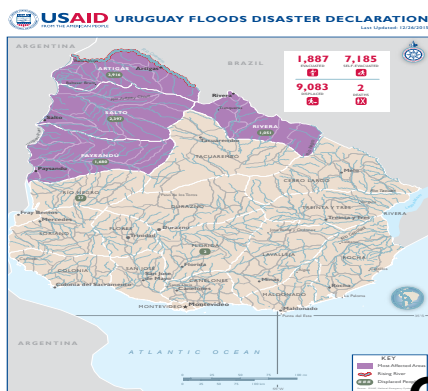




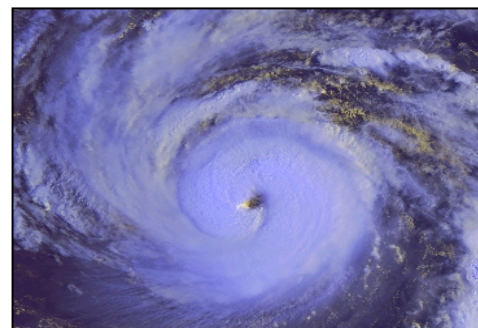
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Lessons learned in building Hydrometeorological Early Warning Systems in developing countries : Why some systems fail and others succeed



By

**Curtis B. Barrett and
A. Sezin Tokar, Ph.D.**



**Office of U.S. Foreign Disaster Assistance
U.S. Agency for International Development**

Working Toward a More Weather, Water and Climate Ready World—Issues and Opportunities: Part 2 (Joint with Board on Global Strategies)

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Outline

- What's the problem?
- What is an End to End (E2E) Hydromet EWS?
- Lessons are noted but not learned
- Why do E2E Hydromet Systems (EWS) fail?
- Example of Successful E2E System
- Conclusions and recommendations

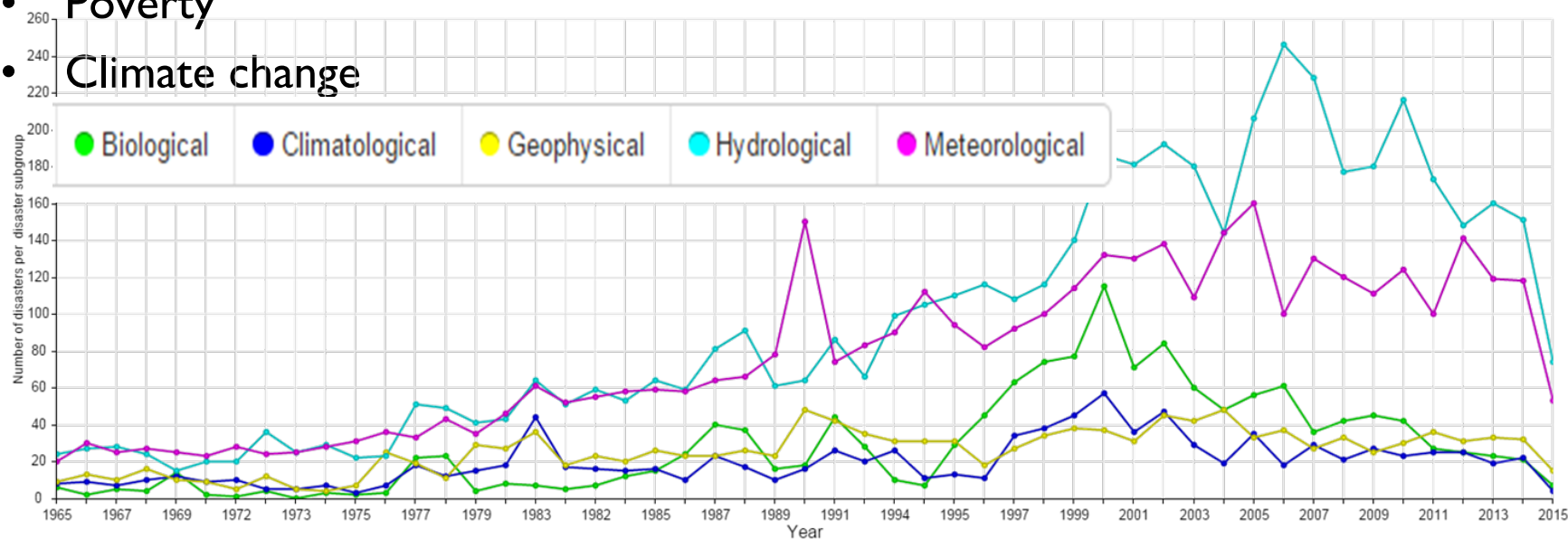




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What is the Problem?

- Populations growth
- Settlement in high risk areas
- Environmental and natural resource degradation
- Governance
- Resources, financial and human
- Sustainability
- Poverty
- Climate change





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What is an End-to-End Process?

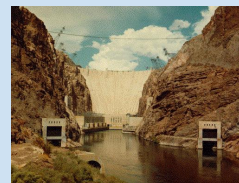
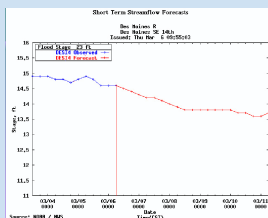
Multi Hazard forecast, warnings and Decision making



Data



Communication



River/Flood
Forecast

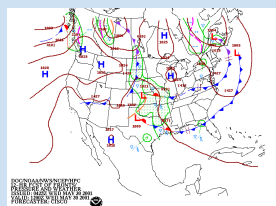
Decision
Support

Disseminate

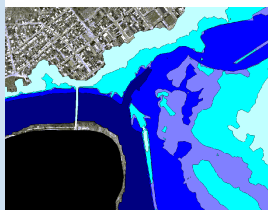
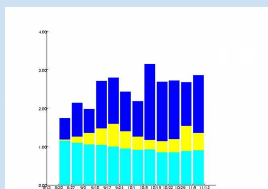


Coordinate

Actions



Forecast





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Lessons are noted but not learned

- USAID OFDA and University of Colorado study to understand why lessons are not learned
- USAID, WMO, Turkish Meteorological Service and Univ of Colorado, Lessons Learned report and forum in February, 2015.
- Experiences of World Bank Hydrometeorological projects
- The key question:

“Lessons are noted but not learned at all level”





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Why do E2E Hydromet projects fail?

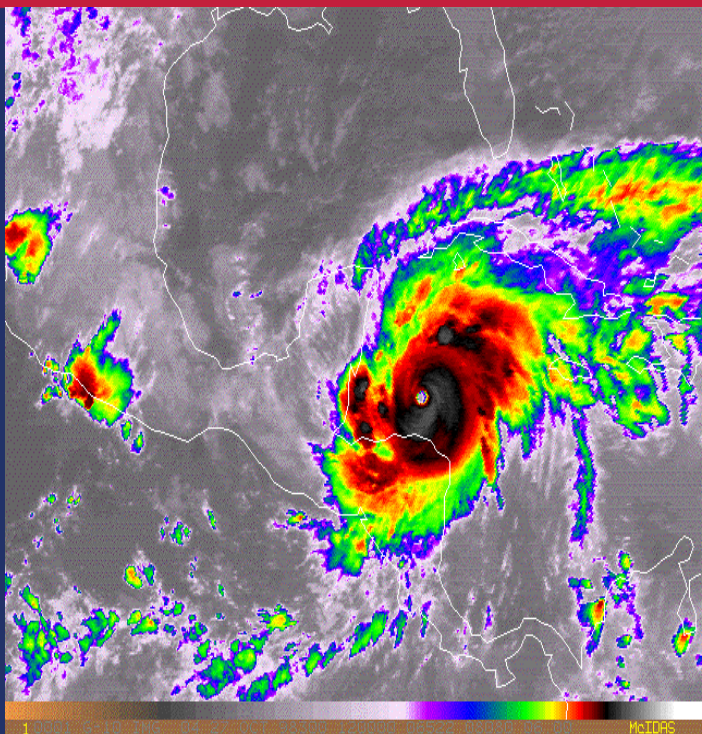
- Short project time frames
- No strategy or vision
- Limited capacity building
- Lack of technical champion
- Short-term political will/interest
- Lack of incentives to keep qualified staff
- Limited funds to maintain, repair and operate the systems
- Lack of donor coordination
- Lack of integration
- Sustainability of the systems Chevy versus Cadillac



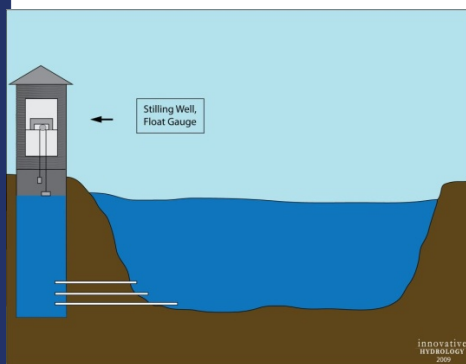


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Hurricane MITCH ravages Central America



- Mitch, “the Storm of the Century”
- Over 11,000 deaths
- 75 inches of rain in a week
- Damage 80% of Honduras GDP
- \$6B in Damage
- USG provided \$1B in aid
- **USAID goal: Build an Early Warning System 2000-2003**





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SUCCESS IN RIO LEMPE RIVER BASIN

In 2000 USAID OFDA
Funds NOAA to
develop two regional
Systems

- Regional Flash Flood Forecasting System for Central America Region
- Establish Rio Lempa River and Flood Forecasting System
- Local Flash Flood EWS's





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Elements of Success

- Hydromet Champion assures maintenance and operational system
- Public-Private Partnership between CEL and SNET (El Salvador NMHS)
- Strong Political Will
- Technical support by NOAA
- Complied with WMO Hydromet standards
- NOAA Partnership with Private Sector Integrator
- Users active in demanding forecast service





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CONCLUSIONS

- Need for a new approach for Hydrometeorological modernization efforts
- Find a way to incorporate valuable lessons learned that can serve to re-define how projects are implemented to improve sustainability of E2E EVS
- Better donor, UN, development bank and host country coordination to assure no duplication and proper integration
- Need for WMO to develop best practices guidelines to and advice donors, banks and NMHS's
- Critical need to build capacity of NMHSs
- Invest in locally sustainable systems

Warnings Save Lives...



**FLOODING AHEAD
TURN AROUND
DON'T DROWN**

