

JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION

Upon the basis of the following justification, I as Contracting Officer hereby approve use of the other than Full and Open competition for the proposed contractual action pursuant to the authority of 10 USC 2304(c)(3), Industrial Mobilization; Engineering, Developmental, or Research Capability; or Expert Services., as implemented by FAR 6.302-3.

1. Contracting Activity

Naval Postgraduate School
Department of Contracting and Logistics
1 University Circle
Monterey, CA 93943

2. Description of the Action Being Approved

This justification covers the procurement of all aspects of software engineering related to the development of the Regional Arctic System Model (RASM), physical and numerical model improvements, and model optimization and portability from sole proprietor Anthony Craig. This justification for other than full and open competition will be posted at the Government wide Point of Entry.

3. Description of Supplies/Services

Regional Arctic System Model (RASM) is based on the National Center for Atmospheric Research (NCAR) Community Earth System Model (CESM) framework, including the flux coupler (CPL7) for physically consistent communication among model components. RASM contains over 1.5 Mln lines of Fortran code. This work will involve use of computation resources available to the RASM project through the DOD High Performance Computing Modernization Program (HPCMP). The combined in-depth knowledge of and experience with both RASM and CESM codes as well as with the state-of-the-art HPC systems is the main critical requirement for this contract.

Specific tasks will be to investigate, test, and refine or implement new formulations to improve representation of physical processes and the high frequency and high resolution coupling required in the RASM configuration focused on the Arctic climate system. In particular, this work will help improve the simulation of eddies, tides, ice melt ponds, and rheology, model time-stepping schemes, implementation of lateral boundary conditions, treatment of mass conservation in the POP ocean model, and coupling of model components using different regional grids. In addition, many of those improvements will involve further increases in model resolution (<3 km), which in turn will require evaluation of the code performance, optimization, and scaling for use of thousands of cores to efficiently utilize available resources.

Optional tasks will include: (i) support of new additional tasks, to be determined and performed during YEAR 2 of the contract, and evaluated on the as-needed basis, subject to progress with the model development and utilization during YEAR 1, (ii) support and development of RASM internal and release versions, (iii) porting, debugging and optimization of all versions of RASM to new HPC platforms and (iv) contribution to RASM collaborative projects associated with improvements to the land, ice sheet and component coupling.

4. Statutory Authority Permitting Sole Source

FAR 6.302 -- Circumstances Permitting Other Than Full and Open Competition.

- 6.302-3 -- Industrial Mobilization; Engineering, Developmental, or Research Capability; or Expert Services.

5. Rationale Justifying Use of Cited Statutory Authority

No other single provider exists who has capabilities in and experience with all the above requirements including the in-depth understanding and experience with the RASM, CESM 1.X and CPL7 codes, all aspects of software engineering and its application to HPC environments for advanced investigations of Arctic climate change. The sole proprietor has an extensive knowledge of both the RASM and NCAR CESM efforts, which he has acquired working with the RASM team for the past seven years and at NCAR for the past 25 years, including as the CESM lead software engineer. His unique skills and expertise are highly relevant to this project. The advancement of RASM skill in simulating and predicting Arctic climate is in part the results of the contributions by the sole proprietor to this effort for the past seven years. His expected contributions will have high impact on the timely progress of this project. The combination of these factors makes Mr. Craig the only candidate capable of completing the requirements of this contract.

6. Description of Efforts Made to Solicit Offers from as Many Offerors as Practicable

The specified contractor is the only source of the requested services and no efforts were made to solicit additional offers.

7. Determination of Fair and Reasonable Cost

Costs will be determined fair and reasonable at time of award by the Contracting Officer and based on previous contracts and similar contracting efforts.

8. Market Research

While it may be possible to find alternative providers of separate aspects of the critical and unique requirements as outlined above, no other single provider exists who has capabilities in all the above requirements. The required level of expertise at the minimum is equivalent to a mid-carrier faculty (i.e. Assoc. Prof.).

9. Other Facts Supporting Use of Other Than Full and Open Competition

N/A

10. Actions to Remove Barriers to Future Competition

Given the specific and complex nature of RASM and the fact that it is the only regional model for the Arctic in the U.S. the NPS anticipates that the barriers to competition will continue, but will diminish in time, as RASM increases the user base and more junior experts gain experience with this code.

CERTIFICATIONS AND APPROVAL

TECHNICAL/REQUIREMENTS CERTIFICATION

I certify that the facts and representations under my cognizance which are included in this Justification and its supporting acquisition planning documents, except as noted herein, are complete and accurate to the best of my knowledge and belief.



CONTRACTING OFFICER CERTIFICATION

To the extent that the LSJ value is between \$2,500 and \$150K for services and between \$3K and \$150K for products, the Contracting Officer's signature below also represents approval of the J&A/LSJ.

