

**NASA
GODDARD SPACE FLIGHT CENTER
RFP NNG14481818R**

**STATEMENT OF WORK
FOR**

**MESOSCALE ATMOSPHERIC INSTRUMENT SUPPORT SERVICES
(MAISS)**

November 12, 2013

TABLE OF CONTENTS

BACKGROUND	1
SCOPE OF WORK.....	1
I. GENERAL RESPONSIBILITIES.....	1
II. PERFORMANCE MEASUREMENT.....	2
III. TASKS.....	2
TASK 1: REQUIREMENTS AND INTERFACE DEFINITION.....	2
TASK 2: MANAGE SUBASSEMBLY DELIVERY AND FUNCTIONAL TESTING	2
TASK 3: SUPPORT SYSTEM INTEGRATION AND MOUNTING	3
TASK 4: SUPPORT FOR MECHANICAL DESIGN AND FABRICATION.....	3
TASK 5: SUPPORT FOR THERMAL DESIGN AND FABRICATION	3
TASK 6: SUPPORT FOR STRUCTURAL ANALYSIS.....	4
TASK 7: SUPPORT FOR DEVELOPMENT OF GROUND SUPPORT EQUIPMENT (GSE)..	4
TASK 8: SUPPORT FOR MEETINGS, REVIEWS, AND AIRCRAFT/PLATFORM INTEGRATION	4

BACKGROUND

The Mesoscale Atmospheric Processes Laboratory investigates the physics and dynamics of atmospheric processes using remote-sensing data and high-resolution numerical simulations. Key areas of research are cloud and precipitation systems and their impact on regional and global climate. Another central focus is developing remote-sensing technology and methods to measure aerosols, clouds, and other atmospheric parameters, especially using lidar remote sensing instruments. These remote-sensing instruments require on-going efforts to develop and demonstrate atmospheric measurements from onboard research aircrafts or other suitable platforms such as the International Space Station.

SCOPE OF WORK

The purpose of this contract is to acquire engineering and fabrication related services for the Mesoscale Atmospheric Processes Laboratory, as required, for interface definition, design, development, fabrication of mechanical components, integration, thermal and structural analysis, testing, and development of ground systems support equipment in support of remote-sensing instrument projects. They shall be end-to-end instrument builds of complete lidar systems, culminating in test flights of prototype instruments. Examples of possible projects are: the Cloud-Aerosol Transport System (CATS), the Multi-Angle Cloud-Aerosol Lidar (MACAL), and the Forest Lidar and Optical Research for Ecosystem Structure on Station (FLORESTA).

The emphasis in engineering services under the MAISS contract will be in the areas of (1) mechanical design, (2) structural analysis, and (3) thermal analysis. A lesser emphasis on fabrication will be to supplement the GSFC on-site capabilities to fabricate instrument hardware, mounting components, and support hardware. This may include fabrication of instrument hardware and components at the contractor's facility.

To this end, the contractor shall provide on- and off-site multidisciplinary engineering services, pursuant to task orders issued by the Contracting Officer. These services shall include the personnel, facilities, and materials (unless otherwise provided by the Government) to accomplish the tasks.

I. GENERAL RESPONSIBILITIES

The Contractor's responsibilities shall include the management of personnel, timely and effective implementation of task assignments, control and monitoring of contract and subcontract performance (if any), management of scheduled deliveries, and timely and effective reporting to the Government. These responsibilities shall also include efficient cost management methods as well as procedures to ensure that the Government is aware of task assignment status and progress achieved.

The Contractor shall be responsible for ensuring that all contractor and subcontractor personnel (if any) engaged in performance of this Statement of Work have appropriate qualifications,

knowledge, and certification to perform work in accordance with the task assignments.

II. PERFORMANCE MEASUREMENT

Performance-based statements of work/specifications will be used for establishing contract requirements. Therefore, each task order issued by the Contracting Officer will include, as a minimum, the following:

1. Statement of Work, including the requirements to be met, the standard(s) of performance/quality of work, and required deliverables (or other output)
2. Performance Specification (if applicable)
3. Applicable Documents (if required)
4. Period of Performance
5. Surveillance Plan

The Contractor shall be required to adhere to the performance standards detailed in each task assignment.

III. TASKS

Services shall be required in one or more of the areas described in the scope of work for any given task orders. Services within the scope of this Statement of Work and specified in task assignments shall include, but not be limited to, the specific services delineated in the following sections.

TASK 1: REQUIREMENTS AND INTERFACE DEFINITION

The contractor shall provide engineering support to identify system requirements (optical, mechanical, electrical, thermal and, as required, software). The contractor shall also provide services for interface definition within the system(s) and to the installation platform, aircraft, etc. The contractor shall work with subsystem providers (laser, data system, optics). Where required, Interface Control Documents (ICD) shall be developed to document electrical, mechanical, thermal, and software interfaces. In addition, the contractor shall provide support for design requirements reviews when/if needed. The contractor shall package and present requirements information to GSFC or external reviewers.

TASK 2: MANAGE SUBASSEMBLY DELIVERY AND FUNCTIONAL TESTING

The contractor shall provide logistical and engineering support for subsystems delivery and checkout. Subsystems may be procured by GSFC but the contractor shall be responsible for subsystem conformance and delivery of the complete integrated instrument(s). Bench level functional testing shall be performed to verify conformance to specifications.

TASK 3: SUPPORT SYSTEM INTEGRATION AND MOUNTING

The contractor shall provide engineering services for system integration into the aircraft/platform, using defined mechanical, electrical and thermal interfaces. Ground support equipment shall be specified as required for this effort.

TASK 4: SUPPORT FOR MECHANICAL DESIGN AND FABRICATION

The contractor shall provide support for design and fabrication of mechanical components. This task is comprised of two subtasks: developing mechanical designs and detailed drawings, and fabrication of parts from those designs and drawings. This task encompasses the following specific subtasks and deliverables:

- 4.1 Provide mechanical design support for Project system components. These components include, but are not limited to, the following: pressure vessel boxes for subsystems, pressure vessel boxes for entire instruments, mechanical interface to the aircraft/platform, mechanical interfaces for subsystem mounting, and mechanical mounting of individual components (e.g., lenses, mirrors, etc.). Deliverables shall be detailed drawings of each component and assembly level drawings for groups of components (as necessary).
- 4.2 Fabrication of mechanical components for the Projects. Fabrication of components includes, but is not limited to, those identified in task 4.1. Deliverables shall be completed mechanical components along with proper documentation of flight-certified materials and fasteners.

TASK 5: SUPPORT FOR THERMAL DESIGN AND FABRICATION

The contractor shall provide support for design, fabrication and implementation of various thermal controls and components for the Projects. This task is comprised of two subtasks: developing mechanical designs and detailed drawings, and implementation and/or fabrication of parts from those designs and drawings. This task encompasses the following specific subtasks and deliverables:

- 5.1 Provide thermal design support for the Projects. This support includes, but is not limited to, analysis of thermal loads, design of appropriate thermal interfaces and controls, and design of specific thermal components. These components include, but are not limited to heat pipes/straps/plates for subsystems, heat pipes/straps/plates/exchangers for the entire instrument, thermal interface to the aircraft/platform, thermal interfaces for subsystem mounting, and thermal mounting of individual components. Deliverables shall be documented design and analysis studies and/or detailed drawings of each component and assembly level drawings for groups of components (as necessary).

- 5.2 Fabrication/acquisition and implementation of thermal components for the Projects. Fabrication of components includes, but is not limited to, those identified in task 5.1. Implementation of components includes, but is not limited to, those identified in task 5.1. Deliverables shall be completed thermal components along with proper documentation of flight-certified materials and fasteners.

TASK 6: SUPPORT FOR STRUCTURAL ANALYSIS

The contractor shall provide support for structural analysis of instrument components, subsystems, and/or complete instruments. Deliverables shall be documented analysis studies and/or detailed drawings of each component and assembly level drawings for groups of components (as necessary).

TASK 7: SUPPORT FOR DEVELOPMENT OF GROUND SUPPORT EQUIPMENT (GSE)

The contractor shall provide support to design and/or fabricate necessary ground support equipment (GSE) for the Projects. GSE is necessary to permit, e.g., insertion of instruments into the research aircraft/platform. GSE includes lifting and handling fixtures and mounts and test equipment. Deliverables for this task shall be documented mechanical designs and/or fabricated GSE components.

TASK 8: SUPPORT FOR MEETINGS, REVIEWS, AND AIRCRAFT/PLATFORM INTEGRATION

The contractor shall provide technical support for meetings, reviews and aircraft/platform integration, as necessary. This shall include travel to meetings and reviews in support of the Projects. Travel may be required for the following types of meetings: project reviews, technical interchange with vendors, and integration support at the aircraft. Deliverables for this task shall be documented travel reports and/or review packages.