ECMWF Copernicus Procurement

Invitation to Tender

Copernicus Atmosphere Monitoring Service
Copernicus Climate Change Service

Sustained Operational Provision of Historical Climate Forcings for CMIP and Wider Applications

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 data and information services for a range of environmental and security applications. The Copernicus Climate Change Service[1] (C3S) responds to environmental and societal challenges associated with climate change, by providing access to data and information for monitoring and predicting climate change, to support efforts towards adaptation and mitigation. The Copernicus Atmosphere Monitoring Service (CAMS)[2] provides consistent and quality-controlled data and information related to air pollution and health, solar energy, greenhouse gases, and climate forcing.

The European Centre for Medium-Range Weather Forecasts (ECMWF), as the Entrusted Entity for both C3S and CAMS, invites tenders for the development and implementation of the components required for a transition to a sustained mode of operation in the provision of historical climate forcings data for the Coupled Model Intercomparison Project (CMIP) and other uses. This initiative is driven by requirements from a variety of uses of climate forcings in the Copernicus services and at ECMWF, and the wider science and services community. This is intended to align with the current push towards a sustained mode of operation of the CMIP activity.

2. Background

2.1. The Components of C3S

C3S is designed around a cloud-based Climate Data Store[3] (CDS) that provides users with a single point of access to quality-assured data on climate. The datasets may be physically located at various data centres around the world, or distributed on cloud-based platforms, but this is transparent to users of the CDS. All data are open and free and can be used by anyone for any purpose. In addition to standardisation of data formats and metadata, extensive documentation is provided to aid correct interpretation. The CDS deploys data volume reduction tools for many of its datasets, as well as example workflows and applications to extract information from the data; further tools are currently under development. More complex applications allowing users to 'interrogate' the content of the CDS are also provided (e.g., the C3S Interactive Climate Atlas[4]).

For example, the climate projections datasets available from the CDS (e.g. CMIP6), are provided via an infrastructure based on ESGF, and are not directly stored on CDS or ECMWF storage. As part of this activity a Web Processing Service (WPS) has been developed which enables server-side data operations such as subsetting, averaging, and regridding. The development of new Quality Assurance (QA) and Quality Control (QC) frameworks are also supported by C3S, with the aim that they become widely used in WCRP community, as well as by C3S.

Climate data contained in the CDS are also further tailored to requirements of users from a variety or socio-economic sectors, in the service's Sectoral Information System. The content of the CDS spans timescales from past, present to future, and consist of observations, reanalyses, predictions and climate projections.

The C3S Evaluation and Quality Control function (EQC) performs independent assessments on selected datasets and applications by applying basic quality criteria in a quality assurance step (assessing documentation, dataset completeness, etc) and performing in-depth quality assessments in the context of

[1] https://climate.copernicus.eu
[2] https://atmosphere.copernicus.eu/
[3] https://cds.climate.copernicus.eu
[4] https://atlas.climate.copernicus.eu/atlas

specific user questions. The outcomes of both are used to formulate general fitness for purpose advice, which aims to aid users in determining whether a dataset is fit for their intended use themselves. The information is available directly in the corresponding CDS entry via the dedicated 'quality' tab.

2.2. The Components of CAMS

CAMS is also designed around a cloud-based data store, the Atmosphere Data Store[5] (ADS) that provides users with a single point of access to quality-assured data on atmospheric composition. The datasets may be physically located at various data centres around the world, or distributed on cloud-based platforms, but this is transparent to users of the ADS. All data are open and free and can be used by anyone for any purpose. In addition to standardisation of data formats and metadata, extensive documentation is provided to aid correct interpretation. In particular, CAMS climate forcing datasets available on the ADS provide comprehensive estimates of the Earth's radiative forcing, covering carbon dioxide, methane, ozone, and aerosol interactions (aerosol–radiation and aerosol–cloud) for the 2003-2017 period.

In addition, CAMS provides access to some of its data sets with dedicated tools to visualize the data as well as Python-based data access tools.

The CAMS Evaluation and Quality Control (EQC) framework performs independent assessments on most of the datasets and applications by applying basic quality criteria in a quality assurance step (assessing documentation, dataset completeness, etc) and performing in-depth quality assessments in the context of specific user questions.

2.3. C3S and CAMS Support for Sustained-Mode Earth System Forcings Production

Earth-system forcings are critical inputs for the CMIP activity, but their role has grown far beyond this initial purpose to serve a long-standing requirement from the reanalysis and prediction communities, so that the latest forcings now underpin a broad array of scientific and operational downstream applications across timescales: reanalyses, seasonal and decadal predictions, and emerging climate projection services such as DestinE[6]. To support these additional communities, forcing datasets must be:

- **accurate**;
- **consistent**, through the historical period and at the transition to scenario periods;
- **timely, and regularly extended**, especially to support operational users requiring recent years (e.g., seasonal/decadal prediction, reanalyses);
- **well documented**, including metadata, methodological transparency, version control, and uncertainties;
- **quality-controlled**.

with specific applications prioritising some of the features above over the others.

Currently, forcing dataset production is supported by fragmented, largely research-project-based funding across many institutions, leading to variability in capacity, sustainability, timelines, and quality control. While this arguably offers the best expertise available in the specific areas, it presents challenges in terms of sustainability and consistency across datasets. In October 2024 a workshop held at ECMWF to discuss a "Pathway to Regular and Sustained Delivery of Climate Forcing Datasets" identified a strong community need, including from CMIP itself, for transitioning toward operational-like, sustained production and maintenance of forcings datasets, with appropriate infrastructure, governance, and support. Links to the workshop materials and its outcomes are provided in the additional information.

[5] https://ads.atmosphere.copernicus.eu/#!/home
[6] https://destination-earth.eu/

C3S and CAMS have a close collaboration, which has already supported the assessment and sometimes uptake of relevant CAMS datasets in climate applications. With its focus on atmospheric composition, CAMS provides various data products that are directly relevant for building climate forcing datasets, such as the global reanalysis for atmospheric composition[7] that includes aerosols and reactive gases, global emissions[8], global fire emissions (GFAS)[9], and greenhouse gas concentrations and fluxes, including radiocarbon[10].

3. Service Scope and Contract Summary

C3S and CAMS aim to support the climate forcings community with the transition to a sustained mode of operation. A key element of this goal is to support the needs of non-CMIP users (reanalyses, NWP, etc.) that require near-current historical forcing data, with appropriate long-term support for dataset versions deemed fit for specific purposes.

This Invitation to Tender (ITT) is a first step towards this vision, and will establish an operational infrastructure layer supporting sustained, high-quality, regularly extended climate forcing datasets for the historical to near-present period, while also scoping and producing a longer-term vision for future historical forcings provision. This will ensure that the infrastructure, quality control, documentation, and regular extension of existing forcing datasets become continuous activities and complement the well-established forcings research activities which support CMIP. Therefore, the scope is not scientific method development, but rather:

- standardisation, metadata, and documentation infrastructure;
- a transition to operational workflows, automation, and reproducibility;
- QA/QC frameworks (pre-publication, and scoping of post-publication options);
- pilot forcings dataset extensions based on existing scientific methods, and running newly developed and endorsed methods to create new forcings dataset versions where appropriate;
- stakeholder and governance structures;
- cross-dataset, and cross-activity coordination (e.g. with research activities producing updates to forcings).

Tenderers are invited to propose additional aims and areas of work in line with the broader scope of this tender.

In the context of this ITT, we distinguish between extensions and updates as follows. Forcings dataset extensions add new, more recent years to an existing dataset using the same underlying methods and inputs, without changing any previously published values; the main objective is to support continuity for operational and near-real-time applications. Forcings dataset updates, by contrast, revise the full historical time series to incorporate new scientific understanding, changes to observations or methodology; these are expected to be less frequent, as they can be disruptive for some use cases.

4. Technical Requirements

4.1. Areas of Work

For this first phase of activity towards sustained-mode historical forcings dataset production, the following areas of work should be covered, with bidders expected to refine this considering the constraints of the available resource.

[7] https://ads.atmosphere.copernicus.eu/datasets/cams-global-reanalysis-eac4?tab=overview
[8] https://ads.atmosphere.copernicus.eu/datasets/cams-global-emission-inventories?tab=overview
[9] https://ads.atmosphere.copernicus.eu/datasets/cams-global-fire-emissions-gfas?tab=overview
[10] e.g., https://ads.atmosphere.copernicus.eu/datasets/cams-global-greenhouse-gas-inversion?tab=overview

User requirements: The activity should start with an analysis of the user community and associated requirements, as well as of challenges and lessons learnt from forcings provision for the current and past CMIP phases. This will inform the final priorities and plans in the contract, as well as feed into other areas of the contract, such as governance.

Governance. The contract will need to tackle the issues of governance, considering user requirements, in dialogue with the relevant bodies and panels (ESMO, CMIP-Panel, etc.). This activity should include:

- Translating user requirements into a strategy for extensions and updates.
- Decisions on datasets which will become part of this service and receive long-term support.
- Considering future governance, including engagement with the CMIP Panel, a potential Forcings Panel under ESMO, and other relevant communities.

Common infrastructure. This should cover metadata, standardisation, publication, and documentation of forcings datasets, in line with relevant community standards and infrastructure, such as input4MIPS[11] protocols and ESGF. An approach to versioning, archiving, and publication - common across forcings - should be established, enabling the publication of any extensions produced in the contract, as well as updates produced by this contract or other activities (according to the governance approach agreed).

QA/QC framework. The main aim of this area of work should be the delivery of pre-publication QC framework with examples of use (such as catching issues uncovered in CMIP6/CMIP7 forcings). Ideally, this would reuse the WCRP/ESGF QC and QA frameworks[12] which C3S has supported the development of for its climate projections activities. Further work could include the design of a community-acceptable model for independent post-publication assessment, which would support determining fitness for purpose for different use cases, feeding into decisions on which versions of a forcings dataset receive long term support and regular extensions.

Production Pilots. Tenderers should propose a (sub)set of CMIP7 historical forcing datasets for extension pilots (up to present, then at regular - e.g., annual - intervals), chosen considering (but not limited by):

- existing operational maturity (some datasets already extend annually);
- readiness of observational inputs;
- sustained commitment of producers;
- relevance to the Copernicus services C3S and CAMS.

Here, relevance to the Copernicus Services includes both importance to the climate signal and the variability and predictability of the forcing. For example, volcanic forcing, biomass burning, and to some extent solar variability, are hard to predict, while, on the other hand, major GHG projections are relatively accurate but, given their importance, even small errors can accumulate to drive a substantial impact.

Each pilot extension should be based on existing scientific methods, produced via the implementation of reproducible workflows aligned with the metadata/QC standards formulated in the contract and provide complete end-to-end documentation. Running new methods to produce new dataset versions (updates) could also be in scope where appropriate or supporting the publication of such updates which have been produced elsewhere (such as by research activities running in parallel).

Sustained-mode roadmap. The contract should work to propose a model for sustained, timely forcing production and provide recommendations for reproducible, automated workflows. This should include an exploration of mechanisms to reduce the dependence on key individuals and improve institutional resilience, as well as mapping upstream dependence on input datasets.

[11] https://input4mips-cvs.readthedocs.io/en/latest/

[12] https://esgf.github.io/cc-plugin-wcrp/, https://github.com/ESGF/esgf-qa

Additionally, the merits and limitations of existing CAMS products for the elaboration of forcings variables should be investigated, and recommendations to widen the use of these products should be provided.

4.2. Deliverables

The following is a non-exhaustive, indicative list of technical deliverables (or collections of deliverables) which could be proposed, related to the areas of work introduced above.

- Enhanced metadata and standardisation framework, and a versioning, archiving and publication strategy.
- Operational QA/QC framework and proof-of-concept tests.
- Pilot forcings extensions (up to present, then at regular - e.g., annual - intervals), and updates where appropriate, with full documentation.
- User-requirements report and governance framework proposal.
- Future sustained-mode recommendations and roadmap.
- Report on potential of CAMS data products and recommendations for future CAMS service development to address relevant climate forcing needs.

Outcomes which include software should take into account the ECMWF software strategy where relevant, including the potential use of Earthkit[13] when applicable.

5. General Requirements

5.1. Implementation Schedule

ECMWF intends to award a single Framework Agreement for a period of 27 months, which shall be implemented via a single Service Contract expected to commence in Quarter 4 2026. Tenderers shall provide a detailed implementation plan (including relevant Pert and Gantt charts) in the tender response. The proposed time plan and schedule shall address the main tasks, inputs, outputs, intermediate review steps, milestones, deliverables and dates.

5.2. Work Packages

The work proposed by the Tenderer should be organised in work packages aligned to the main objectives of the proposal. The design of the work package structure is left to the discretion of the Tenderer, with one notable exception: the work package on contract management, the content of which is prescribed by ECMWF, as described below.

5.2.1. Work Package (WP0): Management and Coordination

This work package includes overall responsibility for day-to-day service management and coordination. The effort allocated to contract management and coordination (WP0) is expected to be commensurate with the extent of the management and coordination requirements of the contract.

The following contract management aspects shall be considered and as needed briefly described in the proposal:

Meetings (classified as tasks and listed in a separate table as part of the proposal):

- Kick-off meeting (via teleconference)
- Quarterly progress review meetings (via teleconference) to discuss the service provision, evolution and other topics, prepare corresponding summary minutes of these meetings and maintain a list of agreed actions and their status.

[13] https://earthkit.ecmwf.int/

- ECMWF organises annual C3S and CAMS General Assemblies. The Successful Tenderer is expected to attend these meetings with maximum 2 team members and contribute to discussions related to the topic of this ITT.
- Tenderers can propose additional contract internal meetings (e.g. kick-off meeting, regular meetings to monitor contract performance) as part of their response. Most such meetings should be held by remote participation.

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 Successful Tenderer (in terms of content, use of ECMWF reporting templates for deliverables and reports (Microsoft Word), format, deliverable numbering and naming, spelling and typing errors, etc); all reports and documents shall be provided in English. Unless otherwise specified the specific contract Deliverables shall be made available to ECMWF in electronic editable format (e.g. Microsoft Word/Excel), via the relevant deliverable repository system.

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 cover, 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 key performance indicators can be provided to the European Commission (cf. Clause 2.4.6 of the Framework Agreement).

Set of Key Performance Indicators (KPIs) suitable for monitoring contract and service performance. As part of the Tender, Tenderers shall specify a proposed set of KPIs appropriate for the service. The KPIs shall be designed to quantify various aspects of quality of service against the requirements described in this document. The proposed KPIs shall be SMART (specific, measurable, actionable, realistic and time bound).. The Successful Tenderer shall report to ECMWF on these KPIs during the the progress review meetings, as well as part of the Quarterly and Annual Implementation Reports. The proposed set of KPIs may be requested to be updated regularly during contract implementation, upon review with ECMWF. The template to be used by the Tenderers to propose and describe the KPIs is included in Volume IIIB of the ITT "Template for Tenderers".

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 must include both preventive and corrective measures. The risk register shall be updated regularly by the Successful Tenderer, and any update (related to new risks, or changes to likelihood or impact) must 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 allocation of work and 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 Framework Agreement, and in particular Clause 2.9 on Sub-contracting, has been flowed down to all their subcontractors.

Management of personal data and how this meets the requirements of Clause 2.8 on Personal Data Protection and Annex 6 of the Framework Agreement.

List of minimum deliverables and milestones required as part of WP0, covering the **contractual reporting and planning obligations** towards ECMWF in line with the Terms and Conditions of the Framework Agreement (cf. Clause 2.3 and Annex 5):

WP0 Deliverables		
Deliverable #	**Title**	**Due**
D0.1.1-YYYY.QX	Quarterly Implementation Report QQ YYYY (QQ YYYY being the previous quarter)	Annually on 15/04, 15/07 and 15/10
D0.1.2-YYYY	Annual Implementation Report Part 1 YYYY (YYYY being the Year n-1) This includes: 1) Quarterly implementation Report for the previous quarter Q4 YYYY 2) Preliminary financial form YYYY (YYYY being the Year n-1)	Annually on 15/01
D0.1.3-YYYY	Annual Implementation Report Part 2 YYYY (YYYY being the Year n-1)	Annually on 28/02
D0.1.4	Final implementation report	end of the contract
D0.2.1-YYYY	Annual Implementation Plan YYYY (YYYY being the Year n+1)	Annually on 30/09
D0.3.1-YYYY	Copy of prime contractor's general financial statements and audit report YYYY (YYYY being the Year n-1)	Annually (no-cost associated)

Table 1: WP0 Deliverables

WP0 Milestones			
Milestone #	**Title**	**Means of verification**	**Due**
M0.1.1	Kick-off meeting	Minutes of meeting	By M1
M0.1.2.QX	Progress review meetings with ECMWF	Minutes of meeting	Quarterly
M0.1.3.YYYY	Participation to the C3S General Assembly	Technical note confirming attendance	Annually
M0.1.4.YYYY	Participation to the CAMS General Assembly	Technical note confirming attendance	Annually

Table 2: WP0 Milestones

5.3. Deliverables and Milestones

Deliverables should be consistent with the technical requirements specified in this document. A deliverable is a substantial, tangible or intangible good or service produced in response to the specific objectives of the contract. Deliverables are subject to acceptance by ECMWF key personnel (i.e. Technical Officers, Contract Management Officers). All deliverables shall be duly quality controlled before submission to ECMWF (cf. quality assurance and control requirements under section 5.3 of this document).

Each Deliverable shall have an associated resource allocation in person-months and price. The total of these allocated resources shall amount to the requested budget associated with payroll.

Milestones should be designed as markers of demonstrable progress in service development and/or quality of service delivery, as applicable. They should not duplicate deliverables. No resources (effort in person-months) or price shall be allocated to milestones.

Tenderers shall complete the relevant table in Volume IIIA as part of their Tender, which includes the details of deliverables and milestones for all work packages and the schedules for each work package. Volume IIIA will be used by Tenderers to describe the complete list of deliverables, milestones, and schedules for each work package, including proposed due dates for each deliverable and milestone, which shall be realistic and achievable. The deliverables and milestones should be consistent with the technical requirements specified in Section 4 of this document. The submission/completion of the last deliverables and/or milestones shall be scheduled **not later than 30 days before the expected contract end date.**

All deliverables and milestones shall be numbered as per the following format DX.Y.Z (for deliverables) and MX.Y.Z (for milestones), where X is the WP number, Y is the task number and Z is the deliverable or milestone number under this task. Deliverables delivered annually should be numbered DX.Y.Z-yyyy, where yyyy is the year the deliverable refers to (e.g. DX.Y.Z-2026). Deliverables delivered quarterly should be numbered DX.Y.Z-yyyyQx, where yyyyQx is the quarter of the year the deliverable refers to (e.g. DX.Y.Z-2026Q1, DX.Y.Z-

2026Q2). The same numbering format shall be applied for the milestones. Continuous deliverables at higher frequency can be labelled in the same way as quarterly deliverables.

ECMWF will provide the templates for reporting and planning deliverables under WP0 (cf. section 5.3 of this document) at the beginning of the contract. Reporting documents should be short and factual, following the guidance which will be provided by ECMWF.

5.4. Data and IPR

It is a condition of EU funding for Copernicus that ownership of any datasets/software developed with Copernicus funding passes from the suppliers to the European Union via ECMWF. Ownership will pass from the date of creation of the datasets/software. Suppliers will be granted a non-exclusive license to use the datasets/software which they have provided to Copernicus for any purpose.

All software and products used by the Successful Tenderer to produce the Copernicus datasets/software will remain the property of the Successful Tenderer, except for those components which are acquired or created specifically for Copernicus purposes, with Copernicus funding, and which are separable and useable in isolation from the rest of the Successful Tenderer's production system. The identity and ownership of such exceptional components will be passed to the European Union annually. The Successful Tenderer will be granted a non-exclusive license to use them for any purpose.

5.5. Payment Plan

Tenderers can propose a Payment Plan in ITT Volume IIIA "Pricing and deliverables" (cf. Excel spreadsheet "Payment Plan preparation"):

- The Payment Milestones should relate to the deliverables and milestones delivered during the corresponding Payment Milestone period (e.g. the payment milestone covering the period January-June would only relate to the deliverables and milestones whose due dates fall within the same period).
- The frequency of Progress Review Meetings might be adapted to synchronise with the anticipated date of completion of each Payment Milestone.
- In case of request for a payment at contract signature, please note that this should be duly substantiated (e.g. in terms of necessary investment prior to implementation or during first weeks/months for ensuring the initial set up of the project). It is necessary to relate this payment to activities subject to other Payment Milestones.

5.6. Ad hoc Support

Whilst communications and user engagement, training and support activities are not part of the scope of this ITT, the Tenderer shall make provisions for possible requirements for technical and scientific expertise in ad hoc support of these activities. The Tenderer shall specify in the Tender the experts available to provide this support. If applicable, a small budget may be proposed to cover such resources.

6. 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 particular 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 Tenderer's response.

6.1. Page limits

As a guideline, it is expected that individual sections of the Tenderer's 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.

Section	*Page Limit*
Executive Summary	2
Track Record	2 (for general) and 2 (per entity)
Quality of resources to be Deployed	2 (excluding Table 1 in Volume IIIB and CVs with a maximum length of 2 pages each)
Technical Solution Proposed	30 (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)
Management and Implementation	10 (excluding Table 4 and Table 5 in Volume IIIB) + 2 per each Work package description (Table 3 in Volume IIIB)
Pricing Table	No limitation

Table 3: Page Limits

6.2. 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.

6.2.1. Executive summary

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

6.2.2. Track record

Tenderers must demonstrate for themselves 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.

6.2.3. Resources to be deployed

Tenderers shall propose a team that meets the following minimum requirements:

- A senior team member (Principal Investigator) with more than 5 years of experience in managing activities related to this ITT. This role will ensure the strategic direction of the design and implementation.
- A senior team member (Service Manager) with more than 5 years of experience in performing activities related to the various aspects of this ITT. This role will oversee the technical developments and implementation of the elements of this contract.
- A team member with suitable experience in contract management, to ensure the coordination of the administrative elements related to the running of this contract (including management of subcontractors' contributions).

These team members should be involved in the activities of this ITT at a minimum level of 10% of their total working time.

- Team members with the appropriate competencies to deliver the components of the contract. The size of the team is at the discretion of the Tenderer, but the total capacity must be sufficient to deliver the content within time and budget.

A brief description of the role each of the key team members will play is required.

6.2.4. Technical solution proposed

Tenderers are expected to provide a short background to the proposed technical solution to demonstrate understanding of the solution proposed, as well as an exhaustive and detailed description of the proposed technical solution and its organisation into work packages.

6.2.5. Management and Implementation

As part of the general project management description, and in addition to the guidance provided in Volume IIIB, Tenderers shall consider the elements described in section 5.2.1 above.

7. Additional Information

7.1. Outcomes from the 2024 WCRP CMIP Forcings Workshop

Responses to this tender should take into account the discussions which took place at the October 2024 climate forcings workshop at ECMWF in Reading (slides available here https://wcrp-cmip.org/event/forcings-workshop/), as well as the published outcomes from the meeting (Nature comment https://www.nature.com/articles/d41586-025-02642-3, BAMS report https://doi.org/10.1175/BAMS-D-25-0119.1).

7.2. Acronyms

ADS	Atmosphere Data Store
C3S	Copernicus Climate Change Service
CAMS	Copernicus Atmosphere Monitoring Service
CDS	Climate Data Store
CMIP	Coupled Model Intercomparison Project
CVs	Curriculum Vitae
DestinE	Destination Earth initiative
ECMWF	European Centre for Medium-Range Weather Forecasts
EQC	Evaluation and Quality Control
ESGF	Earth System Grid Federation
ESMO	Earth System Modelling and Observations
EU	European Union
GFAS	Global Fire Assimilation System
GHG	Greenhouse gas
input4MIPs	input datasets for Model Intercomparison Projects
IPR	Intellectual Property Rights
ITT	Invitation to Tender
KPI	Key performance indicator
NWP	Numerical weather prediction
QA	Quality Assurance
QC	Quality Control
WCRP	World Climate Research Programme
WP	Work Package
WPS	Web Processing Service