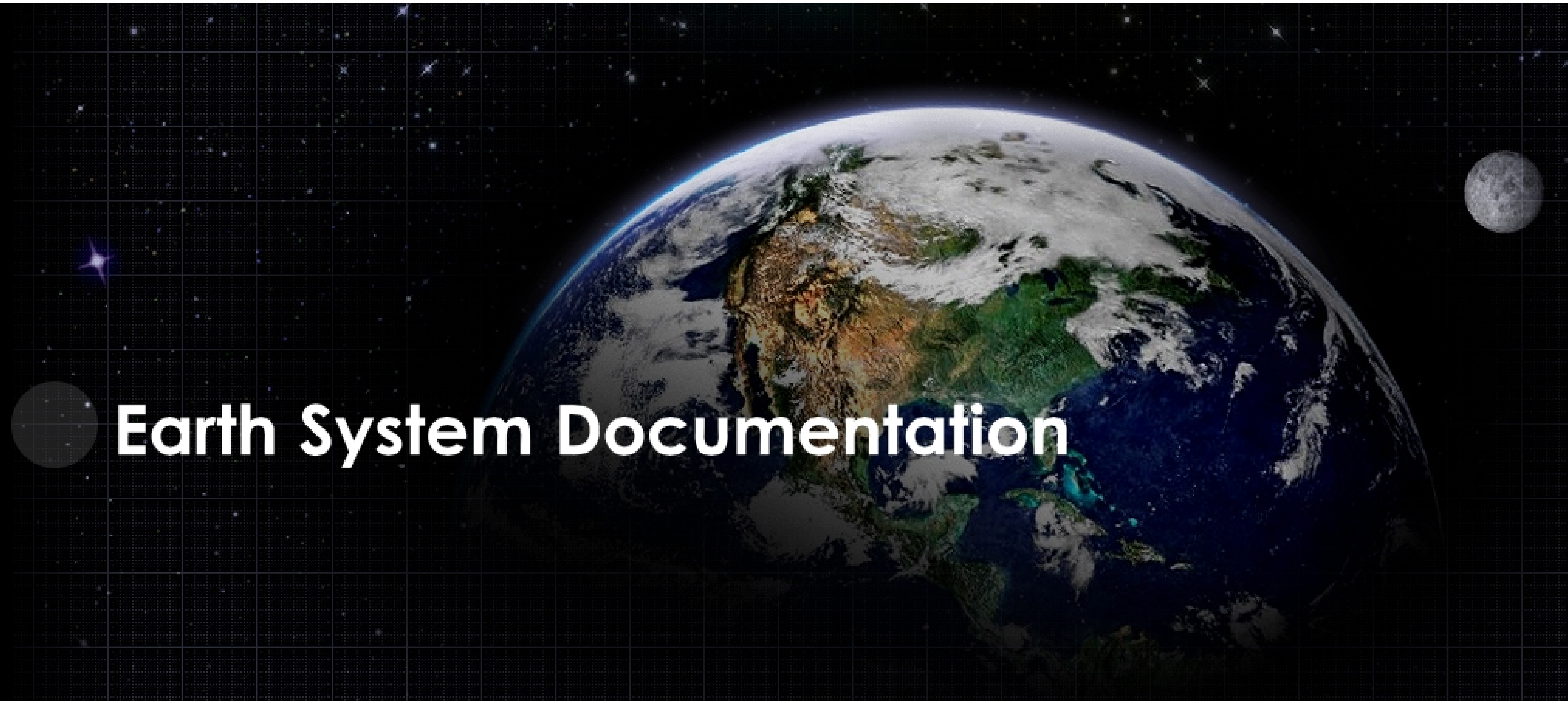

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Earth **S**cience **Doc**umentation

OBJECTIVE	Creation, exploitation & dissemination of standards (e.g. CIM) based earth system modelling metadata
FUNDING	EX-ARCH, NOAA
HISTORY	04 / 2012 Metafor WP4 evolution
“WHO”	EU - IPSL, BADC, DKRZ US - NOAA, NCAR, PCMDI
HOW	Development of <u>standards</u> based <u>open source</u> tools and web services
LICENSING	GPL / CeCILL

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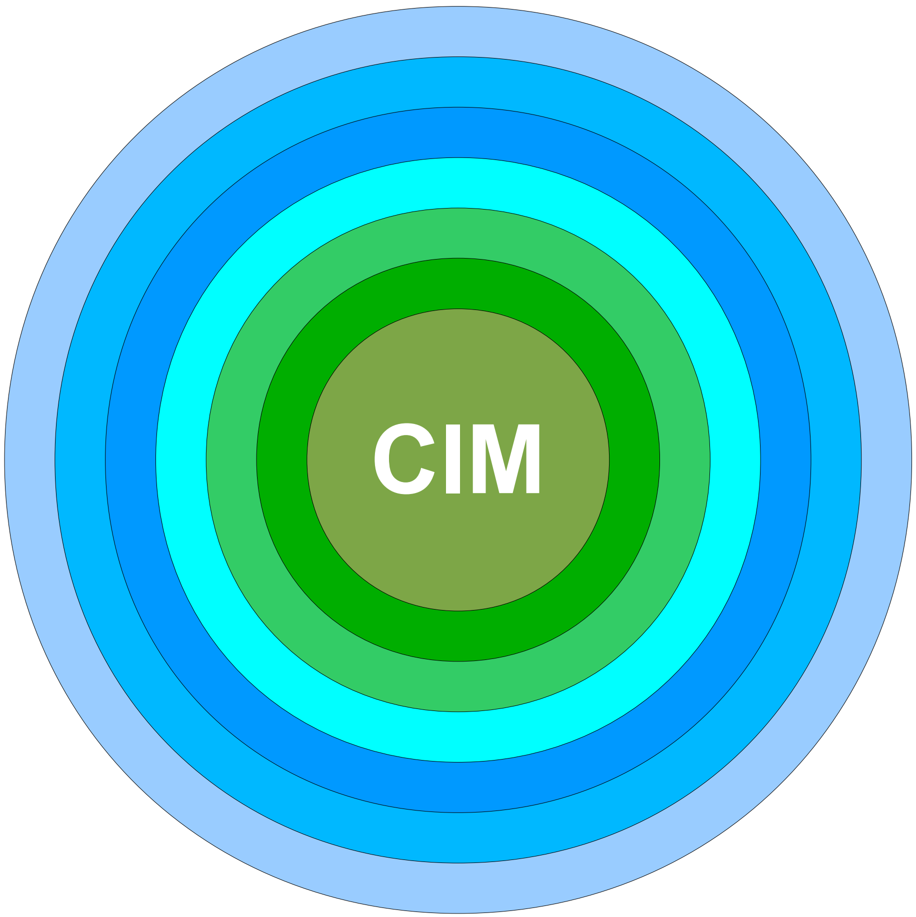
Target User Community



- **Modellers**
- **Scientists**
- **Students**
- **Impacts Community**
- **Politicians**
- **Media**
- **Public**

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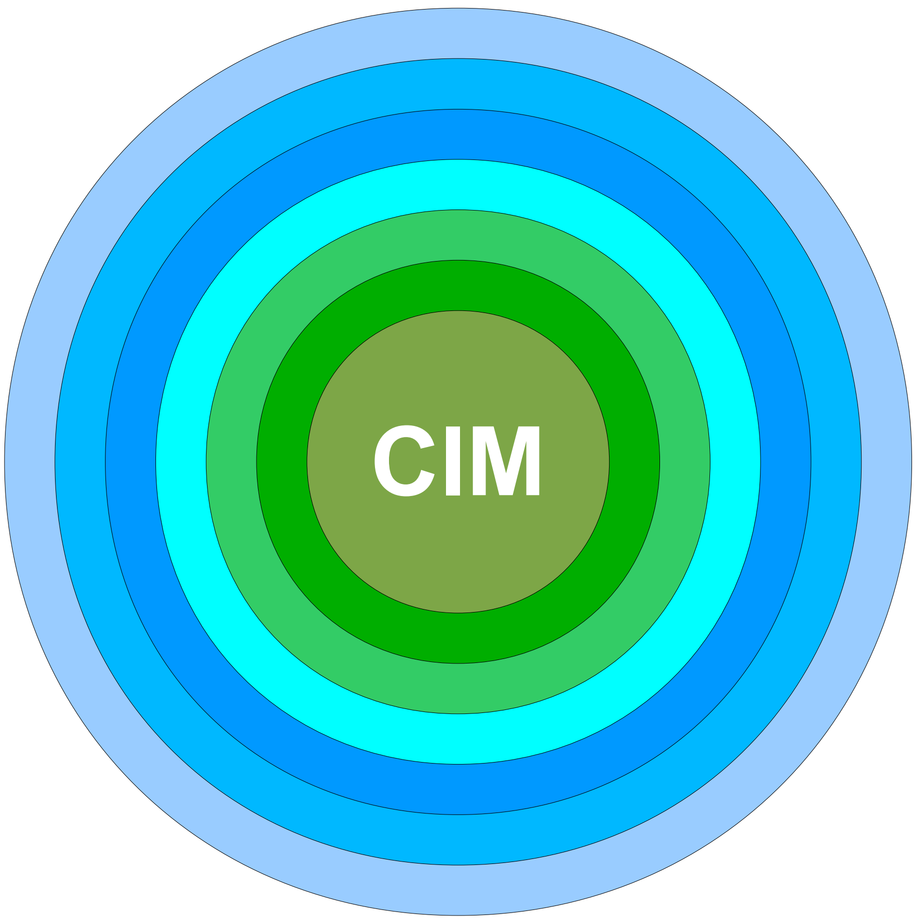
Target Documentation Types



- **Models**
- **Experiments**
- **Simulations**
- **Grids**
- **Data**
- **Ensembles**
- **Quality**

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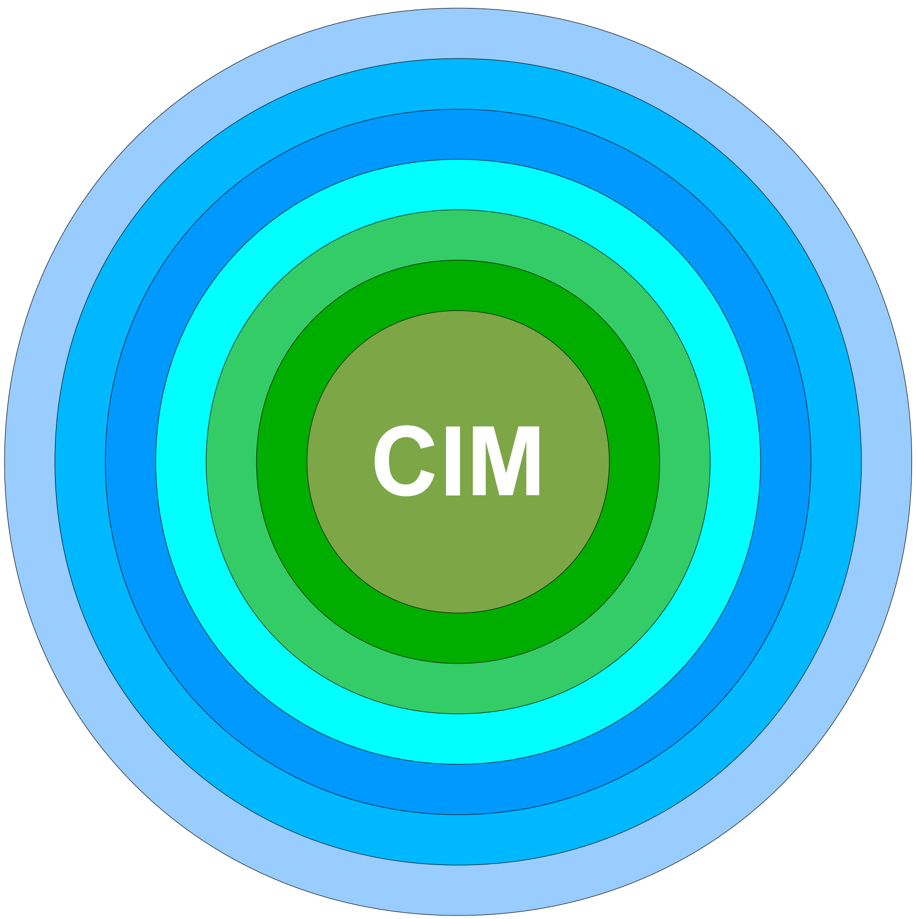
Target Technical Challenges



- **Versions**
- **Encodings**
- **Languages (human)**
- **Languages (programming)**
- **Representations**
- **Formats**
- **Devices**

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Meta-Programming Framework (pycim_mp)

Problem 1	CIM Schema
Problem 2	CIM XML Encoding
Solution	Meta-Programming Frmework
Result	Decoupled and agile in relation to CIM schemas, encodings and language bindings.

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API - Web Service

PUBLISH	Create
	Retrieve
	Update
	Delete
SEARCH	ID / version
	Type / name
	Dataset id
	File id
	DRS
COMPARE	C1 = Model component properties

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Tools - Document Viewer

CMIP5 Model - HadGEM2-ES Model Simulation Experiment Platform

Overview Citations Contacts Components Grids

Project	CMIP5
Short Name	HadGEM2-ES
Long Name	Hadley Global Environment Model 2 - Earth System
Institute	UK Met Office Hadley Centre
Funder	UK Met Office Hadley Centre
Principal Investigator	Chris Jones
Release Date	2009-11-26 00:00:00
Language	--
Description	The HadGEM2-ES model was a two stage development from HadGEM1, representing improvements in the physical model (leading to HadGEM2-AO) and the addition of earth system components and coupling (leading to HadGEM2-ES). [1] The HadGEM2-AO project targeted two key features of performance: ENSO and northern continent land-surface temperature biases. The latter had a particularly high priority in order for the model to be able to adequately model continental vegetation. Through focussed working groups a number of mechanisms that improved the performance were identified. Some known systematic errors in HadGEM1, such as the Indian monsoon, were not targeted for attention in HadGEM2-AO. HadGEM2-AO substantially improved mean SSTs and wind stress and improved tropical SST variability compared to HadGEM1. The northern continental warm bias in HadGEM1 has been significantly reduced. The power spectrum of El Nino is made worse, but other aspects of ENSO are improved. Overall there is a noticeable improvement from HadGEM1 to HadGEM2-AO when comparing global climate indices. [2] In HadGEM2-ES the vegetation cover is better than in the previous HadCM3LC model especially for trees, and the productivity is better than in the non-interactive HadGEM2-AO model. The presence of too much bare soil in Australia though may cause problems for the dust emissions scheme. The simulation of global soil and biomass carbon stores are good and agree well with observed estimates except in regions of errors in the vegetation cover. HadGEM2-ES compares well with the C4MIP ensemble of models. The distribution of NPP is much improved relative to HadCM3LC. At a site level the component carbon fluxes validate better against observations and in particular the timing of the growth season is significantly improved. The ocean biology (HadOCC) allows the completion of the carbon cycle and the provision of di-methyl sulphide (DMS) emissions from phytoplankton. DMS is a significant source of sulphate aerosol over the oceans. The diat-HadOCC scheme is an improvement over the standard HadOCC scheme as it differentiates between diatom and non-diatom plankton. These have different processes for removing carbon from the surface to the deep ocean, and respond differently to iron nutrients. The HadOCC scheme performs well with very reasonable plankton distributions, rates of productivity and emissions of DMS. The diat-HadOCC scheme has slightly too low levels of productivity which requires further tuning to overcome. The additions of a tropospheric chemistry scheme, new aerosol species (organic carbon and dust) and coupling between the chemistry and sulphate aerosols have significantly enhanced the earth system capabilities of the model. This has improved the tropospheric ozone distribution and the distributions of aerosol species compared to observations, both of which are important for climate forcing. Including interactive earth system components has not significantly affected the physical performance of the model.

Clientèle @ 01/02/2013
Metafor Questionnaire
ESGF-P2P Node Front End
DyCore 2012 Portal
IPSL Prodiguer Portal

Technology
Javascript / HTML
AJAX (API)
JSON

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Tools - Comparator

C1 - Model Component Properties	
Step 1	Select Models
Step 2	Select Components
Step 3	Selection Properties
Step 4	View Report
Step 5	Export to CSV

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Futures

Sustainable Funding

Controlled Vocabularies

Comparators

Automated Documentation

EXA-Scale

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