

EarthScope Consortium, Incorporated

Request for Quotation

for

**DAS Interrogator for Field Surveying
and Instructional Use**

7/07/2023

RFQ
for
DAS Interrogator for Field Surveying and Instructional Use

Table of Contents

I. Background	3
A. Information about EarthScope	3
B. EarthScope's Portable Instrumentation and PI Support	3
II. Description of Need (Product or Services Desired)	3
III. Tasks and Deliverables	4
A. Requirement Details	4
B. Desired Attributes	5
C. Deliverables	5
IV. Procurement Conditions	6
A. Bid Evaluation Criteria	6
B. Transmittal Information	6
C. Rights of Retention	6
D. Clarification of RFQ	6
E. Cost of Proposal	7
F. Confidentiality	7
G. Submission	7
H. Other	7
V. Vendor Selection	7
VI. Preliminary Schedule	8

Request for Quotations for DAS Interrogator for Field Surveying and Instructional Use

I. Background

A. Information about EarthScope

The EarthScope Consortium is a university consortium dedicated to transforming global geophysical research and education. Our vision is an engaged society, resilient to geohazards, informed by geophysical discovery and global collaboration. Additional information is available here: <https://www.earthscope.org/about/earthscope/>

Support for EarthScope comes from the National Science Foundation (NSF), United States Geological Survey (USGS), NASA, other federal agencies, universities, and private foundations.

EarthScope is a 501(c)(3) nonprofit organization incorporated in the state of Delaware with its primary headquarters office located in Washington, DC.

B. EarthScope's Portable Instrumentation and PI Support

Under its Cooperative Agreement "Seismological Facility for the Advancement of Geoscience" (SAGE) with NSF, EarthScope maintains an extensive pool of portable geophysical instruments, including thousands of seismometers, geophysical data loggers, and ancillary hardware and equipment at the EarthScope Primary Instrument Center (EPIC) in Socorro, New Mexico. These instruments are made freely available to NSF Principal Investigators (PIs) and other facility users for temporary deployments at scales spanning in dimension from hundreds of meters to hundreds of kilometers or more. In addition, staff at the EPIC provide comprehensive training on instrument usage, logistical planning for field experiments within the U.S. and abroad, and data handling and archive support for PIs.

II. Description of Need (Product or Services Desired)

We seek to add a Distributed Acoustic Sensing (DAS) interrogator to the slate of portable observing systems available through the SAGE facility. This involves procurement of an interrogator and other ancillary hardware and software to be supported from the EPIC, for use in PI-led experiments. We also seek training from the manufacturer on full operation of the interrogator, the best practices for installation, operation, and data-handling, and maintenance and repair of the interrogator unit to the extent possible.

We intend for this system to be used for near-field surveying applications, for instance those using fiber deployed by the PI and have hard power available. However, we are

open to consider a DAS interrogator that can be connected to dark fiber to conduct studies over longer distances. The EPIC also loans instrumentation to field-based courses at universities throughout the academic year and during the summer, so straightforward trainability in using this instrument is especially appealing. By embedding this capability within the SAGE facility and specifically leveraging the well-established processes at the EPIC, EarthScope seeks to encourage interested PIs to gain experience in studying the subsurface using DAS methods. Depending on community uptake and the evolving priorities of the SAGE or a Future Geophysical Facility, we may consider future procurements of DAS instrumentation.

The EPIC currently has a small number of tools for cutting and splicing fiber, including a Fujikura 31S+ Fusion Splicer and CT08 Fiber Cleaver.

III. Tasks and Deliverables

A. Requirement Details

The quote for a single (1) Distributed Acoustic Sensing (DAS) Interrogator should specify the following (as applicable):

- Cost of the unit
- Any recommended auxiliary hardware with short description and itemized cost
- Acquisition software with short description and itemized cost
- Processing software with short description and itemized cost
- Data storage requirement/hardware options and itemized cost
- % or amount of discount (if any) for educational users and/or non-profit organizations

The quote should also include detailed technical specifications, limitations, and flexibility as fully as possible, including:

- Dimensions (length, width, height)
- Weight
- Casing/build material
- Water-resistance (IP Rating, if any)
- Power
 - Consumption statistics (peak/startup/average [Watts])
 - Availability of DC powered version
- Timing (precision, method(s) of acquisition)
- Data logger (bandwidth, sampling rates, gauge length, channel length)
- Instrument response and self-noise
 - Example: $\text{pe}/\sqrt{\text{Hz}}$ specified at 10, 50, 100, and 150 km optical distance
 - What is the noise floor as a function of frequency?
 - Please use standard, defined units for ease of comparison
- Data output format
- Length range(s) of supported survey
- Option/version for L-band surveying

EPIC staff typically have extensive knowledge of all SAGE facility instruments and conduct hardware analyses and minor to moderate repairs in-house to minimize the time and cost of sourcing routine maintenance through the manufacturer. We are keen to extend this model to DAS. The quote should include:

- Types of formal training available to SAGE facility staff, either at the EPIC or at the vendor, and itemized cost
- Warranty information
- Availability on technical documentation for the instrument and information on the on user support and processes for troubleshooting and repair
 - Extent (limited or unlimited) of manufacturer technical support
 - RMAs
 - Ordering replacement parts
- Description of technical or legal accommodations (if any) for EPIC staff to operate as a “super user” in the diagnostics, maintenance, and repair of the DAS interrogator. In some cases, EarthScope has entered into non-disclosure agreements to protect proprietary information associated with commercial instruments.

To best train our user community, which can include novices, we strongly encourage responses that help us to understand the “dirt to desktop” process for the DAS interrogator and its supporting hardware and software, including:

- Any peer-reviewed publications about how their interrogator works.
- General requirements and optimization of deployment and operation in common outdoor conditions (combinations of wet, dry, hot, cold, etc.)
- Role of data acquisition and infield processing software
- Data processing and role of any proprietary or licensed software in development of scientific products
- Documentation and tutorials for using both the instrument and any data acquisition/processing software
- Willingness to assist facility staff convert data format from any proprietary standard (if applicable)

B. Desired Attributes

Based on how SAGE instrumentation is used by a diverse user base, highly desired qualities of the DAS interrogator include:

- Internal data storage and integrated software
- Comes with or capable of being fitted into a ruggedized case
- Compatible with open source software solutions

C. Deliverables

Replies to the RFQ should be provided directly to EarthScope in a MS Word or PDF document with clear responses and/or pricing info for each point.

IV. Procurement Conditions

A. Bid Evaluation Criteria

Bids will be evaluated on the basis of the quote and written response. However, EarthScope may use information other than that provided by the Respondent in its evaluation.

The following criteria (not listed in order of priority) will be used to determine the prevailing bid:

- Cost/value of DAS interrogator
- Cost/value of auxiliary items
- Cost/value of supporting software
- Technical attributes (size, weight, data storage, timing, self-noise)
- Suitability for regular use in field settings (ruggedized, integrated hardware-software design)
- Broader flexibility for use with dark fiber and other DAS surveying applications
- Trainability, both for facility staff and end users

Respondents must be sure to address all criteria specified in this RFQ, where applicable.

B. Transmittal Information

The bid should include a cover page with the following information:

- Name, mailing address, telephone # and email address of the responding organization
- Name, Title and Contact Information of the responding organization,

C. Rights of Retention

Following submission of bids and final evaluation, EarthScope will have the right to retain the quotations, maintaining them in confidence. All documents submitted in response to this RFQ shall become the property of EarthScope.

D. Clarification of RFQ

Any questions, requests for clarification or requests for data in connection with this RFQ shall be made no later than July 14 at 8 PM EST via email to:

[<tim.rinner@earthscope.org>](mailto:tim.rinner@earthscope.org)

E. Cost of Proposal

EarthScope will not reimburse the Respondent for their cost of preparation and submission of a bid.

F. Confidentiality

The recipient of this Request for Quotation acknowledges that this RFQ, including without limitation any addenda to this RFQ, or oral information about this RFQ, are EarthScope's proprietary and confidential property (hereinafter "Proprietary and Confidential Information"). News or other information releases pertaining to this RFQ shall not be made without prior written approval from EarthScope.

G. Submission

The submission deadline is **8 PM EST July 21**. Submit one electronic copy to:

<tim.rinner@earthscope.org>

The bid must be received by the submission deadline to be considered for this contract.

H. Other

By submitting a bid, Respondent agrees to all applicable provisions, terms and conditions associated with this Request for Quotation.

V. Vendor Selection

EarthScope reserves the right to issue a contract based solely on the information provided, to reject any or all bids, to accept any bids, or to affect any combination of bids. EarthScope reserves the right to conduct discussion or request bid revisions, if deemed necessary.

The vendor selected for the contract will be chosen on the basis of EarthScope evaluation and determination of which vendor will provide the greatest benefit to EarthScope, not necessarily on the basis of lowest price. EarthScope has no obligation to reveal how bids were assessed. Therefore, bids should contain your best terms within the proposed functional and technical approach.

EarthScope reserves the right to reject any or all bids that are deemed to be non-responsive, late in submission or unsatisfactory in any way. EarthScope shall have no obligation to award a contract for work, goods and/or services as a result of this RFQ.

Contracts will be contingent upon the availability of funds and EarthScope will solely be responsible for determining which, if any, bids will be awarded a contract.

VI. Preliminary Schedule

The following schedule may be changed or modified by EarthScope:

- | | |
|--|------------|
| 1. RFQ issued: | 7/07/2023 |
| 2. Respondents' requests for clarification of RFQ due: | 7/14/2023 |
| 3. EarthScope response to requests for clarification: | 7/19/2023 |
| 4. Bids due: | 7/21/2023 |
| 5. Selection made: | 8/01/2023 |
| 6. Respondents notified of determination: | 8/04/2023 |
| 7. Procurement issued: | ASAP after |