



Las Cruces, Guatemala Assessment Trip

Engineers Without Borders
Post-Flood Assessment Project

IAFSM, March 10, 2010

Engineers Without Borders (EWB)

- From a backyard conversation to 12,000 members worldwide
- EWB mission statement
- Chicagoland projects
- Las Cruces, Guatemala Flood Assessment

Changing our World One Community at a Time

Chicago Professional Chapter



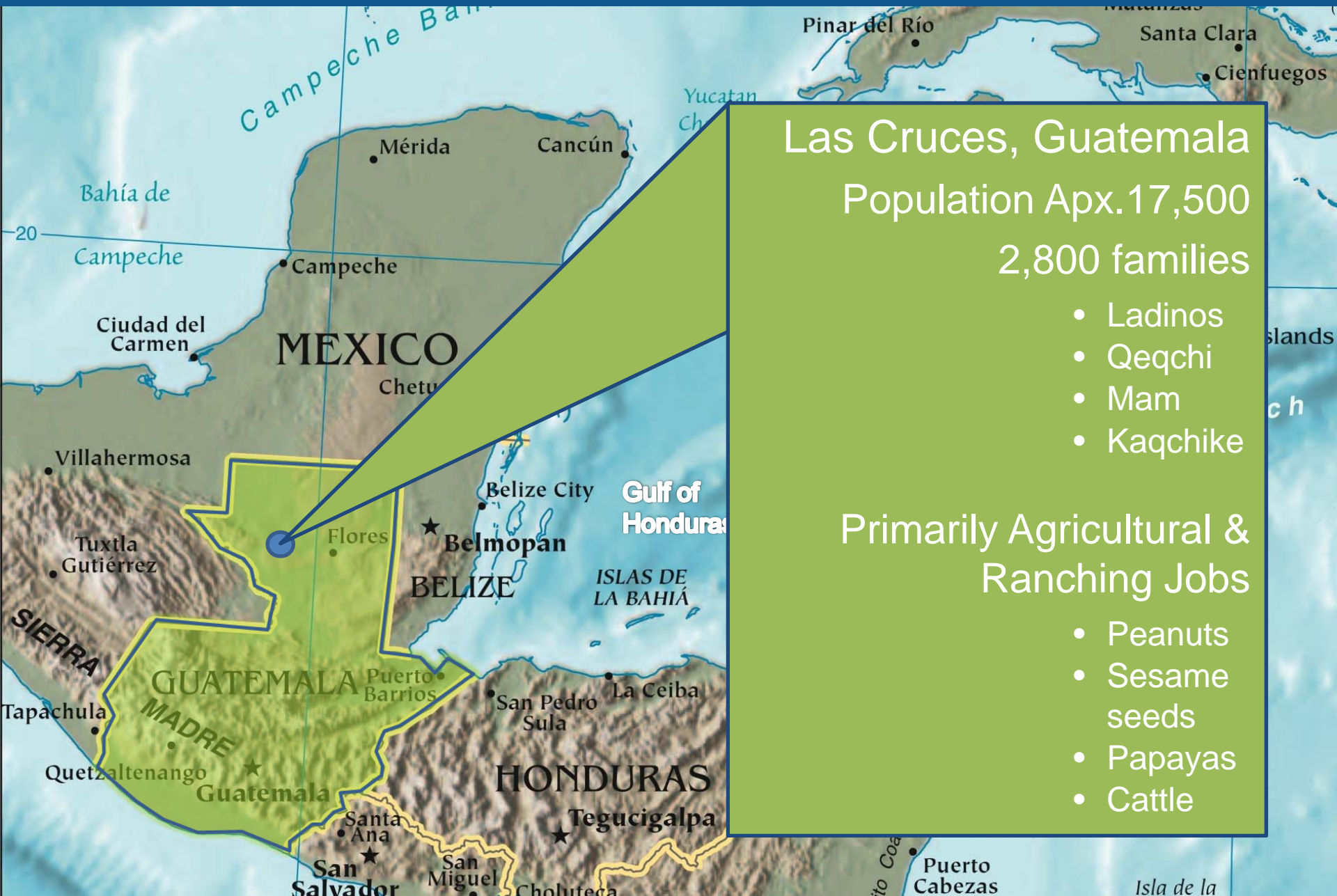
Concern America, Local Partner

In Las Cruces since 1994 with a focus on:

- Healthcare clinics
- Training of villagers as health promoters

Approached EWB in 2008,
following a severe flood in
Las Cruces





Las Cruces, Guatemala
Population Apx.17,500
2,800 families

- Ladinos
- Qeqchi
- Mam
- Kaqchike

Primarily Agricultural &
Ranching Jobs

- Peanuts
- Sesame seeds
- Papayas
- Cattle

Las Cruces



738 m

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Image © 2010 TerraMetrics

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October 2008
Tropical
depression
produced **18** days
of intense rainfall

4,700 to 7,000
residents were displaced
for a month



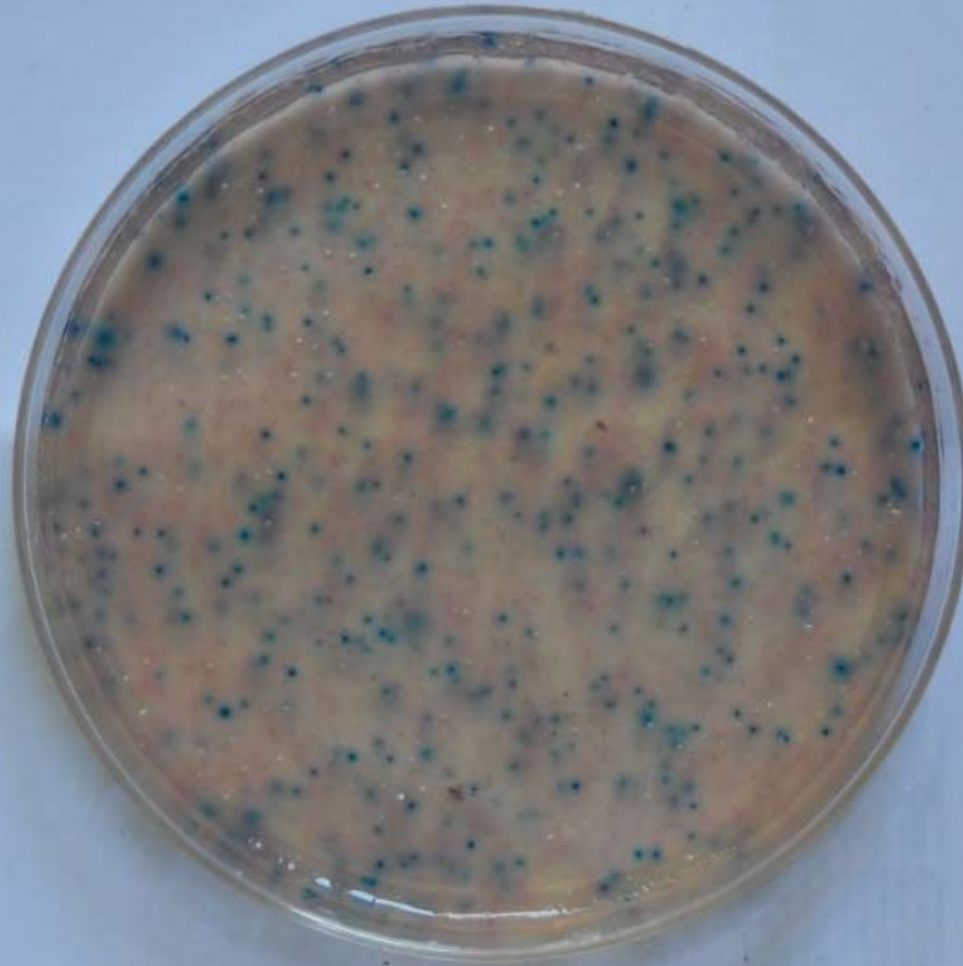
Flood depths over 10 ft
occurred, inundating
homes up to their roofs



404 m



Only one well
out of 10
tested did not
contain e. coli



1009

~~7013~~

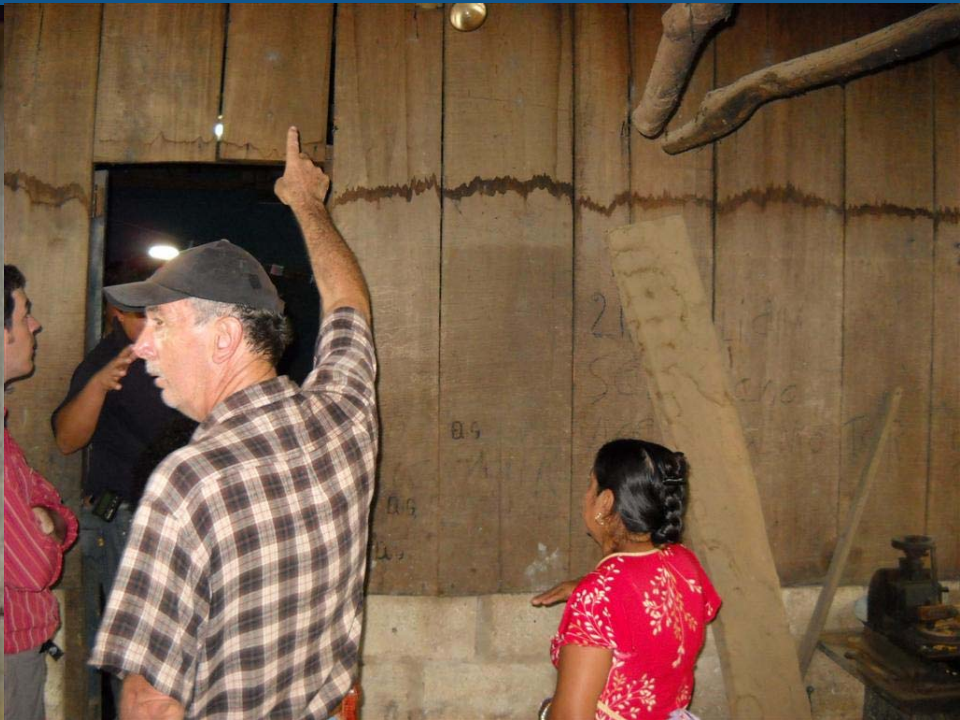
Framework for a Solution

Most Important?

Maintain a local perspective.



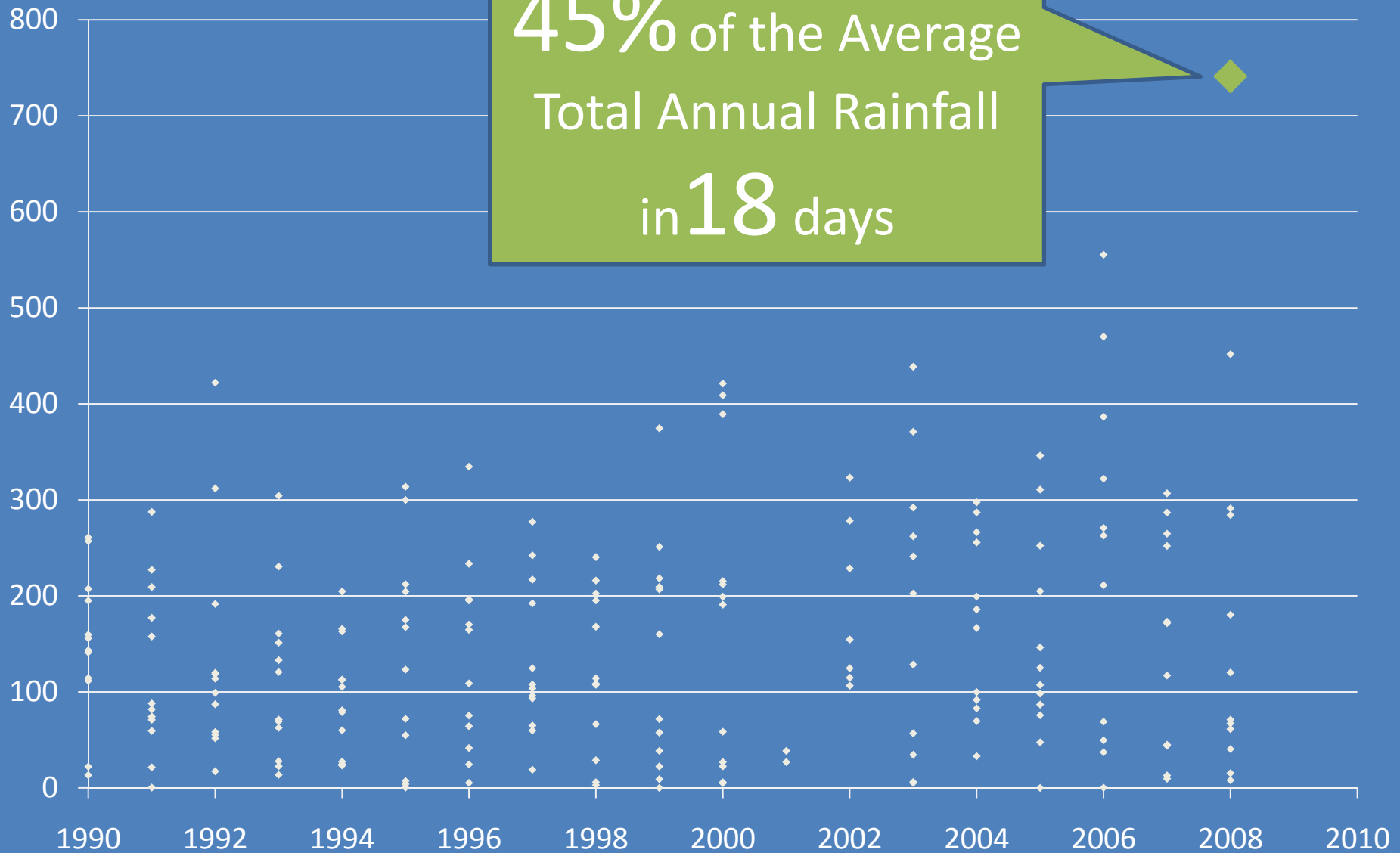






- **NASA / USGS Shuttle Radar Topography Mission (SRTM)**
 - Aerial and satellite photography
 - Digital Elevation Models (DEMs)
 - Land cover
 - Watersheds
- **NASA Tropical Rainfall Measuring Mission (TRMM)**
 - Tropical 3 hr rainfall (2.5 miles gridded)
- **Guatemala Instituto Nacional Sismologia**
 - Monthly rainfall totals (30 miles away)
 - Isohyetal maps (regional)
- **UN Food and Agricultural Organization**
 - Soils
- **USGS Caribbean Water Science Center**
- **Inter-American Bio-diversity Information Network**
- **Google Earth**

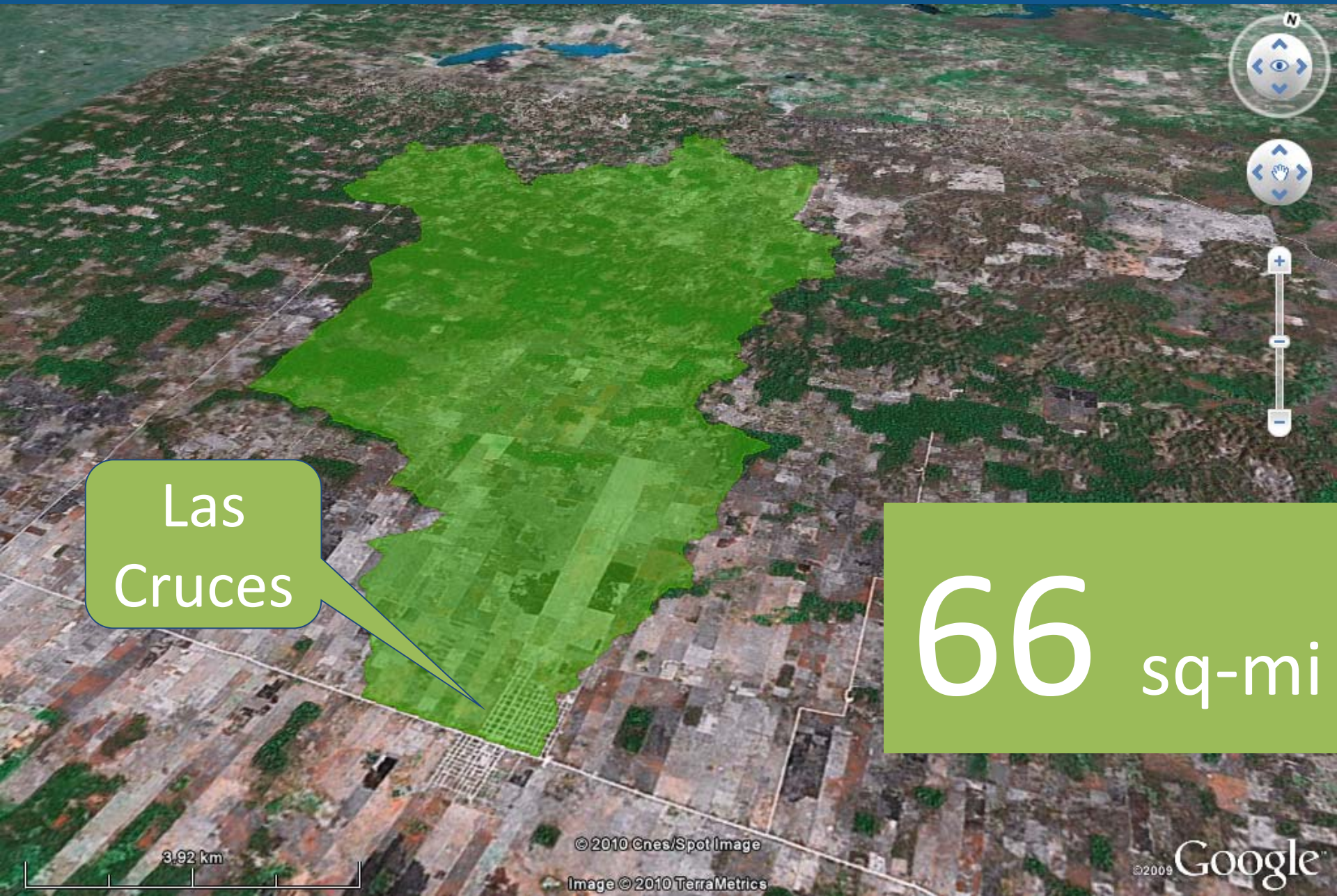
Rainfall (mm)





30 yrs

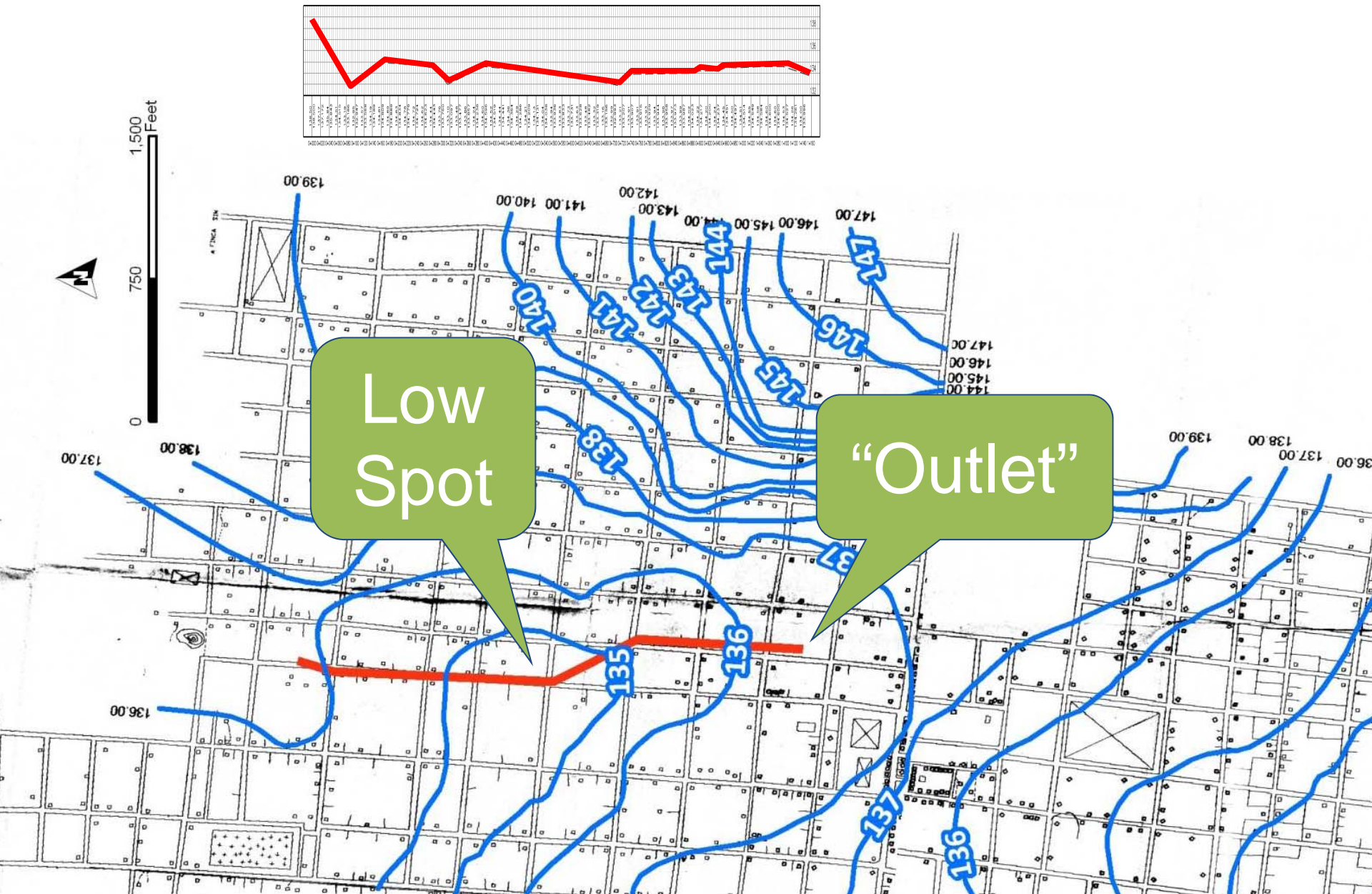




Las
Cruces

66 sq-mi







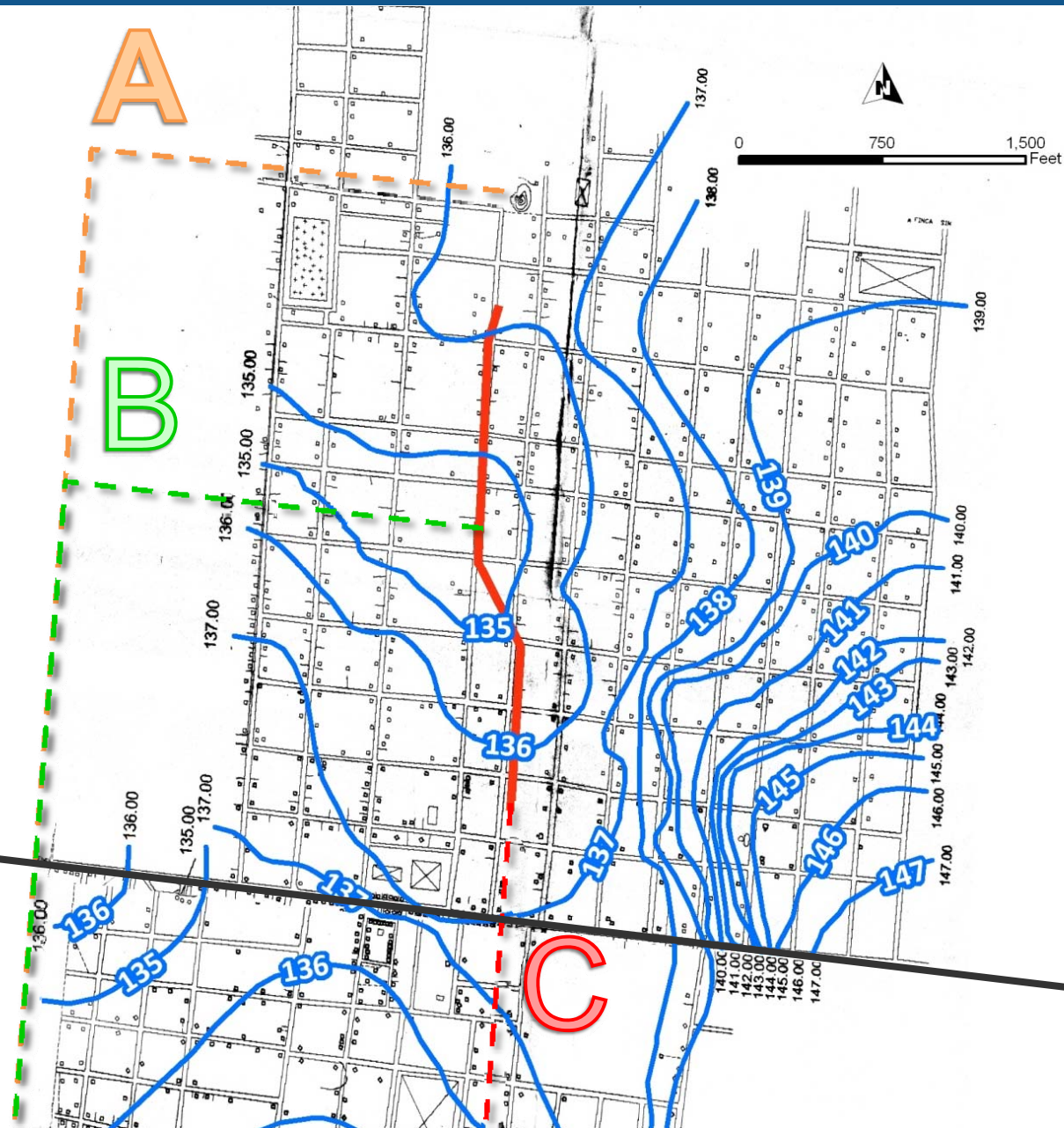






Framework for a Solution

- Understand the Problem
 - Was this an extreme event?
 - What's a typical event?
 - What event significantly impacts the community?
- Understand the Constraints
 - Limited engineering alternatives
 - Lack of funding
 - Lack of Resources
 - Historic community issues
 - Lack of national support



What's Next?

- Project report (March)
- Fund-raising
- Additional survey
- Final design, plans and specifications
- Implementation?



Changing our World One Community at a Time

Chicago Professional Chapter

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ENGINEERS WITHOUT BORDERS USA

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EWB-USA Supports Haiti

In light of the recent devastating earthquake in Port-Au-Prince, H EWB-USA community offers our thoughts and well wishes to the of Haiti. While EWB-USA does not work in the field of disaster re chapters do partner with the various communities within the cou work on community and infrastructure needs. For information o support the disaster relief effort in Haiti, click here.



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Shuttle Radar Topography Mission

The Mission to Map the World

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This is the SRTM home page. The Shuttle Radar Topography Mission (SRTM) obtained elevation data on a near-global scale to generate the most complete high-resolution digital topographic database of Earth. SRTM consisted of a specially modified radar system that flew onboard the Space Shuttle Endeavour during an 11-day mission in February of 2000.

SRTM is an international project spearheaded by the National Geospatial-Intelligence Agency (NGA) and the National Aeronautics and Space Administration (NASA).

Latest Image Release



View [North America](#) in the image gallery.

SRTM Publication

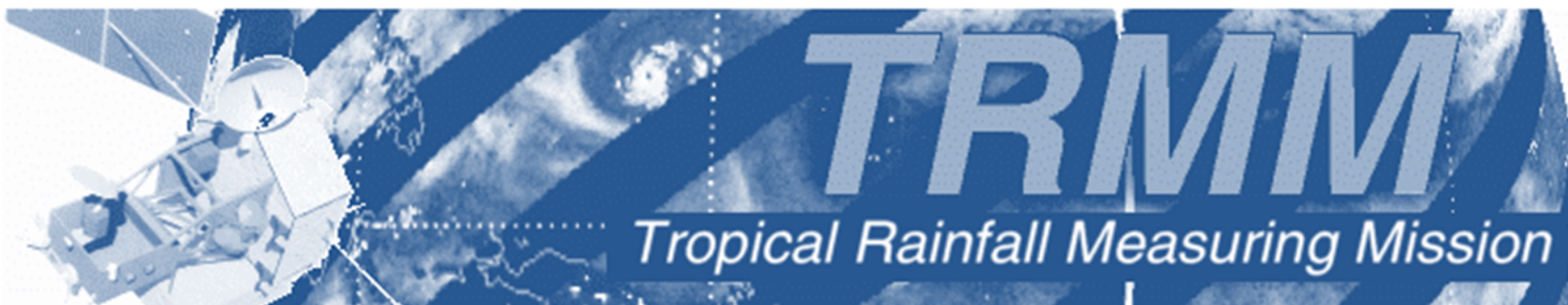
An edited version of "The Shuttle Radar Topography Mission, Rev. Geophysics 45, PG2004



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The Tropical Rainfall Measuring Mission (TRMM) is a joint mission between NASA and the Japan Aerospace Exploration Agency ([JAXA](#)) designed to monitor and study tropical rainfall.

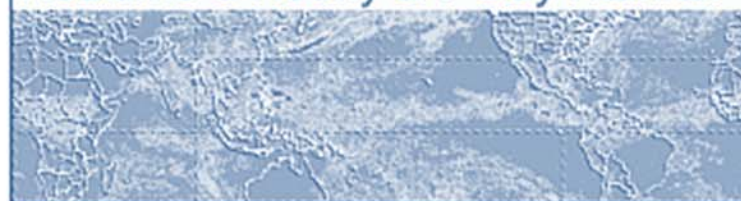
TOP STORY

STORMS BRING MUCH NEEDED RAIN TO EASTERN AUSTRALIA

Over the past month, a series of storms have brought much needed drought relief, as well as some flooding, to parts of eastern Australia, including Queensland, South Australia, and New South Wales. The first and biggest storm was Tropical Cyclone Olga, which began as an area of low pressure in the Southwest Pacific northeast of the Solomon Islands. After moving southwest into the Coral Sea, this low gradually intensified into a Category 1 cyclone (equivalent to a weak tropical storm on the US Saffir-Simpson scale) on the morning (local time) of 23 January 2010. At that time, it was about 300 miles (~485 km) due east of Cairns, which is located on the east coast of Queensland. As Olga continued to head west towards Queensland, it intensified slightly into a Category 2 cyclone on the evening of the 23rd with sustained winds estimated at 110 kph (~60 mph, equivalent to a strong tropical storm on the Saffir-Simpson scale) by the Australian Bureau of Meteorology's Tropical Cyclone Warning Centre. Olga made landfall just south of Cairns on the night of the 24th and weakened to a depression. Over the next several days, the center moved westward across the base of the York Peninsula, remaining over land until finally reaching the northeast coast of the Northern Territory. The storm then reversed course, headed east, and re-intensified into a Category 1

RESOURCES

Realtime 3 Hourly & 7 Day Rainfall



Global Flood & Landslide Monitoring



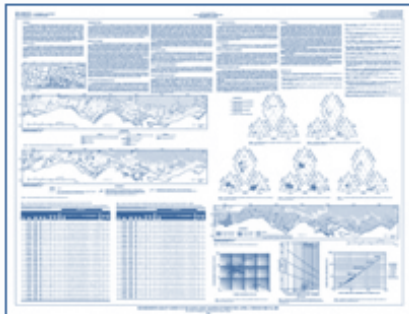


Water Resources of the Caribbean

News:

- [Annual Water Data Reports](#)
- [Recent Online Publications](#)
- [Online Bibliographic Search](#)

Recent Online Publications:



[Groundwater-Quality Survey of the South Coast Aquifer of Puerto Rico, April 2 through May 30, 2007](#)



About the Caribbean Water Science Center



The U.S. Geological Survey is the Nation's largest natural-science agency and has the privilege of working for the government for mapping the Nation, assessing its geologic resources and hazards, understanding the Nation's water resources, and providing hydrologic information for appraising the Nation's water resources. The Center is involved with conducting water-resources investigations in Puerto Rico and the U.S. Virgin Islands.

[About the Director](#), [CWSC Science Plan](#), [Map](#), [US Geological Survey Activities in the Caribbean](#)

Real-Time Data



Streamflow	Rainfall	Lakes	All	Map	- Puerto Rico
Streamflow	Rainfall	--	All	--	- El Salvador
Streamflow	Rainfall	--	All	--	- Guatemala
Streamflow	Rainfall	Lakes	All	Map	- Honduras
Streamflow	Rainfall	Lakes	All	--	- Nicaragua
--	Rainfall	--	All	--	- Haiti

[Real-time Ground-water Levels for Wells in Puerto Rico](#)
[Real-time Water Quality of Surface Water Reservoirs in Puerto Rico](#)

Water Data



[Active Ground-water Stations in Puerto Rico](#) || [Annual Water Data Reports](#) || [1999-2000 Information System for the Caribbean](#) || [U.S. Water Watch](#) || [Water Resources Data for Puerto Rico](#) || [Water Resources Data for the U.S. Virgin Islands](#) || [Water Use](#)





