

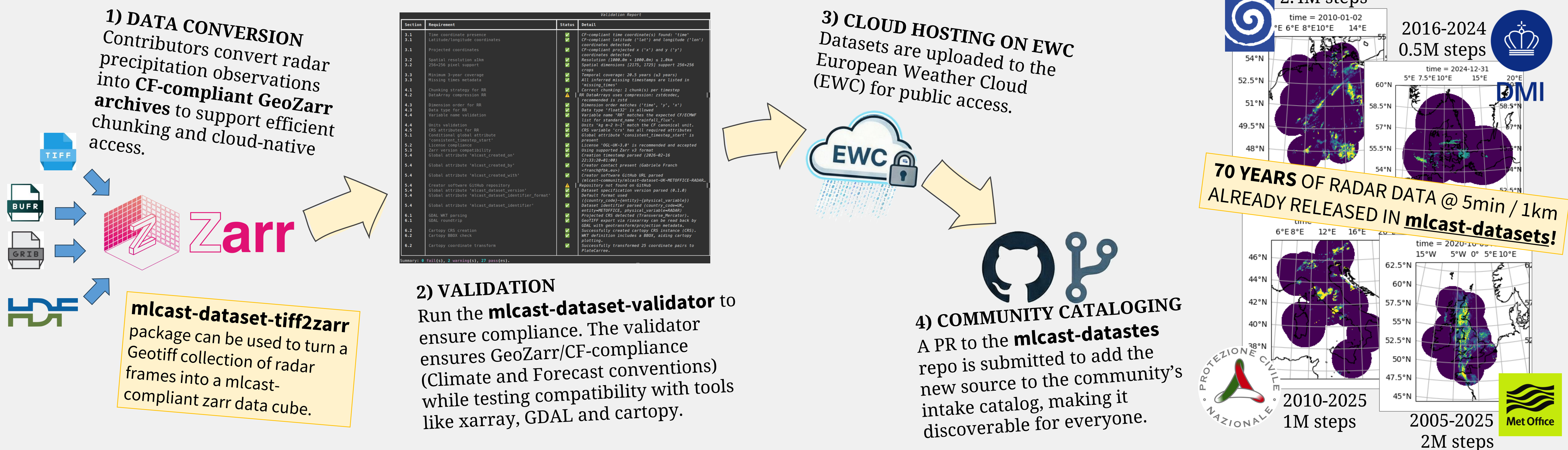
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MLCast is a community effort born as part of Working Group 6 on Nowcasting in the EUMETNET E-AI Optional Programme. The aim of MLCast community is to advance weather nowcasting through machine learning, by sharing datasets and code.

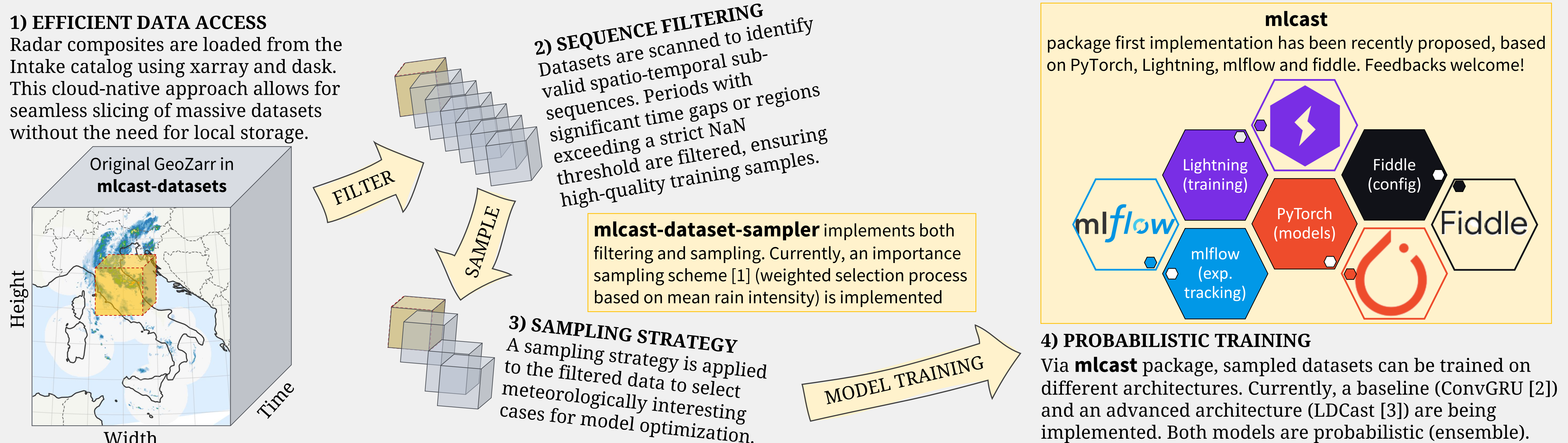
SHARING DATASETS (and how to contribute yours!)

The community, as a first step, has focused on radar nowcasting and has standardized how radar data is prepared and shared. This workflow ensures that contributed datasets are technically robust, cloud-optimized, and immediately usable for machine learning training.



THE TRAINING WORKFLOW

The GPU-optimized training pipeline is designed to leverage the modular mcast ecosystem to transform raw community datasets into calibrated, ensemble-based nowcasts. The core objective is the **delivery of operational pre-trained models**, empowering weather services to deploy state-of-the-art predictive capabilities. This workflow is designed to scale gracefully from a single GPU to high-performance computing (HPC) environments.



JOIN US AND SEE WHAT'S NEXT

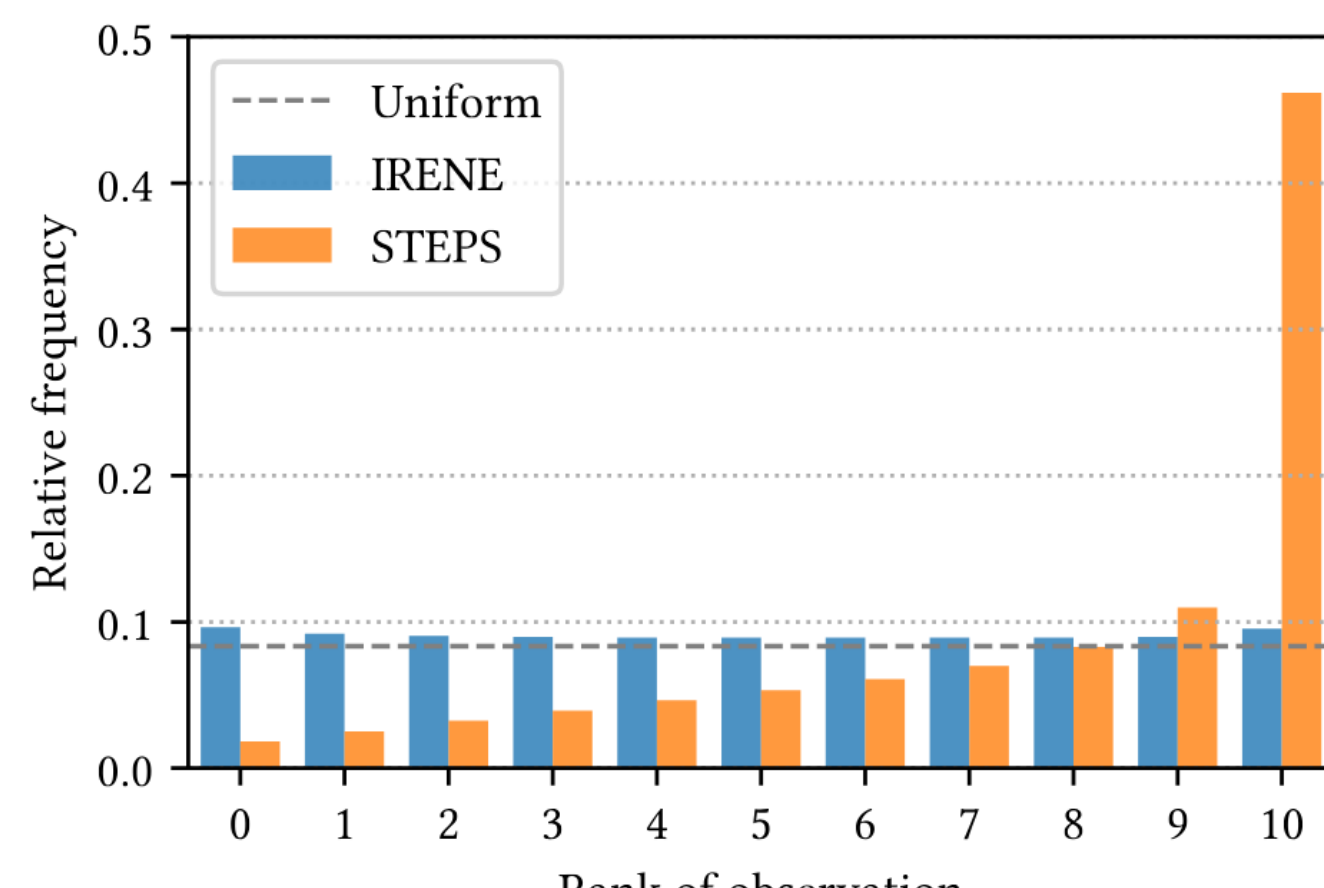
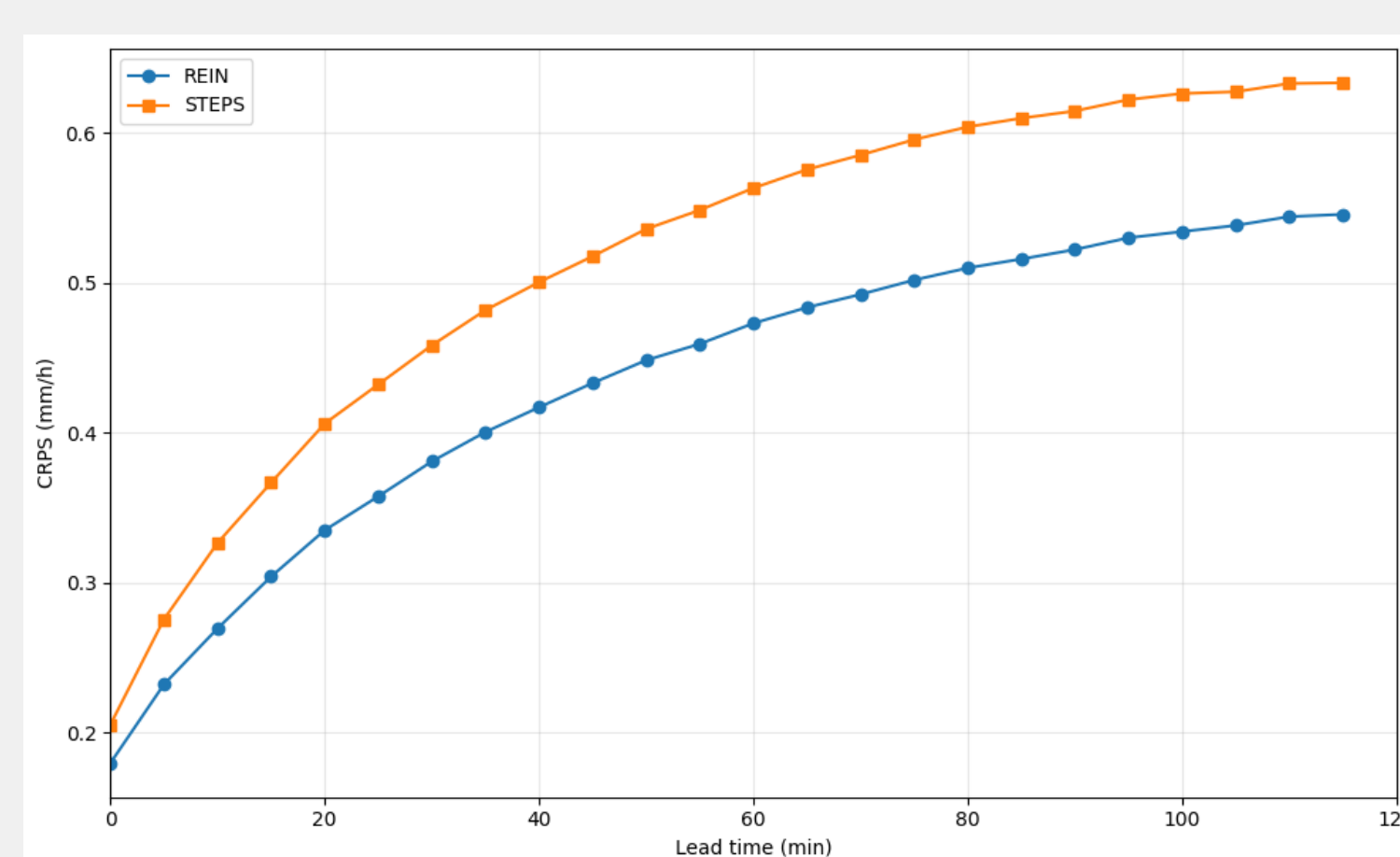
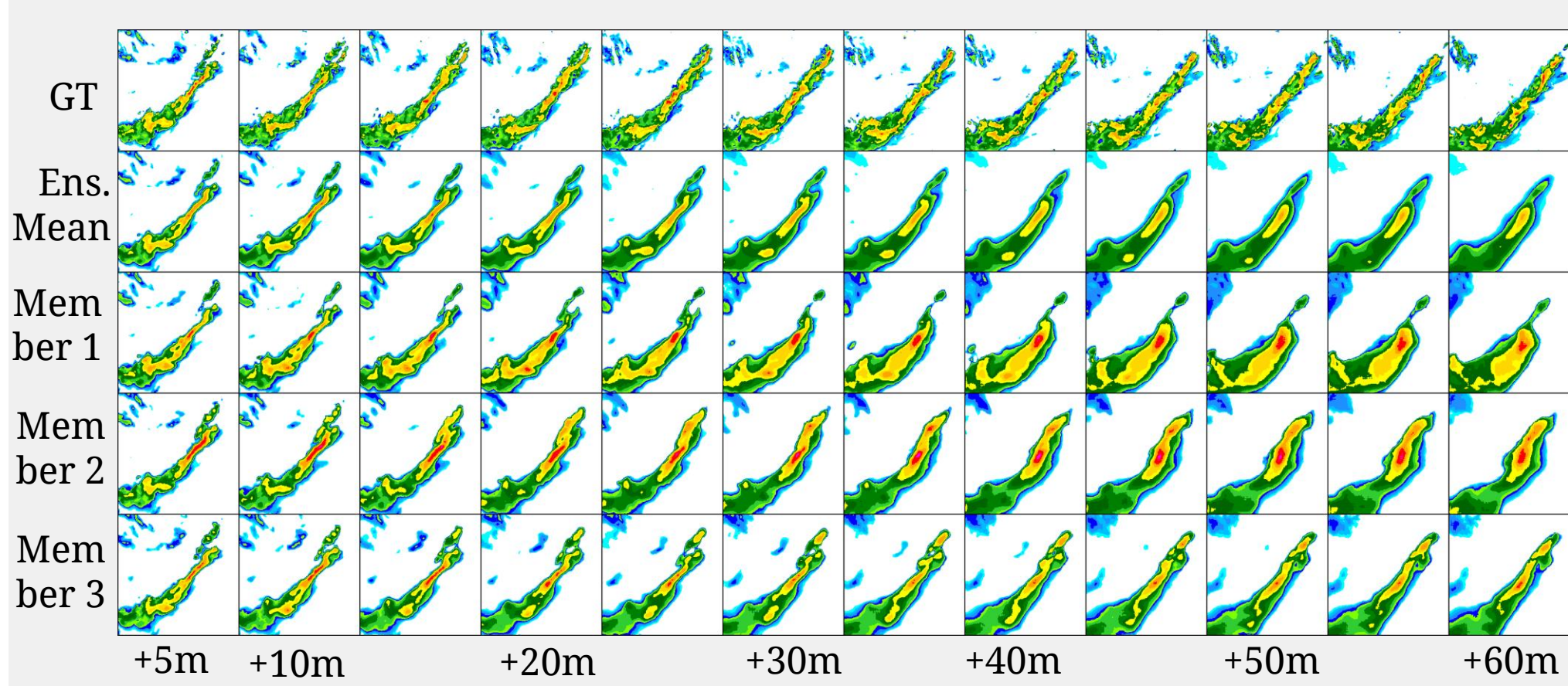
WHAT'S UP NEXT

More DATASETS:

- New dataset from **RMI (Belgium)** just merged, will be published in the next **mcast-datasets** package release!
- KNMI (Netherlands)** is working on the data for a dataset release too!

First PRETRAINED MODEL:

- A grant of 10.000 GPU Hours on Leonardo HPC is being leveraged to train the first release of the baseline ConvGRU model on the 4 datasets currently available in the catalog (ETA end of April 2026). Some preliminary results are shown (CRPS and Rank Hist. w.r.t. STEPS)



HOW TO FIND THE COMMUNITY

- github.com/mlcast-community – software package developments and dataset contributions.
- pypi.org/org/mlcast – install stable releases of the python software packages from here.
- bit.ly/mlcast – Access our community notes.
- groups.google.com/g/mlcastcommunity – Mailing list: stay updated on releases and events.
- Monthly Meetings: Join us every **1st Thursday @ 15:05 CET** (links via mailing list).
- mlcast.slack.com – slack channel. Scan the QR Code in the lower-left corner to join!
- mlcast.community@gmail.com – For direct inquiries.

REFERENCES

- Ravuri, Suman, et al. "Skilful precipitation nowcasting using deep generative models of radar." *Nature* 597.7878 (2021): 672-677.
- Shi, Xingjian, et al. "Deep learning for precipitation nowcasting: A benchmark and a new model." *Advances in neural information processing systems* 30 (2017).
- Leinonen, Jussi, et al. "Latent diffusion models for generative precipitation nowcasting with accurate uncertainty quantification." *arXiv preprint arXiv:2304.12891* (2023).

