Guidelines for Proposing New GLOBE Measurement Protocols

The mission of GLOBE is to promote the teaching and learning of science, enhance environmental literacy and stewardship, and contribute to scientific understanding of the environment. This document provides general guidelines for establishing new protocols or modifying existing protocols for measurements in the GLOBE Program.

Those considering proposing a new protocol or protocol modification to GLOBE should consult with NASA as the Program Sponsor. If the Program Sponsor judges the new protocol or modification idea consistent with GLOBE and potentially feasible from a resource and implementation stand point, the GLOBE Implementation Office (GIO) and Goddard GLOBE Information Technology (GGIT) support group will be directed to guide the proposers in development of their proposal. Modifications to existing protocols to bring them up to date, support the use of improved, updated, or more affordable instrumentation, or provide implementation changes to directly support activities associated with a formal partnership with GLOBE are encouraged. Development and evaluation of new protocols will require considerable work on the part of the GIO and GGIT as well as the proposer.

Care will be taken to only devote GIO and GGIT resources to development of scientifically justified, educationally useful protocols that will significantly strengthen GLOBE and support growth in Program participation and implementation. Any organization interested in providing funding support for implementation of a new protocol should discuss with NASA the possibility of entering into a formal agreement for a GLOBE partnership.

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Requirements for New GLOBE Measurement Protocols

For a measurement protocol to be incorporated into the core collection of the GLOBE Program and be associated with the GLOBE trademark, it must meet the following requirements:

1. The protocol must be relevant to the mission of GLOBE and designed to produce research quality measurements and improved characterization of the environment.

2. Any instruments, equipment, or material required must be specified, readily available either through purchase, Web download, or construction by students, and affordable by at least a significant portion of the GLOBE community. Alternatively, free equipment must be offered for use by a number of schools sufficient in number and distribution to address the scientific objectives of the protocol.

3. Protocols and the data produced must be comprehensible by secondary school students; it is desirable that they be comprehensible by primary and intermediate school students as well. If appropriate, options targeted at specific learning levels are encouraged.

4. Conducting the protocol must not pose a significant safety risk for students.

5. Training of teachers in the correct conduct of the protocol and the interpretation of the resulting data must be achievable in a reasonable amount of time. No more than 8 hours, in total, of training should be needed, although the training may require multiple days to complete.

6. If the data are reported as values with units, the units must be metric and consistent with those in scientific use (e.g., centimeters, grams, seconds, pH, degrees Celsius).

7. The site for the measurement(s) must either be of a type already defined in GLOBE or the protocol must include a definition of the required characteristics of acceptable measurement sites, information about the site that should be reported to support data interpretation, and site geolocation to within a specified accuracy.

8. The time requirements for taking data must be consistent with the incorporation of this measurement activity in a school curriculum and schedule; daily measurements should be doable in less than 20 minutes at sites adjacent to schools; less frequent measurements may require travel away from school and up to a few hours of field work in addition to follow-on laboratory analysis. Lab procedures should be doable in one or more non-consecutive 45-minute blocks of time.

9. Measurements must be appropriate to a range of different locations but need not be doable everywhere; for adoption as a protocol supported as part of the worldwide common elements of GLOBE, the protocol must be appropriate for implementation in multiple countries.

10. The protocol and resulting data must be made publicly available, preferably by GLOBE through the Internet. If the protocol is approved for incorporation in the core collection of GLOBE, the proposers must work with GLOBE information systems developers on the development of database structures and visualization capabilities for www.GLOBE.gov.

11. The resulting measurement data must increase or enhance scientific knowledge of environmental conditions.

12. The proposal must include the commitment of the proposers to provide scientific support of the protocol for at least three years following its inclusion in GLOBE and availability to the GLOBE community. This support includes advising GLOBE on all scientific questions relating to the protocol, interacting with GLOBE partners and teachers on the science of the protocol, and support for communications with the GLOBE community including blog posts, etc., and quality checking of the resulting data reported.

How to Propose New GLOBE Measurement Protocols?

With guidance provided by GIO and GGIT, the Party proposing the new protocol(s) or protocol modification(s) should assemble a proposal document consisting of the following components:

1. A full description of the protocol or modification, including the science relating to the measurement and instrumentation required.

2. A explanation of how this protocol or modification will improve implementation of GLOBE and strengthen Program participation.

3. A detailed description of the measurement steps in the form used in field guides and lab guides in the GLOBE Teachers Guide.

4. A section to guide and support implementation to be added to the GLOBE Teachers Guide including science background material appropriate for students for whom the protocol is grade-appropriate and material to aid teachers in planning implementation of the protocol with their students and integrating the measurement activity into their curricula.

5. Documentation of prior testing.

6. Relevant scientific publications and biographical sketch of the proposing party.

7. A statement of the commitment of the proposer to the continuing support of the proposal for at least three (3) years.

This document should be submitted electronically to the GLOBE Program Manager at NASA Headquarters. The proposal will be given final review for its relevance to the GLOBE program as well as its scientific and pedagogical merit. The cost and work load implications for the GLOBE data and information system and other infrastructure supporting the worldwide implementation of the proposed change or addition will also be examined.

Expectations of those proposing a new protocol or protocol modification

1. Provide a measurement protocol or modification that is understandable, doable, and safe for students in some portion of primary, intermediate, and secondary school grades;

2. Work with GIO and GGIT to develop detailed field and/or lab guides for doing the protocol, forms for data entry, and appropriate educational material to support teachers in integrating the protocol into their curricula;

3. Provide protocol instrument or equipment specifications and review them on an on-going basis to keep them up to date and address issues of change in designs and availability;

4. Work with GGIT on the development of database structures and visualization capabilities for www.GLOBE.gov;

5. Train a number of GLOBE Master Trainers in the proper conduct and presentation of the protocol and provide teacher training materials;

6. Advise GLOBE and the GLOBE community on all aspects of protocol implementation, data visualization, and student use of resulting data in research projects for at least three (3) years;

7. Provide review by a scientist (graduate student or above) of the accuracy of all data contributed by students and teachers to the GLOBE database;

8. Provide scientific review of any written, visual, or video materials provided for distribution through the GLOBE website;

9. Join and actively participate in the GLOBE International Scientist Network (GISN) by communicating with the GLOBE community and serving as a role model and representative of the measurement protocol; and

10. Publicize the activity in coordination with GIO.

GLOBE-provided support for protocols

1. Guide proposers through development of all materials required for integration of the protocol or modification into GLOBE;

2. Incorporate approved protocols or modifications in GLOBE scientific, educational, and training materials;

3. Work with proposers to develop database structures and visualization capabilities for www.GLOBE.gov;

4. Disseminate the protocol and supporting materials to the GLOBE community through the GLOBE website;

5. Encourage partners to train and support the protocol and teachers to include the measurement and data reporting in their activities;

6. Receive, archive in perpetuity, and make publicly available all measurement data contributed to GLOBE including appropriate visualization of data, establishment of appropriate database structures, and routine error checking of summited data using methods approved by the protocol provider;

7. Contribute to and participate in education, engagement, or public outreach activities of the proposer germane to GLOBE;

8. Gather and provide feedback from the GLOBE community on implementation of the protocol or modification;

9. Review and host approved written, visual, and video materials provided for distribution through the GLOBE website; and

10. Publicize the activity in coordination with the proposer.