

A Consortium for CONvection-scale modelling
Research and Development

Topical Session about DOCUMENTATION

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5th ACCORD All Staff Workshop
Zalakaros, 31 March – 4 April, 2025

TOPICAL SESSION about Documentation

1) ACCORD Scientific - Technical documentation

DISCUSSION 1

2) Documentation of the Namelists in ACCORD

DISCUSSION 2

3) Welcome pack. User's guides, Tutorials, How To's.

DISCUSSION 3

4) Code Related Documentation. ACCORD GitHub

5) Reports of WW, Meetings and ACCORD Stays. ACCORD Wiki

FINAL DISCUSSION

TOPICAL SESSION about Documentation

- 1) ACCORD Scientific- Technical documentation
DISCUSSION 1

1) ACCORD Scientific-Technical documentation

Current STATUS:

- There are some parts already documented but not centralized in an ACCORD place.
- Lack of documentation within ACCORD framework.

What we DO intent:

- Have a transversal documentation across all the scientific areas written taking into account the different model versions.
- Help ACCORD members, including the newcomers, to have a general overview of the topic they work with.

What we DO NOT intent:

To provide a full expert knowledge updated about anything.

1) ACCORD Scientific-Technical documentation

Existing documents:

- IFS documentation <https://www.ecmwf.int/en/publications/ifs-documentation>
- GMAPDOC documentation <https://www.umr-cnrm.fr/gmapdoc/>
- SURFEX documentation <https://www.umr-cnrm.fr/surfex/>
In Hirlam the repository: <https://github.com/Hirlam/SFXDOC>
In ACCORD the repository: <https://github.com/ACCORD-NWP/SURFEX-NWP>

And NEW documentations in ACCORD have already started:

1) Harmonie Cy46 Scientific Documentation

2) Scientific documentation for PHYSICS parametrization in ACCORD

1) ACCORD Scientific-Technical documentation

SOME examples that have already started:

1) **Harmonie Scientific Documentation** : Description of the Harmonie forecast Model , first in LATEX to <https://github.com/Hirlam/HarmonieScientificDocumentation> and written by **Hirlam PLs**.

In this case this doc is scientific, the technical part is on Hirlam/GitHUB/ Wiki <https://hirlam.github.io/HarmonieSystemDocumentation/dev/>

STRUCTURE:

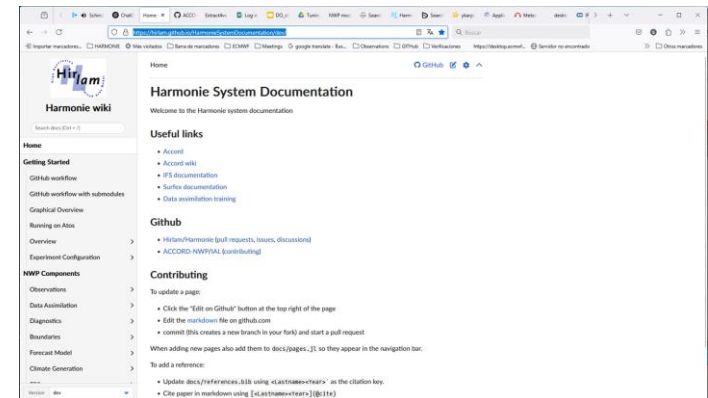
- 1 Documentation overview
- 2 Surface Data Assimilation
- 3 Upper-air Data Assimilation
- 4 The Forecast Model
- 5 Ensemble Prediction System

The Cycle 46 Configuration of HARMONIE-AROME

March 6, 2025

1 Documentation Overview

The aim of this scientific documentation is to describe the Cycle 46 reference configuration of the HARMONIE-AROME numerical weather prediction (NWP) system configuration and some optional choices and on-going developments. The NWP system consists of surface and upper-air data assimilation and a convection-permitting numerical weather prediction model. The system includes a probabilistic ensemble system component also described. HARMONIE-AROME one of the canonical system configurations, which is developed, maintained, and validated in the ACCORD consortium, a collaboration of 26 countries in Europe and northern Africa on short-range mesoscale numerical weather prediction. This documentation describes scientific data assimilation algorithms for data assimilation and observation usage, forecast model parametrizations, both upper-air and surface, configuration choices such as lateral boundary conditions, model levels, horizontal resolution, model time step and databases associated with the model, such as for physiography and aerosols. The EPS description includes various perturbation techniques.



1) ACCORD Scientific-Technical documentation

SOME examples that have already started:

2) Scientific documentation for PHYSICS parametrization in ACCORD -

LATEX doc template prepared by Meto

General parts with different sections for the 3 CSC: HARMONIE, AROME and ALARO in case they differ between them.

Meto has suggested some of the people of his team to fill the different parts.

STRUCTURE:

- 1 Turbulence and convection
- 2 Cloud macrophysics
- 3 Radiation
- 4 Cloud-precipitation microphysics
- 5 Aerosols and their link to radiation and clouds
- 6 Surface-Atmosphere coupling

ACCORD scientific documentation on
physics parameterization

Metodija Shapkalijevski (*SMHI*)
Name and Surname (*Affiliation*)

March 6, 2025

1) ACCORD Scientific-Technical documentation

PROPOSED structure **TEMPLATE for each area:** DA, Physics, Dynamics...

For each COMPONENT/Chapter:

Common ACCORD part CSC dependent

State of the Art		Links to existing documents (IFS etc)
Scientific part	Main Assumptions	relevant for the code
	Main equations	relevant for the code
	Main variables	relevant for the code (include range of recommended values)
Technical part	Data structures	Link between equations and variables
	Call TREES	just the most relevant ones
References		

1) ACCORD Scientific-Technical documentation

ACTIONS:

- **Build** a documentation for all **the ACCORD AREAS:**
PHY,DA, SFC, DYN, MQA and EPS.
- Further investigate the practical conditions of use of tools: eg. Overleaf with a pay-plan solution

HOW to proceed with this NEW documentation:

- Start with LATEX document (Overleaf) and later on upload it to GitHub ACCORD (version controlled + need to be updated). LATEX Templates would be provided
- It will be coordinated by the DO and the MG according to the different area topic and ACCORD scientists would be proposed to fill the parts related to their area of expertise.

1) ACCORD Scientific-Technical documentation

DISCUSSION 1

QUESTIONS to discuss:

- 1) Which is the level of technical details that people expect to have?
- 2) What do people think of having a CSC dependent parts?
- 3) How do we handle the existing documentation? Either provide the link (the existing doc remains the ref) or project it into the ACCORD documentation (and the ACCORD one becomes the new reference and is maintained) ?

TOPICAL SESSION about Documentation

2) Documentation of the Namelists in ACCORD

DISCUSSION 2

2) Documentation of the Namelists in ACCORD

ACCORD Namelist Repository

https://github.com/ACCORD-NWP/ACCORD_namelists/tree/main

3 folders: ALARO, AROME and HARMONIE-AROME

Goal :

Share all the Namelist and its particularities for the 3 CSCs

How: QUESTIONS to discuss:

DISCUSSION 2

Provide a REFERENCE per CSC to simplify the comparison.
And also details for different operational configurations can be stored.

How to document the switches, values and/or the reasons to setup the model?
Better to do it in the namelist itself or in a markdown/LATEX format (**readme.md**) ??

TOPICAL SESSION about Documentation

3) Welcome pack. User's guides, Tutorials, How To's.

DISCUSSION 3

3) User's guides, Tutorials, How To's. Welcome pack.

WELCOME PACK

https://github.com/ACCORD-NWP/ACCORD_documentation

Webinars or Tutorials about:

- How to use GitHub for ACCORD: accounts, teams, tokens, forking workflow, use of issues/PRs, ...
- Contributing guidelines, incl. links to Coding Norms, Scientific doc of the models,, Davai User Guide, etc...
- How to create tickets (if something you find wrong); etc
- Organisation of NWP projects: IAL, OOPS, etc...
- GPU refactoring consequences
- Error debugging
- Good coding practices

DISCUSSION 3

More ideas/needs of TUTORIALS to do?

TOPICAL SESSION about Documentation

- 4) Code Related Documentation. ACCORD GitHub
- 5) Reports of WW, Meetings and ACCORD Stays. ACCORD Wiki

FINAL DISCUSSION

4) CODE Related Documentation

<https://github.com/ACCORD-NWP>

33 repositories

Discussions about Code at the GitHub FORUM:

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

NEEDS:

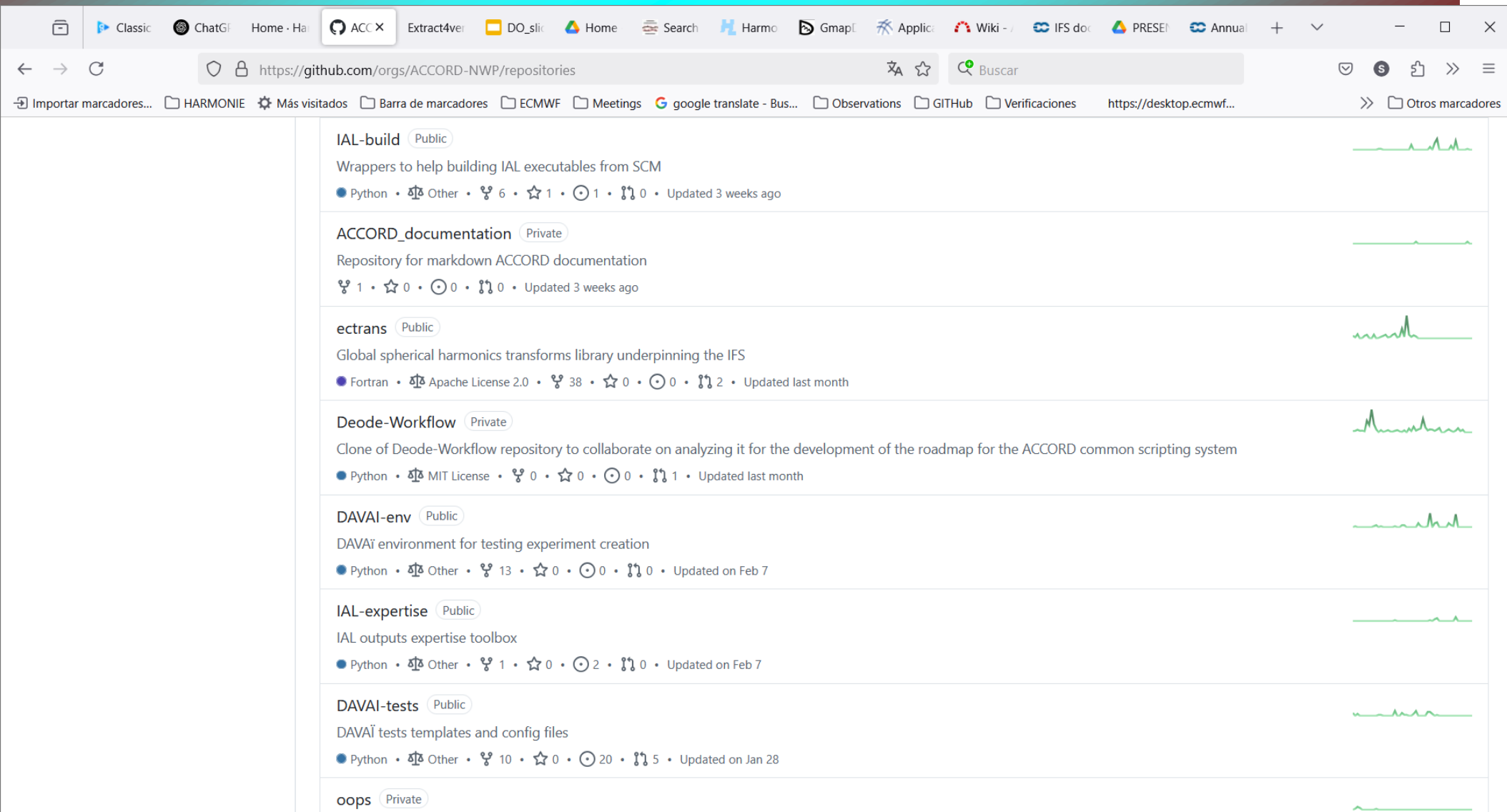
Different description of each one depending on the repository. The description should be in README.md

4) CODE Related Documentation

The screenshot shows a web browser displaying the GitHub page for the ACCORD-NWP organization's repositories. The browser's address bar shows the URL <https://github.com/orgs/ACCORD-NWP/repositories>. The page lists 33 repositories, sorted by 'Last pushed'. The left sidebar shows navigation options: Public, Sources, Forks, Archived (selected), and Templates. The main content area displays a list of repositories with their names, visibility status, descriptions, and statistics.

Repository Name	Visibility	Description	Language	License	Stars	Forks	Issues	Commits	Updated
FALFILFA	Private	FA/LFI/LFA formats library (incl. python binding and API)	Fortran		2	0	5	0	Updated 19 hours ago
ecsaber	Public		C++	Apache License 2.0	0	0	0	0	Updated last week
DAVAI-ciboulai	Public	Ciboulai: the interactive dashboard for DAVAI	SCSS		0	0	0	0	Updated 2 weeks ago
fiat	Public	The Fortran IFS and Arpege Toolkit	Fortran	Apache License 2.0	27	0	0	0	Updated 3 weeks ago
IAL-bundle	Private	Tracking bundles for building IAL executables			9	0	0	2	Updated 3 weeks ago
IAL	Private	IFS-Arpege&LAM: NWP models & DA common code	Fortran		138	8	11	77	Updated 3 weeks ago
DAVAI	Public	DAVAI merged repo	Python	Other	2	0	2	0	Updated 3 weeks ago

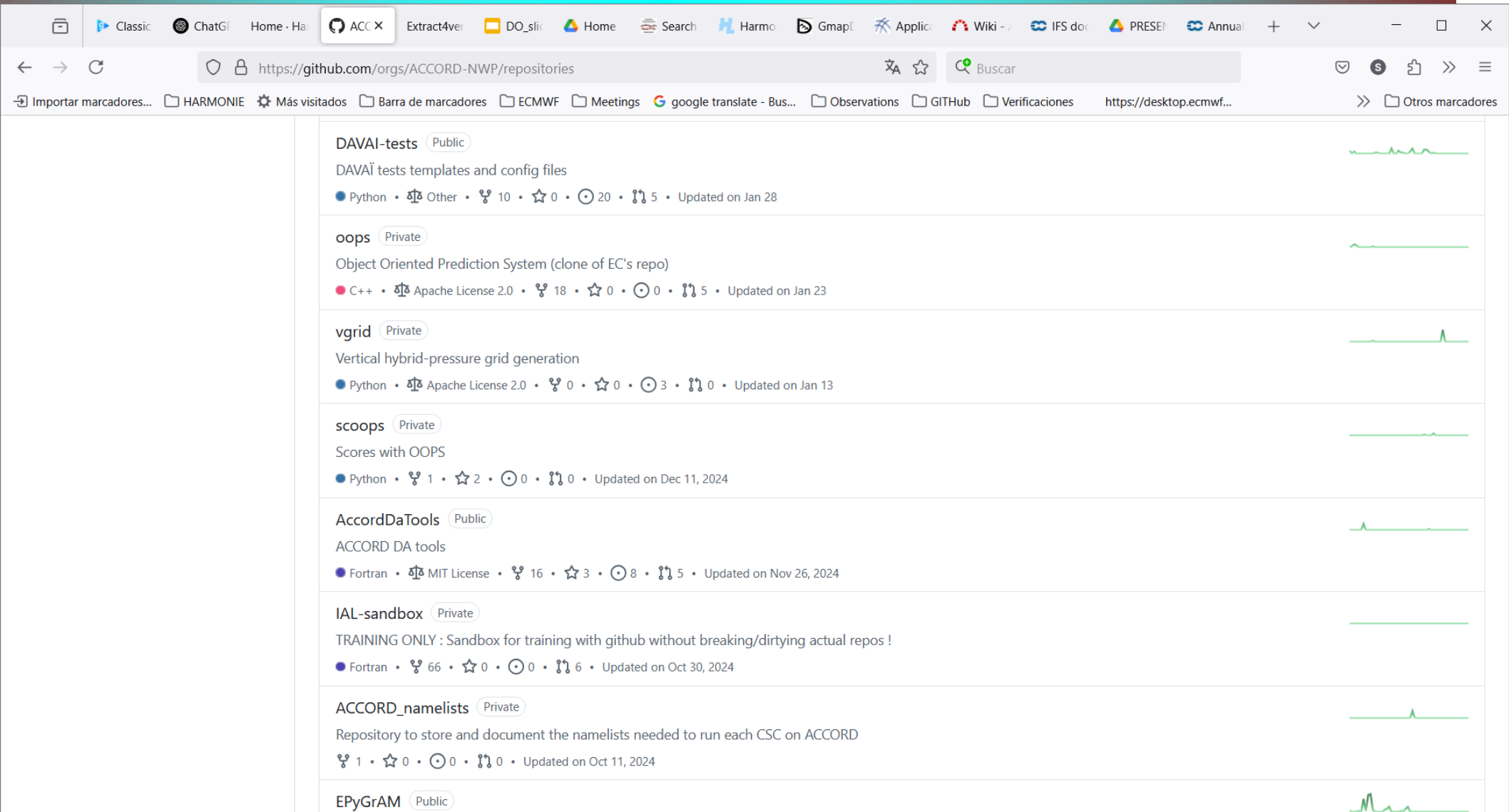
4) CODE Related Documentation



The screenshot shows a web browser displaying the GitHub page for the ACCORD-NWP organization's repositories. The browser's address bar shows the URL <https://github.com/orgs/ACCORD-NWP/repositories>. The page lists several repositories, each with its name, visibility status, description, and statistics.

Repository Name	Visibility	Description	Language	License	Forks	Stars	Issues	Updated
IAL-build	Public	Wrappers to help building IAL executables from SCM	Python	Other	6	1	1	Updated 3 weeks ago
ACCORD_documentation	Private	Repository for markdown ACCORD documentation			1	0	0	Updated 3 weeks ago
ectrans	Public	Global spherical harmonics transforms library underpinning the IFS	Fortran	Apache License 2.0	38	0	0	Updated last month
Deode-Workflow	Private	Clone of Deode-Workflow repository to collaborate on analyzing it for the development of the roadmap for the ACCORD common scripting system	Python	MIT License	0	0	0	Updated last month
DAVAI-env	Public	DAVAI environment for testing experiment creation	Python	Other	13	0	0	Updated on Feb 7
IAL-expertise	Public	IAL outputs expertise toolbox	Python	Other	1	0	2	Updated on Feb 7
DAVAI-tests	Public	DAVAI tests templates and config files	Python	Other	10	0	20	Updated on Jan 28
oops	Private							

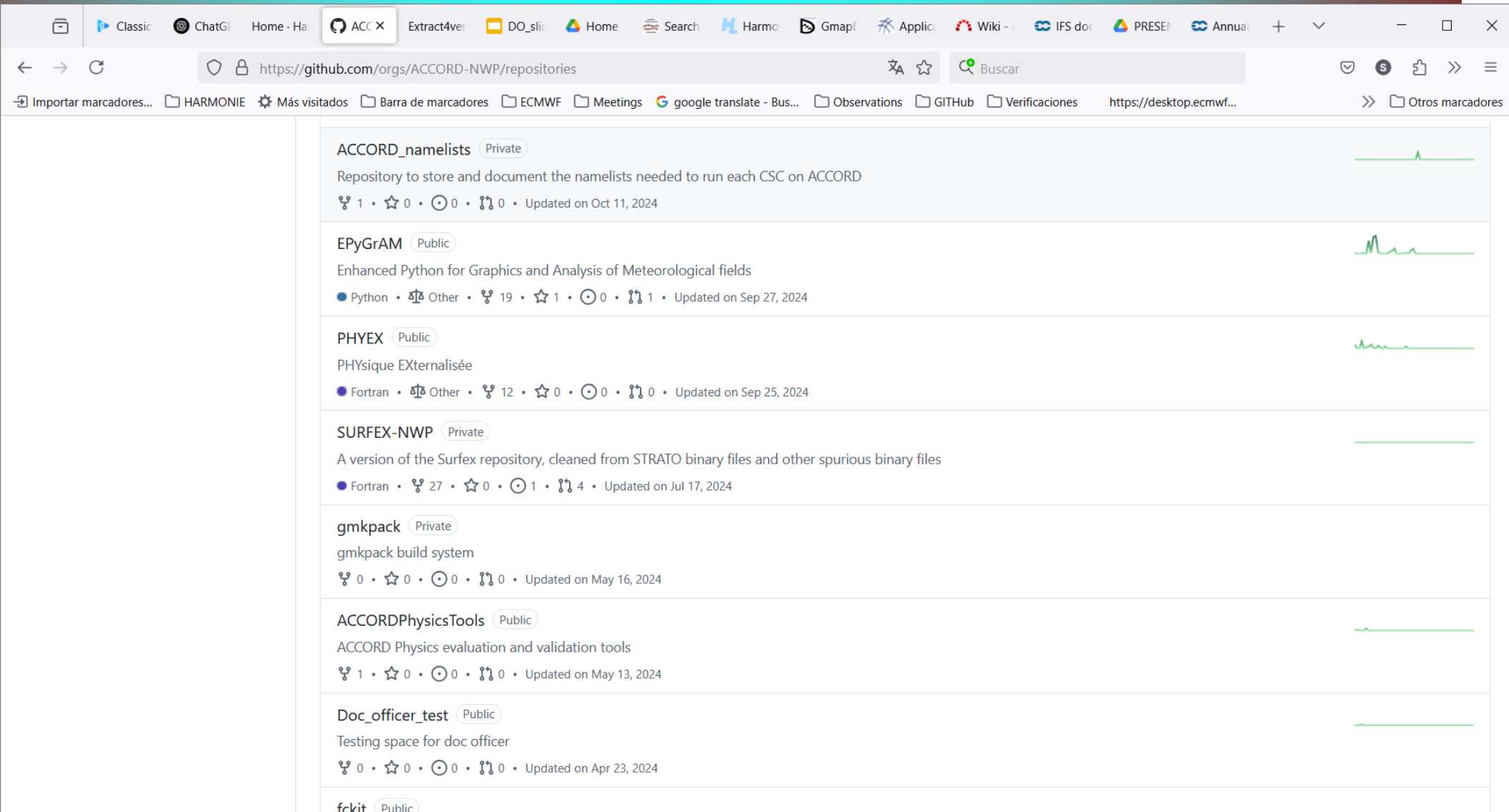
4) CODE Related Documentation



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Repository Name	Visibility	Description	Language	License	Forks	Stars	Clones	Updates
DAVAI-tests	Public	DAVAI tests templates and config files	Python	Other	10	0	20	5
oops	Private	Object Oriented Prediction System (clone of EC's repo)	C++	Apache License 2.0	18	0	0	5
vgrid	Private	Vertical hybrid-pressure grid generation	Python	Apache License 2.0	0	0	3	0
scoops	Private	Scores with OOPS	Python		1	2	0	0
AccordDaTools	Public	ACCORD DA tools	Fortran	MIT License	16	3	8	5
IAL-sandbox	Private	TRAINING ONLY : Sandbox for training with github without breaking/dirtying actual repos !	Fortran		66	0	0	6
ACCORD_namelists	Private	Repository to store and document the namelists needed to run each CSC on ACCORD			1	0	0	0
EPyGrAM	Public							

4) CODE Related Documentation



The screenshot shows a web browser window with the URL <https://github.com/orgs/ACCORD-NWP/repositories>. The browser's address bar and tabs are visible at the top. The main content area displays a list of repositories:

- ACCORD_namelists** (Private): Repository to store and document the namelists needed to run each CSC on ACCORD. Updated on Oct 11, 2024.
- EPyGrAM** (Public): Enhanced Python for Graphics and Analysis of Meteorological fields. Updated on Sep 27, 2024.
- PHYEX** (Public): PHYsique EXternalisée. Updated on Sep 25, 2024.
- SURFEX-NWP** (Private): A version of the Surfex repository, cleaned from STRATO binary files and other spurious binary files. Updated on Jul 17, 2024.
- gmkpack** (Private): gmkpack build system. Updated on May 16, 2024.
- ACCORDPhysicsTools** (Public): ACCORD Physics evaluation and validation tools. Updated on May 13, 2024.
- Doc_officer_test** (Public): Testing space for doc officer. Updated on Apr 23, 2024.
- fckit** (Public):

4) CODE Related Documentation

The screenshot shows a web browser window with the URL <https://github.com/orgs/ACCORD-NWP/repositories>. The browser's address bar and tabs are visible at the top. The main content area displays a list of five public repositories:

- Doc_officer_test** (Public): Testing space for doc officer. Updated on Apr 23, 2024.
- fckit** (Public): A Fortran toolkit for interoperating Fortran with C/C++. Updated on Nov 20, 2023.
- field_api** (Public): Field API aims to ease the management and the transfer of data between CPUs and GPUs for the IFS-ARPEGE-LAM software. Updated on Oct 23, 2023.
- eckit** (Public): A C++ toolkit that supports development of tools and applications at ECMWF. Updated on Jun 21, 2023.
- Tallinn_GitHub_TestRepo** (Public): Test repository for Tallinn Surface side meeting with GitHub exercise. Updated on Mar 30, 2023.

At the bottom of the repository list, there are navigation links: < Previous, 1 (highlighted), 2, Next >. The footer of the page contains the GitHub logo, copyright information (© 2025 GitHub, Inc.), and links for Terms, Privacy, Security, Status, Docs, Contact, Manage cookies, and Do not share my personal information.

4) CODE Related Documentation

The screenshot shows a web browser displaying the GitHub page for the ACCORD-NWP organization. The browser's address bar shows the URL <https://github.com/orgs/ACCORD-NWP/repositories?page=2>. The page header includes the ACCORD-NWP logo and a search bar. Below the header, there are navigation tabs for Overview, Repositories (33), Discussions, Projects, Packages, Teams (32), and People (250). The main content area is titled "All" and features a search bar for repositories. A list of 33 repositories is shown, sorted by "Last pushed". The visible repositories are:

- ectrans_withlam** (Private): Temporary PRIVATE clone of ecmwf's public ectrans with LAM transforms in it. Updated on Aug 23, 2022.
- ACCORD-NWP.github.io** (Public): Updated on Apr 11, 2022.
- OOPS-configs** (Private): OOPS config files. Updated on Apr 7, 2022.

At the bottom of the repository list, there are navigation links: < Previous 1 2 Next >.

5) Reports of Meetings, WW and Scientific Stays

At the WIKI:

<https://redmine.umr-cnrm.fr/projects/accord/wiki/Wiki>

- Almost all the reports are uploaded in the WIKI in the appropriate Area section
- How this material is provided in each Area, depends on the Area leader style. Some ALs report more and some less.

NEEDS:

Some of the reports still remain in local (CSC) pages, and they should be moved to the ACCORD WIKI.

FINAL DISCUSSION