Mid-Term Dissemination and Exploitation Report

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Co-ordinated by ECMWF

D4.6 Mid-Term Dissemination and Exploitation Report

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CONFESS

Consistent representation of temporal variations of boundary forcings in reanalyses and seasonal forecasts

Research and Innovation Action (RIA)
H2020- LC-SPACE-18-EO-2020 Copernicus evolution: Research activities in support of the evolution of the Copernicus services - Copernicus Climate Change Service (C3S

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Contents

Figures

Tables

1 Executive Summary

To ensure that the CONFESS project remains visible and results are taken up by the wider community, dissemination and exploitation activities play a major role.

D4.6 provides an update of the activities performed by the project partners within the first 12 months of the project, and reviews both dissemination and exploitation plans.

To-date, two journal papers have been published; CONFESS researchers presented their work in six times in conferences and workshops. Additional outreach activities to ensure uptake of results were undertaken.

The exploitation activities and plans presented in D4.3 remain valid and will be further pursued.

2 Introduction

2.1 Background

A climate resilient society requires reliable monitoring and forecasting information of the climate trends, patterns and disturbances, both at global and regional scales. Through consistent representation of temporal variations of boundary forcings in reanalyses and Seasonal forecasts, CONFESS will contribute to the emerging societal need for an enhanced Copernicus Climate Change Service (C3S) that can support adaptation and mitigation strategies facing increased frequency and intensity of climate extremes.

The aim of CONFESS is to improve the reliability and usability of C3S information in the land-atmosphere coupled system by exploiting new and improved Earth Observations data records of land-cover/use, vegetation states and surface-emitted aerosols delivered across different Copernicus Services. CONFESS developments will be integrated consistently for use in future C3S systems, enhancing the service's accuracy by representing annual changes of land use, and adding satellite-derived and prognostic vegetation states along with aerosols emissions due to hazardous/extreme events such as volcanic eruptions and large-scale biomass burning (e.g. wildfires).

The added capacity to represent temporal variations and trends of these variables and the occurrence of hazardous/extreme events will be supported by a rapid uptake of new Earth Observations. The impact on the Earth system will be evaluated by assessing the quality of global reanalysis as well as seasonal forecasts using state-of-the-art modelling systems.

The infrastructure and knowledge developed within CONFESS will contribute to improve the C3S capabilities for reliable monitoring and forecasting with particular focus on extremes.

2.2 Scope of this deliverable

2.2.1 Objectives of this deliverable

The objective of D4.6 is to report on the dissemination activities of the first 12 months and provide an update, where appropriate, to the dissemination and exploitation plans.

2.2.2 Work performed in this deliverable

As per the initial deliverable D4.3, feedback from the partners was collected in the form of questionnaires, identifying the relevant aspects pertaining to both dissemination and exploitation.

2.2.3 Deviations and counter measures

No deviations have been encountered.

3 Dissemination Activities

3.1 Report on Dissemination Activities

CONFESS has been active on various dissemination streams, including publications, workshops, conferences, etc.

The following publications have been prepared to-date:

1. Andrea Alessandri, Franco Catalano, Matteo De Felice, Bart van den Hurk and Gianpaolo Balsamo, *"Varying snow and vegetation signatures of surface-albedo feedback on the Northern Hemisphere land warming"* 2021 *Environ. Res. Lett.* **16** 034023, https://doi.org/10.1088/1748-9326/abd65f
2. Fransje van Oorschot, Ruud J. van der Ent, Markus Hrachowitz, and Andrea Alessandri, *"Climate-controlled root zone parameters show potential to improve water flux simulations by land surface models"*, Earth Syst. Dynam., 12, 725–743, https://doi.org/10.5194/esd-12-725-2021, 2021.

Further dissemination activities since the start of the project are presented in Table 1.

Table 1: Dissemination Activities

Type	Description
Participation to a conference	1. CNRS-ISAC: EGU General Assembly 2021 – vEGU21 Gather Online: A. Alessandri, Varying Signatures of Surface Albedo Feedback on the Northern Hemisphere Land Warming title, https://cnrsc-my.sharepoint.com/:b:/g/personal/andrea_alessandri_cnr_it/EQkUfME3AK5OgPxI1VlZfyUBSH3UF3OQG4iVBJKcVGDnow?e=dMhVon 2. CNRS-ISAC: EGU General Assembly 2021 – vEGU21 Gather Online, F. van Oorschot, 'Climate controlled root zone parameters show potential to improve water flux simulations by land surface models' 3. BSC: EGU General Assembly 2021, Roberto Bilbao, Implementing the capability to respond to large volcanic eruptions in the C3S prediction systems.
Participation to a workshop	1. CNRS-ISAC: Virtual EC-Earth meeting, A. Alessandri, Towards observation-constrained representation of land cover and vegetation/hydrology processes in the H2020-CONFESS project, https://cnrsc-my.sharepoint.com/:b:/g/personal/andrea_alessandri_cnr_it/EZYHuRQxYwNChhgIewdfg9IBKfYXJkDXI7qEorvOSDk5_Q?e=lSNH1Q 2. CNRS-ISAC: Virtual EC-Earth meeting, F. van Oorschot, 'Climate controlled root zone parameters show potential to improve water flux simulations by land surface models', https://cnrsc-my.sharepoint.com/:p:/r/personal/andrea_alessandri_cnr_it/Documents/CONFESS-onedrive/PeriodicReport_1/presentation_ecearth2021_v2_fransjevanoorschot.pptx?d=w2625fab0cd9443cabc677bca26edf2ed&csf=1&web=1&e=xDi72O

	3. BSC: WCRP Workshop on Attribution of multi-annual to decadal changes in the climate system, Roberto Bilbao, Impact of volcanic eruptions in CMIP6 decadal prediction systems: a multi-model analysis.
Web-site	1. Project Website: www.confess-h2020.eu
Other	1. ECMWF: A GLACE-VEG proposal with WP1 partners was submitted as a GEO Community Activities under GEO Work Programme. GLACE-VEG was also promoted under the GEWEX GLASS panel. 2. ECMWF: With the public release of WP1 report D1-1 on Vegetation dataset of Land Use/Land Cover and Leaf Area Index, feedback on the raw data deficiencies was provided to the Copernicus services (C3S and CGLS as data providers). 3. ECMWF: Link CONFESS to the WGNE activity led by Ariane Frassoni at CPTEC, data from preliminary CONFESS biomass burning experiments will be of sent. Whilst these are not the CONFESS experiments, they can be considered precursors experiments. The data will be processed at CPTEC and compared to other S2S systems such as CMA's, NASA's and NOAA's. CONFESS has been mentioned several times, and I do think it has gained some visibility thanks to this activity. 4. ECMWF: Conversations with CAMS regarding public dissemination of the biomass burning emission climatology. 5. ECMWF: Contribute to the planning for C3S ERA6 for maximum uptake of CONFESS developments. 6.

3.2 Update to Dissemination Plan

CONFESS has, in deliverable D.3, provided an initial plan for Dissemination and Communication Activities. Figure 1 presents the current status.

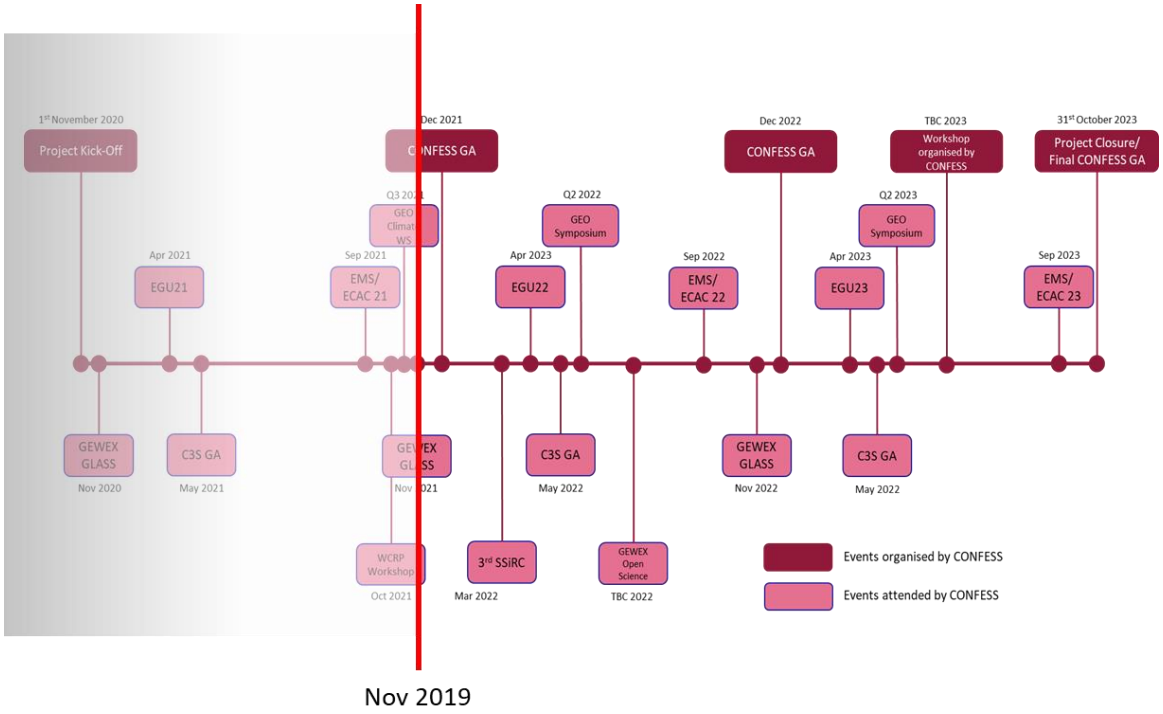

Figure 1: CONFESS Dissemination Plan

The main activity for dissemination revolved around EGU-21, with the Covid-19 restrictions mandating conferences and workshops to be either postponed or held virtually.

The remainder of the CONFESS Dissemination Plan remains relevant. It is planned that the number of publications will increase significantly with the initial results of the WPs 1 to 3 becoming available.

4 Exploitation

Deliverable D4.3 already outlined potential exploitation avenues, as presented here again in Table 2.

Table 2: CONFESS Exploitation

Exploitable Products	• new operational seasonal forecast system • seasonal forecast products • Improved operational decadal predictions with EC-Earth (www.decadal.bsc.es) • land reanalysis representing consistent temporal variations of land cover and vegetation for the period 1993-present • Proof-of-concept for treatment of temporal variations of land properties -land cover and vegetation- and improved radiative forcing from tropospheric aerosols in a full reanalysis. • Prototype of next generation of seasonal forecasts with treatment of temporal variations of land properties -land cover and vegetation- and improved radiative forcing from tropospheric aerosols. • Prototype of volcanic aerosols prediction module interfaced with 1 seasonal forecast. New capability for C3S. • Proof-of-concept module for biomass burning impact interfaced with seasonal forecasts. New capability for C3S.
Exploitation Activities during the Project	• Scientific exploitation (publication of articles, talks in international conferences) during the 3 years of the project • state-of-the-art/literature reviews, developments, competitive/ benchmark analysis • Determine the added value of the various products developed in CONFESS by quantifying the improvements in prediction skill. • liaison with stakeholders including C3S, continuous feedback
Exploitation Activities after the end of the Project	• further developments, integration into services, research to operations • integration in the EC-Earth operational decadal system • full development of an operational seasonal forecast system with a higher degree of complexity, related to additional processes taken into account, such as interactive vegetation. This should take place within the two years following the end of the project. • Integration of prototypes into C3S
Consortium-wide/Joint Exploitation	• The new vegetation and aerosol forcing datasets (anthropogenic and volcanic). • Improved ECMWF reanalyses and predictions making use of them

An update to the exploitation survey run for Deliverable D4.3 has confirmed that the products and activities described above remain relevant.

5 Conclusion

D4.6 reported on the dissemination activities performed in the first 12 months, and reviewed the dissemination and exploitation plans.

The exploitation plan will be revisited towards the end of the project with a view of establishing the relevant activities to be performed after the end of the project, and providing a definitive IPR register to serve as a reference point for project partners.

Document History

Version	Author(s)	Date	Changes
0.1	Daniel Thiemert (ECMWF)	18/10/2021	Initial version
1.0	Daniel Thiemert (ECMWF)	01/11/2021	Final verison

Internal Review History

Internal Reviewers	Date	Comments
Magdalena Alonso Balmaseda (ECMWF)	24/10/2021	Approved.

Estimated Effort Contribution per Partner

Partner	Effort
ECMWF	0.2
Total	**0.2**