

News and updates from a selection of NMSs

AEMET (Spain – Jesus Barroso)

Since last spring, forecasters have been allowed to work from home for up to 60 % of their shifts. This organisational scheme is intended to become permanent, if approved by the Aeronautical Supervision Authority.

Regarding operational applications and tools, a team is working on the implementation of a new meteorological workstation, VisualWeather software by IBL being the preferred option, though other systems are still under consideration.

As for the meteorological events, the Atlantic storms Fien and Gérard brought strong winds and high amounts of snowfall to the Pyrenees, where the snow season has been short and scarce anyhow. Juliette, a Mediterranean storm, caused a historical snowfall episode on the Balearic Islands, even at sea level and low altitudes, especially in Majorca. On the other hand, most of the country faces drought conditions, due to the lack of precipitation during the spring. April 2023 was the hottest and driest in record, causing widespread damage to growing crops.

ARSO (Slovenia – Veronika Hladnik-Zakotnik)

We bought TriVis for weather graphics.

We released our 100th Podcast about weather and weather related topics.

Start of new big project Sovir in autumn - a plan to renew prognostic system.

We remain on national TV every day, also have every day at 5 pm, a live 3 minute talk about weather with news presenter.

A lot of activities for our new web site.

Recruitment of new forecasters continues, now 2 are in training.

CHMI (Czech Republic – Marjan Sandev)

New organizational structure

From 1 January 2023, a new Forecasting Service Division was established, separated from the Meteorology and Climatology Division. This division incorporates the Meteorological Forecasting Section, the Hydrological Forecasting Department and the Forecasting Service Development Department. The director of Forecasting Service Division is Mgr. Radek. The aim of this change is to focus on the expertise of forecasting offices and communication both between departments and sections, as well as towards the public and customers.

Warning System updates

Changes of display alerts on the CHMI websites. Approved version of two maps: the first map displays information about all severe phenomena, and second map shows observed severe phenomena which requires extraordinary attention and possibly a quick response to protect property and the health of the population.

From 1 May 2022 an expert team, The Convective Group, started working to help operational forecasters with decision making during forecasting and nowcasting severe convective storms. In the convective season (from May to September) forecasters from the Convective Group have shifts on days when storms are expected. They prepare alerts and summary reports for media and social networks, explain forecast uncertainty, prepare case studies and train the forecasters. Members of the Convective Group also personally ensure and coordinate cooperation with other meteorological entities on research after storms with extraordinary impact (e.g., F4 tornado on 24 June 2021).

The working group for a new (Impact based/oriented) warning system has been working since the summer of 2022. A group is split to look at

different factors i.e. limits, impacts, hydrology, CAP, Alert Editor (meteorological workstation), distribution, education, and communication.

CHMI developed a mobile app: SMS alerts for mayors. Access to the application is only for mayors and external employees of the regions. It also distributes alerts to state and local government organizations through many other apps operated by partners.

Innovations

International and national cooperation with organizations and customers this year have included: Preparation for international exchange and visualization of 10 min data with Austria (Geosphere). Preparation of interdepartmental cooperation in the rental of drones for terrain/damage survey activities, the purchase drones and training of pilots is planned. Cooperation with an Amateur Meteorological Society, who are building an app for reporting severe weather phenomena from the field (similar to ESWD of ESSL). Preparation of a cooperation with the Mountain Rescue Service on sharing warnings (avalanches probably will be a part of the NMS warning system and distributed to Meteoalarm).

HAMR (Hydrology – Agronomy – Meteorology - Retention) – as part of the PERUN project (Prediction, Evaluation and Research for Understanding National sensitivity and impacts of drought and climate change for Czechia) was developed. The goal of HAMR is drought status information, at a regional level resolution, on surface and underground waters with a prediction out to 1 week, not currently part of the warning system. The CAP protocol that will be offered to end users is required for the next growing season.

FROST – a part of TAČR grant, a cooperative project with Institute of Atmospheric Physics. The aim is for better prediction of surface temperatures and conditions on the Czech motorway network. The project supposes the use of new data sources, especially satellite measurements, which will be used for a cloud extrapolation. The forecast will be calculated on all sections of Czech motorways and their connections.

In cooperation with the organization CzechGlobe, the FIRERISK model was innovated. FIRERISK is a forecast model for predicting the risk of occurrence and spread of wildfires. Based on the

experience of the fire in the Czech Switzerland National Park, the model was updated. It uses the outputs of the ALADIN model (from 00 UTC). The overall risk is a combination of the Haines index, drought conditions, and the FWI Fire Danger Index itself.

Automatic creation and distribution of products at the request of customers from the energy suppliers (ČEZ, ČEPS), transport (road – ŘSD, railway – SŽ) and public services segments (WOLT). Data, text, graphic forecasts of severe weather phenomena with a large impact - e.g. wind gusts, storms, snowfall, icing, rime.

Education and Training

Preparation and creation of online meteorological courses in MOODLE (for mandatory and optional training) for newcomers as well as operational forecasters. Examples of courses: Convective storms (mandatory), Road meteorology (mandatory), Integrated warning system and meteorological workstation Visual Weather – Alert Editor (mandatory). Other optional courses: Basics of synoptic meteorology, Satellite and radar meteorology, numerical weather forecast etc.

CNMCA (Italy – T.Col. Alessio Canessa)

On July 20th 2022 the CNMCA and COMet Centers were reorganized into a single new one, called "Centro Nazionale di Meteorologia e Climatologia Aerospaziale". The new Centre will therefore maintain the acronym of the historical Centre, the CNMCA, where the final "A" intends to emphasize its "Aerospace" capacity in the context of space weather forecasts.

The website www.meteoam.it and the "Meteo Aeronautica" APP, managed by the Air Force Meteorological Service, have been renewed and updated. New products and new tools for accessing meteorological information are available.

The long roadmap to make "ItaliaMeteo" Agency operational is progressing well. "ItaliaMeteo", the new Italian civil meteorological service based in Bologna, will play a coordinating role of the weather agencies already active at national and regional level. (www.agenziaitaliameteo.it)

DWD (Germany – Robert Hausen)

Forecasters are more now involved in project work and education but at the expense of other work, e.g. the zoomed analyses charts for central Europe issued every 3 hours, now retired.

Forecasting staff numbers have now become limited at regional offices due to issues hiring suitable candidates (shift work not attractive enough anymore despite home office and dislocated work being established in recent years for some shifts).

A new warning project "RainBow" started which will see: automatization of warning process for some events, tailored warning information for key customers/ expert users, harmonization of thresholds between general, aviation and maritime warnings and consideration of impact with improved communication.

Finally some significant rainfall during winter and spring with slow recovery of groundwater the table, but now drought returned since mid of May.

ECMWF (Tim Hewson)

Operational ECMWF forecast production moved to the new ATOS supercomputer in Bologna in October 2022.

Work continued apace on the next forecast upgrade (cycle 48r1) due for implementation in June 2023 - some key points are:

1. Upgrade to ENS resolution (18km to 9km); no upgrade to HRES resolution (run will be renamed).
2. Extended Range will be separate system, 36km resolution, running daily from 00UTC, day 1-46, 101 members.
3. Two reforecast streams rather than one to support medium and extended range suites, one at 9km to day 15, the other at 36km to day 46.
4. New snow scheme - up to 5 layers depending on snow depth (was 1). Will improve 2m temperatures over snow and other aspects.
5. Higher resolution than hitherto for part of the analysis cycle.
6. Improvements to some CAPE-related variables.
7. A new precipitation type of "freezing drizzle" is to be diagnosed and predicted.

Visibility meteograms (in bar chart format) are being introduced to our output products.

The Destination Earth (DestinE) Digital Twin initiative is expected to have a second phase, lasting 21 months (team based in Bonn).

ECMWF is actively exploring the topic of Machine Learning ("data driven") forecasts, which, when fed with a good analysis, have become very competitive versus standard operational NWP, at least for predicting broadscale flow. Externally, there has been a big surge of activity in this area in the last year or so.

FMI (Finland – Juha Sihvonon)

FMI stopped running our HIRLAM model in December 2022. We had been one of its first adopters and it had been in use for nearly 33 years.

During the fall the sea model NEMO was taken into use.

A neural network based total cloud cover nowcast has been implemented as part of FMI's automated nowcasting/very short-range weather forecast.

For the winter 2022-2023 a simple energy weather forecast for the general public was quickly implemented. It took into account heating needs, availability of wind power and other factors.

The safety weather services group has also increased cooperation with the road authority.

In aviation weather we piloted a new product for the winter season with the aircraft deicing services at Helsinki-Vantaa Airport (EFHK). It consists of a tailored weather forecast up to ~24h ahead twice daily, delivered via email and phone briefing.

In the north, avalanche warnings were unified to European EAWS standards.

In June 2023 our "edited" meteorologist's weather forecast had been added to our open data service. The service already included our weather warnings, real-time observations, daily and monthly values for historical observations, values for past 30-year climate normal periods, forecasts from the ECMWF and Nordic MEPS/HARMONIE models, air quality and sea models, and climate change forecasts from the ECMWF and Nordic.

Work on the GeoWeb workstation continues together with KNMI and MET Norway. Currently at FMI it is used operationally primarily for viewing radar and satellite images, but other data like lightning and ceilometer observations or model data are often included as well.

LVGMC (Latvia – Valerija Kostevica)

We continue to improve our warning system by turning it into an impact-based warning system. Starting this summer (2023) a new heat wave warning criteria and guidelines for forecasters will be introduced.

In 2022 December we introduced new warning criteria for high water level in rivers (in cooperation with municipalities). Now warnings are sent directly not only to civil protection authorities but also to municipalities.

MODES data from airplanes are now visualized for operational work use allowing us to see more frequent vertical observation data for temperature and wind.

Over the last year we've improved collaboration with the Radiation Safety Centre. Due to the war in Ukraine we offer additional information about the potential spread of nuclear pollution.

Two new aviation forecasters and two general forecasters started to work, training of few more trainees is continuing.

Extreme floods in East part of Latvia in January 2023 (issued red warning).

Met Éireann (Ireland – Liz Coleman)

The incomparable Head of Forecasting, Evelyn Cusack retired at the start of June after 42 years of service and we welcomed our new Head of Forecasting, Eoin Sherlock.

High-resolution version of Harmonie called HECTOR, has been made available to forecasters in a test environment. HECTOR has a horizontal grid resolution of 750m.

Works have commenced on the installation of the first of five planned dual polar radars for Ireland. The first installation will be in Shannon Airport, Co. Clare.

We have been working with Climate services to develop climate lines for our forecasters as media interviews tend towards a climate context for current weather.

ANYWHERE Multi-Hazard portal has been rolled out to stakeholders, allowing stakeholders real time information on potential hazards in their areas.

Met Eireann continues to collaborate on the UWC-W project. Forecasters are using operational comparisons between Harmonie and UWC models informing forecasting decision.

A review of Met Éireann's warnings guidelines has begun, with help and input from colleagues in Climate Services Division to review threshold values for warnings.

Met Éireann is currently tendering for a new text-based forecasting system, with further tenders for visualisation of model output and the website and app development planned.

Three new forecasters have joined the team.

MET Norway (Geir Ottar Fagerlid)

Focusing on the weather since the last member meeting, Norway has experienced a fairly normal weather year. The country is quite elongated, so it is common to have areas with a bit of everything throughout the year. The summer of 2022 was seen as poor. The average temperature for the whole country ended 0.7 °C above normal. Large parts of the country were classified as "Very wet" or "Extremely wet". For the country as a whole, 15% more precipitation fell than normal. As a result of a lot of maritime air throughout the summer, few convective danger warnings were sent. Only one orange warning was sent at the end of the season. Normally there are usually some more.

The winter season was seen as warm in the northern parts of Norway. In the rest of the country's season was mainly within normal, but an area in the north of Eastern Norway could be classified like "Cold". The national temperature was 0.3 °C above normal.

Since last summer, focusing only on more serious alerts (amber/red), one warning was sent for torrential rain, 7 warnings sent for persistent rain, 2 warnings sent for strong winds, and 4 amber war-

nings sent for heavy snow. A part of the country also experienced an "undetected" polar low pressure, which in an ideal world would have had a more serious warning.

Met Office (UK – Nick Roe)

The Combination of the defence and civil forecasting departments continues with a joint management team now in place. To streamline products a product catalogue is being compiled to identify similar items and reduce the duplication of effort, there is also a project ongoing to identify and decommission products that are no longer required by the users. There will be greater sharing with third party companies when it is judged that this will 'help the public make better decisions to stay safe and thrive' e.g. UKV data is now available on windy.com.

The office has now aligned with the governmental Civil Service pay grades and talent spotting process as well moving ministries from the now defunct Department of Business, Energy and Industrial Strategy to the Department for Science, Innovation and Technology. The Met Office has also been recognised as an official Category 2 Responder to acknowledge the importance of forecasts during extreme weather emergencies.

Many working groups have started as Future of Operational Meteorology (FoOM) project continues to gather pace. These are looking at strategic workforce planning, demand management, future ways of working, manager to staff ratios and change management.

The technical side of FoOM has started to deliver with the work around the new data visualisation package in the Beta stage. This will be a completely online, cloud based, system called Vortex which will combine the current IBL Visual Weather with all the data on internal websites. All operational meteorologists have been tasked with testing various elements and fill in questionnaires to help shape what it will look like and do.

It was a challenging spring/early summer with stretched staffing resources and industrial action resulting in several strikes (now resolved). Training courses to get meteorological technicians qualified into operational forecasters sooner will help with resourcing. It was found that doing these courses remotely was not completely effective so

remote learning will be blended with more learning in person on future courses. The value of experienced meteorologists as well as other staff has also been recognised with the implementation of a long service award.

Météo-France (France - Bruno Gillet-Chaulet)

NWP: New version of ARP/AROME on new computers (June 2022). Ensembles (PEARP/PEARO): members resolution now matches HR deterministic runs. Testing a 500 m resolution version of AROME to be operational for the Paris Olympic Games 2024.

Weather Warnings: New version of "Vigilance" (November 2022) with 2 maps (D and D+1), infra-departmental (French administrative division) information for Avalanches and Storm Surges.

Climate: new references (1991/2020). New tools for Climate Change Adaptation ("Climdiag"/"Climsnow") and trainings for local elected/authorities.

Celebrations: 100 years of the French Meteorological School (ENM) and 40 years of the National Research Center (CNRM) (October 2022).

Trade: New commercial policy refocused on high value-added customers

Staff: Number of employees on the rise! With 17 new dedicated forecasters hired. Recruitment policy: 23 hires.

Observations: New buoys planned to be implemented in the Mediterranean Sea.

New Météo-France "motto": "At your side in a changing climate".

Weather Events: Exceptional "wildfires" season (Summer 2022: 72 000 hectares burnt) due to exceptional heatwaves (earliest ever seen in June 2022) and drought, resulting in a new national weather production ("Forest Weather") to help prevent such situations. Early and intense forest fire for a month of April (2023) at the French-Spanish border (Catalonia). Numerous solicitations for water resources management, electricity consumption...

OMS (Hungary – Zsolt Patkai)

After the 2022 national vote, HMS has been transferred from the Ministry of Agriculture to the newly created Ministry of Technology and Industry. Just some weeks before the end of the year this Ministry was dissolved, the Met. Service was transferred next to Ministry of Energy. Meanwhile, after the poor NWP forecast on National Day (August 20th), the president and vice-president were fired. Later, vice-president could be returned to the Service. These rapid changes stalled, for a long time, the most important goal of the Service: the transformation from a state administration body into a

state-owned company. This transformation would solve many problems: staff limit, salary limits, complete financial and human resource management dependence on the state, etc. At the time of writing the transformation process has finally started. In addition to these, our Service has not had an officially appointed senior management since the end of August. As if there weren't enough problems, in May an unexpected 10% downsizing had to be implemented at all state administration bodies.