Statement of Need – 145022-26-0008

PURPOSE: NOAA/ARL/ATDD has a requirement for equipment for the GCOS Reference Upper Air Network (GRUAN) program at the Atmospheric Radiation Monitoring site at Howard University Beltsville Research Station in Beltsville, MD.

SCOPE OR MISSION: The scientific instruments used for GCOS GRUAN upper air monitoring observation sites were chosen through a long and exhaustive process. (GRUAN) is an international reference observing network, designed to meet climate requirements and to fill a major void in the current global observing system. Upper air observations within the GRUAN network will provide long-term high-quality climate records, will be used to constrain and validate data from space-based remote sensors, and will provide accurate data for the study of atmospheric processes.

Since 2005 GRUAN has targeted requirements of accuracy, stability and vertical resolution of upper air measurements by radiosondes and the GRUAN community has called upon the hydro-meteorological equipment industry to develop new "reference" radiosondes.

Implementation of the network has started, involving the identification of eligible measurement sites, development of a data policy and dissemination scheme and the quest for a common mode of operations. Currently, the network comprises 15 initial sites. In 2009, the 'GRUAN Implementation Plan 2009-2013' was published and an updated 5-year Plan for 2014-2018 was subsequently published.

GRUAN has been identified by the climate community as being required to generate long-term high-quality climate records, to constrain and calibrate data from more spatially-comprehensive global observing systems (including satellites and current radiosonde networks), and to fully characterize the properties of the atmospheric column. GRUAN is building on existing observational networks, such as the Atmospheric Radiation Measurement (ARM) program, the Network for Detection of Atmospheric Composition Change (NDACC), the GCOS Upper Air Network (GUAN), the Global Atmospheric Watch (GAW) program, the Baseline Surface Radiation Network (BSRN) and the GCOS Surface Network (GSN).

BACKGROUND: The Global Climate Observing System (GCOS) Reference Upper Air Network (GRUAN) requires its compliant sites to perform at least monthly soundings of atmospheric humidity with "best quality" Cryogenic Frostpoint Hygrometer (CFH) sondes.

The NOAA National Centers for Environmental Information (NOAA NCEI) cooperates with the DOE Atmospheric Radiation Measurement (ARM) program to support GRUAN. ARM currently provides its radiosonde data to GRUAN for evaluation of uncertainties, and the ARM Southern Great Plains (SGP) sites have been selected for CFH measurements as compliant GRUAN sites. GRUAN suggested use of CFH sondes to better evaluate the upper troposphere / lower stratosphere humidity. CFH sondes will be flown at least once per month at the GRUAN SGP main site to produce the highest quality data for atmospheric humidity compared to other radiosonde humidity

measurements available on the market. Several international scientific studies comparing radiosonde measurements have repeatedly shown that most used radiosonde data show a dry humidity bias at low temperatures. The CFH measurements have been tested for highest quality and reliability in these cold conditions.

TECHNICAL SPECIFICATIONS: Tasks to be performed or required items (with description)
Our requirements for CFH humidity measurements include:

1. Best quality Humidity measurements
2. Fully digital transmission
3. Water resistant
4. Continuous outdoor use

Based on extensive market research, the Government has determined that the CFH consistently produces higher quality data than other humidity sensors and is competitively priced. Environmental Science sells the CFH instruments to the US federal agencies at a 2.95% discount.

This information can be found under Tab 1 and Tab 2 of the contract file.
Based on information viewed the Government's independent estimate of this requirement is $60,000.

DELIVERABLES: Delivery to Baltimore, MD (for delivery to Beltsville, MD)

PERIOD OF PERFORMANCE: 90 days from award of contract

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