EWC III
Third International Conference on Early Warning

From concept to action

27-29 March 2006
Bonn, Germany

Compendium of Early Warning Projects

International Strategy for Disaster Reduction

Federal Foreign Office

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Foreword

This compendium of proposals for early warning system projects has been assembled as part of the preparations for the 3rd International Conference on Early Warning, Bonn, Germany, 27-29 March 2006. Containing over one hundred individual projects, it represents a rich vein of initiative, expertise and capacity to secure early warning systems to save lives and to protect livelihoods and property throughout the world. Governments and donors are strongly encouraged to study these proposals and to work with the submitting organizations to turn them into reality.

The proposals cover all the main hazard types, all regions of the world, and span from technical systems to community-based action. Some are brand new initiatives, while others are adaptations of existing projects. The submitters include government bodies, non-governmental organizations, scientific institutions and private companies. All project proposals have been accompanied by a written endorsement from an appropriate government department or international authority.

The call for proposals by the conference organizers was intended to act as a catalyst for the design and implementation of concrete people-centred early warning systems, as well as to provide good examples of projects for presentation at the conference. This is in line with the Conference motto '*from concept to action'* and with the implementation focus of the *Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters*, the landmark plan agreed by the world's governments at the World Conference on Disaster Reduction, Kobe, Hyogo, Japan, 18-22 January 2005.

The guidelines for the submission of proposals stressed the need for the proposed projects to consider all four elements of effective early warning systems – the assessment of risk, the technical warning service, the communication needs, and the preparedness of those at risk. Those elements not directly dealt with by the project were expected to be in place through existing means, so that the project would result in a well-integrated system and not be an unconnected link in the chain. The proposals were also expected to have high impact in terms of people affected, to be technically well-designed, and to be sustainable over the long run.

The proposals were subjected to a quality control process managed by the ISDR Platform for the Promotion of Early Warning (PPEW). The first step was a screening process to ensure that proposals met the basic requirements of relevance and completeness. Altogether 105 proposals were accepted and entered into a specially developed web-accessible database.

The second step involved the review and assessment of the proposal against the submission guidelines by two or more expert reviewers. This was a large task, involving 55 reviewers from many different countries and over 215 individual reviews. The reviews were carried out directly through a web interface to the database. The conference organizers express their deep gratitude to the voluntary contribution of the expert reviewers. In some cases, reviews were undertaken by senior PPEW personnel owing to difficulties of obtaining the services of suitable volunteer experts. Appreciation and thanks are also expressed to the Government of Germany for its initiative in convening the EWC III and for supporting the entire process.

Following the conference, the compendium and its associated on-line database will continue to be administered by PPEW as an important international resource to support the development and promotion of early warning systems.

How the Compendium is Structured

For ease of use and practicality, the projects in the compendium have been sorted by geographical region and then presented alphabetically, according to the country the project will be implemented in (i.e. not the country that has submitted the project). Projects that span more than one geographic region have been classified as 'global' projects.

The compendium provides a brief summary or 'snapshot' of each project rather than a comprehensive explanation. Each summary contains key information including the title, geographic location, the submitting organization, project timeframe, funding sought and contact details.

To provide further insight into what each project aims at achieving, the EWC III secretariat has assigned each project a 'project type'. This is comprised of the type of hazard that the project is addressing (e.g. storm, flood, multi-hazard) in addition to the type of activities that will be undertaken as part of the project implementation. Each project has been assigned one or more 'types' from the list below:

- *Evaluation & Implementation* – projects falling under this category are those that involve research, analysis or scoping studies; evaluating existing systems or processes; or implementing new arrangements, ideas or strategies to improve early warning.
- *Technical* – these projects largely involve the implementation or development of technical systems for monitoring, measuring or evaluating natural hazards and the risks associated with them or the installation of hardware or technical equipment.
- *Governance* – projects in this category involve the development or restructure of governance or institutional arrangements associated with early warning. As an example this may include better coordination of agencies or organizations involved in early warning or the establishment of new organizations or groups to progress early warning or elements of it.
- *Community Participation* – these projects are primarily associated with actively engaging the community in developing early warning systems or the evaluation of current arrangements.
- *Education & Public Awareness* – projects associated with education and public awareness include those involved directly with educating the community or government about natural hazards or early warning, capacity building within the community or specific organizations, and communicating and disseminating early warnings.

The brief abstract of each project in the Compendium was prepared by the EWC III secretariat utilizing the information submitted in the project proposals. Project submitters or proponents have had no involvement in the preparation of these summaries. The EWC III organizers and secretariat can not take responsibility for the projects and their stated objectives or expected results.

Where to Find Further Information

Further details on each project can be found on the on-line database at:
http://www.unisdr-earlywarning.org/ewpp

Projects from Africa and the Middle East

Alert Africa-An African Early Warning System (Ref.123)

Location:	Africa
Project Type:	Multi-hazard, Governance, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	African Union and World Food Programme
Timeframe & Funds Requested:	24 months, 1,645,000 USD
Primary Contact:	Carlo Scaramella carlo.scaramella@wfp.org
	Tel: +39 6 65132962

Abstract: In cooperation with the World Food Programme (WFP), the African Union (AU) is examining the impact of conflicts and natural hazards on food production and food security, covering areas such as emergency preparedness, response mechanisms and disaster management, and assessment of early warning systems. WFP brings its experience in building networks of scientific partners and designing comprehensive early warning systems. This joint project will enhance the AU Commission's corporate preparedness and response capacity. The project should help develop an early warning platform for AU countries with standards, methodologies and dedicated management support tools. This will facilitate the establishment of more effective links between early warning activities and the decision-making processes in the AU countries.

Managing Risks Related to Weather/Climate Extremes in Southern Africa (Ref.108)

Location:	Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	World Meteorological Organization (WMO)
Timeframe & Funds Requested:	48 months, 2,300,000 EUR
Primary Contact:	Victor A. Simango vsimango@wmo.int
	Tel: +41 22 7308303

Abstract: Natural hazards, such as droughts, floods, and tropical cyclones, are a major challenge to the sustainable development of Southern African Development Community (SADC) countries. The objective of this project is to provide the SADC region with the necessary tools for managing the risks posed by extreme weather and climate events. This objective will be achieved by: strengthening regional collaboration and coordination in the provision of meteorological and hydrological information, products and services; improving weather and climate monitoring and prediction; basin-wide flood forecasting and modeling capabilities; building the capacity of the SADC National Meteorological and Hydrological Services, and the SADC Drought Monitoring Centre, to generate, interpret, and apply early warning information for use in disaster management and mitigation.

UNICEF Project Sentinelle: Early Warning with Focus on Children, Preventing Child Malnutrition in the Sahel (Ref.149)

Location:	Burkina Faso, Chad, Mali, Mauritania, Niger, Senegal
Project Type:	Malnutrition, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	UNICEF
Timeframe & Funds Requested:	36 months, 10,725,000 EUR
Primary Contact:	Olivier Degreef odegreef@unicef.org
	Tel: +41 22 909 56 55

Abstract: As a result of drought, locust invasions and other climate risks, including floods, malnutrition is an ongoing threat to children's lives in the Sahel countries (Burkina Faso, Chad, Mali, Mauritania, Niger, Senegal). An estimated 300,000 children die of malnutrition every year. However, early response can prevent morbidity and mortality of children. While early warning systems do exist in the Sahel countries they are based on climate (e.g. rainfall, locust invasion), and access to food (availability, prices) which do not adequately coincide with malnutrition levels of children. This project will develop methodologies for sustainable community-based data collection; experimental implementation of data collection and ongoing monitoring of results; harmonized protocols across the region; and adoption of national early warning systems.

Disaster Awareness in Schools (Ref.39)

Location:	Burundi
Project Type:	Multi-hazard, Education & Public Awareness
Submitting Organizations:	Youth Strategy for Disaster Reduction (YSDR)
Timeframe & Funds Requested:	12 months, 59,760 USD
Primary Contact:	Gorgon Sabushimike wgaproject@yahoo.fr
	Tel: +257 931 013

Abstract: In the absence of a national disaster preparedness and mitigation strategy, the Burundian Youth Strategy for Disaster Reduction movement calls for the introduction of a disaster awareness programme in schools. This project aims at the development of modules, initially for primary schools but subsequently to be expanded to secondary schools and universities, for teaching disaster awareness and risk reduction courses. Heads of schools (or of other public entities) would become designated officials for the issuance of early warnings and rescue actions for those under their supervision. This approach would need to be approved by the Ministries of Environment, National Education, Public Security and Interior.

Youth Contribution in Disaster Reduction (Ref.40)

Location:	Burundi
Project Type:	Multi-hazard, Education & Public Awareness
Submitting Organizations:	Youth Strategy for Disaster Reduction (YSDR)
Timeframe & Funds Requested:	9 months, 42,830 USD
Primary Contact:	Cyprien Ntahomvukiye bysrdr@yahoo.fr or ntacyp@usa.com
	Tel: +257 931 013

Abstract: Through this project, young Burundians intend to contribute to the establishment of a structure for disaster reduction in Burundi. They aim at increasing the public's risk awareness through the activities of the Youth Strategy for Disaster Reduction movement, and at convincing the authorities to implement a disaster reduction policy that follows up on proposals submitted by local communities. This is to be achieved through the development, updating and dissemination of risk maps and risk/vulnerability indicators, initially in the two provinces of Bujumbura and Gitega. In addition, people-centred early warning systems are to be developed, taking into account the demographic, gender, cultural and livelihood characteristics of target populations.

Enhacing Hydroclimate Monitoring, Early Warning and Applications for the Reduction of Climate Related Risks in the Greater Horn of Africa (Ref.62)

Location:	Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Sudan, Tanzania and Uganda
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	IGAD Climate Prediction and Applications Centre (ICPAC)
Timeframe & Funds Requested:	60 months, 4,070,000 USD
Primary Contact:	Prof Laban Ogallo logallo@icpac.net
	Tel: +254 20 3878340

Abstract: The Greater Horn of Africa region is prone to a wide range of climate-related natural hazards, including droughts, floods, dust storms, tropical cyclones, and locust invasions. These hazards have resulted in significant environmental, social and economic damage in the region, yet prediction and early warning tools remain limited. This project will enhance the capacity of the region to cope with climate-related risks by: developing a regional data base with long-term, high-quality information on natural hazards; improving the dissemination of timely early warning products; increasing the availability of sector-specific early warning information and tools; and, strengthening regional climate modeling, prediction and early warning.

Strengthening the Coping Mechanisms and Monitoring Capacities of the Killer Lake Nyos Degassing Featuers by the Local People Themselves: Continuities and Discontinuities (Ref.61)

Location:	Cameroon
Project Type:	Geological Hazard, Technical, Education & Public Awareness
Submitting Organizations:	Global Centre for Compliance, Hazards and Disaster Management (GLOCECOHADIM-CAMEROON)
Timeframe & Funds Requested:	20 months, 28,000 USD
Primary Contact:	Tomukum Chia degassinglakeyos@yahoo.com
	Tel: +237 5122 231

Abstract: The spreading of carbon dioxide released by Lake Nyos in Cameroon killed some 1,700 people in August 1986. Emergency assistance was provided to the survivors, but adequate longer-term aid for rehabilitation and sustainable development did not materialize. The project calls for the strengthening of an early warning system and the implementation of a community-focused development programme at a time when Lake Nyos and another lake are now being successfully "degassed". It foresees local capacity building through the training of community groups and experts in the monitoring of poisonous gas evaporation, in community management of natural resources. The project will also improve farm productivity through better agro-forestry practices, soil conservation and environmental protection.

Enhacing Marine Multi-hazard Early Warning System in West African Countries for Improved Marine Safety (Ref.71)

Location:	Cape Verde, Guinea, Mauritania, Nigeria, and Senegal
Project Type:	Multi-hazard, Education & Public Awareness, Technical
Submitting Organizations:	World Meteorological Organization (WMO)
Timeframe & Funds Requested:	36 months, 1,340,000 EUR
Primary Contact:	Edgard Cabrera ecabrera@wmo.int
	Tel: +41 22 730 82 37

Abstract: A good part of the population of West African countries lives in coastal cities, with their economic activities in the coastal zones. A WMO survey in those countries revealed a lack of expertise in marine meteorology in their national meteorological services, as well as an absence of an effective warning and disaster mitigation strategy. The objective of this project is to enhance an operational marine multi-hazard early warning system. This would be achieved through the provision of new tools for the marine meteorological services, and the training of local, national and regional experts in five West African countries. This project would stimulate closer cooperation between the five national meteorological services.

Do We Know How to React to an Alert? Information and Sensitization of Populations in the Western Part of the Indian Ocean (Ref.137)

Location:	Comores, Kenya, Madagascar, Maurice, Réunion, Seychelles, Tanzanie.
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Météo-France and Croix-Rouge Française
Timeframe & Funds Requested:	12 months, 500,000 EUR
Primary Contact:	Judith Bourgeois judith.bourgeois@croix-rouge.fr
	Tel: +33 1 444 311 03

Abstract: The December 2004 tsunami has boosted international efforts to implement reliable high-performance alert systems. However, too often vulnerable populations are still unaware of the risks they are exposed to and unable to react appropriately. This project, as a complement to a bilateral programme and through a partnership between a scientific institution and a humanitarian organization, aims to improve the chain that links those who are the first to see disasters occur, and those who need the information. The objective of the project is to contribute to a better translation of alerts issued by technical agencies into effective response by affected communities. The expected result is that local populations will have proper means and skills to receive the alert, understand it and react appropriately.

Early Warning on Climate Related Natural Hazards to Save Lives, Properties and Livelihoods (Ref.83)

Location:	Gambia
Project Type:	Multi-hazard, Technical, Education & Public Awareness, Governance
Submitting Organizations:	Department of Water Resources
Timeframe & Funds Requested:	48 months, 1,000,000 USD
Primary Contact:	Pa Ousman Jarju dwr@gamtel.gm or pajarju@yahoo.co.uk
	Tel: +220 422 76 31

Abstract: Climate-based natural hazards pose a major threat to the lives and livelihoods of the population in Gambia. These hazards are particularly challenging for the country, given that agriculture and natural resources sectors employ over 75 percent of the labour force, and account for approximately 40 percent of total export earnings. Despite this fact, Gambia lacks effective natural hazard early warning systems. This project aims to strengthen early warning systems for the major socio-economic sectors of the country. Expected results include: availability of timely and reliable hydrological and meteorological bulletins, daily and seasonal forecasts, and natural hazard warnings. The project will also build human and institutional capacities to prepare effectively for climate-based natural hazards.

Early Warning and Flood Control Monitoring in the Eastern Mediterranean (Ref.51)

Location:	Lebanon, Syrian Arab Republic and Jordan
Project Type:	Flood, Evaluation & Implementation, Technical
Submitting Organizations:	Remote Sensing Center-Lebanon; Center for Remote Sensing-Boston University -USA; General Organization of Remote Sensing-Syria; and Jordan University of Science and Technology-Jordan
Timeframe & Funds Requested:	24 months, 625,000 USD
Primary Contact:	Dr Amin Shaban geoamin@cnrs.edu.lb
	Tel: +961 4 409845/6

Abstract: Data collected over the past 120 years reveals a long-term decline in overall rainfall across the region but, recently, erratic and extremely high rainfall has caused severe flooding. A lack of watershed management and disregard for flood-prone areas in the spreading of human settlements resulted in annual losses of some USD 45 million. This project aims at establishing a flood hazard mapping system, providing risk magnitude indicators according to terrain characteristics and settlement density. This would be achieved through an analysis of past flood risk records and the mapping of flood-prone areas by using remote sensing. The mapping would help governments identify safe settlement areas, select mitigation practices and set up early warning and monitoring systems for each country and the region.

Early Warning Systems for Desert Locusts- A West Africa Pilot Project (Ref.33)

Location:	Mauritania and Senegal
Project Type:	Desert Locust, Technical, Evaluation & Implementation, Governance
Submitting Organizations:	National Meteorological Service, Republic of Senegal; National Meteorological Service, Islamic Republic of Mauritania; World Meteorological Organization (WMO); and Institute of Biometeorology, Florence, Italy
Timeframe & Funds Requested:	24 months, 1,000,000 EUR
Primary Contact:	Dr M.V.K. Sivakumar msivakumar@wmo.int
	Tel: +41 22 730 8380

Abstract: Desert locust plagues have been recognized as a major threat to agricultural production in Africa and West Asia for thousands of years. Meteorological information is available through the internet to assist in the monitoring and forecasting of locust outbreaks, and technological advances have been made since the last major locust plague in 1988/89. However, this information and these tools are not widely used at the national level. The aim of this project is to develop more effective and efficient tools and more reliable information for countries to use in monitoring and predicting locust development and migration, and to build the capacity of national governments to plan control operations. Target countries for the project are Mauritania and Senegal.

Implementing an Early Warning System Concerning the Floods in the Province of Ifrane (Ref.117)

Location:	Morocco
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	Directorate-General of the Local Communities / Province of Ifrane, Direction of National Meteorology
Timeframe & Funds Requested:	10 months, 700,000 EUR
Primary Contact:	Province d'Ifrane sgifrane@menara.ma
	Tel: +55 56 64 636221

Abstract: The province of Ifrane is one of Morocco's most exposed regions to flooding, affecting nearly all of its communities. The objective of this project is to enable local officials to sensitise and alert the population to hazards, and to set up equipment and services for an early warning system. This will be achieved through the establishment of a hydro-meteorological monitoring system and a climatological data bank. In addition, flood alert systems will be set up, complemented by expertise capacity building and an information dissemination chain through the provincial telecommunications network.

Seismic and Satellite Networks of Warning of Tsunami of Seismic and Volcanic Origin on the Atlantic and Mediterranean Coast in Morocco (Ref.118)

Location:	Morocco
Project Type:	Earthquake & Tsunami, Technical, Education & Public Awareness
Submitting Organizations:	The Faculty of Science of Rabat, Scientific Institute, National Center for Scientific and Technical Research (CNRST); and Royal Center of Space Teledetection (CRTS)
Timeframe & Funds Requested:	24 months, 1,780,000 EUR
Primary Contact:	Ait Brahim aitbrahi@fsr.ac.ma
	Tel: +212 37 771957

Abstract: The faults in the Azores-Gibraltar Atlantic zone and the Western Mediterranean are a seismic risk for Morocco's coastlines, as are the potential eruptions of volcano Cumbre Vieja on the Canary Island of Palma. Noting that Morocco is one of Africa's countries most exposed to earthquake-triggered tsunamis, the project aims at establishing a satellite-assisted surveillance system linked to a wide telecommunications network, to be integrated into a regional early warning system for the benefit of the Mediterranean and African regions. It would process real-time information on earthquakes for tsunami early warning. It would also include a public awareness component to prepare the rapidly growing population in the coastal cities to respond effectively to early warnings.

Installation of an Early Warning System of Rising in the Ouzoude Center (Ref.119)

Location:	Morocco
Project Type:	Storms & Flood, Technical, Education & Public Awareness
Submitting Organizations:	Directorate-General of the Local Communities / Province of Azilal
Timeframe & Funds Requested:	12 months, 160,000 EUR
Primary Contact:	Province d'Azilal
	Tel: +212 234 58072/8121

Abstract: River Oued Ouzoud flows through the town of Ouzoud. At the end of summer and the beginning of autumn torrential rain regularly produces flooding in the basin of the Oued Ouzoud. These floods pose a threat to infrastructure at the waterside of the river such as cafés, camping sites, and craft shops. They make streets unusable and have cost lives in the past. This project aims to establish an early warning system (EWS) which will consist of a rain measurement system and water-gauges along the Oued Ouzoud. The information collected will be connected to a regional and national information centre where it will be analyzed and communicated. The project includes setting up an evacuation organization with a minimum response time of one hour.

Establishement of an Early Warning System for Floods in the Toudgha for the Rural Community Tourist Site: Toudgha Eloulia- Ouarzazate (Ref.120)

Location:	Morocco
Project Type:	Flood, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Directorate-General of the Local Communities / Province of Ouarzazate
Timeframe & Funds Requested:	8 months, 50,000 EUR
Primary Contact:	Province de Ouarzazate sgouarzazate@menara.ma
	Tel: +212 44 88 2218

Abstract: About 240,000 tourists visit Morocco's Toudgha Gorge every year. Some 7,000 people live downstream, outside the narrow gorge that is regularly hit by flash floods. The project is to set up an integrated early warning system linked to an already operational real-time alert device at a hydroelectric power station located some 40 kilometres upstream. The activation of that warning system would make it possible to organize timely evacuations of visitors and inhabitants in the event of flash floods.

Disaster Observatory Linked to Major Emergencies and Sanitary Risk (Ref.121)

Location:	Morocco
Project Type:	Multi-hazard, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Ministère de la Santé, Direction des Hôpitaux et des Soins ambulatoires, Division des Urgences et Secours
Timeframe & Funds Requested:	Not provided, 38,060 EUR
Primary Contact:	Dr Mohammed Hamouiyi mhamouiyi@sante.gov.ma
	Tel: +212 37 20 81 68

Abstract: Morocco is vulnerable to a wide range of risks from natural and technological disasters, diseases and epidemics. The Ministry of Health has adopted a comprehensive strategy to reduce direct and indirect sanitary and medical risks from emergencies and ensure that the population's medical needs are met quickly and efficiently in the event of a disaster. This project will contribute to the implementation of this strategy by: strengthening the disaster management knowledge base; improving understanding of disaster risks; improving sanitary measures in health facilities; and sensitizing a range of partners to the importance of information exchange. These activities will be undertaken in a pilot region, and then expanded to other areas.

Tsunami Early Warning System for Morocco (Ref.122)

Location:	Morocco
Project Type:	Tsunami
Submitting Organizations:	Centre National pour la Recherche Scientifique et Technique
Timeframe & Funds Requested:	24 months, 685,000 EUR
Primary Contact:	Nacer Jabour jabour@cnr.ac.ma
	Tel: +212 37 778674

Abstract: Morocco is situated at the edge of the African tectonic plate. The friction with the European plate makes it particularly prone to earthquakes and tsunamis, when they occur off-shore. This project focuses on the detroit of Gibraltar, covering the Atlantic and Mediterranean sides and aims to modernize and expand the earthquake sensing network of Morocco in order to improve decision making for tsunami early warnings. This system proposes the replacement of out-dated analogue earthquake sensors with new digital sensors, in addition to the installation of new sensors. This should allow faster and more reliable communication and better data processing. This project is a complementary network to those existing in Spain and Portugal and an element of a pan Mediterranean Tsunami Early Warning System.

Flood Early Warning System Project (Ref.135)

Location:	Morocco
Project Type:	Flood, Technical, Evaluation & Implementation
Submitting Organizations:	The Moroccan Meteorological Authority
Timeframe & Funds Requested:	48 months, 819,273 EUR
Primary Contact:	Nadia Maatouk ouldbba@marocmeteo.ma
	Tel: +212 33 91 3699

Abstract: Floods have become increasingly frequent and severe in Morocco. Climate projections indicate that storms are likely to hit the north and the areas west of the mountain chains more forcefully and erratically, causing exceptional flooding and compromising sustainable development efforts. The objective of this project is to establish a national early warning system, following the implementation of a pilot phase, as the current system is not yet capable of generating accurate assessments, despite considerable investments in monitoring and weather forecast infrastructure. The project is based on a model for forecasting rainfall and converting actual data gathered from a network of meteorological observation stations into flood estimates, which will allow for the preparation of community alerts.

Capacity Building in Mozambique:Using the Education Sector for Disaster Awareness Outreach (Ref.105)

Location:	Mozambique
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	InWEnt - Capacity Building International
Timeframe & Funds Requested:	10 months, 145,000 EUR
Primary Contact:	Christina Kamlage Christina.Kamlage@inwent.org
	Tel: +49 30 25482 112

Abstract: Capacity building at the institutional, organizational and individual level can systematically strengthen the elements of the early warning chain. This project aims at integrating disaster awareness and knowledge about early warning systems into teacher training and primary-level education. During the initial pilot phase, at least 100 teachers are to participate in disaster sensitisation courses, each of them subsequently passing on his/her knowledge to 100 students. As a result, 10,000 students would be equipped to convey their knowledge to their families and communities. A film, to be aired on television, is to be produced to enhance the outreach of the project in Mozambique and the Southern African region.

Establishment of a Seychelles Early Warning and Mitigation System Based on a Multi-hazard Approach (Ref.145)

Location:	Seychelles
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	National Meteorological Services/National Disaster Secretariat
Timeframe & Funds Requested:	12 months, 2,640,000 USD
Primary Contact:	Michel Vielle m.vielle@statehouse.gov.sc
	Tel: +248 224028

Abstract: The tsunami tragedy and torrential rains in December 2004 highlighted the need for enhancing the safety of the population and minimizing threats to sustainable development in the Seychelles. Owing to enormous data gaps in the monitoring of oceanic and atmospheric parameters, alerts tended to be ill-timed. The aim of this project is the establishment of an early warning system with a multi-hazard approach under the aegis of the National Meteorological Service. It will include the enhancement of observation networks, the acquisition of meteorological equipment and a comprehensive capacity-building programme. The project will cover data collection through to the provision of services and the issuance of alerts, and help raise the level of multi-hazard education and awareness.

South African National Seismograph Network to Act as an Array for an Early Warning System (Ref.46)

Location:	South Africa
Project Type:	Seismic Hazards, Technical
Submitting Organizations:	Council for Geoscience
Timeframe & Funds Requested:	12 months, 1,453,000 ZAR
Primary Contact:	Dr A Kijko kijko@geoscience.org.za
	Tel: +27 12 8411201

Abstract: The infrastructure, communication and instrumentation at five existing stations of the South African National Seismograph Network need to be upgraded to assure a high level of timely data transfer. Through upgrading of the stations, this project will improve the operation of the Indian Ocean Tsunami Warning System. The populations living along the coastlines and in the gold-mining areas would benefit from the improved network.

Capacity Building in Disaster Prevention and Preparedness (Ref.37)

Location:	Tanzania
Project Type:	Multi-hazard, Community Participation, Education & Public Awareness
Submitting Organizations:	Disaster Management Department (Prime Minister's Office)
Timeframe & Funds Requested:	Not specified, 1,437,600 USD
Primary Contact:	Director for Disaster Management
	Tel: +255 22 211 7266

Abstract: Natural disasters such as drought, cyclones, floods, earthquakes and, most recently, the tsunami have seriously affected the implementation of Tanzania's development plans. The project aims at increasing the awareness of the public and stakeholders and in enhancing their capacities in disaster prevention and preparedness. This is to be achieved through the development of public awareness programmes and tools. Specifically, it is intended to produce a television documentary and individual videos on the country's five most common natural hazards, to prepare of hazard maps and sensitisation tools, to conduct sensitisation seminars for ward/village disaster management committees, and possibly to establish an emergency operation centre.

Enhancing Early Warning and Preparedness of Natural Hazards (Ref.60)

Location:	Tanzania
Project Type:	Tsunami & other natural hazards, Technical, Education & Public Awareness
Submitting Organizations:	Tanzania Meteorological Agency
Timeframe & Funds Requested:	36 months, 5,744,400 USD
Primary Contact:	Director-General met@meteo.go.tz
	Tel: +255 22 24607068

Abstract: Tanzania is situated along the western Indian Ocean coast and relies heavily on the agriculture, tourism and mining sectors. Natural hazards that have occurred in the region have had considerable negative economic impact on Tanzania's development. The main objective of this project is to strengthen meteorological services in Tanzania and establish a Tsunami Early Warning System. This will be achieved through the procurement of technical and meteorological equipment; training staff to operate the equipment and broader capacity building exercises; and maintenance of the equipment. Expected project outcomes include the improvement of the accuracy and reliability of meteorological warnings related to floods, tropical cyclones, drought and severe local storms; and economic sectors will be provided with improved meteorological services, information and products so as to plan their operations appropriately.

Towards a Multi-Hazard Early Warning and Response System in West Africa: A Multi-Hazard Approach to Forecasting Adverse Health Impacts in Africa (Ref.73)

Location:	West Africa, Sahel and Niger
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	World Meterological Organization (WMO)
Timeframe & Funds Requested:	48 months, 2,000,000 EUR
Primary Contact:	Dr David Rogers drogers@wmo.int
	Tel: +41 33 730 80 71

Abstract: This project aims to contribute to the development of an effective multi-hazard early warning and response system, which will strengthen the ability of health institutions at all levels to address climate-related disease and health hazards in West Africa. The primary goal of the project is to achieve a 50% reduction in morbidity and mortality, particularly for women and children under the age of five. Project activities will include: building institutional capacity to produce early warning information tailored to the health sector; enhancing the ability of the health sector to understand and respond to early warning messages; and improving the communication of warnings to field staff and vulnerable communities.

Flood Hazard Monitoring and Flood Risk Mapping for Save Catchment - Zimbabwe (Ref.36)

Location:	Zimbabwe
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	Zimbabwe-National Water Authority (ZINWA)
Timeframe & Funds Requested:	12 months, 105,000 USD
Primary Contact:	Elisha Madamombe hycos@mweb.co.zw
	Tel: +263 4 707054

Abstract: During the past ten years, Zimbabwe has experienced catastrophic floods that have caused extensive damage especially in the Save River basin. Subsequent assessments indicated that the country's early warning system needed to be made more effective. For this purpose, the monitoring of hydrological events was to be strengthened to facilitate more accurate forecasting of floods. The objectives of this project are to design a flood forecast digital elevation model which is to identify flood hazards with the help of new precipitation gauging stations; assist in the preparation of flood risk maps for the Save area; and to upgrade technical expertise. The flood risk maps would also be used for the planning of settlements.

Projects from Asia and the Pacific

From Local Action to Regional Cooperation: People Centered Early Warning System in the South Caucasus (Ref.64)

Location:	Armenia and Georgia
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	Ministry of Territorial Administration (MTA) of the Republic of Armenia with Emergency Management Administration (EMA under MTA); and Ministry of Internal Affairs – Department for Regional Policy and Emergency Affairs, Republic of Georgia
Timeframe & Funds Requested:	36 months, 2,170,000 EUR
Primary Contact:	Edik Barsegyan emainter@arminco.com
	Tel: +374 10 521802

Abstract: The Armenian regions of Syunik and Tayush are frequently affected by natural disasters (earthquakes, floods, landslides, avalanches). Their communities cannot cope on their own with the prevention/mitigation of the effects of such a wide range of disasters. National institutions lack the capacity to manage disaster risk and face inadequate communication structures. Through national and regional efforts, the project's objective is to reduce natural disaster risks through joint action by the authorities in Armenian and Georgian disaster-prone regions. Such collaboration is expected to result in the setting-up of adequate operational early warning systems supported by local action plans, the development of effective communication systems and the training of a critical number of technical staff.

Agrometeorological Warning in Disaster Condition in South-West and Central Asia (Ref.94)

Location:	10 Countries of West and South-West Asia
Project Type:	Agrometeorological Hazards, Technical, Education & Public Awareness
Submitting Organizations:	Islamic Republic of Iran Meteorological Organization (IRIMO)
Timeframe & Funds Requested:	36 months, 4,500,000 USD
Primary Contact:	Gholam Ali Kamali kamali@irimet.net
	Tel: + 98 912 1209948

Abstract: Major challenges to the development of south-west and central Asia are natural and environmental disasters such as desertification and drought. Most countries in this region are characterized by poor infrastructure and low resilience to impacts of natural disasters, yet they are heavily dependent on agricultural production, which is strongly influenced by the prevailing weather. The objective of this project is to provide examples of management strategies for minimizing agrometeorological risks and promoting sustainable agriculture; and to review the use of crop insurance strategies and schemes to reduce the vulnerability of farming communities to these risks. Planned project activities include the gathering of relevant meteorological information, as needed by the agricultural sector; and the timely dissemination of information bulletins.

Sub-Regional Natural Disaster Early Warning System (Ref.96)

Location:	10 Countries of West and South-West Asia
Project Type:	Multi-hazard
Submitting Organizations:	Islamic Republic of Iran Meteorological Organization (IRIMO)
Timeframe & Funds Requested:	60 months, 19,350,000 USD
Primary Contact:	Gholam Ali Kamali kamali@irimet.net
	Tel: + 98 912 1209948

Abstract: Countries of west and south-west Asia have been affected by natural disasters, especially drought in the last decade, with more than 100 million people impacted. This project addresses all types of natural disasters of weather and climatic origin and focuses on services for social and economic sectors, such as agriculture, food security, water resources, public health, and safety. It develops natural disaster monitoring and early waning systems, as well as weather, climatic and environmental products, which benefit regional and national activities. The main project objectives include: data and information management; short and long term forecasting and prediction; disaster risk assessment and analysis; disaster monitoring and development of an early warning system; and capacity building.

Sustainable Mitigation of Hydro-meteorological Disasters in Cities of Afghanistan (Ref.35)

Location:	Afghanistan
Project Type:	Hydro-meteorological Hazards, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Afghanistan Information Management Service (AIMS)
Timeframe & Funds Requested:	36 months, 2,900,000 USD
Primary Contact:	Neal Bratschun neal.bratschun@aims.org.af
	Tel: +93 70 233 751

Abstract: Afghanistan's development has not only been seriously disrupted by nearly three decades of conflict but also by natural catastrophes, including 32 events of large-scale floods over the past 25 years. The proposed project focuses on the mitigation of flood disasters (river and flash floods) which have primarily affected Afghan cities. Its objective is to encompass the technological component of disaster mitigation (data collection, modelling of natural phenomena, forecasting hydro-meteorological events, technological support) and the human behaviour component (policy formulation, planning, public awareness, education, capacity building and response). Its ultimate goal would be the introduction of a vulnerability-oriented model for sustained disaster mitigation and preparedness.

Earthquake Risk Knowledge and Public Awareness in Kabul-Afghanistan (Ref.133)

Location:	Afghanistan
Project Type:	Earthquake, Technical, Education & Public Awareness
Submitting Organizations:	InWEnt Capacity Building International, Germany
Timeframe & Funds Requested:	12 months, 471,790 EUR
Primary Contact:	Dr Christina Kamlage Christina.Kamlage@inwent.org
	Tel: +49 30 254 82 117

Abstract: Afghanistan is an earthquake-prone country. The highest earthquake hazard is located in the north-east, including Kabul. Widespread poverty and large population segments displaced after prolonged conflict add to the vulnerability of the city's inhabitants. The project aims at contributing to earthquake vulnerability reduction in Kabul through disseminating earthquake risk knowledge and boosting public and institutional awareness of earthquake hazards and vulnerabilities. A microzonation exercise is proposed, followed by a vulnerability analysis and, for selected city quarters, a risk analysis involving community participation. The information gained through the project will flow into the production of public education and awareness materials.

Drought Assessment and Monitoring for the ECO Region Using Satellite Data (Ref.95)

Location:	Afghanistan, Azerbaijan, Islamic Republic of Iran, Kyrgyzstan, Pakistan, Tajikistan, Turkey and Uzbekistan
Project Type:	Drought, Technical, Evaluation & Implementation
Submitting Organizations:	Islamic Republic of Iran Meteorological Organization (IRIMO)
Timeframe & Funds Requested:	60 months, 785,000 USD
Primary Contact:	Isaac Moradi isaac_moradi@yahoo.com
	Tel: + 98 912 5158290

Abstract: Drought is one of the most damaging of all natural hazards. It has caused millions of deaths worldwide, and cost economies hundreds of billions of dollars. Recurrent severe droughts in parts of the region have significantly impacted agricultural production and trade of agro-products. Drought management is now a priority area of cooperation for countries in the region. The objective of this project is to support drought preparedness and mitigation efforts through the establishment of a real-time drought monitoring system. This system will be developed using satellite sensing data and specialized drought mapping techniques to fill in gaps in drought monitoring for the region. A website will be designed to disseminate drought monitoring information.

Towards the Implementation of Early Warning for Megacities (Capital of Armenia) (Ref.17)

Location:	Armenia
Project Type:	Earthquake, Technical, Education & Public Awareness
Submitting Organizations:	Armenian National Survey for Seismic Protection
Timeframe & Funds Requested:	24 months, 29,700 EUR
Primary Contact:	Dr Alvaro Antonyan president@nssp-gov.am
	Tel: +374 10 286494

Abstract: Armenia's capital Yerevan is located in a highly active seismic zone. In 1998, the "National Survey for Seismic Protection" agency developed an earthquake early warning system whose alarms, triggered by seismic measurement stations around Yerevan, were to alert the population prior to a strong earthquake. The current follow-up project aims at issuing earlier pre-disaster signals for the population and at automatically disconnecting life support lines such as hydroelectric power and gas distribution stations, as well as at helping obtain initial damage estimates calculated by using vulnerability indicators of city buildings. The project includes measures to improve seismic hazard assessments through the analysis of seismic anomalies and to train the population in taking life-saving decisions.

Short-term Forecasting of Extraordinary Geologic Events (Strong Earthquakes, Tsunamies, Volcanoes Eruptions) (Ref.138)

Location:	Azerbaijan
Project Type:	Seismic Hazards, Technical, Evaluation & Implementation
Submitting Organizations:	Geophysics and Engineering Geology Production Association; and State Oil Company of Azerbaijan Republic
Timeframe & Funds Requested:	24 months, 450 000 USD
Primary Contact:	Garib Agaguliyev garib_agaguliyev@yahoo.com
	Tel: +99 412 431 0198

Abstract: Strong earthquakes frequently strike the Caucasus and the Caspian Sea area. A particular technology has been developed in Azerbaijan to forecast, at short term, potentially catastrophic geological events such as earthquakes and volcano eruptions. The objective of this project is to apply that technology for the determination of the sites, times and magnitudes of such potential geological events. For this purpose, a network of five local and regional stations for early warning would be set up, each of them capable of monitoring the geodynamic environment within an 800 to 1,000 km radius. The project includes work on the creation of mathematical and physical models of geodynamic processes observed in the region.

People-Centered Area-Specific Flood Warning System: Improving Communication of and Community Responses to Flood Warnings in Bangladesh (Ref.18)

Location:	Bangladesh
Project Type:	Flood, Governance, Education & Public Awareness
Submitting Organizations:	Bangladesh Disaster Preparedness Centre (BDPC)
Timeframe & Funds Requested:	36 months, 500,000 USD
Primary Contact:	Muhammad Saidur Rahman bdpc@glinktel.com
	Tel: +880 2 881 5074

Abstract: Severe flooding poses a significant risk to lives and livelihoods in Bangladesh. The Government of Bangladesh Flood Forecasting and Warning Centre (FFWC) is mandated to monitor river conditions and to issue flood warnings to help mitigate flood damage. However, the warnings that are currently issued are not tailored to local needs. This project will begin to address this problem by strengthening early warning communication and flood preparedness in select communities in the flood-prone Sirajganj District. Local institutions will be trained to interpret, translate, and communicate forecasts and warnings to communities at risk. Lessons learned will be shared in a national workshop so that efforts may be replicated in other flood-prone districts.

Community Based Multi-Hazard Early Warning and Dissemination Systems Project (Ref.27)

Location:	Bangladesh
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Center for Environmental and Geographic Information Services (CEGIS); and Disaster Management Bureau (DMB)
Timeframe & Funds Requested:	18 months, 250,000 USD
Primary Contact:	Giasuddin Ahmed Choudhury gchdhury@cegisbd.com
	Tel: +880 2 88215701

Abstract: Bangladesh is highly prone to almost all types of natural hazards. These hazards pose a serious threat to the economic and social development of the country. However, the country lacks an effective multi-hazard disaster warning system to help reduce the loss of life and livelihoods resulting from natural hazards. The objectives of this project are to: develop a pilot multi-hazard community early warning system, based on internationally accredited methods for multi-hazard mapping and innovative early warning dissemination systems; and, to strengthen capacities of volunteers to communicate early warning messages at the community level. This model multi-hazard early warning system could be replicated in other hazard prone areas of the country.

Early Warning Dissemination Systems Project for Water Induced Hazards in Bangladesh (Ref.28)

Location:	Bangladesh
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	Center for Environmental and Geographic Information Services (CEGIS); and Flood Forecasting and Warning Center (FFWC)
Timeframe & Funds Requested:	24 months, 200,000 USD
Primary Contact:	Giasuddin Ahmed Choudhury gchdhury@cegisbd.com
	Tel: +880 2 88215701

Abstract: Bangladesh is highly prone to natural hazards, including floods, cyclones, droughts, tornadoes, and earthquake. These hazards have caused significant harm to people and their livelihoods, and pose a threat to the economic development of the country. The objective of this project is to strengthen the country's resilience to natural hazards by developing an early warning information dissemination system for water related hazards, and by building community capacity to use this system effectively for disaster preparedness and management. Two pilot study areas have been selected to develop this system: the Faridpur District (for flood, erosion, and drought hazards) and Cox's Bazar (for cyclone, and tsunami hazards).

Building Tornado Warning System for Bangladesh – Coping with Neglected Disaster (Ref.103)

Location:	Bangladesh
Project Type:	Tornado, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Asian Disaster Reduction Center (ADRC)
Timeframe & Funds Requested:	36 months, 1,322,500 USD
Primary Contact:	Akihiro Teranishi teranishi@adrc.or.jp
	Tel: +81 78 262 5540

Abstract: Tornados and micro-bursts cause significant damage and loss of life in Bangladesh, yet this country does not have a tornado early warning system or preparedness programme. The objective of this project is to reduce the risks posed by tornados in Bangladesh by developing early warning systems and shelters. Over the course of this multi-year project, tornado and micro-burst data will be compiled, forecasting improved, and a communication network established to disseminate tornado warnings. In addition, model tornado shelters will be designed and built in selected villages, and communities will learn about tornado risks and options for preparedness.

Enhaced Multi-hazard Alert and Response Mechanisms for Malaysia & Bangladesh (Ref.80)

Location:	Bangladesh and Malaysia
Project Type:	Multi-hazard, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Worl Meteorological Orgnaization (WMO); Malaysian Meteorological Department (MMD); and Bangladesh Meteorological Department (BMD)
Timeframe & Funds Requested:	36 months, 500,000 EUR
Primary Contact:	Haleh Kootval hkootval@wmo.int
	Tel: +41 33 730 83 33

Abstract: While early warning systems exist in many communities in Bangladesh and Malaysia, early warning messages are not always well-understood by the public. This project has two goals: to improve the communication of early warning information; and, to use the experience and expertise of Bangladesh and Malaysia to help other countries to communicate effectively early warning messages. The expected result is a 20% reduction in the loss of livelihoods compared to the average over the past ten years. Planned activities include: an assessment of current education activities and best practices; enhancement of natural hazard education and training materials for the public; and, development of modules to improve communication between meteorological services, emergency managers, media and decision-makers.

Flood Disaster Preparedness for the Vulnerable Communities in the Province of Kampong Cham (Ref.31)

Location:	Cambodia
Project Type:	Flood, Education & Public Awareness, Community Participation
Submitting Organizations:	Action Contre la Faim (ACF)
Timeframe & Funds Requested:	12 months, 180,500 USD
Primary Contact:	Youcef Hammache yhammache@actioncontrelafaim.org
	Tel: +33 1 4335 8888

Abstract: Kampong Cham, the most populated province in Cambodia, is situated in the Mekong River basin. Approximately 600,000 of the region's inhabitants are vulnerable to flooding. The objective of this project is to improve early warning and flood preparedness within the province. This will be achieved through a wide range of activities, including: broadcasting of water level and rain forecasts on FM radio, local broadcasting of audio dramas to raise awareness about flood preparedness, and flood preparedness and early warning awareness training in schools and community workshops. Expected results include increased early warning and flood management capacity within the province, and enhanced stakeholder participation in flood preparedness. It is also expected that this project would be replicated in at least one other province.

Development of Cambodia and Lao P.D.R.'s Tropical Cyclone Forecast and Early Warning Service (Ref.78)

Location:	Cambodia and Lao People's Democratic Republic
Project Type:	Storms & Flood Technical, Governance, Education & Public Awareness
Submitting Organizations:	Department of Meteorology of Cambodia
Timeframe & Funds Requested:	60 months, 1,500,000 EUR
Primary Contact:	Seth Vannareth dom@camnet.com.kh
	Tel: +855 23 890 034

Abstract: Following prolonged conflict in Cambodia and the Lao PDR, the facilities of both countries' meteorological services have become inoperative and their staff insufficiently trained to meet their responsibilities. They are consequently unable to provide reliable and timely weather forecasts and alerts, and to contribute to disaster prevention. The objectives of this project aim at rehabilitating both services at national and provincial levels to enable them to meet international forecasting standards through the supply of equipment and staff training, in particular with a view to facilitating the issuance of tropical cyclone and flood warnings and weather forecasts for civil aviation at frequent intervals.

Improving the Early Warning Efficiency of the Regional Flood Management and Mitigation Centre (RFMMC) of the Mekong River Commission in Phnom Penh (Ref.142)

Location:	Cambodia, Lao People's Democratic Republic, Thailand and Vietnam
Project Type:	Flood, Technical, Evaluation & Implementation
Submitting Organizations:	Mekong River Commission Secretariat (MRCS), Vientiane, Laos, represented by the Regional Flood Management and Mitigation Centre (RFMMC) of the Mekong River Commission, Phnom Penh, Cambodia; and the University of Karlsruhe, Germany
Timeframe & Funds Requested:	24 months, 237,000 EUR
Primary Contact:	Prof Erich J. Plate plate@iwk.uka.de
	Tel: +49 721 608 3907

Abstract: The lower Mekong River region is prone to frequent and extreme flooding. In the year 2000, more than 30,000 km² of land was flooded, and over 2,000 people were killed as a result. A basic early warning system exists for this area, but is inadequate. Urgent improvements are needed to fill gaps in this system until it can be fully replaced in the long-term. The purpose of this project is to strengthen the capacity of the Mekong River Commission to provide early warning information to communities in the lower Mekong (Thailand, Laos, Cambodia and Vietnam) with improved accuracy. This project will involve: assessing the existing forecasting system to determine any problems; and developing an algorithm to improve the performance of the current system, without changing its basic structure.

Creating a Hydro Meteorological Disasters Database Management System within Central and South-West Asia (Ref.151)

Location:	Central and South-West Asia
Project Type:	Hydro-meteorological Hazards, Technical, Education & Public Awareness
Submitting Organizations:	Islamic Republic of Iran Meteorological Organization (IRIMO)
Timeframe & Funds Requested:	60 months, Not clearly defined
Primary Contact:	Farah Mohammadi mohamadi@irimet.net
	Tel: +98 912 2965144

Abstract: In recent years, particular attention has been paid to mitigation of disaster activities. Various studies and projects have been attempted and conducted relating to natural disaster mitigation. However, many suffer from a lack of access to reliable and easily accessible databases, especially if the region of study incorporates more than one country, such as the South-West Asian region. This project aims too integrate all existing databases in the region through an Earth Observation Portal (EOP). This projects aims to create and implement a national Hydro-Meteorological Disaster Database Management System in each country in the region and a regional portal; and promote information sharing among governments and users which will help ensure access to reliable data in order to implement early warning projects and mitigate losses.

Flood Warning as part of a Multi-Hazard Warning System for Fiji (Ref.140)

Location:	Fiji
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	National Disaster Management Office (NDMO)
Timeframe & Funds Requested:	24 months, 296,000 USD
Primary Contact:	Joeli Rokovada jrokovada@govnet.gov.fj
	Tel: +679 3313 400

Abstract: Owing to high rainfall levels, steep topography and relatively large catchments combined with intensive agricultural use of lowlands, inland flooding is currently the most frequent and damaging natural hazard to communities in Fiji. The objective of this project is to improve existing early warning services and install a modern flood warning and forecasting system within two major watersheds. It is intended as a pilot project with a view to subsequently institutionalising flood warning as an integral part of a people/community-focused multi-hazard early warning system. Other Pacific Island countries with similar geographic settings would be enabled to gain from this experience.

Application of Information Communication Technology in Community Based Disaster Preparedness in Andhara Pradesh State, India (Ref.53)

Location:	India
Project Type:	Storms & Flood, Community Participation, Education & Public Awareness
Submitting Organizations:	Welfare Organisation for Rural Lean Development (WORLD)
Timeframe & Funds Requested:	12 months, 302,009 USD
Primary Contact:	Kancherla Seshaiah world_uma@yahoo.com
	Tel: +91 8749 276574

Abstract: Andhra Pradesh State, India, is highly prone to cyclones and flooding. Over the past 100 years, the State has been affected by 71 damaging cyclones. The aim of this project is to improve disaster preparedness in five coastal districts of Andhra Pradesh. This will be achieved by strengthening cyclone and flood early warning communication, raising awareness among coastal residents about natural hazard preparedness, and building the capacity of rural youth to assist with cyclone and flood risk mitigation. This project will also support the strengthening of storm shelters, protection of drinking water sources, and planting of vegetation in coastal area to serve as a natural storm barrier.

Space Science for Disaster Management (Ref.68)

Location:	India
Project Type:	Multi-hazard, Technical, Evaluation & Implementation
Submitting Organizations:	Barkatullah University, Bhopal, India
Timeframe & Funds Requested:	24 months, 100,000 EUR
Primary Contact:	Prof Ashok Kumar Gwal splakg@sancharnet.in
	Tel: +91 755 2677722

Abstract: Micro-satellite DEMETER (Detection of Electromagnetic Emissions Transmitted from the Earthquake Region) has monitored and recorded signals since 2004 to study disturbances of the ionosphere resulting from pre-seismic seismo-electromagnetic effects and anthropogenic activities. The seismo-electromagnetic effects are the electric and magnetic perturbations caused by natural geophysical activities such as earthquakes, volcanic eruptions and tsunamis. The objective of this project is to conduct an extensive coordinated ground-satellite study of phenomena possibly taking place before earthquakes in the ionosphere above the Indian subcontinent. This would serve to verify the existence of ionospheric precursors of earthquakes and to identify (if they exist) their main features with a view to using the ones helping to forecast strong earthquakes.

Analysis Risk, Identifying Gaps, Preparing Communities for Developing and Operationalising Decentralised Information System Framework for Enabling Communities to Comprehend Early Warning in Disaster Prone Regions of India (Ref.91)

Location:	India
Project Type:	Multi-hazard, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Ekgaon Technologies pvt ltd led consortium including Winrock International, India; ISET, USA; NWCF, Nepal; SWAD; and Orissa & GEAG, UP, India
Timeframe & Funds Requested:	24 months, 724,500 EUR
Primary Contact:	Vijay Pratap Singh Aditya info@ekgaon.com
	Tel: +91 1151657166

Abstract: The project is an integrated programme of pilot implementation, policy analysis, capacity building and dissemination activities: it is designed to develop, test and document practical interventions that integrate disaster relief, rehabilitation, mitigation and follow-up work with the development of resilient livelihoods and adaptive capacity in disaster-prone regions. It will focus on areas particularly vulnerable to the impact of climatic variability and change (coastal zones and flood/drought-affected regions). The project's objectives consist in identifying flood, cyclone, tsunami and earthquake risks, understanding vulnerabilities associated with disasters and mitigation measures, and detecting existing gaps in early warning and community preparedness. It will identify suitable stakeholders in the information-sharing framework for early warning, including in community networks.

Disaster Management Systems and Operations Around the Indian Ocean Region (Tsunami and and Catastrophic Loss Reduction) (Ref.130)

Location:	Indian Ocean Region
Project Type:	Tsunami, Technical, Education & Public Awareness
Submitting Organizations:	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH; and European Aeronautic Defense and Space Company (EADS Deutschland GmbH)
Timeframe & Funds Requested:	24 months, 2,500,000 EUR
Primary Contact:	Felix Wiederspahn felix.wiederspahn@eads.com
	Tel: +49 89 3179 4073

Abstract: The Indian Ocean tsunami disaster of 2004 revealed key infrastructure deficiencies that caused significantly large losses. Following the implementation of a first "diagnostic" phase of an early warning system to identify potential losses caused by tsunamis, funded by the German government, the project aims at reducing such losses through the establishment and operation of a second-phase early warning disaster management infrastructure. The implementation of that phase should help sensitize coastal populations to potential disasters. It foresees the setting-up of technically self-sufficient flexible communications systems for the transmission of information during emergencies. This would be complemented by structures (national/regional disaster management centres and local response teams) focusing on awareness raising and teaching appropriate response behaviour.

Early Warning System of Padang City - Operation Center - Earthquake and Tsunami Disaster Mitigation Pilot Project (Ref.54)

Location:	Indonesia
Project Type:	Earthquake & Tsunami, Technical, Education & Public Awareness
Submitting Organizations:	RAPI 03.01 Wilayah Kota Padang
Timeframe & Funds Requested:	24 months, 390,076 EUR
Primary Contact:	Aim Zein aimzein@fastmail.fm
	Tel: +62 811 669988

Abstract: Padang City, West Sumatra, Indonesia, is situated on the Indian Ocean coastline, less than 5 metres above sea level, and only 3 kilometres inland. Damage to the city and its 350,000 inhabitants would be extensive in the event of a tsunami. The objective of this project is to design a tsunami early warning system at the national level, which would provide extensive support to Padang City. The early warning system to be established for the city will use radio communication, a local disaster management operation system centre, and an education centre to raise public awareness about tsunami risks and appropriate damage mitigation measures.

Education for Disaster Preparedness in Primary Schools (Ref.113)

Location:	Indonesia
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Asian Disaster Reduction Center (ADRC)
Timeframe & Funds Requested:	4 months, 250,000 USD
Primary Contact:	Akihiro Teranishi teranishi@adrc.or.jp
	Tel: +81 78 262 5540

Abstract: After the deadly Indian Ocean tsunami of 2004, it appeared that 94 percent of people questioned about it in Sri Lanka and 83 percent in the Maldives had never heard about tsunamis prior to the disaster. By then though, nearly all school children wished to study the topic of natural disasters at school, which they also intended to discuss with their parents at home. This project aims at taking advantage of the children's potential role in disseminating key elements of long-term disaster reduction strategies and integrating disaster preparedness education into curricula on a permanent basis. It foresees the development and distribution of educational materials and teaching manuals to strengthen disaster preparedness in primary schools, as well as teacher training in related subjects.

Installation of Evacuation Signboards (Ref.114)

Location:	Indonesia
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Asian Disaster Reduction Center (ADRC)
Timeframe & Funds Requested:	4 months, 100,000 USD
Primary Contact:	Akihiro Teranishi teranishi@adrc.or.jp
	Tel: +81 78 262 5540

Abstract: After the 2004 tsunami disaster, Sri Lankan government officials stated in interviews that the display of signboards indicating evacuation routes or safe places in different languages would be the most effective way to help tourists move out of dangerous zones in the event of tsunami threats. This project would set up such signboards, whose indications should be easily understood by the local population and foreign tourists. The implementation of the project would not only facilitate evacuations but also raise the local population's tsunami awareness.

A Tool and Data Base for Reliable Earthquake Loss and Risk Estimates in Iran (Ref.66)

Location:	Islamic Republic of Iran
Project Type:	Earthquake, Technical, Education & Public Awareness
Submitting Organizations:	World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMER); and International Institute of Earthquake Engineering and Seismology (IIES)
Timeframe & Funds Requested:	36 months, 511,560 EUR
Primary Contact:	Prof Max Wyss wapmerr@maxwyss.com
	Tel: +41 79 749 4894

Abstract: As an earthquake-prone country, Iran possesses a wealth of data that should help develop its capability to estimate potential earthquake losses. Using such data, the project's objectives consist in the evaluation and microzonation of earthquake hazards (including assessments of the impact of such hazards on the vulnerability of structures in various Iranian cities), emergency response planning and identification of locations for temporary housing and for reconstruction. The project would be part of an overall objective to achieve earthquake risk reduction, to facilitate the development and reconstruction of vulnerable structures in urban areas and the development of earthquake mitigation and preparedness activities.

Flood Warning System as a Sector of Flood Integrated Action Plan in Imamzade Davood Basin, Tehran Province (Ref.67)

Location:	Islamic Republic of Iran
Project Type:	Flood, Evaluation & Implementation, Technical
Submitting Organizations:	Ministry of Interior (MOI); and Ministry of Energy (MOE)
Timeframe & Funds Requested:	12-24 months, 100,000 USD
Primary Contact:	Flood Control & River & Coastal Engineering Bureau jf_vatan@yahoo.com
	Tel: +98 21 88955108

Abstract: The Islamic Republic of Iran is prone to severe annual flooding that causes significant death and property damage. Recent studies suggest that flooding is exacerbated by human factors, such as floodplain development, deforestation, gravel mining, poor infrastructure design, and lack of education. The goal of this project is to create the basis for a national flood early warning system and an integrated flood management programme for Iran. This will be achieved through in-depth work in the Imamzade Davood Basin, which could then be replicated in other areas of the country. Project activities will include: a review of existing flood management systems in Iran, justification of site selection, and the development of requirements for integrated flood management programmes (e.g. flood maps, early warning dissemination, and emergency action plans).

Determination of Needed Factors for the Effective Early Warning System for Reducing the Impacts of Hydro-Meteorological Extreme Events in Iran (Ref.97)

Location:	Islamic Republic of Iran
Project Type:	Hydro-meteorological Hazards, Technical, Evaluation & Implementation
Submitting Organizations:	Islamic Republic of Iran Meteorological Organization (IRIMO)
Timeframe & Funds Requested:	36 months, 2,500,000 USD
Primary Contact:	Gholam Ali Kamali kamali@irimet.net
	Tel: + 98 912 1209948

Abstract: Significant progress has been made in understanding the frequency and intensity of extreme hydro-meteorological events. The project aims at developing climate models to establish long-term forecasts of national and regional trends of climate variables and possible climate change, and thus to determine the likelihood of such extreme and potentially disastrous events in the future. Such models would help design an early warning system for the Iranian population with a view to reducing loss of human life and economic losses, especially in the areas of agriculture, livestock, infrastructure and hydroelectric power generation during droughts.

Warning Analysis Network and Site for Iran (Ref.126)

Location:	Islamic Republic of Iran
Project Type:	Multi-hazard, Evaluation & Implementation, Technical, Governance
Submitting Organizations:	National Disaster Task Force of the Ministry of Interior
Timeframe & Funds Requested:	18 months, 70,000 USD
Primary Contact:	Mohammad Reza Houshmand Marvasti houshmandmarvasti@gmail.com
	Tel: +98 912 115 9292

Abstract: The Islamic Republic of Iran is highly prone to earthquakes, flooding, and drought. In order to reduce the vulnerability of the population to these hazards, the government must strengthen its disaster management and emergency response capacity, in particular its access to, and integration of, natural hazard information from all sources. The aim of this project is to provide disaster management officials with quick and reliable access to hazard information. Project activities will include identifying and addressing gaps in current knowledge, and developing a national early warning network. It is expected that improved access to information will reduce the time needed to make critical decisions in the event of a disaster by up to 30%, and will improve the efficiency of disaster response by up to 60%.

Creation of "Safety Instruction Leaflet" for Foreign Tourists (Ref.112)

Location:	Maldives
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Asian Disaster Reduction Center (ADRC)
Timeframe & Funds Requested:	4 months, 83,000 USD
Primary Contact:	Akihiro Teranishi teranishi@adrc.or.jp
	Tel: +81 78 262 5540

Abstract: Many foreign tourists lost their lives during the 2004 tsunami, many of whom may not have spoken the language of their host countries and were unfamiliar with natural disaster threats and escape routes. The post-tsunami decline in visitor numbers needs to be reversed, especially in tourism-oriented economies. The objective of this project aims at creating a tourist-friendly environment addressing the tourists' concerns for safety. One way of achieving this would be through the distribution of safety instruction leaflets and posters, presented in the prevailing languages of the tourist community and providing information on potential disasters, early warning systems and evacuation procedures. The project foresees the conduct of sensitization seminars in disaster preparedness for tour operators.

Strengthening of Early Warning System for Flood in Ulaanbaatar (Ref.25)

Location:	Mongolia
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	National Emergency Management Agency (NEMA)
Timeframe & Funds Requested:	30 months, 3,302,000 USD
Primary Contact:	Sh. Ganbold sh_ganaa99@yahoo.com

Abstract: Climate change is anticipated to pose particular challenges for Mongolia, where temperatures are rising three times as rapidly as the global average. It is expected that temperatures in Mongolia will rise by another 1.8-2.0 degrees Celsius over the next 20 years, increasing risks of climate-related natural hazards. Despite this fact, Ulaanbaatar City, the capital of Mongolia, does not have an adequate disaster management strategy. This project's aim is to reduce natural hazard risks, in particular damage caused by flooding, in Ulaanbaatar City. This will be achieved through the development of a climate change adaptation plan, and a master plan for flood control, based on international best practices. A flood early warning system will also be established.

Development of a Regional Sand and Dust Storm Early Warning System (SDS-EWS) in North East Asia (Ref.21)

Location:	North East Asia
Project Type:	Sand & Dust Storm, Technical
Submitting Organizations:	Center for Atmosphere Watch and Services (CAWAS); China Meteorological Administration (CMA); and World Meteorological Organization (WMO)
Timeframe & Funds Requested:	120 months, 2,100,000 EUR
Primary Contact:	Dr Zhang Xiao-ye xiaoye@cams.cma.gov.cn Tel: +86 10 68408943

Abstract: Major dust storms are of increasing concern in North East Asia, as recent storms have caused significant property damage, poor air quality, and even death. As such, interested countries and organizations are collaborating to develop a regional Sand and Dust Storm Early Warning System (SDS-EWS). The aim of this project is to develop the science components and networks that will serve as the basis for an effective system. Expected results include: the establishment of a regional SDS monitoring network, and upgrading current monitoring capacity; the improvement of SDS modeling capabilities; the development of methods to assimilate scientific data; and, the strengthening of the SDS forecasting and early warning capacities of participating countries.

GIS/RS Based Earthquake Hazard Mapping of North Pakistan (Ref.56)

Location:	Pakistan
Project Type:	Earthquake, Technical, Evaluation & Implementation
Submitting Organizations:	Department of Environmental Sciences, University of Peshawar (DES); and National Centre of Excellence in Geology, University of Peshawar (NCEG)
Timeframe & Funds Requested:	24 months, 73,468 USD
Primary Contact:	Dr Noor Jehan noorjehan@upesh.edu.pk Tel: +92 91 9216742

Abstract: The development of comprehensive disaster preparedness and mitigation strategies has been hampered by the unavailability of adequate scientific data related to the geographic coverage of earthquake vulnerability. The amount of energy stored, resulting from the Indian plate's push, is estimated to far exceed the amount released by earthquakes. Northern Pakistan has therefore the potential to generate several earthquakes of a magnitude of 8 or more. The project aims at developing an earthquake hazard database, including the preparation of updated maps of geological/geomorphologic features influencing earthquake effects, peak ground acceleration maps and demographic maps, and composite/cluster maps of potential risk areas. The project would assess the vulnerability and risk potentials for rehabilitation, development planning, emergency preparedness and relief strategies for selected areas at risk.

Seismograph and Tide Gauge Networks for Earthquake and Tsunami Monitoring in Papua New Guinea (Ref.26)

Location:	Papua New Guinea
Project Type:	Earthquake & Tsunami, Technical, Education & Public Awreness
Submitting Organizations:	Port Moresby Geophysical Observatory (PMGO)
Timeframe & Funds Requested:	24 months, 3,167,000 USD
Primary Contact:	Chris O. McKee pmgo@daltron.com.pg
	Tel: +675 321 45 00

Abstract: Papua New Guinea has experienced devastating tsunamis generated locally by earthquakes and volcano-related activities, confronting the coastline populations with life-threatening breaking waves, flooding, and property damage. Maintaining the national seismic network's old equipment encounters enormous difficulties. It is no longer manufactured and spare parts are rarely available. The objective of this project is to set up a system capable of monitoring and locating local tsunamigenic earthquakes, including smaller magnitude events which, according to historical records, also had devastating effects. It foresees the establishment of a communication network for the dissemination of earthquake and tsunami information to the authorities and the public. The proposed system would tie in with systems in neighbouring countries to form regional networks.

Community Empowerment for Effective Early Warning System (Ref.23)

Location:	Philippines
Project Type:	Multi-hazard, Education & Public Awareness, Evaluation & Implementation
Submitting Organizations:	Philippines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
Timeframe & Funds Requested:	24 months, 161,000 USD
Primary Contact:	Ninio A. Relox narelox@yahoo.com
	Tel: +63 2 922 1992

Abstract: Despite the efforts of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) to strengthen its early warning services for tropical cyclone hazards, damage and casualties caused by cyclones continue to increase in the Philippines. Recent studies show that public comprehension of early warning messages is low and that appropriate damage mitigation measures are not being taken. This project intends to both improve PAGASA's ability to communicate early warning messages effectively, and increase community understanding of the messages. Project activities will include working with local government units in 12 jurisdictions to achieve three objectives: the effective dissemination of early warning messages, the improvement of public understanding of these messages, and the establishment of an information caravan for local communities.

Development of an Advanced Tropical Cyclone Early Warning System for the Philippines (Ref.48)

Location:	Philippines
Project Type:	Storms & Floods, Technical, Education & Public Awareness
Submitting Organizations:	Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA); City University of Hong Kong, China; Bureau of Meteorology, Australia; and World Meterorological Organization (WMO)
Timeframe & Funds Requested:	60 months, 500,000 EUR
Primary Contact:	Dr Prisco Nilo pdnilo@pagasa.dost.ph
	Tel: +63 2 4349026

Abstract: Each year an average of 20 tropical cyclones enter the Philippines forecast area of responsibility, with an average of nine actually crossing the country. However as yet there is no early warning system based on state-of-the-art technology available in developed countries. The overall aim of the project is to reduce by 20% the number of deaths associated with typhoon landings in the Philippine through the implementation of an advanced tropical cyclone warning system. This will be achieved through technology transfer to provide state-of-the-art numerical predictions of tropical cyclones landfall and hydrological models to predict floods; and training of decision-makers, emergency managers, other officials; and the provision of education programmes for the public.

Mitigation of Tsunami Risks in the Philippines Through the Establishment of a Tsunami Early Warning System (Ref.58)

Location:	Philippines
Project Type:	Tsunami, Technical, Education & Public Awareness
Submitting Organizations:	Philippines Institute of Volcanology and Seismology (PHIVOLCS)
Timeframe & Funds Requested:	24 months, 1,159,000 USD
Primary Contact:	Renato U. Solidum Jr. solidr@phivolcs.dost.gov.ph
	Tel: +632 926 2611

Abstract: Tsunamis have caused substantial damage and claimed thousands of lives in costal areas of the Philippines. The Philippine Institute of Volcanology and Seismology (PHIVOLCS) is the government agency responsible for monitoring and providing information on earthquakes and tsunamis, however it does not have adequate tsunami detection and early warning capabilities. The objective of this project is to establish an effective tsunami early warning system for the country including: improvements to the seismic monitoring network and the PHIVOLCS communication system; establishment of a tsunami wave detection network; tsunami hazard and risk mapping; public awareness and preparedness campaigns; development of a sustainable technology to issue tsunami alerts and evacuation orders.

Mitigation of Volcanic Risks in the Philippines Through the Improvement of Volcano Monitoring Systems and Preparedness Plans (Ref.77)

Location:	Philippines
Project Type:	Volcano, Technical, Education & Public Awareness
Submitting Organizations:	Philippines Institute of Volcanology and Seismology(PHIVOLCS)
Timeframe & Funds Requested:	24 months, 140,090 USD
Primary Contact:	Renato U. Solidum Jr. solidr@phivolcs.dost.gov.ph
	Tel: +632 926 2611

Abstract: There are 300 volcanoes in the Philippines, dozens of which are active or potentially active. Volcanic eruptions have caused extensive damage and loss of life in the country, and continue to pose a significant threat to vulnerable populations. Despite this risk, the Philippine Institute of Volcanology and Seismology (PHIVOLCS) does not have the capacity to detect volcanic eruption precursors, and its ability to monitor and issue warnings regarding post-eruption hazards needs strengthening. The aim of this project is to improve volcano monitoring, early warning systems, and preparedness plans through: detecting volcanic eruption precursors using geophysical techniques; establishing a real-time monitoring network for the prediction and timely detection of floods and lahars; developing a volunteer programme for volcano observation; and, developing volcano preparedness plans.

A Flood Forecasting Device in Quezon City, Philippines a Sound Practice for Flood Disasters Reduction Measure (Ref.87)

Location:	Philippines
Project Type:	Flood, Evaluation & Implementation, Education & Pubic Awareness
Submitting Organizations:	California Riverside and Odelco Compound, Barrio (Bgy.) San Bartolome, Novaliches, Quezon City
Timeframe & Funds Requested:	6 months, 600 USD
Primary Contact:	Dr Noel L. Lansang noellansang@yahoo.com.ph
	Tel: +632 924 2027

Abstract: Quezon City, the second largest city in the Philippines, is situated along the Tullahan River, Northeast of Manila. Heavy rainfall causes regular flooding in many parts of this city. Existing warning procedures do not, however, provide enough lead time for families to evacuate, and residents are regularly trapped in their homes. The aim of this project is to install a rain gauge, combined with an improved flood warning system, to produce reliable flood information to facilitate timely evacuation operations. It is anticipated that this flood warning system will serve as a model to be replicated in other areas in Quezon City, and throughout the Philippines.

Enhancement of the National El Niño-Southern Oscillation (ENSO) and Drought Early Warning, Monitoring and Prediction System for Disaster Preparedness in the Philippines (Ref.47)

Location:	Philippines
Project Type:	El-Niño, Technical, Education & Public Awareness, Governance
Submitting Organizations:	Philipines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA); and Department of Science and Technology (DOST)
Timeframe & Funds Requested:	Not defined, 244,000 USD
Primary Contact:	Dr Graciano P. Yumul Jr. csrwg@yahoo.com Tel: +632 434 9040

Abstract: Climate-related hazards, particularly those resulting from El Niño, have caused considerable environmental, economic, and social damage and loss in the Philippines. The goal of this project is to improve the accuracy, reliability, and timeliness of climate forecasts, so that communities and vulnerable economic sectors can better prepare for climate-related hazards. Specifically, this project aims to address the gaps in existing forecasting initiatives. It will improve the science and dynamics of ENSO, develop and validate forecasting tools and climate indices and indicators, and build staff capacity to translate global ENSO forecasts into local climate and sector-specific forecasts. This project will also enhance community understanding of climate forecasts, and strengthen linkages between all levels of government engaged in natural hazard preparedness and response.

Upgrade of the WMO Global Telecommunication System (GTS) to Serve as Backbone Communication Network for the Exchange of Warnings and Related Information in Support of Multi-hazard Early Warning Systems (Ref.86)

Location:	South-East Asia and Pacific
Project Type:	Multi-hazard, Technical
Submitting Organizations:	World Meteorological Organization (WMO)
Timeframe & Funds Requested:	36 months, 2,500,000 EUR
Primary Contact:	Jean-Michel Rainer jmrainer@wmo.int Tel: +41 22 730 8219

Abstract: While the WMO GTS currently interconnects all National Meteorological and Hydrological Services (NMHSs) and ensures that each country has access to information to provide effective weather, water and climate services and warnings, some shortcomings exist in the South-East Asia and Pacific region. Through procurement of technical upgrades of GTS components; in-country assistance; capacity building and training; and follow-up monitoring, this project will ensure all NMHSs get timely warnings and information to support an efficient national early warning system. Seventy percent (70%) of the funding for this project will be dedicated to procurement and installation of equipment. Major beneficiaries of this project will be Governments and their NMHSs, in particular from developing and less developed countries.

Improving Disaster Resilience of Coastal Schools in Sri Lanka - IDRIS-SL (Ref.41)

Location:	Sri Lanka
Project Type:	Tsunami, Evaluation & Implementation, Education & Public Awareness, Governance
Submitting Organizations:	Geological Survey and Mines Bureau; and Department of Meteorology for Technical Advisory Committee for Disaster Early Warning of the Disaster Management Centre of the Government of Sri Lanka
Timeframe & Funds Requested:	12-24 months, 276,000 USD
Primary Contact:	Lalith Chandrapala lalithch@hotmail.com

Abstract: The 2004 Indian Ocean Tsunami affected approximately 850 km of the coastline in Sri Lanka, and resulted in over 35,000 casualties and extensive property damage. Fifty-nine schools were destroyed and one-hundred and two were seriously damaged by the tsunami. This project is intended to reduce the vulnerability of students and teachers to tsunamis by strengthening the capacity of coastal schools to receive and to react to warnings. Activities will include: training teachers in disaster prevention; distributing tsunami preparedness resource material to high-risk schools; developing emergency plans for targeted schools; and strengthening links between schools and agencies responsible for early warning dissemination. Over 60,000 children and 3,000 teachers in schools located within one kilometre of the coastline will be targeted.

Improving Resilience in Rural Communities of Sri Lanka - IRRC (Ref.43)

Location:	Sri Lanka
Project Type:	Tsunami, Evaluation & Implementation, Education & Public Awareness, Governance
Submitting Organizations:	Geological Survey and Mines Bureau; Department of Meteorology for Technical Advisory Committee for Disaster Early Warning of the Disaster Management Centre of the Government of Sri Lanka
Timeframe & Funds Requested:	12-24 months, 276,000 USD
Primary Contact:	Lalith Chandrapala lalithch@hotmail.com
	Tel: Not supplied

Abstract: The 2004 Indian Ocean Tsunami affected 45% of all townships in Sri Lanka and damaged over 100,000 houses. Since the tsunami, some work has been undertaken to strengthen the resilience of coastal areas. For example, a tsunami-ready model village has been constructed in southern Sri Lanka. This project will further these efforts by strengthening the capacity of rural communities to prepare for future tsunamis. Activities will include: training communities to prepare for tsunamis and to respond to early warning messages; developing emergency plans for, and conducting drills in, villages in the project area; and strengthening links between villages and agencies responsible for early warning. The target area for this project is a 200 kilometre strip of coastline from Panadura to Matara.

From Local Action to National Cooperation: National and People Centred Early Warning System in Tajikistan - An Interagency Approach to Link Local and National in the Zerovshan Valley (Ref.65)

Location:	Tajikistan
Project Type:	Multi-hazard, Education & Public Awareness, Technical, Governance
Submitting Organizations:	Ministry of Emergency Situations (MoES); partners: GTZ, GAA, UNDP-DMRP
Timeframe & Funds Requested:	36 months, 2,406,883 EUR
Primary Contact:	Dr Christina Bollin disaster-reduction@gtz.de
	Tel: +49 619 679 4218

Abstract: Dozens of landslides and hundreds of mudflows and avalanches occur annually in Tajikistan, resulting in severe economic and social losses. The Zerovshan Valley is particularly prone to natural hazards, yet monitoring and assessment of potential risks is sporadic, forecasting is incomplete, communication networks are unreliable, and local capacity to prevent and mitigate natural hazards is limited. The objective of this project is to develop effective early warning systems in Tajikistan at the community level, which are backed by competent national services and adequate communication systems. Three main activities would be undertaken at local, regional, and national levels: natural hazard awareness raising and training; monitoring and forecasting of hazards, such as floods and landslides; and, strengthening of disaster coordination and communication capacities.

Early Warning Communication System for the Kingdom of Tonga (Ref.139)

Location:	Tonga
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	Tonga National Disaster Management Office (NDMO)
Timeframe & Funds Requested:	12 months, 65,000 USD
Primary Contact:	Deputy Director, National Disaster Management Office (NDMO) makai@kalianet.to
	Tel: +676 28215

Abstract: The Kingdom of Tonga in the Pacific Ocean is highly vulnerable to natural hazards. However, disaster managers have limited ability to access and disseminate natural hazard information. The aim of this project is to strengthen early warning and disaster preparedness in the Kingdom by building a reliable natural hazard communications network. This network would both improve the collection of meteorological data from remote monitoring sites, and also facilitate the distribution of this information throughout Tonga, using high frequency radio data circuits, augmented by satellite broadcast information. Similar projects are being implemented throughout the Pacific region through the RANET-Pacific Project.

Implementing a Real-time Flood Forecasting System for East Black Sea Region in Turkey (Ref.93)

Location:	Turkey
Project Type:	Flood, Technical, Evaluation & Implementation
Submitting Organizations:	General Directorate of State Hydraulic Works
Timeframe & Funds Requested:	12 months, 110,000 EUR
Primary Contact:	Fatih Keskin fatihk@dsi.gov.tr
	Tel: +90 312 417 8300

Abstract: In 1998, the Western Black Sea Region in Turkey experienced devastating flooding resulting from unusually high levels of rain. The Turkey Emergency Flood and Earthquake Recovery (TEFER) project, a flood warning system that covers 4 regions (Western Black Sea, Susurluk, Gediz, and Buyuk Menderes) was established following these floods. Results from the TEFER project have been positive, but additional work is now needed to expand the system. The objective of this project is to implement a real-time forecasting system in the Eastern Black Sea Region, in the Trabzon and Rize areas. This will enable prediction of the frequency, magnitude and timing of floods, and will provide early warning to authorities and the public when flooding is expected.

Seismic Risk Assessment and Mitigation in the Antakya-Maras Region in Turkey (Ref.102)

Location:	Turkey
Project Type:	Earthquake, Technical, Evaluation & Implementation
Submitting Organizations:	Institute for Socioeconomic and Cultural International Analysis (ISOKIA); and Bauhaus-University Weimar Institute of Structural Engineering Earthquake Damage Analysis Center (EDAC)
Timeframe & Funds Requested:	36 months, 1, 300,000 EUR
Primary Contact:	Dr Elke M. Geenen geenen@isokia.de
	Tel: +49 431 58 12 43

Abstract: Many of the activities related to seismic risk assessment, mitigation, and early warning in Turkey are focused on Istanbul. However, mid-sized cities have endured most damage from earthquakes. The aim of this project is to use current tools for earthquake risk mitigation to develop a Master Plan for Mitigation and Early Warning, focusing in particular on risks in the earthquake-prone Antakya-Maras region. This project will involve several steps, including: documentation of risks in three urban areas and select rural areas in the Antakya-Maras region, development of risk scenarios, interviews with local communities concerning vulnerability and risk awareness, and establishment of early warning systems. It is hoped that the Master Plan will become a model for other earthquake-prone regions in Turkey.

Water-related Crisis Information Centre for the Mekong, Vietnam (Ref.44)

Location:	Vietnam
Project Type:	Hydro-meteorological Hazards, Technical, Education & Public Awareness
Submitting Organizations:	Southern Institute of Water Resources Research (Vietnam); in cooperation with project partners in Vietnam and Germany
Timeframe & Funds Requested:	Start August 2006, Not defined.
Primary Contact:	Prof Dr Le Sam vkhtlmn@hcm.vnn.vn
	Tel: +84 8 8380989

Abstract: The Lower Mekong Basin is affected by dramatic seasonal variations in water quantity, resulting from monsoons and tropical cyclones. By the end of the wet season, a combination of rainfall and tidal inundation may flood up to 3,400,000 ha in the Vietnamese portion of the delta, resulting in significant damage and loss of life. The goal of this project is to establish a satellite-based Crisis Information Centre, linked to the Vietnamese National Mekong River Committee and water-related research institutions, to provide information and guidelines for flood prevention and disaster mitigation to decision-makers. The Centre will provide information including: topographic maps and digital elevation models; a database for flood forecasting and water resource management; and flood vulnerability indicators.

Building the Resilience of Communities to Disasters (BRCD) in Baluchistan, Azad Jammu and Kashmir – Pakistan (Ref.157)

Location:	Pakistan
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation, Technical
Submitting Organizations:	Islamic Relief Deutschland e.V.
Timeframe & Funds Requested:	15 months, 196,957 EUR
Primary Contact:	Dr Sanaa Ashour sanaa@islamicrelief.de
	Tel: +49 221 7220 799

Abstract: The densely populated nation of Pakistan is vulnerable to a variety of natural hazards including floods, earthquakes, droughts, cyclonic storms and land sliding. In addition, the diversity of cultures, the adverse socio-economic and political environment lead already vulnerable people to inhabit high risk areas and engage in unsustainable and unhealthy livelihood practices Both *Azad Jammu & Kashmir* and *Baluchistan* are prone to major natural and man-made hazards. The key objective of this project is to ensure communities are resilient to, informed and well prepared against potential disasters and that losses are reduced. This will be achieved through small-scale mitigation works such as rangeland management, building retaining walls and check dams to minimise spoil erosion; advocacy and public awareness campaigns; local capacity building; and development of early warning systems.

Projects from Europe

Early Warning Integrated Weather and Hydrological System (Ref.59)

Location:	Bulgaria
Project Type:	Multi-hazard, Technical, Evaluation & Implementation
Submitting Organizations:	State Agency for Civil Protection
Timeframe & Funds Requested:	9 months, 40,000,000 EUR
Primary Contact:	Dr Nikola Stoyanov Nikolov nikolov@cp.government.bg
	Tel: +359 2 962 51 69

Abstract: The disastrous floods that affected 80 percent of Bulgaria's territory in 2005 highlighted the need for an early warning system. The project's objective consists in the establishment of an Early Warning Integrated Weather and Hydrological System (EWIWHS). The implementation of that system would help develop a national hydro-meteorological forecast infrastructure and integrate the work of state agencies and local authorities into a national network for information dissemination. EWIWHS would thus become the focal point for emergency management information, rainfall, flood and landslide forecasts and warnings, and the detection of forest fires.

The Loire Prevention Ambassadors (Ref.136)

Location:	France
Project Type:	Flood, Education & Public Awareness, Community Participation
Submitting Organizations:	Association Prévention 2000; and l'Institut Français des Formateurs Risques Majeurs et protection de l'Environnement (IFFO-RME) en coolaboration avec AFPCN
Timeframe & Funds Requested:	24 months, 50,000 EUR
Primary Contact:	Olivier Schick mel@prevention2000.org
	Tel: +33 2 47 20 00 28

Abstract: The Loire, France's largest watershed, has historically experienced catastrophic flooding. This project is intended to commemorate these past floods, and to help raise public awareness about the risks posed by flooding. For 12 days, francophone youth from France and from several developing countries will travel the length of the river by bus, educating communities in the region about flood preparedness and prevention. This project is part of the Natural Disaster Prevention Ambassadors' Network, which facilitates exchanges between children and teachers to raise awareness about natural hazards. The resources sought in this proposal would help to support the travel of students and teachers from schools in developing countries.

Earthquake Early Warning System for Greece (Ref.90)

Location:	Greece
Project Type:	Earthquake, Technical, Education & Public Awareness
Submitting Organizations:	National & Kapodistrian Univeristy of Athens, Faculty of Geology, Department of Geophysics and Geothermics Seismological Laboratory (NKUA/SL); and European Centre on Prevention and Forecasting of Earthquakes (E.C.P.F.E.)
Timeframe & Funds Requested:	60 months, 10,000,000 EUR
Primary Contact:	Prof K.C. Makropoulos kmacrop@geol.uoa.gr
	Tel: +30 210 727 4425

Abstract: Fifty percent of Europe's mean annual seismic activity occurs in Greece. As such, the development of a comprehensive earthquake early warning system is critical for this country. The aim of this project is to develop such a system. Key activities will include: upgrading seismological infrastructure, establishing a warning service, using new wireless technologies to disseminate hazard alerts, building national preparedness and response capabilities, and strengthening public awareness and preparedness for earthquakes. Athens and the Gulf of Corinth have been selected as pilot regions for this project, which would eventually be expanded to cover the entire country. This system will also support the development of a tsunami early warning system.

Developping Data and Computational Tools for Assessment of Tsunamis Towards Effective Early Warning Systems (Ref.76)

Location:	Mediterranean Sea, Aegean Sea, Marmara Sea, Black Sea
Project Type:	Earthquake & Tsunami, Technical, Education & Public Aareness
Submitting Organizations:	Middle East Technical University
Timeframe & Funds Requested:	12 months, 128,000 EUR
Primary Contact:	Dr Ahmet C Yalciner yalciner@metu.edu.tr
	Tel: +90 312 210 54 38

Abstract: The Mediterranean basin is highly prone to earthquakes that may cause tsunamis. Historically, tsunamis have occurred in the Mediterranean, Aegean, Marmara and Black Seas. Tsunami early warning systems, however, do not exist for this region. The objective of this project is twofold: to improve understanding of earthquakes and tsunamis in the region, and to develop the scientific tools necessary to establish regional tsunami early warning systems. Activities will include data collection, analysis, computer modeling, simulation, and mapping. Pilot studies will be undertaken in Marmara, Santorini, and the Eastern Mediterranean.

FINO-MED: Long-term Testing of Warning System Instruments at FINO (North Sea) for an Integrated Seafloor Observatory Network in the Mediterranean Sea (Ref.150)

Location:	North Sea and Mediterranean Sea
Project Type:	Earthquake, Technical
Submitting Organizations:	Research Centre Ocean Margins (RCOM), University of Bremen, MARUM Bremen
Timeframe & Funds Requested:	24 months, 140,000 EUR
Primary Contact:	Prof Achim Kopf akopf@uni-bremen.de
	Tel: +49 421 218 65800

Abstract: Humans settling along active convergent margins are subject to repeated earthquakes, landslides, and other threats to human life, ecosystems and infrastructure. Given that 60% of the Earth's population lives within 50 km of coastlines, enormous scientific and economic efforts are undertaken to shed light on the processes responsible for such ocean margin geohazards as well as their precursors. This project proposes to use the existing shallow-water FINO research platform, North Sea, for long-term testing of state-of-the-art technology to monitor the temporal and spatial evolution of critical physical parameters in seismogenesis. FINO provides researchers and engineers with real-time data transmission so that newly developed warning system instruments can be calibrated and tested for long periods of time. The long-term goal is the installation of an “amphibic” earthquake mitigation network in the Mediterranean Sea.

An integrated Pilot System for Severe Weather (Drought and Flash Flood) Forecast, Detection and Warning in Romania (Ref.69)

Location:	Romania
Project Type:	Drought & Flood, Technical, Evaluation & Implementation
Submitting Organizations:	National Meteorological Administration (NAM)
Timeframe & Funds Requested:	24 months, 200,000 EUR
Primary Contact:	Dr Cornel Soci cornel.soci@meteo.inmh.ro
	Tel: +40 21 3183240

Abstract: With increasing desertification since the 1980s, climatic studies indicate that Romania is affected by drought every year and by extreme drought every four to six years, causing significant losses in cereal production. The current ground-based weather station infrastructure is inadequate for early forecast and tracking of the settling-in of drought conditions. This project’s objectives consist in developing a monitoring system for drought using satellite radiances, vegetation indices and a geographic information system. It would monitor drought intensity expansion or contraction, estimate drought-related losses in cereal production and develop warning indicators for use by local authorities. Satellite data would delineate drought-affected areas more precisely and identify drought conditions three to six weeks earlier than the existing ground station infrastructure.

Projects from Latin America and the Caribbean

Early Warning System for Provincial Park Pereyra Iraola (Ref.89)

Location:	Argentina
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Ministerio de Asuntos Agrarios de la Provincia de Buenos Aires; and Comisión Cascos Blancos del Ministerio de Relaciones Internacionales, Comercio Exterior y culto.
Timeframe & Funds Requested:	6 months, 18,000 USD
Primary Contact:	Marcelo Martin marcelomartin05@yahoo.com.ar Tel: +54 11 4310 2112

Abstract: The Provincial Park of Pereyra Iraola near Buenos Aires is a nature reserve that distinguishes itself by its biodiversity and ecosystems. Its three zones (a recreation area, an area used by small farmers and an interference-free reserve) are threatened by fire, illegal tree cutting, water and air pollution and waste deposits. The project's objective is to contribute to the establishment of an early warning programme to be implemented by a volunteer corps to prevent further deterioration of the Park's condition. Volunteers would be trained in workshops on environmental risks, covering subjects such as natural resources, pollution/waste treatment and fire-fighting, and in disseminating public information materials for primary school children, teaching staff, residents and visitors.

Hydrologic Warning and Information System for the Plata Basin (Ref.128)

Location:	Argentina
Project Type:	Hydrologic Hazards, Technical, Evaluation & Implementation
Submitting Organizations:	National Water Institute, Agentina
Timeframe & Funds Requested:	Project submitted as an illustration of good practice. No funding sought.
Primary Contact:	Dr Dora Goniadzki vivalvar@yahoo.fr or gfu@mrecic.gov.ar or vcb@mrecic.gov.ar

Abstract: The extraordinary floods encountered in 1982-83 in the Del Plata basin brought about the establishment of Argentina's Operational Centre for Hydrological Warning. The Centre has helped coordinate the separate efforts of national and provincial agencies managing hydrological information and establishment of an information exchange with upstream countries. Its hydrological early warning system, which transmits information on extraordinary hydro-meteorological events to civil protection and disaster control authorities, has alerted the population in time and contributed to minimizing damages. Lessons learned after 23 years of operation point to the need for permanent monitoring, capitalizing on the experience gained in dealing with earlier disasters, an interdisciplinary work approach, and avoiding excessive reliance on the results of simulation models.

Flooding and Landslide Early Warning System in the City of La Paz, Bolivia (Ref.19)

Location:	Bolivia
Project Type:	Flood & Landslide, Technical
Submitting Organizations:	Municipality of La Paz
Timeframe & Funds Requested:	24 months, 1,134,500 USD
Primary Contact:	Dr Juan del Granado Cosio correspondencia@ci-lapaz.gov.bo Tel: +591 2 2202000

Abstract: The city of La Paz is the second largest in Bolivia and has been developed along a narrow valley of the La Paz River. Over 200,000 inhabitants are vulnerable to the impacts of sudden flood and landslides. The main objective of this project is to develop and implement an automatic early warning system (EWS) for floods and landslides which will enable people to receive timely warnings of impending danger and adopt appropriate measures to reduce human and material losses. This will be achieved through the installation of technical monitoring equipment for both floods and landslides. The EWS would become the main element of the La Paz Municipal Hazard management System and will be incorporated within the municipal organizational structure under the responsibility of the Chief Technical Official of the Municipality of La Paz.

Climate Observation Network for Early Warning Systems in Western South America (Ref.127)

Location:	Bolivia, Chile, Colombia, Ecuador, Perú and Venezuela
Project Type:	Multi-hazard, Technical, Evaluation & Implementation
Submitting Organizations:	International Research Centre on El Niño Phenomenon (CIIFEN)
Timeframe & Funds Requested:	36 months, 2,500,000 USD
Primary Contact:	Rodney Martínez Guingla r.martinez@ciifen-int.org
	Tel: +593 4 2514770

Abstract: Both the Andean Cordillera and the Pacific Ocean influence the climate of Western South America. Phenomena such as El Niño and La Niña, and the complex topography of the Andean high plateaux and peaks, exacerbate climate-related risks, affecting water supply and agricultural production. This project aims at enhancing an early warning network system focusing on climate-related issues, through processing observation data, ensuring compatibility of databases, quality control and mapping activities, and training of technicians and users. Several national hydro-meteorological institutions are committed to this cooperative arrangement in the Andean Region.

Flooding Early Warning System for the Cities of Artigas (Uruguay) and Quaraí (Brazil) (Ref.16)

Location:	Brazil and Uruguay
Project Type:	Flood, Evaluation & Implementation
Submitting Organizations:	Dirección Nacional de Hidrografía (DNH) (Uruguay) and Comisión Mixta Brasileña – Uruguaya para el desarrollo de la Cuenca del Río Cuareim (CRC)
Timeframe & Funds Requested:	36 months, 400,000 USD
Primary Contact:	Alvaro Sordo Ward asordo@dnh.gub.uy
	Tel: +598 2 9164666 Int. 20233

Abstract: Although the cities of Artigas, Uruguay, and Quarai, Brazil, are highly prone to flooding by the Cuareim river, a comprehensive early warning system does not yet exist in this area. Work to develop such a system has been started in Artigas, and substantial information is available for the region. However, there is a need to undertake additional work such as, precipitation studies, improvements to the precipitation gauging network, and flood contingency planning. The objective of this project is to establish a comprehensive flood early warning system for Artigas and Quarai to help reduce flooding losses in the region. The system will include: information on flood risks, monitoring and warning services, warning dissemination, and response capabilities.

Strengthening Capacity in Dealing with Major Risks in the Caribbean Basin (Ref.147)

Location:	The Caribbean
Project Type:	Multi-hazard, Technical, Education & Public Awareness
Submitting Organizations:	Secretariat Technique Commun
Timeframe & Funds Requested:	60 months, 1,558,930 EUR
Primary Contact:	Secretariat Technique Commun interreg.v.weck@wanadoo.fr
	Tel: +590 47 06 00

Abstract: The Caribbean Basin faces a number of meteorological and geophysical hazards, ranging from hurricanes and other storms to earthquakes, tsunamis and volcanic eruptions. In an effort to improve the region's capacity to prepare for and respond to these threats, this project proposes a variety of measures to strengthen regional early warning and emergency response networks, encourage the exchange of scientific findings and practical know how, and to promote the establishment of a sustainable environmental management system covering the whole region. In addition, the project will engage directly with communities at risk to generate heightened risk awareness through targeted education activities. This regional initiative is divided into 4 sub-projects, each emphasizing one of the above-mentioned objectives or focusing on a particular geographic zone.

Note: More specific details on sub-element 4 of this project, titled *"Establishment of an Information Chain to Influence the Behaviour o Populations Exposed to Atmospheric and Geological Risks [cyclones and tsunamis] in the Caribbean Basin and the Atlantic Ocean, with a View to Reducing their Vulnerability"* can be found on **page 41**.

Community Networks for the Prevention of Disasters and Attention of Emergencies with Application of Early Alert (Ref.22)

Location:	Costa Rica
Project Type:	Flood & Landslide, Local Participation, Education & Public Awareness
Submitting Organizations:	Comisión Nacional de Prevención de Riesgos y Atención de Emergencias
Timeframe & Funds Requested:	36 months, 150,000 EUR
Primary Contact:	Gerardo Monge Bolaños gmonge@cne.go.cr
	Tel: +506 220 03 78

Abstract: The project aims at organizing a network of 38 appropriately trained school communities at high-risk locations in the basins of the Costa Rican rivers of Reventazón, Parrita and Canas with a view to helping them set up and administer an early warning system in that landslide and flood-prone area. The project would focus, with the assistance of 42 community facilitators, on the education of children and adolescents to deal with emergency situations and thus make them true "early warning agents". In support for their involvement, the communities would be supplied with rainfall measuring devices, sensors and a radio communication network, as well as printed and audio-visual training material.

Regional Multipurpose Information and Early Warning System for Tsunamis, Earthquakes, and Storm Swells in Central America (Ref.81)

Location:	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
Project Type:	Earthquake, Tsunami & Hyrdo-meteorological Hazards, Technical, Education & Public Awareness
Submitting Organizations:	Nicaraguan Geosciences Institute (INETER), Coordination Center for Disaster Prevention in Central America, Regional Intergovernmental Organization(CEPREDENAC)
Timeframe & Funds Requested:	48 months, 4,500,000 USD
Primary Contact:	Dr Wilfried Strauch wilfried.strauch@gf.ineter.gob.ni
	Tel: +505 2492761

Abstract: Guatemala, El Salvador, Nicaragua, Honduras, Costa Rica, and Panama are highly prone to earthquakes and tsunamis, yet Nicaragua is the only country in Central America that has a tsunami early warning system. This project aims to establish a regional cooperation system for the exchange of seismic data, regional and national tsunami warnings, and sea level predictions. Such a system would strengthen existing capacities in the region, and provide assistance to national technical institutions for disaster prevention and mitigation. Activities will include: development of national warning centres and a regional coordination committee; establishment of cooperative activities and data exchange with regional information and early warning systems; installation of monitoring systems; and elaboration of hazard and risk maps, and evacuation plans.

Central America Small Valleys Flood Alert (Ref.84)

Location:	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama
Project Type:	Flood, Education & Public Awareness, Governance, Community Participation
Submitting Organizations:	Organization of American States (OAS); and Office for Sustainable Development and Environment (OSDE)
Timeframe & Funds Requested:	12 months, 600,000 USD
Primary Contact:	Pedro Bastidas pbastidas@oas.org
	Tel: +1 202 458 6308

Abstract: The Central America Small Valleys Flood Alert and Vulnerability Reduction Program (SVP) is a community-based, multi-disciplinary approach to flood hazard management, currently operating in Honduras, Guatemala, Nicaragua, Costa Rica, El Salvador and Panama. This project will disseminate information about the SVP in the region, and expand the number of individuals from both the public and private sectors who can work with municipalities and development groups to implement the SVP. The project will also support the development of a regional platform for the SVP, which will be responsible for supporting local and national flood alert and preparedness activities through training, technology transfer, and technical assistance.

The Training of Leaders: A Way to Reduce the Vulnerability to Disasters (Ref.75)

Location:	Cuba
Project Type:	Multi-hazard, Education & Public Awareness, Community Participation
Submitting Organizations:	Filial Universitaria de Ciencias Médicas "Lidia Doce Sánchez" MINSAP
Timeframe & Funds Requested:	12 months, 7,200 EUR
Primary Contact:	Yosbanys Roque Herrera catas@undoso.vcl.sld.cu
	Tel: +53 66 3286

Abstract: The principal objective of this project is to improve the capacity building of community and entity leaders (key persons) in the Municipality of Sagua la Grande, Villa Clara, Cuba. A survey on training necessities for effective disaster reduction will be carried out at the community level. On this information, training courses concerning medical emergencies will be developed and an office for disaster reduction is foreseen to be established. The trained leaders will act as multiplicators to disseminate best practice for disaster reduction in their communities. For the implementation of this project, the Municipal Government representing the Civil Defense will cooperate with the Red Cross Society of Sagua la Grande and the local representatives of the Ministry of Public Health.

Early Warning System Towards Hazards of the Tungurahua and Cotopaxi Volcanoes, Province of Tungurahua, Ecuador (Ref.32)

Location:	Ecuador
Project Type:	Volcano, Technical, Education & Public Awareness, Governance
Submitting Organizations:	Junta Provincial de Seguridad Ciudadana y Defensa Civil de Tungurahua
Timeframe & Funds Requested:	36 months, 454,000 USD
Primary Contact:	Mauro Rodríguez Benítez jpdct@andinanet.net
	Tel: +593 3 242 2026

Abstract: The Cotopaxi volcano in Ecuador is the highest active volcano in the world. There is a possibility of over 50% that this volcano will erupt within the next hundred years. The Tungurahua volcano is one of the most active volcanoes in Ecuador, with frequent, medium intensity activity, occasionally resulting in the formation of lava wells. Over 14,000 families are vulnerable to these hazards. This project is intended both to improve understanding of the risks of these volcanoes by installing a remote early warning system, and to strengthen capacities of the institutions and population in these regions to prepare for and respond to an eruption. The remote early warning system will focus on mudflow and ash fall from Cotopaxi, and lava and mudflow from Tungurahua.

Early Warning System in Case of Flooding for the City of Coca—Orellana Province, Ecuador-South America (Ref.42)

Location:	Ecuador
Project Type:	Flood, Technical, Governance, Education & Public Awareness
Submitting Organizations:	Municipality of Coca; National Institute of Meteorology and Hydrology (INAMHI); and Department of Civil and Environmental Engineering- Escuela Politécnica Nacional
Timeframe & Funds Requested:	24 months, 1,550,000 USD
Primary Contact:	Ximena Hidalgo B josegala@interactive.net.ec
	Tel: +593 2 2 228 113

Abstract: The city of Coca, capital of Orellana province, is located at the confluence of the Coca, Napo and Payamino rivers. It is the main entry port for petroleum companies that operate in the north-eastern region of Ecuador, as well as for tourists. Annual flooding causes significant damage in the city, destroying buildings, and affecting the drainage and potable water systems. This project is intended to improve flood preparedness and prevention in the city. Activities will include: developing a monitoring network, early warning system, and an emergency preparedness plan for the city; zoning areas vulnerable to flooding; and, strengthening institutions and standards at local and national levels to ensure a coordinated and effective response to floods

Monitoring Weather-Related Threats to Food Security in Ecuador (Ref.82)

Location:	Ecuador
Project Type:	Multi-hazard, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	International Center for Tropical Agriculture (CIAT)
Timeframe & Funds Requested:	36 months, 363,162 USD
Primary Contact:	Glenn Hyman g.hyman@cgiar.org
	Tel: +1 650 833 6625

Abstract: One-fifth of the population in Ecuador suffers from malnutrition. This problem is exacerbated by droughts, floods, frosts, and other climate-related natural hazards. The objective of this project is to improve food security and reduce malnutrition in Ecuador by strengthening understanding of the effects of climate variability on agricultural production, and facilitating information sharing among relevant stakeholders. Climate and weather information will be collected from both satellites and field sites and mapped for the entire country. This data will be integrated into crop models for assessing the negative effects of climate on harvests. A web site and networking tools will be developed to share this information among experts working in the field of agriculture and food security.

Early Flood Warning in Ecuador (EFIDOR) (Ref.156)

Location:	Ecuador
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	University of Stuttgart, Germany, Institute of Hydraulic Engineering
Timeframe & Funds Requested:	12 months, 49,000 EUR
Primary Contact:	Prof Dr András Bárdossy Andras.bardossy@iws.uni-stuttgart.de
	Tel: +49 711 685 4679

Abstract: The coastal area of Ecuador, and the city of Santa Rosa in particular, have repeatedly been hit by El Niño related floods, causing devastating human and economic losses. Effective flood protection and early warning measures remain absent, largely due to resource constraints, leaving the area and its population highly exposed and vulnerable. This project aims to implement simple but effective early warning measures (such as upstream gauging stations) combined with awareness raising activities, to enable the population at risk to receive warnings and respond in a timely fashion. Furthermore, the effects of current land-use practices on flood risk will be analyzed with a view to developing a more comprehensive and long-term protection strategy.

Early Warning Systems for Natural Hazards in the Binational River Basin Catamayo-Chira (Ref.34)

Location:	Equador and Peru
Project Type:	Hydro-meteorological Hazards, Technical, Education & Public Awareness
Submitting Organizations:	Honourable Porvincial Counsel of Loja (HCPL), Ecuador; and Regional Government Piura, Peru
Timeframe & Funds Requested:	36 months, 1,620,000 USD
Primary Contact:	August Zegarra Peralta (Peru contact) azegarrap@regionpiura.gob.pe
	Tel: +51 73 328 232

Abstract: The Catamayo-Chira river basin is shared between Ecuador (42% of territory) and Peru (58% of territory). Approximately 585,000 people live in this area, and their economy is largely based on agriculture. The basin is highly vulnerable to extreme climate variations, caused by “El Niño” and “La Niña”. The aim of this project is to establish a real-time hydro-meteorological network and early warning system to improve natural hazard preparedness and response. Project activities will include: zoning of vulnerable areas, updating hydro-meteorological databases, designing and implementing a monitoring network for the region, and strengthening institutional and community capacity to understand and prepare for natural hazards. The project also aims to improve water resource management in the region.

Integration of the Communications Systems of the Emergency Organizations in Honduras (Ref.85)

Location:	Honduras
Project Type:	Multi-hazard, Evaluation & Implementation, Education & Public Awareness
Submitting Organizations:	Biomedial, Communications & Media Systems Honduras
Timeframe & Funds Requested:	21 months, 200,000 USD
Primary Contact:	Oscar Sady Orellana biocommsystems@yahoo.es
	Tel: +504 934 0663

Abstract: During the onslaught of hurricane Mitch in 1998, Honduras proved unable to carry out effective coordination of the various national emergency assistance organizations, as it did not have the infrastructure to achieve integration of communication systems. This project foresees the conduct of a feasibility study that should define the technical criteria and outline alternative arrangements for the proposed integration in emergency situations.

From Reconciliation to Knowledge of Response Actions of Emergency of RiversideCommunities of Gracias a Dios Department in Honduras (Ref.132)

Location:	Honduras
Project Type:	Flood, Technical, Governance, Education & Public Awareness
Submitting Organizations:	ALISEI ONG
Timeframe & Funds Requested:	12 months, 795,660 USD
Primary Contact:	Francesco Mazzone pvd.rm@alisei.org
	Tel: +39 6 48 986113

Abstract: The project region, the State of Gracias a Dios, is Honduras' poorest region. It covers the Caribbean coastal lowlands of the Mosquitia area characterized by ten of the country's principal watersheds. The region is frequently affected by the impact of hurricanes and tropical storms, such as "Mitch" and "Michelle", wildland fires and epidemics. The principal objective is to enhance the capacity of institutions to respond to the impact of natural hazards, particularly floods, through the establishment of an efficient early warning system. The project will involve the development of fifteen emergency coordination centres, various examples of good hydrological and environmental practices, and rehabilitation of educational centres to reduce the impact of floods.

Early Alert, Monitoring and Impact Assessment System for Forest Fires in Mexico and Central America (Ref.106)

Location:	Mexico and Central America
Project Type:	Forest Fires, Technical, Evaluation & Implementation
Submitting Organizations:	The National Commission for the Knowledge and Use of Biodiversity (CONABIO)
Timeframe & Funds Requested:	36 months, to be defined
Primary Contact:	Dr Rainer Ressl rressl@xolo.conabio.gob.mx
	Tel: +52 55 55289 186

Abstract: Forest fires pose a major threat to biodiversity and the economy in Mexico and Central America. However, the region lacks comprehensive and reliable forecasting and early warning for forest fires. The main objective of the project is to develop, implement, and manage an early warning, monitoring and impact assessment system for forest fires in Mexico and Central America. The system will include: early warning and prevention, monitoring of risks and fires, rapid response, impact assessment and post-fire analysis, and data dissemination. It will be developed and installed at the National Commission for the Knowledge and Use of Biodiversity in Mexico

Geographical Analysis of the Watershed of the Mocotíes Valley and Urban Local Plan for Sustainable Development for the Community of Santa Cruz de Mérida (Ref.146)

Location:	Venezuela
Project Type:	Flood, Technical, Education & Public Awareness
Submitting Organizations:	Alcaldía de Santa Cruz; Fundación para la Prevención del Riesgo Sísmico, Universidad de Los Andes; and Instituto de Estudios Regionales Urbanos, Universidad Simón Bolívar
Timeframe & Funds Requested:	12 months, 15,000 USD
Primary Contact:	Alejandro Linayo linayoa@icnet.com.ve
	Tel: +58 74 2442076

Abstract: This project aims to design a local plan for sustainable development in the Mocoties Valley, Mérida State, located in the Venezuelan Andes, which were affected by floods and landslides in February 2005. The weak level of sustainability of the community's urban and rural development process caused severe losses (87 dead; economic loss: 80 million USD). Thus, the local government together with the Regional Institute for Urban Development and the Foundation for Disaster Risk Prevention elaborated a local development project principally based on sustainable human development, natural resource conservation and community disaster preparation through early warning systems. This project has a strong emphasis on social participation and community capacity building for disaster risk management.

Establishment of an Information Chain to Influence the Behaviour of Populations Exposed to Atmospheric and Geological Risks [cyclones and tsunamis] in the Caribbean Basin and the Atlantic Ocean, with a View to Reducing their Vulnerability (Ref.147, Sub-project 4)

Location:	Guadaloupe, Haïti et Dominique
Project Type:	Cyclone & Tsunami, Education & Public Awareness, Technical, Community Particpation
Submitting Organizations:	CORISK, PIRAC
Timeframe & Funds Requested:	24 months, 134,230 EUR
Primary Contact:	Pierre-Marie Sarant pmsarant@corisk-international.com
	Tel: +590 690558793

Abstract: Analyses of past catastrophes in this region concluded that alerts failed to help populations-at-risk to properly assess the gravity of approaching dangers. The official triggering of alerts was delayed owing to cumbersome decision-making processes, and response activities were largely based on intuitive assessments and ad hoc requests for assistance. This project aims to set up an effective pre-crisis management system through the establishment of risk rankings according to zones and the identification of exposed population groups. It furthermore strives to improve the information chain by using existing communication techniques and specifically established civil society communication channels to disseminate custom-made alerts, security measures and crisis response.

Global Projects

Star and Caring Wings: An Early Warning System for Forest Fire Smoke Impacts (Ref.152)

Location:	Europe, South East Asia and Mediterranean Basin
Project Type:	Forest fires, Technical, Evaluation & Implementation
Submitting Organizations:	National Technical Univeristy of Athens
Timeframe & Funds Requested:	24 months, 700,000 EUR
Primary Contact:	Prof Milt Statheropoulos stathero@orfeas.chemeng.ntua.gr
	Tel: +30 210 772 23109

Abstract: Big forest fire smoke incidents are known to be responsible for emergency situations in various regions of the world. They produce huge quantities of smoke, which are responsible for safety issues such as: health impact and reduced visibility at airports and on highways. “Star & Caring Wings” is an Early Warning System for coping with forest fire smoke impact, allowing early and fast response. It will have star architecture; use field measurements and connect decision making with fire personnel and relevant operational bodies; and provide population protection by suggesting necessary measures that will consider sensitive groups exposed to forest fire smoke (children, people with asthma etc). In addition, it will support front line personnel (firemen) against toxic effects of forest fire smoke. The system will also support decision making for transportation impact (reduced visibility) of critical public services (airports, highways).

Global Early Warning System for Wildland Fire (Ref.49)

Location:	Global
Project Type:	Wildland Fire, Evaluation & Implementation, Technical, Education & Public Awareness
Submitting Organizations:	Global Fire Monitoring Center (GFMC) / Fire Ecology Research Group
Timeframe & Funds Requested:	36 months, 1,151,000 USD
Primary Contact:	Johann G. Goldammer johann.goldammer@fire.uni-freiburg.de
	Tel: +49 761 808011

Abstract: Forest fires destroy several hundred million hectares of land every year globally, severely damaging human health and economies. Global fire activity is increasing, and developing countries are often most susceptible. Early warning systems are essential to enable fire detection and prevention. This project aims to develop a global early warning system for wild-land fire, based on existing science and technology. This system will include an information network to effectively disseminate early warning messages. Historical records of global fire danger will be developed to assist strategic planning efforts and early warning. In addition, a technology transfer programme will be established to provide training at all levels in early warning system operation, and fire prevention, preparedness, detection, and response.

International Mobile-Early Warning System(s) for Volcanic Eruptions and Related Seismic Activities (Ref.79)

Location:	Global
Project Type:	Volcano, Technical, Education & Public Awareness
Submitting Organizations:	UNESCO
Timeframe & Funds Requested:	36 months, 2,000,000 USD
Primary Contact:	Badaoui Rouhban b.rouhban@unesco.org
	Tel: +33 1 456 83 933

Abstract: More than 500 million people live in danger zones around active or potentially active volcanoes. The objectives of this UNESCO project are mitigating the disastrous consequences of volcanic phenomena; and developing knowledge of early-warning methodology and the operation of a timely dissemination of warnings. This is to be achieved through the development and promotion of an international system of rapid response and mutual assistance during volcanic crises, specifically through the dispatch of mobile scientific teams; improved knowledge of early-warning precursors of impending volcanic eruptions; on-the-job training of local scientists in volcano-monitoring techniques and equipment; and assistance of local scientific institutions in pre-crisis studies.

Local Action/Indigenous Knowledge: Pilot Projects and Peer Learning to Enhance Grassroots Women's Groups Capacity to Implement Early Warning Systems (Ref.72)

Location:	Honduras, India, Jamaica, Peru, Sri Lanka and Turkey
Project Type:	Multi-hazard, Community Participation, Education & Public Awareness
Submitting Organizations:	Grassroots Organizations Operating together in Sisterhood (GROOTS) and the Huairou Commission
Timeframe & Funds Requested:	18 months, 250,000 USD
Primary Contact:	Sandra Schilen grootsss@aol.com Tel: +1 718 388 8915

Abstract: The aim of this project is to increase community resilience to natural hazards by developing disaster preparedness initiatives that build on indigenous knowledge and strengthen the capacity of grassroots women's organizations. The project will engage over 15,000 low-income women and their families in developing community-managed early warning systems and improving natural hazard preparedness. Projects will be launched in Sri Lanka, India, Turkey, Jamaica, Peru, and Honduras, and will include: enhancing linkages between grassroots women's groups and key disaster management institutions; assessing community disaster risks; developing community risk maps, emergency plans, and disaster preparedness material; and conducting risk reduction training for women. A range of strategies for increasing the participation of women's groups in early warning systems will also be established.

Establishing a Regional/Global Earthquake Prediction and Pre-Warning System with the MDCB Electromagnetic Seismic Precursor Recording Instrument and Technology (Ref.134)

Location:	Regional (Asia) or Global
Project Type:	Earthquake, Technical, Evaluation & Implementation
Submitting Organizations:	Geology Research Institute of the Xian-Division of China Coal Science & Research Institute
Timeframe & Funds Requested:	12 months (reginoal application) or 24 months (global Aplication), 500,000 USD (regional application) or 5,000,000 USD (global application)
Primary Contact:	Chen I-wan cheniwan@263.net Tel: +86 10 6595 1832

Abstract: A network of electromagnetic seismic precursor-recording instrument units established throughout China continually detects and records electromagnetic signals. These are forwarded every day to a central station at Xian for checks against actual earthquakes. The findings are compiled in weekly earthquake prediction reports. The network claims an average accuracy rate of its predictions of some 75 percent. The objective of this project is to install additional units in other earthquake-prone areas in the region and beyond at other strategic seismic locations. The expansion of that network into more epicentre areas would increase the accuracy and reliability of earthquake predictions. The project includes a training programme for the instrument operators.

Evaluation and Recommendation of Guidelines for Both Short-term and Long-term Desertification Early Warning Systems (Ref.155)

Location:	Global
Project Type:	Education & Public Awareness, Evaluation & Implementation
Submitting Organizations:	UNCCD Secretariat through the CST Group of Experts, Dept of Soil and Water Conservation CEBAS-CSIC
Timeframe & Funds Requested:	24 moths, 131,000 USD
Primary Contact:	Victor Castillo Sánchez Tel: +34 968 396349

Abstract: Early warning systems (EWS) are key to understanding the causes and characteristics of drought and desertification processes, and they offer a useful framework for data collection and analysis, as well as for the formulation and implementation of measures combating desertification. While a considerable amount of work has been done in this field, there are still no operational desertification EWS ready for implementation. This project therefore aims to update existing early warning concepts for desertification, identify ways to improve data gathering and information sharing, and to formulate guidelines for implementing, testing and promoting multi-scale desertification EWS based on experiences at national, regional and global levels. The project will furthermore develop a proposal for a comparative pilot study in selected risk areas.

Contact information

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All projects contained in this compendium can also be viewed in an on-line database at http://unisdr.unbonn.org/ewpp

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