Newsletter 4
April 2020

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IS-ENES3 and the COVID-19 impacts

In these times of global pandemic, we hope that you and your family are all safe and healthy.

Most of IS-ENES3 planned work is ongoing, but some activities have been impacted and we must adapt to this exceptional situation. **The workshops will be rescheduled later in 2020 and 2021** (such as the 9th ESGF F2F Conference, the 5th Workshop on Coupling Technologies for Earth System Models, the Climate and Forecast Convention workshop), **and some other events will be held virtually** (Climate4Impact Coding sprints, EGU2020 splinter meeting turned into a webinar,…). **You will be kept informed** of those changes and rescheduled dates via the IS-ENES3 mailing list and via the IS-ENES3 official website.

Ongoing call

Second IS-ENES3 call for Access to Advanced Analysis Platforms for CMIP6 and CORDEX!

The IS-ENES3 project is broadening access to world-class supercomputers at the national facilities used by research communities in Germany, France, Italy and the UK. These facilities provide access to significant computational resources located next to **extensive data collections, including data from CMIP6 and CORDEX**. Thanks to funding from EU H2020, the IS-ENES3 project is able to provide **access**

free of charge to scientists from anywhere in Europe. By applying for direct access to compute facilities, you will be able to discover the model data, process your multi-model analysis on the supercomputer and download the results. With the new **Access to Advanced Analysis Platforms**, you will be able to:

1. log onto a server that has direct access to the file system containing the data, allowing for the import of additional data on request,
2. run your own software,
3. have access to a large collection of software libraries commonly used to analyse climate model output.

The application deadline is 31.05.2020. Calls are open twice a year, approximately every 6 months.
More information on these new analysis platforms, the application procedure, and deadlines at: https://portal.enes.org/data/data-metadata-service/analysis-platforms

You can learn more on this new service at **EGU2020:**
- **Session CL5.7** Climate Services - Underpinning Science (**5 May, 10:45–12:30,** EGU 2020-19121)
- **Session CL2.6** Detecting and attributing climate change: trends, extreme events, and impacts (**7 May, 08:30–10:15**, EGU 2020-19340).

Upcoming Events

IS-ENES3@EGU2020

Find here all the talks related to IS-ENES3 at the EGU2020, held virtually from the 4-8 May 2020, as well as the talks that are of interest for the community.

IS-ENES3 webinar on the Access on CORDEX and CMIP6 climate data (June 15th 2020)

IS-ENES3 is a partner of the **Earth System Grid Federation (ESGF)**, an international open-source effort that disseminates climate model data, observational and reanalysis data free of charge. I**S-ENES3 organizes a webinar aimed at users in any scientific or applied domain that need access to climate data,** for example, climate modelers performing multimodel comparisons, researchers evaluating climate change impacts, climate services providers, etc., **at global or regional scales**. This was originally planned as a Splinter meeting at EGU2020. Due to the cancellation of the Face-to-face meeting of EGU2020 the splinter meeting will now be transformed into a webinar, which will take place on **June 15th**. **If you're interested and want to be kept informed, please contact** janette.bessembinder(a)knmi.nl
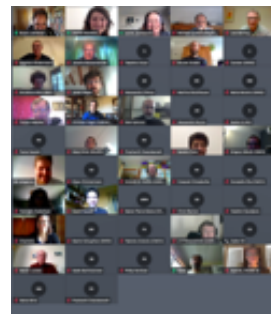
Recent Activities

A YouTube Channel for IS-ENES3!

Subscribe to our new IS-ENES3 YouTube channel has been created, you can subscribe! You can already find there the recording of the **Virtual workshop on Compute and analytics** (December 2^{nd,} 2019).

Virtual First General Assembly (25-27 March 2020)

The IS-ENES3 Virtual First General Assembly was held from the 25-27[th]of March 2020, and more than 100 persons joined the discussions throughout the three days. The General Assembly started with a general presentation session, and was then organized around the three main themes of IS-ENES3, which are *Data, metadata and other data software; Models, tools and HPC* and *Model evaluation*. Friday 27th was dedicated to cross-WP discussions and various "Around coffee discussions' (climate indices standards, carbon footprint…). The General Assembly allowed to present what has been achieved during the first year of the project, and it fostered in-depths discussions on different aspects of the project. **Find all the presentations** here**.**

Supporting the emerging community standard for climate indices and their metadata

Common standards and conventions for describing climate data are essential for efficient data management. For example, such tools are underpinning CMIP and CORDEX, as well as enabling climate model data to be used with Earth Observation data and other observations.

In IS-ENES3 we extend these concepts to support a wider circle of impact scientists and stakeholders in need of climate impact information. Various climate indices/indicators are widely used for describing aspects of the climate, and climate change, in a way that is relevant to a wide spectrum of societal sectors and impacts, such as health, tourism, agriculture, infrastructure, water management, biodiversity, and transportation. Because of their popularity among stakeholders, it is no wonder that such indices are produced by different institutes and groups across the globe, using various software tools.

To facilitate exchange and analyses of climate index data from different sources we now publish a consolidated database of the emerging community standard for climate index metadata. It is available as a git repository here:

https://bitbucket.org/cf-index-meta/cf-index-meta/

This repository aims to provide a **platform for exchanging ideas, and developing a unified view of metadata elements required to describe climate indices**. It is based on work in **Work Package 10** and builds on efforts in earlier projects. The database includes core indices identified by the CCI/WCRP/JCOMM Expert Team on Climate Change Detection and Indices (**ETCCDI**) and World Meteorological Organization's Expert Team on Sector-Specific Climate Indices (**ET-SCI**).

The emerging community standard is as far as possible based on the Climate and Forecasting (CF) Conventions. Some elements of the standard have already been put in use by ET-SCI, as well as in several Copernicus Climate Change Service products.

Many of the most popular indices are fully covered, but as the emerging standard it is not yet complete, **several aspects remain to be covered, and more complex indices are not yet included**. We encourage all interactions. **Do not hesitate to contribute** (contact: lars.barring(a)smhi.se) **!**

Cylc Development Workshop, New Zealand (10-14 Feb 2020)

The 2nd Cylc Development Workshop was held in Wellington, New Zealand, from Monday 10 to Friday 14 February. David Matthews represented IS-ENES3 at the workshop. He joined the other core Cylc developers from the Met Office and NIWA plus representatives from the Bureau of Meteorology, Australia and from the U.S. Naval Research Laboratory.

A **major new release of Cylc is currently under development** which incorporates a number of significant changes including the port to Python 3 and the introduction of a new web-based GUI. The workshop was an excellent opportunity to review the progress made so far and plan the remaining work. There remains much to do but we expect to start user testing of the new release later this year. **For more information see the** workshop summary report.

Recent Deliverables and Milestones

New deliverable and milestones achieved!

1 Deliverable and 3 Milestones has been released between **February 2020** and **April 2020**!

D5.1 Compute service requirements and state of the art approaches

In order to design and develop a Compute Service to support better data access to the European ESGF Research Infrastructure, it is mandatory to collect user requirements, gaps and challenges on computing aspects for analysis and processing. To this aim a virtual workshop has been organized to gather this information. This deliverable summarizes the outcome of this workshop. **This provides needed information to design and plan the future ENES Compute Service that will be developed within the IS-ENES3 project**. **Read it** here**.**

M10.1 Technical requirements on the ENES Climate Data Infrastructure software stack

This report addresses the milestone M10.1 "Technical requirements on the software stack" of the IS-ENES3 project and provides a comprehensive list of technical requirements driven by the work done in WP5/NA4 "Networking on data and model evaluation" and WP3/NA2 "Community engagement" as well as by previous meetings and workshops in the community, like the ESGF F2F Conferences. **It represents the first step towards the design of the ENES Climate Data Infrastructure (ENES CDI) software stack architecture.** The document adopts the concepts of user stories and use cases to translate them into functional and non-functional requirements for the whole ENES CDI software stack. **Read it** here**.**

M2.1 New Advice Structures Active

The New Advice Structures Active milestone is a short report describing the Terms of Reference of the IS-ENES Stakeholder Board and explaining the steps towards its establishment. **Read it** here**.**

M7.2 - Set up of review committee and user selection panel

The IS-ENES3 provides services on data from the ENES Data Federation. We set a Review Committee to report on the services we offer in IS-ENES3, such as ESGF, ES-DOC, and the Climate4Impact Data Portals. A Scientific Evaluation Committee to review candidate proposals and support the users selection for the new Trans-national access service has also been established. **Read it** here**.**

ESMValTool v2.0 – Technical overview

ESMValTool 2.0 - Technical Overview was published on the **16th of March 2020** in the **Geoscientific Model Development** open-access journal.

Abstract: This paper describes the second major release of the Earth System Model Evaluation Tool (ESMValTool), a community diagnostic and performance metrics tool for the evaluation of Earth System Models (ESMs) participating in the Coupled Model Intercomparison Project (CMIP). Compared to version 1.0, released in 2016, ESMValTool version 2.0 (v2.0) features a brand-new design, with an improved interface and a revised preprocessor. It also features a significantly enhanced diagnostic part that is described in three companion papers. The new version of the ESMValTool has been specifically developed to target the increased data volume of CMIP Phase 6 (CMIP6) and the related challenges posed by the analysis and the evaluation of output from multiple high-resolution or complex ESMs. The new version takes advantage of state-of-the-art computational libraries and methods to deploy an efficient and user-friendly data processing. Common operations on the input data (such as regridding or computation of multi-model statistics) are centralized in a highly optimized preprocessor, which allows applying a series of preprocessing functions before diagnostics scripts are applied for in-depth scientific analysis of the model output. Performance tests conducted on a set of standard diagnostics show that the new version is faster than its predecessor by about a factor of three. The performance can be further improved, up to a factor of more than 30, when the newly-introduced task-based parallelization options are used, which enable the efficient exploitation of much larger computing infrastructures. ESMValTool v2.0 also includes a revised and simplified installation procedure, setting of user configurable options based on modern language formats, and high code quality standards following the best practices for software development.

RDA Plenary, Melbourne - Participation in the VRE-ig IG Virtual Session

During the virtual RDA 15th Plenary that took place virtually from March 18th to April 10th, the VRE-ig organized a session, to which some IS-ENES3 members participated (Christian Pagé). VRE-ig is a **RDA Interest Group on Virtual Research Environments** (also called Scientific Gateways or Virtual Laboratories).

The VRE-IG objectives are to explore all aspects of existing and planned future VRE/SG/VLs with the aim of moving towards common policies and best practices, such as those now being promoted by the European EOSC. The specific focus of this session was to discuss the plan of developing a common reference architecture for VREs based on the European VRE4EIC reference architecture and the US Science Gateways Community Institute (SGCI) reference architecture paper.

Minutes of the session as well as presentations are available on the RDA 15th Plenary specific VRE-ig

## Reminder: Virtual 6th HPC workshop (25-26 and 28-29 May, 2020)

The ENES Workshop on High Performance Computing for Climate and Weather, that was initially planned in Hamburg, will be taking place as a **virtual event.**
This workshop of the **European Network for Earth System modelling** (ENES) will bring together experts on HPC in earth system modeling at a virtual event using videoconference software. The talks will be structured in four sessions (Very high-resolution modeling, Performance portability, Machine learning for parametrization schemes, Challenges in exascale data processing and visualization). See more.
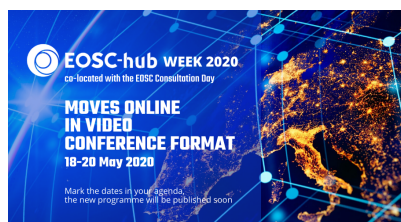
EOSC-hub Week 2020 goes virtual (18-20 May 2020)

The EOSC-hub Week 2020 will bring together key players in the development of the European Open Science Cloud (EOSC) and this year will be colocated with the EOSC Executive Board Consultation Day. Taking place from **18-20 May 2020**, **the EOSC-hub Week 2020 will be an important and timely platform to align efforts towards a functional federated science cloud**. The first day, Monday 18 May 2020, will host the **EOSC Executive Board Consultation Day**, one day organised by the EOSC Executive Board to present the latest developments of the EOSC and to gather feedback and input from the EOSC stakeholders on all the latest released documents. See more**.**

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