

***Notice of Expression of Interest for
“ENGINEERING SERVICE to SUPPORT CIRA-IWT CALIBRATION for SLD
CONDITIONS”***

1. Introduction

CIRA is planning a calibration effort of the Icing Wind Tunnel (CIRA-IWT) for freezing drizzle (FZDZ) cloud conditions with potential extension to freezing rain (FZRA) clouds. Development activities are ongoing to define an additional spray nozzle setup able to reproduce FZDZ clouds features, in agreement with CFR FAR Part 25 Appendix O requirements.

To this end, with the aim of calibration methodology harmonization approach, CIRA is funding the update of the OAP260X probe with novel faster electronic technologies, while maintaining the performance of the old probe configuration to cover the gap poorly represented by legacy instruments used in CIRA-IWT, especially in the high-speed configuration.

The activities requested herewith are focused on the software algorithms to integrate with this updated OAP260X probe's electronic technology. The software must provide accurate data analysis, as per the most up-to-date community research standards, where correction algorithms to address the main SLD cloud particle measurement issues must be applied. Furthermore, the work must provide an analysis of upgraded and standard OAP260X probe calibration data, supplied by CIRA from a spinning glass disc calibration with dense coverage of the sample area with small steps in x and y directions. Finally, an OAP260X validation test campaign will be performed in an icing wind tunnel for probe and software validation, but also to compare upgraded and standard technologies. At the end of these OAP260X software and calibration activities, the work will include support to the CIRA researchers in the calibration of CIRA-IWT for SLD cloud conditions, where LWC and PSD data set must be accurately collected by the team for calibration purpose. This support will include participation in the design and execution of the calibration effort, and in analysis of the OAP260X PSD data and the hot-wire LWC data. Efforts must include an effort to estimate uncertainty of MVD and LWC, to support the accurate definition of CIRA-IWT FZDZ cloud envelope

With this notice, economic operators, in possession of the necessary requirements, are asked to express their interest in being invited to the negotiated procedure without prior publication of a call for tenders, launched pursuant to Article 36 of Legislative Decree 50 / 2016 and in compliance with the principles indicated therein and finalized to the engineering service to support CIRA-IWT calibration for SLD conditions.

This notice is therefore intended exclusively for the receipt of expressions of interest aimed at guaranteeing the provisions of paragraph 6 of the aforementioned article.

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2. Scope of the Work

The object of procurement which details are described in the CIRA statement of work (CIRA-DTS-20-2242), includes the following main working activities:

1. Implement the SODA software for the updated OAP260X, and provide PSD results for OAP260X testing and calibration
2. Support the execution of CIRA-IWT calibration under Appendix O cloud conditions;
3. Assess and validate the SLD-FZDZ cloud envelope in CIRA-IWT through international instrumentation comparison experiment;

3. Description of the requested supply

The request for procurement is described in CIRA technical specification n. CIRA-DTS-20-2242 (see in the annex):

Engineering service to support CIRA-IWT calibration for SLD conditions

4. Subjects admitted to submit proposals

The Candidate for which skill and experience are in accordance to sustain the requested activities described in CIRA-DTS-20-2242, jointly to the expression of interest must provide:

- Documented expert knowledge and understanding of the issues related to accuracy of spectrometers for cloud microphysics parameter characterization, mainly as related to SLD clouds, natural and as generated in icing wind tunnels.
- Expert understanding of complex image analysis software for 2D spectrometer PSD analysis.
- Documented expert knowledge and understanding of the issues related to accuracy of bulk cloud TWC/LWC measurements devices (e.g., hot-wire techniques), mainly as related to artificial SLD clouds, natural and as generated in icing wind tunnels.
- Demonstrated experience in analyzing PSD and bulk LWC data from wind tunnel investigations.
- Documented experience in designing, organizing, and conducting wind tunnel investigations of cloud probe performance.
- Wide knowledge on atmospheric and cloud conditions, demonstrated in particular by past activities in flight campaigns for collecting general cloud data, and particularly for Appendix D/O conditions.
- Documented experience and success in publication of experimental results in peer-reviewed journals.
- Demonstrated skills in computer programming as required for data manipulation and analysis.

5. Participation requirements

At the time of submitting the expression of interest, the applicant, under penalty of exclusion,
MUST

Declare to be in full and free exercise of their rights, not being in a state of bankruptcy, arrangement with creditors, controlled or extraordinary administration, compulsory administrative or voluntary liquidation;

Declare to be in compliance with current tax, welfare and social security regulations;

Demonstrate possession of the technical and organizational skills necessary for the activities execution indicated in the Technical Specification CIRA-DTS-20-2242 *Engineering service to support CIRA-IWT calibration for SLD conditions*.

6. Methods for submitting proposals

The expression of interest in the initiative, drawn up on plain paper and in English, according to the model referred to in Annex 1, must be signed by the legal representative or his / her delegate with power of attorney (to be attached), accompanied by a front-back photocopy of a valid identity document. The following documentation must be attached to the declaration of interest:

- Declaration of registration in the Register of Companies, if applicable, indicating the type of activity exercised duly completed, stamped and signed with an attached photocopy of the declarant's identity documents;
- Deed of incorporation (for entities);
- Confidentiality Agreement (Attachment 2) duly completed and signed

The required documentation relating to the " ENGINEERING SERVICE to SUPPORT CIRA-IWT CALIBRATION for SLD CONDITIONS ", must be submitted to CIRA, by email to ufficioacquisticira@legalmail.it by _December 23rd, 2020 at one o' clock p.m. (under penalty of exclusion. Applications received after the deadline will not be considered.

7. Procedure and methods of implementation

The supply assignment procedure will be initiated pursuant to Article 36 of Legislative Decree 50/2016 paragraph 2 letter b) and the criterion of the most economically advantageous offer will be contemplated.

CIRA will carry out the procedure even in the presence of only one suitable participant.

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The time required for the specialized technical support to support IWT SLD calibration to the Client must not exceed 365 calendar days calculated from the date of the kick-off (T0). The auction base value will be US\$ 150,161.00 plus VAT.

The following Milestones of technical advancement are planned in accordance to the Technical Specification CIRA-DTS-20-2242:

- MWP 1.1 Implement SODA for the CIRA upgraded OAP260X – Due date: 3 months after CIRA delivery of first test dataset.
- MWP 1.2 Provide analysis of OAP260X spinning disk calibration data to characterize sizing accuracy on standard and upgraded probe. – Due date: 3 months after CIRA delivery of dataset.
- MWP 1.3.1 Support the analysis of hot wire datasets (AIWT#1) at the NRC tunnel.- Due date: 1 month after CIRA delivery of hot-wire datasets and supporting NRC dataset.
- MWP 1.3.2 Support for collection and analysis of OAP260X dataset (AIWT#2 or alternatively the NASA IRT) at the NRC tunnel.- Due date: 2 months after CIRA delivery of hot-wire dataset and supporting NRC dataset.
- MWP 2.1 Wind Tunnel Calibration Definition.- Due date: On delivery of wind tunnel draft plan and schedule, no later than two months before CIRA calibration start.
- MWP 2.2 On-site support for CIRA wind tunnel calibrations.- Due date: Detailed notes per run required for post-calibration data analysis at the end of CIRA wind tunnel calibration.
- MWP 2.3 CIRA Calibration Data Reduction and Analysis.- Due date: 2 months after CIRA delivery of datasets.
- MWP 3.1 Provide weekly telephone support for planning CIRA SLD Instrumentation campaign effort.- Due date: One year after contract star.
- MWP 3.2 Provide draft test matrix.- Due date: One month after CIRA calibration.
- MWP 3.3 Provide day-by-day instrument test plan.- Due date: 6 months before CIRA SLD Instrumentation testing campaign

The person in charge of the procedure for the assignment phase is Dr. Carlo Russo.

For any problem, you can write or send documentation to ufficioacquisticira@legalmail.it, but always within the terms under penalty of exclusion indicated in this notice.

Capua, 9 Dicembre 2020

CIRA ScpA