FAQs – Snow Remote Sensing and Prediction

Last updated November 12, 2024

What data sources can we use? Can we use simulated snow-filled environments?

Snow scientists broadly recognize that using simulated snow-filled environments for this kind of application would be a step backward and, thus, unacceptable. Such data used to train machine learning could simply lead to a model of artificial constructs and structures introduced by the simulation model.

Any competitive proposal would rely on using real-world conditions, filling in the blanks between observations, deriving variables from surrogate remote sensing, or promoting skill in extrapolating sparse observations into broader grids; all three are based on machine learning to discover underlying patterns in real-world data.

Snow researchers recognize and use many well-documented, trusted, and archived real-world datasets that already exist in the United States with very convincing metadata regarding variables, sampling spatial frequency, temporal frequency, etc., such as SNOWEX, CLPX, or BOREAS datasets, just to mention a few.

Can we partner with Canada or Finland for the real datasets?

The prime contractor (the offeror) may subcontract with other groups. We would warn that ignoring the established trusted U.S. datasets to instead use foreign datasets would require very convincing metadata regarding variables, sampling spatial frequency, and temporal frequency.

Do we need a business/academic partner in Phase I or II?

No, you do not.

What level of budget detail is required for the Phase I submission?

The solicitation does not specify guidance for level of detail for the budget required under a Phase I (Pre-Proposal). The range of Phase I budget detail provided in the past for other successful offerors spanned from: (a) one page listing estimated "rolled up" costs for Tasks or Years, with an aggregated total, and a paragraph describing major budget activities / requirements; (b) two-three pages listing each budget category (labor, travel, equipment, etc.) along with two-three pages of budget justification narrative. The intention for the pre-proposal is to provide an overview with enough detail to understand intentions and start a conversation if the government has interest in the offeror's concept. More detailed conventional budgets would be required if a Phase II full proposal is requested.

Are the snow integrative and predictive solutions to be focused upon/optimized for Alaska specifically, or more broadly applicable to the global circumpolar Arctic/Subarctic?

Snow integrative and predictive solutions should be focused upon/optimized to be broadly applicable to the global circumpolar Arctic/Subarctic. This would have the greatest Army interest.

Who are the anticipated users and what are the expected software, hardware, and connectivity profiles (researchers and mission planners in a lab with NIPR-connected servers and workstations, forward base commander and staff with NIPR-connected local workstations, convoys with laptops and no connectivity, etc.)?

Consider range of possible users, from Subject Matter Experts to Operational Practitioners, who have good network access in the former case, to periodically having to work in an isolated computing situation in the latter case. We want to hear your ideas about this considering use cases of those who need to know about snow conditions.

How much historical data is available to train on and is it felt to be sufficient by itself to complete the machine learning algorithm training?

Large disparate holdings of snow cover observations at different spatial and temporal scales and measurement techniques already exist, some dating back decades. We have interest in which ones the vendor sees as the most promising to start.

How far into the future are the predictions targeting? To what level of granularity?

Prediction into the future and granularity. We want to know what the vendor thinks lies in the realm of possibility based on their review of archived data at various centers.

Is the desired outcome intended to be site-specific, regionalized, generic, or any/all of the above?

All depending on what the vendor thinks the data and model can support and the range of use cases.

Are solutions preferred to be workable in a GPS-denied environment, or are solutions relying on GPS for real-time positioning during data collection acceptable? Will soldiers and vehicles be able to use GPS-based deliverables?

Solutions at the prototype stage can rely on GPS for real-time positioning during data collection. The Army plans to adapt any solution to address transition opportunities.