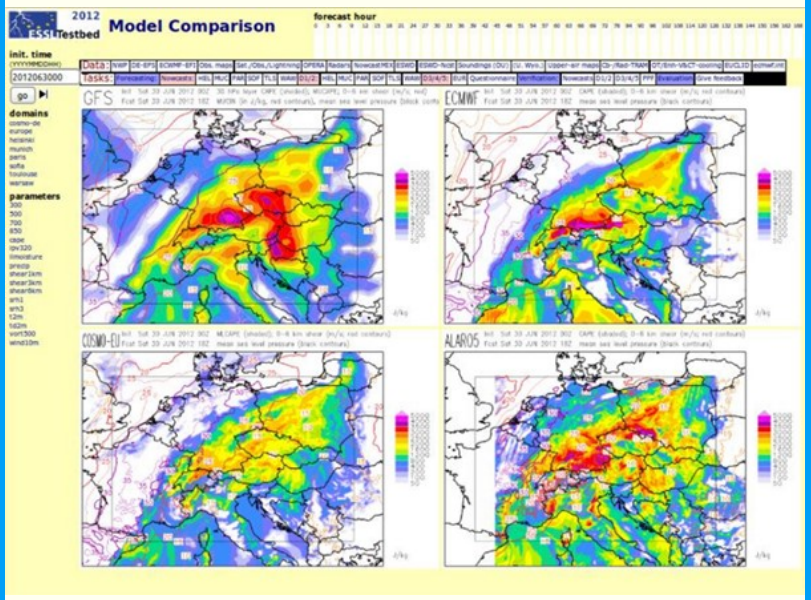
This year marked the **10th anniversary** of the launch of the ESSL Testbed in **2012**. And although there was no celebration in Wiener Neustadt - the Testbed was online due to the ongoing COVID-19 situation - it is still an anniversary worth mentioning.

How has the Testbed changed in the last 10 years?

The concept of the ESSL Testbed has remained the same: bringing together forecasters and developers to discuss and evaluate recent developments and tools in the field of severe weather forecasting, and to provide training. Although the daily programme has changed somewhat since 2021, it still includes mornings where short-term forecasts are made, and afternoons with a focus on product evaluation, nowcasting or medium-range forecasts. Something that has changed is the duration of the Testbed: the 2012 edition lasted 5 weeks, which changed to 4 weeks in 2013 and has remained the same since. In 2019, ESSL started introducing so-called Expert Weeks for returners, in which more attention is paid to product evaluation and less to training.

Major changes were made to the data displayer that participants use for forecasting and nowcasting. One of the most important and most praised changes was the addition of the Skew-T model and the hodograph tool. In addition, it is now possible to overlay observation, satellite,

radar and model data.



ESSL Testbed displayer in 2012

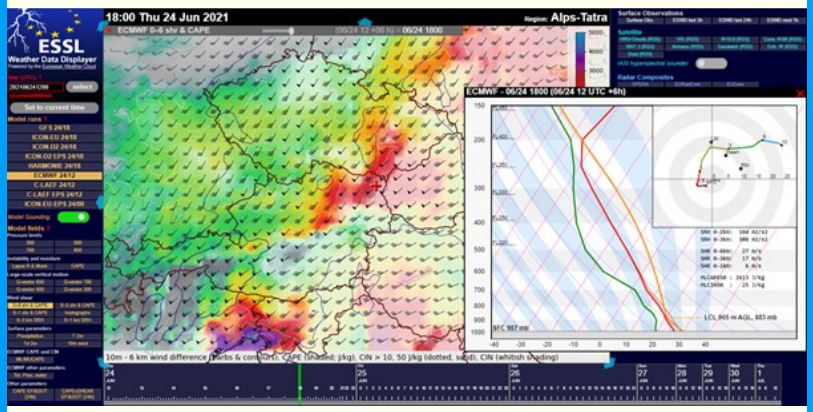
So far, the ESSL Testbed has welcomed **447 non-unique participants during a period of 41 weeks**. Of these participants, a minority visited the Testbed several times. Like such returning participants, there were also returning products, usually with important improvements from one year to the next. For example, DWD's COSMO and ICON NWP models, NowcastMIX, or the Mesocyclone Detection Algorithm were evaluated multiple times.

A**nd how was the weather during the 2012 and 2021 Testbeds?**

Well, both 2012 and 2021 were very active severe weather seasons. We all remember the violent tornadoes and gigantic hail producing supercells of 24 June 2021 or the deadly floods in Germany and Belgium in early July. In 2012, there was a regional severe weather outbreak in France, Switzerland and Austria on 7 and 8 June. On 28 June, a supercell caused hail up to 9 cm in the UK,

which still is the country record, followed by widespread severe weather across Central Europe on 30 June. Another similarity was that both summers saw deadly floods. The 2012 Testbed also ended with tragic floods, when 161 people died in Krymsk, Russia, a large city near the Black Sea.

One can only wonder what awaits the Testbed in the next 10 years. But we all hope for the same thing: many satisfied participants, new insights, and new, better severe storm forecasting products to evaluate, in order to increase the community's capabilities to better predict extreme weather, and to do so in close cooperation with EUMETSAT and ECMWF. But above all, we hope to return to our premises in Wiener Neustadt and to be able to welcome participants in person rather than on a screen!



ESSL Testbed displayer in 2021 with the roaming sounding tool

ESSL General Assembly

In the next days, ESSL members will receive by e-mail their invitation for the General Assembly. It is scheduled as an online meeting on 20 October at 1200 UTC. More information is contained in the

invitation.

ESSL training activities

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

Or approach us for tailored trainings or forecaster training on-the-job.

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