FAQs - Advanced Arctic Radar Remote Sensing

Last updated March 21, 2025

The Advanced Arctic Radar Remote Sensing project has an expiration date of March 31, 2025, but the CRREL CSO has an expiration date of September 30, 2025. Is this a discrepancy? Which date is correct?'

This project is considered an Individual Program Requirement (IPR) supported by the ERDC Cold Regions Research and Engineering Laboratory (CRREL) Commercial Solutions Opening. Posted under the authority of the CRREL CSO, the IPR will describe the desired end result, offer additional context for the needs that seek solutions, provide a funding profile, and stipulate a specific due date for solutions. Please use the submission deadline date for the Advanced Radar Remote Sensing Methods project as the close date.

I noticed that the current project announcement is for Phase II. Could you clarify whether there was a Phase I competition previously? Additionally, is prior participation in Phase I a prerequisite for submitting a proposal for Phase II?

Phase I is regarded as the submission and down selection phase for this project opportunity.

In measuring the terrain properties, the CSO leaves the impression that only terrestrial and airborne solutions are being considered. Is this an accurate conclusion (i.e., space-based solutions are not being considered)?

There is no specific requirement to pair the solution with an existing or future satellite mission. The advanced radar remote sensing solution (hardware and software) should be justified based on its ability to make a significant impact toward the current state of science as it relates to Arctic terrain property estimation. Some consideration may be given for solutions that identify a transition pathway for such an instrument toward a current or future space-based mission.

If the goal is to measure the four terrain properties listed in the CSO, why narrow the solution space to transitioning fixed/static radar to moving terrestrial/airborne platforms? The emphasis on going from tower/fixed radar to using on a moving vehicle or airborne platform seems like a really specific architecture/solution concept ERDC has already decided upon to address the Arctic terrain property gaps. Can you share more info on this vision, as it would be helpful to applicants to this CSO? Without additional information, the narrowness of the CSO comes off as if it was written for someone ERDC already had in mind and/or a pre-decided framework for how to accomplish measuring the terrain properties.

Through a modest literature search of radar remote sensing methods to characterize Arctic terrain properties, one will find many examples of tower-based radar instrumentation development and observations with an eye toward transitioning the solution to a mobile platform. ERDC is interested in specific expertise that does evolve advanced radar remote

sensing instrumentation from the point or study plot scale (e.g., tower-based) to the landscape scale and beyond. ERDC is interested in what advanced radar remote sensing instrumentation and solutions may exist perhaps at lower technology readiness levels with scientific footing in Arctic terrain characterization that ultimately could be transformational by mobilizing the technology from these types of tower-based demonstrations.

What specific performance criteria is ERDC looking for as it relates to measuring the four terrain properties (snow mass, soil freeze thaw, soil moisture, soil stability)? There are existing radar-based and non-radar-based technologies and data products (some commercial and some government) that accomplish this already.

Solutions should include expectations of performance criteria for estimating one or more Arctic terrain properties based on existing literature or results comparing radar remote sensing observations to in-situ measurements. Otherwise, the solution should include activities that address establishing performance criteria of the instrumentation and methods.

Will selectees work in tandem with ERDC to evaluate hardware and software solutions or will ERDC work independently to evaluate? If ERDC will work independently, what will those evaluations entail?

Successful solutions would include methods to evaluate hardware and software implementation independently of ERDC activities. Depending on whether the threshold or objective goal is met, the desired solution could be delivered in such a way that ERDC would replicate the implementation with a similar outcome and result.

What restrictions might there be on the altitude of the UAS?

The U.S. Army Corps of Engineers' standard maximum altitude above ground level for small UAS (Class II) operations is 120m. Exemptions to this may be granted based on airspace and application. Absolute altitude for UAS operations is based on aircraft manufacturer specifications.

What is the desired coverage area of the UAS, and should we be concerned about any line-of-sight restrictions?

The U.S. Army Corps of Engineers' standard small UAS (Class II) operations require visual line of sight (VLOS) at all times.

Do you have concerns about using research-granted frequencies that may not be available in all situations?

No.

Modeling and simulation are not discussed in the call, but these would be advantageous for evaluating the models being used for extracting parameters. Is there interest in proposals that include the development of a modeling and simulation capability with predictive power for the system?

No. The CSO focuses on hardware and software solutions for the advanced radar systems.

Are there restrictions on the country of origin of hardware components for the system?

Under the current National Defense Authorization Act, the U.S. Army Corps of Engineers' small UAS activities prohibit the procurement and use of technology from the People's Republic of China (PRC). This includes critical transmitting components [including firmware, logic boards, chips, Bluetooth devices, software, etc.] manufactured in or assembled in the People's Republic of China, the Russian Federation, The Islamic Republic of Iran, or the Democratic People's Republic of Korea. Under this guidance and for this CSO, new aircraft and payloads require a list of all components' compliance with 2020 National Defense Authorization Act (NDAA) 848, the 2023 NDAA 817, and EO 13981.

Does this mean that the funding would be meant to construct or purchase a new radar system, or some part of that?

Yes. The threshold goal of the CSO is to support the development and delivery of a radar hardware and software system.

By "Delivery," does that mean that the proposer would no longer have possession of the hardware after the Period of Performance is complete?

Yes. Under the threshold goal of the CSO, the hardware solution will be provided to ERDC, and ERDC will take full title of the hardware as funded under the government CSO.