Centre for Mathematics of Planet Earth

Ver-AI Workshop

on Verification of AI-Based Meteorological Forecasts

24th-25th of June, Department of Meteorology, Brian Hoskins Building 1L61

24th of June

Time	Speaker	Title (and discussion themes)
12.00		*Welcome Lunch*
13.10	Simon Lang	*The AIFS: ECMWF's ML forecasting system*
13.50	Simon Driscoll	*Do AI models produce better weather forecasts than physics-based models? A quantitative evaluation case study of Storm Ciarán*
14.20	Coffee and Discussion	*Group A: Theme 1*
		Group B: Theme 2
		Group C: Theme 3
15.40	Tobias Necker	*The fractions skill score for ensemble forecast verification*
16.20	Anna-Louise Ellis	*Ethics, ``Explainability'' and XAI*
16.50	Lewis Blunn	*The use of citizen weather stations and urban flux observations in training and evaluating machine learning models*
17.30	Closing, Dinner at 19.00	

25th of June

Time	Speaker	Title (and discussion themes)
9.30	Zied Ben Bouallegue	*Forecast realism: a new verification mantra?*
10.00	Martin Leutbecher	*Ensemble size dependence of the logarithmic score for forecasts issued as multivariate normal distributions*
10.40	Coffee and Discussion	*Group A: Theme 2*
		Group B: Theme 3
		Group C: Theme 1
12.00		*Lunch*
13.00	Nkuiate Harris Sop	*Evaluating Probabilistic Forecasts in the Presence of Observation Error*
13.40	Etienne Roesch	*Computational reproducibility*
14.20	Coffee and Discussion	*Group A: Theme 3*
		Group B: Theme 1
		Group C: Theme 2
15.30	Cédric Mesnage	*(stability of AI models and transfer learning)*
16.10	Closing	

Posters

Poster presenter	**Title**
José M. Rodríguez	*Development of systematic errors in the East Asian summer monsoon*
Yoshinori Tashiro	*Evaluation of AI-driven weather forecasts of extreme wind events in Europe*

Discussion themes

Theme 1	*Long term statistical properties of AI-based forecasts, including ensembles.* How well do AI-based forecasts in terms of reliability, resolution, correlation, signal-to-noise properties, and events of extreme magnitude and duration?
Theme 2	*ML benchmarks for weather and climate problems.* Benchmarks allow AI researchers without domain expertise to make significant contributions. What are good design principles for such ML benchmarks? (A recent example is WeatherBench, see also Google funding call.)
Theme 3	*Physical properties and interpretability of AI-based forecasts.* To what extent do AI-based forecasts exhibit the typical atmospheric balances such as mass conservation, geostrophic balance? How realistic are complex spatio-temporal meteorological patterns such as storms, droughts or blocking events?