

Redefinition of structure and focus of COSMO working groups for cooperation within broader ICON community.

Recommendations and suggestions by the COSMO SMC for further discussion (Nov. 2023)

A) The SMC recommends as general approach for the working groups

- to build topic-oriented interest/theme groups, where all people of different institutions/communities (COSMO and non-COSMO) involved in the development of common interests meet in the common groups
- to appoint co-chairs from different institutions or groups, but always including a COSMO permanent staff (up to 3 co-chairs)
- the formal appointment of group co-chairs is done by the STC, but the leading/coordinating bodies of cooperation partners (e.g. ICON-C5, CLM-Community Coordination) are asked and encouraged to nominate co-chairs where appropriate.
- Add some flexible and dynamical approach to join common interests beyond the permanent character of the core groups (see below at the specific suggestion for groups)

Remarks:

- The degree of common interest across the ICON community beyond COSMO members is likely to vary between the topic groups and with time (e.g. DA is mostly COSMO currently). This supports some flexibility in the nomination of co-chairs beyond staff of COSMO members taking into account the specific situation of each group
- The phrase “co-chairs” instead of “chair / deputy chair” has been chosen on purpose, but COSMO member group chairs have a well-defined role in each group (see below)

The following table compares the key aspects of the “traditional” COSMO WGs and “redesigned” groups of COSMO within the ICON community (but mostly refers to development WGs as Phys, Dynamics, EPS and to less extent DA (WGs 2,3ab,7,1)):

COSMO WG in “traditional style”

COSMO WG within ICON community

defined by topic and working approach

defined by topic and working approach

focus on core development of relevant model features
(the place where it is decided, what is going to be developed in the COSMO model)

shift the focus towards information tasks (collecting, distributing, exchanging), while defining and carrying out core developments remains relevant task of the working groups.

initiate activities for operational regional small-scale NWP development and integrate development of ICON partners to achieve highest possible forecast quality

comprehensive representation of the relevant institutions: the COSMO members

provide a network/platform to join and link NWP developments from different places and to include ‘state-of-the-art’ science in our developments (also from outside ICON)

represent the operational NWP centres and licensees within ICON community

Permanent working/theme /interest groups as well as flexible ‘tasks groups’ on specific topics with limited lifetime as joint activity of the permanent groups (e.g. hectometric scale, AI knowledge/capacity building)

B) The SMC suggest for the role of COSMO co-chairs in the working groups:

- take the lead in making sure that the new interest group is working well (WGC have permanent positions)
- represent this topic at the SMC and at the GM
- represent the interest of COSMO on this topic in the ICON community
- award FTE for activities of COSMO scientists in this field which are of direct interest for the Consortium
- suggest PT or PP following opportunities and needs
- it is not compulsory to define PP/PTs for development activities, but it would be beneficial for the development coordination if co-chairs install an alternative, less rigid, coordinated approach which has a „traceable“ commitment & plan (eg. 1-2 pages), approval, and reporting (talk/poster).
- For activities with FTEs awarded, a basic commitment, plan and reporting is compulsory

C) Suggested composition of SMC and participation in SMC meeting

- SMC is composed of COSMO group chairs + SPM + 1 person per member state which is not represented by a WG chair
- participation in the SMC meeting:
 - the SMC
 - the STC chair
 - one representative of ICON-C
 - the co-chairs of WGs who are not "COSMO chairs"
 - permanently invited: representatives of other major members; associated partners,
 - special-topic functionaries, if suitable

D) Specific suggestions for the Working Groups structure by the SMC:

- Five core groups for model development:
 - DYN (topics of current WG2)
 - PHY (topics of current WG3a + b)
 - DA (topics of current WG1)
 - ENS (topics of current WG7)
 - COMP (new – see below)
- Group V/A (verification & application) combining the tasks of current WG4 & WG5
- Group SPRT with the current topics of WG6 excluding tasks of new group COMP

Remarks:

- The new group COMP is suggested to represent the strategic direction formulated by the STC as: 'Engage with activities to evolve our model codes into a set of modern, modular, and re-usable components which are capable of efficiently leveraging current and emerging hardware architectures.'
- The group SPRT is essential for the support of licensees and comprises former WG6 activities not belonging to COMP (i.e. NWP test suite, COSMO software, technical reports, newsletter, web page) or new aspects like data format (GRIB/netCDF). Details to be defined, if the idea of COMP or similar will be approved by the STC.
- The majority of SMC members supports a specific WG ENS for the topics of ensemble prediction and predictability to avoid a weakening of the research potential topics in this field. The core of ENS will be the study of the predictability on different scales, the development of subsequent ensemble generation methods and their evaluation, with own methodologies and expertise. A strong cooperation with other groups essential for the integration of ENS studies.
- In general, the groups are encouraged to create task groups for topics of particular interest or to organize flexible substructures according to development tasks. This will be vital for PHY which could currently be sub-structured along the topics boundary layer, radiation, land, and ocean.
The SMC suggests a quite broad definition of topics for the core groups to ensure flexibility in scientific development (i.e. the current separation of WG3a and b is not suitable for all current developments) as well as in the organisational structures of COSMO (be 'agile' -- buzzword alert...). This gives more responsibility to the co-chairs to organize substructures where suitable.

E) Flexible component of development work

Besides the above mentioned permanent and core working groups, the SMC suggests to install the option of flexible, 'on-demand' and temporary focus groups or task groups for specific relevant and emerging topics. There should be a limited number of people and a very confined task for such a group. The focus is on information exchange. The related flow of information should have a higher frequency than the rhythm of COSMO GM- ICCARUS. Such task groups can for example help to efficiently integrate new topics to the consortium, such as AI or climate projections.

In the discussion of this topic in the SMC it turned out, that adding some 'flexible spirit' is indeed wanted, but that a suitable implementation is not clear by now.

F) SMC on AI, working group for AI:

- the relevance and importance of the topic is acknowledged by the SMC
- however, there is currently considerable uncertainty how the topic will develop
- therefore, it is too early to install a dedicated core WG on AI right now, but it is very important for COSMO to follow the flow of information and to gain common knowledge about the relevance of AI developments for regional modeling (i.e. global AICON is starting to be developed at DWD and the COSMO community should be at the forefront when an AI-LAM becomes feasible)
- a 'task group' as mentioned above in E) could be very beneficial in this context

G) SMC on climate working group

- engaging in regional climate simulations would be a clear extension to short range NWP
- several COSMO met services are involved in CLM
- requests by licensees for regional climate "simulation" to be expected in near future -> option would be to provide a statistical downscaling which is not available in COSMO/CLM now.
- to be clarified: What is the interest of the met services? What would be the tasks?
- But: avoid doubling of CLM structure, intensify cooperation instead of new WG
- Alternative: strong engagement of CLM in PHY group
- Current action: meeting of Christian Steger (CLM), Paola Mercogliano (CMCC) and Christoph Gebhardt on 6th December to define the frame for a 'white paper' on possible activities in COSMO towards climate simulations (could be seen as a realization of a temporary 'task group' according to E) to provide a basis for further decisions)