ACCORD

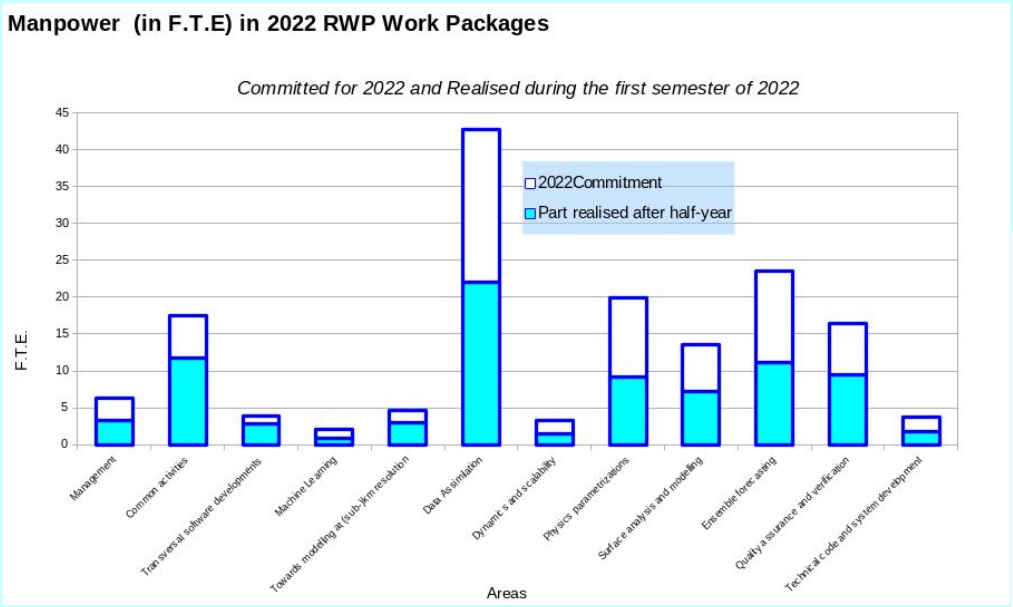
A Consortium for COnvection-scale modelling
Research and Development

PM slides for Assembly-5

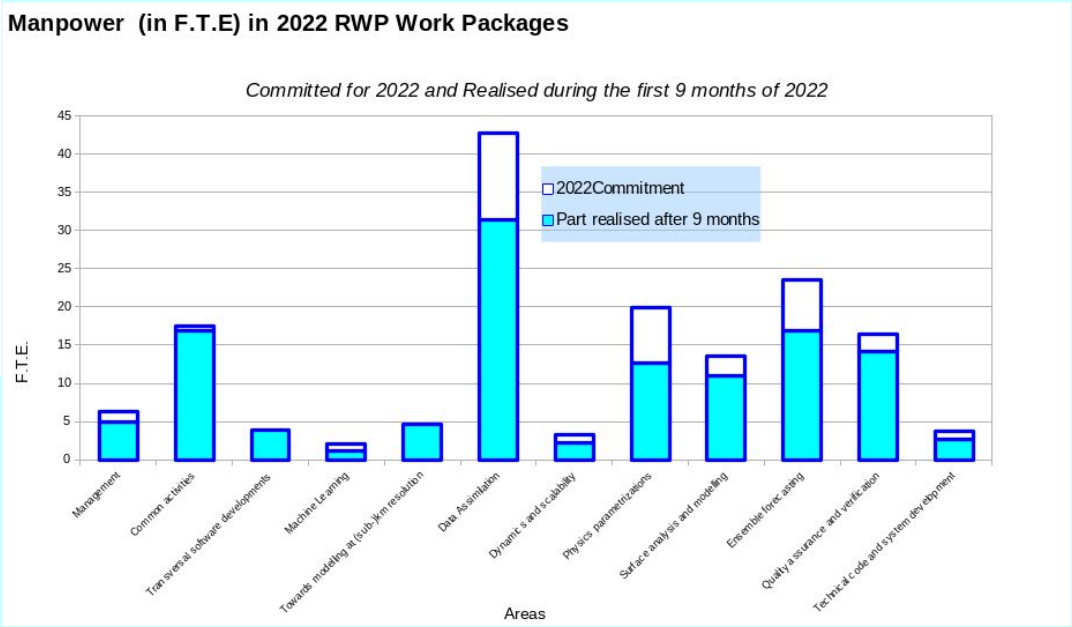
Claude FISCHER, ACCORD/PM
5th ACCORD Assembly, Darmstadt (EUMETSAT) and online, 7-8 December 2022

3.a Reporting on RWP2022

- **SPTR: the end-of-2022 realized manpower will exceed the committed figure (from 2021)**



<= Q1-2 (no DEODE-funded manpower yet)



Q1-2-3 (including DEODE-funded manpower in Q3) =>

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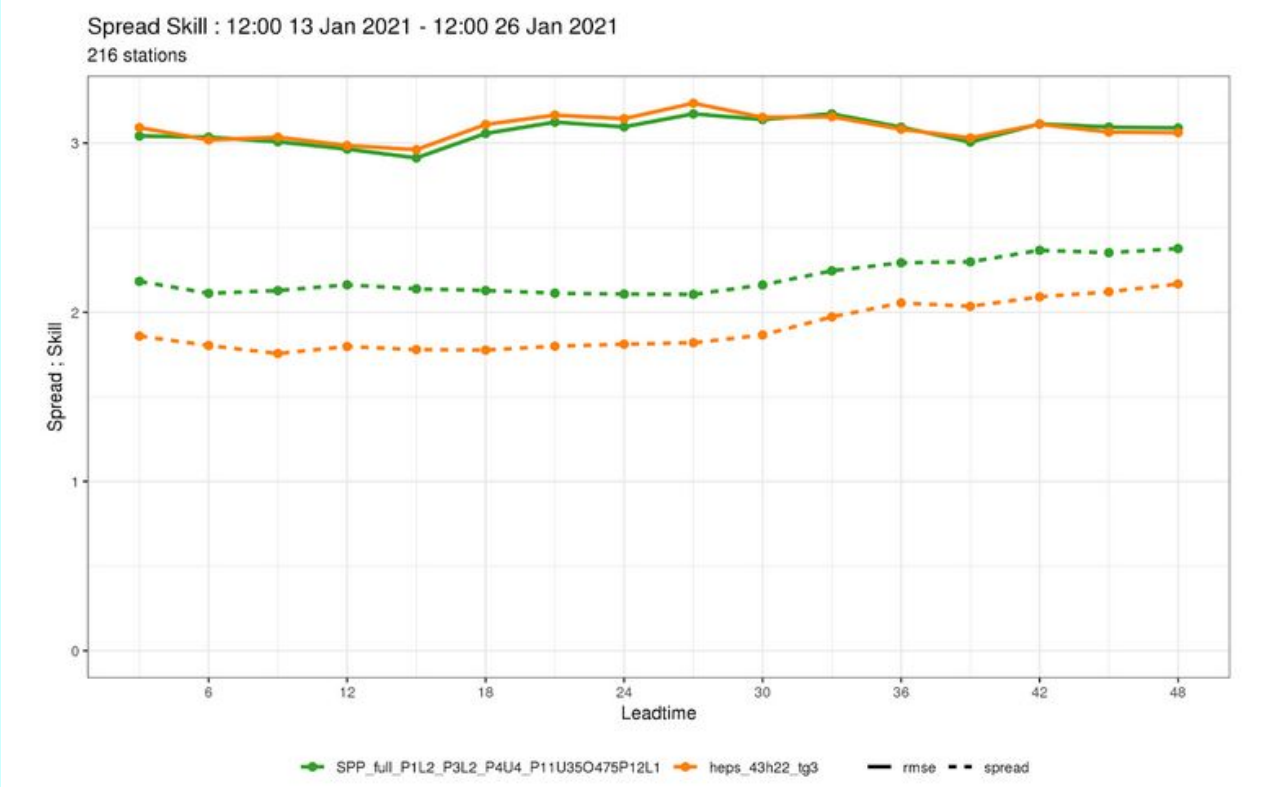
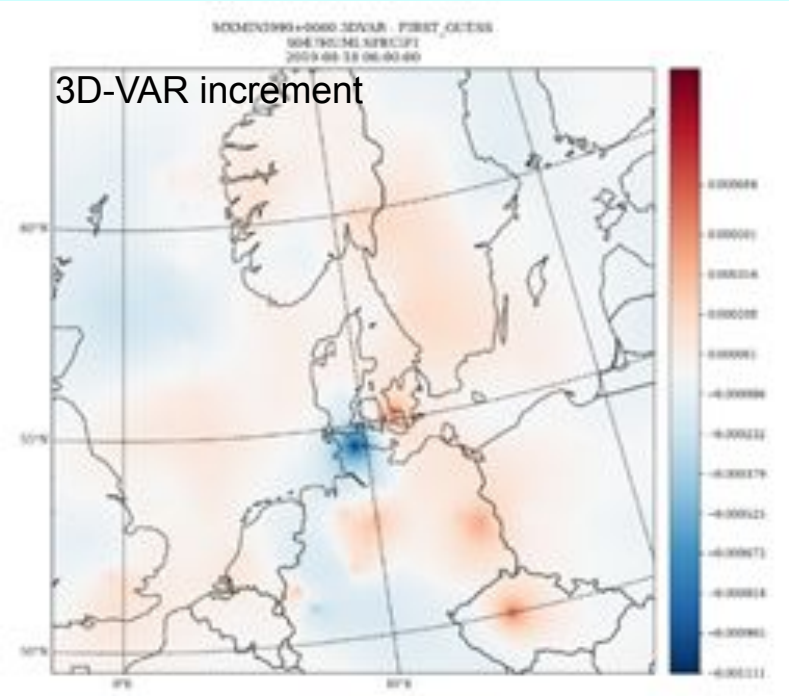
3.a EPS: stochastic parameter perturbation method

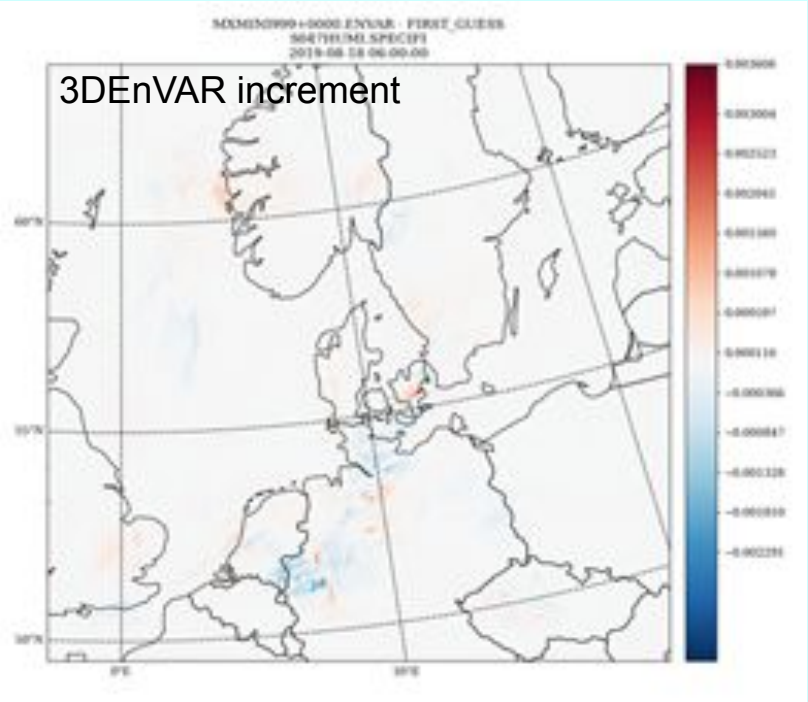
- **SPP implemented in C-LAEF e-suite and operational in HarmonEPS (see figure below)**



3.a (upper-air) DA

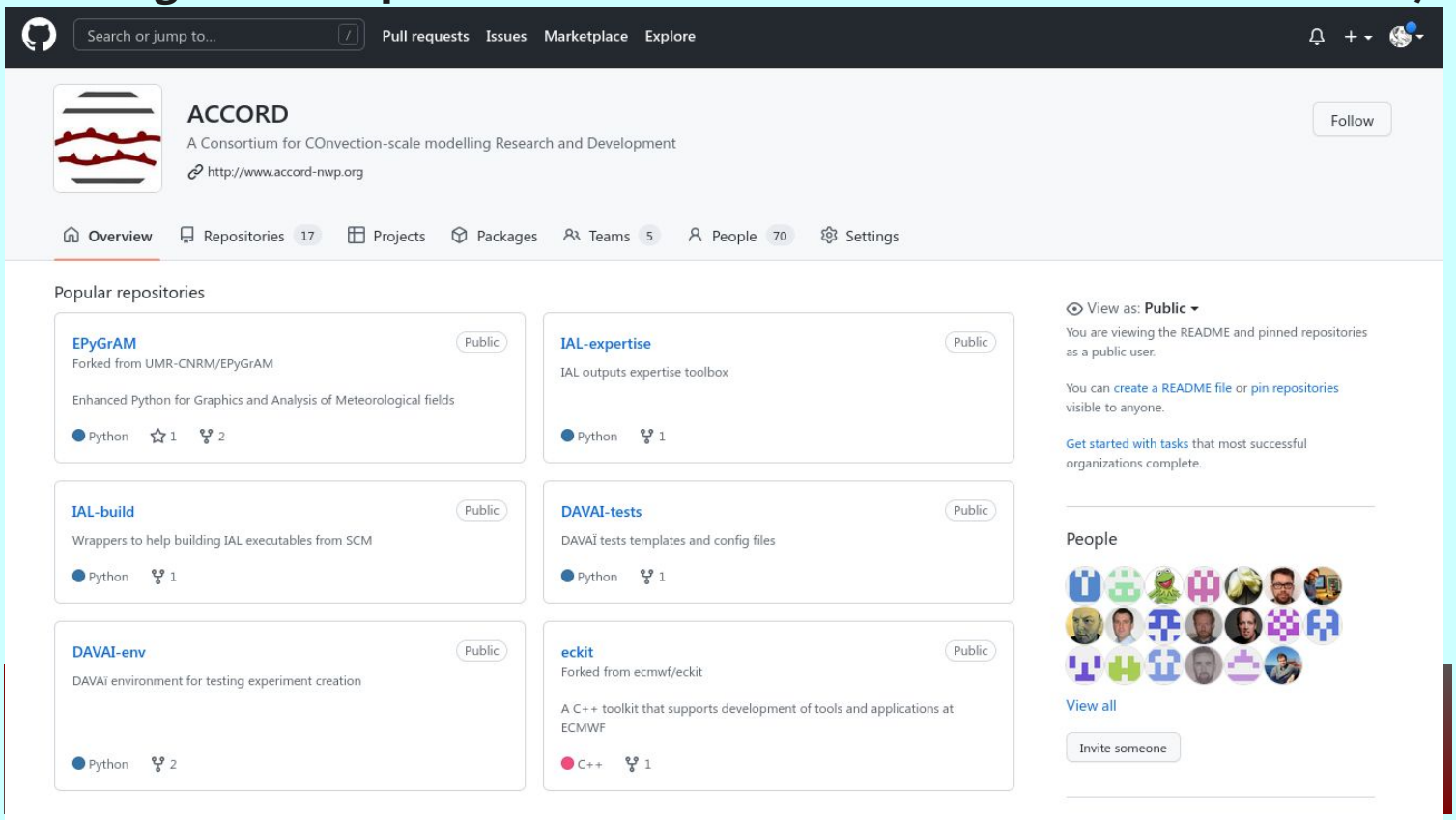
- **the migration to OOPS/DA codes:**
  - 3DEnVar tested in e-suite at MF
  - “hands-on” experiments started in other ACCORD teams (see figure)





3.a Integration of code contributions, source code forge for ACCORD

- **the source forge is in place under github.com and was used for CY48T* and CY49**
- ***the intention is to generalize its use for CY49T1 (2023), under a "formal" approval by the Assembly (7-8 Dec'22), since no specific policy, pricing or manpower issue was raised for the time being***
- **contributors will be trained by webinars and during the preparation of their commits**
- **Next steps: implement the multi-repo approach (deal with the "ecosystem"); form an "embryo" of the future *"DAVAÏ-contributors" team* (technical validation of new releases all along the build process - we will liaise with the LTMs and the LTSRs)**



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3.a SPTR (code adaptation)

- **porting of spectral transforms to NVIDIA GPU, including collaboration with NVIDIA**
- ***issue arises whether the LAM spectral transforms can be declared open source (item 6b in the Assembly agenda)***
- **refactoring of ACCORD (grid point) codes:**
  - general refactoring started in MF, entered CY48T3 and served as basis for analysis across ACCORD
  - dedicated WWs to get started with Harmonie-Arome and Alaro
  - refactoring of MesoNH codes used in Arome => “PHYEX” code
  - this work will continue in 2023, aiming for updates to be integrated in CY49T1
- **s2s tools: LOKI-based GPU version of ACRANEB2; evaluate the relevance of using “fxtran” (MF tool)**

All Staff Workshops

- All Staff Workshop in April 2022, hybrid format (Ljubljana and online)
- [2023 ASW in Estonia] (Tallinn) and online: 27-31 March 2023

ASWs, WWs, WDs: http://www.accord-nwp.org/

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3.a recommendations from STAC

STAC in its meeting on 3-4 November formulated the following recommendations 1:

- **STAC reviewed the work done in 2022 and discussed the progress report. STAC formulated the following specific recommendations:**
  - **STAC recommends the Assembly to formally agree on the use of the source code forge implemented under Github.com;**
  - **STAC reminds the importance of implementing the new working practices, and building the team of "DAVAI-contributors";**
  - **STAC stresses the importance of SPTR and keeping up with the code adaptation of the spectral transforms, considers that the work on the preparation of the codes ahead of adapting them (to new architectures) requires an increase of staffing and careful planning;**
- **STAC recommends the Assembly to adopt the progress report.**

3.a actions for the Assembly

- **Comment. Approve the progress report.**
- **Take note and support the use of the ACCORD source code forge implemented under Github.com.**
- **Approve the repartitioned manpower realization of Q1-2 of 2022: the figures will enter the voting procedures (*ref to Table 1 in the preparatory document with 2022/Q1-2 added to the manpower figures for 2021*).**

3b.i-ii. Roadmap & White Paper

- **These are two new management documents by the MG**
- **The (MG-)Roadmap:**
  - is a complement to the Strategy (long term) and the RWP (yearly updated)
  - contains goals and milestones per Area
- **The White paper on R2O and O2R:**
  - tries to make more explicit where the MG sees the current border between ACCORD common R&D and bridging tasks towards local implementation of the codes
  - 3 topics: technical and meteorological QA (testing), users' feedback, documentation
  - a few concrete actions are proposed by MG:
    - implement further the modernization of the working practices, the new testing tools for technical QA & associated efforts on documentation
    - MQA tasks will mostly be done at a local level and feedback on results provided via the Newsletter and results shown in ASW
    - we have set up an O2R-WG to make recommendations on how ACCORD could organize users' feedback
    - we have started to address documentation with ECMWF and MF (the role of a Documentation Officer has been envisaged)

3b.i-ii. STAC recommendations

- **STAC expresses its support to the roadmap and to the white paper.**
- **STAC recommends the MG to report on the progress with the roadmap, taking into account the opportunities arising from DEODE.**
- **STAC encourages the MG to continue to work along the lines outlined in the roadmap and the white paper, and continue implementing the current proposals.**
- **STAC recommends the MG to regularly revisit the conclusions of the white paper and re-evaluate the current border of R2O and O2R taking into account the future evolution, needs and new opportunities of the consortium.**
- **STAC will follow the progress on the white paper proposals in its next meetings.**

3b.i-ii. actions for the Assembly

- **Comment.**
- **Take note of the content of the roadmap and the white paper, and support the next steps of implementation proposed by the MG taking into account the recommendations formulated by STAC.**

3c. DEODE and ACCORD

- **PAC discussed how DEODE manpower efforts falling into the ACCORD RWP scope should be monitored and accounted for, including for voting rights**
- **STAC discussed a cross analysis between DEODE and ACCORD plans (*see the Annex in the 3c. preparatory document*)**
- **practical management link of DEODE with ACCORD, discussed at STAC:**
  - **to engage proactively into informal meetings with DEODE/WP co-leads;**
  - **the ACCORD/PM will stay in regular contact with the DEODE core MT;**
  - **the PM could agree with the DEODE Lead Scientist on specific MG/MT meetings on arising matters of concern or of mutual interest**

3c. actions for the Assembly

Comment.

Approve the following proposals (from the recommendations by PAC):

I. to monitor the DestinE-funded manpower within the Common Manpower Register (CMR) and the Rolling Work Plan (RWP), as proposed by the PM and the CSS, with adding a disclaimer in the CMR and in the RWP explaining that the manpower figures are not representative of decisions or actual figures from the DE_330 contracts, and that these figures only are meant for ACCORD-internal management purposes.

II. to agree with the principle of redistributing the DestinE-subsisting IPRs (within ACCORD background IPRs) across all Members.

III. to agree to redistribute these IPRs according to the DestinE-registered manpower falling within the scope of the ACCORD RWP, and following the provisions of Article 9 item 136 of the ACCORD MoU.

IV. to agree that the proposals in items II and III are conditional to a positive decision by ECMWF (and EU) regarding the assignment back to ACCORD of subsisting IPRs.

Take note that the practical consequence of the above items is that ACCORD manpower figures to enter the voting rights would be without DE-funded figures, until a decision is made with ECMWF on the subsisting IPRs (this situation becomes relevant with Q3/2022).

Support the recommendations made by STAC to set in place informal exchanges at the level of the management of ACCORD and DEODE, for the benefit of both projects (at the levels of management group members, at the level of PMs)

3d.i-ii. Outcome of WG-interoperability for Physics

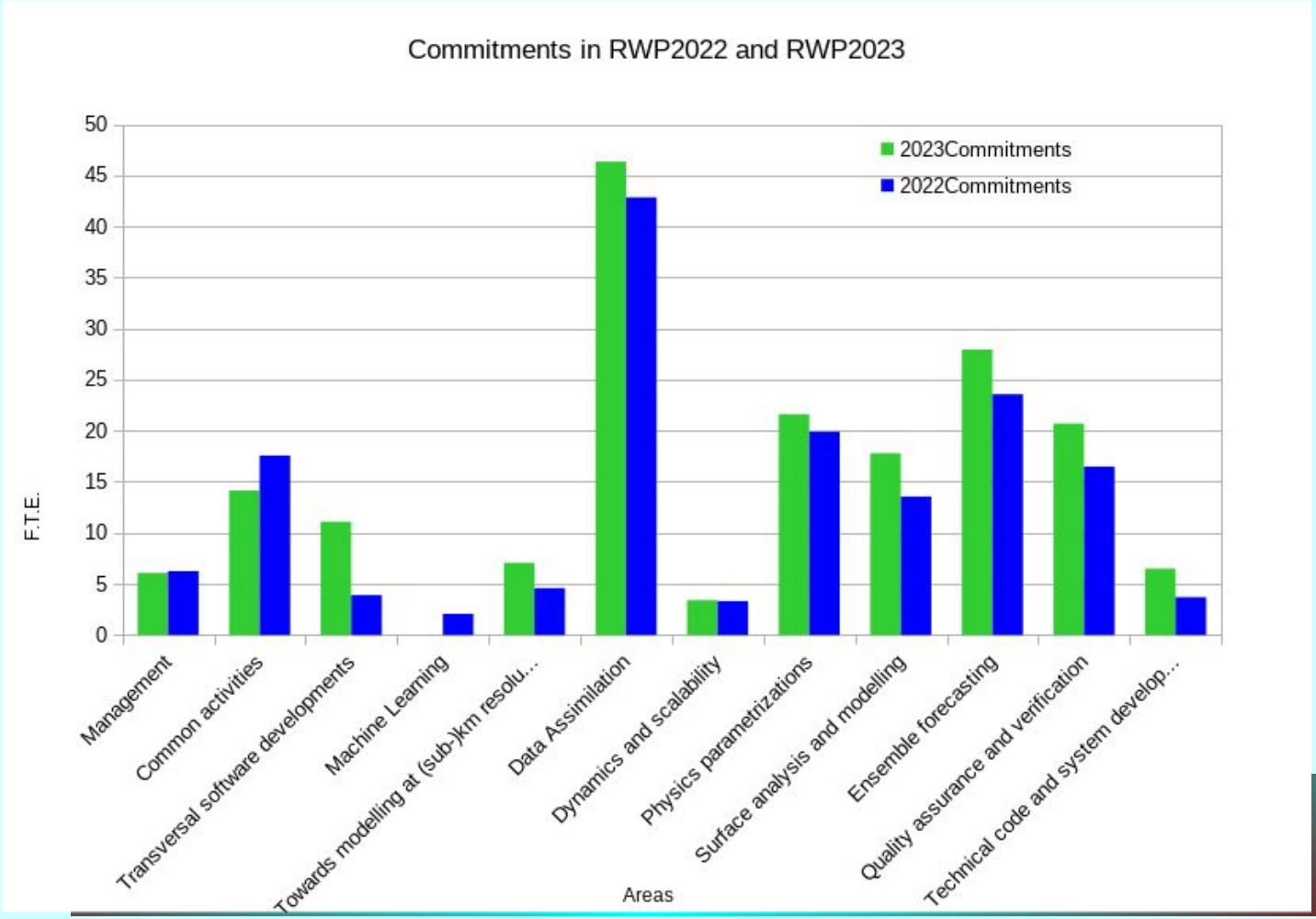
- **Roadmap towards an enhanced interoperability in Physics:**
  - organization: implement WPs and organize the actual work in physics by thematics (WWs, online meetings …). This already is reflected in the RWP2023.
  - codes: strong link with SPTR/code refactoring
  - scientific challenges ahead of us: physics evaluation for VHR confs, 3D effects, link with probabilistic forecasting, ML tools
  - the roadmap was a request by the Assembly (March 2021), presented now for approval
- **Conditional to the Assembly's approval of the roadmap:**
  - opening of the position of the Physics Area Leader. *The ToR's are provided in the prep' document 3d.ii*

3d.i-ii. actions for the Assembly

- **comment, approve the Physics interoperability roadmap**
- **comment, approve the opening of the Physics Area Leader position**

6.a RWP2023: manpower commitments per RWP-Area compared with 2022

- **increase in SPTR and several other areas, partly due to DEODE-funding**
- **note: ML tasks are now included in the thematic WPs**
- **decrease in “common activities” WPs: more difficult to explain, could be partly linked to the changing work practices**



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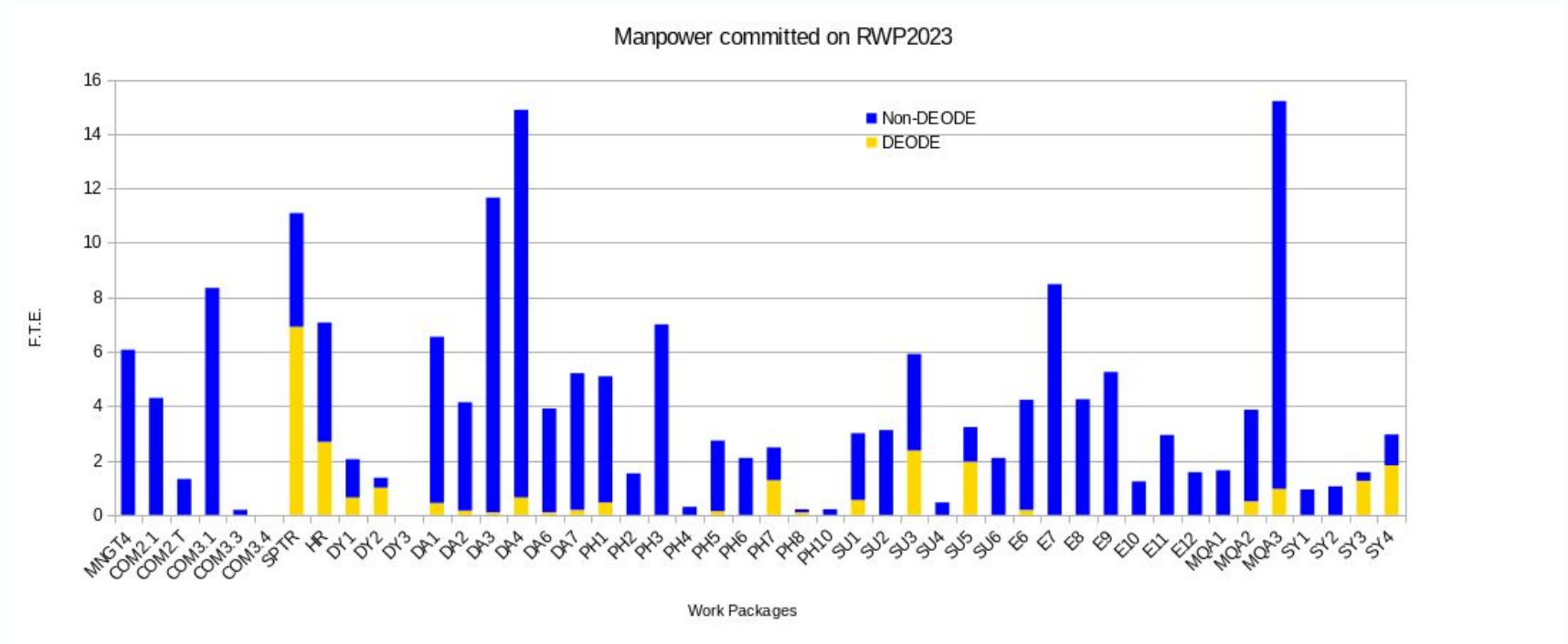
6a. RWP2023: commitments per RWP-WP and with DEODE estimate

- SPTR is largely increased by DEODE, however this increase has two components: funding of current staff (allocated to some DEODE tasks) and recruitment
- WP towards VHR configurations ("HR") also is increased
- rest of ACCORD-relevant DEODE-funded manpower spreads over a range of WPs (in coherence with the analysis presented in item 3c)
- WPs in link with modernization of work practices: COM2.T, SY4, as well as COM2.1, SY3



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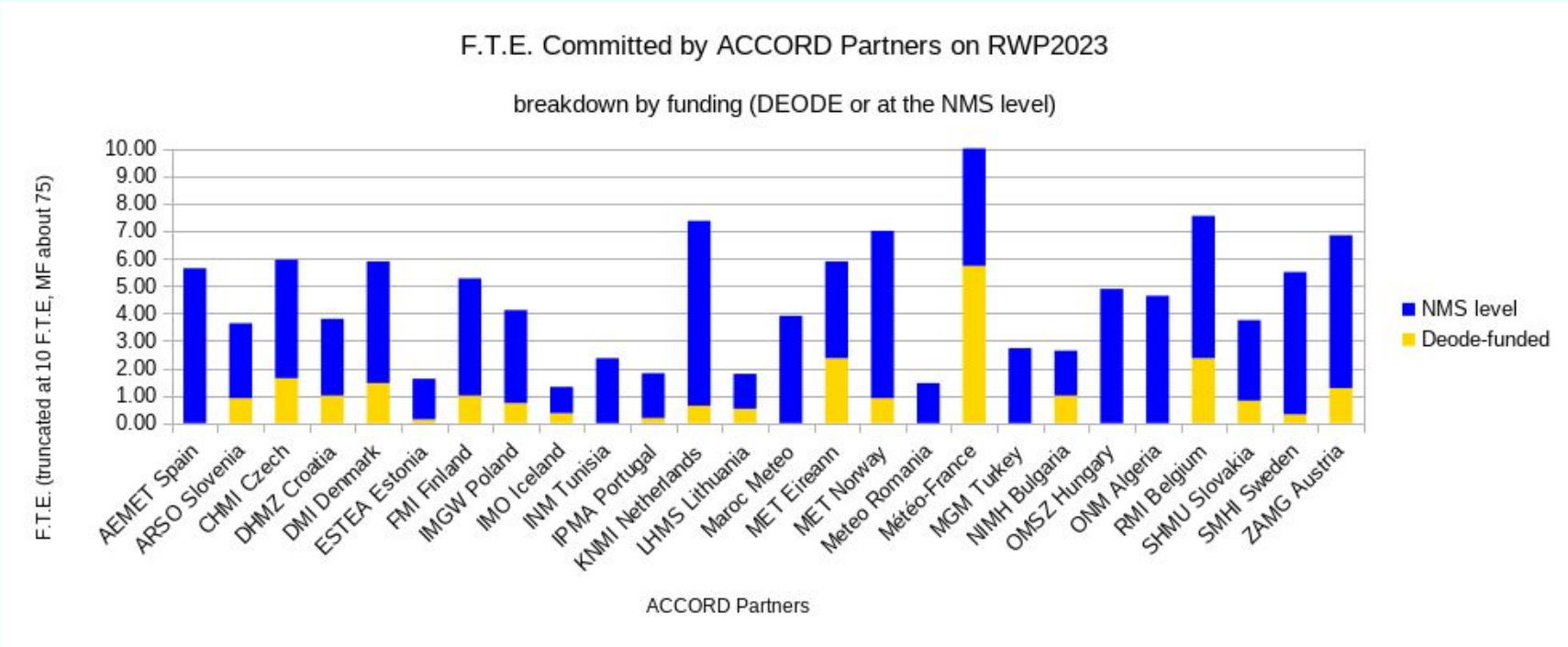
6a. RWP2023: committed manpower per Member, including DEODE

- note: Tunisia (INM), Maroc-Météo, Meteo Romania, Turkey (MGM), Algeria (ONM) are not members of DEODE
- otherwise all NMSs who are both members of ACCORD and DEODE have some manpower funded by DEODE allocated to ACCORD WP-relevant work
- note: The MG would like to organize visits or online discussions to/with some member countries (to start in 2023)



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6a. Headlines from RWP2023 (methods)

- **modernization of working methods:**
  - **we propose to use the ACCORD source forge under *github.com* as main (official) tool for constructing CY49T1**
  - **use DAVAÏ as main technical testing tool**
  - **get started with the "DAVAÏ-contributors" team to maintain and enhance the tool**
  - **pursue training and tutorial efforts (GIT, DAVAÏ)**
  - **use more the ECMWF facilities via the S.P. "SPFRACCO"**
  - **scripts: continue exchange with the team working on the implementation of the DTE in WP5 of DEODE**

6a. Headlines from RWP2023 (code adaptation)

- the ALARO physics will be cleaned and refactored along the lines of the ARPEGE physics (completed by end of 2023);
- the move of the AROME/HARMONIE-AROME physics parameterizations to the external PHYEX package should be completed (includes validation !);
- further AROME/HARMONIE-AROME physics code refactoring to take place in 2023;
- the AROME and HARMONIE-AROME physics control routines will be cleaned and refactored to allow for a flexible parallel granularity and the use of s2s tools (this task to continue in 2024);
- further adaptation and scalability tests on GPU's of the spectral transforms will be carried out;
- dynamics: a work plan is in preparation (MF), pending on fairly frequent exchanges with ECMWF

6a. Headlines from RWP2023 (code releases)

- ***recent past (2021-2022):***
  - *CY48T1: Last "open contributions" R&D cycle*
  - *CY48T2: Integration of rephasing features of (pre-)oper developments + OOPS major upgrade*
  - *CY48T3: Refactoring features in preparation for GPU-readiness / Bit-reproducible with 48T2*
- **today and near future:**
  - CY49: Merge of 48T3 and 48R1 - Convergence of MF & ECMWF Git trees
  - CY49T1: expected contents:
    - various ACCORD developments,
    - rephasing features from e-suites,
    - common H+T version of SURFEX,
    - pre-externalisation of PHYEX and FA/LFI,
    - developments from ARPEGE-climate etc.
  - CY50: not planned yet, around summer 2023 ?

6a. actions for the Assembly

- **STAC reviewed the draft RWP2023 in its meeting on 3-4 November. STAC recommends the Assembly to adopt the RWP2023.**

- **comment; approve RWP2023**

6b. LAM spectral transforms

- **Adding the LAM spectral transform codes to the ECMWF open source repository would greatly facilitate the common work and the collaboration with ECMWF on the code adaptation**
- **This (technical) action requires a (political) decision to declare these specific ACCORD-common codes as open source (following the APACHE-2 licence like for IFS components).**
- ***A detailed rationale is provided in the preparatory document 6b.***

STAC in its meeting on 3-4 November considered that the benefits of open source, for this particular piece of code, outweigh the risks, and made the following recommendations:

- **on the basis of the scientific and technical considerations, STAC recommends the Assembly to discuss and approve an open source licensing of the LAM spectral transform codes shared in ACCORD;**
- **STAC notices that the open source licensing for the global transforms is APACHE-2.**

6b. actions for the Assembly

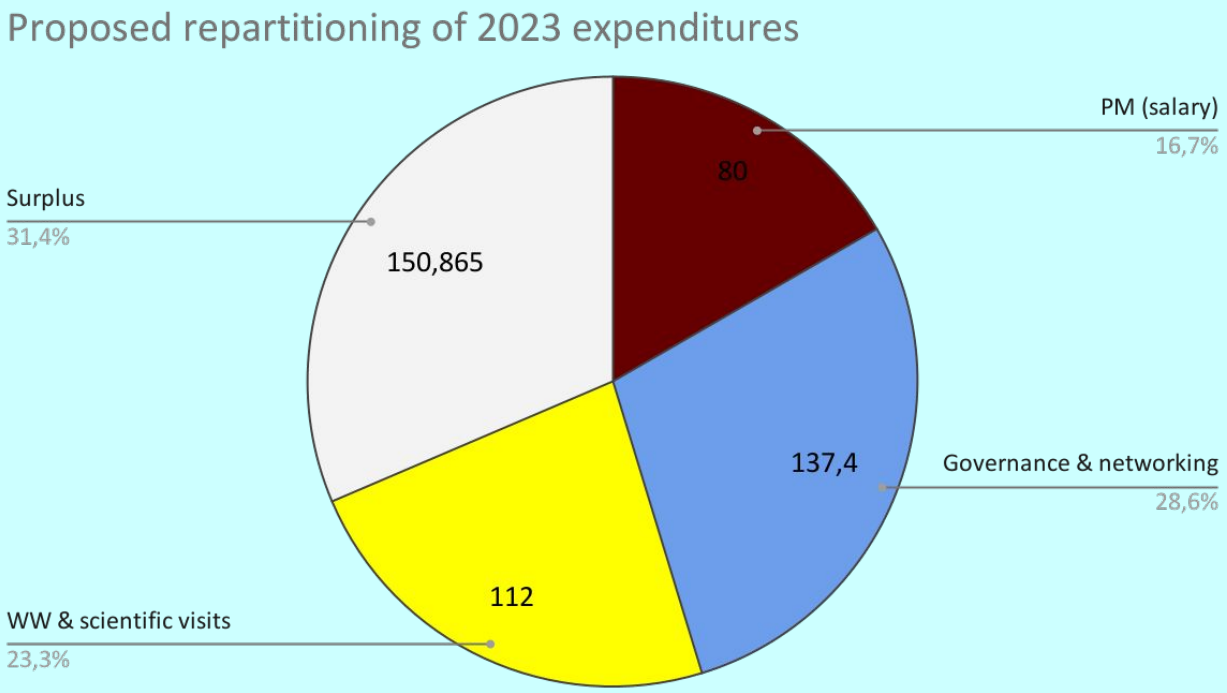
- **Comment.**
- **Approve the open source declaration of the LAM spectral transform codes under an APACHE-2 licence.**

7. Budget: realization of the DAP2022

- **very good realization of the planned WWs and a rather good realization of the scientific visits**
- **the signed DAP2022 was published in March, with additional actions decided in the course of the year (until the beginning of the autumn)**
- ***the outcome of the full realization of actions (done, not done) leads to the Table of regularization for 2022 presented in the preparatory document 7 (Table 1)***

7. Budget for 2023

- **the proposal is to keep the membership fee unchanged: 11 k€ per Member**
- **the following repartition is proposed:**



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7. actions for the Assembly

- **Approve the amount to be reimbursed by, respectively to, Members in 2023 for non-executed, respectively additional, actions in 2022 (*refer to the Table 1 "regularizations for 2022" of the preparatory document 7*).**
- **Approve the amount of the membership fee for 2023: 11kE per Member.**
- **Approve the partitioning of the expenses for 2023.**

- **Take note that a new convention between MF and the successor of ZAMG will be needed; agree that MF will take all appropriate steps on this item.**

8. Management and governance positions - MG positions

- Data Assimilation Area Leader:
  - there was no candidate in the first Call
  - the proposal is to reopen the Call with an additional flexibility in the conditions (allow a couple of applicants from different institutes to prepare an application together)
  - should no candidate(s) apply or be ranked, then the DA Area management would have to be organized in an ad-hoc, less optimal way (*see risk/mitigation analysis in the prep' doc for item 8*)
- Physics Area Leader:
  - open the first Call according to decision in item 3d.ii of this Assembly meeting
  - if this first Call is unsuccessful, consider to reopen the position with the additional flexibility (two applicants from different institutes)
  - should the Calls be totally unsuccessful, continue manage the Physics Area by PM+CSC-Leaders+SPTR/AL, however in a less optimal way; *a risk/mitigation analysis is provided in the prep' doc for item 8*
- for the above steps, the PM suggests to coordinate with the Bureau (for the mandate) and with the MG; information on the outcome will be provided to STAC in due time

8. actions for the Assembly (MG positions)

regarding the DA/AL position:

- agree on making the conditions in the Call for the DA/AL(s) more flexible, by allowing a couple of experts from *different* institutes to apply, and reopen the Call in a timeline similar to the one for the Physics AL,
- agree to task the PM, in coordination with the Bureau, to explore alternative ways of organizing the (upper-air) DA Area, should no adequate candidacy be received (the alternative organization also would be presented for information to STAC),
- the Assembly should take notice of the risk and mitigation analysis, and that the absence of (a) DA/AL(s) would imply that the management of the DA Area necessarily will be suboptimal (with respect to the implementation of the strategy, with respect to the overall coordination in the Area, with respect to the consortium's visibility internationally).

regarding the Physics AL position:

- agree (confirm) on opening the Call of application for the Physics AL position under the Terms presented in item 3.d,
- Should this first Call be unsuccessful (no candidacy or none ranked), agree on making the conditions for the application more flexible, by allowing two candidates from *different institutes* to apply together (with letters of support from each institute). Agree to relaunch the Call with these modified provisions,
- agree on tasking the PM to take any other appropriate step to organize the Physics Area, in close coordination with the Bureau, should no adequate candidacy be received (the alternative organization also would be presented for information to STAC),
- the Assembly should take notice of the risk and mitigation analysis, and that the absence of (a) Physics/AL(s) would imply that the management of the Physics Area necessarily will be suboptimal (with respect to the implementation of the strategy and of the interoperability roadmap, with respect to the overall coordination in the Area and future challenges).

8. Management and governance positions - ST positions

- The CSS position will have to be staffed by mid-2023. MF is considering opening the position within its administrative procedures. The Assembly will be kept informed about the outcome via the Bureau.
- The opportunity to define and open a position of Documentation Officer (on a part-time basis) will be assessed in 2023 - if so, ToR's will be drafted taking into account the outcome of discussions on documentation and perhaps some other Support Team needs.
- We will look out for a new Wiki solution, and this may raise the need for a Wiki manager position (on a part-time basis).

8. Membership in STAC & PAC

- **STAC members are designated by the Assembly for a two year period, renewable**
- **each family was contacted in order to confirm or propose their new representatives**

Family	PAC Members	STAC Members
Flat-Rate ALADIN MoU5 Members	Nuno Lopes (Portugal)	Rafiq Hamdi (Belgium)
	Mehmet Fatih Büyükkasabbaşı (Turkey)	Haythem Belghrissi (Tunisia)
	Siham Sbii (Morocco)	Yelis Cengiz (Turkey)
RC-LACE Members	**Florinela Georgescu (Romania) CHAIR**	Christoph Wittmann (Austria)
	Radmila Brozkova (Czech Republic)	Kristian Horvath (Croatia)
	Subs.: Jure Jerman (Slovenia)	Simona Tascu (Romania)
HIRLAM-C Members	Jussi Kaurola (Finland) VICE CHAIR	**Saji Varghese (Ireland) CHAIR**
	Jørn Kristiansen (Norway)	Xiaohua Yang (Denmark)
	Subs.: Ben Wichers Schreur (Netherlands)	Sami Niemelä (Finland)
Météo-France	Alain Joly	François Bouyssel VICE-CHAIR
	Marc Pontaud	Alain Joly
	Subs.: Samuel Morin	Christine Lac

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8. actions for the Assembly (CSS and Committees)

- **regarding the CSS position:** the Assembly is invited to take note of the leave of P. Pottier by mid-2023, and the consideration by MF to open the position within its internal administrative procedures (the Assembly will be kept informed of the outcome).

- **Approve the nominations of members proposed for the PAC and the STAC, respectively.**

- **Discuss and approve the nominations of the chair and the vice-chair of the Assembly.**

9. Dates and places of next Assembly meetings

- ***a detailed list of ACCORD events is provided in the prep' document for item 9***
- **Next Assembly meetings:**
  a. in End of June - beginning of July 2023
     - for information: 21-22 June 2023 virtual ECMWF Council, 4-5 July 2023 EUMETSAT in-person Council; ACCORD Assembly possibly the week 26-30 June ? virtual ?
  b. End of the year Assembly meeting
     - for information: 28-29 November 2023 EUMETSAT in-person Council; 5-6 December 2023 in-person ECWMF Council; 7-8 December EUMETNET Council

The Assembly is expected to decide on their next meeting(s).

PAC only can be convened on request by the Assembly. The Assembly is invited to consider providing the Bureau a mandate to convene a PAC meeting before the next Assembly, should topics of interest arise by then (in link with DE for instance).

AOB

- **Met Éireann would like to draw the attention of the members on the recent ECMWF Call for informal expression of interest to participate in pilot projects on:**

1. Adaptation to Emerging Technologies

2. IoT observations for NWP

[*reference to ECMWF Council document ECMWF/C/105(22)15*]

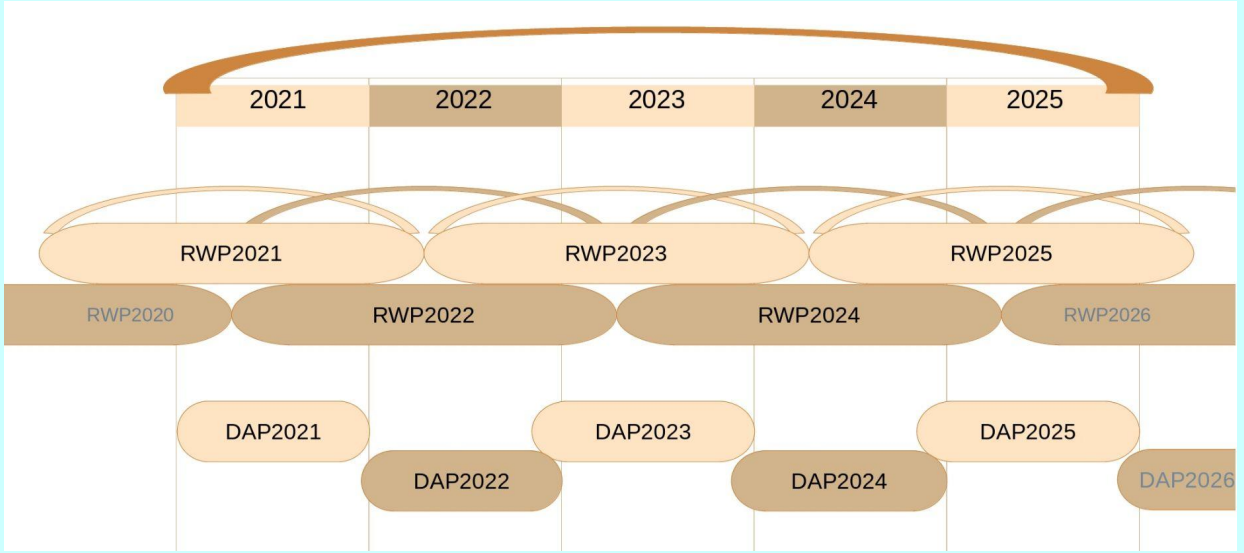
- **The PM has been contacted by a scientific consultant on behalf of the New Zealand NWS, which is currently reassessing its scientific and operational strategy for NWP. On request by the consultant, information about ACCORD agreements and scientific material has been provided.**

End of meeting

- Thank you and closure by chair

3.a Reporting on RWP2022

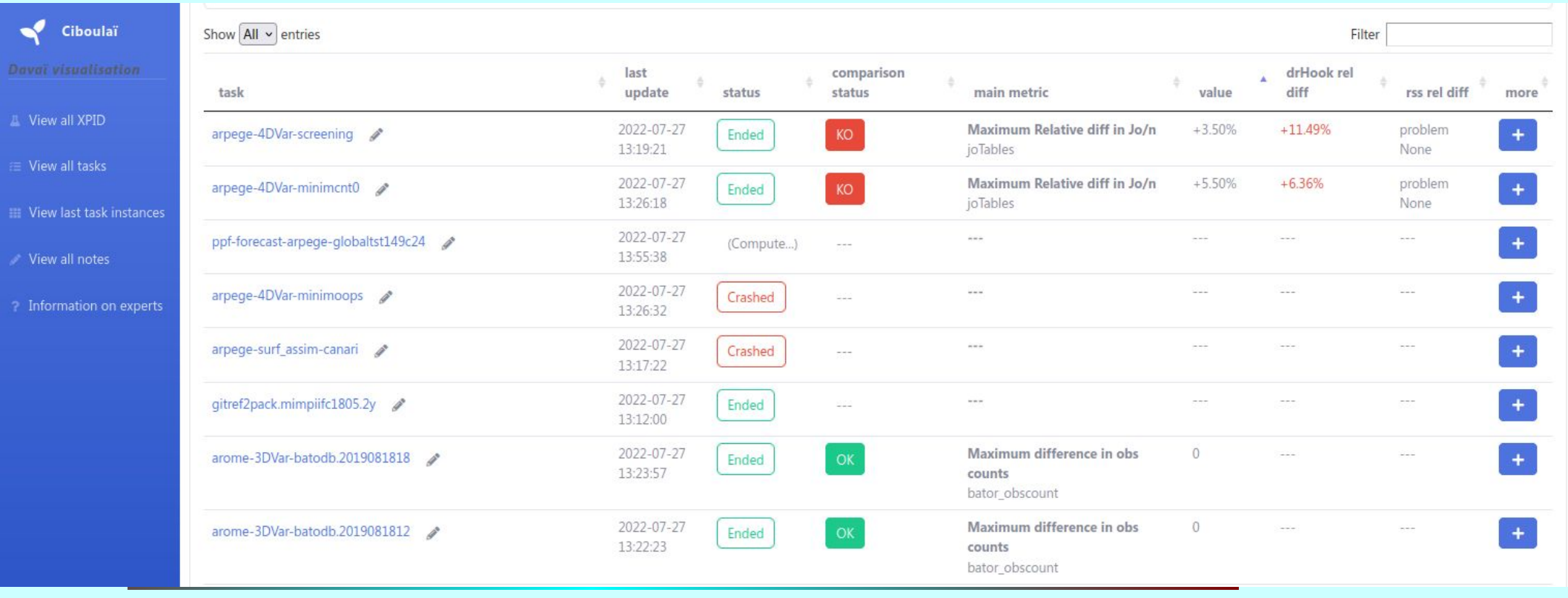
- **Management level:**
  - Two major scientific management documents, both with a yearly life cycle:
    - the Rolling Work Plan (RWP)
    - the Detailed Action Plan (DAP)



- Management Group meets every second Friday online; MG members organize their topical teams and meetings according to their work arrangements
- Important task in ACCORD: commitments and registration of the manpower figures by each partner, under the coordination of the Consortium Scientific Secretary and the responsibility of the PM

3.a Integration of code contributions & testing of new versions

- **Next steps: multi-repo approach (the “ecosystem”)**
  - **this will require to implement and use the “bundling” mechanism**
  - **code contributions will then have to be coordinated with a view across these multiple repo’s**
- **Testing:**
  - **a prototype DAVAÏ (scripted) version is available on the MF and the ECMWF computers**
  - **a “DAVAÏ-contributors” WW was organized at DMI in November**
  - **we hope to form an “embryo” of the future *“DAVAÏ-contributors” team* (further training and advertisement will be made via the LTSRs and the LTMs)**
  - **example of an output from the DAVAÏ/ciboulaï tool for visualizing test results (dashboard):**



task	last update	status	comparison status	main metric	value	drHook rel diff	rss rel diff	more
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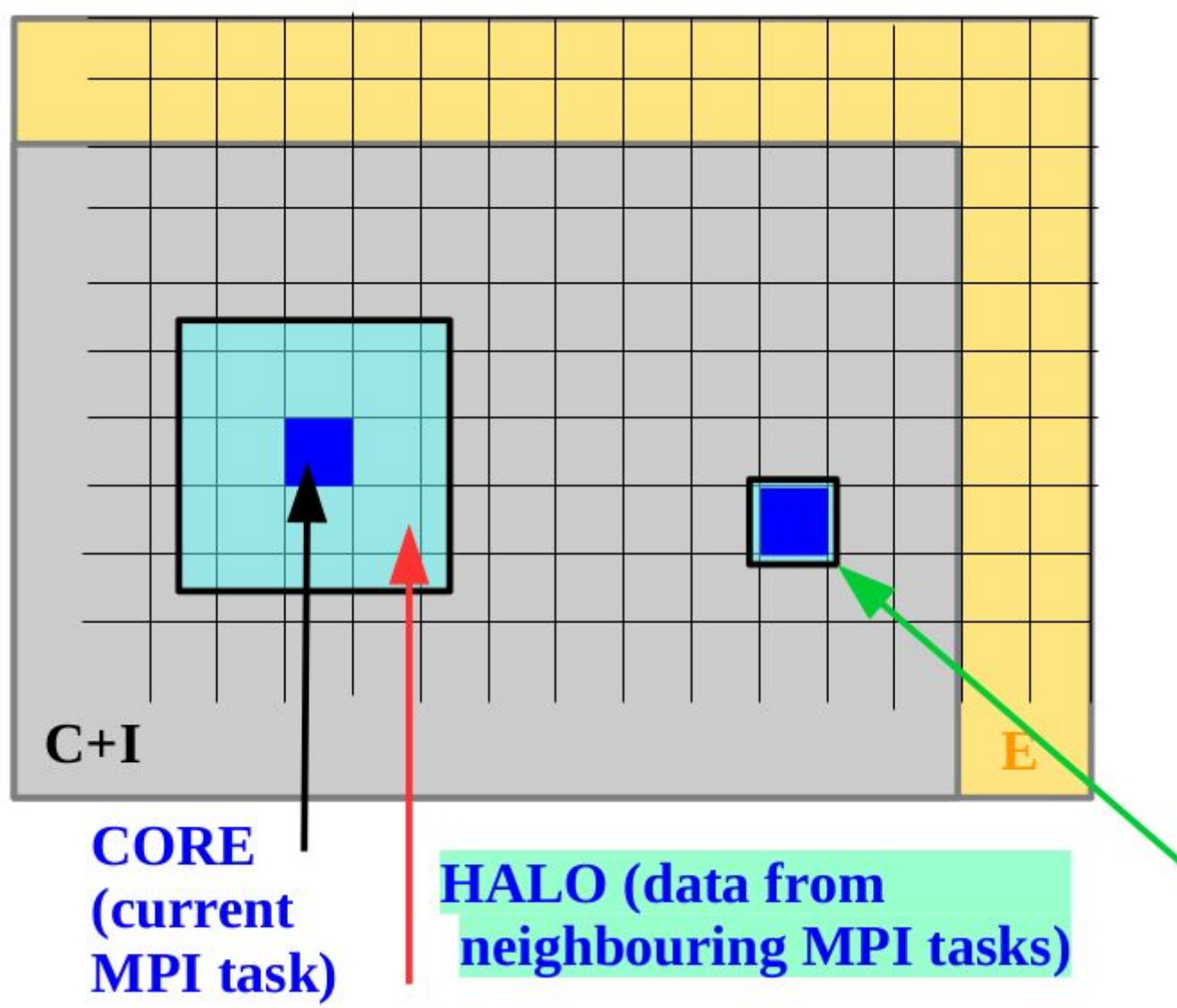
arpege-4DVar-minimcnt0	2022-07-27 13:26:18	Ended	KO	**Maximum Relative diff in Jo/n** joTables	+5.50%	+6.36%	problem None	+
ppf-forecast-arpege-globaltst149c24	2022-07-27 13:55:38	(Compute...)	---	---	---	---	---	+
arpege-4DVar-minimoops	2022-07-27 13:26:32	Crashed	---	---	---	---	---	+
arpege-surf_assim-canari	2022-07-27 13:17:22	Crashed	---	---	---	---	---	+
gitref2pack.mimpiifc1805.2y	2022-07-27 13:12:00	Ended	---	---	---	---	---	+
arome-3DVar-batodb.2019081818	2022-07-27 13:23:57	Ended	OK	**Maximum difference in obs counts** bator_obscount	0	---	---	+
arome-3DVar-batodb.2019081812	2022-07-27 13:22:23	Ended	OK	**Maximum difference in obs counts** bator_obscount	0	---	---	+

3.a System

- **Optimization: progress on mixed-precision for EPS; intention to discuss and exchange with ECMWF and MF on our mid-term views regarding the adaptation and maintenance of mixed precision in the shared codes (beginning of 2023)**
- **Hirlam team has been active in preparing webinars, which will also serve to prepare training for ACCORD staff (for instance to the use of GIT and Github)**

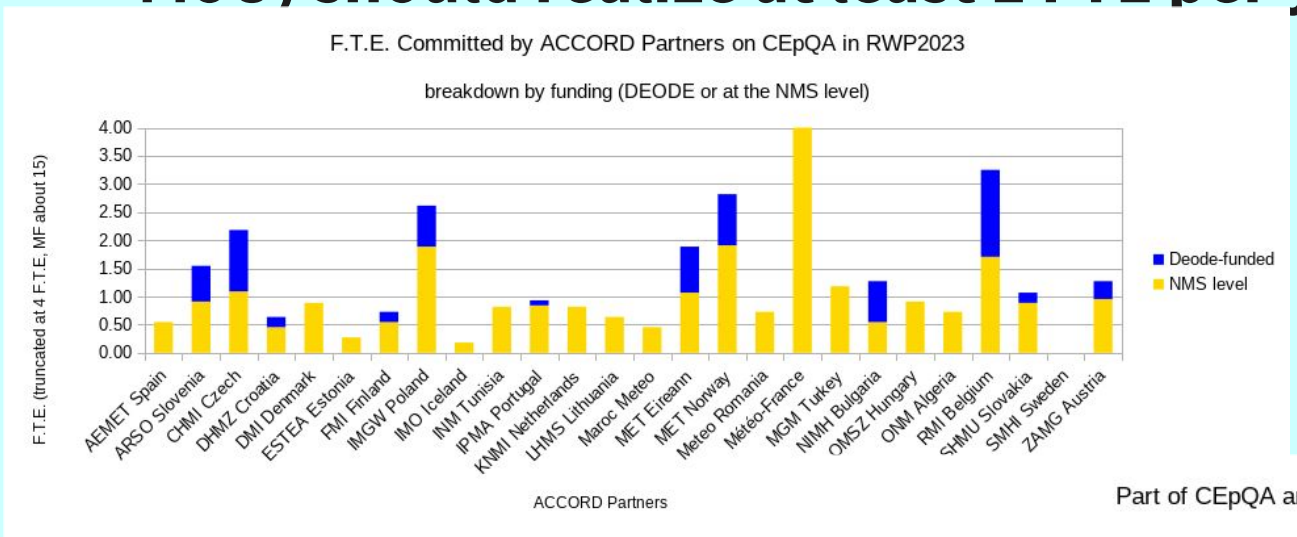
3a. Preparation of codes for enhanced scientific options, here pseudo-3D turbulence

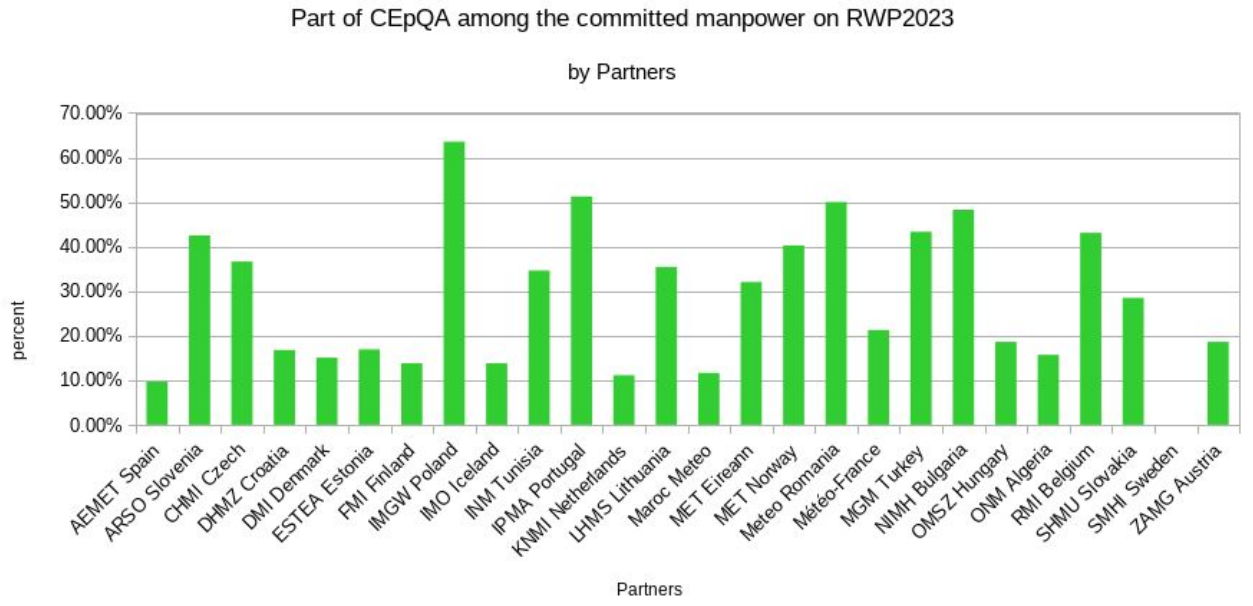
- Reuse the Semi-Lagrangian advection code infrastructure for computing horizontal gradients and organize their dataflow
- These gradients are then used to compute additional terms in the turbulence scheme (ref Goger etal., Moeng etal.)
- Experimental evaluation in ACCORD models has started this year
- The technical part (workflow for the gradients) has been integrated in CY48T1/T2



6a. RWP2023: CEpQA

- **reminder: each partner (except those listed in Annexe III of MoU) should realize at least 1 FTE per yer on CEpQA**





6a. Headlines from RWP2023

- **WG activity:**
  - **WG-ML: finalize portfolio and recommendations (item 9)**
  - **WG-VHR: working week in February and publish material (Newsletter, ASW) (item 9)**
  - **O2R-WG:**
    - **in association with MG, provide recommendations on way forward for organizing users' feedback at ACCORD level;**
    - **MG to draft work plan proposal**
-

6a. Working Groups on ML and VHR modelling

- **WG-ML:**
  - **the draft portfolio has a fair concrete content with elements of reasoning on general issues for ML within the NWP codes and suggestions on specific thematics (turbulence, radiation, surface, obs operators …)**
  - **finish the portfolio by spring 2023 and publish it**
  - **provide recommendations in a mid-term perspective**
- **WG-VHR:**
  - **outcome of WG will be presented in a VHR-WW on 14-16 Feb'23 (SMHI). The WW agenda will be complemented with time slots for practical work on VHR confs (the WW can be useful for those teams also involved in DEODE)**
  - **a summary document of the WG outcome will be published**

MG composition

- **Text**
  - Tex
  - T
- **Text**
  - Tex

Management Group

Chaired by PM

Area Leaders

Dynamics: **Ludovic Auger (Fr)**

Surface: **Patrick Samuelsson (Se)**

Meteorological QA: **Carl Fortelius (Fi)**

E.P.S.: **Henrik Feddersen (Dk)**

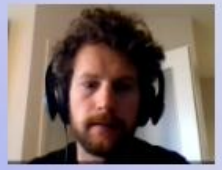
System: **Daniel Santos (Dk)**

Data Assimilation

Physics

Transversal activities: **Piet Termonia & Daan Degrauwe (Be)**

Integration Leader
Alexandre Mary (Fr)



CSC Leaders

CSC Arome:
Eric Bazile (Fr)

CSC Alaro:
Martina Tudor (Hr)

CSC Harmonie-Arome:
Jeanette Onvlee (Nl)

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