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SPECIAL EDITION

CEDAR Class I Instrument/Facility Development

The original CEDAR planning document compiled by the Steering Committee in 1986 called for a three-phase approach for addressing scientific questions related to atmospheric coupling. In Phase III of the plan a concerted effort was to be devoted to the use of Class I instruments and facilities on a global basis to observe critical atmospheric phenomena. Class I instruments and facilities are those that make use of state-of-the-art technology to achieve greater sensitivity, better spatial and temporal resolution, and new measurement capabilities.

In the last seven years, great advances have been made in the development and deployment of Class I instrumentation and facilities. However, it is clear that in recent years such progress has been impeded by the competition for funds with increasingly more robust and diverse scientific efforts. The greater cost for instrument development has made it difficult to justify the support of these proposals under current budgetary constraints. To compensate for this trend and to signal CEDAR's entry into Phase III, the Steering Committee recommends that a major portion of FY94 funds be set aside for proposals related to Class I instrument and facility development. **These proposals are to be submitted by November 1, 1993, and will replace the general call for CEDAR proposals.**

Because we anticipate that funding requests submitted under this solicitation will be significantly higher than typical CEDAR awards, proposers are asked to follow carefully the guidelines outlined below and, if in doubt about the appropriateness of a planned investigation, contact the NSF Program Directors listed below for additional guidance. The overall objective of this solicitation is to begin a three-year augmentation of as many scientifically relevant Class I instruments and facilities as available funding will allow.

The following types of proposals are acceptable as part of the CEDAR New Technology Initiative:

- Proposals to design, develop, and test a single state-of-the-art instrument with unique scientific applications.
- Proposals to design, develop, and test a state-of-the-art instrument which can be subsequently duplicated and distributed in a cost-effective manner to meet specific scientific requirements.
- Proposals to upgrade existing instruments and facilities to Class I status.
- Joint proposals from two or more institutions to develop a set of state-of-the-art instruments to be operated in a coordinated manner at a specific location (Class I facility).

Proposals in all four areas should include the following elements that will be used in the evaluation:

- Scientific justification for the proposed instrument/facility.
- A description of the way in which the instrument and/or data is to be used for scientific studies, although the cost of such data analysis is not to be included in the budget (see the information on funding profile below).

- Detailed design, development and test plans.
- Requirements, if any, on the host site along with a letter of support from the facility. Extraordinary costs required to field an instrument should be included: for example, necessary modifications to a host observatory.
- An estimate of the operation and maintenance that will be required after the instrument is deployed, although the operation and maintenance costs are not to be included in the budget (see the information on funding profile below).
- A description of how the instrument/facility development will contribute to the research education infrastructure.

Class I Facilities. A Class I facility is defined as a facility in which a collection of Class I instruments is operated in a coordinated manner. At the present time there are several such clusters of instruments that have achieved or are approaching Class I status: for example, the four incoherent scatter radar sites, and optical observatories at Bear Lake, Peach Mountain, Longyearbyen, etc. Proposals should indicate any intentions to deploy newly developed or upgraded instruments at these sites, either temporarily or permanently.

With regard to the Polar Cap Initiative, an observatory at Resolute Bay, Canada, is scheduled for completion in December 1993. Proposals for instrumentation at Resolute Bay are acceptable provided they fall within the logistics capabilities of the facility. Information about the facility can be obtained by contacting Dr. John Kelly of SRI International, who is overseeing the construction of the facility. The use of optical domes at the observatory will be coordinated to provide opportunities to as many different investigators as possible. Therefore, portability in the proposed instrumentation for Resolute Bay is highly desirable. In addition, active experiments such as lidars and radars require approval from Canadian authorities. John Kelly is the current liaison with the appropriate authorities and therefore should be contacted if active experiments are proposed. Dr. Kelly can be contacted at the Geoscience and Engineering Center, SRI International, 333 Ravenswood Avenue, Menlo Park, CA 94025; Phone: (415) 859-3749; Fax: (415) 322-2318.

Funding. This initiative is envisioned to provide a step-function infusion of CEDAR funds toward the development of Class I instruments and facilities. Most of the funding is to be provided in FY94 with available funding tapering off in the subsequent two years. Therefore, it is to the proposers' advantage to plan their budgets to mirror this funding profile. For example, the first year of funding could be for design and construction, the second year for deployment and test, and the third year to adapt the instrument for multiple users. The approximate amount available in FY 1994 is \$1 million.

As mentioned above, the proposals should include the expected cost burden on NSF for operation and maintenance of the instruments after termination of the award. Proposals for operation and maintenance of the instruments after the three year award period will have a much better likelihood for success if NSF can more accurately anticipate future requirements. On the other hand, a plan for future research with the instruments need not be included in the proposal because future proposals for scientific investigations involving the Class I instruments will not necessarily be awarded to the investigators who have developed them.

Schedule. Proposals submitted by November 1 will be evaluated both by mail and by a panel which will meet in February 1994. Awards will be made by April 1994. Proposals for general CEDAR scientific investigations will be solicited in early 1994 with an estimated submission deadline of April 1. Those proposals will be reviewed for funding actions in early FY1995.

The CEDAR Steering Committee

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