VN 26/24 Research Fellowship at ETH Zürich/MeteoSwiss

Recent advances in AI-based weather prediction have demonstrated remarkable skill and computational efficiency. However, most current machine-learning weather prediction (MLWP) systems rely primarily on NWP analyses for initialization and only partially exploit the wealth of available satellite observations. With the advent of the Meteosat Third Generation (MTG), new high-frequency and high-resolution measurements of clouds, moisture, temperature, and lightning activity provide unprecedented opportunities for substantially improving regional forecasts.

Within the framework of a Research Fellowship funded by EUMETSAT, we are advancing the integration of geostationary satellite observations into a next-generation regional MLWP system. The project builds on an existing graph-based, stretched-grid regional forecasting model developed at MeteoSwiss and is embedded in the Anemoi framework initiated by ECMWF. The objective is to develop and evaluate novel multi-encoder-decoder architectures capable of ingesting various satellite data streams (e.g. radiances, cloud products, lightning observations, hyperspectral soundings) and integrating them into high-frequency forecasting cycles with lead times from short-range to up to 10 days ahead. The work will be carried out in close collaboration with national and international partners and contributes directly to the future operational exploitation of MTG data.

Duties

We are looking for a Scientific Programmer / Software Developer to join our motivated and interdisciplinary team.

In this role, you will:

- Develop and implement machine-learning model architectures enabling the direct ingestion of next generation satellite data
- Train, fine-tune, and evaluate models using large-scale meteorological and satellite datasets
- Quantify the impact of satellite data on forecast skill across variables and lead times
- Collaborate closely with scientists, ML

LOCATION
Darmstadt, Germany

QUALIFICATIONS
PhD in computer science, data science, natural sciences (e.g. physics, meteorology) or a related field. Candidates with an MSc and proven professional experience may also be considered

LANGUAGES
Good communication skills (oral and written) in English and one of the Swiss national languages

DEADLINE
31 May 2026

(e.g. MTG FCI, LI, IRS) into state-of-the-art regional forecasting models in Anemoi
- Contribute to the evolution of a multi-encoder-decoder MLWP framework within the Anemoi ecosystem

researchers, and operational forecasting teams to ensure that forecast outputs meet the needs of diverse users
- Disseminate results through scientific publications, conference presentations, and exchanges with EUMETSAT and partner institutions

Skills and Experience

We welcome applications from candidates with diverse backgrounds who meet most (not necessarily all) of the following criteria:

- PhD in computer science, data science, natural sciences (e.g. physics, meteorology) or a related field. Candidates with an MSc and proven professional experience may also be considered
- Experience working with satellite data (e.g. geostationary observations, radiances, retrieval products)
- Strong programming skills in Python
- Experience in machine learning, ideally including deep learning architectures such as graph neural networks, transformers, or spatio-temporal models
- Experience with high-performance or distributed computing environments
- Good understanding of meteorological processes and numerical weather prediction
- Interest in DevOps practices and sustainable software engineering
- Ability to work independently on research questions while contributing to a collaborative team environment
- Motivation to work in a diverse, interdisciplinary, and international environment
- Good communication skills (oral and written) in English and one of the Swiss national languages

We look forward to receiving your online application with the following documents:

- Motivation letter
- CV (including a link to your latest thesis and your publication record)

Employment Conditions

The fellowship is offered for one year, with possibility of extension for up to two additional years. The main workplace is located at MeteoSwiss, Via ai Monti 146, 6605 Locarno with regular visits to Zürich. The amount of remuneration will be in accordance with the salary system of ETH Zürich, see https://ethz.ch/staffnet/en/employment-and-work/employment/salary/fixed-rate-salaries.html.

Further information can be found at the C2SM and MeteoSwiss websites.

We additionally offer:

- Direct involvement in shaping next-generation AI-based weather forecasting systems
- A unique opportunity to contribute to the operational exploitation of Meteosat Third Generation data
- Direct involvement in bringing cutting-edge ML research into operational use
- Close collaboration with European partners, including EUMETSAT, European national weather centers, ECMWF and the wider Anemoi community
- Use of modern scientific and ML software stacks, including Python, PyTorch, Xarray, and container technologies on high-performance computing infrastructure
- A supportive, motivated, and interdisciplinary team within a mission-driven public service organization
- The opportunity to combine scientific impact, societal relevance, and modern software engineering

EUMETSAT and ETH Zürich are committed to providing an equal opportunities work environment for men and women. Please note that only nationals of EUMETSAT Member States may apply. The EUMETSAT Convention requires that Staff shall be recruited on the basis of their qualifications, account being taken of the international character of EUMETSAT.

About EUMETSAT

EUMETSAT is Europe's meteorological satellite agency. Its role is to establish and operate meteorological satellites to monitor the weather and climate from space - 24 hours a day, 365 days a year. This information is supplied to the National Meteorological Services of the organisation's Member States in Europe, as well as other users worldwide.

EUMETSAT also operates several Copernicus missions on behalf of the European Union and provide data services to the Copernicus marine and atmospheric services and their users.

As an intergovernmental European Organisation, EUMETSAT has 30 Member States (Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.)

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