Data Infrastructures for the next IPCC report: A European Perspective

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Introduction
For distribution of data connected to the next IPCC report, the Earth System Grid Federation (ESGF) was founded. Its members have different responsibilities in the data infrastructure:
- POMD / LLNL
- BADC (British Atmospheric Data Centre)
- WDCC (World Data Center Climate) / DKRZ: quality control, data publication (STD-DOI)

European Contribution to CMIP5 / IPCC-AR5
Metadata Infrastructure: Within the European project METAFOR a detailed metadata scheme and accompanied tools were developed, which enables data users to evaluate and discover data, efficiently. It adds information to the NetCDF file header attributes. Quality Control / STD-DOI: The experiences of the WDCC in STD-DOI data publications are integrated in the CMIP5 process leading to citable model experiment instances.

European Future Perspective
Europe started to build an overall European network for Earth system modelling (ENES). CMIP5 / IPCC data with METAFOR metadata are the first services for the development of the infrastructure for ENES (IS-ENES). ENES is to support Earth System scientists in all aspects of knowledge exchange, on Earth System Models and analysis tools, usage of HPC facilities, discovery of data, and scientific discussions / trainings.

Quality Control / Data Citation
Quality Control CMIP5 / IPCC
Three Quality Control (QC) Levels are defined for CMIP5 data:
- QC Level 1: MD10 and ESG publisher conformance checks
- QC Level 2: Metadata: METAFOR questionnaire metadata checked by scientist
- QC Level 3 / STD-DOI: Data approved by author and published as STD-DOI

Metadata – METAFOR / CIM
Metadata for CMIP5 / IPCC
The METAFOR project has developed a Common Information Model (CIM), which is a standard schema to describe climate data, the models that produce this data, their underlying software and all the relationship between these components. Thus, in a CIM repository knowledge of climate data is collected as an asset for numerous stakeholders actively engaged in climate change issues (policy, research, impacts, mitigation).

METAFOR tools and services:
- Questionnaire for metadata ingest
- CIM Portal ingest, search, view, validation
- AtomFeed for automated access
- Web Services for metadata completion
- Metadata mapping tool TDS2CIM
- Quality tool ingest
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Metadata for CMIP5 / IPCC
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IS-ENES in CMIP5 / IPCC
The first productive services of IS-ENES will be the metadata services of METAFOR and data services for CMIP5 data:
- METAFOR Services: metadata view, differencing, ingest and update, support
- Data Browse and Search: access to European CMIP5 data

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