## 7. Pan American Climate Information System (PACIS)

### 7.1 Background

The 1997-1998 El Niño experience in Latin America and the Caribbean has demonstrated the value of climate information. Based on this recent experience, a group of institutions concerned with climate impacts, risk management, research and forecasting have proposed the establishment of an integrated set of activities that would advance the production, dissemination and application of climate forecast information. These activities, in conjunction with human resource development and focused global change research, would constitute the PACIS.

An initial meeting of a small international group of experts to discuss the need and potential for establishing a PACIS was held in early April 1998 in San José, Costa Rica. The meeting recommended the establishment of a formal mechanism to produce, analyze, disseminate and apply seasonal to inter-annual climate forecast information. In addition, several activities were suggested as tools that can be used to advance the PACIS:

1) the creation of a steering group composed of stakeholders;
2) an evaluation of existing forecasting capabilities;
3) the organization of systematic regional climate outlook fora;
4) the holding of national meetings to discuss climate forecast productions and potential risk management applications;
5) the design and implementation of training activities; and
6) the advancement of integrated, multi-disciplinary research.

Lastly, the meeting concluded that the PACIS initiative could benefit by high-level visibility, such as that provided by the April 1998 Summit of the Americas.

### 7.2 Mandate and Authority - April, 1998

Recognizing the regional interest in, and need for PACIS, the U.S. Secretary of Commerce, William M. Daley, and the Chilean Minister of the Interior, Carlos Figueroa, signed a Statement of Intent to further the recommendations of the April Meeting of Experts, and launch the PACIS in partnership with other countries.

To this end, the U.S. and Chile offered to organize a regional meeting to design and launch PACIS in 1998. A Planning Committee (PC) was formed, initially of Chilean and U.S. representatives, along with a representative of the International Decade for Natural Disaster Reduction (IDNDR). At a June 1998 planning meeting in Santiago, Chile, these representatives agreed to establish a broader PC to plan the PACIS Design Workshop. The multilateral PC, which would meet for the first time in August 1998 in San José, Costa Rica, was charged with developing plans for a regional workshop to design and launch PACIS, and with facilitating the interest and participation of agencies with

activities relevant to its objectives and functions. The PC will be dissolved and a permanent organization will be created at the conclusion of the March 1999 workshop.

### 7.3 Composition of the Planning Committee

The Planning Committee (PC) consists of representatives of the following institutions:
- National Emergency Office of Chile (ONEMI)
- Meteorological Bureau of Chile (DMC)
- Hydrographic and Oceanographic Service of Chile (SHOA)
- International Research Institute (IRI) for Climate Prediction
- Inter-American Institute for Global Change Research (IAI)
- International Decade for Natural Disaster Reduction (IDNDR)
- World Meteorological Organization (WMO)
- World Bank/Inter-American Development Bank
- Office of Foreign Disaster Assistance, Agency for International Development (USAID/OFDA)
- Office of Global Programs, National Oceanic and Atmospheric Administration, Department of Commerce (DOC/NOAA/OGP)
- Economic Commission for Latin America and Caribbean (ECLAC)
- Regional Water Resource Committee and Regional Center of Prevention of NaturalDisasters in Central America (CEPREDENAC)
- National Meteorological Institute of Costa Rica

### 7.4 Potential Structure and Functions of PACIS

The PACIS organizing principles are as follows:
- Multi-lateral, including countries and sectors
- Risk management focus
- Organization by sub-regions
- New institutional arrangements, not new institutions
- Open, systematic exchange of data, information, and experience
- Establishment of a long-term mechanism for generating, disseminating andinterpreting regional climate forecast information
- "Bottom-up" approach, utilizing existing frameworks to achieve political will
- Enhance capacity building and training
- Physical and socio-economic research
- Tailoring regional climate information to users needs

PACIS has two principal components:
- The production of global and regional forecasts; and
- The use of forecast information by climate sensitive sectors, such as:
  - Basic services and infrastructure (e.g., water, energy, and transport)
  - Health (medical services, sanitation, infectious diseases)
  - Productive infrastructure (agriculture, fisheries, livestock)
  - Environment (forests, watersheds, and bio-diversity)
  - Disaster Management

Other essential elements of PACIS are human resource development, research into physical and socio-economic processes related to climate variability, and communications.

The need to identify regional organizations dedicated to the use of climate information – such as CEDERA, CEPREDENAC, CPPS (ERFEN), and soon MERCOSUR – was recognized. The main idea is not to create a new organization, but to use existing structures and organizations. With regards to users, specific products will be determined later.

**8. Cooperation with World Bank, Inter-American Development Bank and Pan American Health Organization.**

The ENSO 97/98 created a special opportunity for fostering an integrated approach among financing and development agencies in the Latin America and Caribbean Region.

Intentionally, and for the first time, the World Bank, Inter-American Development Bank (IADB), and the Andean Development Corporation (ADC), met together to study the probable ENSO impact in a specific country - Ecuador. The USAID/Ecuador Mission requested OFDA to participate as an expert agency and Dr. Juan Pablo Sarmiento was sent as OFDA's representative. From September 29 - October 3, 1997), a collaborative effort was made to define financing policies for other countries exposed to the climatic phenomenon in the region.

As a result of this meeting, a workshop on El Niño was held in Washington on June 11, 1998, that was sponsored by the World Bank and the PAHO.

Despite the interest of the WB, IADB, and the ADC in the subject, a more pro-active approach needs to be taken in dealing with disasters. A policy should be established that defines procedures that include risk variables in all investments and development proposals that are promoted in the region.

Regarding the health aspects, OFDA and PAHO held information-sharing meetings geared toward decision-making. A collaborative initiative was undertaken to record the impact of the ENSO 97/98 in the region. The results will be published by PAHO.

## 9. Coordination with other International Institutions

The United Nations, including the Office for the Coordination of Humanitarian Affairs (OCHA) and the UN Development Program (UNDP), played a special role during the ENSO 97/98 event. It is also important to mention the role played by PAHO, and to a lesser extent by the WMO and the IDNDR. That being said, the levels of coordination between these agencies depended more on their interest and convocation capacity at the country level, rather than a coherent and comprehensive regional policy.

Another multilateral agency participating in the ENSO response was the European Union (EU), which coordinated directly with the affected governments and NGOs. However, the EU did not coordinate with OFDA or other agencies at the national or regional level.

The bilateral cooperation agencies of Canada, Japan, France, England, Switzerland, and Germany also contributed to the emergency response. However, there was no efficient channel of coordination between agencies, nor did grantees set up coordination mechanisms, as they tended to prefer independent meetings with donors.

## 10. OFDA Response in Figures[38]

### 1. Situations that generated an OFDA/LAC response during the ENSO 97-98 event.

**Andean countries: Ecuador, Peru and Bolivia**

The dramatic El Niño impacts – flooding and mudslides produced by torrential rains, etc. – began in Ecuador in late October, in Peru in late December, and to a lesser extent, in Bolivia in February. As noted earlier, the main El Niño threat to Bolivia was, and continues to be, drought.

**2/3/98 – Peru – Floods**

The immediate precursor to issuing the disaster declaration in Peru was the surprise flooding of Ica on two occasions in late January. The first airlift on February 5 was followed by a series on February 27-28, after the flooding of the northern cities of Chiclayo, Trujillo and Chimbote (details below).

**5/5/98 – Ecuador – Floods**

Coastal areas of Ecuador experienced numerous flooding episodes beginning in late October 1997. The USAID Mission made funding available for several emergency initiatives, but a disaster declaration was not made until May, following devastating rains that isolated Manabi province.

**Bolivia**

While a disaster was not declared in Bolivia due to El Niño (there was one declared following the Aiquile earthquake), the MEC, OFDA advisors and consultants regularly monitored the situation of a slow onset drought.

**4/7/98 – Brazil – Fire**

Prolonged drought and fires in Roraima State combined to produce a critical situation for local populations and indigenous people in particular, prompting the declaration of disaster.

**Argentina/Paraguay**

**4/30/98 – Paraguay – Floods / 5/8/98 – Argentina – Floods**

Paraguay and the northeastern section of Argentina experienced large-scale flooding in late April/early May due to two factors: a) unprecedented rainfall in flooded areas culminating in late April; and b) torrential rains in southern Brazil which lead to river levels several meters above normal.

**Mexico and Central America**

Six disasters were declared between the May 15-22, following the outbreak and rapid spread of forest fires throughout Mexico and the Central American countries. The fires were a result of/caused by exceptionally dry/drought conditions associated with El Niño,

[38] Prepared by Julie Leonard, MEC-Perú Dec/1998.

and exacerbated by field clearing techniques (slash and burn) of local farmers. In Mexico, it is estimated that 13,459 fires burned nearly 500,000 hectares; in Guatemala, there were more than 2,000 fires raging at the peak of the emergency; in Honduras, 1,856 fires consumed 51,511 hectares; in El Salvador, there were close to 1,140 fires; in Nicaragua, more than 13,000 fires were estimated to have destroyed over 800,000 hectares; and in Costa Rica a total of 40,000 hectares of parkland forests are estimated to have burned.

## 2. Technical Assistance provided by OFDA/LAC.

### Andean Countries

**Peru**

| | Days |
|---|---|
| Julie Leonard, Mission ENSO Coordinator, 1/9/98 – 11/20/98<br>11/30-12/11/98 | |
| Juan Pablo Sarmiento, OFDA/LAC Regional ENSO Coordinator,<br>2/2-8, 3/xx-xx, 7/xx-xx | |
| Rene Carrillo, OFDA/LAC Regional Advisor, 2/2/98-2/5/98 | 4 days |
| Alejandro James, OFDA/LAC Regional Advisor, 2/9-21, 2/25-3/13 | 30 days |
| Kathi McNeil, OFDA/LAC, 2/18-27/98 | 10 days |
| Ricardo Herrera, OFDA/LAC, 2/25-3/5 | 8 days |

**Ecuador**

| | |
|---|---|
| Mike Hacker, Mission ENSO Coordinator, 12/xx – 4/xx | |
| Patricio Maldonado, Mission ENSO Coordinator | |
| Juan Pablo Sarmiento, OFDA/LAC Regional ENSO Coordinator | |
| Rene Carrillo, OFDA/LAC Regional Advisor | 2 days |
| Alejandro James, OFDA/LAC Regional Advisor, 11/11-15/97 | 4 days |

**Bolivia**

| | |
|---|---|
| Salvatore Pinzino, Mission ENSO Coordinator, 1/5/98 - ?? | |
| Juan Pablo Sarmiento, OFDA/LAC Regional ENSO Coordinator | |

### Mexico and Central America

**Mexico**

Seven-member joint assessment team May 16 for:

- assessing land and air logistics coordination;
- identification of criteria for selecting and suppressing priority fires;
- determination of resources available and needed; and
- effect on local populations.

| | |
|---|---|
| Rene Carrillo, OFDA/LAC Regional Advisor | 17 days |

**Guatemala**

| | |
|---|---|
| Alejandro James, USAID/OFDA Regional Advisor, 5/21-6/6, 6/14-20 | 24 days |
| Jay Perkins, USFS, 5/21 | |
| Dennis Trujillo, USFS, 5/21 | |
| Luisa Alfaro, OFDA/LAC Fire Management Specialist, 5/26-6/1 | 7 days |

**Honduras**

| | |
|---|---|
| Assessment team composed of DOD, USFS and U.S. fire and rescue personnel, 5/27 | |
| Kathi McNeil, OFDA/LAC, 5/28 | 1 day |
| Luisa Alfaro, OFDA/LAC Fire Management Specialist, 6/2-6 | 5 days |

**El Salvador**

| | |
|---|---|
| Ricardo Herrera, OFDA/LAC, 5/22-25 | 4 days |
| Luisa Alfaro, OFDA/LAC Fire Management Specialist, 6/7-10 | 4 days |

**Nicaragua**

| | |
|---|---|
| Luisa Alfaro, OFDA/LAC Fire Management Specialist, 5/18-25, 6/10-19 | 18 days |

**Argentina**

| | |
|---|---|
| Rene Carrillo, OFDA/LAC Regional Advisor, May 1998 | 12 days |
| Alejandro James, OFDA/LAC Regional Advisor, 5/10-18 | 9 days |
| Jorge Grande, OFDA/LAC Consultant | |
| Carlos Cordova, OFDA/LAC Consultant | |

**Paraguay**

| | |
|---|---|
| Rene Carrillo, OFDA/LAC Regional Advisor | 7 days |
| Marcelo Garcia, Hydrologist, University of Illinois | 7 days |
| USFS personnel | 7 days |
| Alejandro James, OFDA/LAC Regional Advisor, 5/2-9 | 8 days |

**3. Economic assistance: Changes that arose in relation to initial definition and end use of resources**

**Andean Countries**

**Peru**

A total of $3,011,133 in economic assistance was provided along the following lines:

- $25,000 – disaster declaration: funds to INDECI for the purchase of blankets and tents
- $20,000 – charter air transport to assist assessment and evaluations by USAID/OFDA personnel
- $1,918,500 – grants to CARITAS ($1,368,500), ADRA/OFASA ($350,000) and CARE ($200,000) for logistics, transport and purchase of local relief supplies – including construction materials – to complement airlift of plastic sheeting, etc.
- $385,376 – grant to CARE for an integrated emergency response program for 20 communities (150 families each) in Piura affected by El Niño rains and flooding. Grant consists of the provision of family housing and water protection kits; technical

assistance for improving housing and sanitary conditions; and the development of an information system for reporting damages and coordinating emergency responses.
- $ 665,757 – cost of relief supplies and two airlifts (materials detailed below).

Changes:
1. As the cost of construction materials dropped appreciably between February and June, and as in-kind donations from other donations obviated the need for grantees to spend on original line-items, both CARITAS and ADRA/OFASA requested and received approval for the use of funds for the construction of latrines and wells.
2. CARE grant for integrated disaster response: in the original plan, $60,000 was to be used for the purchase of mattresses. However, as mattresses were distributed by the regional government, CARE requested and received approval to use these funds, plus savings in other line items, to buy seeds and small animals so that people could start recovering their lost livelihoods.

**Ecuador**

- $25,000 disaster declaration: used for the local purchase of chlorine for water treatment and for repairing water filtration and delivery systems
- $50,000 – used for disaster assessments, the local purchase of chlorine, and transport and installation of water purification equipment to provide potable water for up to 200 communities
- unspecified amount for airlift of OFDA supplies (water jugs and bladders)

**Mexico and Central America**

In all, a total of $8,195,907 was made available for fire suppression efforts in Mexico and Central America, as outlined below.

**Mexico**

- $5,000,000 – grant: support to U.S. Forest Service (USFS) for fire suppression in Mexico and the region, including:
  - specialized firefighting operations – one heavylift helicopter and one fixed-wing aircraft with infrared fire detection capabilities
  - firefighting and safety equipment for up to 3,000 firefighters
  - communications equipment for firefighting teams in the field
  - USFS firefighting specialists to provide technical assistance
  - two portable MARK III pumps with kits
  - four small water pumps with 4,000 feet of hose
  - rejuvenating a bilateral USG/Government of Mexico (GOM) training/technical cooperation program in firefighting
  - support for fire suppression efforts in Central American countries.

- $2,689,907 – grant: to the GOM to support the operations of five medium-duty helicopters equipped with fixed and portable tanks, cargo nets, swivels, and long lines (Includes the $25,000 attached to the disaster declaration).

**Guatemala**

A total of $506,000, breakdown as follows:

- $ 25,000 – disaster declaration: purchase of firefighting equipment.
- $476,000 – 4 U.S. Department of Defense (DOD) helicopters, 180 hours of flight time for reconnaisance, transport of food, firefighters, and water drops
- $ 5,000 – fuel for aerial assessment missions

**Honduras**

- tools, equipment and training, charged to the $5 million noted above

**El Salvador**

- firefighting tools and equipment, as above

**Nicaragua**

- tools and equipment, as above

**Costa Rica**

- tools and equipment, as above

**Brazil, Argentina, Paraguay**

**Brazil**

- $25,000 – disaster declaration: local purchase and distribution of basic food items

**Argentina**

Disaster declaration and supplies, but no funds: see below

**Paraguay**

- $25,000 – disaster declaration: through the Paraguayan Red Cross for the local purchase of mattresses and blankets for 3,860 people in 18 rural villages

## 4. Relief supplies

| Country | Water Jugs | Bladders | Rolls of Plastic | Chainsaws | Blankets |
|---|---|---|---|---|---|
| **Peru** | | **15** | **1890** | **1** | |
| **Ecuador** | **5,000** | **20** | | | |
| **Argentina** | | | **1000** | | **10,000** |

## 11. Lessons Learned

### 11.1 Facts

- There have been important scientific advances that make it possible to improve our understanding of the processes related to extreme climatic events such as ENSO.

- For the ENSO 97/98, there was an early warning system (detailed in part 2.1 above): the first notification of the ENSO phenomenon was given at the end of 1996. Its occurrence was confirmed in June-July 1997, and in September-October of the same year there was clear evidence of the event.

- There is background (ENSO 82/83) on the impact of the extreme climate variations.

- There is a considerable level of awareness about disaster management in Latin America, which has created a certain level of commitment from national governments whose exposure to risk requires decisive intervention in this area.

- The capacity to predict extreme climatic events is directed toward the present (preparedness and response activities), rather than the future (prevention and mitigation). Thus, it comes as no surprise that there were relatively few actions undertaken in the field of prevention and mitigation (risk management). The time period in which governments acted was significantly short and their actions focused on preparation and response (disaster management).

- Much of the infrastructure damage that occurred during the ENSO 97/98 corresponded to public works and projects financed with WB and the IADB resources that had not taken variable climate risk into account at the design stage.

- The USAID Missions in Bolivia and Peru lost valuable time looking for mechanisms for selecting and contracting the MEC.

- One of the incomplete tasks during the current ENSO was the review of the Missions' portfolio. Now that the ENSO has passed, some questions persist:
  - Were the Missions' projects affected, and to what degree?
  - How could current projects contribute to the process of recovery of the affected areas?
  - How could prevention and mitigation activities be promoted at the Mission level, based on current or future projects?

- The works in Ecuador, Peru and Bolivia are highly sustainable, making it possible to link emergency response and regular Mission development activities. In Ecuador, it was possible to strengthen activities in the areas of clean water and health education which are promoted by PAHO and other local health agencies. In Peru, the larger part

of grant activities focused on relief, while activities such as food security, and latrine and well construction (in relocated communities) were add-ons.

- The fires in Mexico and Central America provided an opportunity to implement a long-term strategy to control forest fires based on training, organization, and the provision of equipment and basic tools.

- Communication between OFDA/Washington and OFDA/LAC was fluid, which facilitated rapid responses to needs detected during the emergency.

### 11.2 Recommendations

#### Recommendations for the Missions

- USAID Missions in countries exposed to extreme climate variations such as ENSO should have pre-defined criteria on risks and climate issues for applying to their programs and regular projects.

- The Missions should expedite the hiring of personnel to deal with these types of situations.

- The Missions should have protocols that allow the incorporation of affected areas into internal programs (the portfolio) when there is a disaster.

#### Recommendations for OFDA

- Consolidate the ENSO documentation center network, focusing on social, environmental, economic, and political sectors.

- Promote and support the consolidation of the PACIS

- Develop a strategy to provide training and technical assistance at the highest levels of public administration with an emphasis on large-scale disasters.

- Establish a data bank of professionals and technicians who can be contracted in emergencies or disasters.

- Systematize OFDA response experiences for the purpose of standardizing training activities and procedures, but which are adaptable to different situations.

- Promote the inclusion of climate and risk variables in national, regional and local development plans.

- Work with national governments to establish early warning systems that are based on seasonal and inter-annual climate forecasts.