

WG 3ab: Parallel Session:

Monday 11 September 2023 (hours in local time of Gdansk)

Session of WG 3ab, Part I: Organization of work related to ConSAT		
Room: Zubr		
ConSAT and links with other related development:		
Chair: Matthias Raschendorfer		
09:00 – 09:10	All	Preparation, Welcome
09:10 – 09:30	Matthias Raschendorfer (MR)	Action-plan and current state of ConSAT
Contrasting particular ConSAT-issues (each introduced by MR) with associated other work, reported by: Martin Köhler (MK); Linda Schlemmer (LS); Jean-Marie Bettems (JMB)		
09:30 – 09:45	MR <-> MK	Additional Roughness by change of land-use <-> Special SSO-Tuning (by Günther Zängl)
09:45 – 10:00	MR <-> LS	Further development of STIC (e.g. Thermal SSO) <-> Parallel development of a TKESV scheme
10:00 – 10:20	MR <-> MK	Surface-layer shear amplification <-> Adaptive Parameter Tuning (by Günther Zängl) <-> Ocean Coupling and Mixed Upper Ocean Layer
10:20 – 10:30	MR <-> JMB	Dynamic Surface-Smoothing by snow <-> possible issue also for follow-up of SAINT?
10:30 – 10:40	MR <-> JMB	Closing Water-budget related to vert.-diff. of hydrometeors <-> possible issue also of WG3b in general?
10:40 – 11:00	All	Coffee

25nd COSMO General Meeting

11 September - 15 September 2023
(face-to-face)

11:00 – 11:15	MR <-> LS	Revised TERRA with implicit treatment of surface processes <-> Modularization of current TERRA code (by Roland Wirth)
11:15 – 11:30	MR <-> JMB, LS	Thermal coupling of ML->SL snow within implicit TERRA-version <-> Sasch Bellaire's implementations in ICON branch 'nix' (JMB) <-> Related ideas/planning in ICON_Seamless/Consolidated (LS)
11:30 – 11:45	MR <-> MR, JMB	Prepared implicit mixed phase interception and semi-transparent cover-layer <-> Related measures by Günther Zängl (MR) <-> Related planning within WG3b (JMB)
11:45 – 11:55	MR <-> MR, LS	Modularization and cleaning of turbulence code <-> BRIDE-project within WG2
11:55 – 12:30	All	Final Discussion about questions like: a) Are there inherent contradictions, and have we ideas towards a harmonization? b) What are the true open problems, and can we arrange all the related efforts under a leading concept? c) How can we organize a workflow of complementing contributions to the model, avoiding double work as well as undesired interference?
12:30 – 14:00	All	Lunch

Session of WG 3ab, Part II: Considering the role of COSMO (as a consortium) regarding development of model physics in general

Room: **Zubr**

Discussion about the role of COSMO WGs 3a,b (under the roof of COSMO SMC) in the interplay with ICON authorities, National Services, Research Centers and their consortia (such as CLM):

Chair: Jean-Marie Bettems, Matthias Raschendorfer

14:00 – 14:15	Jean-Marie Bettems, Matthias Raschendorfer	Introduction and personal perspectives.
14:15 – 15:30	All	<p>Discussion about questions like:</p> <ul style="list-style-type: none"> a) Could the SCM still be a place for <ul style="list-style-type: none"> - compiling a coherent and consistent development- and implementation-plan for short- to longer-range from all desired initiatives for model development? - coordinating the order and priorities of code-implementations, aiming to minimize overall work and mutual disturbances, as well as to optimize efficiency of individual engagement? b) Should the WG3ab leaders (or delegates) be included into the non-technical gate-keeping process under GitLab for ICON-nwp as regards a review of content? c) Should, perhaps, new physics WGs be established according thematically connected issues, which explicitly include developers outside of COSMO/NWP (such as climate people and ICON developers in general)? d) Should, in contrast, the physics WGs (a part of COSMO-SMC) <ul style="list-style-type: none"> - restrict to particular COSMO/NWP issues? - and provide an overview of other development at the most? e) Should, perhaps, a kind of “core model-development” group be established (dealing with the matters of our WGs 2,3ab) and should this be closer connected with the already existing ICON-developer group? f) Should SMC also organize general aid for special problems or burden related to model development in the sense of a proper division of work?
15:30 – 16:00	ALL	Coffee

Session of WG 3ab, Part III: Organization of technical support for coding of new physics development (e.g. related to BuildBot-testing and GPU-porting)

Room: **Zubr**

Towards developing a common understanding of model developers about the current needs and shortcomings regarding the process of finally getting a larger development on top of already operational code into the master-code, facing the

- large and further developing technical overhead of the ICON code, e.g., due to GPU-facilities
- high and still increasing update rate of the master code and the BuildBot test-infrastructure
- implementation of not tunable (particularly empirical) extensions apart from consistent parameterization strategies
- large formal code reorganization, running in parallel (organized and planned by ICON groups)
- growing list of coding standards (formulated and agreed by ICON groups)
- obligatory readiness of the code for various
 - computer systems, methods of parameter variation or applications apart from NWP
 - alternative non-operational parameterization schemes for the same purpose with all their overhead and special requirements

Chair: Jean-Marie Bettems, Matthias Raschendorfer

16:00 – 16:15	Jean-Marie Bettems, Matthias Raschendorfer	Introduction and report about personal experiences
16:15 – 16:30	ALL	Other individual reports about related experiences
16:30 – 17:30	ALL	<p>Discussion about wishes like:</p> <ul style="list-style-type: none"> a) Alternative parameterizations -> Single, consistent code with upgrade options. b) Empirical extensions: Hard-coded with fix numbers -> Adapting to new, more advanced parameterizations. c) Better arrangement with running code-development, when introducing extensive modifications of technical overhead (such as ACC-directives) into the related master-code <ul style="list-style-type: none"> ➤ Adaptation of related review/gate-keeping ➤ Taking-over of related modification in development branches by those actions as well, if desired d) Technical support: mandatory part of future action-planning e) Better division of work to associated experts within the community: <ul style="list-style-type: none"> - Support at using GitLab efficiently - Support, if debugging is necessary on external machines - Support at achieving readiness of new development for GPU - Adaptation of too sensible BB-tests, failing due to pure difference of rounding errors. - Providing tools helping to prescind from minor modifications (such as blanks and comments) for review with GitLab - Support of non-technical gate-keeping by factual experts of related matters
17:30 – 18:00	ALL	Time-buffer or possibility to join (at least the final discussion of) the parallel WG6 session just about technical issues (ICON-SCA/C)

WG 3a: Parallel Session:

Tuesday 12 September 2023 (hours in local Time of Gdansk)

Session of WG3a + ART: PP CAIR2 and related issues		
Room: Zubr		
Running development related to Radiation, Microphysics and Aerosols as organized by PP CAIR2 or other groups/projects contributing to the related ICON code:		
Chair: Matthias Raschendorfer, Harel Muskatel		
14:00 – 14:30	Ali Hoshyaripour	Treatment of aerosol-radiation interaction at KIT
14:30 – 15:00	Linda Schlemmer, Ali Hoshyaripour	Operationalization of ICON-ART and further developments within the German project PermaStrom
15:00 – 15:30	Daniel Rieger	Further work on the 2D prognostic aerosol scheme
15:30 – 16:00	All	Coffee
16:00 – 16:30	Pavel Khain	Tackling strong precipitation overestimation in ICON during unstable events with weak dynamic forcing
16:30 – 17:00	Harel Muskatel,	Status of PP CAIR2 including Alberto de Lozar's adaptations in the microphysics (generalized hydrometeors)
17:00 – 17:30	Linda Schlemmer, Martin Köhler	A survey of other work related to clouds, radiation and aerosols in the physics department of DWD
17:30 – 18:00	Harel Muskatel, All	Final PP CAIR2 session: Open issues, coordination of work, future challenges, general discussion