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

Final General Assembly

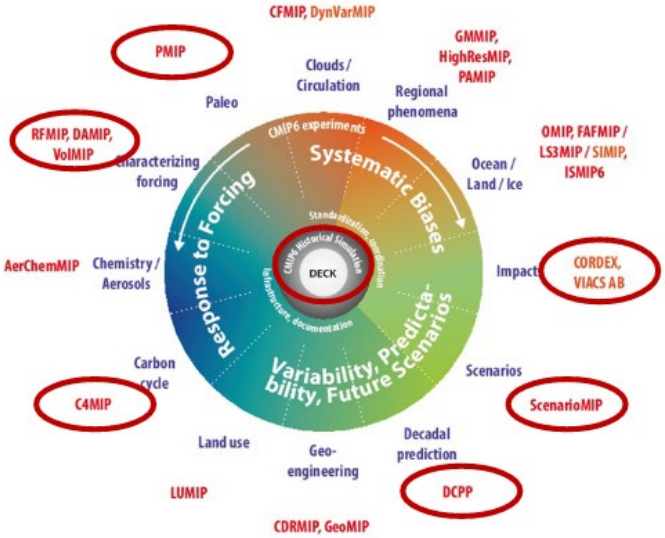
16-18 January 2023
Toulouse

Supporting standards for CF and Data Request

Martin Juckes (CEDA)
Antonio S. Cofiño (U.Cantabria)

IS-ENES3 has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824084

CMIP6 Innovations



- MIP endorsement
  - leading to 23 science teams
- CF Conventions
  - 552 new standard names proposed for CMIP6,
    - 349 accepted.
  - 5 convention modifications approved; a further 2 discussed but not finalised.
- Data Request
  - Move from PCMDI/DOE to CEDA/ENES;
  - From Excel to XML plus python API;
  - Strict XSD schema compliance to facilitate implementation in workflows

CF (1): Workshop(s) and Training

- Hybrid 2022 CF Workshop. 60 participants (40 online).
  - Online 2021 CF Workshop. 50-75 participants
  - Online 2020 CF Workshop. 65-90 participants
  - https://cfconventions.org/Meetings/
- CF topics and parallel sessions:
  - Mapping CF; Housekeeping; Github process and automation; lossy compression; **standard_name**; CF in ML datasets; Aggregation, Climate Indices; Provenance; DOIs for CF and Datasets; **cell_method**; subsampled coords; CRS WKT;
- 2022 CF Training Workshop for new users:
  - Intro to CF and Standard Name; Why use CF?; CF Tools; Use Cases; How to contribute to CF. https://cfconventions.org/Training

Time zone a challenge for Asia and Oceania, but **low participation from Latin America or Africa**. Most participants from NA and EU.

The CF workshop has a important impact pushing the CF Convention update. What is its future in the ENES-RI?

CF (2): Communications Issues

SUCCESS:

- Very large number of discussions running in parallel with scientists from dozens of institutions, enabling a level of clarity in metadata which could not be achieved by any other means;
- Use of CF enables use of a range of community tools;

But:

- Some science teams were not familiar with concepts and process;
- Large load fell on a small number of people when proposed concepts did not attract new people to the discussion.

Data Request (1): Elements of the Request

- Consolidated data requirements of 23 MIP teams, with targeted variable requests for each CMIP6 experiment, provided as an XML database;
- Python API to facilitate integration in workflows;
- Command line interface for quick queries;
- Excel summaries for individual MIPs;
- Browsable online view;

Data Request (2) : pros and cons

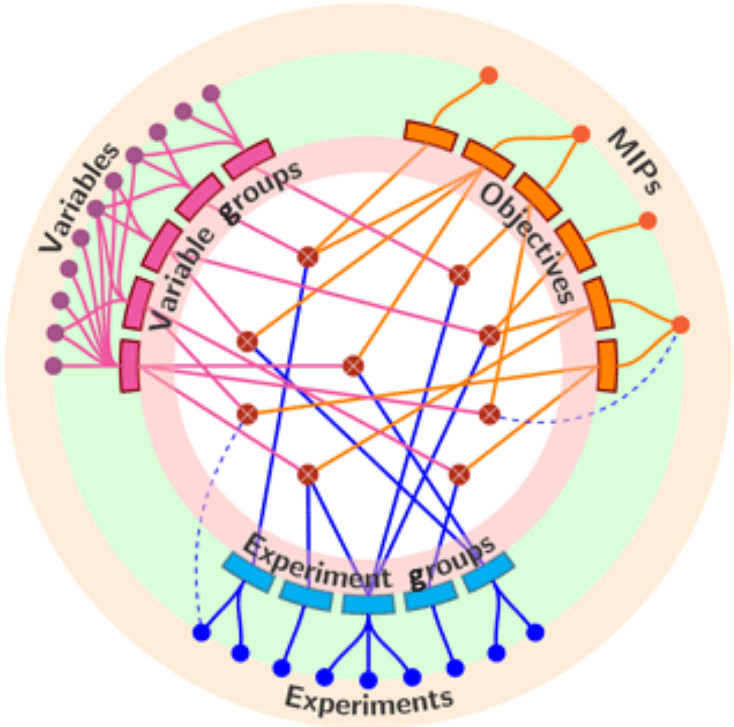
The Data Request maps Variables and Experiments onto Objectives.

PROS:

- Allows wide range of models and experiments to be built into a single consolidated database.
- Support for machine processing, including strict compliance with a database schema.

CONS:

- Implementation created an overly complex database structure which reduced utility.
- Confusion around interpretation of Tiers (of experiments) and Priorities of variables, especially MIP-specific priorities.



Future

- Expanding scope of climate science and Earth system models creates major challenges for standards developments.