

Forecast-in-a-Box

AI weather forecasting, easy to run and simple to deploy

Corentin Carton de Wiart, Harrison Cook, Vojtech Tuma, Jenny Wong, Frank Lieber, James Hawkes, Tiago Quintino, Umberto Modigliani
ECMWF and contractors

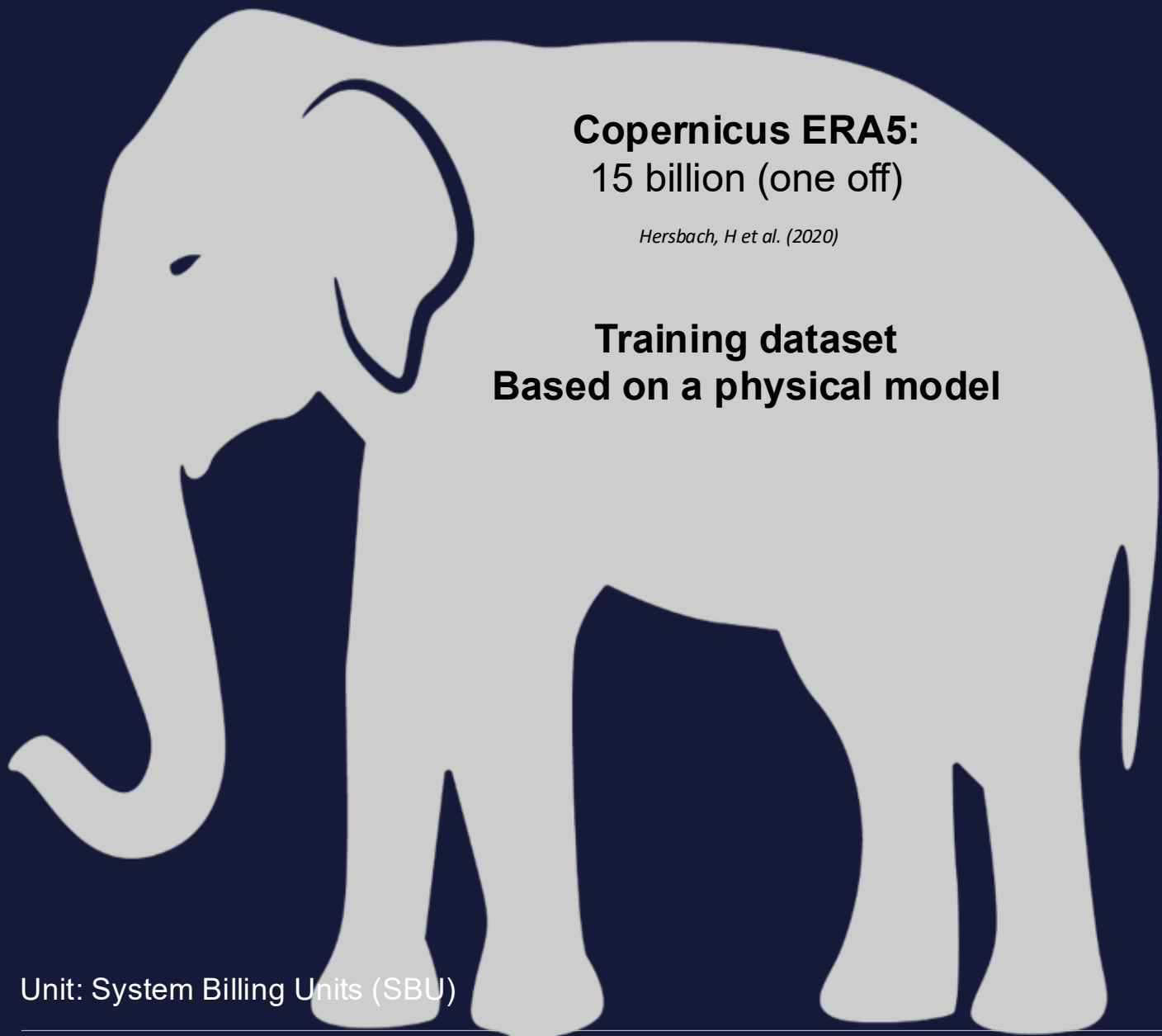
Håvard Alsaker Futsæter, Lene Østvand, Vegard Bønes, Thomas Nipen, Nico Budewitz et al.

MET Norway



Funded by
the European Union

Destination Earth



Copernicus ERA5:
15 billion (one off)

Hersbach, H et al. (2020)

**Training dataset
Based on a physical model**

Physics-based Forecast:

180 000
per forecast

AI Model:

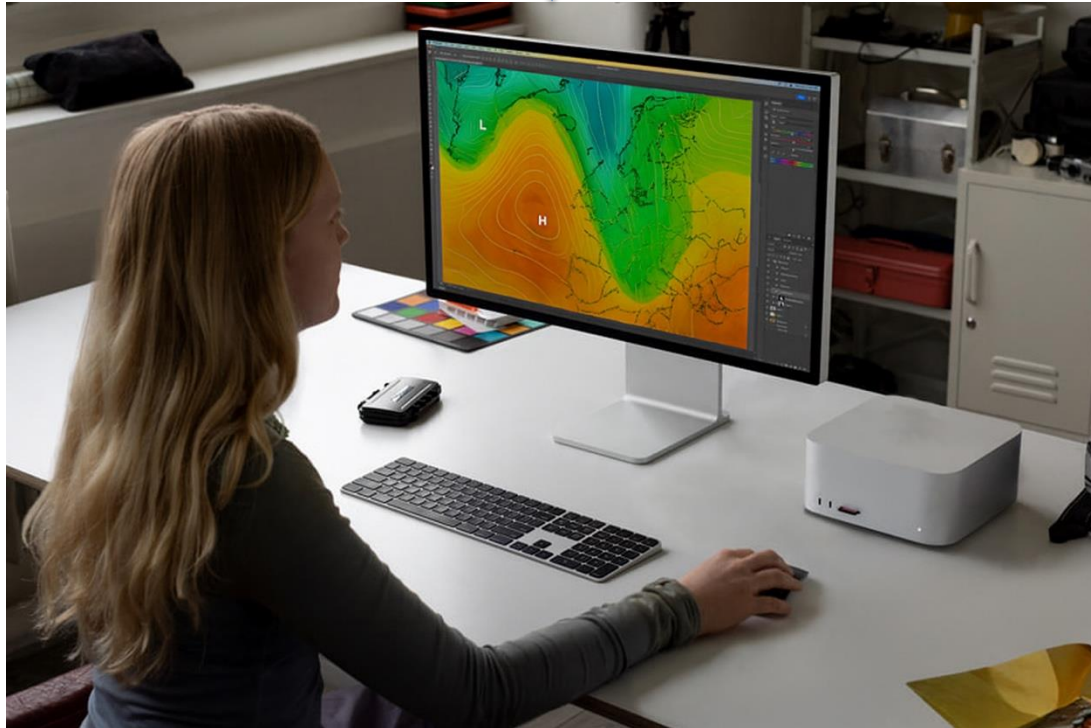
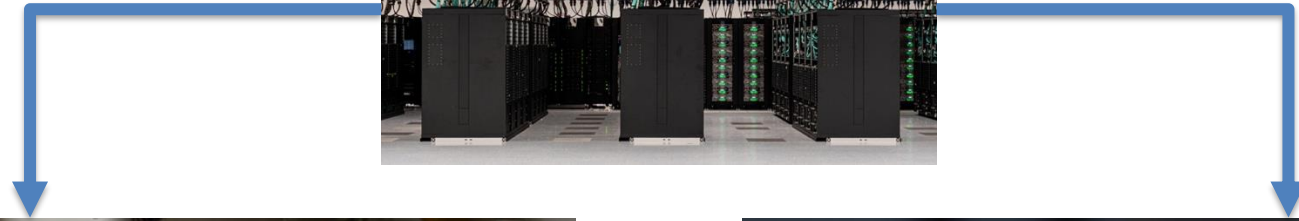
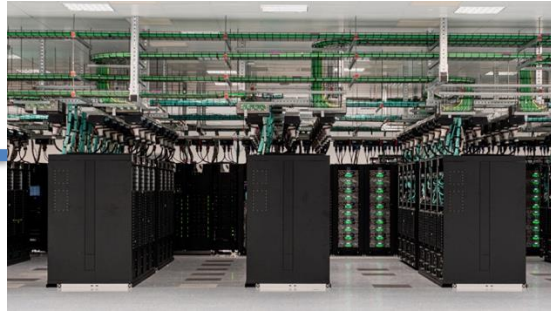
0.3
per forecast

~1000x
reduction in
energy
Forecast time
reduced from
~30minutes to
~3minutes

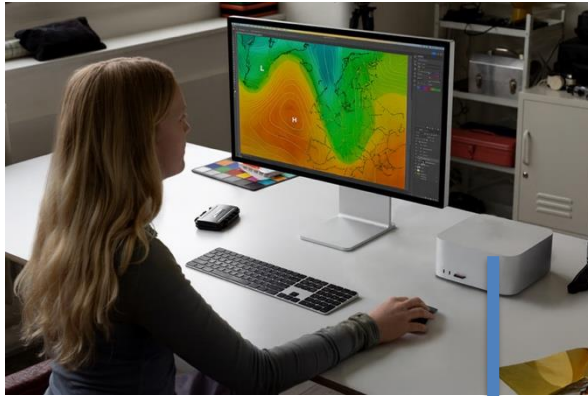


Unit: System Billing Units (SBU)

From Supercomputer to Super Convenient!



Ship the Model, not the Data

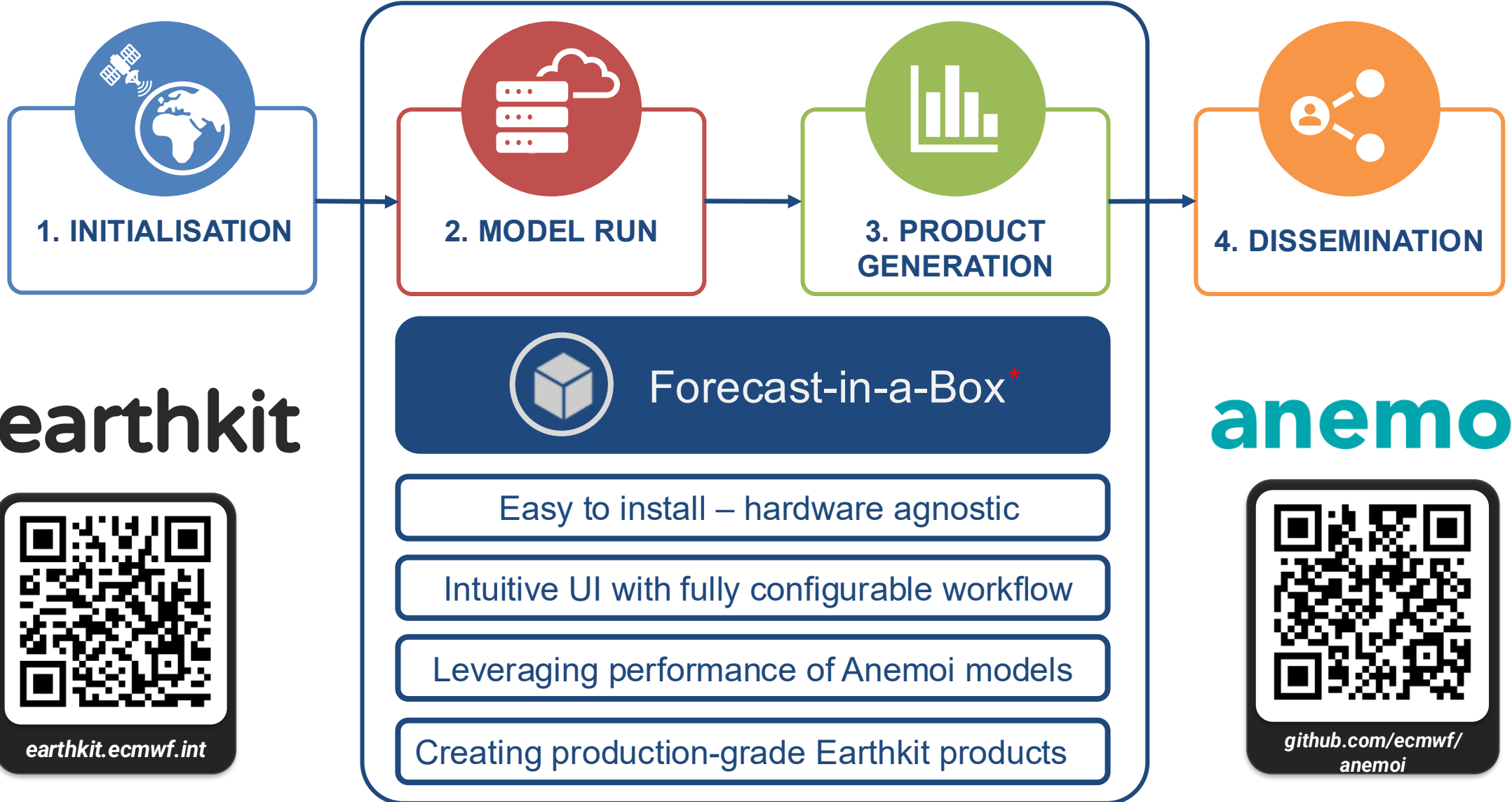


New Paradigm:

Instead of shipping huge forecast datasets, we can send the model instead

Give them the “**box**” that produces the data

Forecast-in-a-Box – A Fully Packaged Weather Forecasting System



earthkit.ecmwf.int



github.com/ecmwf/anemoi



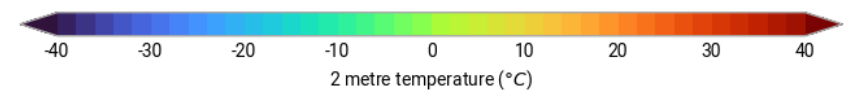
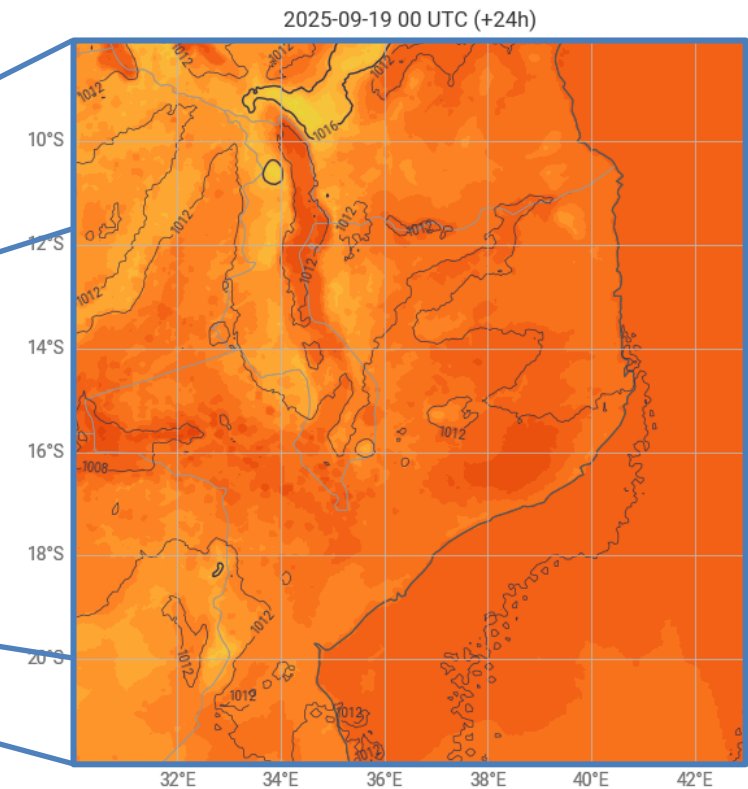
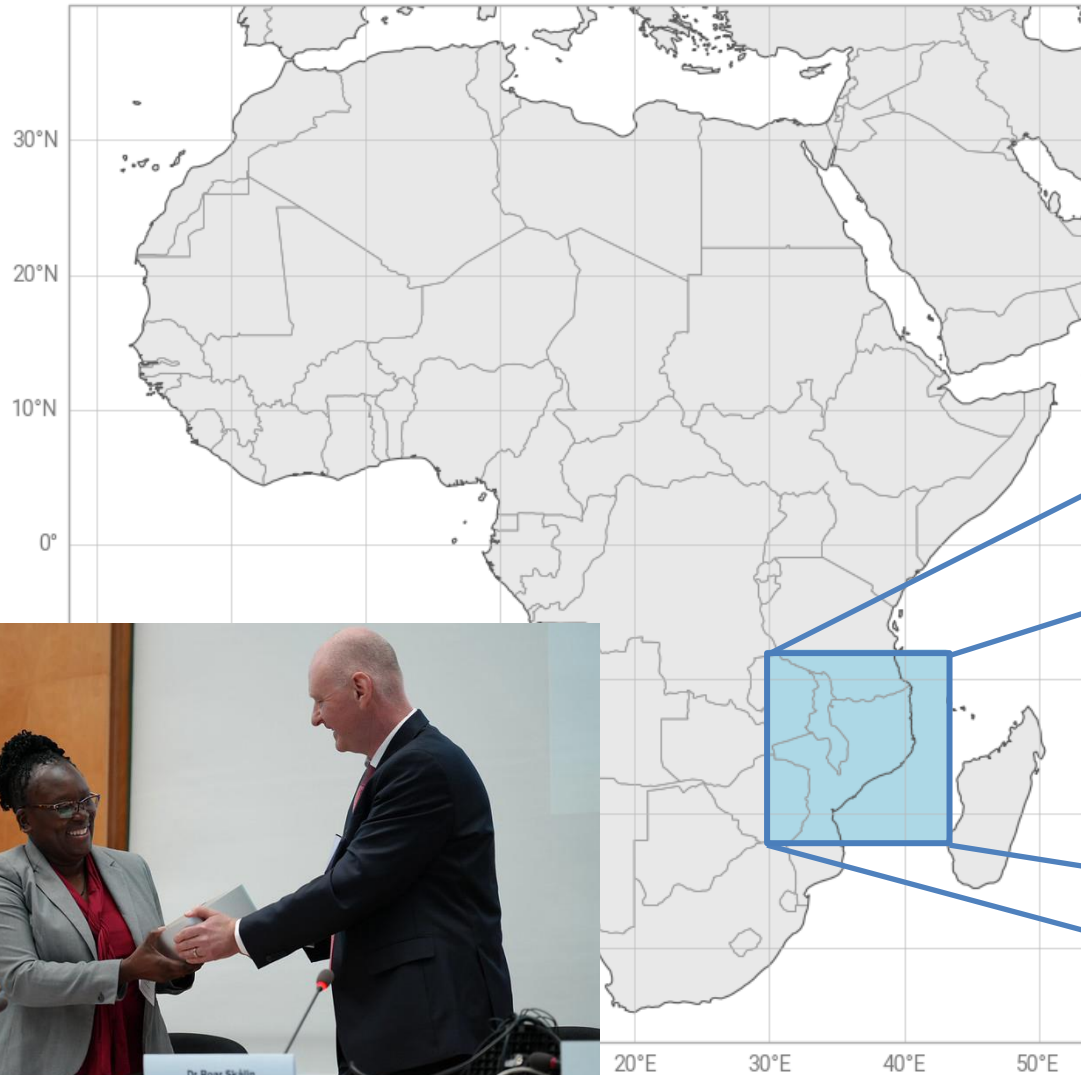
EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS

* This is an application, NOT a physical box !

Proof-of-concept for WMO WIPSS Project (2025)



MINISTRY OF NATURAL RESOURCES AND CLIMATE CHANGE
DEPARTMENT OF CLIMATE CHANGE
AND METEOROLOGICAL SERVICES



New Version from Proof-of-concept Feedback



Welcome back

SYSTEM STATUS

All OK

Operational

CURRENTLY SUBMITTED

1 •

Active forecasts

AVAILABLE MODELS

0 of 5

Downloaded models

TOTAL FORECASTS

1,247 ~+12%

Executed this month

[Manage Plugins](#)

[Manage Job Executions](#)

[Manage Configuration Presets](#)

[Manage Scheduled Forecasts](#)

Forecast-in-a-Box Community News

Latest Available Models

- AIFS v2.1** New
Released 3 days ago
- MetNorway-ML v1.8**
Released 1 week ago
- AICON v2.5**
Released 3 weeks ago
- Neural Forecast Model v3.0**
Released 2 weeks ago

[View Model Registry >](#)

Latest Forum Topics

- Best practices for extreme weather forecasting**
Posted by @weatherpro • 2h ago
- Comparing forecast model accuracy**
Posted by @mlweather • 5h ago
- Tips for optimizing forecast runtime**
Posted by @fastforecast • 1d ago
- Regional model recommendations**
Posted by @euroweather • 2d ago

[Visit Community Forum >](#)

Getting Started Presets

Choose how to start your forecast configuration

Recommended

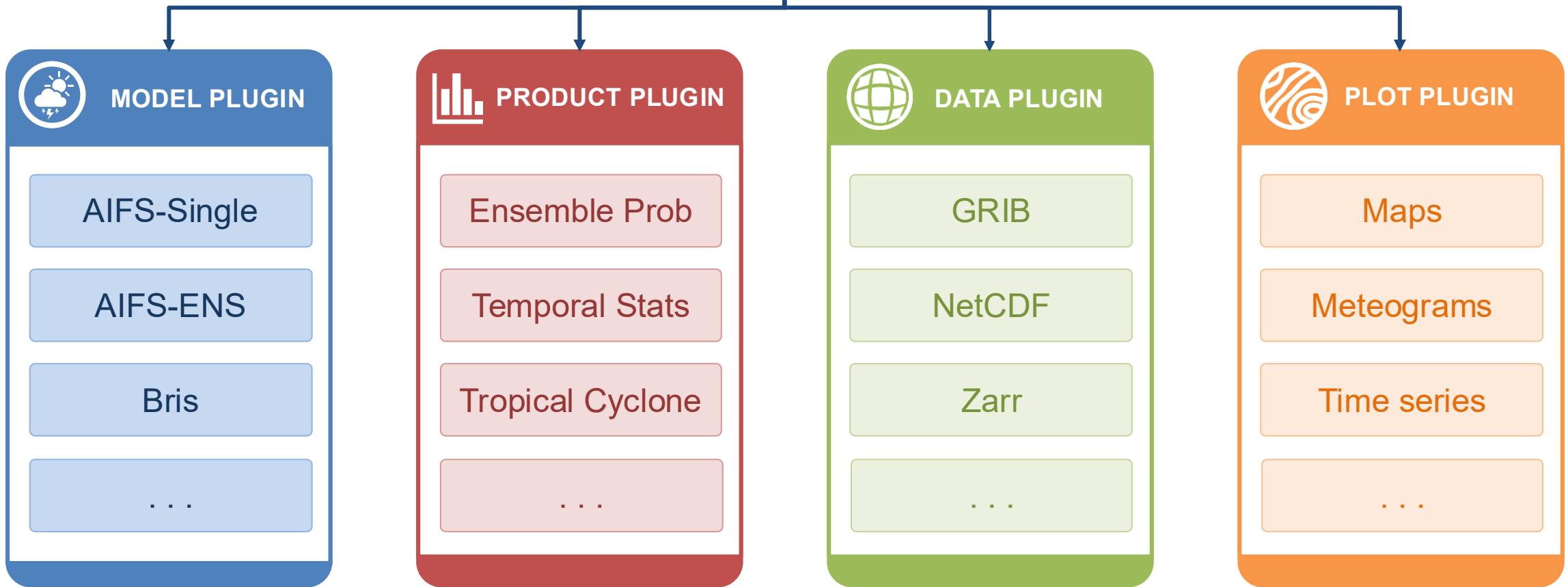
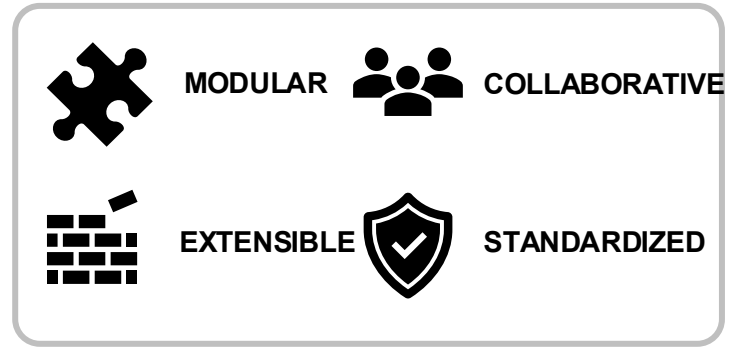
Quick Start

Custom Forecast

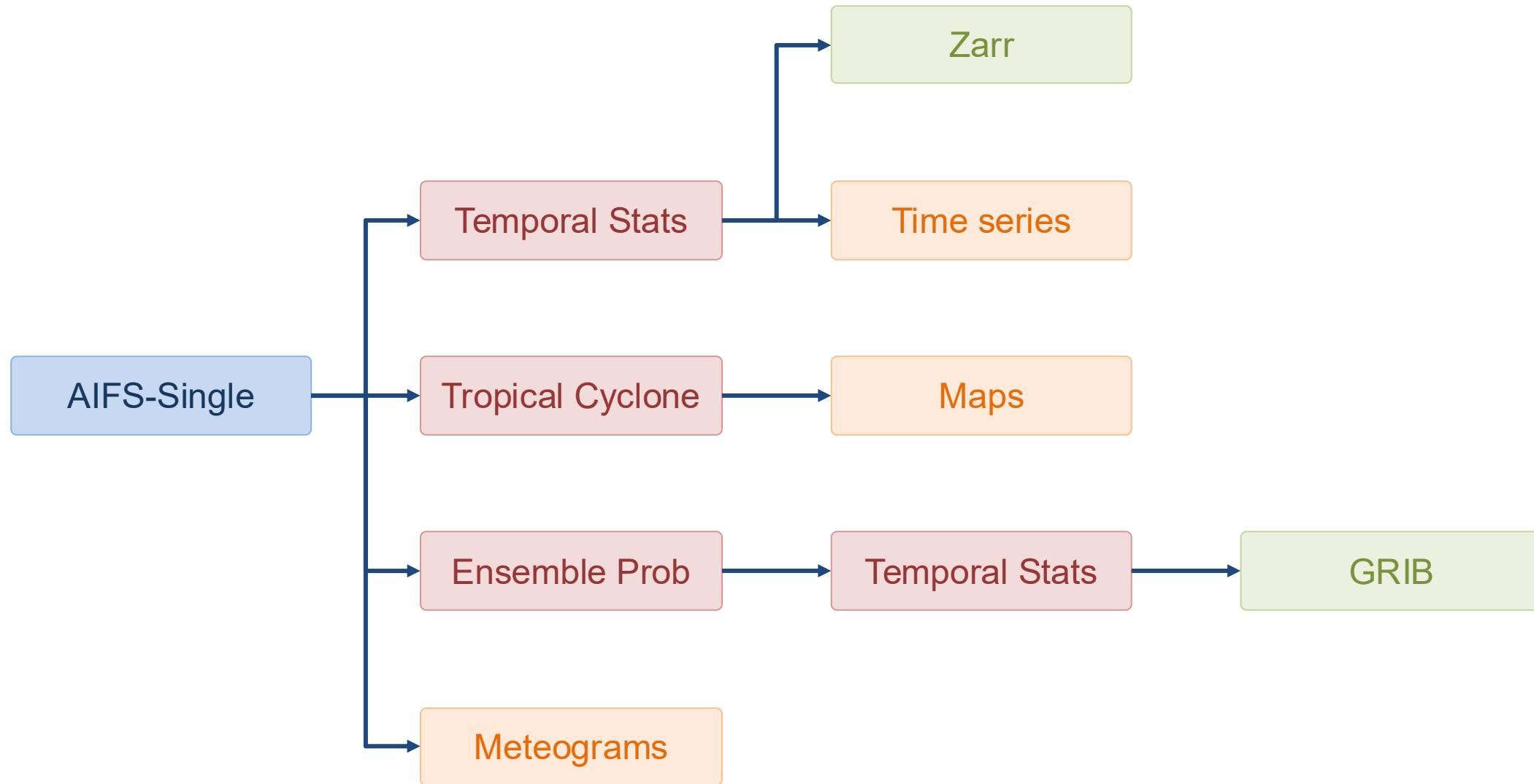
Standard Forecast

Dataset Forecast

Plugin Mechanism



Assemble Blocks to Build Complex Workflows



Flexible Deployment

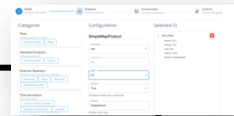


Forecast-in-a-Box

Everything Local



Web App



Backend



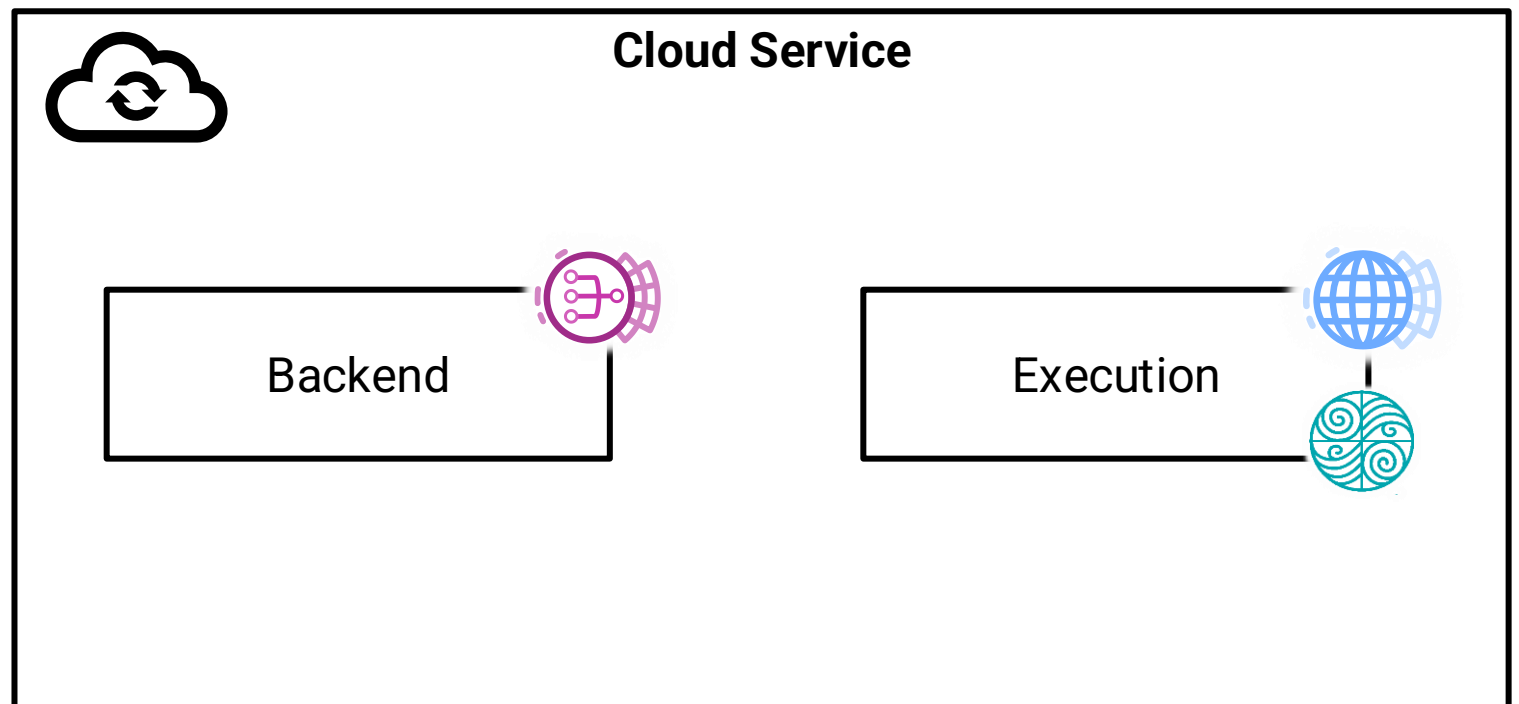
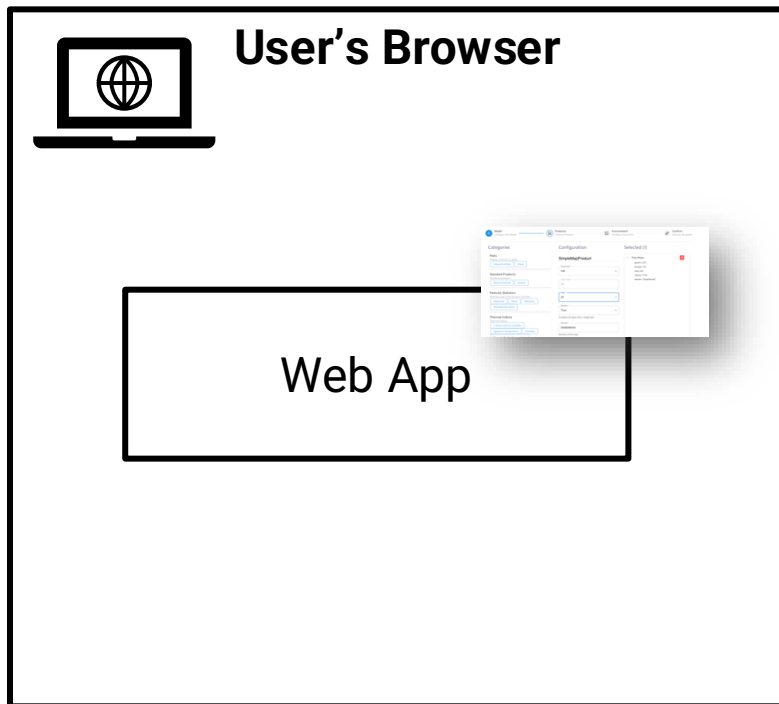
Execution



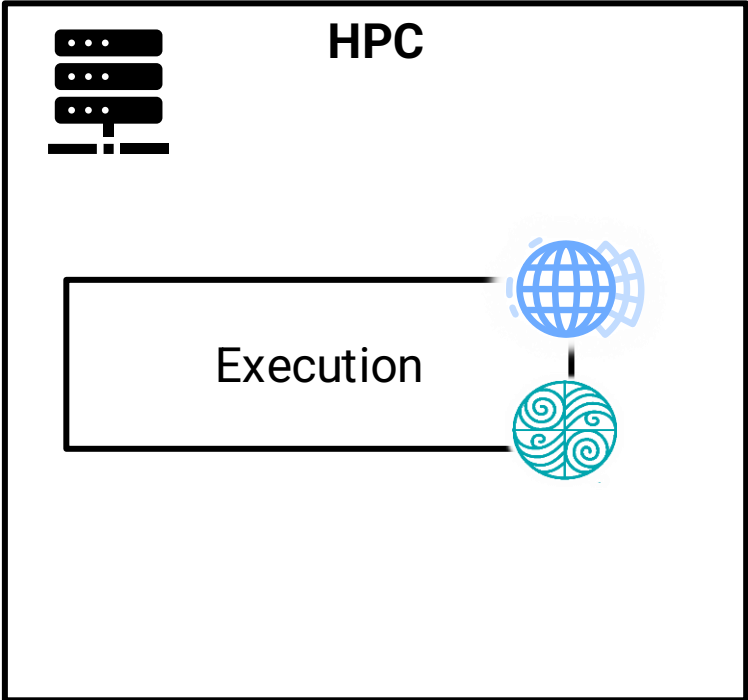
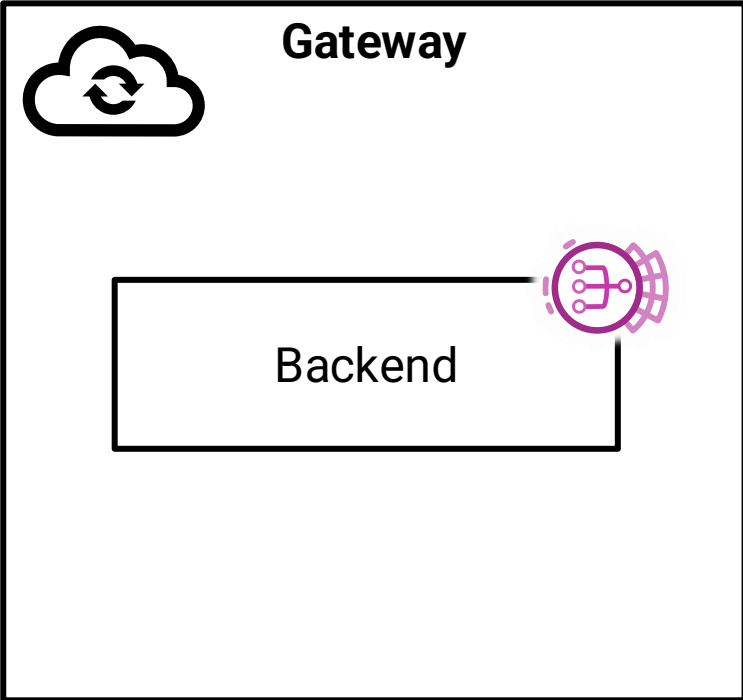
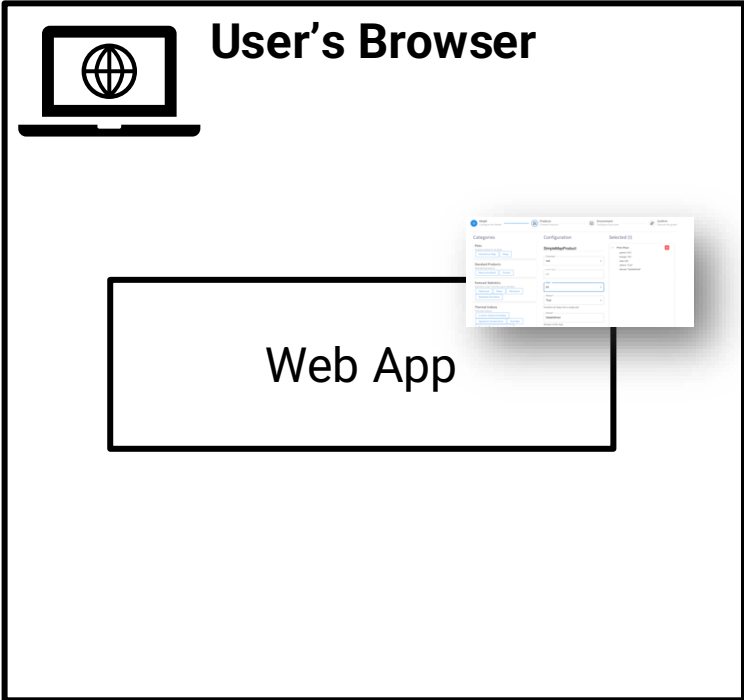
Flexible Deployment



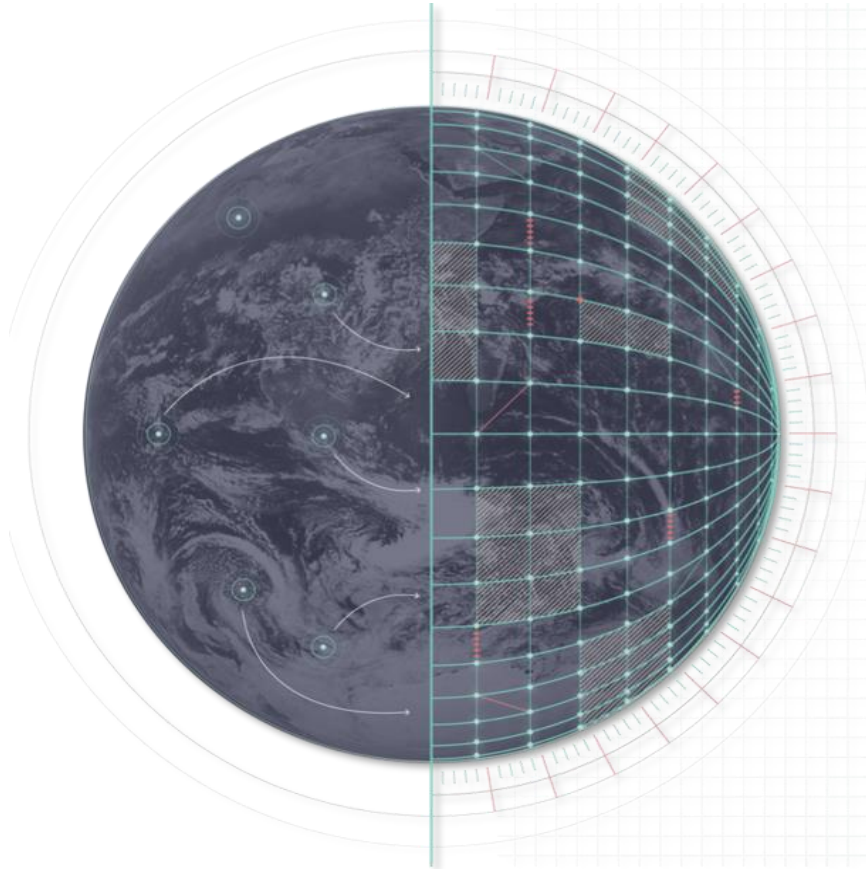
Forecast-in-a-Box



Flexible Deployment



Ongoing Projects



 Funded by the European Union **Destination Earth**

Africa Regional Centres of Excellence Programme



Thank you for your attention!



Forecast-in-a-Box



Jenny Wong et al. - *Minimising I/O, maximising throughput: earthkit-workflows, a task-graph engine for heterogeneous systems.*

Friday 16:40, Room -2.33 (EGU26-20436)

Oisín M. Morrison and Corentin Carton de Wiart - *Introducing earthkit-hydro: an efficient graph-based library for scalable hydrological modelling and analysis.*

Friday 14:15, Room 3.16/17 (EGU26-11233)