“Towards more shared software on environment tools?”

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is-enes
INFRASTRUCTURE FOR THE EUROPEAN NETWORK FOR EARTH SYSTEM MODELLING

Max-Planck-Institut für Meteorologie

WP4 / NA3
“Earth System Modelling Environments”

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Topics

- The idea
- Status (WP4 report)
  - So far
  - So bad
- Future
  - What's next
  - What could we do
- Summary

The idea

- Community **interaction** on the topic
  "Earth System Modelling Environments" – or:
  What does it take to run an existing Earth System model?
  - Workshops
  - Electronic Interaction
- Topics:
  - Workflows
  - Configuration management
  - Meta-data creation and usage
  - Governance of a community coupler

Status (WP4 report)

- So far
  - All workshops done (partly on-line (cm))
    - See list below

Status (WP4 report)

- Task 1 Workflow solutions, including seasonal to decadal (S2D) climate prediction systems
  - 2 workshops held (Jun 14, Hamburg; Sep 2016, Lisbon)
  - Reports available or in preparation
- Task 2. Configuration Management Tools
  - 2 Workshops held (Sep 13, Exeter; Q1/2 2016, virtual)
  - Reports available
- Task 3. Metadata creation and usage
  - 2 Workshops held (Jan 2014, Hamburg; Sep 2016, Lisbon)
  - Reports available or in review
- Task 4 Governance of a community coupler
  - Document available, D4.3, Coupler Governance model document
  - **T.b.d. later today**

Status (WP4 report)

- So far
  - All workshops done (partly on-line (cm))
    - List available, see above
  - Reports or summaries available
    - See ISENES project website
  - WS well received, seem to be a good method for community interaction and sharing
    - Virtual workshop might better facilitate recommendations and common conclusions
  - My judgment/sentiment/feeling:
    More community feeling than before,
    but there are no KPIs for it!
- So bad
  - No self-propelled activity
  - Difficult to detect what people really use and need

- **So good**
- **ESiWACE activity**
- **potential for ISENES3(?)**

Future

- What's next?
  - CMIP6
    - MD (and ES-DOC)
    - Cylc-enabled experiments:
      - Mick?
      - Take-up e.g. at GFDL, others?
      - DKRZ: Used as „cylc bubbles“ for specific PP-jobs
  - CM receives more attention than before
  - Later:
    - Easier model deployment via SPACK (ESiWACE WP3 activity)
- What could we do?
  - Think about ES-DOC?
  - Think about "The chasm"?
    - Scientific/code complexity vs machine complexity
    - Develop activity on DSLs? (Do not reduce the "D" (domain) to: One site, one model!)

Summary

- From DoW:
  - The objective of this work package is to provide networking activities to increase the pace of climate science employing modelling by **sharing best practice** in software environments for Earth System Models and encouraging more **sharing of selected codes** within the climate community.
- After project:
  - **sharing best practice ✔**
  - **sharing of selected codes**
    - It takes more than workshops:
      - Systematic approaches to SW evaluation
      - Agreement upon common requirements
      - Stronger modularisation, smaller packets

Thanks!

- Questions?

CM Best Practice Guide highlights (3)

- Results and conclusions
  - Specific advice provided relevant to each role, e.g.
    - Manage quality in the development process using CM tools to support the role of gate-keeper
    - You need to apply CM to the full workflow
      - Consider this in the selection of workflow tools
      - List of tools to consider is provided
      - The user of the data relies on every step that leads to the result
  - Consider extending CM to cover the environment (systems, compilers, libraries)
  - Design systems that as far as possible automatically capture information and make it easy for users to record the rest.