

Ampath Workshops: Fostering Collaborations and Next Generation Infrastructure Across the Americas Miami, January 28-31, 2003

Sponsored by National Science Foundation and Florida International
University

**Proposal for a Meso-American
Multidisciplinary Research Optical Network:
Support for more accurate predictions and
analysis of El Niño Southern Oscillation to
help prepare against natural disaster
diseases**

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Why such a project

- **Prepare for disaster and disease spread**
- **Foster collaboration of interdisciplinary work across cultures and latitudes**
- **Demonstrate usefulness of distributed remoted instrumentation networking**
- **Climate, Atmospheric and Oceanic sciences enrichment**

Why such a project

- **Correlation between high risk diseases and El Niño, the anomalously warm equatorial current**
 - **Cyclic and evolution correlation in case studies in Ecuador, Peru, Colombia, Bolivia and Central America of *Leptospirosis*, *Dengue*, *Vibrio Cholerae* outbreaks**
 - **Brought up contingency programs but which need much better predictive mechanisms based on realistic modeling correlation**

Scope of the project

- **Build a network of remote local-sensing instruments (following model of TOA) across the pacific coast of Mexico, Central America and Andean countries**
- **Setup distributed environmental data processing and mining**
- **Correlation of behavior infered from data and models with other phenomena (disease spread, plague vectors, etc)**

Objectives

- **General: understand the complexity of regional climate phenomena in the tropics and its relations to other effects in nature and humans**
- **Specific: build an optical and human network to support multidisciplinary research in the Americas**

Infrastructure

- **Remotely-controlled and autonomous sensor systems in several localized points of the Pacific (buoys), some near the coast, some far**
- **Sensors network will access high-speed networks in each country**
- **Data Processing Hubs in Mexico and Panama**
- **Data exchange through FIU**

Infrastructure

Middle America



Data
Exchange
Data
Hubs
Data
Collector

Infrastructure

Middle America



**National
connect
Intra-
Regional
Connect
Regional
Connect**

Collaboratory

- **National Atmospheric and Oceanic Organizations and Research Institutes**
- **National Science & Technology Institutions**
- **National Advanced Networks**
- **Health Authorities (National, Regional and Hemispheric-OPS)**

Funding

- **National Science Fund Organizations**
 - **MoU, cooperation protocols**
- **Hemispherical Cooperation Agencies**
- **Other countries International Cooperation Agencies**
- **National counterpart funds**
- **Regional Health Organization funds (OPS)**

Roadmap

- **Phase I – Sensor systems and national networking and capacity building (all areas)**
- **Phase II – Regional networking and distributed data exchange grid**
- **Phase III – Hemispheric Grid for Data correlation and collaborative modeling**
- **Phase IV – Predictive Benchmarks**

Roadmap Phase I

- **Phase I – Sensor systems and national networking and capacity building (all areas)**
 - **Option I: optically connected sensor mooring systems (submarine cabling)**
 - **Independently (near coastline)**
 - **Through Existing Connecting Points (far off)**
 - **Option II: optically-wireless hybrid connected sensor mooring systems**
 - **Budget partnerships resolution**

Deliverables

- **Generally, products should benefit**
 - **Health**
 - **Disaster relief**
 - **Education (higher and basic)**
 - **Research in Atmospheric and Oceanic Sciences**
 - **Optical Networking**

Contact Info

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