



**NATIONAL CENTRE FOR EARTH SCIENCE STUDIES**  
**(An Institution under the Ministry of Earth Sciences, Govt. of India)**  
**P.B. No. 7250, Akkulam, Thiruvananthapuram-695 011, Kerala.**  
**PURCHASE & STORES DIVISION**

**Our Ref : PUR-PROC/42/2025-PUR-NCESS**  
 (To be quoted in all correspondence)

**Dt. 27/02/2025**

**To,**  
**M/s. Phame Enterprises,**  
**Indore**

Phone : ( 0471) 2511531  
 FAX: (0471) 2442280  
 E-mail: [purchase@ncess.gov.in](mailto:purchase@ncess.gov.in)  
[ncesspurchase@gmail.com](mailto:ncesspurchase@gmail.com)  
 website : [ncess.gov.in](http://ncess.gov.in)

**Sub: e-Procurement Single Tender**

Dear Sirs,

Please send your offer along with descriptive catalogue/ pamphlet for the following items not later than **17/03/2025 at 06.00 PM (Tender Opening at 11.00 AM on 19/03/2025)**. The terms and conditions governing the tender are given at the bottom.

| <i>SI. No</i> | <i>DESCRIPTION</i>                  | <i>QUANTITY<br/>REQUIRED</i> |
|---------------|-------------------------------------|------------------------------|
| <b>1</b>      | <b>COSMOS Soil Moisture Station</b> | <b>6 Nos.</b>                |

**(Detailed specification and conditions are given separately)**

**INSTRUCTIONS TO THE TENDERERS AND TERMS AND CONDITIONS**

- The quotation should be submitted by e-procurement in PDF format by 'logging on' on the website [eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app). The total file size of the documents submitted should not exceed 20 MB.**
- The Technical and Financial Bids should be submitted separately (Two Bid System).**
- In place of a Bid security, the bidders must sign a Bid securing declaration along with the bid stating that "We accept that if we withdraw or modify our Bids during the period of validity, or if we are awarded the contract and we fail to sign the contract, or to submit a performance security before the deadline defined in the request for bids document, we will be suspended for the period of time decided by NCESS from being eligible to submit bids for contracts with NCESS". The bids without this declaration or Udyog Aadhar Memorandum /NSIC will be rejected.**
- Bidders from a country which shares a land border with India will not be eligible to participate in this tender, unless the bidder is registered with Department for Promotion of Industry and Internal Trade (DPIIT) under Order (Public procurement No. 1) issued by Ministry of Finance, Department of expenditure in line with OM No. F.No.6/18/2019-PPD dt 23rd July, 2020 and F.18/37/2020-PPD, dt. 08.02.2021 inserting Rule 144 (xi) in GFR 2017.**

5. Preference to Make In India: Preference will be given to the eligible Make in India offered products, in accordance with the CVC letter No. 018/VGL/022-377353 dated 20.04.2018, pertaining to Department of Industrial Policy and Promotion (DIPP) in connection with Preference to Make in India, Order 2017'(PPP- MIIOrder) dated15.07.2017 and order dated 19.07.2024 pursuant to rule153(iii) of General Financial Rules 2017. (Declaration may be submitted).
6. Startups: To promote make in India and startups, the prior turnover and prior experience for all startups shall be relaxed subject to their meeting of quality, technical specifications and tender conditions as per tender. The bidder who intends to participate as "startup" company should enclose the certificate towards startup enterprise registration/recognition issued by Department of Industrial Policy and Promotion, Ministry of Commerce and the certificate should be certified by the Chartered Accountant or should be registered with GeM as startup. Applicable certificate should be enclosed.
7. Fall Clause: An undertaking has to be provided by the bidder that it has not supplied / is not supplying similar product / systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry / Department of the Government of India or PSU and if it is found at any stage that similar product / systems or sub systems was supplied by the bidder to any other Ministry/Department of the Government of India, or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the bidder to NCESS, if the contract has already been concluded.
8. MAF: The authorisation from the manufacturer should be tender specific, i.e., tender reference number and date should be mentioned in the certificate. A bidder shall not have conflict of interest with other bidders. In cases, where the manufacturer has submitted the bid, the bids of its authorised dealer will not be considered and in case of violations, both infringing bids will be rejected.
9. Bids are liable to be rejected as nonresponsive if a Bidder fails to provide and/ or comply with the required information, instructions etc., incorporated in the Tender document or gives evasive information/ reply against any such stipulations. Furnishes wrong and/ or misleading data, statements(s) etc. In such a situation, besides rejection of the bid as nonresponsive, it is liable to attract other punitive actions under relevant provisions of the Tender Document for violation of the Code of Integrity.
10. During the evaluation of Techno-Commercial or Financial Bids, NCESS may at its discretion, but without any obligation to do so, seek any shortfall information/documents only in case of historical documents which pre-existed at the time of the tender opening and ask the Bidder to clarify its bid by a specified date. Bidder should answer the clarification with in that specified date (or, if not specified, 7 days from the date of receipt of such request). The request for clarification shall be submitted in writing or electronically. If discrepancies exist between the uploaded scanned copies and the Originals submitted by the bidder, the original copy's text, etc, shall prevail. Any substantive discrepancy shall be construed as a violation of the Code of Integrity, and the bid shall be liable to be rejected as nonresponsive in addition to other punitive actions under the Tender Document for violation of the Code of Conduct.
11. From the time of bid submission to awarding the contract, no Bidder shall contact NCESS on any matter relating to the submitted bid. If a Bidder needs to contact NCESS for any reason relating to this tender and/ or its bid, it should do so only in writing or electronically. Any effort by a Bidder to influence the Procuring Entity during the processing of bids, evaluation, bid comparison or award decisions shall be construed as a violation of the Code of Integrity, and bid shall be liable to be rejected as nonresponsive in addition to other punitive actions for violation of Code of Integrity as per the Tender Document.
12. After the award of contract, the supplier encounters conditions hindering timely delivery of the Goods, he/she shall promptly inform NCESS in writing about the same and its likely duration. NCESS shall examine the situations and, at its discretion, may agree to extend the delivery Schedule, with or without Liquidated Damages (LD). When the period of delivery is extended due to unexcused delay, the amendment extending the delivery period shall, inter alia, be subject LD to a maximum deduction of the 10% of the delayed Goods contract price (all inclusive) and with and without denial clause. Nevertheless, NCESS shall be entitled to the benefit of any decrease in price

on account of reduction in or remission of GST, customs duty or foreign exchange rate variation or any other variation clause which takes place after the expiry of the original delivery date.

13. Force Majeure: On the occurrence of any unforeseen event, beyond the control of either Party, directly interfering with the delivery of Goods arising during the currency of the contract, such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, or acts of God, the affected Party shall, within a week from the commencement thereof, notify the same in writing to the other Party with reasonable evidence thereof. Unless otherwise directed by the NCESS in writing, the supplier shall continue to perform its obligations under the contracts far as reasonably practicable and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. If the force majeure condition(s) mentioned above be in force for 90 days or more at any time, either party shall have the option to terminate the contract on expiry of 90 days by giving 14 days' notice to the other party in writing. In case of such termination, no damage shall be claimed by either party against the other. None of the Party shall seek any such remedies or damages for the delay and/ or failure of the other party in fulfilling its obligations under the contract if it is the result of an event of Force Majeure.
14. **The bidder should enclose all relevant documents in a sequential manner as per the tender format.**
15. **The bid should contain the Bid securing declaration, MII / Startup / Land Border declaration, Authorization from manufacturer, Fall Clause, Latest Price Proofs, Details of service Centre, Technical details with make, model and specification of each component, Technical Compliance statement, List of Customers, Brochures etc., wherever applicable.**
16. Catalogue/Brochure/Manual should be submitted along with the offer wherever necessary.
17. Warranty / Guarantee Clause needs to be mentioned necessarily wherever applicable.
18. The material should be delivered at NCESS or installed at the specified location and so the quotation should include all the charges for the delivery at NCESS/installation.
19. **In INR orders, the Customs Duty Exemption Certificate will be given to the supplier upon request. But the entire responsibility of customs clearance and delivery at NCESS will rest with the supplier. High sea sale is not accepted and should not be quoted.**
20. **The offer should be valid for 180 days from the due date of opening of tender.**
21. NCESS reserves right to accept the tender in part or full without assigning any reasons. The enquiry is not a commitment, and the purchaser reserves the right to reject or cancel any or all offers.
22. **Payment Terms:**

#### **If Indian Purchase Order**

- a. 90% upon delivery and acceptance of entire system by NCESS and submission of Invoice, applicable Test Certificate, Installation Certificate, Warranty Certificate.
- b. Balance 10% will be paid against submission of performance bank guarantee from a nationalized bank for the applicable amount valid for the warranty period plus 60 days or after successful completion of warranty period.

#### **If Foreign Purchase Order**

- a. LC will be established for 100% of order value against which 90% will be released on submission of Order Acceptance, Proforma Invoice, LC details and other shipping documents etc.
- b. Balance 10% will be after submission of performance bank guarantee from a nationalized bank for the applicable amount valid for the warranty period plus 60 days or successful completion of warranty period.

*Net payment will be released after statutory deductions. No advance payment will be allowed, and no other payment terms will be considered.*

23. **In the event of placement of order, the successful bidder shall provide a Performance Bank Guarantee from a Nationalised Bank for 3% - 5% of the order value (DoE OM No. F.1/2/2023-**

**PPD dated 01.01.2024) wherever applicable. The PBG should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.**

24. Any further changes in the details, like the date of opening or specification, will be posted on our web site only.

Yours faithfully.

Sd/-

Deputy Manager (Purchase &Stores)

## **Technical Specification**

### **Soil Moisture Station with Cosmic Ray Probe**

#### **Detailed Conditions & Technical Specification**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The COSMOS Soil Moisture Station should consist of Cosmic-Ray Probe, MET Sensors for measurement of Ambient Temperature, Relative Humidity, Atmospheric Pressure, TBRG for Rainfall, Hydra probe Soil Sensors for measurement of Soil Real Dielectric permittivity, Moisture, Temperature and EC parameters along with the Data logger with on board 4G / 3G GSM/GPRS Modem capable to send field data directly over specified email ID, FTP Servers and NCESS Servers with Alarms facilities though SMS & Email. The system should be supported by Solar Panel based power supply to support 15 days in cloudy weather conditions and should be suitable for installation in remote and unattended locations. |                                                                                                                                                                                                                                                                                           |
| <b>General Conditions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                           |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The specifications mentioned below are most preferred & any deviation OR equivalent configuration shall be mentioned in the technical compliance statement.                                                                                                                               |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The vendor should have demonstrated installation and maintenance of Cosmic Ray Probe for soil moisture measurement in at least 3 sites in India and maintaining them for at least 1 year. Proof of the same needs to be provided along with the quote.                                    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All sensors should be provided by a single party/company.                                                                                                                                                                                                                                 |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The offer should be submitted only by manufacturer or their exclusive agent with certificate of exclusivity.                                                                                                                                                                              |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Vendor shall ensure thorough installation, demonstration & relevant application training at the time of installation.                                                                                                                                                                     |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Detailed technical specification of the instrument must be provided along with the quote, original catalogue, all service and operation manuals of the instrument.                                                                                                                        |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | After sales support in terms of availability of spares/consumables should be guaranteed for a period of minimum 5 years from the date of supply.                                                                                                                                          |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NCESS will provide basic facilities for installation. However, if any special requirements needed for the installation of the same should be intimated along with the quote.                                                                                                              |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The quoted costs should include the cost of packing, forwarding, freight, insurance and installation charges, whichever is applicable.                                                                                                                                                    |
| <b>Technical Conditions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                           |
| <b>a. Cosmic-Ray Probe</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                           |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Cosmic Ray Probe should measure naturally occurring cosmic-ray neutrons through non-invasive and non-contact type measurements                                                                                                                                                            |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Measure Range: Spatial 100 acres or better                                                                                                                                                                                                                                                |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The measurement must be insensitive to soil salinity, bulk density, soil texture and surface roughness.                                                                                                                                                                                   |
| <b>b. Profile Soil Moisture and Temperature Sensor</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                           |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Single or multiple probes to measure soil moisture/soil salinity and soil temperature for atleast three depths from surface to 1 m depth                                                                                                                                                  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Soil Moisture:</b> Technology: Sensor should be designed on Coaxial Impedance Dielectric Reflectometry or similar method. Measuring Range: 0 to 100 % volumetric (Completely dry to fully saturated), Accuracy: $\pm 0.01$ water fraction by volume (WfV) or better, Resolution: 0.001 |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Soil Temperature:</b> Measuring Range: $-10^{\circ}$ to $+50^{\circ}\text{C}$ or better, Accuracy: $\pm 0.5^{\circ}\text{C}$ or better, Resolution: $0.1^{\circ}\text{C}$                                                                                                              |

|                                            |                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>c. Meteorological Sensors</b>           |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | Air Temperature: Measuring range: $-20$ to $+60$ °C, Accuracy: $\pm 0.2$ °C, Resolution: 0.01 °C                                                                                                                                                                                                                                 |
| 2                                          | Relative Humidity: Measuring range: 0 to 100 % RH, Accuracy: $\pm 2$ % RH, Resolution: 0.1 %                                                                                                                                                                                                                                     |
| 3                                          | Air Pressure: Measuring range: 600 to 1100 hPa, Accuracy: $\pm 0.2$ hPa, Resolution: 0.01 hPa                                                                                                                                                                                                                                    |
| <b>d. Tipping Bucket Rain Gauge</b>        |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | The TBRG should be with siphon control mechanism & dual reed switches with varistor protection. The rain gauge shall have a smooth surface finish with a sharp drain tip to drain out complete collected rain water in the bucket. The TBRG must have a base mount with bull's eye level indicator with SS nut, bolts & washers. |
| 2                                          | Technology: Siphon control mechanism & dual reed switches with varistor protection                                                                                                                                                                                                                                               |
| 3                                          | Resolution: 0.2 mm, Accuracy: $\pm 2$ % for up to 250 mm/hr and $\pm 3$ % for $>250$ to 500 mm/hr                                                                                                                                                                                                                                |
| <b>e. Data Logger and Telemetry system</b> |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | Data Logger should be suitable to interface with proposed Meteorological Sensors and send field data in real time over the FTP Servers, email ID.                                                                                                                                                                                |
| 2                                          | The data Logger should be on board 3G/4G GSM/GPRS Modem and capable to send directly field data over specified Gmail ID and ftp servers.                                                                                                                                                                                         |
| 3                                          | The logger should be of ultra-low power economical solution for data logging, automatic reporting and alarm dialing.                                                                                                                                                                                                             |
| 4                                          | The data logger software should have the facility to generate Alarm SMS, data recovery i.e., if due to technical bugs the GPRS Network fails then whenever it recovers then send field data with previous data (After last reported data).                                                                                       |
| 5                                          | The System has a facility to interact & download data from the system over Laptop during field visit.                                                                                                                                                                                                                            |
| 6                                          | Sampling: 1 second, User definable,                                                                                                                                                                                                                                                                                              |
| 7                                          | Capacity: to store minimum 6 months data with Non-volatile FLASH memory                                                                                                                                                                                                                                                          |
| <b>f. Power Supply Unit</b>                |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | The entire system should be powered with suitable Battery and charged through Solar Panel with charge controller unit (CCU) and ensure power backup for 15 Cloudy days.                                                                                                                                                          |
| 2                                          | Sensors should be able to operate without solar power up to 15 days in case of cloudy conditions.                                                                                                                                                                                                                                |
| <b>g. Enclosures and Mounting poles</b>    |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | The enclosure should be made of robust steel sheet and should be able to accommodate Data Logger, Battery and CCU, Termination Block. Locking facility should be available with the enclosure.                                                                                                                                   |
| 2                                          | The enclosure should be powder-coated with polyester powder or other material suitable for all weather conditions.                                                                                                                                                                                                               |
| 3                                          | Necessary GI mounting poles and all fixers, connectors and accessories should be provided.                                                                                                                                                                                                                                       |
| <b>h. Accessories</b>                      |                                                                                                                                                                                                                                                                                                                                  |
| 1                                          | All necessary cables of sufficient lengths to connect the sensors to the data logger, power supply unit and any other unit of the device should be provided, the length of cable                                                                                                                                                 |

|                    |                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | should be atleast 8 m so as to enable to install the soil moisture sensors at a location far from the cosmic ray probe unit.                                                                  |
| 2                  | All mounting hardware/sensor cables/accessories should be provided for continuous operation of all sensors.                                                                                   |
| 3                  | The necessary and suitable field enclosure of stainless steel or any other non-corrosive material for protection of the sensor unit and the power supply unit from damage should be provided. |
| 4                  | Essential tools/tool kits/utilities should be provided for the entire setup for regular operations and maintenance.                                                                           |
| <b>i. Warranty</b> |                                                                                                                                                                                               |
| 1                  | Minimum three-year comprehensive onsite warranty for the entire setup (including sensors) should be provided.                                                                                 |
| 2                  | The vendor should undertake preventive maintenance service of the instruments once every six-months during the warranty period                                                                |



**NATIONAL CENTRE FOR EARTH SCIENCE STUDIES**

P.B. No. 7250, MEDICAL COLLEGE P.O., AKKULAM, THIRUVANANTHAPURAM-695 011, INDIA

Tel: 91-471-2511531

Fax: 91-471-2442280

e-mail: [purchase@ncess.gov.in](mailto:purchase@ncess.gov.in)

**TENDER FORM**

Tender No. & Date : **PUR-PROC/42/2025-PUR-NCESS Dt.27/02/2025.**  
Due Date : **17.03.2025 (06.00 PM).**  
Date of Opening : **19.03.2025 (11.00 AM).**  
Venue of Opening : National Centre for Earth Science Studies, P.B.No.7250,  
Medical College P.O., Thiruvananthapuram – 695 011.  
Description of stores : **COSMOS Soil Moisture Station**  
Quantity : **6 Nos.**

Sirs,

The Senior Manager on behalf of the Director, National Centre for Earth Science Studies (NCESS), invites bids for the supply of stores mentioned above. The tender documents are classified as Annexure-A and Annexure-B. Annexure-A is a specimen tender form meant for suppliers and the bid should contain all the details specified therein. The instructions to the tenderers and the general terms and conditions applicable to the Purchase Orders placed by NCESS are given under Annexure-B. Those who are able to quote for the stores in accordance with the above requirements, may please furnish their offer through eprocurement, on or before the last date and time specified in the tender.

Any deviations from the terms and conditions of the Annexure-B must be clearly indicated in the offer.

Yours sincerely,

Sd/-

Senior Manager

**ANNEXURE A**

**The Senior Manager,  
National Centre for Earth Science Studies,  
P.B.No.7250, Akkulam, Medical College PO,  
Thiruvananthapuram – 695 011.  
Kerala, India**

Sir,

Sub: Your Tender No .....Dated.....

I/We hereby offer you to supply the stores detailed below at the price hereunder quoted and agree to hold this offer open till .....I/We shall bind to supply the stores hereby offered, upon the issue of the purchase order communicating the acceptance thereof on or before the expiry of the delivery date therein. You are at the liberty to accept any one or more of the items of such stores. I/We, notwithstanding that the offer in this tender has not been accepted in whole shall be bound to supply to you such items and such portion or portions of one or more of the items as may be specified in the purchase order communicating the acceptance.

### 1. Technical Compliance Statement.

| Required Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                        | Spec offered (with make and model) | Whether complied | Brochure Page No |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------|------------------|
| <b>COSMOS Soil Moisture Station</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                        |                                    |                  |                  |
| <b>6 Nos.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                        |                                    |                  |                  |
| <p>The COSMOS Soil Moisture Station should consist of Cosmic-Ray Probe, MET Sensors for measurement of Ambient Temperature, Relative Humidity, Atmospheric Pressure, TBRG for Rainfall, Hydra probe Soil Sensors for measurement of Soil Real Dielectric permittivity, Moisture, Temperature and EC parameters along with the Data logger with on board 4G / 3G GSM/GPRS Modem capable to send field data directly over specified email ID, FTP Servers and NCESS Servers with Alarms facilities through SMS &amp; Email. The system should be supported by Solar Panel based power supply to support 15 days in cloudy weather conditions and should be suitable for installation in remote and unattended locations.</p> |                                                                                                                                                                                                                                                        |                                    |                  |                  |
| <b>General Conditions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                        |                                    |                  |                  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The specifications mentioned below are most preferred & any deviation OR equivalent configuration shall be mentioned in the technical compliance statement.                                                                                            |                                    |                  |                  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The vendor should have demonstrated installation and maintenance of Cosmic Ray Probe for soil moisture measurement in at least 3 sites in India and maintaining them for at least 1 year. Proof of the same needs to be provided along with the quote. |                                    |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | All sensors should be provided by a single party/company.                                                                                                                                                                                              |                                    |                  |                  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The offer should be submitted only by manufacturer or their exclusive agent with certificate of exclusivity.                                                                                                                                           |                                    |                  |                  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Vendor shall ensure thorough installation, demonstration & relevant application training at the time of installation.                                                                                                                                  |                                    |                  |                  |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Detailed technical specification of the instrument must be provided along with the quote, original catalogue, all service and operation manuals of the instrument.                                                                                     |                                    |                  |                  |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | After sales support in terms of availability of spares/consumables should be guaranteed for a period of minimum 5 years from the date of supply.                                                                                                       |                                    |                  |                  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NCESS will provide basic facilities for installation. However, if any special requirements needed for the                                                                                                                                              |                                    |                  |                  |

|                                                        |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|                                                        | installation of the same should be intimated along with the quote.                                                                                                                                                                                                                                                               |  |  |  |
| 9                                                      | The quoted costs should include the cost of packing, forwarding, freight, insurance and installation charges, whichever is applicable.                                                                                                                                                                                           |  |  |  |
| <b>Technical Conditions</b>                            |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| <b>a. Cosmic-Ray Probe</b>                             |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| 1                                                      | Cosmic Ray Probe should measure naturally occurring cosmic-ray neutrons through non-invasive and non-contact type measurements                                                                                                                                                                                                   |  |  |  |
| 2                                                      | Measure Range: Spatial 100 acres or better                                                                                                                                                                                                                                                                                       |  |  |  |
| 3                                                      | The measurement must be insensitive to soil salinity, bulk density, soil texture and surface roughness.                                                                                                                                                                                                                          |  |  |  |
| <b>b. Profile Soil Moisture and Temperature Sensor</b> |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| 1                                                      | Single or multiple probes to measure soil moisture/soil salinity and soil temperature for atleast three depths from surface to 1 m depth                                                                                                                                                                                         |  |  |  |
| 2                                                      | <b>Soil Moisture:</b> Technology: Sensor should be designed on Coaxial Impedance Dielectric Reflectometry or similar method. Measuring Range: 0 to 100 % volumetric (Completely dry to fully saturated), Accuracy: $\pm 0.01$ water fraction by volume (WFV) or better, Resolution: 0.001                                        |  |  |  |
| 3                                                      | <b>Soil Temperature:</b> Measuring Range: $-10^{\circ}$ to $+50^{\circ}\text{C}$ or better, Accuracy: $\pm 0.5^{\circ}\text{C}$ or better, Resolution: $0.1^{\circ}\text{C}$                                                                                                                                                     |  |  |  |
| <b>c. Meteorological Sensors</b>                       |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| 1                                                      | Air Temperature: Measuring range: $-20$ to $+60^{\circ}\text{C}$ , Accuracy: $\pm 0.2^{\circ}\text{C}$ , Resolution: $0.01^{\circ}\text{C}$                                                                                                                                                                                      |  |  |  |
| 2                                                      | Relative Humidity: Measuring range: 0 to 100 % RH, Accuracy: $\pm 2$ % RH, Resolution: 0.1 %                                                                                                                                                                                                                                     |  |  |  |
| 3                                                      | Air Pressure: Measuring range: 600 to 1100 hPa, Accuracy: $\pm 0.2$ hPa, Resolution: 0.01 hPa                                                                                                                                                                                                                                    |  |  |  |
| <b>d. Tipping Bucket Rain Gauge</b>                    |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| 1                                                      | The TBRG should be with siphon control mechanism & dual reed switches with varistor protection. The rain gauge shall have a smooth surface finish with a sharp drain tip to drain out complete collected rain water in the bucket. The TBRG must have a base mount with bull's eye level indicator with SS nut, bolts & washers. |  |  |  |
| 2                                                      | Technology: Siphon control mechanism & dual reed switches with varistor protection                                                                                                                                                                                                                                               |  |  |  |
| 3                                                      | Resolution: 0.2 mm, Accuracy: $\pm 2$ % for up to 250 mm/hr and $\pm 3$ % for $>250$ to 500 mm/hr                                                                                                                                                                                                                                |  |  |  |
| <b>e. Data Logger and Telemetry system</b>             |                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| 1                                                      | Data Logger should be suitable to interface with                                                                                                                                                                                                                                                                                 |  |  |  |

|                                         |                                                                                                                                                                                                                                                                                                               |  |  |  |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|                                         | proposed Meteorological Sensors and send field data in real time over the FTP Servers, email ID.                                                                                                                                                                                                              |  |  |  |
| 2                                       | The data Logger should be on board 3G/4G GSM/GPRS Modem and capable to send directly field data over specified Gmail ID and ftp servers.                                                                                                                                                                      |  |  |  |
| 3                                       | The logger should be of ultra-low power economical solution for data logging, automatic reporting and alarm dialing.                                                                                                                                                                                          |  |  |  |
| 4                                       | The data logger software should have the facility to generate Alarm SMS, data recovery i.e., if due to technical bugs the GPRS Network fails then whenever it recovers then send field data with previous data (After last reported data).                                                                    |  |  |  |
| 5                                       | The System has a facility to interact & download data from the system over Laptop during field visit.                                                                                                                                                                                                         |  |  |  |
| 6                                       | Sampling: 1 second, User definable,                                                                                                                                                                                                                                                                           |  |  |  |
| 7                                       | Capacity: to store minimum 6 months data with Non-volatile FLASH memory                                                                                                                                                                                                                                       |  |  |  |
| <b>f. Power Supply Unit</b>             |                                                                                                                                                                                                                                                                                                               |  |  |  |
| 1                                       | The entire system should be powered with suitable Battery and charged through Solar Panel with charge controller unit (CCU) and ensure power backup for 15 Cloudy days.                                                                                                                                       |  |  |  |
| 2                                       | Sensors should be able to operate without solar power up to 15 days in case of cloudy conditions.                                                                                                                                                                                                             |  |  |  |
| <b>g. Enclosures and Mounting poles</b> |                                                                                                                                                                                                                                                                                                               |  |  |  |
| 1                                       | The enclosure should be made of robust steel sheet and should be able to accommodate Data Logger, Battery and CCU, Termination Block. Locking facility should be available with the enclosure.                                                                                                                |  |  |  |
| 2                                       | The enclosure should be powder-coated with polyester power or other material suitable for all weather conditions.                                                                                                                                                                                             |  |  |  |
| 3                                       | Necessary GI mounting poles and all fixers, connectors and accessories should be provided.                                                                                                                                                                                                                    |  |  |  |
| <b>h. Accessories</b>                   |                                                                                                                                                                                                                                                                                                               |  |  |  |
| 1                                       | All necessary cables of sufficient lengths to connect the sensors to the data logger, power supply unit and any other unit of the device should be provided, the length of cable should be atleast 8 m so as to enable to install the soil moisture sensors at a location far from the cosmic ray probe unit. |  |  |  |
| 2                                       | All mounting hardware/sensor cables/accessories should be provided for continuous operation of all sensors.                                                                                                                                                                                                   |  |  |  |
| 3                                       | The necessary and suitable field enclosure of stainless steel or any other non-corrosive material for protection of                                                                                                                                                                                           |  |  |  |

|                    |                                                                                                                                |  |  |  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|                    | the sensor unit and the power supply unit from damage should be provided.                                                      |  |  |  |
| 4                  | Essential tools/tool kits/utilities should be provided for the entire setup for regular operations and maintenance.            |  |  |  |
| <b>i. Warranty</b> |                                                                                                                                |  |  |  |
| 1                  | Minimum three-year comprehensive onsite warranty for the entire setup (including sensors) should be provided.                  |  |  |  |
| 2                  | The vendor should undertake preventive maintenance service of the instruments once every six-months during the warranty period |  |  |  |

**2. The list of Indian Customers who have bought the same/similar instrument within the last two years, with contact details:**

**3. Details of Service centre: (In case of dealers, also please state whether Authorised Dealership Certificate is enclosed)**

Place of Delivery: Stores, National Centre for Earth Science Studies, P.B.No.7250, Medical College P.O., Thiruvananthapuram – 695 011, Kerala, India.

I / We understand the instructions to the tenderers and General Terms and Conditions of the Contract governing supplies detailed in Annexure-B. I/We have thoroughly examined the specifications of the stores referred above and my/our offer is to supply stores strictly in accordance with and subject to the terms and conditions stipulated in Annexure-B.

Stamp and Signature of the Tenderer

ANNEXURE B

**INSTRUCTIONS TO THE TENDERERS AND GENERAL TERMS AND CONDITIONS OF THE CONTRACT**

1. **PRICES:** Tenders shall be made in ENGLISH and submitted with price for delivery at National Centre for Earth Science Studies, Akkulam, Medical College PO, Thiruvananthapuram-11, Kerala. The quoted amount should be inclusive of all charges like packing & forwarding charges, inland freight & other related charges, freight, statutory levies, unloading, installation etc.
2. **RIGHTS OF THE PURCHASER:** The Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.
3. **VALIDITY OF OFFER:** The prices quoted should be firm and quotation has to be valid for a period of 180 days from the date of opening of tender.
4. **CATALOGUE:** Tenderers shall furnish Leaflet/Technical Literature of the Stores offered by him along with the offer.
5. **TRANSPORTATION:** Stores shall be supplied under supplier's risk.
6. **MODE AND TERMS OF PAYMENT:** Full payment after successful installation/commissioning and acceptance of stores at Purchaser's Site.
7. **WARRANTY:** The supply made by the supplier shall be of best quality and workmanship shall be in accordance with the specifications stipulated in the Purchase Order. Defects/deficiencies shall be made good by the supplier free of cost, notified within the applicable warranty period.
8. **SUBMISSION OF TENDERS:** The quotation should be submitted by e-procurement in PDF format by 'logging on' in the website [eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)
9. **ENGINEER'S SERVICE MANUAL AND INSTRUCTION MANUAL:** The Engineer's Service Manual including Circuit Diagram and Instruction Manual (Original Copies) of the equipment shall be supplied along with the delivery/shipment by the supplier in the event of a purchase order. This aspect should be clearly indicated in the offer.
10. **DELIVERY/SHIPMENT:**
  - a. The time for delivery of the stores stipulated in the purchase order shall be deemed to be the essence of the contract and delivery must be completed not later than the period specified therein.

**b. Failure and termination:** If the contractor fails to deliver the stores or any part thereof within the period prescribed for such delivery, the purchaser shall be entitled at his option either;

i) to recover from the contractor as agreed liquidated damages and not by way of penalty, a sum of 2% of the price of any stores which the supplier has failed to deliver as aforesaid, for each month or part of a month, during which the delivery of such stores may be in arrears or

ii) to purchase elsewhere, without notice to the contractor on the account and at the risk of the contractor, the stores not delivered or there of a similar description (where others exactly complying with the particulars are not in the opinion of the purchaser readily procurable, such opinion being final) without cancelling the contract in respect of the portion of stores not yet due for delivery.

iii) to cancel the contract or a portion thereof and if so desired, to purchase or authorize to purchase of stores not so delivered or others of similar description (where others exactly complying with the particulars are not in the opinion of the purchaser readily procurable, such opinion being final) at the risk and cost of the contractor.

**11.LAW GOVERNING THE CONTRACT:** The contract shall be governed by the laws of India for the time being in force. The marking of all stores supplied must comply with the requirements of Indian Acts relating to Merchandise Marks and all the rules made under such Acts.

**12. JURISDICTION:** The courts within the local limits of Thiruvananthapuram, the place from the purchase order is issued, will be the jurisdiction to deal with and decide any matter arising out of the contract subject to the clause 18 hereof.

**13.INDEMNITY:** The contractor shall at all, times indemnify the purchaser against all claims which may be made in respect of stores for infringement of any right protected by patent, registration of design or trade mark and shall take all risk of accidents or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfilment of the contract.

**14.ARBITRATION:** Notwithstanding anything contained in clause 16 above, in the event of any question, dispute or difference arising under these conditions or any condition contained in the purchase order or in connection with this contract (except as to any matters the decision of which is specially provided for by these conditions) the same may be referred to the sole arbitration of the Director, National Centre for Earth Science Studies, Thiruvananthapuram or some other person appointed by him, there will be no objection that the arbitrator is a Govt. servant, who has to deal with matters to which the contract relates or that in the course of his duties as a Government servant he has expressed views on all or any of the matters in the disputes or difference. The award of the arbitrator shall be final and binding on the parties to this contract.

Terms of this contract: -

a) If the arbitrator be the Director, NCESS, (i) in the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor in the office either to proceed with the reference himself, or to appoint another person as arbitrator to (ii) in the event of his being unwilling or unable to act for any reason, it shall be lawful for the Director, NCESS to appoint another person as arbitrator;

**Or**

b) If the arbitrator be a person appointed by the Director, NCESS, in the event of his dying, neglecting or refusing to act, or resigning or being unable to act for any reason, it shall be lawful for the Director, NCESS, to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator.

Subject as aforesaid, the Arbitration Act, 1940 and the rule there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under this clause. The arbitrator shall have the power to extend with the consent of the purchaser and the contractor the time for making and publishing the award. The venue of arbitration shall be the place as the purchaser in the absolute discretion may determine.

**15.EXERCISING THE RIGHTS & POWERS OF THE PURCHASER:** All the rights, discretions and power of the purchaser under the contract shall be exercisable by and all notices on behalf of the purchaser shall be given by the Director or the Senior Manager of Centre for Earth Science Studies and any reference to 'the opinion of the purchasers' in the terms and conditions contained in this general conditions of the contract shall mean and be construed as reference to the opinion of any of the persons mentioned in this clause.

**16.EXEMPTION FROM PAYMENT OF DUTIES:** The purchaser is eligible for availing customs duty at concessional rate under the relevant rules.

**17.SPARES & ACCESSORIES:** Offers for plant/machinery/equipment/instrument shall also state prices or essential accessories, optional accessories and spares necessary for 5 years of satisfactory operation of the machinery/equipment/instrument offered. Prices for accessories and spares shall be itemised, offers where only lump sum prices are indicated are liable to be ignored. Particular care must be taken to list out each item of spare and quantity recommended and also individual price for these items.

**18.QUANTITY:** The purchaser reserves the right to accept or reject lowest or any offers in whole or in part without assigning any reason. It would therefore be in the interest of the tenderers to clearly understand that the purchaser may accept offers for any quantity of his choice and hence, the percentage of reduction, if any in the price quoted in case of acceptance of tender in whole or part shall be clearly stated.

**19.TRAINING:** The contractor shall, in special cases, if required by the Purchaser provide facilities for the practical training of the purchaser's engineers and technical personnel in respect of repair, maintenance or operation of the plant/machinery/equipment/ instrument offered at their manufacturing plant in India or abroad. The cost for such training (including travelling, boarding and other related expenses) and the

number of trainees and duration of training and any other terms if any, should be indicated separately in the offer.

**20.INSTALLATION & COMMISSIONING:** In the event of an order, the supplier shall arrange satisfactory installation and commissioning of the plant/machinery equipment/ instrument at purchaser's site, free of cost.

**21.SERVICE SOFTWARE/TOOLS:** The service software, tools required if any for the repair/maintenance of the plant/machinery/equipment/instrument shall be quoted separately.

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