

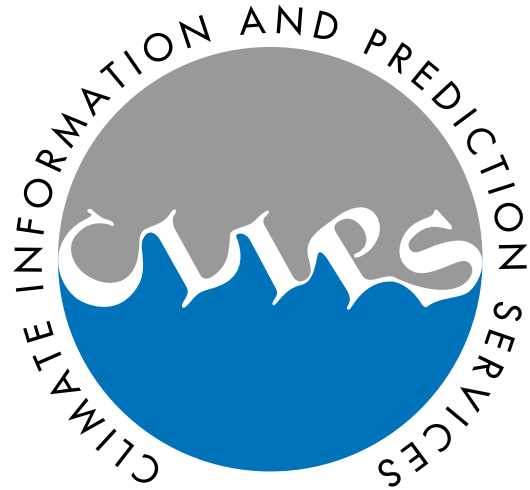


World
Meteorological
Organization
WMO-No.864



Stepping forward

*Implementation of the WMO
CLIPS project*



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FOREWORD

The Twelfth World Meteorological Congress in June 1995 recognized that important advances had been occurring in science and climate services, including the important scientific outcome of the World Climate Research Programme. Congress asserted that the provision of climate information and prediction will improve social and economic decision-making and will support the goal of sustainable development. Congress therefore decided upon the establishment of the World Meteorological Organization's (WMO) Climate Information and Prediction Services (CLIPS) project and included it in the WMO Fourth Long-term Plan for 1996-2005.

The primary objective of the CLIPS project is to develop the capacity of the national Meteorological and Hydrological Services (NMHSs) to take advantage of the recent advances in the science of climate and in the processing and delivery of climate information, and to pass on the benefits of the improved climate services to the user community.

The CLIPS project builds on the past decades of successful atmospheric and oceanographic research, such as the Tropical Ocean and Global Atmosphere (TOGA) project, and on established operational meteorological and hydrological networks involving international and regional centres as well as the NMHSs. At the same time, it builds on a developing capability to predict climate on monthly, seasonal and interannual time scales.

In the final analysis, the CLIPS project should stimulate the use of sector-specific information, in an ongoing, iterative process of

dialogue between the producers of climate information and the multitude of users in government, academia, private industry and the media. It is envisaged that this process will be based on established technical cooperation arrangements between WMO and regional and subregional intergovernmental bodies, especially through the WMO Regional Associations.

The CLIPS project office, established within the World Climate Programme (WCP) Department of the WMO Secretariat, is responsible for the implementation of the project and to maintain relations with WMO partners in the activities under Thrust 2 of the inter-agency Climate Agenda framework - Climate Services for Sustainable Development.

Following the planning phase, which included formulating of the CLIPS project concept and expert missions, the project moved into the implementation phase with the launching of activities within the project's components. The purpose of this brochure is to outline the implementation of the CLIPS project which consists of a suite of complementary thrusts.

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(G. O. P. Obasi)
Secretary-General

Many national Meteorological and Hydrological Services (NMHSs) have extensive experience in preparing various climate products for use in socio-economic activities and

decision-making. The implementation of the WMO Climate Information and Prediction Services (CLIPS) project should ensure that this experience is shared among the NMHSs. Consequently, the capacity of NMHSs to deliver climate services and meet the expectations and needs of customers - national, regional or international - must be built. The capacity-building initiative, as proposed through the WMO CLIPS project, will strengthen the role of NMHSs and ensure the provision of better climate services to their respective governments and other national users.

THE CLIPS PROJECT CONCEPT AND OBJECTIVES

A vision for climate information and prediction services on which the development of the project was based, and the project objectives, were outlined in the booklet *Climate Information and Prediction Services* (WMO-No. 832) published in 1995 by WMO.

The ultimate goal of the WMO CLIPS project within the WMO World Climate Applications and Services Programme was defined as “to provide the best possible climate information, including expectations of future conditions, to improve economic and social decisions, and which will

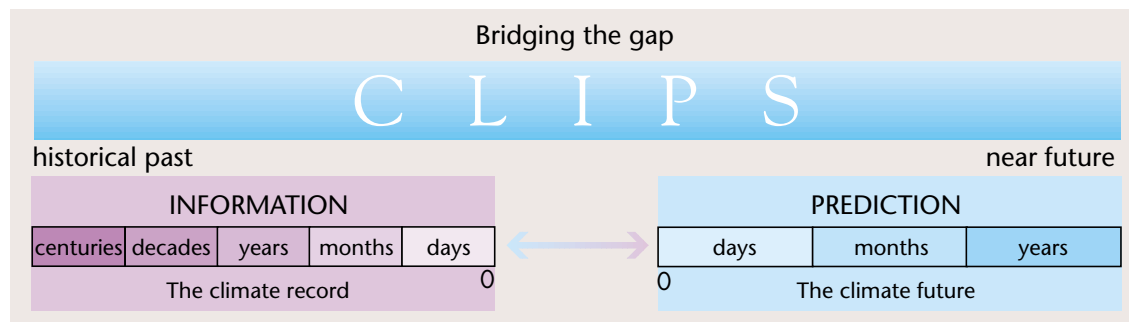


Figure 1

There are four major components of the CLIPS project:

- Training.
- Demonstration/pilot projects.
- Liaison with research programmes.
- Networking.

The attributes and implementation plans for these components are described below.

Training component

The following categories of training events are planned:

- **Initial training seminars/workshops**
Training seminars and workshops (usually one-week's duration) are designed to promote awareness among staff of national climate services of the applications and services involving modern climate products such as climate forecasts, and how to use these products.
- **Advanced training workshops**
These are of a broader and more advanced scope than the initial training seminars and workshops. Advanced workshops of two to three weeks' duration should review recent

climate research developments and the use of climate information to assist decision-making and sectoral management. The major foci of the advanced training workshops are to provide the participants with the opportunity to gain hands-on experience in handling various CLIPS application tools and also to be trained to conduct awareness-raising training seminars in the Member countries.

- Roving seminars

These seminars are organized through visits of experts in CLIPS activities to selected countries to provide on-the-spot training of NMHS staff. They also provide a platform for disseminating information about successful implementation experiences.

The goal is to hold at least one training event in each Region every year. Depending on the sector priorities in each Region, special considerations will be added to the workshops on relevant topics such as public weather services, agrometeorological applications and water resources management. Proceedings of the training workshops will be published and disseminated widely.

Advanced training focuses on the development of methodologies for applying climatological information and tailoring seasonal-to-interannual climate predictions to practical use by decision makers in agricultural planning, water resources management and other socio-economic sectors. Participants will be required to bring observational data from their countries and/or regions to initiate pilot projects.

Each training workshop will have a theoretical and a practical component, with

The demonstration and/or pilot projects may deal with individual components of enhanced climate services, for example, aspects of the use of the Internet; downscaling of information to regional and national scales; establishment and enhancement of user interaction; study of predictable climate signals, e.g. ENSO; or may consist of a series of integrated topics, where each project is designed to evaluate a number of components of enhanced services.

Two different strategies for initiating and implementing pilot projects will be adopted depending on the level of preparedness, sectoral needs, recommendations arising from support missions in the region of interest, as well as other considerations (see boxes on next page).

While the first strategy may be adopted when preparatory work has been already undertaken, the second strategy is more appropriate where the degree of preparedness is inadequate and fact-finding missions have not been initiated or the information is obsolete because of the amount of time that has elapsed since they were undertaken. Under these circumstances, CLIPS advanced training workshops are used to initiate the pilot projects.

In 1997, a pilot project at the African Centre of Meteorological Applications for Development (ACMAD) will continue and some pilot projects will be initiated using support submitted through the VCP channels. Demonstration projects will be initiated in conjunction with a training workshop for ASEAN countries in RAs II and V.

In 1998, further proposals for pilot projects will be developed and submitted for funding

- Geographical information of major hydrological systems and/or agricultural production systems in the country or region.
- Hydrological data such as monthly averages of river discharges, river stages, etc.
- Crop statistics, i.e. crop yields, crop production, or other agricultural data available, such as the environmental conditions needed for selected crops in the participants' home country.
- Water resources systems data (reservoir characteristics, hydropower generation, etc).
- The longest possible records available on monthly averages of precipitation and temperature from selected weather stations on a regional scale.
- Any other information that the participant may consider important to evaluate the impact of extreme climate events, such as droughts and floods, on agriculture, water resources management, and human and property loss.

consideration. Workshops on the progress of pilot projects in countries in Regions II and V will be organized, and funded through extra-budgetary (possibly VCP) sources.

In 1999, this series of workshops will continue in countries in Regions I, III, IV and VI.

This liaison is planned through climate outlook fora and joint expert meetings.

- Climate outlook fora

These are proposed as regional/subregional workshops. Researchers dealing with climate information and prediction and specialists in climate services will develop jointly a consensus or consolidated climate outlook together with guidance on the interpretation and dissemination to users. The participants of the fora are representatives of

- Distribute climate outlook to NMHSs
 - Distribute pilot project progress reports
- Initiate an internet newsgroup
 - Initiate online CLIPS training events
 - Provide feedback to the climate information providers

Strategy I for initiating pilot projects

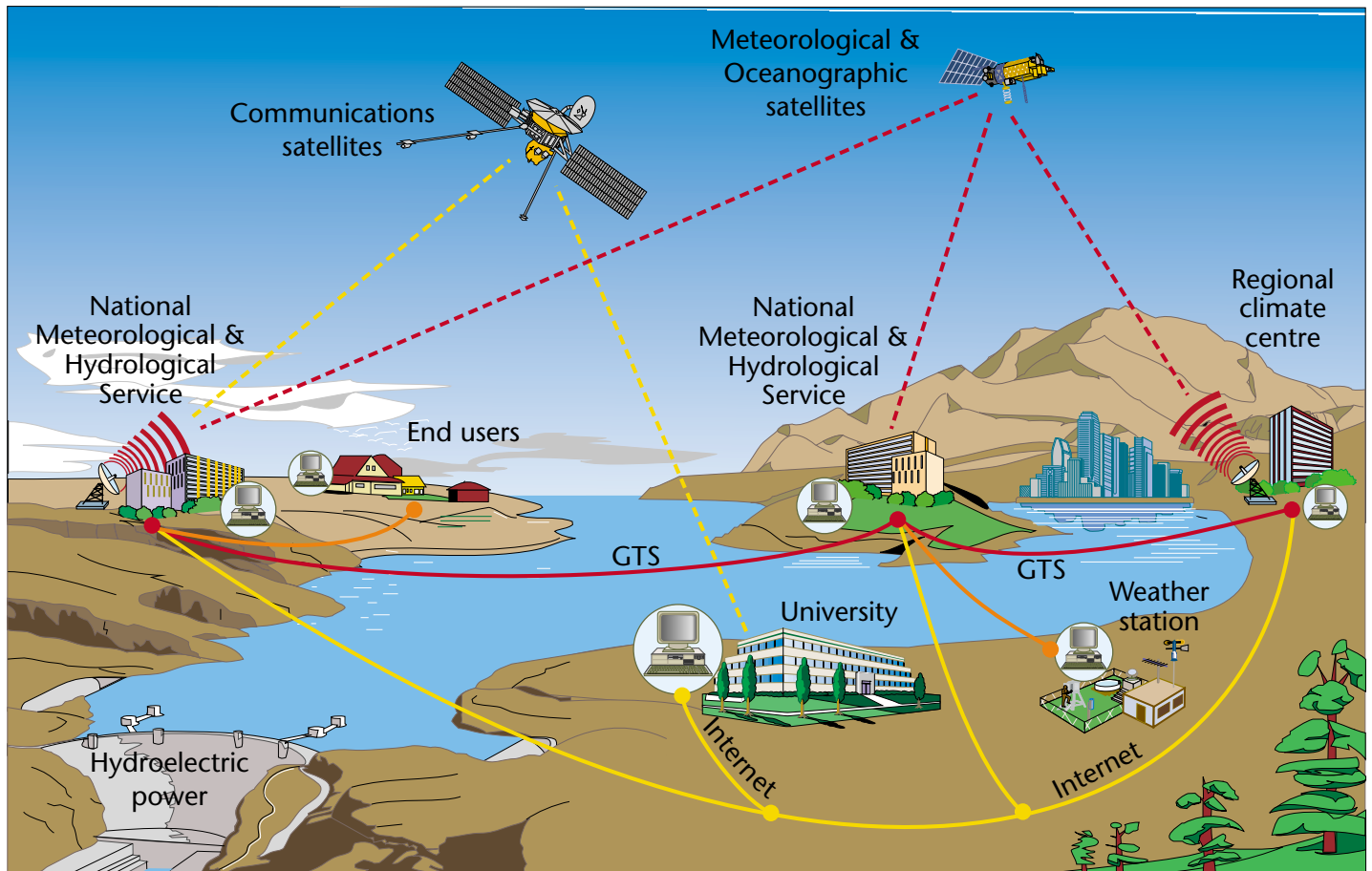
- Expert mission report
- Identify target countries
- Propose priority sectors
 - Identify counterparts
- Identify project leader and duration
 - Identify project objectives
- Establish evaluation criteria
- Identify source of funding

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Strategy II for initiating pilot projects

- Participants prepare data for training workshop
 - Initiate pilot project at training workshop
- Consolidate pilot project after workshop
 - Follow-up steps similar to those under Strategy I

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NMHSs and regional operational climate centres. The climate outlook fora are also designed to provide capacity building on creation and interpretation of climate outlook products. They should draw together partners from various advanced climate prediction centres. Plans already exist for climate outlook fora in Southern Africa for 1997-1999. A climate outlook forum in the Asia-Pacific region is planned for 1998.

- Expert meetings

These will be organized on specific topics requiring coordination of the CLIPS project with research programmes such as CLIVAR.

Networking component

This part of the project deals with studies of the feasibility of using telecommunication platforms such as the Global Telecommunication System (GTS) and Internet to disseminate climate products; consultant services may be required for this purpose.

Recognizing the high cost of organizing workshops, training seminars and publication of reports there is a need to adopt the Internet as one of the CLIPS project's primary modes of information exchange. This will not be confined to data products but also will be used to perform other CLIPS project functions which involve the exchange and sharing of information.

Internet platforms will enable NMHSs to share their experiences with others wishing to develop the capability, and to take part in regional and international networks of countries exchanging information and experience in the provision of climate services. The CLIPS project promotes the use of the Internet to transmit climate data and information and to facilitate the exchange of knowledge between Members.

A study will be initiated to identify ways and means for exploiting the GTS, and a limited CLIPS Internet network will be established on an

experimental basis. Initially, the participating NMHSs will comprise a subset of Members involved in demonstration/pilot projects and which already have adequate connection speed to handle the transfer and exchange of CLIPS products. The specific implementation actions will entail the initiation of the Internet-based exchange of CLIPS products between the selected NMHSs and research institutions over a one-year test period.

PUBLICATIONS

The four components of the project will be supported by publications related to the CLIPS project, which include reports on training workshops, pilot projects, planning strategies, etc. With the help of consultants, several CLIPS publications will be prepared including reports on dissemination of climate products via the GTS and Internet, annual manuals and related reports on CLIPS demonstration/pilot projects. Education material on CLIPS should include a manual on methodologies for providing climate services with an emphasis on user interaction.

The planned publications include the following:

- Manual for CLIPS related training (1998);
- Manual on the dissemination of CLIPS via the GTS and Internet (1998);
- CLIPS demonstration/pilot projects (several reports; 1999)
- Manual on education in the provision of CLIPS;
- Methodologies in providing CLIPS (1999);
- CLIPS information package for use by educators (1999).

THE WMO CLIPS PROJECT IN THE CONTEXT OF THE INTER-AGENCY CLIMATE AGENDA FRAMEWORK

The Climate Agenda - an integrating framework for international climate-related programmes - sponsored by WMO, UNEP, UNESCO and its Intergovernmental Oceanographic Commission, FAO, WHO and ICSU is organized along four major thrusts:

1. New frontiers in climate science and prediction.
2. Climate services for sustainable development.
3. Studies of climate impact assessments and response strategies to reduce vulnerability.
4. Dedicated observations of the climate system.

The Inter-agency Committee on the Climate Agenda (IACCA), established in April 1997, identified leading organizations to be responsible for coordination of the development of the Climate Agenda within each of the four thrusts. WMO is the leading coordinating organization for Thrust 2 - Climate Services for Sustainable Development.

The CLIPS project concerns many aspects of activities envisaged under Thrust 2 and, indeed, represents a major effort to achieve the objectives of this thrust, formulated as follows:

- Delivery of operational climate forecasts and assessment of trends in climatic variables;
- Establishment of national, regional and global climate services networks;
- Provision of assistance to nations to respond to climate extremes and climate-related calamities, especially drought and desertification.

Among the activities which are to be undertaken to meet these objectives, some depend particularly on the implementation of the CLIPS project. The relationship of these activities to the CLIPS project components is shown in the table on page 12.

Implementation of the CLIPS project requires a cooperative effort from many agencies, since there is abundant wealth of

The CLIPS project promotes development of proactive strategies to respond to the impacts of climate fluctuations



experience accumulated by sectors over the years to provide services to the users. The implementation of the CLIPS project is taking advantage of the cooperation and connections through IACCA agenda partners to enhance user interaction.

Activities planned under the four components of the CLIPS project are also related to a number of activities under other thrusts of the Climate Agenda, notably:

- Development of seasonal to interannual forecasting techniques (Thrust 1);
- Creation of regional networks of scientists and scientific institutions to facilitate access to advanced scientific knowledge available worldwide and within the region (Thrust 1);
- Studies of the benefits from the application of climate information in assessments of climate impacts and establishment of national response strategies (Thrust 3);
- Dissemination of information on socio-economic implications of climate variability and change to governments and the general public (Thrust 3);
- Identification of possible mitigation and adaptation strategies (Thrust 3);
- Encouragement of capacity building to develop technical skills for observations, analysis and product generation (Thrust 4).

The Climate Agenda framework strongly supported by WMO enhances the opportunities for collective efforts of which the CLIPS project will certainly be one of the most significant manifestations.

Thrust 2 Activity	Organizations/ Programmes involved	CLIPS project components			
		Training	Pilot demonstration projects	Liaison with research community	Networking
Enhance programmes for the organization of regional/subregional events (workshops and training courses/seminars) bearing in mind the needs of the developing countries.	WMO UNEP	1	3	2	2
Support the training of relevant national personnel involved in the assessment of climate extremes and the development of national preparedness.	WMO UNEP FAO ICSU WHO	1	2	3	2
Develop mechanisms and procedures for the provision and dissemination of quality controlled, user-oriented climate data and products.	WMO GCOS	3	1	3	2
Encourage better assessment of users' requirements and needs for climate information, analyses and predictions.	WMO	1	1	3	2
Raise awareness on the benefits of climate services and the establishment of plans for preparedness for, and mitigation of, adverse effects of extreme climatic events.	WMO UNEP FAO WHO UNESCO	1	1	3	2
Promote and facilitate the exchange of acquired experience in serving various climate-sensitive sectors, and the natural disaster preparedness and reduction plans, including interaction with users and marketing the services provided.	WMO	2	1	3	1
Develop a network of national, regional and global climate centres, in close coordination with, and taking advantage of, the existing infrastructures.	WMO ICSU FAO	3	2	2	1
Stimulate the transfer of research methodologies for climate prediction into operational climate prediction services.	WMO ICSU	2	2	1	3
Foster research into the application of climate products resulting from climate forecasts and analyses.	ICSU WMO	3	2	1	2

1 - leading component(s)

- 1 - leading component(s)
- 2 - supporting components

3 - other related components

participants' services and from other Regions, and the importance of CLIPS in RA I socioeconomic sectors.

A CLICOM/CLIPS seminar was held for some of the French-speaking countries of RA I in March 1997. Participants came from 12 countries and a variety of instructors covered topics

similar to those described for the Lusaka seminar.

A Climate Outlook Forum for Southern Africa (SADC countries) is being organized by the International Research Institute for climate predic-

tion (IRI), the CLIPS project office and other institutions to take place in September 1997 in Harare, Zimbabwe. Part of the Climate Outlook Forum will be a capacity-building component, including a tutorial on creation and interpretation of climate prediction products and a short workshop on dissemination of the climate prediction products to users in the SADC countries.

ICSU	International Council of Scientific Unions
FAO	United Nations Food and Agriculture Organization
GCOS	Global Climate Observing System
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
WHO	World Health Organization

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