

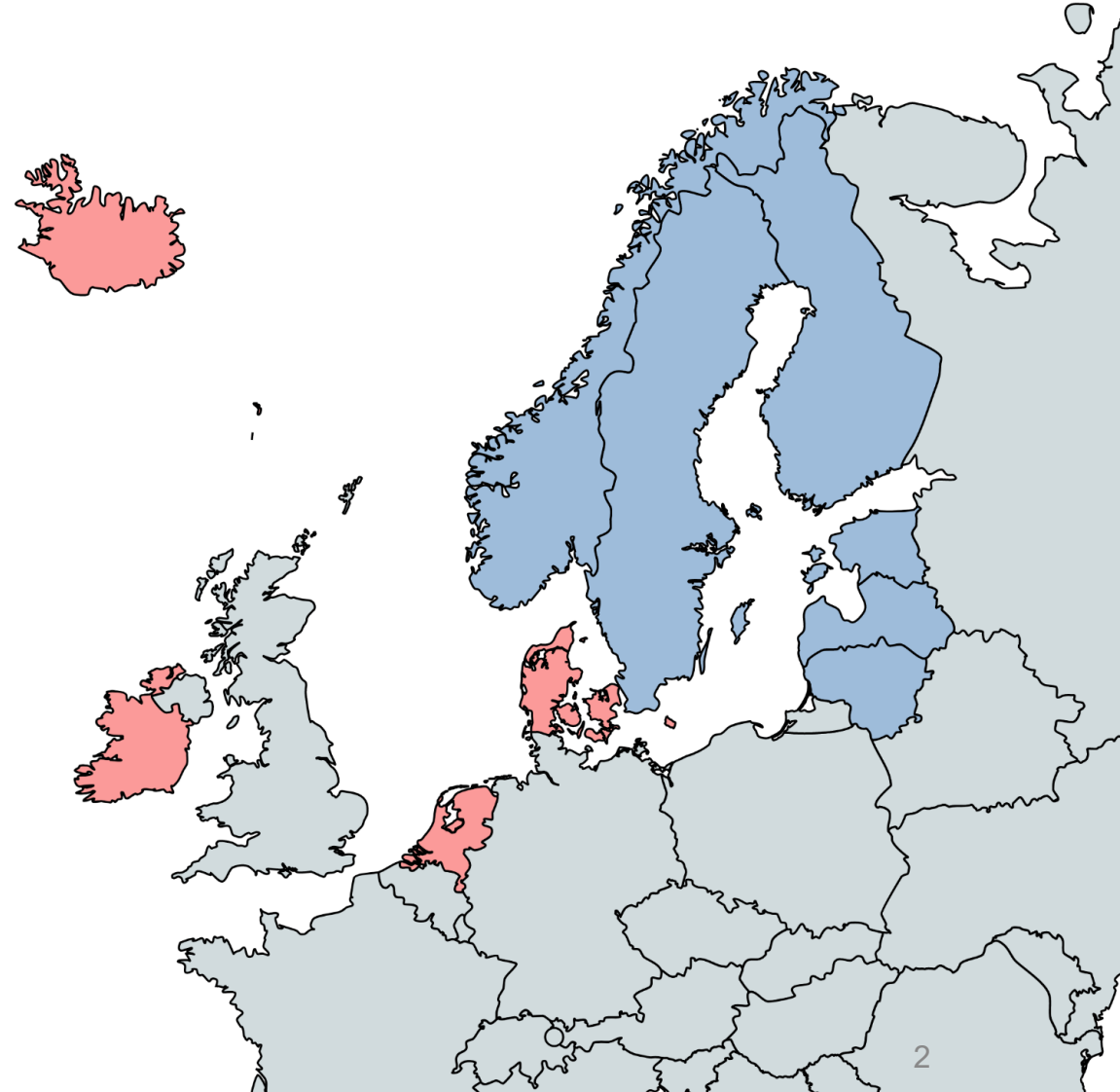
# UWC-West operational cooperation: organization aspects and status

Eoin Whelan, Sander Tijm and many others

# Rationale

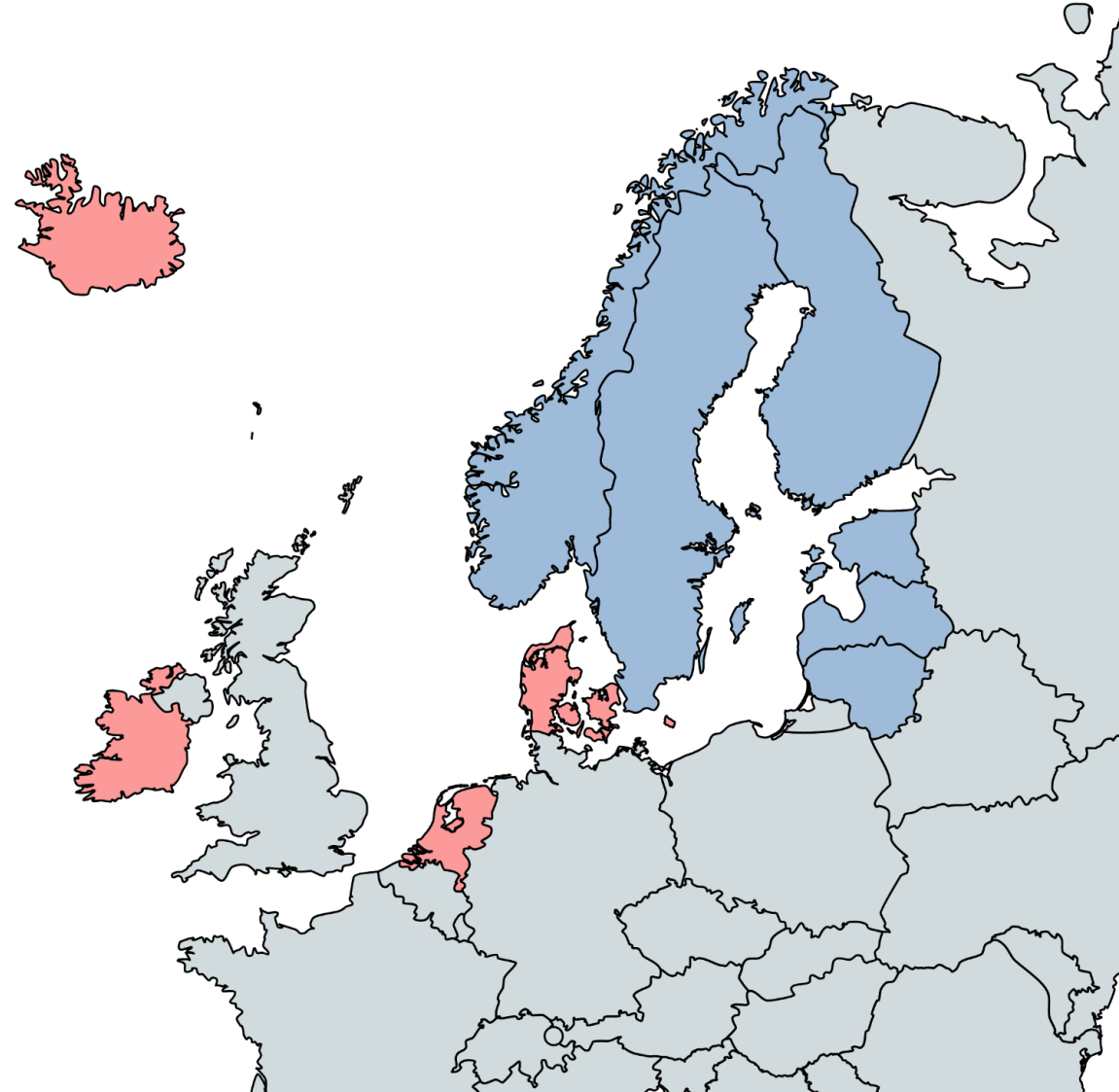
*“... accomplish joint operational exploitation of a science-based limited-area NWP system ... and a suitable HPC infrastructure.”*

- Value for money
- Sharing expertise
- Improved weather guidance
  - *“Taking weather forecasting to the next level”*



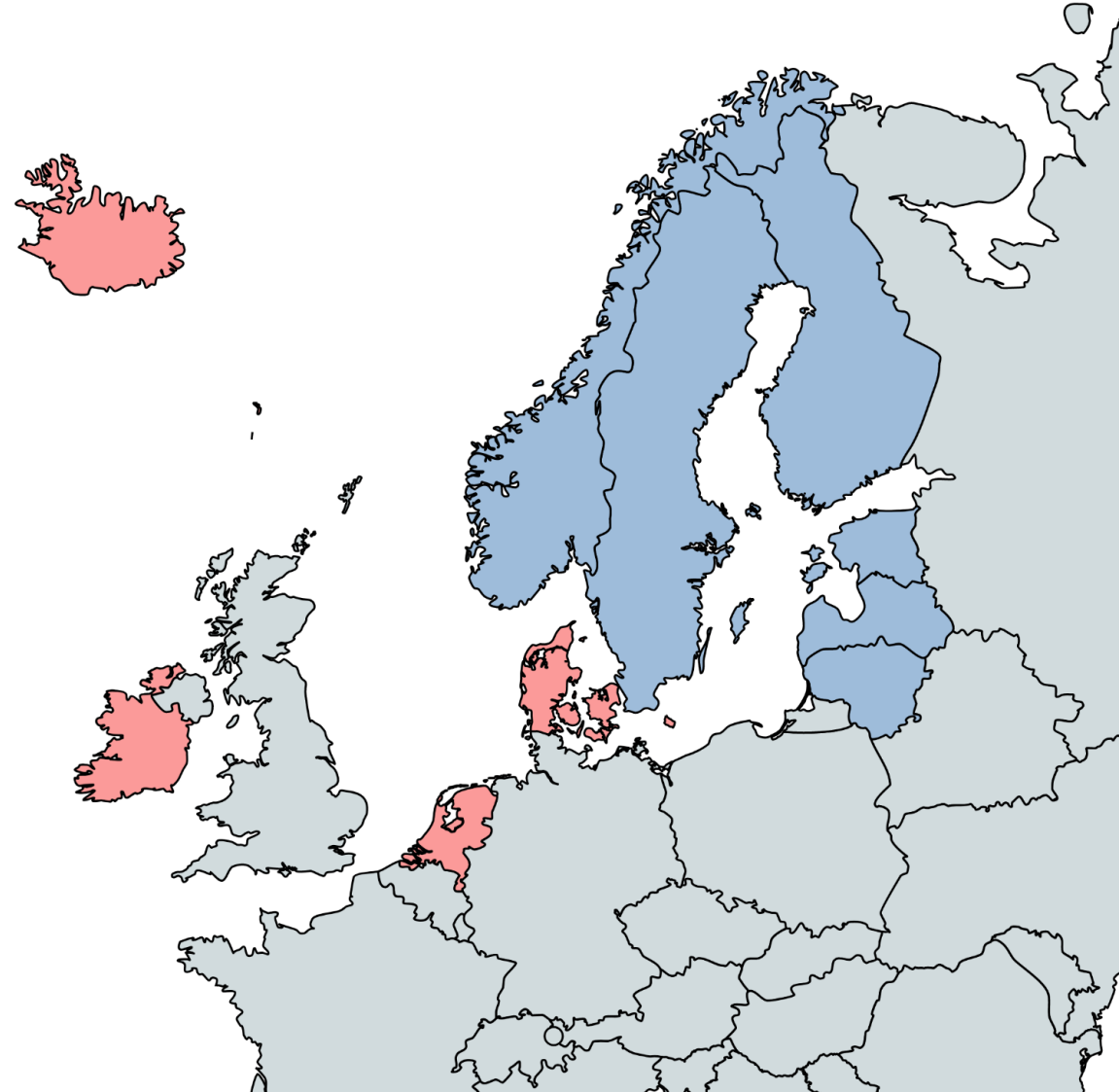
# Outline

- The organisation
- The status
  - HPC infrastructure
  - NWP System



# Outline

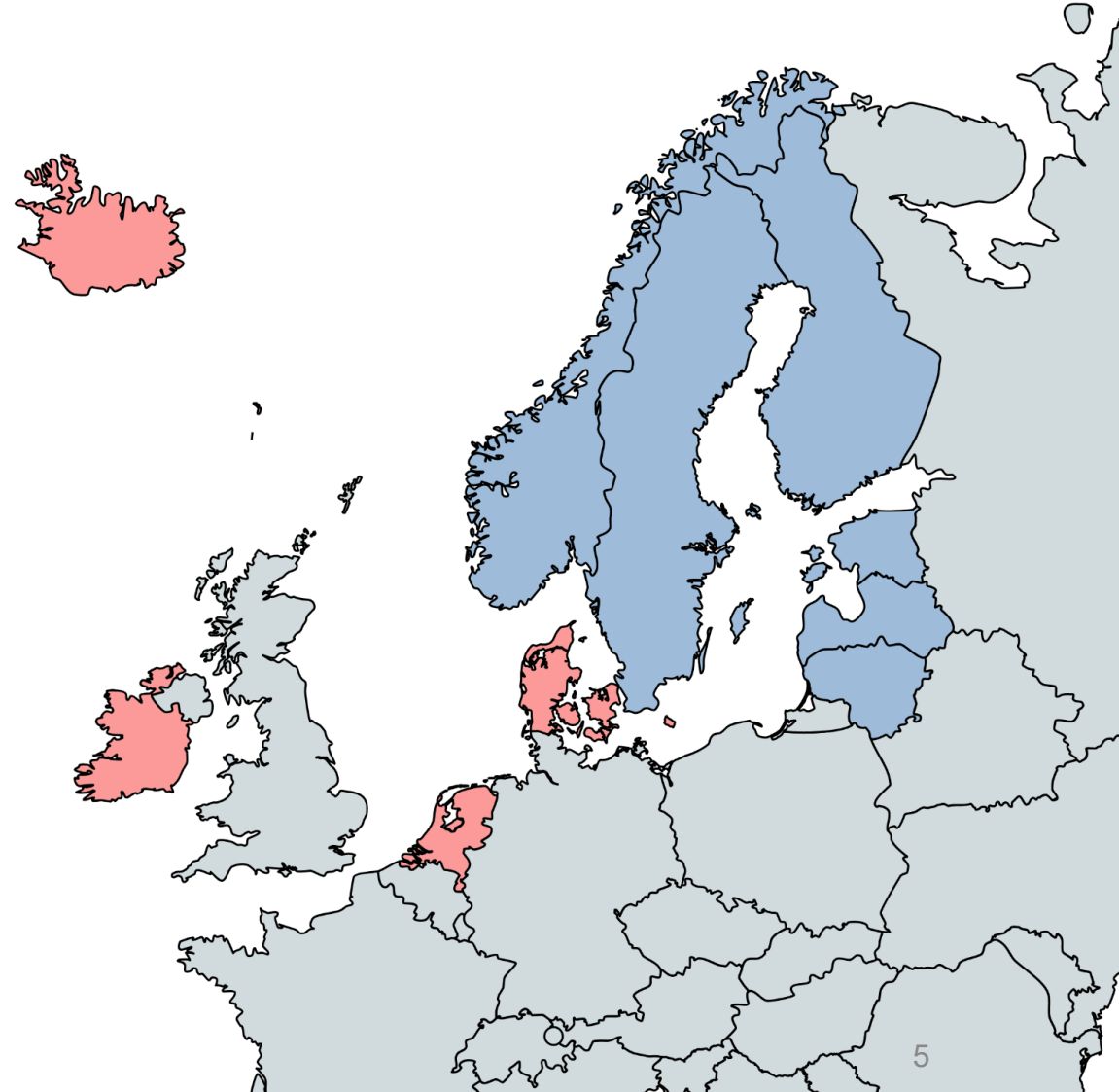
- The organisation
- The status
  - HPC infrastructure
  - **Development**
  - NWP System
  - **The users**



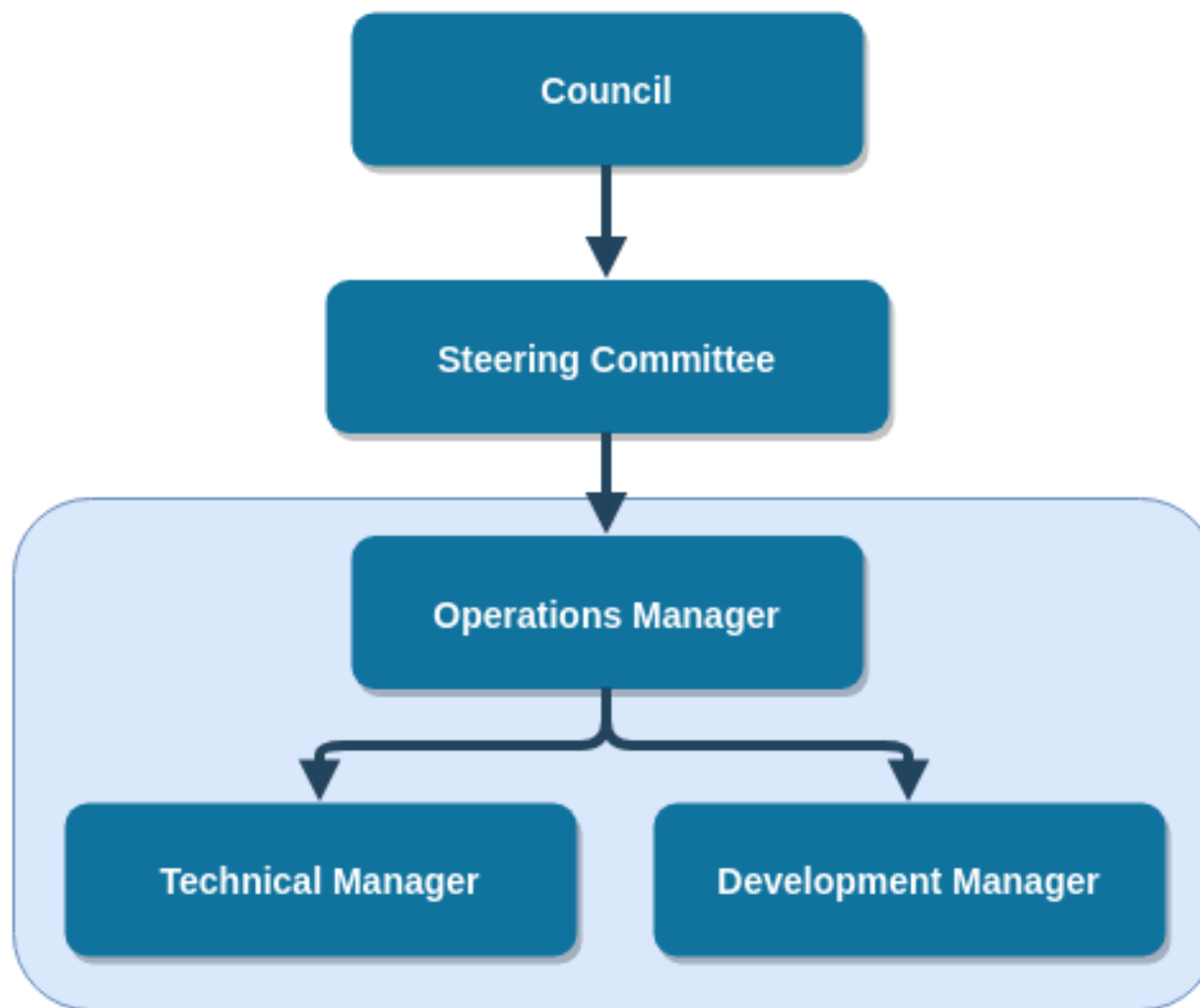


# The collaboration

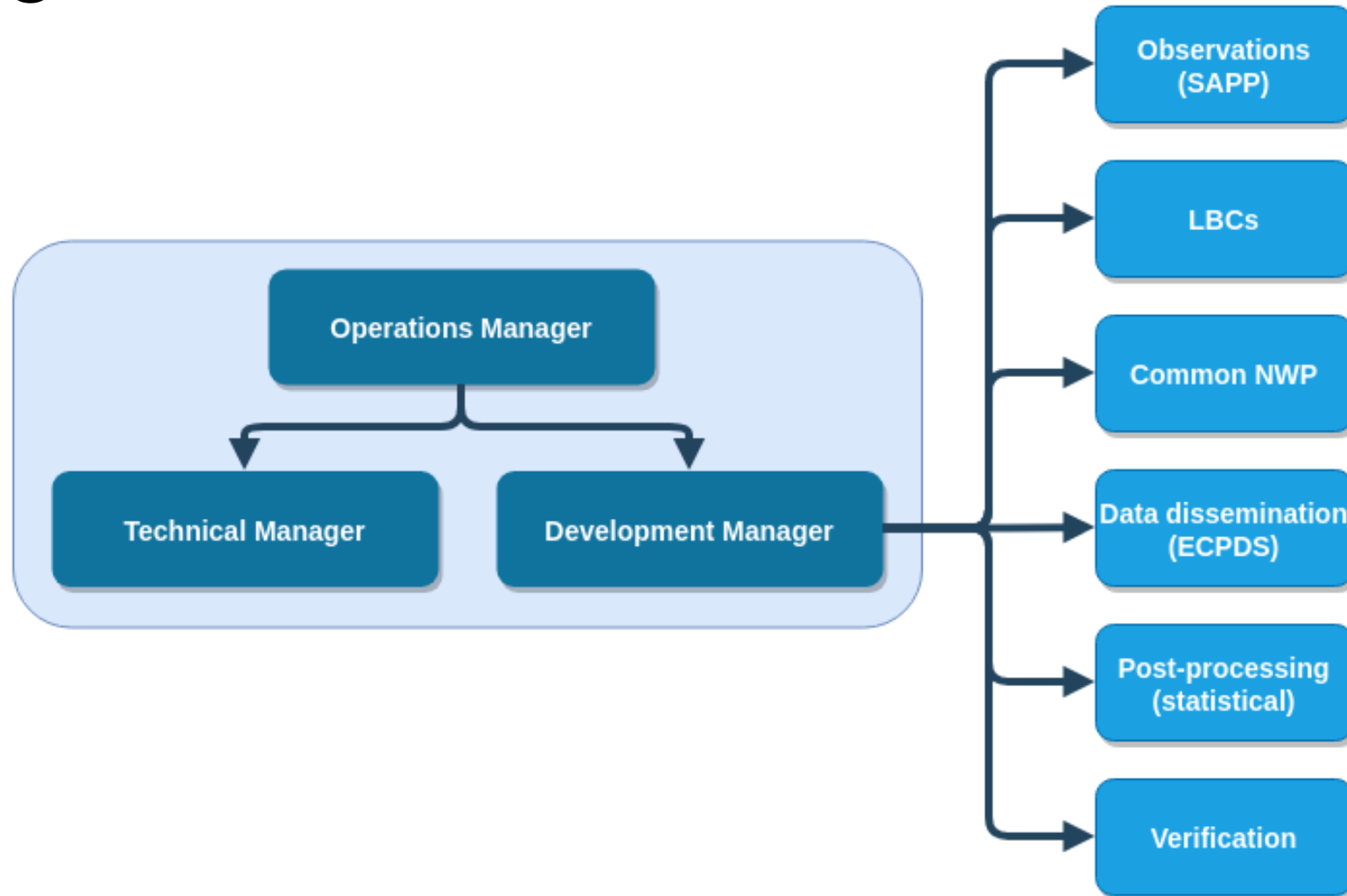
- Meeting of 10 – Feb 2018
- UWC-West MOU signed July 2018
- UWC-West agreement – April 2020
- HPE awarded contract – Sept 2021



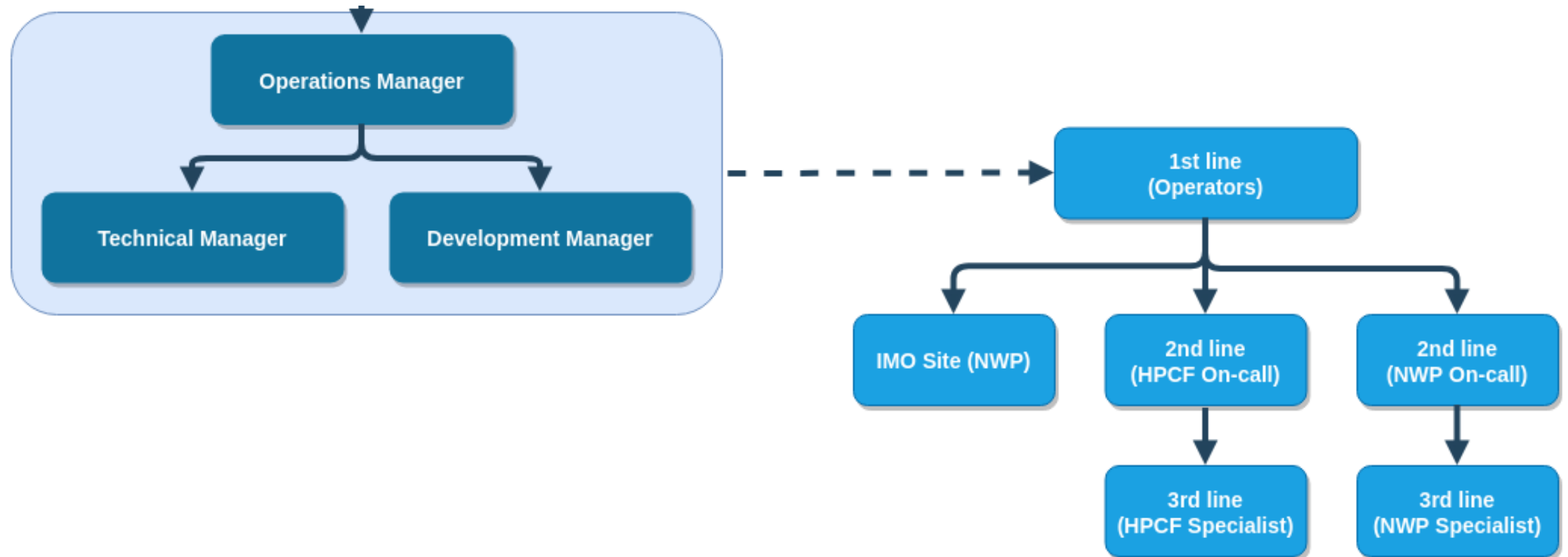
# The organisation



# The organisation

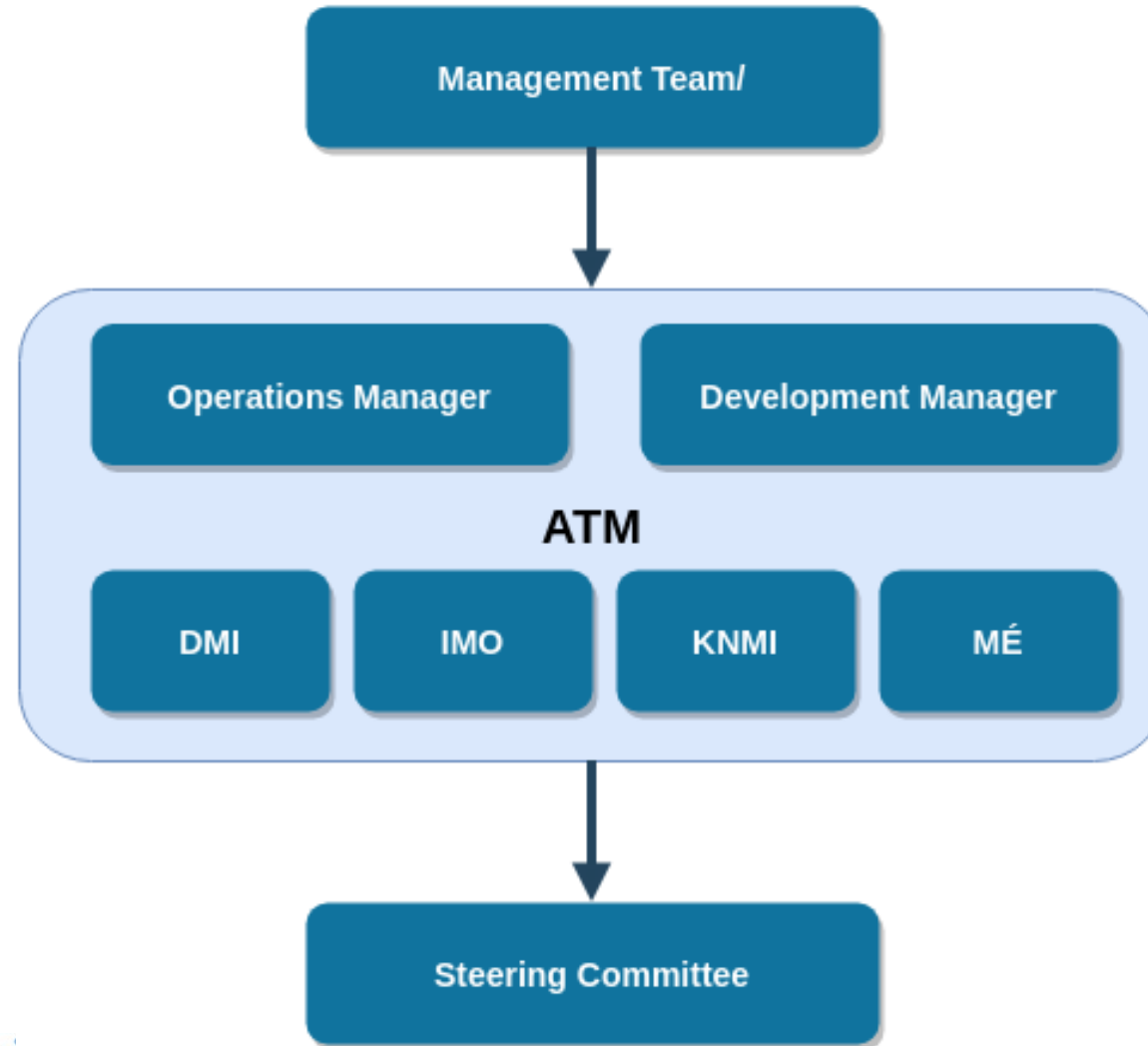


# The organisation





# The organisation



# Status: computer

- Two HPE Cray systems, one dedicated to operational weather forecasting and another for weather and climate research
  - Announced November 2021
  - <https://www.met.ie/joining-forces-in-weather-forecasting-and-climate-research>
  - <https://www.hpe.com/us/en/newsroom/press-release/2021/11/hewlett-packard-enterprise-builds-supercomputer-to-improve-weather-predictions-for-denmark-iceland-ireland-and-the-netherlands.html>
- For various reasons timelines have slipped
- Expect to accept in January 2023

# Status: computer

- Test and development system (TDS) arrived in April
  - Technical testing
- Hardware installation has commenced
- Expect first access mid-October
- SAT end of November followed by trial period in December

# Development environment

## All developments managed by GitLab CI/CD pipelines

gitlab.uwcw.dmi.dk/common/harmonie/-/issues

Open 18 Closed 36 All 54

Search or filter results...

43h2.2 cloud bias #22 · created 4 months ago by Eoin Whelan **model bias** updated 6 days ago

Forecast portability BUG #44 · created 2 months ago by Jacob Poulsen **bugfix** updated 1 week ago

Snow albedo input #54 · created 1 week ago by Eoin Whelan **enhancement** updated 1 week ago

Physiography corrections for IG and beyond #52 · created 1 week ago by Eoin Whelan **bugfix** updated 1 week ago

Improved snow on glacier initialisation required #53 · created 1 week ago by Eoin Whelan **enhancement** updated 1 week ago

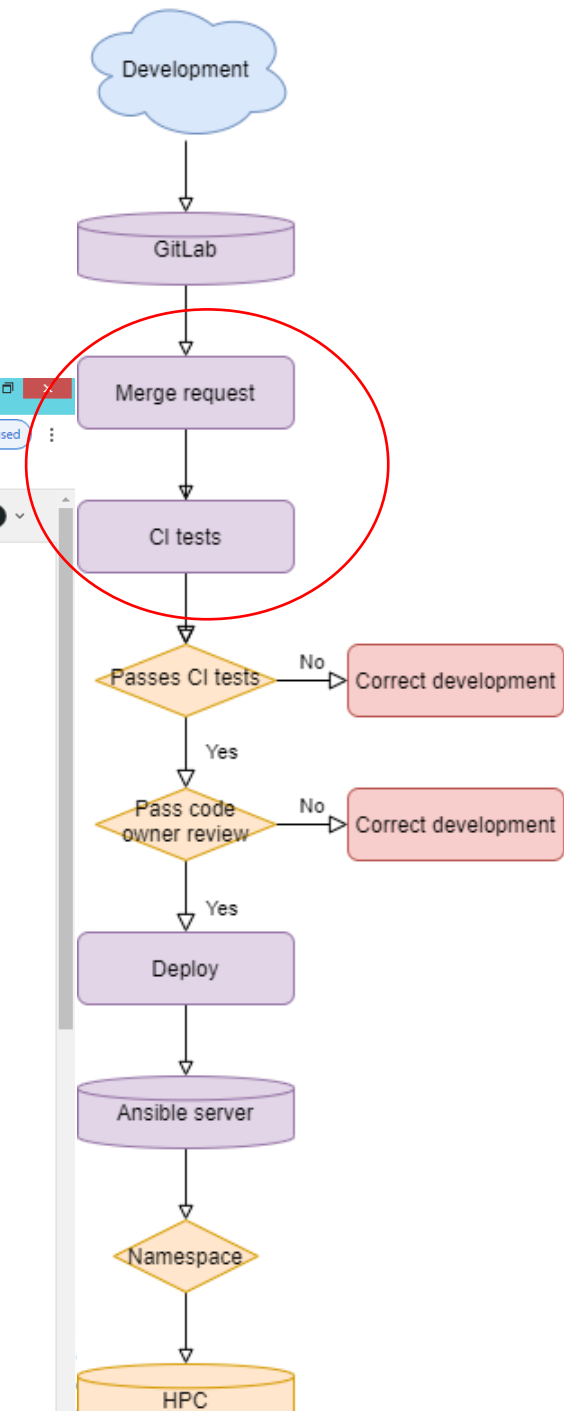
Structure functions for IGB #51 · created 1 week ago by Eoin Whelan **bugfix** updated 1 week ago

Structure functions for DINI - EDA/Brand step #50 · created 1 week ago by Eoin Whelan **enhancement** updated 1 week ago

File made from IO-server streams with FAcet missing on aa #28 · created 4 months ago by Eoin Whelan **bugfix** updated 1 week ago

Lacking documentation in .ecf files #27 · created 4 months ago by Eoin Whelan **enhancement** updated 3 weeks ago

4DVar submit issues #43 · created 2 months ago by Bert van Uift **bugfix** updated 1 month ago



# Development environment

## Continuous Integration using bespoke checks & tests

gitlab.uwcw.dmi.dk/common/harmonie/-/pipelines?page=1&scope=all

Harmonie

- Project information
- Repository
- Issues 18
- Merge requests 3
- CI/CD
  - Pipelines**
  - Editor
  - Jobs
  - Schedules
- Security & Compliance
- Deployments
- Packages & Registries
- Infrastructure
- Monitor
- Analytics
- Wiki
- Snippets
- Settings

common > Harmonie > Pipelines

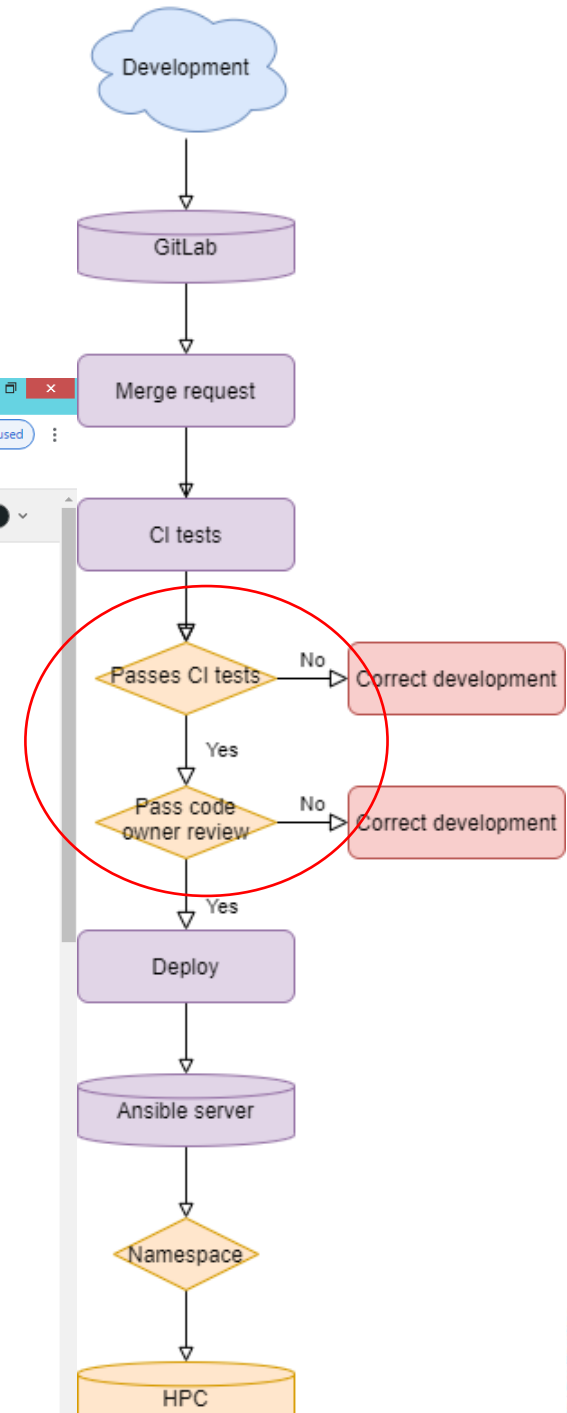
All 78 Finished Branches Tags

Filter pipelines

Clear runner caches CI lint Run pipeline

Status	Pipeline	Triggerer	Stages
passed 01:44:16 1 day ago	Include SPG_DIR #600 62 d2cb6d0b latest merge request		✓
passed 1 day ago	Include SPG_DIR #599 feature/spg_dir d2cb6d0b latest		✓
passed 00:00:02 1 day ago	Merge branch 'feature/ecmwf-aa-benchmark' into 'uwcw...' #598 feature/spg_dir 6f045ee8		✓
passed 00:00:13 1 week ago	Merge branch 'feature/ecmwf-aa-benchmark' into 'uwcw...' #528 uwcw_develop 6f045ee8		! ✓
passed 01:47:34 2 weeks ago	adapt scripts to save proper BM logging for post-analysi... #521 61 2769c92d latest merge request		✓
passed 00:00:02 2 weeks ago	adapt scripts to save proper BM logging for post-analysi... #520 feature/ecmwf-aa-benchmark 2769c92d		✓
passed	Merge branch 'feature/add_test_config' into 'uwcw_devel...		✓

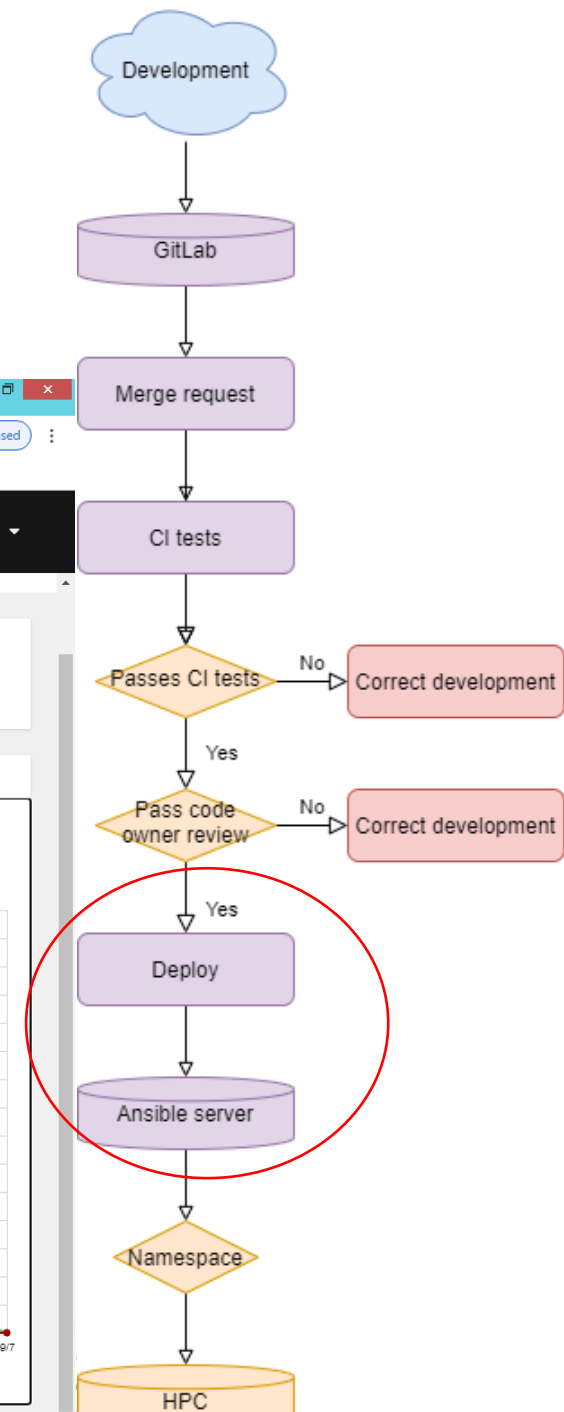
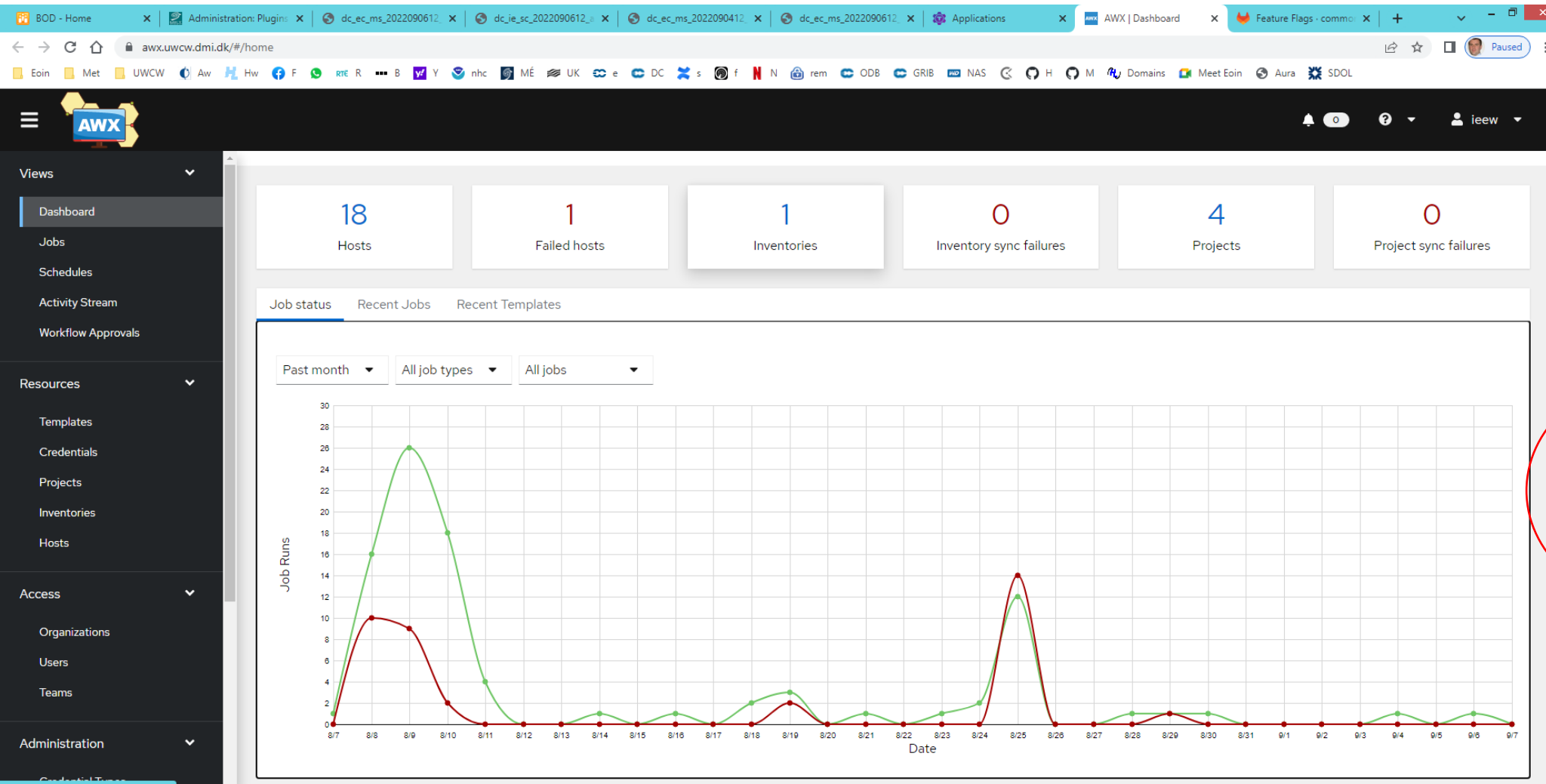
< Collapse sidebar





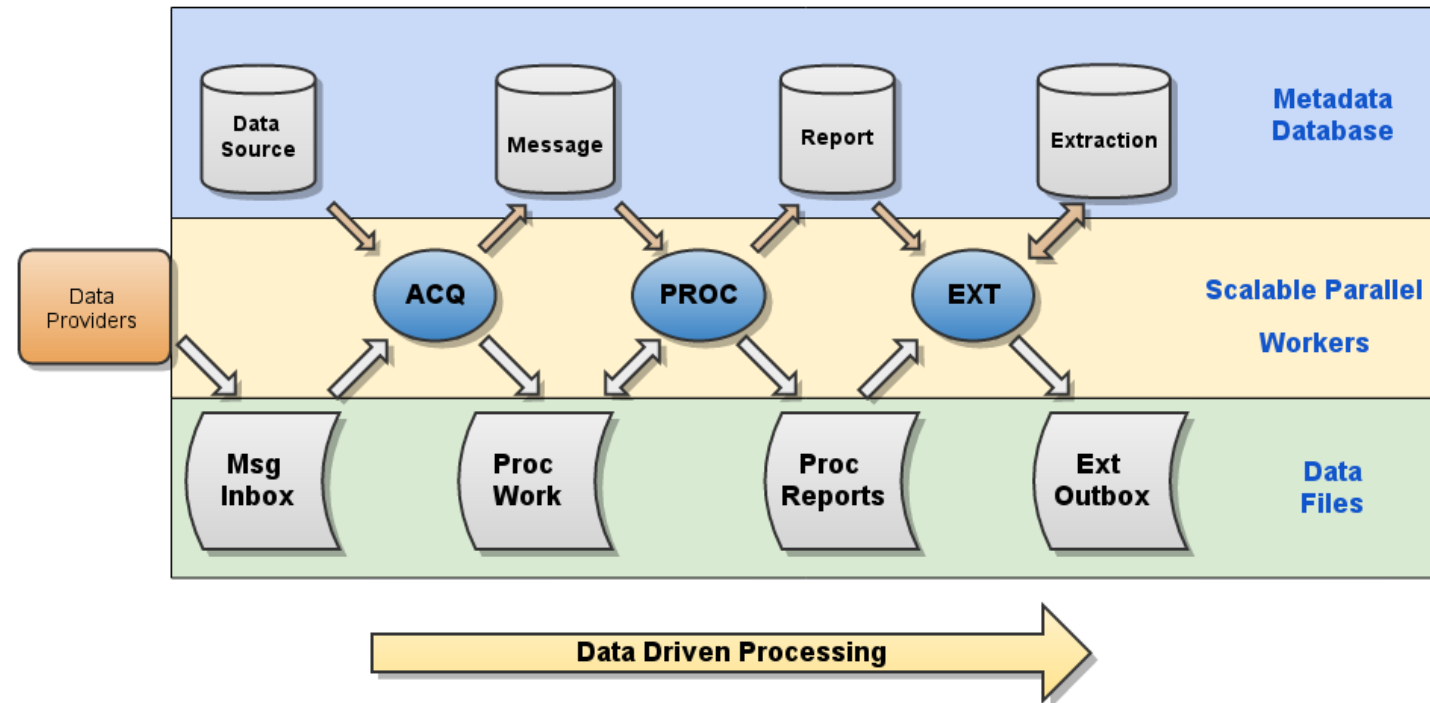
# Development environment

## Continuous Deployment – using Ansible (AWX)



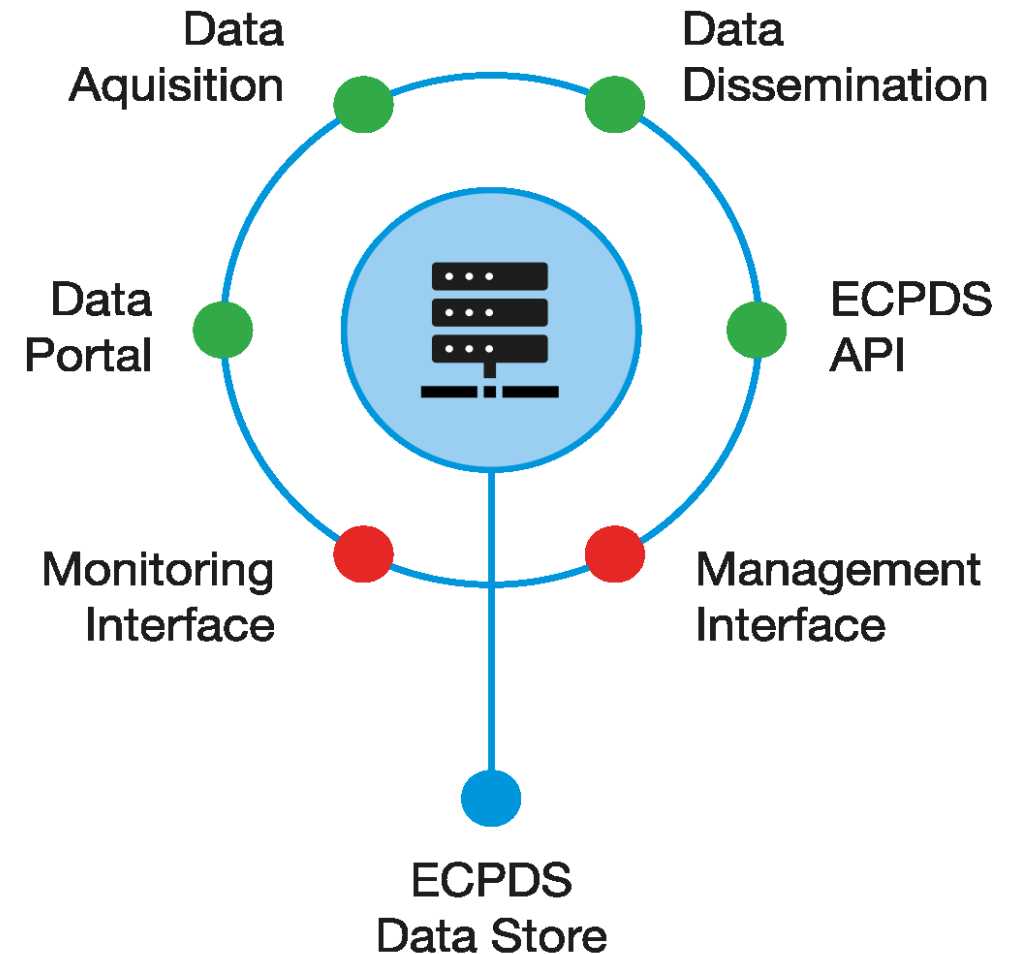
# Building blocks

- SAPP
- ECPDS
- Physiography
- gridPP



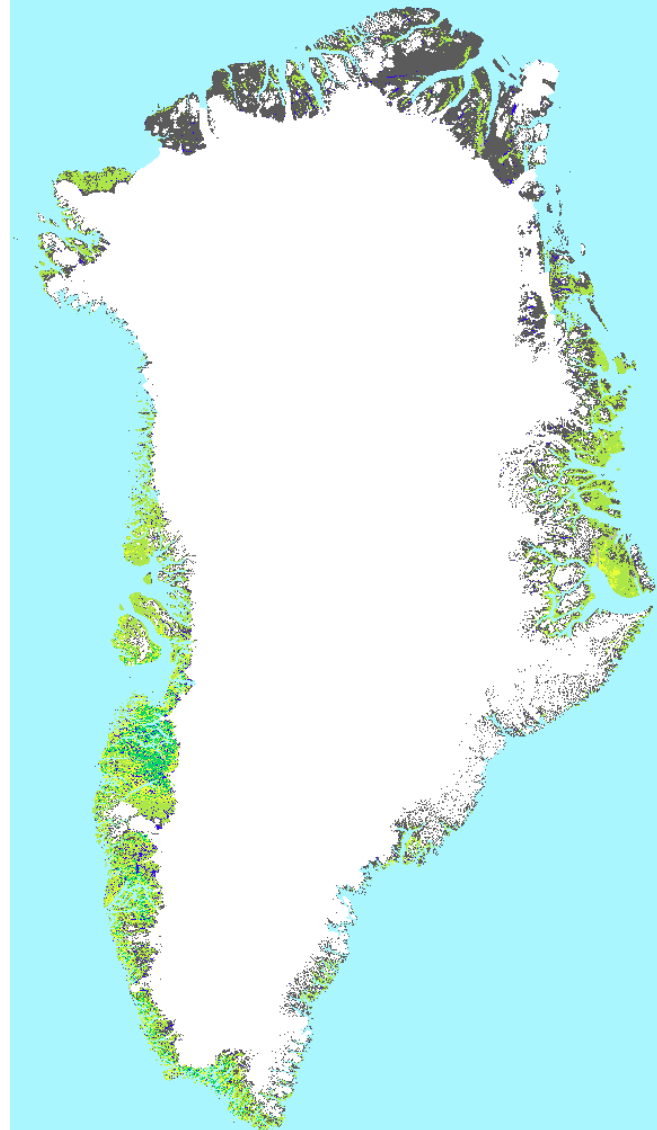
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- SAPP
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# Building blocks

- SAPP
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# Building blocks

- SAPP
- ECPDS
- Physiography
- **gridPP**

metno/**gridpp**

Software to post-process gridded weather forecasts



9

Contributors



19

Issues



29

Stars



14

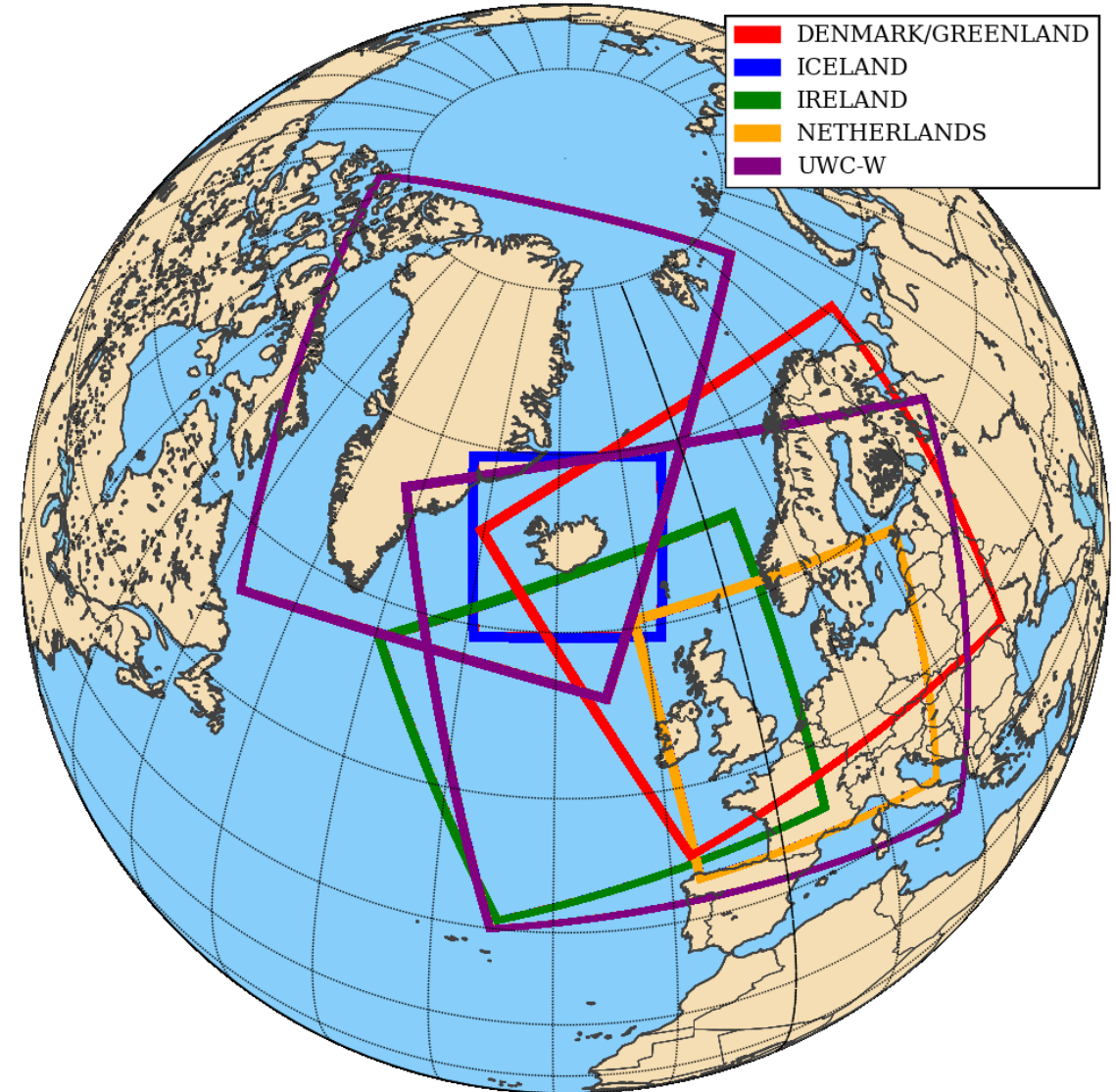
Forks





# The NWP System

- Harmonie-Arome
  - 43h2.1.1
  - 3D-Var
  - 2.0 km horizontal grid
  - 90 vertical levels
- Continuous EPS for DINI
  - 1+5 EPS updated each hour
  - SPP perturbations
  - IFS-ENS LBCs
- Deterministic for IG



UWC-West HPC

Operations

Operations

Operations

Operations

Development

Development

Development

Development

National Applications

National Applications

National Applications

National Applications

Low-priority, flexible

Low-priority, flexible

Low-priority, flexible

Low-priority, flexible

0 UTC

1 UTC

2 UTC

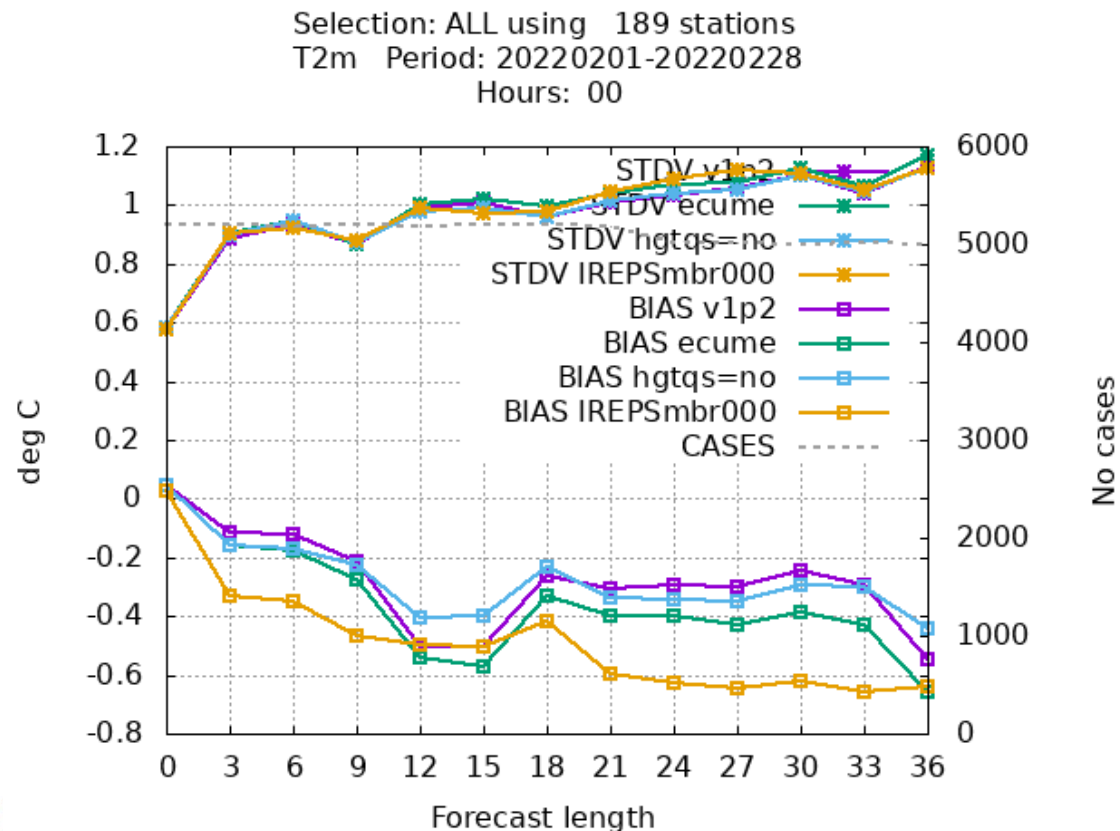
3 UTC

ETC

# The common model - progress

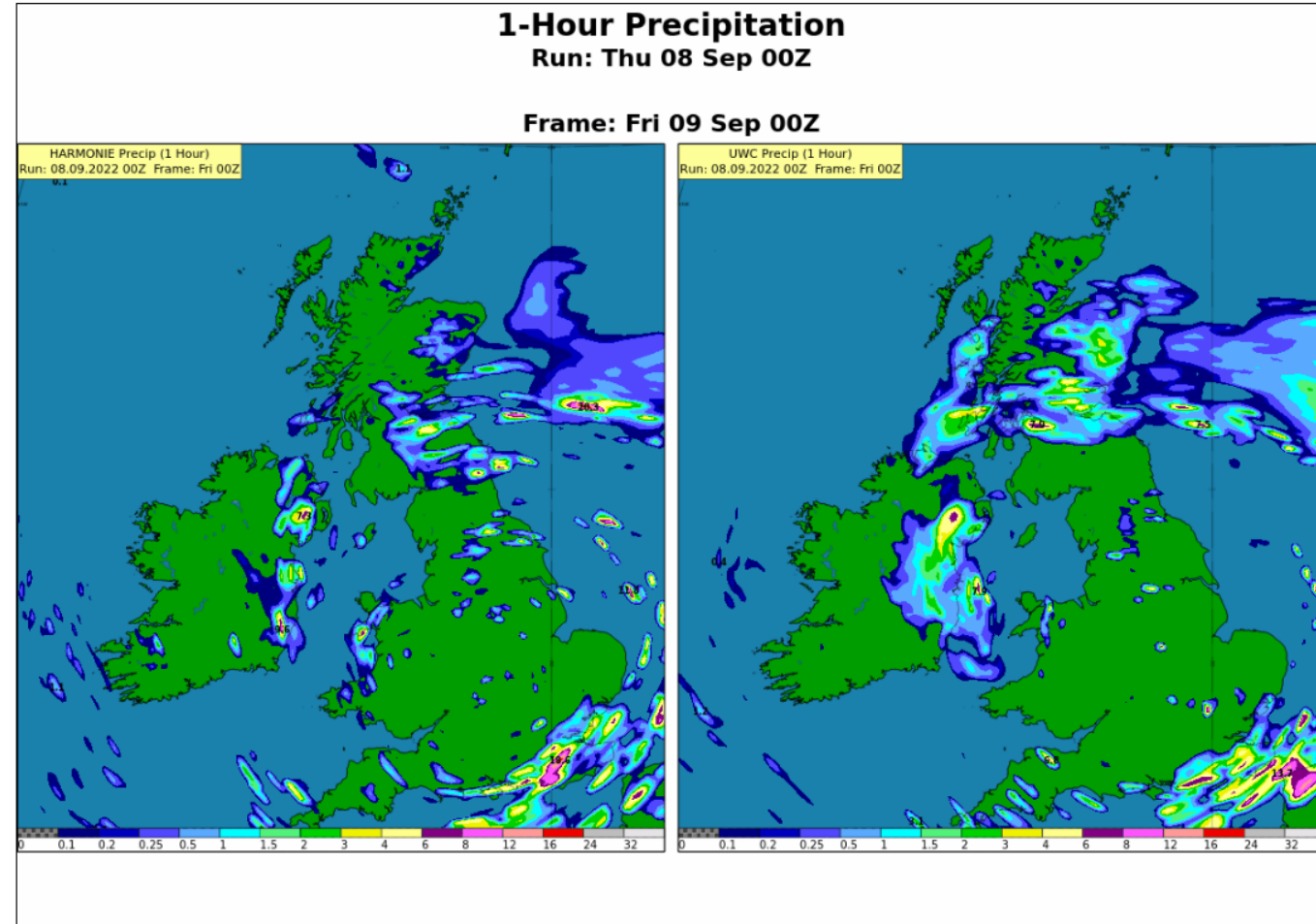
- Forecast model testing underway
- Data assimilation and observations
- EPS tests coming soon

DEFAULT  
 SURFACE CHANGE  
 CLOUD CHANGE  
 IREPS



# The users

- Early Common DINI Suite (ECDS) running since September 2021
- Provides
  - common development focus
  - data for technical testing
  - common model for weekly forecaster feedback







# Thank you for your attention

## Questions?