

ACCORD

A Consortium for COnvection-scale modelling
Research and Development

**Moving towards a more common and transparent
environment for ACCORD systems**

Dr. Daniel Santos Muñoz, ACCORD AL for System

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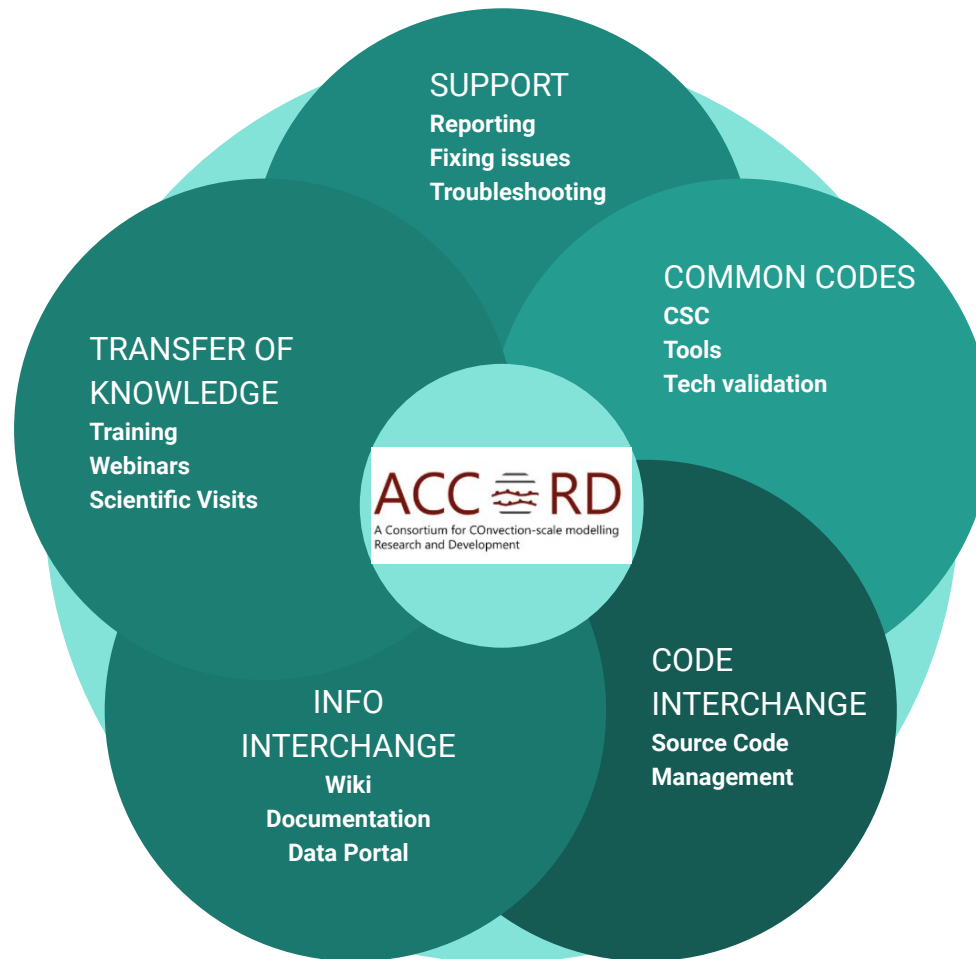
3rd ACCORD ASW, 26-31 March 2023, Tallin (hybrid)

Intro

One objective of the ACCORD strategy is to set up a **framework to collaborate more easily** on the codes that we develop, whether it be the **NWP codes or accessory tools to run our models, handle data or any other NWP-related activity.**

This requires an **evolution of the systems** to achieve a **more common and transparent environment.**

Create a sense of community

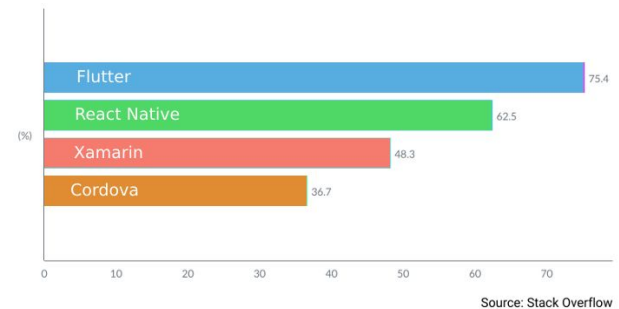
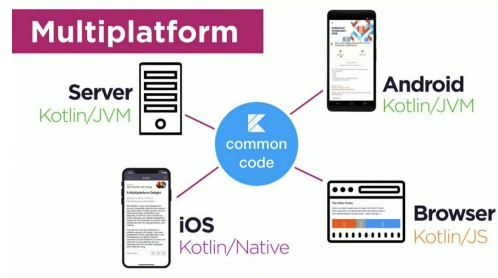


COMMON CODES

CSC
Tools
Tech validation

The full ACCORD NWP system is currently being developed along 3 main model configurations, the so-called **Canonical System Configurations** (“CSC”):

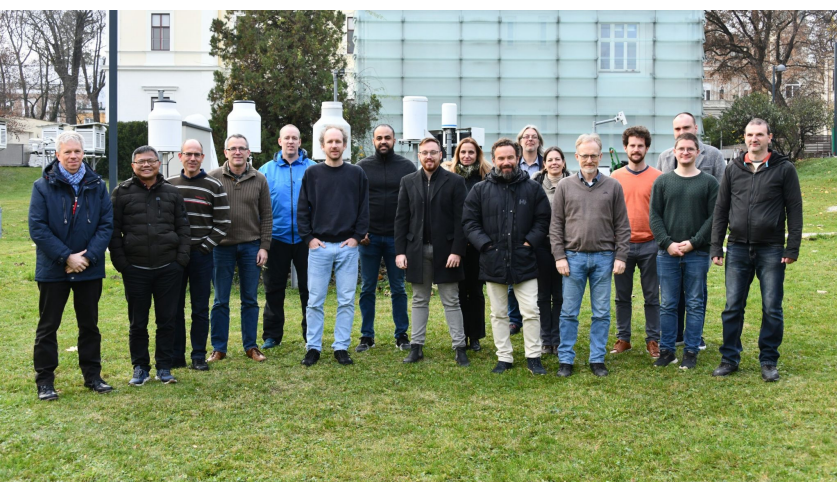
- [AROME](#)
- [HARMONIE-AROME](#)
- [ALARO](#)
- **Separate codes:** [SURFEX-NWP](#) [oops](#) [ectrans](#) [fiat](#)
- Also we have **operational versions/adaptations:** (op branches, h branches, ...)
- This codes should be considered as a **multi/cross platform codes**



Tools: [harp](#) [EPyGrAM](#) [AccordDaTools](#) [obsmon](#) ... Common scripting system and DEODE synergies

Technical code validation: DAVAI ([DAVAI-env](#), [DAVAI-test](#), [DAVAI-ciboula](#)), Testbed ...

ACCORD-DEODE synergies on scripting/model engine



- DEODE script design meeting ZAMG 28-29th of November 2023
 - The primary goal is to **deliver a system for the DestinE engine workflow** with a clear ambition that this **can be of further usage within ACCORD.**

- The [Deode-prototype](#) is the level 0 version of the engine.
 - User friendly (e.g., command line args with help, config with defaults)
 - Testable and safe to be refactored (e.g., unit & smoke tests)
 - Extendable without major changes to existing code (e.g., subcommands)
 - Standardised, self-documented, easy to read (e.g., agreed linting practices)

Davai contributors Working Week outcomes

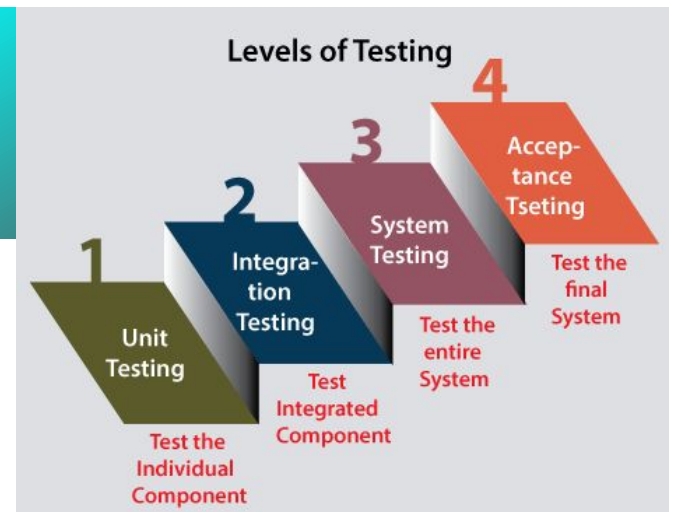


- 23 - 27 Nov 2022 at DMI (Copenhagen)
 - [Introduction to 2022 ECMWF working env](#)
 - Introduction to Davai
- **Davai repos**
 - [DAVAI-env](#): DAVAi environment for testing experiment creation
 - [DAVAI-tests](#): DAVAi tests templates and config files
 - [DAVAI-ciboulai](#): Ciboulai : the interactive dashboard for DAVAi
- DAVAi IN ATOS
 - Preliminary notes on how to run and setup new test cases

- **Necessary changes to add ALARO test CY48T3**
 - https://github.com/ddegrauwe/DAVAI-tests/tree/ddegrauwe_48t3_alaro
- **Pseudo Harmonie test based on CY48T**

<https://github.com/orgs/ACCORD-NWP/teams/system/discussions/1>

Testing codes

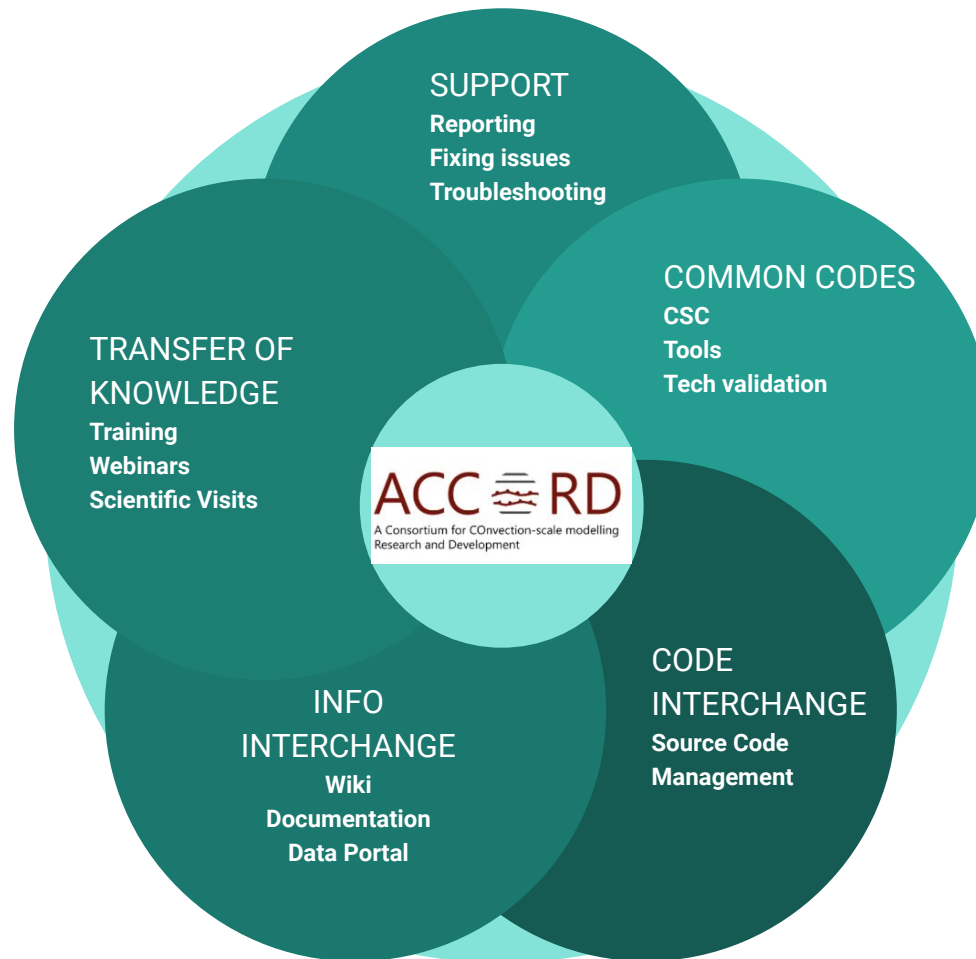


SPFRACCO ECMWF Special project 2022-2024

1. An enhanced **portability and improved capability** of the code testing tools in ACCORD (DAVAI).
2. An enhanced definition of **common working practices and work environment for ACCORD** code and system activity, with a strong focus on code integration and technical validation of new cycles.
3. An improved **evaluation of the portability of new code** versions for ACCORD Members.
4. Through the additional testing on the ECMWF HPC an **improved technical quality assurance of new cycles, with feedback of potential bug-fixes or optimization fixes to the Central Code Repository**

https://www.ecmwf.int/sites/default/files/special_projects/2022/spfracco-2022-request.pdf

Create a sense of community



CODE INTERCHANGE



ACCORD GitHub

The screenshot shows the ACCORD GitHub organization page. At the top, it displays the organization name 'ACCORD' and its description: 'A Consortium for CONvection-scale modelling Research and Development'. Below this, there are navigation tabs for Overview, Repositories (17), Projects, Packages, Teams (5), People (91), and Settings. The 'Popular repositories' section features several repository cards, each with a title, description, and language (Python or C++). The 'Repos' section below has search filters for Type, Language, and Sort, along with a 'New' button. A list of repositories follows, including 'IAL' (Private), 'EPyGRAM' (Public), 'DAVAI-env' (Public), 'DAVAI-tests' (Public), and 'SURFEX-NWP' (Private).

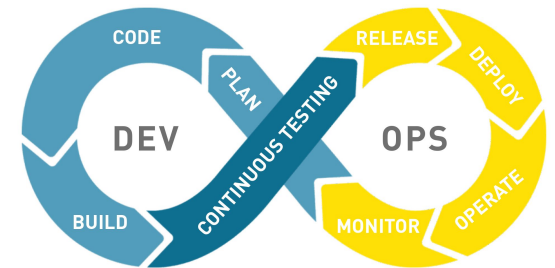
Open source codes



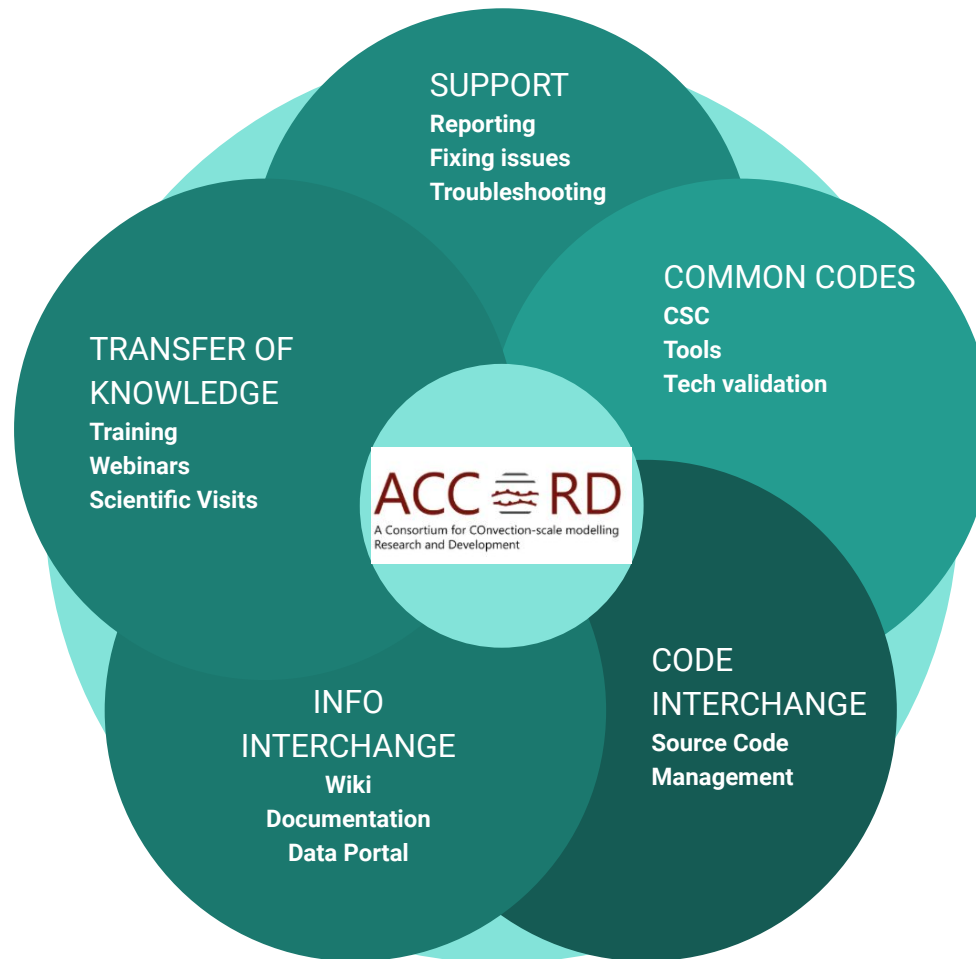
NEWS An open-source Integrated Forecasting System

Michael Sleight, Willem Deconinck, Michael Lange, Olivier Marsden, Balthasar Reuter

Continuous Integration Continuous Deployment



Create a sense of community



INFO INTERCHANGE

Wiki
Documentation
Data Portal

Wiki

The current Redmine solution will no longer be upgraded

[Specs and wishes regarding a new ACCORD wiki](#)

- Redmine, Confluence or GitHub wiki requires license
- Wiki software under a Content Manager
- **Risk of Wiki:**
 - Can **grow very fast in a very dispersive way**, very difficult to know what's is the **most recent information and if it is updated**, searching for specific info **is not very easy**.
 - **Homogenization of contents, maintenance/update the info and accessibility** are the keys
 - What kind of **information** should be **public or private** ?

INFO INTERCHANGE

Wiki
Documentation
Data Portal

Documentation

- **Code documentation**
 - 0) **Inside code and print outs and error messages**
 - Integration rules ..
 - 1) **Technical evolution of code content**
 - pull request, release notes, tech validation results ...
 - 2) **Practical guidance on how to use new features**
 - how to, README, commented namelist, examples, tutorials ...
- **Scientific documentation**
 - Newsletters, reports, papers, exp results, met validation summary...
- **Model documentation**
 - equations, used in the code, algorithm explanation...

Different tools for storing, maintaining and make available the documentation:

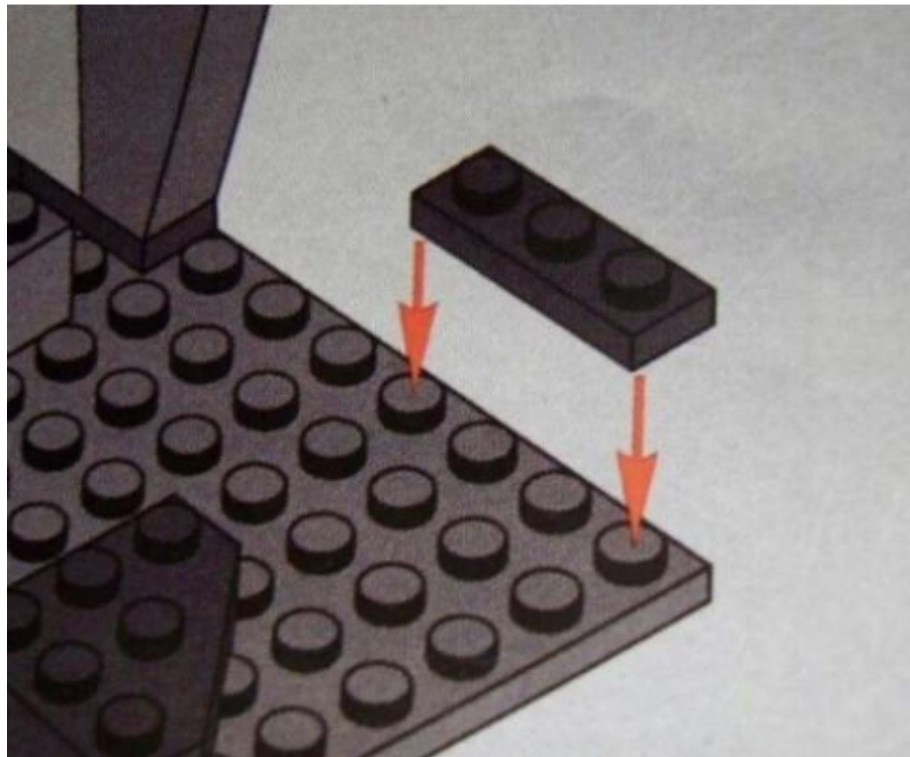
DOC OFFICER

INFO INTERCHANGE

Wiki
Documentation
Data Portal

**Just read the documentation,
it's not that complicated.**

The documentation:



INFO INTERCHANGE

Wiki
Documentation
Data Portal

Data portal

- Data management portals **help organizations to gather, store, access, analyse, and share data easily**. They help organizations to smartly **organize internal data** and put all the public-centric data in **open data** portal form.

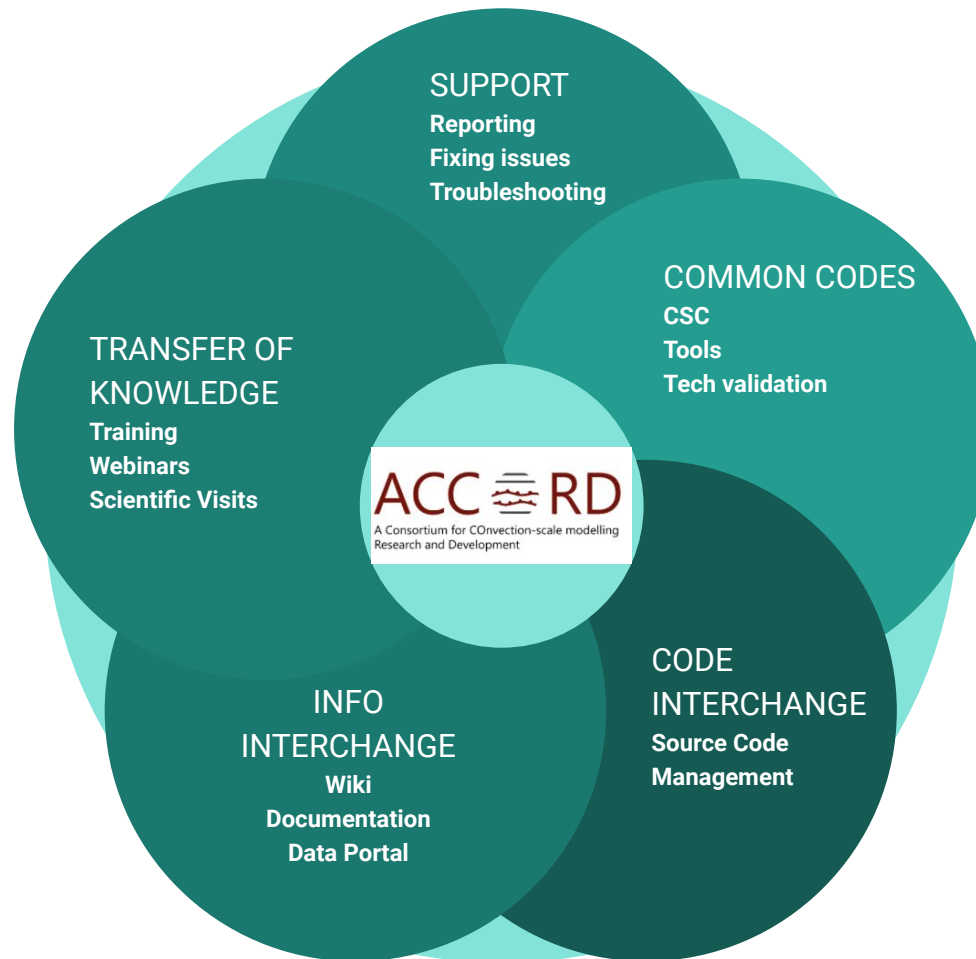


EWC will deliver data access and cloud-based processing capabilities for the European Meteorological Infrastructure (EMI)

As the EMI collects **more detailed and frequent weather and climate observations and develops enhanced prediction capabilities and services**, it is increasingly facing challenges to provide **infrastructure to store, manage and process large datasets**.

- **Harmonized and standardized** online access to data across large data centres.
- **Data As A Service** running software close to the data, like **ML/IA applications** , rather than downloading vast amounts of data locally and needing a local infrastructure in support.

Create a sense of community



TRANSFER OF KNOWLEDGE

Training
Webinars
Scientific Visits

GIT :

- GitHub for ACCORD forge
- local support to implement GIT working practices

Git Forge webinar

DAP -
Tech support visits for
GIT transfer of
knowledge

DAVAI:

- Dev working week
- Users training
- Training on ECMWF's HPCF for Davaï testers and integrators (spfracco project)

DAVAI training for users
webinar

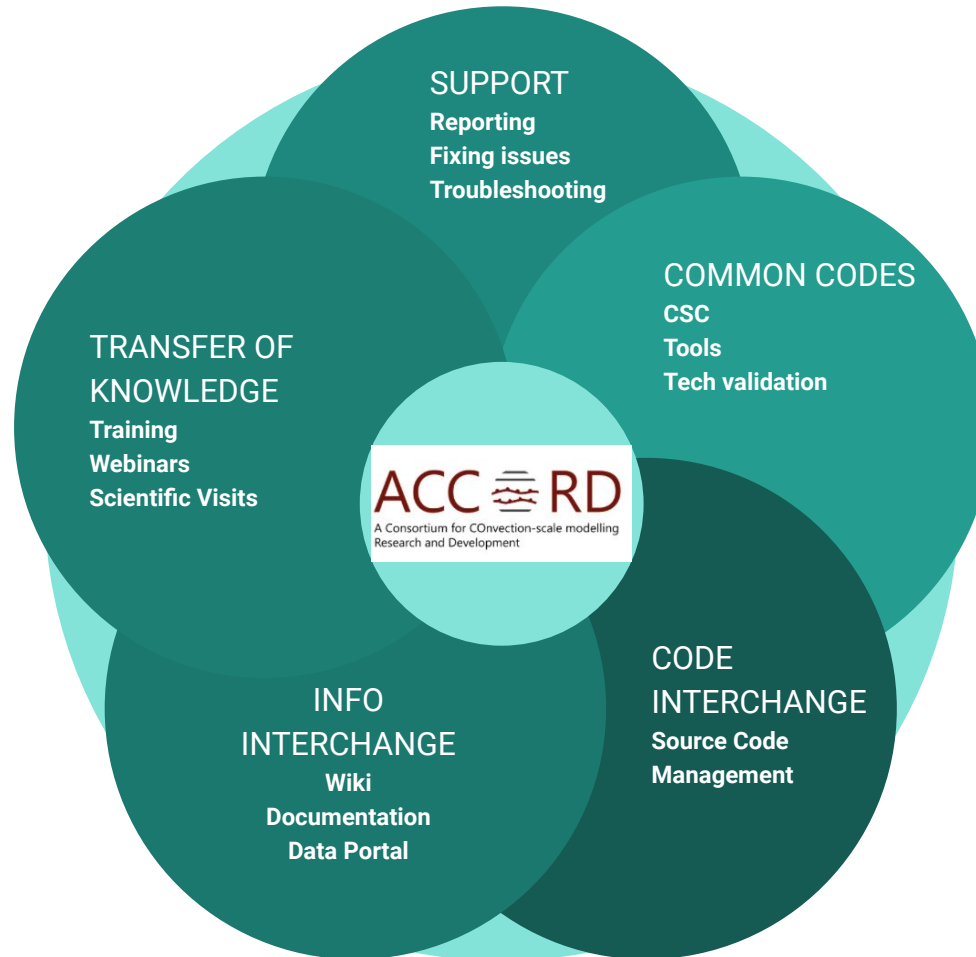
DAP DAVAï
contributors-developers
WW

Vortex:

- Scientific visit

DAP - Visit to MF

Create a sense of community



Reporting
Fixing issues
Troubleshooting

Reporting/Fixing Issues/Troubleshooting:

- **Use GitHub features**

Local Team System Representatives (LTSR)

- **Exchange of information,**
- Prepare **training actions** so that there is a **transfer of knowledge** in this area.
- Increase the **system area presence in the ACCORDers.**

Thank you for your attention



Growth is never by mere chance; it is the result of forces working together.

James Cash Penney

MoU: Article 2: Scope and Objectives

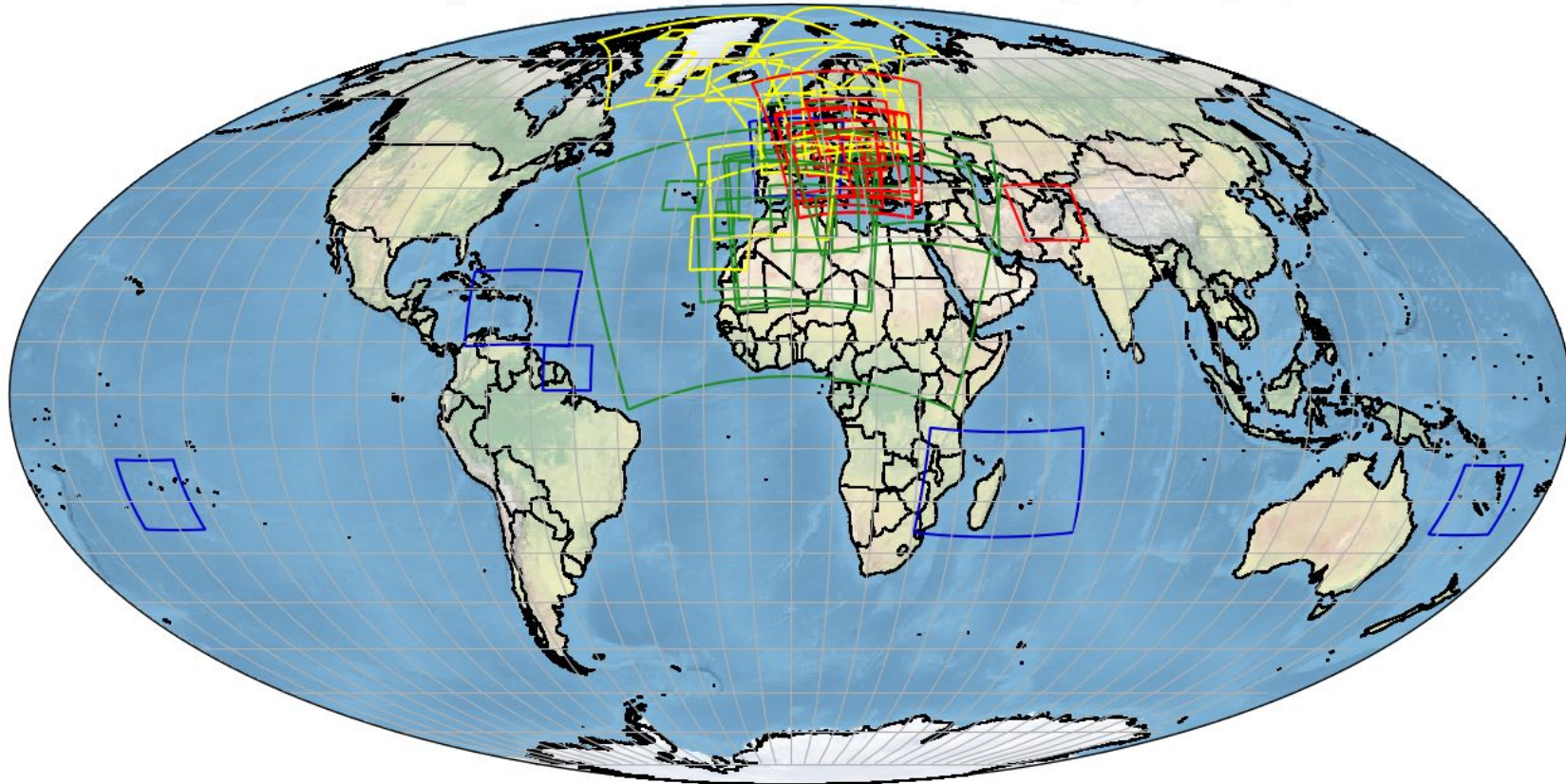
The primary purpose of the Consortium is to share limited resources for the efficient development of a state of the art NWP system and support its operational set up. The Consortium will deliver to its Members a set of common codes that can be assembled under diverse configurations to support the production of world-leading quality numerical weather predictions on limited geographical domains. To this effect, the Consortium will carry out the following activities:

- Research to contribute to the progress of scientific knowledge relevant for short-range weather forecasting, leading to publication of scientific results in the areas of environmental science and high-performance computing;
- Improvement of existing codes or developments of new codes to translate research results into forecasting tools
- Extensive testing to ascertain the technical and meteorological quality of some configurations allowed by the codes (called Canonical System Configurations)
- Regular updates of the scientific and technical documentation of the codes for the benefit of the Members;
- Regular maintenance of the codes in order to increase their efficiency on the latest computing architectures and facilitate their operational use by the Members.

http://www.accord-nwp.org/IMG/pdf/mou_alh_for_signature.pdf

Domains

ACCORD configurations in HIRLAM(yellow), LACE(red), Flat-Rate NMS(green) and MF(blue)



Titre

- **Text 1**

- Text 2

- Text 3

- **Text a bit longer blablaba**

- Text xxxxx