



~20 participants

Working group 3

Missing model components

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Goal

- Brainstorm and collect potential missing model components, processes / technologies / others in natESM
- To motivate
 - topics of further discussion in natESM
 - at one point, concrete suggestions on how to proceed with these topics/developments in natESM
- Scope not limited

Summary of missing model components, processes / technologies / others in natESM: Land (not exhaustive)



- Permafrost, including microphysics, carbon and geomechanics, microbial activities
- Agriculture
- Urban
- Crust, deformation, self attraction: e.g. post glacial rebound
- Erosion water and wind
- Land use change / management / vegetation dynamics
- Geomorphology, interaction with vegetation
- Hydrology, river discharge (nutrients), wetlands
- Fauna / life
- Vegetation
- Disturbance
- Fires
- Volcanoes
- Snow (who take care of this in models, atmosphere?, ...)
- Estuary
- Water management
- Soil (all aspects)
- Swamps
- ...

Summary of missing model components, processes / technologies / others in natESM: Ice (not exhaustive)

- Ice sheets
- Ice shelves
- Glaciers
- Snow firn
- Ice sheet hydrology
- Flora and fauna, biogeochemistry
- Icebergs
- ...

Summary of missing model components, processes / technologies / others in natESM: Ocean (not exhaustive)

- Biogeochemistry
- Higher trophic level model (fishes, ...)
- Zooplankton and phytoplankton
- Waves
- Pollution
- Morphodynamics
- Tides
- Humans (fishery)
- Pollutions
- Sediments including sea floor

Summary of missing model components, processes / technologies / others in natESM: Atmosphere (not exhaustive)

- Atmospheric composition
- Isotopes
- Pollution
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Summary of missing model components, processes / technologies / others in natESM: Others (not exhaustive)

- Data assimilation
- Data analysis (scalable, cloud based)
- Workflows including standards
- Evaluation and quality assessment benchmarking of models
- Diagnostics also online
- Reference configurations recommendation of settings
- Orchestration
- Power of common APIs
- Standards
- Nonlinear coupling
- Run components stand-alone
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Way forward: some ideas

- Continue as a working group: Identify champions, granularity of the meetings
- Develop matrices to infer gaps etc.; identify components for which expertise does (not) exist
- Survey/probe community for their needs/interest; revisit applications
- Formulate juicy key applications that call for developments
- Think how to make use of natESM sprints