AGU 2013

IN22A-07 :: The ES-DOC Software Process

es-doc
Earth System Documentation

Mission

Nurture a standards based eco-system in support of earth system documentation creation, analysis & dissemination.

es-doc
Earth System Documentation

Sub-Domains

2013

Earth System Models

Statistical Downscaling

2014

Obs4MIPs ?

es-doc

Earth System Documentation

Strategic Relevance

EXA-Scale requires quality documentation

es-doc
Earth System Documentation

http://es-doc.org

es-doc
Earth System Documentation

#esdocumentation

es-doc

Earth System Documentation

Funders

IPSL (EU)

NOAA (US)

EX-ARCH (G8)

ISENES-2 (EU)

es-doc

Earth System Documentation

PI's

Venkatramani Balaji (US - NOAA)

Cecelia DeLuca (US - NOAA)

Sébastien Denvil (EU - IPSL)

Eric Guilyardi (EU - IPSL)

Bryan Lawrence (EU - BADC)

Karl Taylor (US - PCMDI)

es-doc

Earth System Documentation

Core Team

Sylvia Murphy (US - NOAA)
Allyn Treshansky (US - NOAA)
Mark Greenslade (EU - IPSL)

es-doc
Earth System Documentation

Tools

Create
Search
View
Compare
Visualize

es-doc
Earth System Documentation

es-doc v0.9.0.0
Earth System Documentation

About Tools Standards API

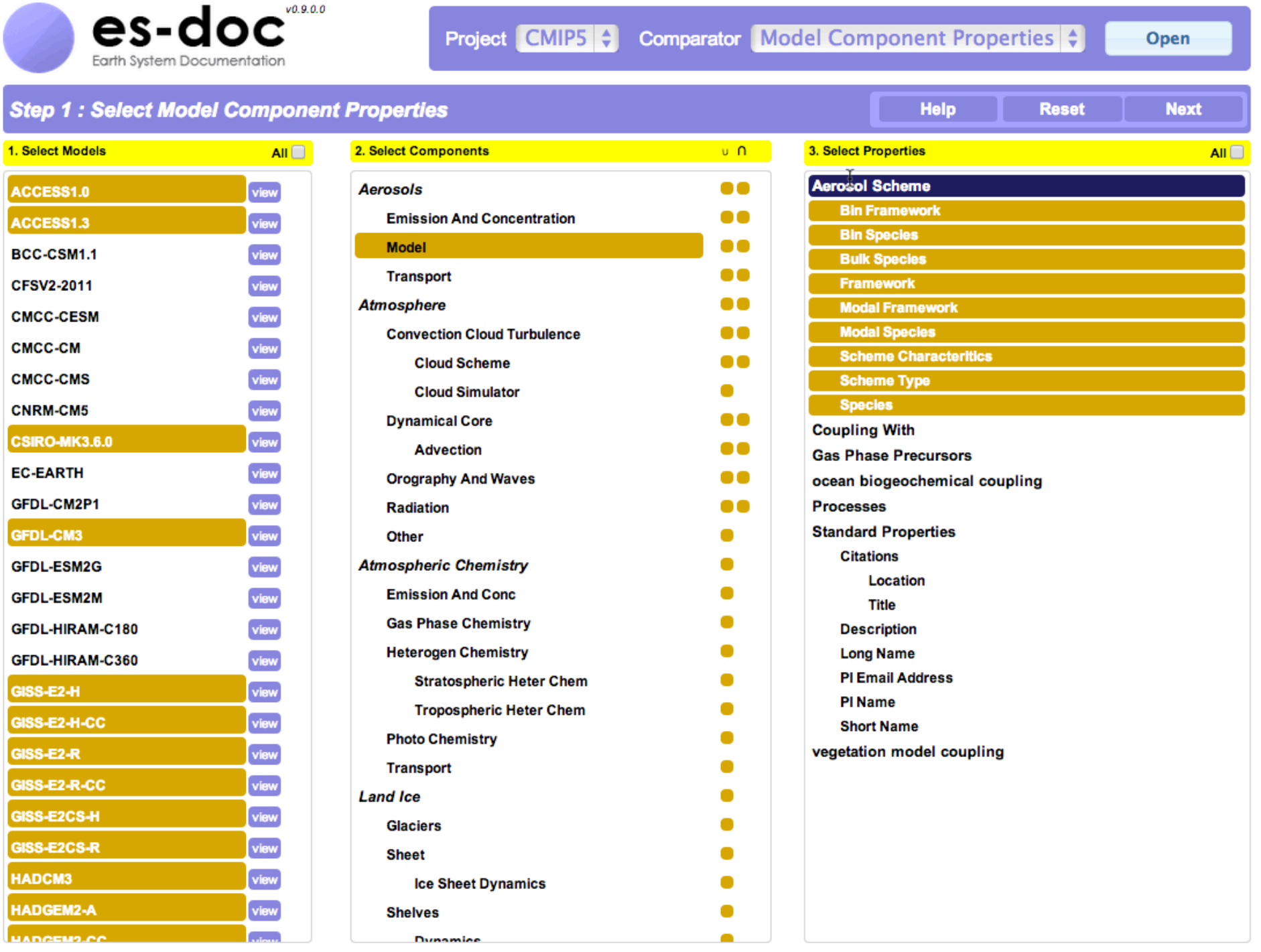
Doc Type :	Doc Version :	Project :	Institute :	Model :	Experiment :
Model	Latest	CMIP5	IPSL	*	*

Search returned 42 of 107 records in 0.135s

1 2 3

Institute	Short Name	Long Name	json
BCC	BCC-CSM1.1	Beijing Climate Center Climate System Model version 1.1	json
CMCC	CMCC-CESM	CMCC Carbon Earth System Model	json
CMCC	CMCC-CM	CMCC Climate Model	json
CMCC	CMCC-CMS	CMCC Climate Model with a resolved Stratosphere	json
CNRM-CERFACS	CNRM-CM5	CNRM-CM5	json
CSIRO-BOM	ACCESS1.0	ACCESS1.0	json
CSIRO-BOM	ACCESS1.3	ACCESS1.3	json
CSIRO-QCCCE	CSIRO-Mk3.6.0	CSIRO Mark 3.6.0	json
EC-EARTH	EC-EARTH	EC-EARTH	json
INM	INM-CM4	inmcm4	json
INPE	HadGEM2-ES	Hadley Global Environment Model 2 - Earth System	json
IPSL	IPSL-CM5A-LR	IPSL-CM5A-LR;atmosphere:LMDZ5A(95x96L39);ocean:NEMOv3.2 (OPA-LIM-PISCES,149x182L31)	json
IPSL	IPSL-CM5A-MR	IPSL-CM5A-LR;atmos:LMDZ5A(144x143L39);ocean:NEMOv3.2(OPA-LIM-PISCES,149x182L31)	json
MIROC	MIROC4h	MIROC4h	json
MIROC	MIROC5	MIROC5	json
MOHC	HadCM3	HadCM3 (2000) atmosphere: HadAM3 (N48L19); ocean: HadOM (lat: 1.25 lon: 1.25 L20); land-surface/vegetation: MOSES1;	json
MOHC	HadGEM2-A	Hadley Global Environment Model 2 - Atmosphere	json
MOHC	HadGEM2-CC	Hadley Global Environment Model 2 - Carbon Cycle	json
MOHC	HadGEM2-ES	Hadley Global Environment Model 2 - Earth System	json

Questions ? Contact support@es-doc.org


es-doc
v0.9.0.0
Earth System Documentation
Project CMIP5
Comparator Model Component Properties
Open
Step 1 : Select Model Component Properties
Help
Reset
Next
1. Select Models
All
ACCESS1.0 view
ACCESS1.3 view
BCC-CSM1.1 view
CFSV2-2011 view
CMCC-CESM view
CMCC-CM view
CMCC-CMS view
CNRM-CM5 view
CSIRO-MK3.6.0 view
EC-EARTH view
GFDL-CM2P1 view
GFDL-CM3 view
GFDL-ESM2G view
GFDL-ESM2M view
GFDL-HIRAM-C180 view
GFDL-HIRAM-C360 view
GISS-E2-H view
GISS-E2-H-CC view
GISS-E2-R view
GISS-E2-R-CC view
GISS-E2CS-H view
GISS-E2CS-R view
HADCM3 view
HADGEM2-A view
2. Select Components
∪ ∩
Aerosols
Emission And Concentration
Model
Transport
Atmosphere
Convection Cloud Turbulence
Cloud Scheme
Cloud Simulator
Dynamical Core
Advection
Orography And Waves
Radiation
Other
Atmospheric Chemistry
Emission And Conc
Gas Phase Chemistry
Heterogen Chemistry
Stratospheric Heter Chem
Tropospheric Heter Chem
Photo Chemistry
Transport
Land Ice
Glaciers
Sheet
Ice Sheet Dynamics
Shelves
3. Select Properties
All
Aerosol Scheme
Bin Framework
Bin Species
Bulk Species
Framework
Modal Framework
Modal Species
Scheme Characteritics
Scheme Type
Species
Coupling With
Gas Phase Precursors
ocean biogeochemical coupling
Processes
Standard Properties
Citations
Location
Title
Description
Long Name
PI Email Address
PI Name
Short Name
vegetation model coupling

API

Publish
Search
Compare
Visualize

es-doc
Earth System Documentation

API Clients

2013

Python

2014

C, Java

es-doc

Earth System Documentation

Demo

CMIP5 Comparator

es-doc
Earth System Documentation

Process

Social or **Technical ?**

es-doc
Earth System Documentation

Social Process

es-doc
Earth System Documentation

before software comes dialog

es-doc
Earth System Documentation

Social Process

Requirements Capture

- scientist engagement
- prioritization
- scoping
- politics

es-doc
Earth System Documentation

Social Process

Self Organization

- roles
- responsibilities
- mutual respect

es-doc
Earth System Documentation

Social Process

Transparency

- visibilty
- accountability
- traceability

es-doc
Earth System Documentation

Social Process

Ethos

- commitment to quality
- determination
- sense of humor !

es-doc
Earth System Documentation

Social Process

Communication (internal)

- face to face
- telcos
- wiki
- email

es-doc
Earth System Documentation

Social Process

Communication (external)

- advocacy
- splash page (see branding)
- social media

es-doc
Earth System Documentation

Social Process

Goals

- achievable
- collectively decided
- iterative

es-doc
Earth System Documentation

Technical Process

es-doc
Earth System Documentation

after dialog comes software

es-doc

Earth System Documentation

Technical Process

Information Architecture

- domain driven design
- ontologies

es-doc
Earth System Documentation

Technical Process

Meta-programming

- Code generation
- Multi-language support
- Supports quaility

es-doc
Earth System Documentation

Technical Process

Map Reduce

- 700,00 lines of XML
- 4D array

es-doc
Earth System Documentation

Technical Process

User Experience

- UI first
- Usability testing

es-doc
Earth System Documentation

Technical Process

Web Services

- HTTP
- REST vs RPC
- Encoding (JSON)
- Security

es-doc
Earth System Documentation

Technical Process

Polygot Programming

- python
- javascript
- bash

es-doc
Earth System Documentation

Technical Process

Testing

- Automated Testing
- Unit, Functional, Integration
- CI Server
- Executed upon check in

es-doc
Earth System Documentation

Technical Process

Deployment

- Today: single click
- Tomorrow: fully automated

es-doc
Earth System Documentation

Conclusions

es-doc
Earth System Documentation

Conclusion - 1

Scripter Developer Engineer Architect

In the absence of systematic training, internships, & mentoring, scientists will not get beyond developer status

es-doc
Earth System Documentation

Conclusion - 2

Strong Repeatable Social Process

The social process is undervalued yet once learnt is transferable between projects

es-doc
Earth System Documentation