ECMWF
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Procurement

Invitation to Tender

Copernicus Climate Change Service

Volume II

Provision of additional world-wide CORDEX simulations for the C3S Climate Data Store

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1   Introduction

ECMWF as the Entrusted Entity for the Copernicus Climate Change Service (C3S) invites Tenders for the implementation of additional CORDEX data in the C3S Climate Data Store (CDS). At present only data from EURO-CORDEX and MED-CORDEX domains are being incorporated into the CDS, *cf*. https://climate.copernicus.eu/climate-projections. However, requirements from a variety of users have highlighted the need to include data for other regions of the world as well. This ITT invites bids to identify currently available data for additional CORDEX regions, with the objective for these datasets to be included in the CDS. The work will connect with and expand on the activities performed in various C3S Climate Projections contracts, particularly C3S_34a Lot1 and C3S_34b Lot1, details of which are given in Section 2. The scope of activities and detailed requirements for this Tender are described in Section 3 of this document. Section 4 lists contractual requirements and Section 5 the required format of the Tender document.

2   Background

The purpose of this section is to describe the context of this Tender, including the relevant outcomes of current activities inside C3S related to this topic.

2.1   The C3S Climate Data Store and Toolbox

The backbone of the C3S services is a cloud-based Climate Data Store (CDS) that provides users with a single point of access to quality-assured data on climate (see at https://cds.climate.copernicus.eu). The datasets may be physically located at various data centres around the world, or they may be distributed in the data cloud, but this is transparent to users of the CDS. All data are open and free and can be used by anyone for any purpose.

To facilitate the transformation of data into tailored information products, the CDS features a toolbox (CDS Toolbox) for creating workflows and applications on-line. The CDS Toolbox provides users with the ability to create interactive web applications tailored to their needs using C3S datasets. The Toolbox contains a variety of software tools for combining CDS datasets and performing basic operations on the data, including functions for interpolation and re-gridding, simple statistical calculations, visualisation, etc.

2.2   Related C3S activities

Several contracts have been awarded to prepare global and regional climate projection data for the CDS. These are as follows:

- C3S_34a Global climate projections: data access, product generation and impact of front-line development - Lot1: Provision of support to one Earth System Grid Federation (ESGF) node in Europe.
- C3S_34b Regional climate projections - Lot1: Access to CORDEX simulations for the European domain and Lot2: Definition and generation of a '3-D matrix' of RCM projections.

C3S_34a Lot1 (STFC) provides quality controlled global climate projection data for the CDS at the Earth System Grid Federation (ESGF) nodes together with necessary compute services. The contract is to be completed by December 2019. The resulting data is coherent and quality assured and can be directly used for the CDS. This contract sets up standards for accessing the data in operational mode (in terms of reliable and robust access and climate data quality) from the ESGF nodes.

This contract is particularly relevant to the present ITT, as the details of the operational organisation of the three ESGF nodes for CDS should be understood by the successful Tenderer.

C3S_34b Lot1 (IPSL) provides CORDEX regional climate projection data for the CDS at the ESGF nodes. The contract is to be completed by the end of April 2021. The resulting data is coherent and quality assured and can be directly used for the CDS. In this contract, EURO-CORDEX and MED-CORDEX domains are considered.

The present ITT can be considered as an addition to the C3S_34b Lot1 contract, therefore close cooperation between the successful Tenderer and this contract is required. More precisely, it is expected that the successful Tenderer would perform similar quality control and ensure similar operational availability of the additional CORDEX data for the CDS as those implemented for European regions by C3S_34b Lot1.

C3S_34b Lot2 (SMHI) provides an enhanced set of regional climate simulations designed to better quantify uncertainties in CORDEX simulations for the benefit of climate services. Also, this contract is to be completed by April 2021. Additional RCM runs will be fed back to 34b Lot1 and will be made available to the users of the CDS.

The present ITT requests that similar standards are achieved for the equivalent data covering the other regions of the world.

More information on the scope of C3S_34a and C3S_34b contracts can be found at respectively:

- https://climate.copernicus.eu/c3s34a-global-climate-projections-data-access-product-generation-and-impact-front-line-developments
- https://climate.copernicus.eu/c3s34b-regional-climate-projections-extended-deadline

Relevant deliverables essential for the execution of C3S_34d shall be provided by ECMWF to the successful Tenderer at the start of the contract.

3   Technical requirements

ECMWF intends to award a contract for making available regional climate simulations for non-European regions of the world in the CDS. This activity will be focused on collecting data already available in the community (CORDEX regional climate simulations), preparing it and making it available through the CDS. It does not include the production of new, supplementary simulations. The criteria for selection and inclusion into the CDS catalogue are aligned to the needs of climate service developers - the most important elements being scientific and technical quality, but also consistency and completeness (in the sense of providing a 'critical mass' of simulations for a robust assessment of changes in the climate of a region). Ideally, tools for assessment of the fitness for purpose would be made available alongside the data. A minimum requirement is the alignment of the work with the principles and objectives of the Climate Atlas in preparation for IPCC's AR6. With the above principles in mind, this work is expected to prioritise activities which achieve maximum benefit, i.e. data access, to the users of the CDS.

To ensure the most up-to-date view on the matter, the <u>exploration of available CORDEX data meeting the requirements</u> shall be part of the tendered work. The likely sequencing of activities in this work is:

- Identify CORDEX simulations already available at the ESGF (especially at the European ESGF) nodes;
- Ensure that the identified additional simulations are available at the three (STFC, IPSL and DKRZ) European ESGF nodes already 'connected' to C3S' CDS;
- Provide quality control equivalent to that applied to the European CORDEX regions (see contract C3S_34b Lot1) in the context of the CDS;

- Identify simulations with a similar experimental design covering all CORDEX regions (e.g. CORDEX-CORE);
- Ensure that the additional new simulations are available at the three (STFC, IPSL and DKRZ) European ESGF nodes;
- Provide quality control and make them available in the CDS, as above;
- Create recommendations and documentation for users on how the additional CORDEX data can be used in conjunction with the already existing datasets.

The steps in the sequence above constitute deliverables of this contract. Creating some quick assessment methods and/or tools for the new datasets and publishing them through the C3S website is also desirable. A key requirement is the creation of guidance and documentation for users, to indicate the robustness of the dataset offered from the perspective of its applicability to climate services at regional scales.

4 Other Tender requirements

4.1 Schedule

ECMWF intends to award a single framework contract running from September 2019 until December 2020. A detailed time plan and schedule (Pert and Gantt charts) shall be included in the Tender response.

The proposed time plan and schedule shall address the main tasks, inputs, outputs, intermediate review steps, milestones, deliverables and dates. The Tenderer is encouraged to include milestones in the implementation plan where, based on the exploration work and upon discussion with the C3S teams, decisions can be made on the further way forward. This may lead to optional work packages, which shall already be anticipated in the tender and may be fine-tuned during the negotiation phase with the successful Tenderer.

4.2 Reporting

Regular (monthly) progress meetings will be held with ECMWF during the contract to assess contract status, risks and actions. The successful Tenderer will also have to report on a quarterly and annual basis and provide contributions to C3S reporting for past and future activities, to an agreed schedule (for more details please see Volume V Framework Agreement for this ITT).

4.3 Meetings

A kick-off meeting shall be organised which includes a timeslot for discussions with representatives of the C3S_34a Lot1 and C3S_34b Lot1 contracts since it is essential to ensure synergy between these contracts. Afterwards regular coordination is expected with those contracts, most likely by remote-participation meetings. ECMWF organises annually C3S General Assembly meetings which all C3S service providers, including the successful Tenderer of this ITT, are expected to attend.

An intermediate contract review is to be organised at ECMWF (Reading, U.K.), where the status, progress and plans would be discussed with the wider C3S management.

The cost of the meetings shall be covered by the successful Tenderer and should be included in the price.

5 Tender format

General guidelines for the Tender are described in Volume IIIB. Specific requirements to prepare the proposal for this particular Tender are described in the next sub-sections.

5.1 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 limits 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 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 details.

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.

5.2.3 Quality of resources to be deployed

The Tenderer shall propose a team having the skills required for providing operational services that meet the technical requirements set out in Section 3. The team shall include a Service Manager with experience in large multi-partnered projects. The Tenderer shall describe the experience of the Service Manager and of the technical project team in performing activities related to the various aspects of this Tender.

5.2.4 Technical solution proposed

The Tenderer shall give a short background to the proposed solution to demonstrate understanding of the requirements 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 on the requirements.

5.2.5 Management and implementation

The Tenderer shall provide a detailed implementation plan of proposed activities for the duration of the framework agreement. Deliverables should be consistent with the technical requirements specified in Section 3. 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 may be requested, depending on needs for service evolution, or changed user requirements, as agreed between the European Commission and ECMWF.

Contract management, quality control and risk management shall be specified in the Tender. If relevant, a list of sub-contractors describing their contribution and key personnel, legal name and address shall be provided. The tenderer shall describe how the Framework Agreement (in particular Clause 2.9) has flowed down to all their sub-contractors and how responsibilities and roles are distributed.

The table below provides the template to be used by the contractor to describe the minimum list of contractual deliverables to be submitted in line with the Terms and Conditions (cf. Volume V). All deliverables shall be numbered as indicated. All document deliverables shall be periodically updated and versioned as described in the table. Tenderers shall provide preliminary versions of the completed tables as part of their bid.

Deliverables for this work package shall include at least the following reports:

Contract management deliverables (not limited):				
#	Responsible	Nature	Title	Due
D0.y.z-YYYYQQ	Tenderer	Report	Quarterly Implementation Report QQ YYYY *QQ YYYY being the previous quarter*	Quarterly on 15/01, 15/04, 15/07 and 15/10
D0.y.z-YYYY	Tenderer	Report	Annual Implementation Report YYYY *YYYY being the Year n-1*	Annually on 28/02
D0.y.z	Tenderer	Report	Final report	60 days after end of contract
D0.y.z-YYYY	Tenderer	Other	Preliminary financial information YYYY *YYYY being the Year n-1*	Annually on 15/01
D0.y.z-YYYY	Tenderer	Report	Draft Implementation plan YYYY *YYYY being the Year n+1*	Annually on 28/02
D0.y.z-YYYY	Tenderer	Report	Finalised Implementation plan YYYY *YYYY being the Year n+1*	Annually on 31/10
D0.y.z-YYYY	Tenderer	Other	Copy of prime contractor's general financial statements and audit report YYYY *YYYY being the Year n-1*	Annually
D0.y.z-YYYY	Tenderer	Other	Letter from auditor specific to C3S contract YYYY *YYYY being the Year n-1*	Annually

5.2.6   Price and payment specifications

The tendered price shall not exceed the price as indicated in Contract Notice and shall include the personnel costs, travel expenses and other costs for all work, tasks and deliverables proposed in your response, including optional items.

Given the exploratory character of the contract, payments shall be conducted on a cost-reimbursement basis. Payment milestones shall be aligned with the implementation milestones as proposed in the implementation plan.