IV. PILOT ACTIVITIES

In fulfilling U.S commitments at UNCED, NOAA has initiated a Pilot Project designed to provide practical experience and generate products useful in implementing an International Research Institute. Pilot activities will continue in 1994 with the continuation of applications and international research, the initiation of a model intercomparison effort, and the convening of applications workshops

A nine-month training course has been developed and implemented at the Lamont-Doherty Earth Observatory of Columbia University to train scientists from countries impacted by ENSO events. The course presents state-of-the art capabilities in coupled ocean-atmosphere climate modeling and prediction and introduces concepts on tailoring forecasts for practical applications to regional and local user communities.

Participants in the first course, completed in January 1993, have conducted climatological assessment and applications experiments for their regions and have returned to their home institutions to assist in the development of applications efforts. As a result, ENSO application efforts have been initiated or enhanced in Australia, Brazil, Chile, Indonesia, the Pacific Islands, Peru, South Africa and Uruguay. A second course, convened in March 1994, supports ten additional trainees from Argentina, Ecuador, India, Japan, Kenya, Paraguay, Peoples Republic of China, Taiwan and Zimbabwe. Planning is underway for short intensive regional courses in Southeast Asia and Africa.

A data manager assists course participants in the development of data and communication links between their home institutions and the Pilot Project, assesses the availability of data products, develops protocol for routinely acquiring and transferring data from experimental prediction institutions, and fills data requests from course participants and their institutions.

The Pilot Project also has initiated a research and development activity at Scripps Institute of Oceanography which supports the intercomparison of currently available fully coupled atmosphere-ocean global circulation models; to evaluate their relative predictive skill; and to gain practical experience in the design and configuration of a model development effort with emphasis on data acquisition, model initialization and forecast guidance preparation.

In an effort to develop linkages between the forecasting and user communities, the Pilot Project sponsors a series of regional workshops in the applications of ENSO and seasonal to interannual forecasts. Workshops held in Brazil, Hawaii, and Australia have successfully initiated dialogue on regional approaches to forecasting and applications. Three additional workshops are being planned for 1994/1995 in North America, Southeast Asia and Central/Southern Africa.

V. ISSUES: PROGRAM MANAGEMENT

Institutional Arrangements

As stated earlier in this proposal, the SCPP will provide the next steps toward the goal of reliable forecasts and analyses of climate variations on seasonal to interannual time scales, and to develop the infrastructure by which this can be used for social and economic benefit by all countries of the world. It is the task of program management to achieve smooth transitional coordination of research and experimental forecast activities, as well as a fruitful dialogue between physical and social scientists, technicians and decision makers, existing operational centers serving individual nations or regions and new multinational institutions, and researchers and implementers.

For the components of the SCPP Program focused on Integrative Modeling and Prediction and on scientific Assessments and Application, it is recommended that a new framework be established allowing all entities, governmental, nongovernmental, commercial, to participate fully. The "science" of the problem, that of a global phenomenon with important and distinct regional manifestations, as well as the economics of global-scale science, where true efficiency is only reached when partner countries work together pooling scientific and financial resources that no single country could put forward, require the establishment of multinational institutional arrangements to provide the context for shared responsibilities, shared benefits, and indeed, shared ownership. While much of the SCPP will be an aggregation of coordinated national contributions, it is proposed that the International Research Institute would be established as an independent multinational organization.

Implementation of a Multinational Network

Building a truly multinational effort requires multinational dialogue, participation, and broad-based ownership from the outset. Each participating entity, governmental, scientific, or institutional, must be able to see clearly both the role it would play in advancing the work of the network and the benefits it could receive from participation in such a network.

In preparing for launching a multinational dialogue, it has become clear that considerable attention must be devoted to: a) the need for a flexible framework upon which to build the broader effort, and b) the nature of national participation in a multinational program. It is in the spirit of providing such a flexible framework that the U.S. has assembled this proposal and is moving forward with anticipatory planning on the national scene. Our plans call for U.S. funding to be directed toward partial funding of the International Research Institute and toward establishment of Research Centers in existing U.S. facilities, either as distinct U.S. entities or in a collaborative mode with facilities located in other countries. These plans also call for enhancing interaction between the U.S. NMC and the research community. If this framework is deemed amenable to the group of partner nations, it is likely that other countries will want to similarly propose the establishment of such Research Centers and the strengthening of linkages to existing operational centers.

Included in the U.S. selection of Research Centers is the plan to accept proposals from one or a group of Research Centers to establish a host site. The U.S. will then work with the international community to review the proposals and agree on the location for the International Research Institute for SCPP. The selection process will include multinational consultation and will be designed to assure that the institution or institutions hosting the International Research Institute have the capabilities to operate the Institute as a fully multinational facility.

It will also be necessary for participating countries to consider arrangements for the establishment of Regional Application Centers. A series of regional workshops are under way under the aegis of the U.S. Pilot Project as a means of creating a structured dialogue between scientists and decision makers on the topic of the impacts of and adaptation to climate variability.

Early activities undertaken by the U.S. thus far, including the pilot project and establishment of the TOGA Program on Prediction (T-POP), have relied on and benefited from consultation of the international community. The mechanisms by which we propose to achieve multinational consensus and broad-based ownership in the SCPP include: a) establishment of a multinational advisory committee to review and comment upon developing multinational plans, b) a process of multinational consultation in all anticipatory steps taken by the U.S., c) a high-level meeting and planning process for initialization and coordination of the end-to-end program, d) a series of working-level meetings to advance the planning process and ensure that necessary resources are in place, and e) the creation of multinational agreements where appropriate and necessary.

Budget Requirements

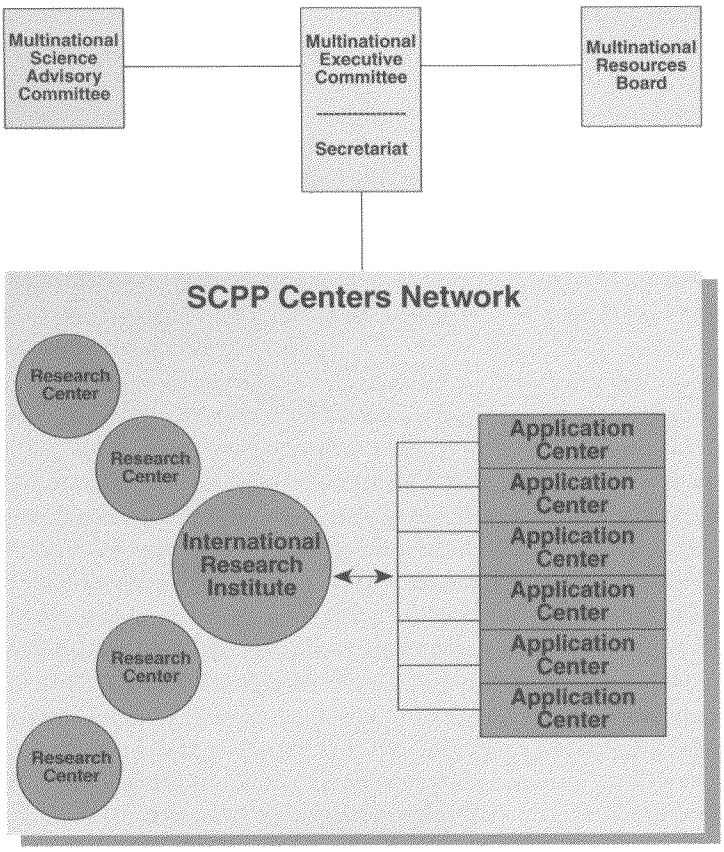
Resources for the observations and process research components of the SCPP will continue to be secured through the national efforts which support existing international programs, such as WCRP and GCOS. These programs are managed under existing and emerging mechanisms. In the U.S. implementation of these efforts will continue to be advanced in the context of the interagency USGCRP.

The most critical resource requirement at this stage involves support for the international forecasting and applications component of the new Program. The shared ownership and shared benefits inherent in the concept of multinational infrastructure imply that the success of the effort depends upon shared responsibility for its financial security. Governments and other entities with a vested interest in the forecast guidance products issued by an International Research Institute will be the source of financial resources required to support the Institute's operational expenses. The U.S. expects to play a significant role, as is evidenced by an expressed willingness to assume a leadership role, and has begun the process of securing resources in the context of the USGCRP. The U.S. is currently funding pilot activities associated with such developmental efforts as training for scientists from countries most directly affected by ENSO and workshops to identify potential users of climate information from the decision-making communities.

SCPP Centers Network

The structure proposed in the figure below is offered for the consideration of all prospective participants in the network. It reflects the proposal for a new, multinational management structure for the components of the SCPP specifically intended to extend scientific infrastructure to the world community at large. As noted earlier, it is proposed that the International Research Institute would be established as an independent multinational organization.

SCPP Centers Network
Program Management



The programmatic architecture depicted in the diagram above is meant to illustrate that the network tasked with generation and distribution of, as well as feedback from, climate forecast information will require the focused efforts of research facilities, a centralized experimental forecast responsibility, and a web of Regional Application Centers located in the heart of regions most vulnerable to the effects of climate variability.

The institute's policy making body would be the Multinational Executive Committee. The Committee would be responsible for setting the overall vision of the network, establishing its routine objectives and procedures, and fulfilling an oversight role regarding the allocation and expenditure of funds. Core membership on the Executive Committee would include representatives from countries providing financial or other support.

The Scientific Advisory Committee would be responsible for scientific and programmatic guidance and the identification of high-priority research activities intended to advance the state-of-the-art of climate prediction. Membership on the Committee would be broad-based, including physical, natural and social scientists, and would be based on the quality of scientific credentials without regard to nationality but reflecting the importance of geographical balance.

The Resources Board would serve as the forum within which both governmental and nongovernmental contributors would meet to review overall funding requirements and indicate individual levels of support.

The Secretariat would serve as the linkage between policy and program setting, carried out within the Executive Committee in cooperation with the Scientific Advisory Committee and the Resources Board, and the coordination of activities throughout the network. In addition, the Secretariat could serve as the network's liaison to the Observations and Data and Process Research communities.

Throughout the development of the SCPP and it's programmatic infrastructure, the transitional step toward systematic production and dissemination of reliable forecasts and forecast guidance products will be facilitated by the maintenance of strong linkages with planning and operational activities of other national and international observations and research efforts.

Coordination of a Multinational SCPP

The design of the SCPP is based on the assumption that advancing the state-of-the-art in climate forecasting will require a close alliance among existing and planned international programs and research initiatives involved in observations and data management, research into climatological processes, integrative modeling and prediction, and assessment and application of climate diagnostics and forecasts. Coordination, for example, should ensure that mechanisms exist to express the needs of the modeling community to the individuals determining priorities in observation and data management. Not only will such enhanced communication among the component scientific communities serve to advance scientific understanding, it will also result in a far more efficient use of resources with the effect of leveraging financial contributions made by each participant in the SCPP.

Implementation of the activities in these areas is an issue of coordination rather than the creation of a management superstructure for the overall SCPP. International management structures already exist for Observations and Data Management with the GCOS and GOOS Secretariats in Geneva and Paris, respectively, and for Process Research with the WCRP Secretariat in Geneva. They each have scientific advisory bodies, appropriate resources boards or committees, and program offices to assure coordination among participants and implementation of activities. A new multinational management structure will be required for the two components of the SCPP addressing integrative modeling and prediction and application. We will continue to discuss these structural requirements, including an elaboration of the functions of a multinational Executive Committee and its associated Secretariat, with the international community.

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Acronyms

CLIVAR	Climate Variability and Predictability
ENSO	El Niño-Southern Oscillation
GCIP	GEWEX Continental-Scale International Project
GCM	General Circulation Model
GCOS	Global Climate Observing System
GEWEX	Global Energy Water Cycle Experiment
GOALS	Global Ocean Atmosphere Land System Program
GOOS	Global Ocean Observing System
ICSU	International Council of Scientific Unions
IOC	Intergovernmental Oceanographic Commission
NASA	National Aeronautics and Space Administration
NMC	National Meteorological Center
NOAA	National Oceanic and Atmospheric Administration
NSF	National Science Foundation
ONR	Office of Naval Research
SCPP	Seasonal-to-Interannual Climate Prediction Program
SST	Sea Surface Temperature
SVP	Surface Velocity Program
TAO	Tropical Atmosphere Ocean Array
TOGA	Tropical Oceans/Global Atmosphere Program
TOS	TOGA Observing System
T-POP	TOGA Program on Prediction
TPPN	Trans-Pacific Profiler Network
UNCED	United Nations Conference on Environment and Development
USGCRP	U.S. Global Change Research Program
WCRP	World Climate Research Program
WMO	World Meteorological Organization
WWW	World Weather Watch
XBT	Expendable Bathythermograph