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White paper on strategy

We are delighted to present our natESM strategy white paper to you—a culmination of collective insights, reflections, and invaluable feedback received throughout our project journey.

This document, a testament to the collaborative spirit of our community, delves into our vision, mission, components, technical criteria, and sprint process, setting the stage for an exciting future. Explore the details and [access the paper here](#).

Our heartfelt thanks go to the community members who contributed critical voices, shaping the early versions of this paper. Your perspectives have been instrumental in bringing it to its current form.

While we've strived to encompass every aspect, we acknowledge the possibility of oversight. If there's a detail we might have missed or an area where improvement is possible, we value and appreciate your constructive comments and suggestions. Feel free to share them via email with the [process coordinator](#) and [the co-chairs](#).



Sprint process upgraded!

Your valuable feedback has driven enhancements to the [natESM sprint process](#)! Based on your positive responses to our sprint checks, we're excited to share the following improvements:

1. Flexible duration: Sprints are now available for a flexible duration of up to 6 months, offering options for 3-, 4-, or 5-month engagements.
2. Mandatory sprint check: To ensure a robust and well-informed low-threshold approach into a full sprint application, every application now requires a preceding sprint check.

Your engagement and feedback have played a pivotal role in shaping these improvements. As we continue on this journey together, let's collaborate to further fortify the capabilities of natESM! Your contributions are the driving force behind our collective success.



natESM events recap

Charting the course for land-ice integration

Our journey to shape the future land-ice component for natESM took a significant stride during our recent land-ice component workshop on October 25. The outcomes are promising:

1. Identification of potential candidates: Both PISM and ISSM have emerged as strong contenders for integration into natESM.
2. Formation of a working group: A new working group has been set in motion, dedicated to bringing the land-ice component to life.
3. Next steps: The working group gears up for its next meeting, and we're pleased to announce that it will take place during our upcoming community workshop in Leipzig.

For a more in-depth look into the KickOff and its details, [visit our website](#) and peruse the KickOff memo. Express your interest in participating in this pivotal working group meeting when you register for the workshop or contact us via mail at info@nat-esm.de.

Empowering our community with technical expertise

Our recent technical training workshop on November 14 and 15 was a resounding success! Co-organized by the natESM support team, DKRZ, DLR, DWD, and MPI-M, the workshop welcomed nearly 40 participants, and covered:

1. Approaches to coupling ESM components, illustrated using ICON.
2. Hands-on session on utilizing ICON data through the YAC-Python interface.
3. Informative presentations on various aspects of model coupling and interfacing.

We appreciate the vibrant discussions and collaborative spirit. Special thanks to our presenters for sharing insights into coupling ESM components, YAC, ICON, ComIn, and more. The presentations can be found [here](#).

In response to the enthusiastic feedback from the participants who expressed a strong desire for a repeat experience, we are delighted to announce another technical training workshop during the upcoming community workshop. Secure your spot now by [registering here](#).

Spotlight your model on natESM GitLab!

This is your golden chance to shine! Take full advantage of our GitLab platform and share comprehensive information, craft detailed descriptions, offer thorough documentation, and put your work on display for the entire ESM community to explore.

Why does it matter? Your model or module could become an integral part of the natESM capability, shaping the future of Earth system modeling. So, don't miss out – let your model take center stage on our **natESM GitLab!**



Sprint status

Model	Service description	Support time	Status
ICON-ART	Analysis of ART code for GPU porting	2 months 04/22-06/22	Closed → Docu
ICON-mHM-YAC	Online coupling mHM into ICON using YAC	6 months 07/22-01/23	Closed → Docu
FESOM	Port FESOM 2.1 to JUWELS booster and Levante-GPU	6 months 11/22-05/23	Closed → Docu
ParFlow	Port ParFlow to AMD GPUs, Inspection of RAPID Memory Manager and Hipification, Performance Analysis	6 months 12/22-06/23	Closed → Docu
MESSy	Optimize the data transfers between host (CPU) and device (GPU)	4 months 01/23-05/23	Closed → Docu
ESMValTool	Updating remaining non-lazy preprocessor functions to be memory efficient AND updating ESMValCore	6 months 06/23-12/23	Closed
HAMOCC	Concurrent HAMOCC on GPU	6 months 06/23-12/23	Running
MESSy-ComIn	Couple MESSy to ICON via the ICON Community Interface (ComIn)	6 months 07/23-01/24	Running
LAGOOn (CLaMS and MPTRAC)	Develop a concept and provide a first implementation of a framework for Lagrangian transport modeling	6 months 09/23-03/24	Running
QUINCY in ICON-Land	Stepwise (mode based) port of the IQ code to GPUs based on the established workflow followed for the ICON GPU implementation with OpenACC	6 months 01/24-06/24	Waiting
modLSMcoupl	Develop proof-of-concept for modular coupling of land surface + implement YAC coupler in ICON-eCLM coupling	6 months 01/24-06/24	Waiting



Happy holidays and a prosperous New Year!

As we reflect on the past year, we are full of gratitude for all the passionate people and dedicated contributors in our natESM community. Their interest, support, and active engagement have been the driving force behind natESM's success.

In the midst of these difficult times, characterized by global uncertainty and conflict, the strength and resilience of a community that is friendly and open with one another is evident. So, as we look to the year ahead, our wish is simple: may the days ahead be

filled with peace, understanding, and kindness. If you can be anything, be kind.

Thank you for being a part of natESM.

We wish you and your loved ones a wonderful holiday season and a new year filled with hope, kindness, and peace. *SM steering group and support team*

Iris Ehlert

For the natESM steering group and support team
Iris Ehlert