

WP5-NA4

## Work progress - Main achievements

Significant results and activities in RP2 (including deviations from Description of Activities) – From July 2020 to Sept. 2021

- **Task 1: Project management of ES-Doc**

- Management transferred from Eric Guilyardi (IPSL) to David Hassell (NCAS)
- Liaison with CMIP6 and CORDEX communities

- **Task 2: Defining an Architecture for Future of Data Services**

- Completed release of ESGF Future architecture system based and made initial deployments at CEDA and US partner GFDL on AWS
- Co-ordinating with WP7+10, integrated new functionality into the Impact Portal using other services in the CDI: web processing services, new identity system and ESGF Future Architecture data node
- New prototype search system developed for ESGF through community collaboration and based on the STAC specification.

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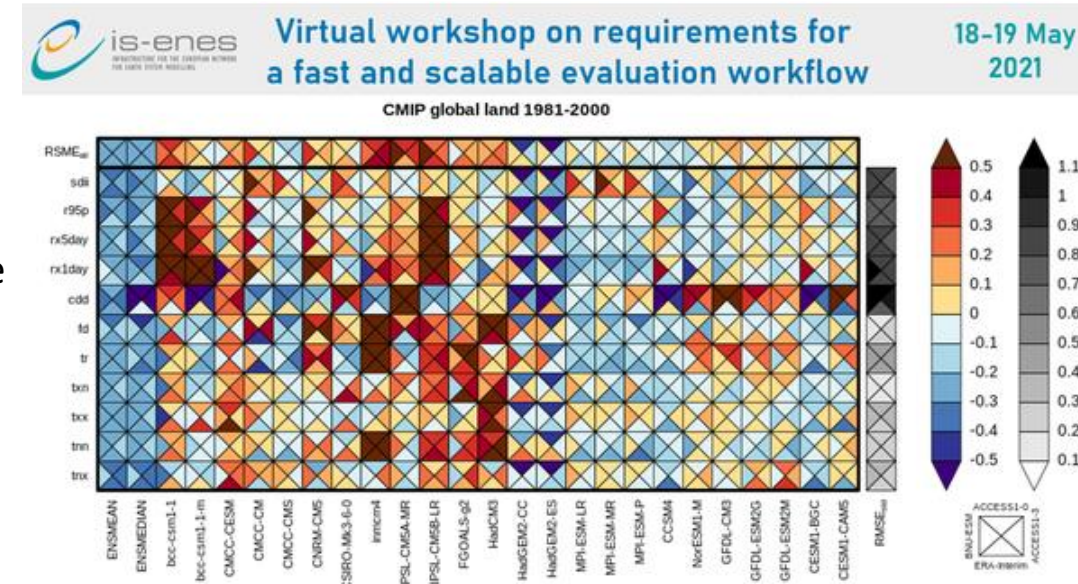
- **Task 3: Defining and communicating European priorities for ESGF**
  - Representation of IS-ENES3 on ESGF Executive Committee. Participation as co-chairs
  - Participation in ENES Data Task Force and CDNOT meetings
  - Liaising with US bidders for future DOE ESGF contract
  - Integration work with partners of statistics and authentication services with Future ESGF architecture implementation
- **Task 4: Defining requirements and establishing the roadmap of an innovative IS-ENES compute service**
  - Definition of compute service roadmap by CMCC
  - Development of deployment system for WPS (UKRI)
  - DKRZ provide instance of Data Reduction service for C4I
  - KNMI - integration of Notebook service with C4I, CERFACS providing user stories for Notebook service
  - Deployment of Jupyter Python environment and visualisation application at BSC

## Work progress - Main achievements

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### • Task 5: Technical standards and an architecture for plugin diagnostic tools

- Workshop on the requirements for a fast and scalable evaluation workflow (May 2021).
  - o 30 participants, 12 presentations and 4 break-out groups
- Define the technical architecture required to plug other diagnostic packages to existing evaluation software frameworks
- Develop a framework for coding standards, which will be defined to improve
  - o code integration
  - o code distribution between developers
  - o reusability, maintenance and readability
- Work at IPSL on installing ESMValtool, adapting to IPSL model outputs
  - o Pilot work : ESMValtool diagnostic adapted to CLIMAF to test interface



## Work progress - Main achievements

### Deliverables and Milestones (Delayed ones, and the next ones to complete before RP2)

- D5.2 Technical standards for diagnostic tools (delayed to February 2022, RP3)
- D5.3 Architecture design plans, Demonstrator (December 2021)
- D5.4 IS-ENES3 involvement in ESGF (December 2021)
- D5.5 Style guide on coding standards (December 2021)

## Next steps with focus on key issues to be addressed

### Next steps and issues to be addressed by the end of RP2 (December 2021)

- Integrate cross-wp contributions for D5.3

### Next steps and issues to be addressed during RP3 (January 2022 - December 2022)

- Continued integration of new features into CDI, particularly new search API
- Further liaison with new ESGF team

WP7-VA2-data

## Work progress - Main achievements

Significant results and activities in RP2 (including deviations from Description of Activities) – From July 2020 to Sept. 2021

### • Task 1: ESGF Data Dissemination, Long Term Archival and User Support (VA) – “ESGF-WDCC-C4I”

- CMIP6 services operation and support: ESGF, PID service, data citation, continued CMIP6 data publication support
- CMIP6/ESGF data curation at centers (replication, update, retraction, PID checks, ..)
- CMIP6 replica pools and related IPCC groups support
- IS-ENES3 KPI production and ESGF data statistics service maintenance
- CMIP5 access and data filtering in C4I v2
- C4I CORDEX access enabled by integration of authorization mechanisms for CORDEX

### • Task 2: Compute Services (VA)- “Comp1”

- Established new VA compute service in addition to TNA service (+large training event for new users)
- Dedicated VA User support and documentation (mostly based on jupyter notebooks)
- C4I subsetting workflow based on OPENDAP and WPS (based on DKRZ rook) finalised
- Established website for overview of ESMValTool recipe runs
- ESMValTool recipe+website integration with C4I portal for comparing CMIP5/6 models



## Work progress - Main achievements

Significant results and activities in RP2 (including deviations from Description of Activities) – From July 2020 to Sept. 2021

- **Task 3: Virtual workspaces (TNA) – “Comp2”**

- 2 new TNA calls (3rd, 4rd), several groups got allocations at STFC and DKRZ
- dedicated TNA user support (tools, ingest of related data for analysis, data pool usage and data replication)

- **Task 4: Support for CF convention and Data Request – “CFDR”**

- CF web site information management
- Contribution to CF-1.9 content

- **Task 5: ES-DOC operational support for CMIP6/7 – “ES-DOC”**

- user support
- set up of CORDEX accounts, provision of machine doc spreadsheets

## Work progress - Main achievements

### Deliverables and Milestones (Delayed ones, and the next ones to complete)

#### Deliverables/Milestones submitted from Jan -August. 2021 (if any):

**D7.2:** First external review report for ENES CDI services, initially planned for Dec 2020, **reviews delayed**, now planned for Nov 2021, Mo 35

#### Deliverables/Milestones planned to be submitted from Sept. 2021-Dec. 2021:

**M7.3:** Improved version of evaluation portal, Nov 21, Mo 35, initially planned for Dec 2020

**D7.3:** Second KPI and TNA report for ENES CDI services, Dec 2021, Mo 36

#### Deliverables/Milestones planned to be submitted from Jan. 2022-Dec. 2022 (RP3):

**M7.4:** Complete ENES-CDI long term archival for CMIP6, Dec 2022, Mo 48

**D7.4:** Second external review of model and tools services, April 2022, Mo 40

**D7.5:** Report on operational support for CMIP documentation, June 2022, Mo 42

**D7.6:** Third KPI and TNA report for ENES CDI services, Dec 2022, Mo 48

## Next steps with focus on key issues to be addressed

### Next steps and issues to be addressed by the end of RP2 (December 2021)

- Prepare WPS service offerings to be integrated and exploited in VA activity
  - C4I / WPS integration for C4I subsetting service etc.
- Start archival of IPCC TG Data agreed data collections
- Release of the ES-DOC comparator for CMIP6 model documentation

### Next steps and issues to be addressed during RP3 (January 2022 - December 2022)

- Archival of CMIP6 beyond minimal [TG-Data](#)/DDC collection
- Operational WPS installations accessible as part of VA (and TNA) activities
- Support for CF 1.9
- Links to ES-DOC Simulation documentation, gathered from ESGF (cdf2cim), from the further Info URLs
- future CORDEX (CMIP6) support: increasing requests to support this .. CVs, cmorization, quality control, PIDs, ESGF publication etc.

**WP10-JRA3**

## Work progress - Main achievements

Significant results and activities in RP2 (including deviations from Description of Activities) – From July 2020 to Sept. 2021

- **WP10 general results**

- First release of the ENES CDI software stack (D10.2 Task 1 to 6, Jan 2021)

- **Task 1: Core data distribution services**

- Synda entered a major refactoring phase leading to a new version of the software (Synda 4.0).
- Extension of WPS service as a data staging service.
- Starting operationalization of PID curation tools.
- Setup of new ESGF datanode in Finland, hosted by CSC, on behalf of University of Helsinki and the Finnish Met office, to publish their CMIP6 data.
- Inclusion of new data nodes and projects (24 data nodes and 31 projects in total) into the ESGF Data Statistics service.

- **Task 2: Develop a compute layer for processing and analytics for CMIP6 and CORDEX**

- WPS compute service for Copernicus with subsetting, averaging and regridding capabilities.
- Integration of the JupyterHub environment in the ENES CDI compute services.
- Support to climate indices calculation for ICCLIM and integration of ICCLIM v4.x with JupyterHub and SWIRRL.
- Multi-model analysis and workflow support through Ophidia

## Work progress - Main achievements

Significant results and activities in RP2 (including deviations from Description of Activities) – From July 2020 to Sept. 2021

- **Task 3: Improve the user interface and functionalities of the climate4impact platform for the impact communities**
  - Climate4Impact Alpha version released.
  - New search interface and preliminary integration of ESMValTool pre-computed information included.
  - Development of the Climate4Impact/ESGF plugin for JDownloader to download ESGF protected data (e.g. CORDEX and CMIP5)
- **Task 4: Integrate the newly developed data compute services for data analytics into the climate4impact platform**
  - C4I Portal integration with ICCLIM and ENES CDI compute services through WPS at the computing sites.
  - Integration of the new AAI service in cooperation with CEDA.

## Work progress - Main achievements

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- **Task 5: ES-DOC extensions for CMIP and other community projects**

- Curation of CMIP6 experiment documentation.
- Definition of quality control metrics for CMIP6 data documentation in C3S.
- Infrastructure and Release of Machine documentation to the CMIP6 community
- ES-DOC ecosystem fully suitable for CORDEX model documentation.
- Obs4MIPs documentation support.
- Creation and publication of new COVID-MIP experiment documentation.

- **Task 6: Tools, services, information models for data standards**

- Development of a revised schema for the CMIP Data Request.
- New data compression (lossy compression by coordinate subsampling) included into the CF 1.9 version.
- CIM data model improvements for CMIP6 and CORDEX.
- Preliminary definition of metadata standards for climate indices.

## Work progress - Main achievements

### Deliverables and Milestones (Delayed ones, and the next ones to complete before RP2)

- M10.3 (Task 6, mo 24, SMHI): Climate indicators/indices and file metadata specifications and tools
  - delayed by 10 months (expected on October-November 2021)
- D10.3 (Task 1 to 6, mo 36, CNRS-IPSL): Second release of the ENES CDI software stack
  - expected on time



## Next steps with focus on key issues to be addressed

### Next steps and issues to be addressed by the end of RP2 (December 2021)

- Continuous improvement of the compute services with respect to access interface, security, and programmatic access
- Continuous improvement of the Climate4Impact portal
- Continuous improvement of tools, services, information models for data standards
- Consolidation of ESGF software at data node, publication, data transfer level

### Next steps and issues to be addressed during RP3 (January 2022 - December 2022)

- ❖ Update of the climate indicators/indices and file metadata specifications and tools (M10.4)
- ❖ CMIP6 documentation (D10.4)
- ❖ Final release of the ENES CDI software stack (D10.5)
- Improved capabilities offered at the Compute Service layer
- Multiple releases of C4I portal with increasing features
- Climate indicators/indices and file metadata specifications and tools
- Continuous consolidation of ESGF software at data node, publication, data transfer level