

# ECMWF Copernicus Procurement Invitation to Tender



## Copernicus Climate Change Service

C3S National Collaboration Programme – Call  
for Actions 2024

## Volume II: Specification of Requirements

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## 1 Introduction

Copernicus is the European Union's flagship Earth-observation programme created to achieve operational monitoring of the atmosphere, oceans, and continental surfaces. It aims to provide reliable, validated information services for a range of environmental and security applications.

The Copernicus Climate Change Service (C3S) implemented by ECMWF on behalf of the European Union develops and delivers authoritative, quality-assured information about the past, current and future states of the climate in Europe and worldwide. It aims to a) inform policy development to protect citizens from climate-related hazards such as high-impact weather events, b) improve the planning of climate adaptation and mitigation strategies for key human and societal activities, and c) promote the development of new applications and services for the benefit of society.

## 2 Description of the National Collaboration Programme (NCP)

The National Collaboration Programme (NCP) aims to support the 27 EU Member States and Copernicus Participating States, i.e., Norway, Iceland, and UK ("Countries" from now on) leverage C3S products and services to enhance their capacity to address risks associated with climate change and transition to carbon-neutral economies. The NCP is an initiative of ECMWF, endorsed by the European Commission, and is based on a strong need for collaboration at national level identified over the years. It follows a parallel programme developed for the Copernicus Atmosphere Monitoring Service (CAMS), which was launched in 2021 and has so far offered support to more than 10 participating countries.

The ambition of C3S NCP is to increase use of C3S data and services at the national level, including promoting novel use of climate data through the development of climate services, promote communication about climate change and impacts and enhance existing workflows that use climate data provided by C3S. The NCP is a key mechanism to realise this objective as it aims to foster capacity building and co-development of services that directly address information needs for and data gaps in climate information of the collaborating countries and support them in developing their own tools to respond to European and national policy needs.

Continuous engagement with Countries will be facilitated by the newly setup C3S NCP Coordination office (supported by Copernicus contract CJS2\_155a). Specifically, it will support the establishment of the C3S NCP Forum, a key platform to facilitate exchange with and among Countries. Furthermore, the C3S NCP Coordination office will assist ECMWF in maintaining continuous bilateral dialogues with the Countries throughout the NCP duration.

The NCP is part of a wider C3S user uptake strategy, built around four interlinked pillars:

1. **Pillar 1 on 'User Intelligence and User Uptake sessions'** is a key component of the C3S user uptake activities, aimed at identifying national and transnational priorities and stakeholders. It also facilitates the targeted collection of user information as well as their needs and requirements and keeps such information up to date. Pillar 1 also connects with the EU level, with user uptake sessions focused on climate data needs at EU policy level. The contract CJS2\_152c, which started in Q4 2023, addresses this Pillar specifically.
2. **Pillar 2, focused on 'actions on national uptake'** is directly related to this ITT and the core of our strategy on targeted actions at national level. Results from a survey launched to all the countries via the Copernicus User Forum in the summer of 2023 and bilateral discussions with national representatives guided the prioritisation of selected implementation actions at national level, which is the purpose of this ITT. Furthermore, actions on national uptake will be supported by the C3S NCP Coordination Office under a separate contract (CJS2\_155a which started in Q1 2024).

3. **Pillar 3 on ‘Training & Knowledge Transfer’** and **Pillar 4 on ‘Applications, use cases & workflows on demand’**, complement C3S’ strategy on user uptake focusing on key elements as requested by institutional users and considered important to increase the C3S user communities and to find solutions to respond to specific user needs. These on-demand pillars can start in 2024 based on priorities as identified in Pillars 1 and 2.



Figure 1: C3S user uptake pillars

ECMWF invites tenders for the development and implementation of activities that aim to enhance C3S uptake amongst Countries, in line with the specific mandate of C3S as a climate data & information service and existing and new policy requirements at national and EU level.

The objective of the C3S NCP is to support Countries in developing capacity to enhance uptake of C3S core products, applications, and services, in response to specific national needs and priorities, with the goal to improve climate resilience. The NCP will support the capacity of national authorities to deliver user-oriented climate services, support adaptation plans and promote climate change communication and public awareness at the national level.

ECWFMF launched a survey in the third quarter of 2023 to better understand the national context and organizations, and the ongoing and future activities relevant for the NCP. Bilateral dialogues with national representatives were conducted in the last quarter of 2023 to allow each engaged country to express their needs and priorities for the NCP call for actions.

Results from these exchanges informed the following priority areas for national collaboration activities, which will be implemented via this and subsequent tenders: (i) enhancing C3S uptake at the national level, (ii) enhancing the C3S portfolio with national products, (iii) supporting Countries to develop improved downscaling methods, (iv) supporting Countries quantify risks of climate change and associated extreme weather events and plan adaptation measures that contribute to building societal resilience, and (v) improving cross-countries collaboration on topics of common interest.

### 3 Approach to Implementing the NCP

#### 3.1 Overall Structure of the NCP

The NCP calls will be implemented as ‘Actions’, oriented around key priorities as identified in the user

engagement activities (outlined in Figure 1) and C3S areas.

This is the first C3S National Collaboration Programme Call for Actions and it will be followed by additional calls commencing in 2025 and 2026. Publication dates for these future Calls for Action will be communicated in due time.

The C3S NCP Call for Actions of 2024 is oriented around the 'Actions' described in the following subsections. Note that the NCP actions will evolve over the next 24 months as new C3S data, infrastructure and tools and services are published / come online. Note that these Actions may be re-opened in the calls for 2025 and 2026 depending on the interest from potential Tenderers.

### 3.2 Action 2024-1: Direct use of C3S products at the national level

**Objectives:** One of the key objectives of the NCP is to promote uptake of C3S products at the national, sub-national and transnational level, supporting the capacity of national authorities to improve their uptake and use of C3S products and services. This action helps fulfil this key objective and will allow contracts with defined requirements to embed C3S products and services in their workflows to enhance and develop climate services in areas such as climate adaptation, climate risk assessment, green transition and transition to a climate resilient society.

This action will support those entities with knowledge of C3S products and service, who have identified a gap in their service provision that could be closed with C3S datasets or services. Activities can include the development of workflows to incorporate C3S products into new or existing workflows and those that build on top or add additional value to C3S datasets or service. It is intended that the NCP funding will be used to embed C3S data in existing operations or support the development of operational climate services that utilise C3S data and services based on national priorities.

C3S data, which is published in the Climate Data Store<sup>1</sup>, includes:

- Observations<sup>2</sup>
  - In-situ observations
  - Satellite Essential Climate Variables
- Climate reanalyses<sup>3</sup>
- Seasonal forecasts<sup>4</sup>
- Climate projections<sup>5</sup>
- Decadal predictions<sup>6</sup>
- Climate Impact Indicators, including indicators characterising climate extremes / Sectorial Information Service (SIS) products.

The expectation is that no datasets or applications developed in Action 2024-1 are to be published in the Climate Data Store (CDS) catalogue.

Tenderers must include in the proposal Communication activities advertising about the project development, outcome and impacts to raise awareness about C3S and the C3S NCP.

#### Expected Impacts:

- Fostering the development of impactful, user-oriented, and operational climate services at the

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<sup>1</sup> <https://cds.climate.copernicus.eu/#!/home>

<sup>2</sup> <https://climate.copernicus.eu/observations>

<sup>3</sup> <https://climate.copernicus.eu/climate-reanalysis>

<sup>4</sup> <https://climate.copernicus.eu/seasonal-forecasts>

<sup>5</sup> <https://climate.copernicus.eu/climate-projections>

<sup>6</sup> CDS climate cmip6 decadal predictions

national level. The service will be developed, and impact analysis subsequently produced to demonstrate the relevance of the product to address user needs and requirements.

- Promoting and increasing awareness of C3S data and services at the national level through implementation of a communication plan. This should include a ‘use case’ showing how C3S funding can be used to address a particular national climate priority of policy relevance. The use case will serve as an example to other national authorities, or even other countries, of how C3S data and services can be used to enhance national climate services.

### 3.3 Action 2024-2: Facilitate access to national data products in C3S activities

**Objectives:** This action welcomes proposals that will contribute directly to enhancing the C3S service through the inclusion of national data products. Through initial consultation with national authorities, this module will include, but is not limited to:

**Priority 1:** Contributing archive observations to the C3S data rescue activities. This action will support the inclusion of data records that are **not included** in current C3S data rescue efforts. The action will utilise C3S tools as defined in <https://datarescue.ooxo1.nl> and will contribute to characterisation of past climate, for Europe and beyond. The rescued data will, in part, support ECMWF’s next generation of reanalysis and those activities which depend on data rescue activities. Tenders which will facilitate data access from national archives, including those that build on novel approaches, e.g., citizen science (involving the public in scientific research), are welcome under this action.

**Priority 2:** Uptake of national climate data into the Climate Data Store (CDS). Activities include exposing national datasets, such as in-situ and national downscaled projections.

This module will allow Countries to take advantage of C3S infrastructure and user base to promote access to their data. Activities could include curation, standardisation, and publication of existing national high-resolution climate projections datasets in the CDS. Publication of national projections will utilise an interface with national infrastructure and the Common Data Store (CDS) Engine (the infrastructure behind the CDS), allowing national users to take advantage of C3S infrastructure and associated tools.

The CDS provides access to climate datasets via a searchable catalogue. Categories of data include Climate Data Records (CDRs) and Interim Climate Data Records (ICDRs), quality-controlled archives of in-situ climate observations, reprocessed satellite data records, data from climate reanalysis, seasonal forecast data, output from climate model simulations, and a variety of derived climate impact indicators. Multiple datasets will be available in each category, e.g., for the majority of GCOS Essential Climate Variables (ECVs), on global or regional domains, with varying spatial resolutions and temporal coverage, from different data providers, based on different methodologies, etc.

The NCP funding will support publication process (provision of data and files containing abstracts, detailed descriptions of dataset, variables, etc.), following the integration process detailed at Annex 1 (Guidelines for Data Integration), as well as any data storage to allow federated access (data bridges) into the CDS, as well as the production of high-quality user guides, and user support provision for the duration of the contract.

**Expected impacts:**

- Enabling access to previously unavailable historical observations, especially for the pre-satellite era and for data-sparse regions, to existing data initiatives, C3S can improve the detection and analysis of climate trends through improved reanalysis.
- Through publishing national climate data in the CDS, e.g., higher resolution national climate projections, users can utilise C3S infrastructure to postprocess data, and support the development of data products and applications. C3S tools, i.e. earthkit (open-source python project implemented by ECMWF) can enable the provision of information for regional assessments of climate hazards and

facilitate uptake of national products by the C3S user community.

### 3.4 Scope of this ITT and Contract Summary

This ITT invites Tenderers to develop proposals around the two Actions described above. This first Call for Actions serves as a pilot to test the process to support the aims and objectives of the NCP. ECMWF intends to award up to **7 contracts** over the **two Actions 2024-1 and 2024-2**. The maximum contract duration is **24 months**. Tenderers are expected to define and indicate the contract duration based on the activities proposed. Each contract award will be for a **maximum of EUR 200k** for activities covered by Action 2024-1, and a **maximum of EUR 120k** for those in Action 2024-2. However, in exceptional cases Tenders for Action 2024-2, which demonstrate significantly enhanced impact, communication potential and/or increased potential for sustainability beyond the term of the contract, can propose activities to an upper limit of EUR 200k. In these cases, Tenderers must demonstrate exceptional value for money and include a dedicated section providing detailed evidence and justification for the consideration of their increased budget.

As part of this ITT, Tenderers are invited to submit their Tenders for any one of the two Actions or for both, depending on their capacity, expertise, and interest. In cases where a Tenderer opts to submit Tenders for both Actions, it is mandatory that each Tender is presented as a separate submission, with its own set of documents, including but not limited to, technical proposals, pricing tables and any required supporting documents. Tenderers must ensure that the submissions for each Action are independently viable and stand on their own merits.

The Tenders for each Action will be evaluated independently of one another. A submission for one of the Actions will not impact the evaluation of the Tender for the other Action. ECMWF aims to achieve a fair and equitable distribution of awards, not only across the two Actions but also among the number of awards per Country. ECMWF intends to award contracts to the highest-ranking Tenders under each Action, which have passed the minimum quality threshold of 60% in the evaluation. Distribution by Country will be an additional award consideration in this process.

The Tenderer can be a public, academic, or private entity. As one of the aims of the NCP is to enhance capacities at the national level, the Tenderer, or any subcontractor(s), should ideally be registered in the country where the services are intended to be developed and implemented. The end user(s), i.e. the national authority, should however always be involved as a partner or third-party within the Tender, and will be a subcontractor, or provide a letter of commitment. Tenderers are encouraged to liaise with their national delegated authorities as early as possible and coordinate at the national level to identify national priorities. In those instances where the Tender addresses transboundary challenges, the same conditions apply.

The country's national delegated authority, or a recognised centre of excellence on climate data with the mandate for implementing climate services on behalf of the lead national centre, can also submit a Tender.

The Tenderer is requested to clearly articulate the activities proposed within the chosen Action. In the proposal, the Tenderer needs to clearly indicate how the funding will be used, the aims, objectives and expected impact(s) that the activities will have on 1) uptake of C3S services, 2) communication potential (i.e. promoting issues associated with climate change, including hazards, risk assessment, adaptation policies and sectorial plans, etc.). The Tenderer is requested to state how the activity will lead to concrete follow-up actions at national level. Finally, it shall also address how the service will be improved or maintained after the end of the contract.

## 4 Technical Requirements

The proposal will be structured in work packages (WPs). A preliminary list of technical WPs and major deliverables are proposed below. These work packages and deliverables are indicative at this stage and Tenderers are free to propose a more refined work package list. Tenderers shall also include an additional mandatory work package (WP0) focused on contract management and coordination.

### 4.1 Work Package 1 (WP1): Design & Planning

The tenderer will describe the activities in sufficient detail to allow ECMWF to evaluate the design, service and activities that will be included in the NCP contract. The tenderer is expected to clearly identify the users, service and functional requirements that make up the NCP activities, and, according to the activities proposed, provide the architecture and outline how user interactions will be managed.

This activity will also define how the tenderer will assess the impact of the NCP activities and detail how sustainability of the activities will be achieved, ideally as part of established or new operational or (pre-) operational processes. This initial period (up to 6 months) of the contract will provide comprehensive plans how C3S products and services will enhance current workflows and services and help to close the current information / service gap. This planning phase will address expected challenges, benefits and, where appropriate include stakeholder engagement activities that will be implemented in the implementation phase (WP2).

Minimum required deliverables include:

- Requirements analysis document, outlining the key requirements (user, data, service requirements) that define the NCP activity.
- Service specification and Implementation plan, providing a detailed overview of the timeline, methodology and activities that will be implemented under the contract and including full assessment of risks, stakeholder and user engagement plans, as well as resources.

### 4.2 Work package 2 (WP2): Implementation

The Successful Tenderer will implement the activities as detailed in WP1. WP2 must have the specific implementation tasks organised into a single work package, with tasks, milestones, deliverables, and a Gantt chart. The deliverables and milestones included in the WP will be dependent on the scope and activities being implemented in the contract.

There are no universal mandatory deliverables – the tenderer needs to define this at the proposal stage. The tenderer must consider the nature of the task being undertaken in their work package and respond accordingly.

The Successful Tenderer can identify needs for Pillar 3 linked to training and knowledge transfer and Pillar 4 linked to 'on demand' applications by month 12. These will be collected through contract CJS2\_155a (supporting the NCP Coordination Office).

An Impact & Service status report will summarise the developments, assess the outcomes of the activities in terms of meeting the user needs and requirements and summarise user feedback and status of the service at the end of the contract. This deliverable will focus on the 'impact' the contract has had on the user community, and particularly the national policy priorities. This report will provide an outlook on potential follow up actions to operationalise the performed development, provide ECMWF with lessons learnt and user requirement for C3S service evolution (collected via contract CJS2\_152c focusing on C3S User Intelligence).



Milestones must be aligned to key developments in implementation of the service, for example 'data ingestion complete', or 'operational service launched'.

### 4.3 Work Package 3 (WP3): Communication and user outreach

Communication and user outreach is an integral part of the NCP. The communication activities of the NCP's contractors should put the contractors at the core of the outreach efforts. C3S should be presented as an enabler of the initiative, but it is the contractor who shall be communicating on behalf of C3S, and to contributing to C3S' strategic and tactic goals.

This work package must include communication and outreach activities organised into a single work package, with specific tasks, milestones, deliverables, summarized in a Gantt chart.

Deliverables must include, but are not limited to:

- Detailed communication and user outreach plan (by month 6 of the project) – this deliverable will inform ECMWF how the contract will develop a strategy and materials for awareness raising, including both wide and targeted user outreach and promotion. This deliverable will:
  - Detail how the contract will raise awareness and promote the use of C3S products and services at the national level, to a broad audience as well as to specific group of potential users, e.g. national administrations.
  - Detail how the contract will allow ECMWF to communicate the activities and expected impacts arising from the contract.

The communication and user outreach plan will include an overview of the activities, use of C3S products and expected impacts of the project/service activities. The plan will be updated over the duration of the contract. The communication and user outreach plan will include development of web material, use of social media channels and other promotion material that will be used to raise awareness and promote the impacts as achieved through the funded action. The plan will also inform ECMWF communication and user outreach teams about key activities, milestones and impacts that have communication potential over the duration of the contract. This plan must also address targeted user outreach activities toward its national users, or other national and regional administrations in the appropriate national languages.

By user outreach in this section, we mean targeted communication efforts to specific groups of potential users with concrete needs in opposite to a broad audience. It should be stressed that user outreach activities must not be aimed at engaging users such as surveys or trainings, which are included in the (Optional) Work Package 4: Training and Capacity Building.

Deliverables are expected over the duration of the contract to include web material, promotional material (as defined in the communication plan). The tenderer needs to define the deliverables at the proposal stage considering the tasks being undertaken in their work package.

The contract is expected to deliver a minimum of one 'use case', a publishable summary of how the NCP activities have demonstrated value – this should include how C3S products and services have been used to enhance existing workflows, in the case of technical development activities; the processing steps undertaken, the added value to users or impacts related to new operating practices arising from the funded activity. In addition, a user testimonial shall be provided before month 18 of the contract.

A report on Communication and user outreach activities shall also be delivered at the end of the contract.

Finally, a milestone under this work package shall be the annual participation, and presentation of the NCP activity, at one C3S event (i.e., user day, C3S general assembly, etc.,) as required by ECMWF. Venue will be in Europe and participation is expected for one day.

#### 4.4 Optional Work Package 4 (WP4): Training & Capacity Building

This optional work package is for the provision of dedicated small-scale training and capacity building activities where these have been envisaged to promote the uptake of the service(s) developed under Actions 1 & 2. Training is a fundamental tool to enhance the uptake of the developed service and is useful in ensuring its sustained impacts. Note, that this optional work package will focus on developing and implementing trainings that **support the uptake of services and activities under this ITT**. General trainings and capacity building are implemented through the 'Training & Knowledge Transfer' activities of Pillar 3. The Copernicus training and capacity building activities will support national needs and based on priorities as identified in Pillars 1 and 2, and the training needs and requirements will be managed by the NCP Coordination Office.

Where training materials are to be developed within WP4, the successful tenderer is encouraged to engage with the principal Copernicus training activity to support the development of training element based on C3S resources. This interaction will also the successful tenderer to take advantage of the wealth of material ECWMF is developing to support the training out outreach activities. In additional, there are opportunities to 'train-the-trainer', ensuring consistency with the quality and narrative of the Copernicus training activities being implemented by ECMWF.

Training and knowledge exchange activities are encouraged to be developed and carried out in local languages. The training activities shall be organized by the tenderer, co-designed together with their target audience (users and stakeholders).

The training activity may include the development of tailored learning resources, such as Jupyter notebooks and/or e-learning modules, the organisation of events to collect needs and ideas for further trainings and capacity building, small-scale national capacity building and training events and/or other activities.

This work package must have the training activities organised into a single work package, with specific tasks, milestones, deliverables, summarized in a Gantt chart.

There are no universal mandatory deliverables – the tenderer needs to define this at the proposal stage. The tenderer must consider the nature of the task being undertaken in their work package and respond accordingly.

Milestones must be aligned to key activities, or events, in the contract, for example 'end user training day', or 'training material published'.

#### 4.5 Work Package 0 (WPO): Management and Coordination

The following management aspects shall be described in the technical proposal:

##### **Meetings:**

- Kick-off meeting.
- Regular progress review meetings (by videoconference).
- ECMWF organises annual C3S General Assembly. The Contractor is expected to attend this meeting and contribute to discussions related to the topic of this ITT.

**Quality assurance and control:** the quality of reports and Deliverables shall be equivalent to the standard of peer-reviewed publications. The timely delivery as well as final quality check of the deliverables shall be ensured by the prime contractor (in terms of content, use of ECMWF reporting templates for deliverables and reports (Microsoft Word), format, deliverable numbering and naming, typos...); all reports in this project shall be in English. Unless otherwise specified the specific contract Deliverables shall be made available to ECMWF in electronic format.

**Communication management** (incl. external and internal communication). Any external communication activity must be agreed with the ECMWF Copernicus Communication team in advance. This includes, but not exhaustively, communication planning, branding and visual style, media outreach, website and social media activity, externally facing text and graphical content and events. Agreed activity would also need to be evaluated and reported on once complete so that success measures and KPIs could be provided to the European Commission (cf. Clause 2.4.6 of the Framework Agreement).

**Set of Key Performance Indicators (KPIs)** suitable for monitor contract performance. The proposed KPIs shall be SMART (specific, measurable, actionable, realistic and time bound).

**Risk Management:** The proposal shall include a risk register that describes identified risks for each work package, along with a mitigation strategy for each of the identified risks. This mitigation strategy shall be composed of both preventive and corrective measures. The risk register shall be updated regularly by the Contractor, and any update (related to new risks, likelihood or impact) shall be reported during the progress review meeting, as well as part of the quarterly and annual implementation reports.

**Resources planning** and tracking using the appropriate tools.

**Subcontractor management**, including conflict resolution, e.g. the prime contractor is responsible for settling disagreements, although advice/approval from ECMWF may be sought on the subject. A list of subcontractors describing their contribution and key personnel shall be provided, as well as backup names for all key positions in the contract. Tenderers shall describe how the Agreement; in particular Clause 2.8 on Sub-contracting has been flowed down to all their subcontractors.

**Management of personal data** and how this meets the requirements of Clause 2.7 on Personal Data Protection and Annex 5 of the Agreement.

**Co-ordination with relevant C3S staff and other contracts/activities**, associated with the implementation of the C3S NCP managed by ECMWF, including training, NCP coordination office and user intelligence. The work package descriptions in the technical requirements section (4) detailed the coordination with other key activities associated with the C3S NCP programme.

**The required deliverables under WPO** include short implementation reports to be delivered on quarterly basis, an annual implementation plan for the coming year (TBC on a case-by-case basis), as well as the final report to be delivered at the end of the contract. In particular:

- The Quarterly Implementation Reports shall summarize in 1 page the technical progress achieved in the last quarter. Potential updates related to KPIs, project risk register or deliverables planning may also be included. In such case, the report shall not exceed 3 pages in total.
  - The quarterly report of Q2 and Q4 of the year shall be accompanied by a financial report of the last 2 quarters and the last year respectively.
- Annual implementation plan includes the objectives and highlights expected in the coming year, overview of planned technical activities, overview of communication and outreach activities, as well as overview of management activities, such as risk management approach, indicative resource planning, quality control activities, etc. Deliverables and milestones planning shall also be included.
- Final implementation report shall contain comprehensive information on the implementation of the project/service throughout its term, including description of results generated and achievements. It shall also contain all the financial information of the project/services, including potential audits and recoveries.

For all the above-mentioned deliverables, the Contractor shall use specific templates, which will be provided by ECMWF in due time ahead of the delivery due date.

WPO Deliverables		
Deliverable #	Title	Due
D461.0.1.1-YYYY.QQ	<b>Quarterly Implementation Report</b> (including relevant financial reporting in Q2 and Q4 of the year)	On 15/04, 15/07, 15/10 and 15/1
D461.0.1.2	<b>Final Implementation report</b> (including relevant financial report)	end of contract
D461.0.2.1-YYYY	<b>Annual Implementation Plan</b> (for the coming year)	Annually on 30/09 (TBC depending on the contract start date)
D461.0.3.1-YYYY	Copy of prime contractor's general financial statements and audit report YYYY (YYYY being the Year n-1)	Annually (no-cost associated)

WPO Milestones			
Milestone #	Title	Means of verification	Due
M461.0.1.1-MX	Progress review meetings with ECMWF	Minutes of meeting	Monthly
M461a.0.1.2	Kick-off Meeting	Minutes of meeting	M1

## 5 Tender Format and Content

General guidelines for the tender are described in Volume IIIB. This section describes specific requirements to prepare the proposal for this tender, along with guidelines for minimum content expected to be included in the proposal, additional to the content described in the general guidelines of Volume IIIB. This is not an exhaustive description and additional information may be necessary depending on the Tenderers' response.

### 5.1 Page Limits

As a guideline, it is expected that individual sections of the Tenderers' response do not exceed the page limits listed below. These are advisory limits and should be followed wherever possible, to avoid excessive or wordy responses.

<i>Section</i>	<i>Page Limit</i>
<i>Executive Summary</i>	2
<i>Track Record</i>	2 (for general) and 2 (per entity)
<i>Quality of Resources to be Deployed</i>	2 (excluding Table 1 in Volume IIIB and CVs with a maximum length of 2 pages each)
<i>Technical Solution Proposed</i>	20 (Table 2 in Volume IIIB, the section on references, publications, patents and any pre-existing IPR is excluded from the page limit and has no page limit)
<i>Impact and Communication Potential</i>	6 (excluding Figures and Charts)
<i>Management and Implementation</i>	6 (excluding Table 4 and Table 5 in Volume IIIB) + 2 per each work package description (Table 3 in Volume IIIB)
<i>Pricing Table</i>	No limitation

Table 1: Page limits

## 5.2 Specific additional instructions for the Tenderer's response

The following is a guide to the minimum content expected to be included in each section, additional to the content described in the general guidelines of Volume IIIB. This is not an exhaustive description and additional information may be necessary depending on the Tenderer's response.

### 5.2.1 Executive Summary

The Tenderer shall provide an executive summary of the proposal, describing the objectives, team and service level.

### 5.2.2 Track Record

The Tenderer shall demonstrate for itself and for any proposed subcontractors that they have experience with relevant projects in the public or private sector at national or international level. ECMWF may ask for evidence of performance in the form of certificates issued or countersigned by the competent authority.

**For this tender, Tenderers are expected to prove their ability to combine excellent knowledge of climate services and national needs in term of climate information to support development of climate actions.**

### 5.2.3 Quality of Resources to be Deployed

The Tenderer shall propose a team providing the skills required for providing operational services that meet the technical requirements set out in Section 4. The team shall include a Service Manager with at least five years of experience in management of large-scale projects. The Tenderer shall describe the experience of the Service Manager and the technical project team in performing activities related to the various aspects of this tender.

**Proposed experts are expected to have profound expertise in relation to the topic areas of this ITT, chiefly downscaling methods, machine learning, extreme weather events, national climate service needs.**

### 5.2.4 Technical Solution Proposed

The Tenderer shall give a short background to the proposed solution to demonstrate understanding of that solution and of the C3S context. This section shall also include information on any other third-party suppliers that are used as part of the technical solution, and a statement of compliance for each requirement formulated throughout this document, describing how the proposed solution maps to the requirements.

### 5.2.5 Impact and Communication Potential

The Tenderer shall demonstrate how the proposal under this NCP call will enhance the development of climate services at the national level by articulating the expected impacts that the proposal will have if it is successful. Please refer to Volume IIIB for further details.

### 5.2.6 Implementation Aspects

Tenderers shall provide a detailed implementation plan of proposed activities for the duration of 24 months. Deliverables should be consistent with the technical requirements specified in Section 4. The number of milestones is not restricted, but they should be designed as markers of demonstrable progress in service development and/or quality of service delivery. Adjustments to the proposed implementation plan can be made on an annual basis depending on needs for service evolution, changed user requirements, or other requirements as agreed between the European Commission and ECMWF.

Tenderers are invited to make proposals that they consider necessary for the effective management and implementation of the contract, considering the elements described under section 4.5 on project management requirements for this ITT.

## 6 Additional Information

### 6.1 Acronyms

CAMS	Copernicus Atmosphere Monitoring Service
C3S	Copernicus Climate Change Service
CDS	Climate Data Store
CDRs	Climate Data Records
CTH	Copernicus Thematic Hub
DG CLIMA	European Commission's Directorate-General for Climate Action
DG DEFIS	European Commission's Directorate-General for Defence Industry and Space
EC	European Commission
ECMWF	European Centre for Medium-range Weather Forecasts
ECVs	Essential Climate Variables
GCOS	Global Climate Observation System
ICDRs	Interim Climate Data Records
ITT	Invitation To Tender
KE	Knowledge Exchange
NCP	National Collaboration Programme
NMS	National Meteorological Services
SIS	Sectoral Information System
WP	Work Package

## Annex 1 Guidelines for Data Integration

Tenderers should refer to the separate document attached. Note that the document includes links to other ECMWF and/or web resources, some of which may not be publicly available. This document is provided to facilitate Tenderers' understanding of the data integration process and to facilitate the assessment and costing of resources which Tenderers should allocate in their response for any such activities. Full access to ECMWF internal resources shall be provided to the Successful Tenderer at the start of the contract.

# **If you are a provider of data**

Copernicus Services

Exported on 02/19/2024



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### About this page

Scope	This page describes the main steps needed to integrate data in the CDS Catalogue. It <b>does not describe</b> what is needed to integrate documentation, the role of the technical officers and other aspects that are very important for a successful integration but that are the scope of other wiki pages.
Intend ed audience	<i>Copernicus CDS data providers.</i>
Outline	<i>The focus of this page is on what the data provider needs to supply to the CDS team and how to do it.</i>
Disclaimer	<i>The information in this page is not guaranteed to describe exactly the actual processes which are subject to change from time to time. But, the CDS team intends to keep the information in this page as close as possible of the actual practices.</i>

# 1 Provider's role: summary

## List of the expected contributions

The provider is expected to work closely with CDS team and the technical officer in order to resolve any issues that come up during the various stages of the publication process and afterwards. Communication is preferred through Jira ticket.

Below there is a list that had been laid out in chronological order with the main contributions.

1. Registers the Dataset: [Dataset registration](#)<sup>1</sup> (*Integration process*)
2. Supplies the Information document: [Information document template](#)<sup>2</sup> (*Integration process*)
3. Supplies manifest file (See more about manifests below at *Manifest and pseudo-manifest files. Integration process.*)
4. Help the CDS team member to reply to the reviewer's and Editorial Board's comments (*Review process*)
5. Provide previous existent DOIs, licences and citations associated with each part of the data (see below: *DOI, citation and licence. Review process.*)
6. After entry published in the CDS Catalogue, the data provider should keep the manifest's filename and path exactly the same for the whole duration of the contract, even when the contents of the manifest is changed. (*Complementary processes: automatic updates*)
7. The data provider is expected to help the CDS team on keeping the entry working as expected when the data provider has the knowledge and the resources to do it (*Complementary processes: Maintenance*)
8. Follows CDS procedures for deprecating data ( see below: *Versions, deprecation of entries, replacement of data. Complementary processes: Maintenance*)

---

<sup>1</sup> <https://confluence.ecmwf.int/display/COPSRV/Dataset+registration>

<sup>2</sup> <https://confluence.ecmwf.int/display/COPSRV/Information+document+template>

## 2 How to start the integration of your data in the CDS Catalogue

### JIRA ticket, Information document and manifest file

Provider's role	Description
<p><b>JIRA</b> When asked by the CDS management <a href="https://confluence.ecmwf.int/display/COPSRV/Dataset+registration">registers the dataset</a><sup>3</sup> and create a JIRA ticket at <a href="https://jira.ecmwf.int/servicedesk/customer/portal/5">https://jira.ecmwf.int/servicedesk/customer/portal/5</a></p>	<p>All information concerning the creation, modification, merging, updating, deprecation, additions of of data or documentation, DOIs, Citations, etc, is supposed to be managed through the JIRA ticket.</p>
<p><b>Manifest</b> Have a pseudo-manifest file (or a <a href="#">manifest file</a>) prepared.</p>	<p>This is the central piece of information needed by the CDS. So important that we have a whole section about it at the bottom of this page.</p>
<p><b>Information document</b> Attach to the JIRA ticket an "Information document" filled in with the information associated to the data that you are delivering for publication in the CDS Catalogue. The template for the information document can be found here: <a href="#">Information document template</a><sup>4</sup>.</p>	<p>The information document is the starting point for the integration process. In order to arrive at an agreed draft entry to submit for review, additional inputs may be required. The document contains fields and tables that should be completed with the information relevant for your data. Guidelines are provide along those fields and tables intending to help you to understand exactly which information is required and in which format.</p>

<sup>3</sup> <https://confluence.ecmwf.int/display/COPSRV/Dataset+registration>

<sup>4</sup> <https://confluence.ecmwf.int/display/COPSRV/Information+document+template>

### 3 Main processes in which you are expected to participate

#### Pre-publication process

The aim of this step is to check and agree on the main inputs for the subsequent publication process:

- path and filename conventions,
- the size of the files,
- the number of variables per file,
- where the data will be stored,
- manifest file

The CDS team expects to have access to the information in the list above as soon as possible through a JIRA ticket and at least 2 month before the actual delivery of the data.

For data for which the contents and the container is still modifiable, the CDS team expects to interact with the provider in order to influence the way the data is stored making it more suitable for the needs of the Catalogue and the needs of the Toolbox.

#### Publication process

The process that goes from the initial trigger of the integration of your data, to the publication of the Catalogue entry in the public Catalogue, is referred as the "publication process".

The publication process has two processes in sequence: the integration process and the review process. Your role in these two processes is summarised below.

Provider's role	Process	Description	
Creates JIRA ticket Supplies the Information document Supplies manifest file Replies to CDS team queries	<b>Integration process</b> (analogous to creating a draft of a paper to be submitted to a scientific journal)	Inputs	JIRA ticket and Information document
		Outputs	Draft Catalogue entry judged to be good enough to be submitted to review by the CDS team, the technical officer and the data provider
		Work	Based on the manifest file and the Information Document, a CDS team member (or associated) creates one or more possible drafts for the future entry in the Catalogue. When agreed that the draft is good enough to be submitted for publication this process ends.

Help the CDS team member to reply to the reviewer's and Editorial Board's comments.	<b>Review process</b> (analogous to the review process of a paper submitted to a scientific journal)	Inputs	Draft entry
		Outputs	Modified entry reviewed and approved by the Editorial Board published in the public CDS Catalogue
		Work	A CDS team member (or associated) runs an internal review process to guarantee that the entry respects the CDS expectations.

### Post-publication processes

After publication there are frequently some additions to be made or some issues to be addressed on the entry associated to your data. These are the two main processes where you may be asked to participate:

Provider's role	Process	Description	
Keep the manifest's filename and path exactly the same. Contents of the manifest is expected to change. But new additions to the contents, other than time extensions, should be discussed with the CDS team. See more about manifests below at <i>Manifest and pseudo-manifest files</i> .	<b>Automatic updates</b> (Updates date and time related widgets in the download form. This allows the automatic release of time extensions of data. Does not work for other widget's updates like new variables. new versions etc. )	Inputs	Entry already published in the Catalogue Manifest file or equivalent Update frequency agreed EC-Flow suite implemented
		Outputs	Entry updated with new dates
		Work	EC-Flow suite will read the manifest file and run CDS scripts able to recreate the download form.

<p>The data provider is expected to help the CDS team on keeping the entry working as expected. The main observed issues with published datasets are:</p> <ul style="list-style-type: none"> <li>• download form not providing the expected data</li> <li>• documentation tab not providing the expected documentation</li> <li>• mismatch between data and documentation</li> </ul> <p>When this or other issues are detected by the data provider, the CDS team will be grateful if the provider could notify the CDS team using the JIRA help desk (<a href="https://jira.ecmwf.int/service desk/customer/portal/5">https://jira.ecmwf.int/service desk/customer/portal/5</a>)</p> <p>Sometimes these issues are detected by users or the CDS team itself, in which case the CDS team will ask the data provider to help to fix the issue only when the data provider has the knowledge or the resources to do it</p>	<p><b>Maintenance</b> (new programmed versions, new documentation, deprecating data, unexpected issues with the data and the documentation, licences, etc)</p>	<table border="1"> <tr> <td data-bbox="735 311 922 461">Inputs</td> <td data-bbox="922 311 1423 461">Published entry Request for modification of the published entry</td> </tr> <tr> <td data-bbox="735 461 922 551">Outputs</td> <td data-bbox="922 461 1423 551">Modified entry</td> </tr> <tr> <td data-bbox="735 551 922 763">Work</td> <td data-bbox="922 551 1423 763">A CDS team member (or associated) modifies the entry as requested. The CDS team evaluates when the required modification needs agreement from the Editorial Board.</td> </tr> </table>	Inputs	Published entry Request for modification of the published entry	Outputs	Modified entry	Work	A CDS team member (or associated) modifies the entry as requested. The CDS team evaluates when the required modification needs agreement from the Editorial Board.
Inputs	Published entry Request for modification of the published entry							
Outputs	Modified entry							
Work	A CDS team member (or associated) modifies the entry as requested. The CDS team evaluates when the required modification needs agreement from the Editorial Board.							

## 4 Manifests, deprecation of data, versions, DOI, citation, acknowledgement and licence

### Manifest and pseudo-manifest files

#### Content of the Manifest

The manifest should contain the path and the file name for every file that the CDS catalogue is supposed to provide to the users. **Nothing more nothing else.** No empty lines, no comments.

For instance:

#### First lines of a manifest for cmip6 data saved in ESGF

```
- path: CMIP/NUIST/NESM3/historical/r1i1p1f1/Amon/evspsbl/gn/v20190705
  ds_id: c3s-
cmip6.CMIP.NUIST.NESM3.historical.r1i1p1f1.Amon.evspsbl.gn.v20190705
  var_id: evspsbl
  array_dims: time lat lon
  array_shape: 1980 96 192
  time: 1850-01-16T12:00:00 2014-12-16T12:00:00
  latitude: -88.57 88.57
  longitude: 0.00 358.12
- path: ScenarioMIP/CNRM-CERFACS/CNRM-CM6-1-HR/ssp245/r1i1p1f2/Amon/pr/gr/
v20191202
  ds_id: c3s-cmip6.ScenarioMIP.CNRM-CERFACS.CNRM-CM6-1-
HR.ssp245.r1i1p1f2.Amon.pr.gr.v20191202
  var_id: pr
  array_dims: time lat lon
  array_shape: 1032 360 720
  time: 2015-01-16T12:00:00 2100-12-16T12:00:00
  latitude: -89.62 89.62
  longitude: 0.00 359.50
- path: CMIP/CNRM-CERFACS/CNRM-CM6-1/historical/r1i1p1f2/Amon/tas/gr/v20180917
  ds_id: c3s-cmip6.CMIP.CNRM-CERFACS.CNRM-
CM6-1.historical.r1i1p1f2.Amon.tas.gr.v20180917
  var_id: tas
  array_dims: time lat lon
  array_shape: 1980 128 256
  time: 1850-01-16T12:00:00 2014-12-16T12:00:00
  level: 2.00 2.00
  latitude: -88.93 88.93
  longitude: 0.00 358.59
```

#### First ten lines of a manifest file for a dataset accessible through URL addresses

```
head ./Integration_of_satellite-earth-radiation-budget/manifest_c3s_312b_lot1_erb_c3s_icdr_latest.txt
http://gws-access.ceda.ac.uk/public/cds\_c3s\_cloud/c3s\_312b\_lot1/data/erb/c3s/icdr/r01/monthly/2017/01/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\_ORAC\_Sentinel-3a\_201701\_fv3.1.nc
http://gws-access.ceda.ac.uk/public/cds\_c3s\_cloud/c3s\_312b\_lot1/data/erb/c3s/icdr/r01/monthly/2017/02/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\_ORAC\_Sentinel-3a\_201702\_fv3.1.nc
http://gws-access.ceda.ac.uk/public/cds\_c3s\_cloud/c3s\_312b\_lot1/data/erb/c3s/icdr/r01/monthly/2017/03/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\_ORAC\_Sentinel-3a\_201703\_fv3.1.nc
```



[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/04/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201704\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/04/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201704_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/05/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201705\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/05/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201705_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/06/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201706\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/06/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201706_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/07/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201707\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/07/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201707_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/08/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201708\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/08/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201708_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/09/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201709\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/09/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201709_fv3.1.nc)  
[http://gws-access.ceda.ac.uk/public/cds\\_c3s\\_cloud/c3s\\_312b\\_lot1/data/erb/c3s/icdr/r01/monthly/2017/10/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR\\_ORAC\\_Sentinel-3a\\_201710\\_fv3.1.nc](http://gws-access.ceda.ac.uk/public/cds_c3s_cloud/c3s_312b_lot1/data/erb/c3s/icdr/r01/monthly/2017/10/C3S-312bL1-L3C-MONTHLY-ERB-SLSTR_ORAC_Sentinel-3a_201710_fv3.1.nc)

### First line of a manifest file for a dataset saved in MARS

head reanalysis-uerra-europe-soil-levels/mars.list

```

class=ur,expver=prod,levtype=sol,origin=eswi,stream=oper,type=an,param=260199/260360,levelist=1/2/3,time=00:00:00/06:00:00/12:00:00/18:00:00,date=1961-01-01/1961-01-02/1961-01-03/1961-01-04/1961-01-05/1961-01-06/1961-01-07/1961-01-08/1961-01-09/1961-01-10/1961-01-11/1961-01-12/1961-01-13/1961-01-14/1961-01-15/1961-01-16/1961-01-17/1961-01-18/1961-01-19/1961-01-20/1961-01-21/1961-01-22/1961-01-23/1961-01-24/1961-01-25/1961-01-26/1961-01-27/1961-01-28/1961-01-29/1961-01-30/1961-01-31
class=ur,expver=prod,levtype=sol,origin=eswi,stream=oper,type=an,param=260199/260360,levelist=1/2/3,time=00:00:00/06:00:00/12:00:00/18:00:00,date=1961-02-01/1961-02-02/1961-02-03/1961-02-04/1961-02-05/1961-02-06/1961-02-07/1961-02-08/1961-02-09/1961-02-10/1961-02-11/1961-02-12/1961-02-13/1961-02-14/1961-02-15/1961-02-16/1961-02-17/1961-02-18/1961-02-19/1961-02-20/1961-02-21/1961-02-22/1961-02-23/1961-02-24/1961-02-25/1961-02-26/1961-02-27/1961-02-28
class=ur,expver=prod,levtype=sol,origin=eswi,stream=oper,type=an,param=260199/260360,levelist=1/2/3,time=00:00:00/06:00:00/12:00:00/18:00:00,date=1961-03-01/1961-03-02/1961-03-03/1961-03-04/1961-03-05/1961-03-06/1961-03-07/1961-03-08/1961-03-09/1961-03-10/1961-03-11/1961-03-12/1961-03-13/1961-03-14/1961-03-15/1961-03-16/1961-03-17/1961-03-18/1961-03-19/1961-03-20/1961-03-21/1961-03-22/1961-03-23/1961-03-24/1961-03-25/1961-03-26/1961-03-27/1961-03-28/1961-03-29/1961-03-30/1961-03-31

```

### Pseudo-manifest

Dataset suppliers to the CDS shall provide a comprehensive description of their data at least two months prior to delivery, using a data registration process established by ECMWF. For the CDS team this means the delivery of a pseudo-manifest file.

A pseudo-manifest is a manifest file with expected path and filenames for the expected data to be created. Note that the pseudo-manifest should be as close as possible of the final delivery but the CDS team understands that modifications may be needed.

If a pseudo-manifest is provided, then a Catalogue entry can be created and its design agreed and tested. Filenames and paths can be checked to see if they allow a good building of the download form.

### Name of the manifest and updates of the contents of the manifest

The manifest should be named "manifest\_<Contract tag>\_<ECV\_name\_tag or SIS\_name\_tag>\_<optional\_tag>\_yyyymmdd.txt" where yyyymmdd is the date where this manifest was created.

It is expected that the providers replace the strings <...> in the manifest filename with the actual names for the dataset they are providing.

When a new manifest file is added to the providers site, that manifest should also be copied to "manifest\_<Contract tag>\_<ECV\_name|SIS\_name>\_<optional\_tag>\_latest.txt".  
Remove the date and leave just the string "latest".

This convention is central for the CDS computers to find and access the correct manifest.

### Where to save the manifest file:

The manifest should be in a directory named <http://web><sup>5</sup> address/c3s\_manifest/ accessible through wget and http(s) or the CDS computers to automatically download/check it.  
Old manifest files may be removed from the providers site. The idea is to store 2 or 3 previous manifest files to track back any issues.  
At least one manifest file should be always present and that providers site: the latest manifest file.

### Why the CDS values so much the manifest file:

For the Catalogue a dataset is a manifest file. Not the description in the contracts, not overviews.  
Nothing else is so central and important than the manifest: it tells the CDS computers what should be present in the public Catalogue.

### How the download form is directly related with filenames and paths in the manifest?

The widgets in the download pages of the CDS Catalogue are the way by which the user builds the name and the path of the file that corresponds to the data the user wants to download.

In other words, there is a direct link between the filename and path convention and what we can offer for the user to click in the download form.

To see it better let's consider the CIMP5 datasets which has addressed like:

[/output1/NOAA-GFDL/GFDL-CM3/historical/day/atmos/day/r3i1p1/ua/v20120227/ua\\_day\\_GFDL-CM3\\_historical\\_r3i1p1\\_19800101-19841231.nc](http://output1/NOAA-GFDL/GFDL-CM3/historical/day/atmos/day/r3i1p1/ua/v20120227/ua_day_GFDL-CM3_historical_r3i1p1_19800101-19841231.nc)<sup>6</sup>

the path and filename convention is:

```
/output1/(?P<__organisation>[\-\w]+)/(?P<model_1>[\-\w]+)/(?P<experiment_1>[a-zA-Z0-9]+)/(?P<frequency>[a-z0-9]+)/(?P<__realm>\w+)/(?P<__cmor_table_1>[a-zA-Z0-9]+)/(?P<ensemble_member_1>[a-z0-9]+)/(?P<variable_1>[a-zA-Z]+)/(?P<__version>[v0-9]+)/(?P<variable_2>[a-zA-Z]+)/(?P<__cmor_table_2>[a-zA-Z0-9]+)/(?P<model_2>[a-zA-Z0-9\-\-]+)/(?P<experiment_2>[a-zA-Z0-9]+)/(?P<ensemble_member_2>[a-z0-9]+)/(?P<period>\d{8}-\d{8}).nc
```

When one looks at <https://cds.climate.copernicus.eu/cdsapp#!/dataset/projections-cmip5-daily-pressure-levels?tab=form> it is easy to notice that the widgets on that download page are the ones defined in the convention.

By clicking on the boxes the user is in fact providing values to each part of the convention and building the name of the file that will be downloaded. Each part of the convention will eventually lead to a widget in the Catalogue for the dataset.

### CDS preferences:

The CDS prefer long names than short names. We prefer understandable than smart. For instance we prefer [L3-U.nc](http://l3-u.nc/)<sup>7</sup> than [L3U.nc](http://l3u.nc/)<sup>8</sup> since in the first case it is clear that 2 things are at play.

<sup>5</sup> <http://web/>

<sup>6</sup> [http://ua\\_day\\_gfdl-cm3\\_historical\\_r3i1p1\\_19800101-19841231.nc/](http://ua_day_gfdl-cm3_historical_r3i1p1_19800101-19841231.nc/)

<sup>7</sup> <http://l3-u.nc/>

<sup>8</sup> <http://l3u.nc/>

Filenames should follow conventions. More than one convention is OK. Different main variables should be preferably in different files.

Examples of what would be desirable for the filename conventions:

*If possible, in the filenames the underscore "\_" should be used to split between place holders and hyphen "-" to say that different words belong in fact to the same placeholder.*

*For instance:*

[sfcWind\\_climatology\\_prevaling/01/sfcWind\\_climatology\\_prevaling\\_01\\_v0.0.nc](#)<sup>9</sup>

*would be better as:*

[sfcWind-prevaling\\_climatology/01/sfcWind-prevaling\\_climatology\\_01\\_v0.0.nc](#)

<sup>10</sup>By using this grouping and splitting *this will help to design more well organised filenames that will be easier to use by the CDS scripts.*

### **Warning:**

*The same thing should be named in the same way whenever it is referenced.*

*For instance, for a computer "version\_0.0" is different from "v0.0". If we mean the same thing then the string should be exactly the same, no differences in capitalisation, or more letters or less letters. One can choose either v0.0 or version\_0.0 or another string one finds convenient but should then keep it the same everywhere when the same thing is meant.*

### **Versions, deprecation of entries, replacement of data**

<b>Amount of data to deprecate</b>	<b>Provider's role</b>	<b>CDS team</b>
Large amount of data	<ul style="list-style-type: none"> <li>• Provide old and new data in the same updated manifest file</li> <li>• Keep old and new data</li> <li>• Remove deprecated data and corresponding lines from the manifest at the end of the deprecation period</li> </ul>	<ul style="list-style-type: none"> <li>• Deprecate the whole entry and create a new one. The deprecated entry will not be searchable in the CDS, but API request will continue to work. ( This prevents new users to find and download deprecated data, allowing at the same time scientific traceability and reproducibility ), Example: <a href="#">Deprecated SST</a><sup>11</sup>. New entry with corrected data: <a href="#">Corrected SST</a><sup>12</sup></li> <li>• Remove the deprecated data after 1 to 3 year deprecation period</li> </ul>

<sup>9</sup> [http://global-shipping.copernicus-climate.eu/shipping\\_metocean\\_variables\\_monthly\\_climatology/v0.0/sfcWind\\_climatology\\_prevaling/01/sfcWind\\_climatology\\_prevaling\\_01\\_v0.0.nc](http://global-shipping.copernicus-climate.eu/shipping_metocean_variables_monthly_climatology/v0.0/sfcWind_climatology_prevaling/01/sfcWind_climatology_prevaling_01_v0.0.nc)

<sup>10</sup> [http://global-shipping.copernicus-climate.eu/shipping\\_metocean\\_variables\\_monthly\\_climatology/v0.0/sfcWind-prevaling\\_climatology/01/sfcWind-prevaling\\_climatology\\_01\\_v0.0.nc](http://global-shipping.copernicus-climate.eu/shipping_metocean_variables_monthly_climatology/v0.0/sfcWind-prevaling_climatology/01/sfcWind-prevaling_climatology_01_v0.0.nc)

<sup>11</sup> <https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-sst-esa-cci?tab=overview>

<sup>12</sup> <https://cds.climate.copernicus.eu/cdsapp#!/dataset/satellite-sea-surface-temperature?tab=overview>

Small amount of data	<ul style="list-style-type: none"> <li>• Create new files with a different version tag for the corrected data</li> <li>• Include those files in the manifest</li> <li>• Manifest should contain both old and new versions</li> <li>• Remove deprecated data and corresponding entries in the manifest at the end of the deprecation period</li> </ul>	<ul style="list-style-type: none"> <li>• Deprecate the version of the data corresponding to the wrong data</li> <li>• Modify overview to explain the deprecation or use a new widget called "Known issues" under the Documentation tab</li> <li>• Modify the download form making clear the deprecated version of the data. (When the CDS will have the tools to do it: the deprecated data will only be accessible through the API).</li> <li>• Remove the deprecated data after 1 to 3 year deprecation period</li> </ul>
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## DOI, citation, licence and acknowledgement

### DOI

Type of data in the CDS Catalogue entry	Provider's role	CDS team
Data <b>without</b> DOI issued before the publication in the CDS Catalogue	<ul style="list-style-type: none"> <li>• No active role</li> </ul>	<ul style="list-style-type: none"> <li>• Provides a DOI to the Catalogue entry (which can be seen as a DOI for the data themselves)</li> </ul> <p>Example:  <a href="https://cds.climate.copernicus.eu/cdsapp#!/dataset/cems-glofas-reforecast?tab=overview">https://cds.climate.copernicus.eu/cdsapp#!/dataset/cems-glofas-reforecast?tab=overview</a></p>
Data <b>with</b> DOIs issued before publication in the CDS Catalogue	<ul style="list-style-type: none"> <li>• Provides a mapping between the data and the previous DOIs</li> </ul>	<ul style="list-style-type: none"> <li>• Create a DOI box allowing for multiple DOIs.</li> <li>• DOI's box will show <ul style="list-style-type: none"> <li>• all the DOIs supplied by the data provider (with a clear association to which data they refer to)</li> <li>• the DOI of the Catalogue entry itself</li> </ul> </li> </ul> <p>Example:  <a href="https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview">https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview</a>  <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-cloud-properties?tab=overview">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-cloud-properties?tab=overview</a></p>

<p>Mixing of data <b>with and without</b> DOIs issued before the publication in the CDS Catalogue</p>	<ul style="list-style-type: none"> <li>Provides a mapping between the data and the DOIs</li> </ul>	<ul style="list-style-type: none"> <li>Create a DOI box allowing for multiple DOIs.</li> <li>DOI's box will show             <ul style="list-style-type: none"> <li>all the DOIs supplied by the data provider (with a clear association to which data they refer to)</li> <li>the DOI of the Catalogue entry itself</li> <li>data with no DOI attribute will be associated with the string: "no specific DOI"</li> </ul> </li> </ul> <p>Example:  <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=overview">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=overview</a></p>
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### Citations

Citations are like file formats, there are a few available, no one better than all the others in all situations.

The "Citation" link in the Catalogue entry **does not say how** people should cite the data, that depends on the journal, site and publisher where the data will be cited.

The "Citation" link in the Catalogue entry **is the Catalogue citing** the contents that it is exposing.

In this way it also shows how to cite the data, but that is just an example of how to cite the data and contents from where **people can extract all information** required to cite the data using other formats in other places.

Type of data in the CDS Catalogue entry	Provider's role	CDS team
<p>Data <b>without</b> citation issued before the publication in the CDS Catalogue</p>	<ul style="list-style-type: none"> <li>Interact with the CDS team on this. Most probably you will be asked for the names of the authors of the data.</li> </ul>	<ul style="list-style-type: none"> <li>Interact with the provider and create a Citation following the Catalogue citation format</li> </ul>

Data <b>with</b> citation issued before publication in the CDS Catalogue	<ul style="list-style-type: none"> <li>Provides those citations to the CDS team</li> </ul>	<ul style="list-style-type: none"> <li>Create a Citation box allowing for multiple citations.</li> <li>Citation's box will show             <ul style="list-style-type: none"> <li>all the Citations supplied by the data provider (with a clear association to which data they refer to)</li> <li>the Citation of the Catalogue entry itself</li> </ul> </li> </ul> <p>Example:  <a href="https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview">https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview</a>  <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-cloud-properties?tab=overview">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-cloud-properties?tab=overview</a></p>
Mixing of data <b>with and without</b> citations issued before the publication in the CDS Catalogue	<ul style="list-style-type: none"> <li>Provides those citations to the CDS team</li> </ul>	<ul style="list-style-type: none"> <li>Create a Citation box allowing for multiple citations.</li> <li>Citation's box will show             <ul style="list-style-type: none"> <li>all the Citations supplied by the data provider (with a clear association to which data they refer to)</li> <li>the Citation of the Catalogue entry itself</li> </ul> </li> </ul> <p>Example:  <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=overview">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=overview</a></p>

## Licence

Provider's role	CDS team
Provide all licences related to the data and a mapping between the licences and the parts of the data they are related to	For datasets with multiple licences use a "Origin" button in the download form making related to the name of the licence Example: <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=form">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=form</a>

## Acknowledgement

Provider's role	CDS team

<p>No active role but may want to have a look at: <a href="#">How to acknowledge and cite a Climate Data Store (CDS) catalogue entry and the data published as part of it</a><sup>13</sup> <a href="https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview">https://cds-test.climate.copernicus.eu/cdsapp#!/dataset/satellite-total-column-water-vapour?tab=overview</a></p>	<p>For datasets with multiple licences use a "Origin" button in the download form making related to the name of the licence Example: <a href="https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=form">https://cds-dev.copernicus-climate.eu/cdsapp#!/dataset/satellite-surface-radiation-budget?tab=form</a></p>
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<sup>13</sup> <https://confluence.ecmwf.int/display/CKB/How+to+acknowledge+and+cite+a+Climate+Data+Store+%28CDS%29+catalogue+entry+and+the+data+published+as+part+of+it>

## 5 Publishing under FAIR principles<sup>14</sup>

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<sup>14</sup> <https://confluence.ecmwf.int/display/PS/Publishing+under+FAIR+principles>



# **Publishing under FAIR principles**

Production Section

Exported on 02/21/2024

## Table of Contents

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# 1 Core interpretation of the FAIR principles

The core principles of the FAIR guidelines have not changed since they were first published in 2016 (\*), and have since been widely adopted by the scientific community as a way to improve the quality and usability of research data. However, the principles are intended to be flexible and adaptable, and different organizations and communities may have different interpretations and implementations of the principles. It's also possible that the principles may be updated or refined over time as the field of data science and technology evolves.

FAIR principles are a set of guidelines for making data more Findable, Accessible, Interoperable, and Reusable:

1. Is the data Findable?  
Can the data be easily discovered by those who need it, using relevant keywords and metadata?
2. Is the data Accessible?  
Can the data be accessed, read, and understood by a machine or a human? Is it available in a widely used, open format?
3. Is the data Interoperable?  
Can the data be easily integrated with other data sources, using common standards and formats?
4. Is the data Reusable?  
Can the data be used and reused for multiple purposes, without significant effort or additional licensing restrictions?

If the data meets all of these criteria, it can be considered "FAIR." It's important to note, however, that the FAIR principles are guidelines rather than strict rules, and different organizations and communities may have different interpretations and implementations of the principles.

(\*) Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* **3**, 160018 (2016). <https://doi.org/10.1038/sdata.2016.18>



Source : Australian National Data Service (ANDS)

Entire FAIR resources graphic is licensed under a Creative Commons Attribution 4.0 International License

## 2 ECMWF data: Extending the FAIR principles to all our data

At the ECMWF, we are committed to making our data as useful and accessible as possible. That's why we aim to publish all our data in accordance with the FAIR principles.

Our data is carefully curated and described using relevant metadata, that provides detailed information about the variables and parameters included in the data. For each variable, we provide a clear definition, specify the units, and include any relevant notes or caveats that users should be aware of, ensuring that the data can be used accurately and reliably.

We use DOIs (Digital Object Identifiers) to provide persistent, stable links to our data, allowing users to easily find and access the data they need. We also use open, standardized formats for our data and provide API (Application Programming Interface) access, allowing users to easily integrate our data with other systems and applications.

And we provide clear licensing information, enabling users to freely reuse and repurpose the data for their own purposes.

By following the FAIR principles, we are helping to make our data more valuable and useful for a wide range of users, from meteorologists and researchers to policymakers and the general public. We are proud to be part of the growing community of organizations that are working to make data more FAIR (\*).

(\*) OGC FAIR Climate Services: [ECMWF is co-chair for the OGC Climate Resilience Domain Working Group](#)<sup>1</sup>

- [Decommissioning plan of ECMWF public datasets service](#)<sup>2</sup>

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<sup>1</sup> <https://www.ogc.org/blog/4460>

<sup>2</sup> <https://confluence.ecmwf.int/display/PS/Decommissioning+plan+of+ECMWF+public+datasets+service>