

*Fostering Disaster-Resilient Communities through
Information, Science, Technology and Exchange*



A PEOPLE CENTERED APPROACH TO RISK AND VULNERABILITY

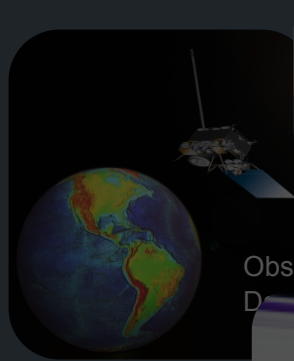


PSAM 12
Honolulu, HI
June 27, 2014

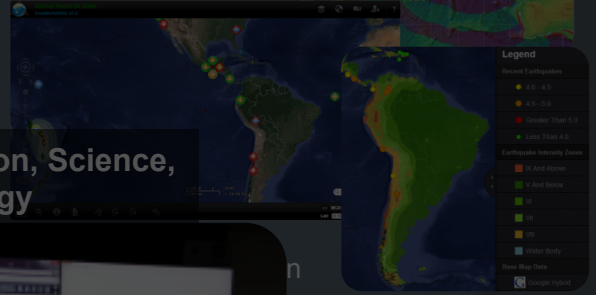
Presented by: Dr. Heather Bell
hbelle@pdc.org

PDC's Integrated Approach

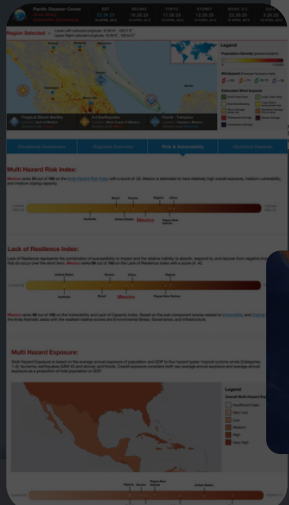
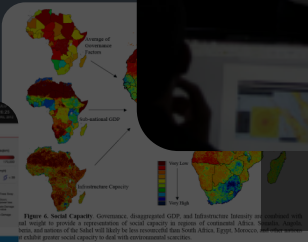
- Applied Science & Technology
- Capability Building
- Evidence-Based Information Products
 - Policy & Decision Makers
 - Disaster Managers
 - Planners
 - Humanitarian Assist. Missions



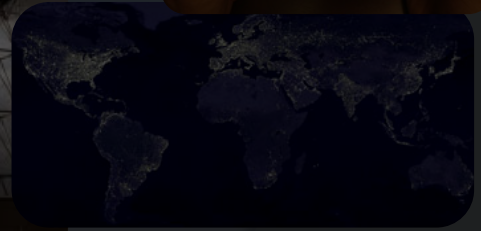
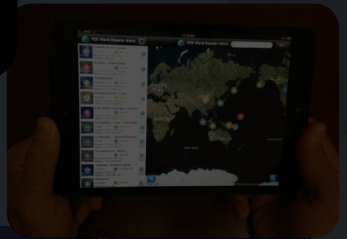
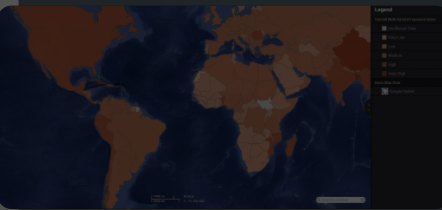
Integrating Information, Science, Observation Systems & Technology



Improve Decision-support Capabilities



Advanced Applications, Models, Risk & Vulnerability Assessments

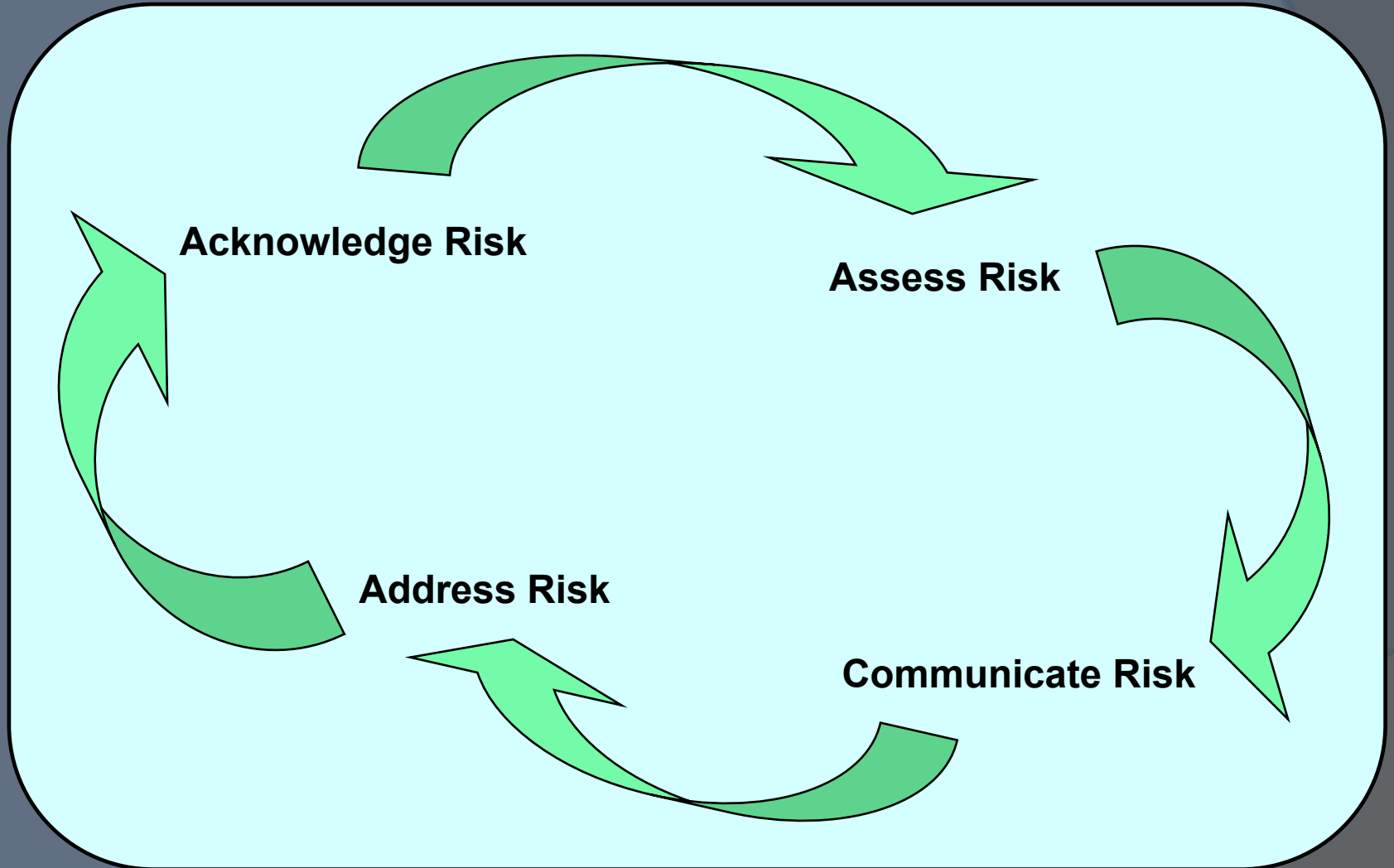


It's All about the People...



Security and Sustainability through the Support of Disaster Risk Reduction

An Approach to Disaster Risk Reduction

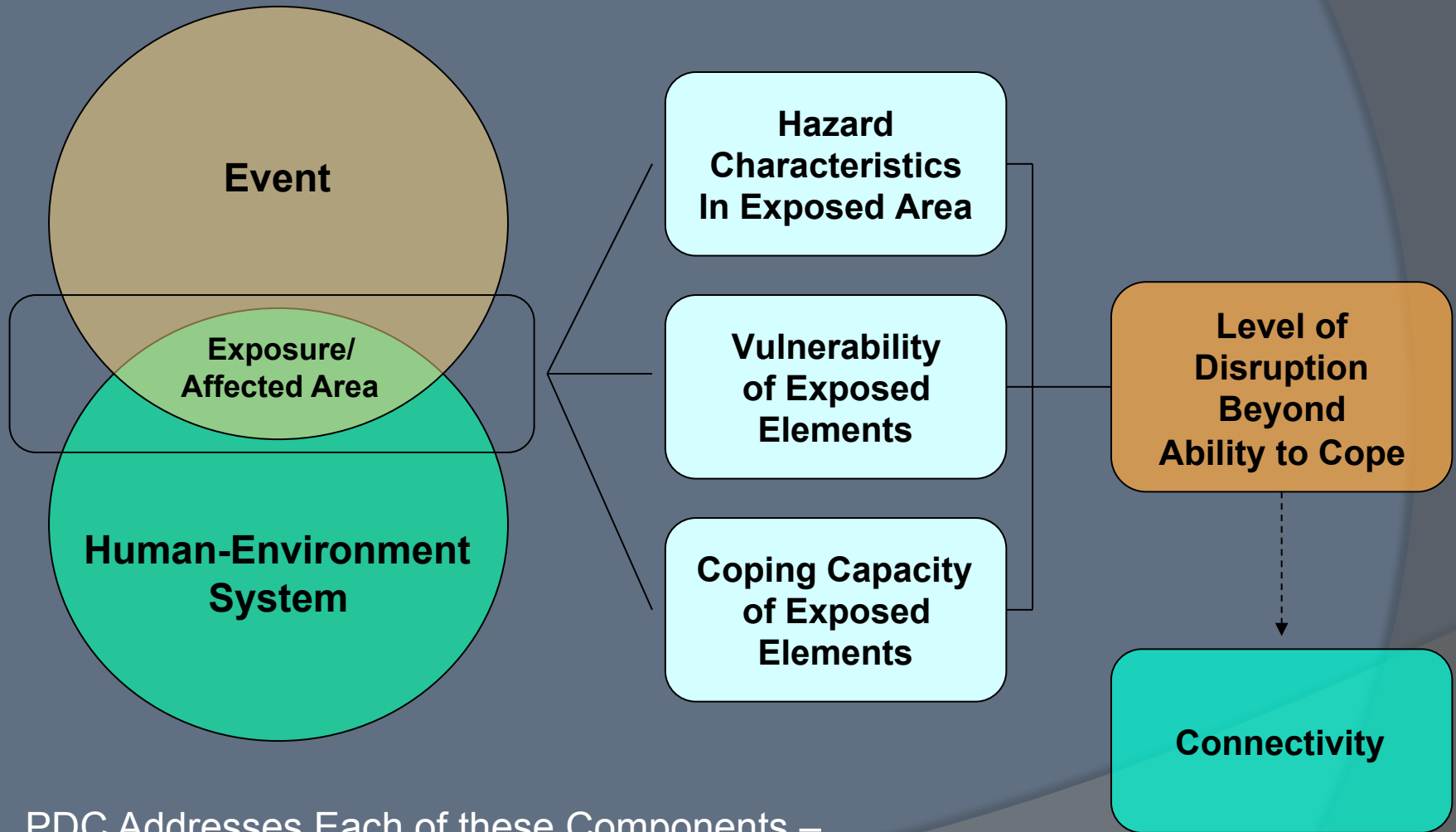


PDC's Approach to RVA

- Conceptualize Disasters As the Result of More than Just Physical Processes
- Facilitate Application of Concepts and Information



Components of Disaster

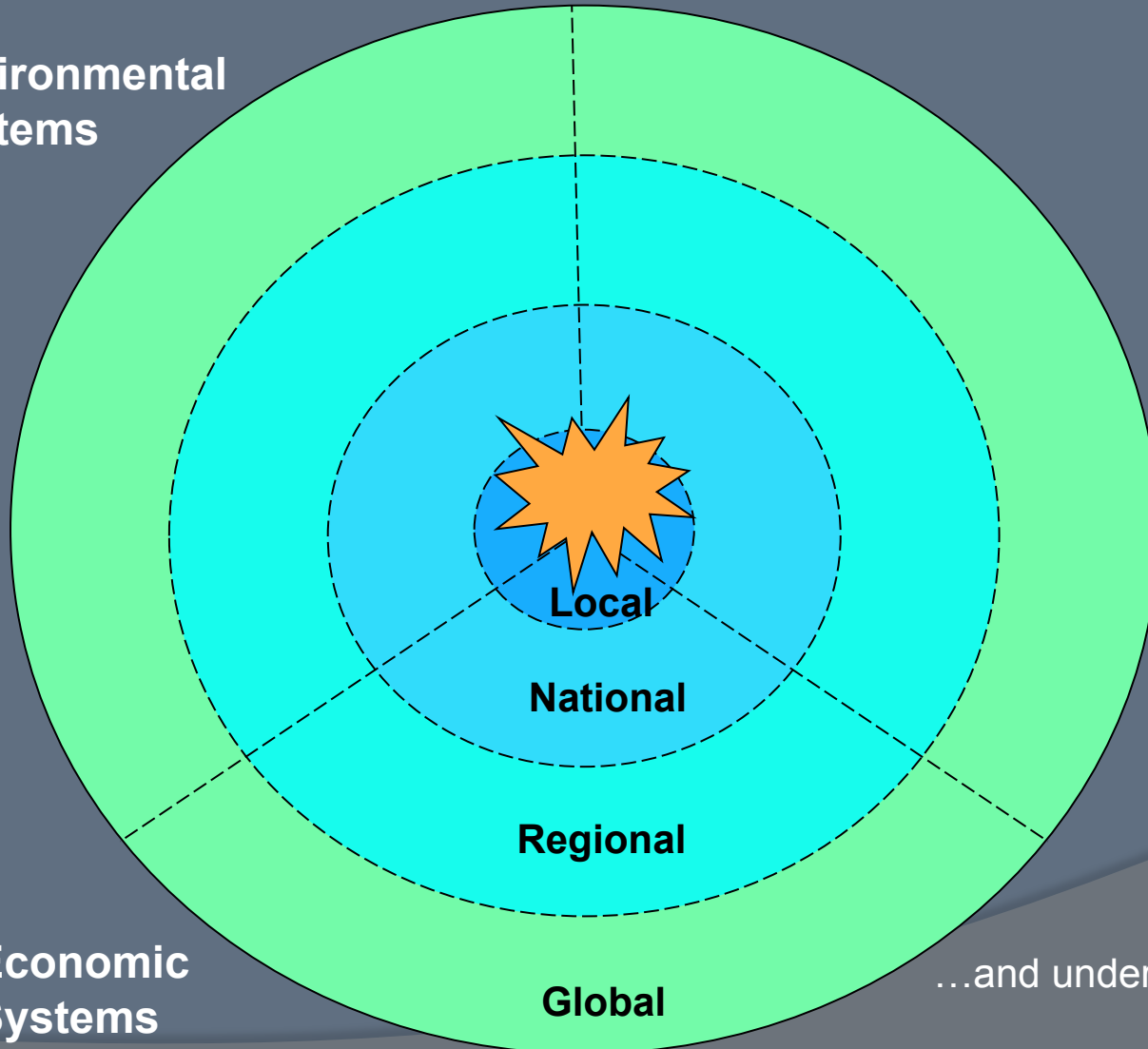


PDC Addresses Each of these Components –
Singly and in Combination

What Drives Disaster Outcomes?

A Focus on the Human-Environment System

Environmental
Systems



Social
Systems

Economic
Systems

Describing the Components of Disaster

Hazard

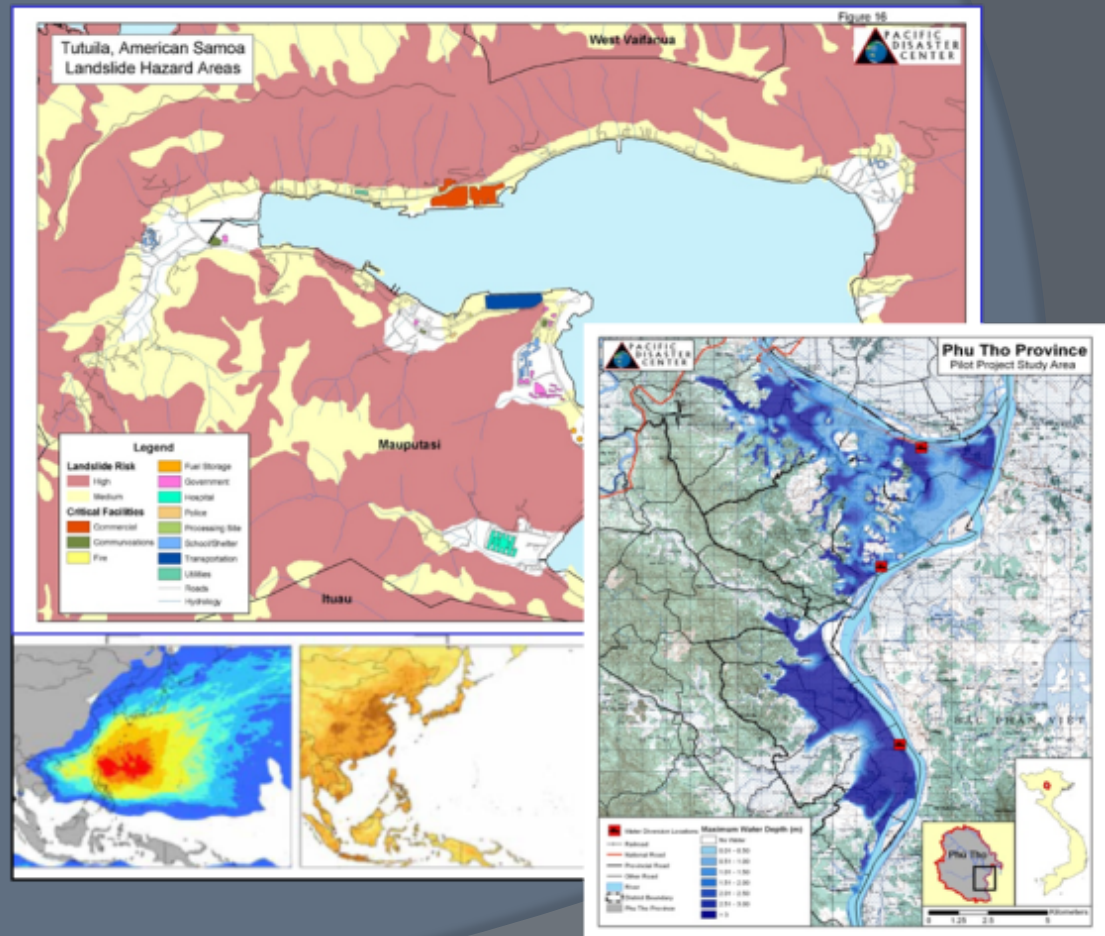
A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage



Describing the Components of Disaster

Exposure

People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses



Describing the Components of Disaster

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard

Vulnerability

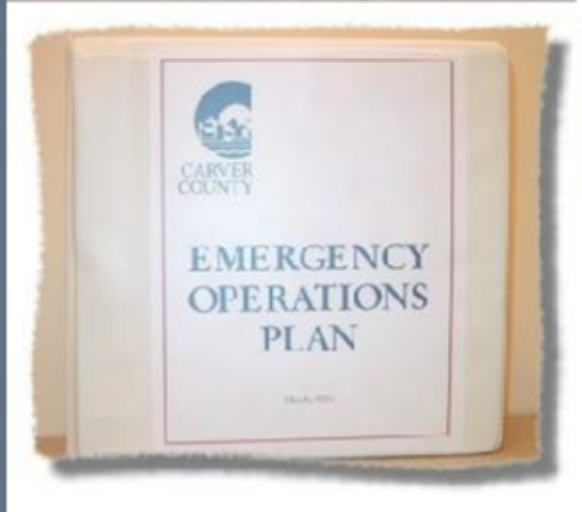
- Health Status
- Access to Clean Water
- Access to Info
- Economic Constraints
- Marginalization
- Population Pressures
- Environmental Stress
- Recent Disaster Impacts
- Conflict Impacts



Describing the Components of Disaster

Coping Capacity

The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters





What do you see?

Activity

What Do You See that Might Influence Disaster Outcomes and Affect Management Strategies?



What Do You See?



What Do You See?



Risk Assessments

- Can Be Qualitative or Quantitative
- Can Be Technically and Thematically Simple or Complex
- Multi-Hazard or Single Hazard
- Are Performed for Communities, Sectors, Systems or Objects
- Should Support Larger DRR and DM Goals
- Generally, Require Information on:
 - Frequency and Intensity of Relevant Hazards
 - Assets and Resources that May Be Exposed
 - Characteristics that Make those Elements More Susceptible to Impact and Less Able to Cope
 - Historical Losses

Considerations

- Many Ways to Represent and Combine Components
- Like Maps, Assessments Are Estimations and Interpretations of Reality
- Practical Tools to Help Us Do Our Jobs More Effectively
- Address a Limited Number of Factors
- What You Include Depends on Purpose, Goals and Constraints
- ...but Keep in Mind What's Missing

PDC's Risk Assessment Roadmap

Purpose, Goals, and Objectives of Risk Assessment

Scale

Participation

Characterize Risk

Definitions
Conceptualization
Key Components and Categories

Analyze Risk

Methods
Data Requirements and Collection
Execution

Communicate Risk

Representation
Reporting
Dissemination

Acknowledge and Address Risk

Policy
Planning
Mitigation
Mainstreaming
Etc.

Standardization/Interoperability

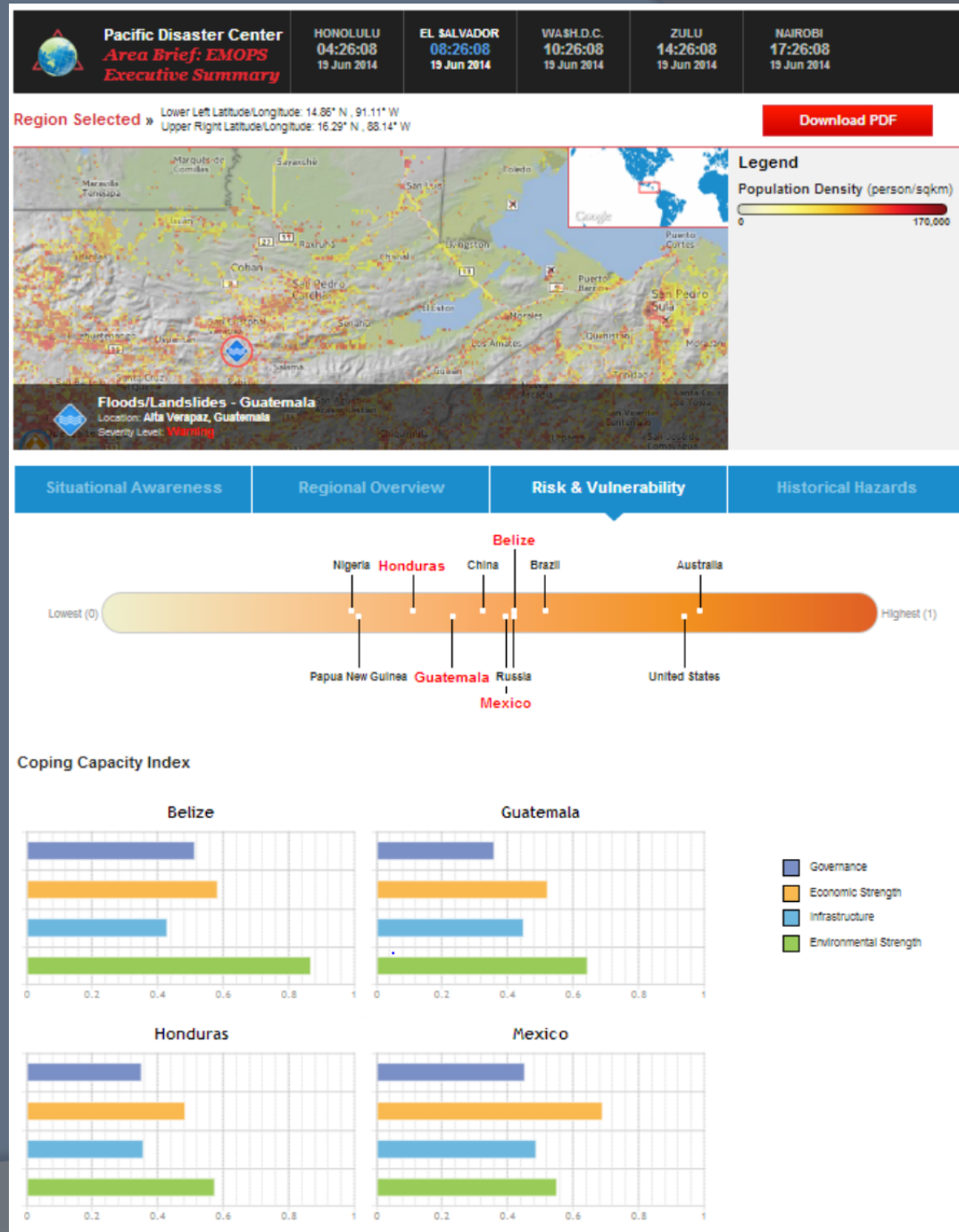
PDC's Global Risk Assessment Project

- National Level Risk Assessment for Globe
- Data and Results Integrated Into PDC's Applications
- Support Familiarization and High Level DM Decision Making



PDCs Global Risk Assessment Project

- Visualize and Interact with Contextual Data at Multiple Levels
- Make Relevant Contextual Data Easily Available in Multiple Forms



Assessment Approach

- Disaster Risk a Function of Multi-Hazard Exposure (MHE), Vulnerability (V) and Coping Capacity (C)
- Vulnerability and Capacity Considered Hazard Independent
- Composite Index Approach
 - Multiple Variables Standardized and Combined to Represent Larger “Theme”
 - Result Is a Single Relative “Score”
 - Risk Components Equally Weighted
 - Approach Enables “Drill Down” into Drivers of Scores
- Framework is Scalable, Applicable at Many Levels
- Outputs of other Assessments Can Serve as Inputs

Global RVA Components

Multi-Hazard Exposure

- Raw Exposure
 - Pop
 - GDP
- Relative Exposure
 - Pop
 - GDP

Vulnerability

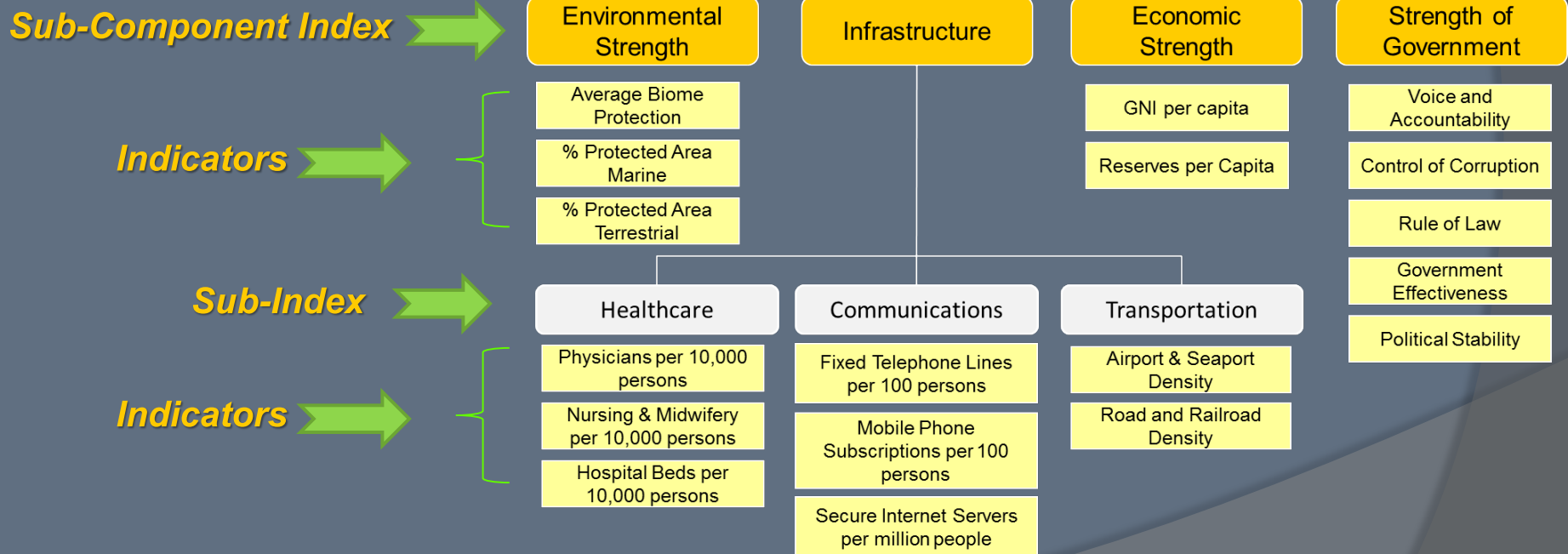
- Health Status
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- Access to Info
- Economic Constraints
- Marginalization
- Population Pressures
- Environmental Stress
- Recent Disaster Impacts
- Conflict Impacts

Coping Capacity

- Governance
- Economic Strength
- Infrastructure
 - Communications
 - Transportation
 - Healthcare
- Environmental Strength

Terminology Describing Index Hierarchy

Risk Component Index → MH Exposure Vulnerability **Coping Capacity**



Risk Component Index:
Coping Capacity



Sub-Component
Index: Infrastructure



Sub-Index: Health
Care Capacity

Indicator: Hospital Beds
per 10,000 Persons



Assessment Data & Coverage

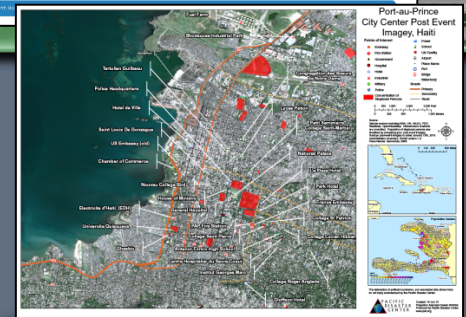
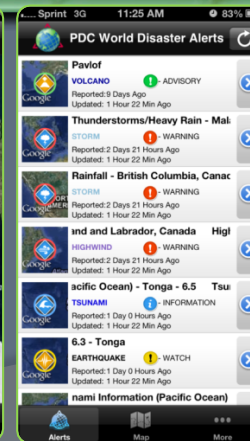
- Vetted Data Sources
 - E.g., United Nations, The World Bank, Uppsala, Universities, CRED, International Non-profits and Organizations.
- Assessment based on the most recent data available.
 - Most data from 2012; of others, majority < five years old.
- Data Publishing Lag
 - Provides General Picture Rather than Exact Representation of on-the-Ground Conditions
- 251 administrative units were included, However, not all countries and territories had sufficient data to calculate the component indices.
 - 170 - Overall Multi-Hazard Risk and Lack of Resilience Index
 - 176 - Vulnerability
 - 174 - Coping Capacity
 - 217 - Multi-Hazard Exposure

DisasterAWARE Platform

- DisasterAWARE (**A**ll-hazard **W**arning, **A**nalysis and **R**isk **E**valuation)
 - An integrated platform providing situational awareness, decision support, and information exchange capabilities to disaster management decision makers.
- DisasterAWARE provides an interoperable platform that incorporates international best practice methodologies and technologies for **data acquisition, hazard modeling, risk and vulnerability assessment, mapping, visualization, and communications.**

DisasterAWARE Platform

- Integrated Multi-hazard Monitoring
- Disaster Early Warning
- Automated / Integrated Modeling
- Exposure Maps & Historical Hazard Data
- Intra-Agency Info Sharing
 - User Added Situation Reports
 - Damage Products, ...
- Remote Access (Disaster Alert)



Example Scenario

RVA In Action

What's Going on Today?

4 June 2014



EMOPS

DisasterAWARE v5.0.4



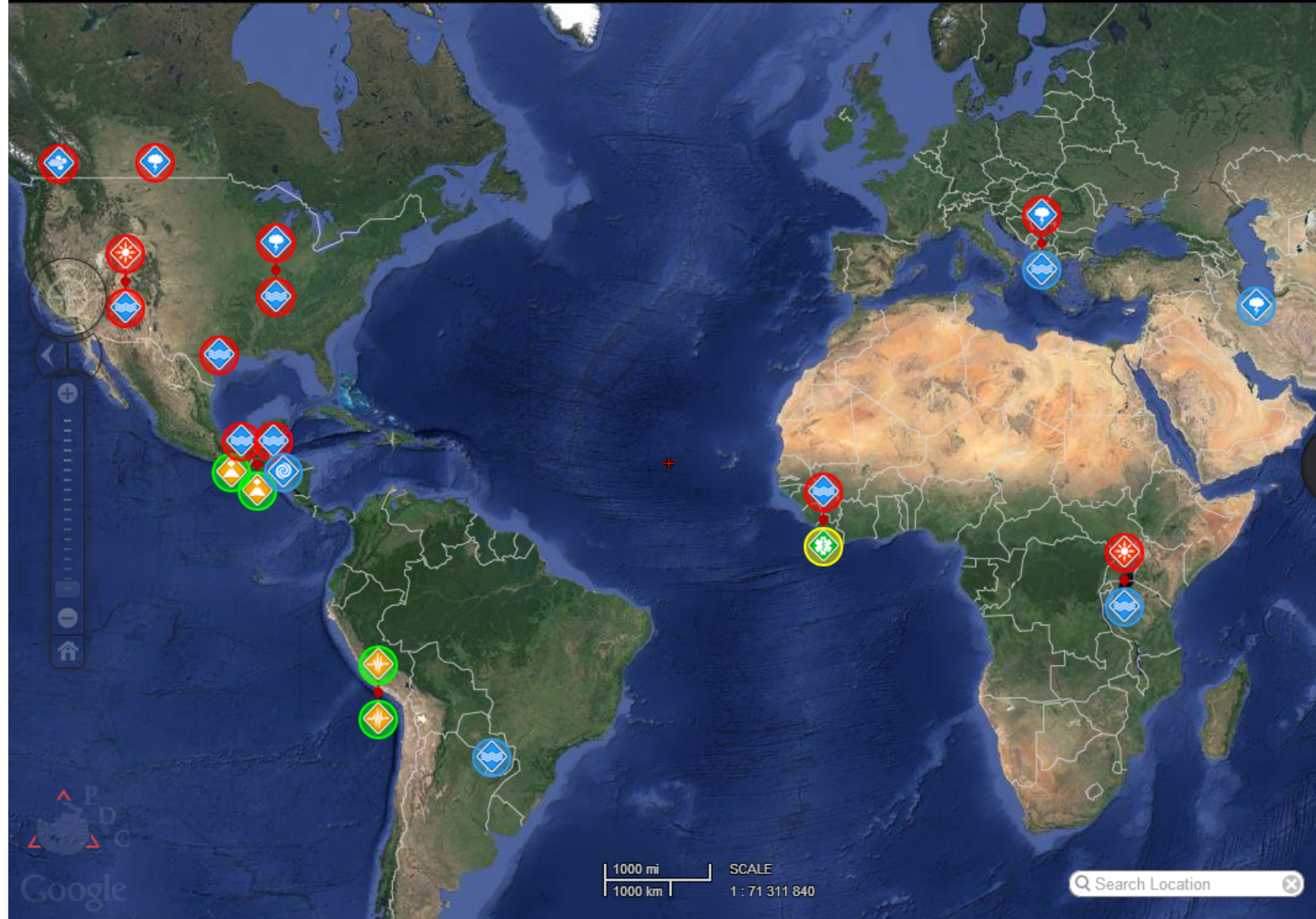
H&P



Legend

PDC Active Hazards

- Avalanche
- Biomedical
- Drought
- Earthquake
- Extreme Temperature
- Flood
- High Surf
- High Wind
- Landslide
- Man-Made
- Marine
- Storm
- Tornado
- Tropical Cyclone
- Tsunami
- Volcanic Eruption
- Wildfire
- Winter Storm
- Equipment

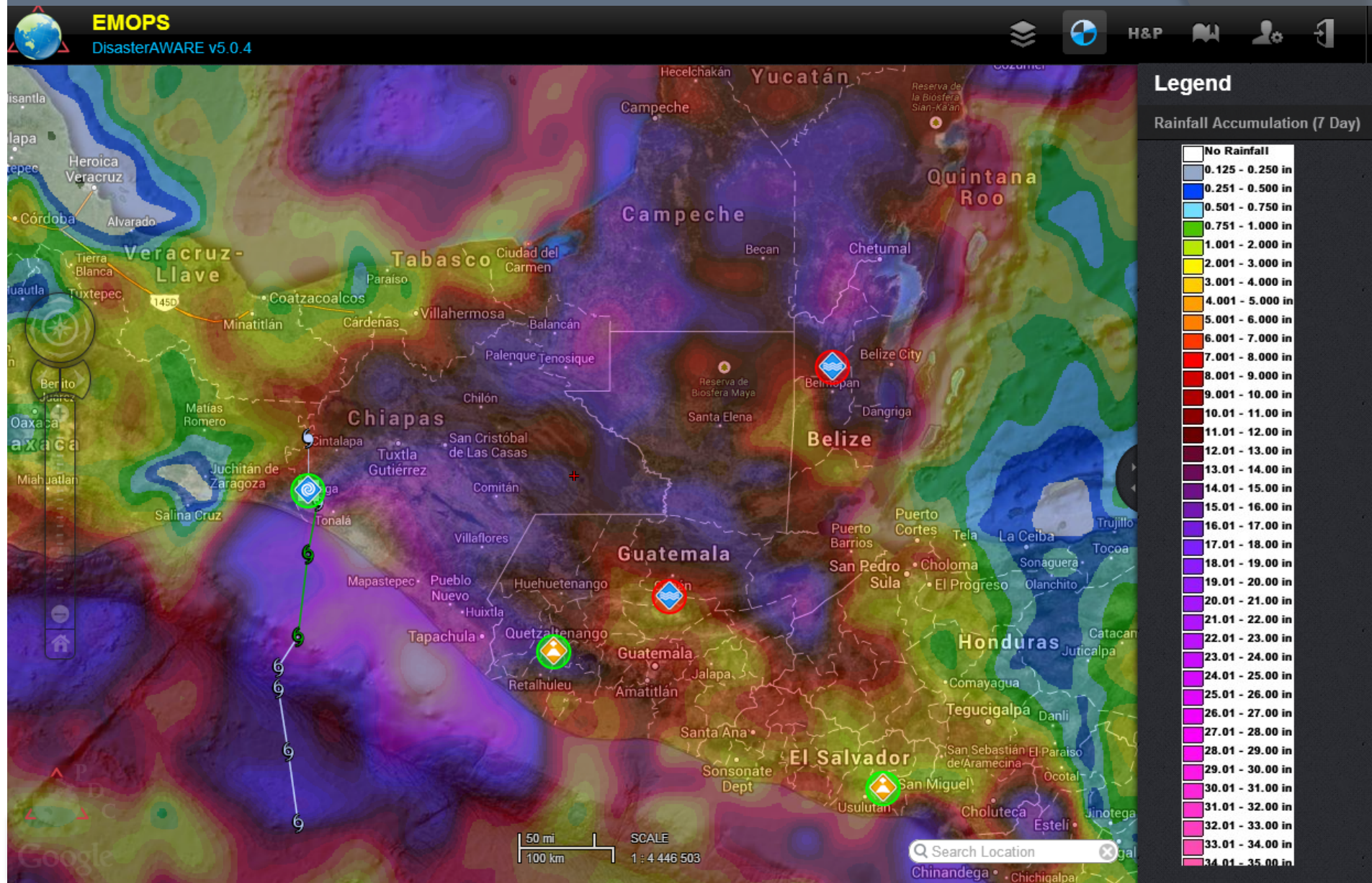


1000 mi | SCALE
1000 km | 1 : 71 311 840

Search Location



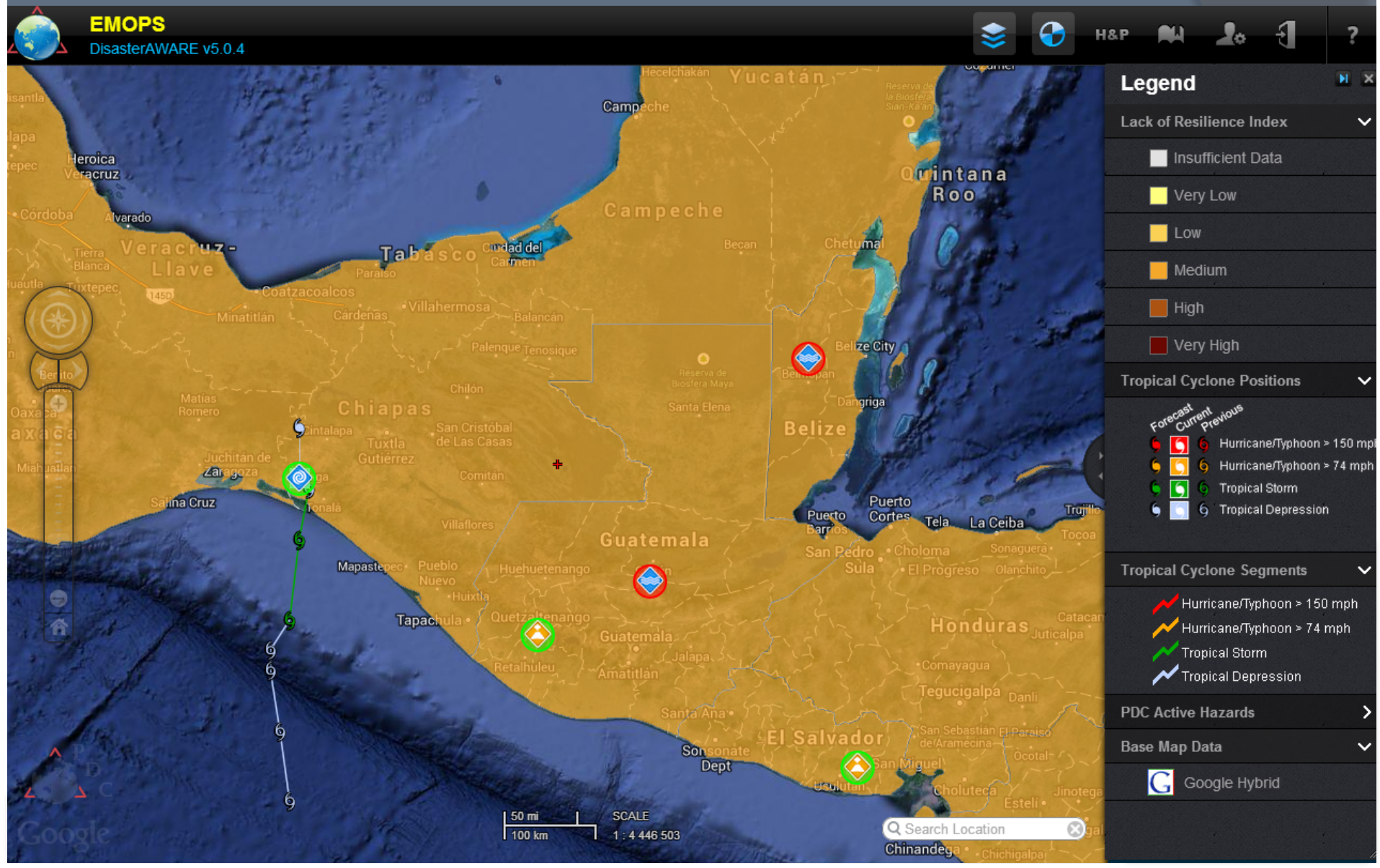
Where Has the Most Rain Fallen?



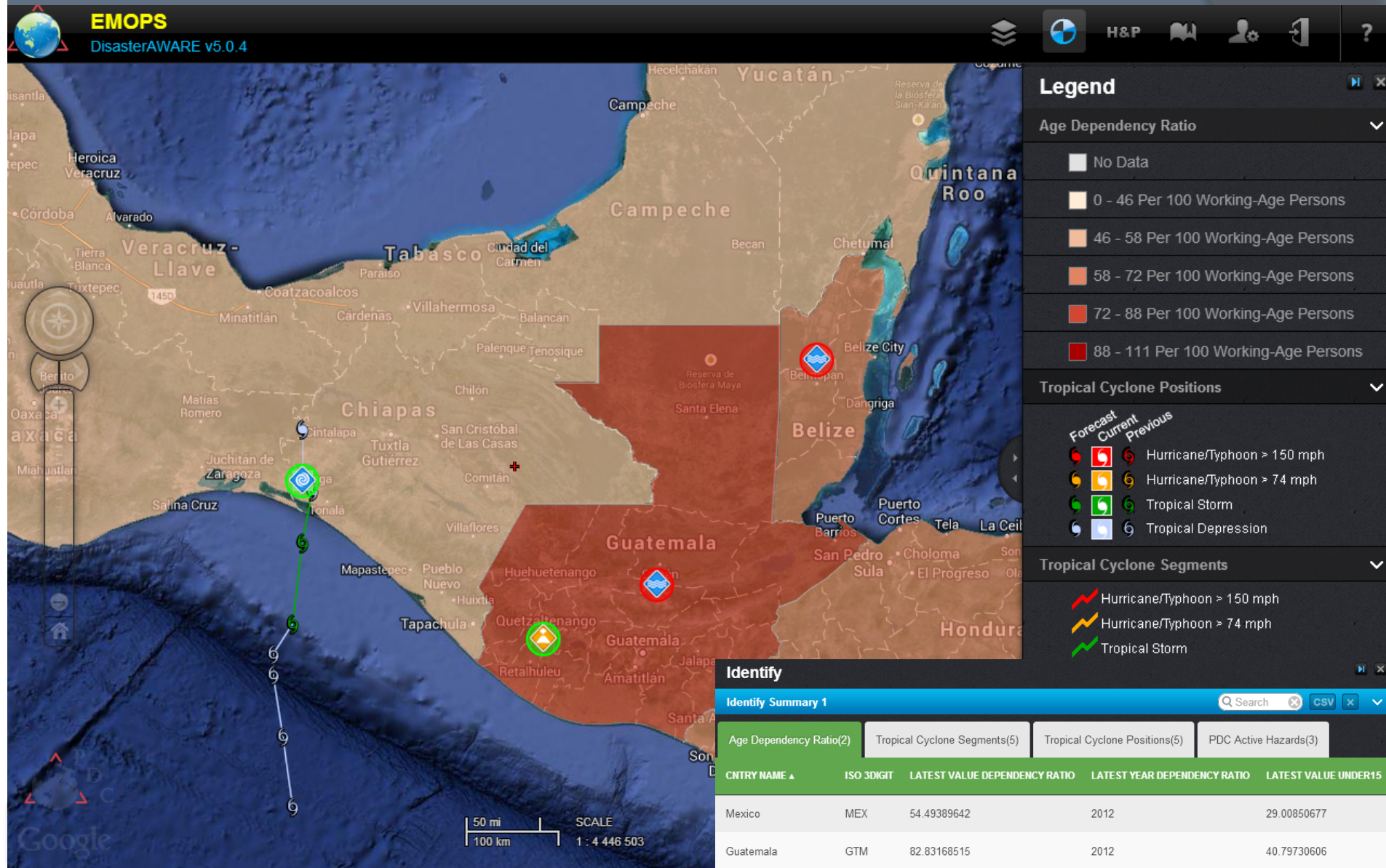
Where Might Flooding Be Exacerbated?



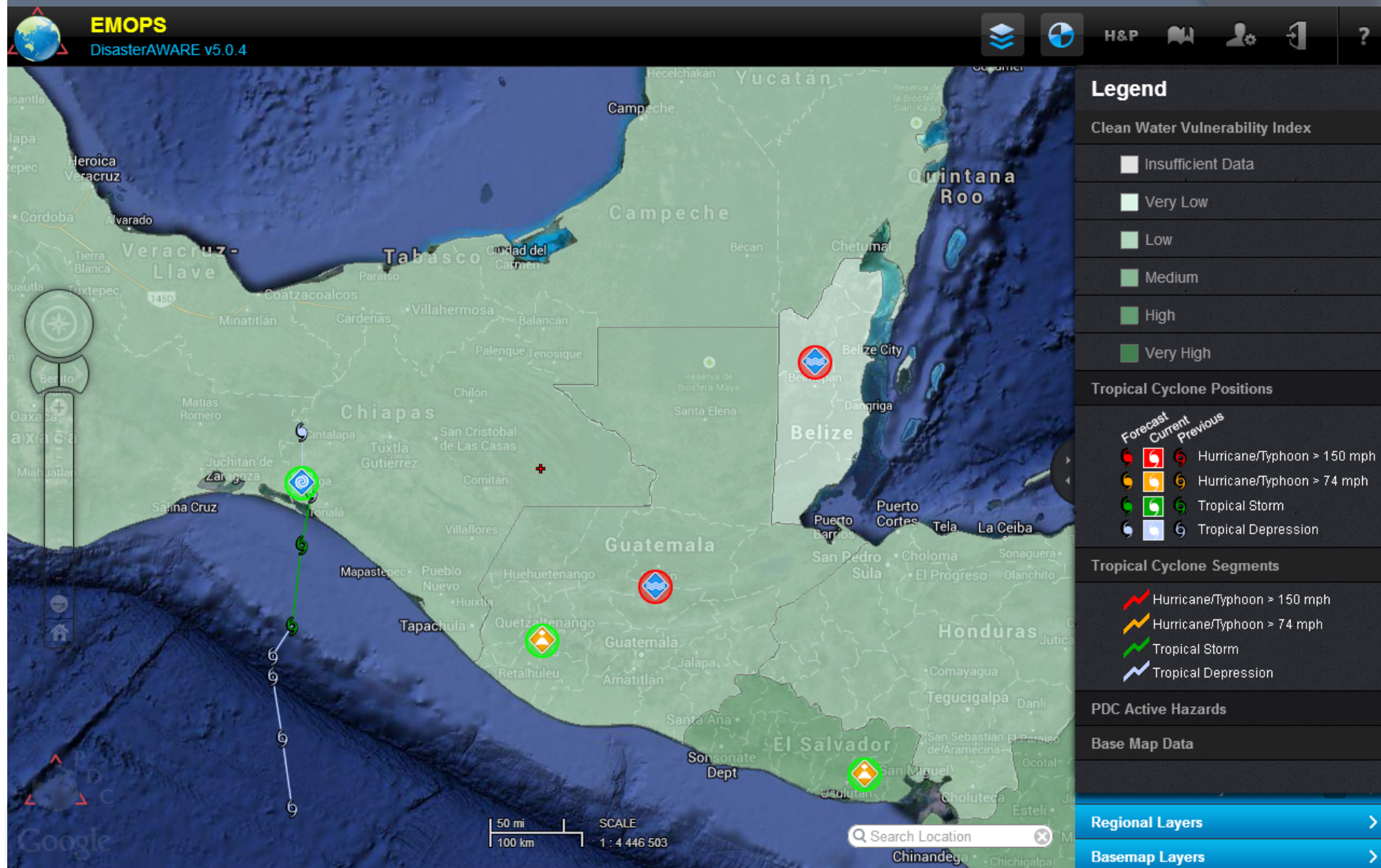
Who Might Need the Most Help?



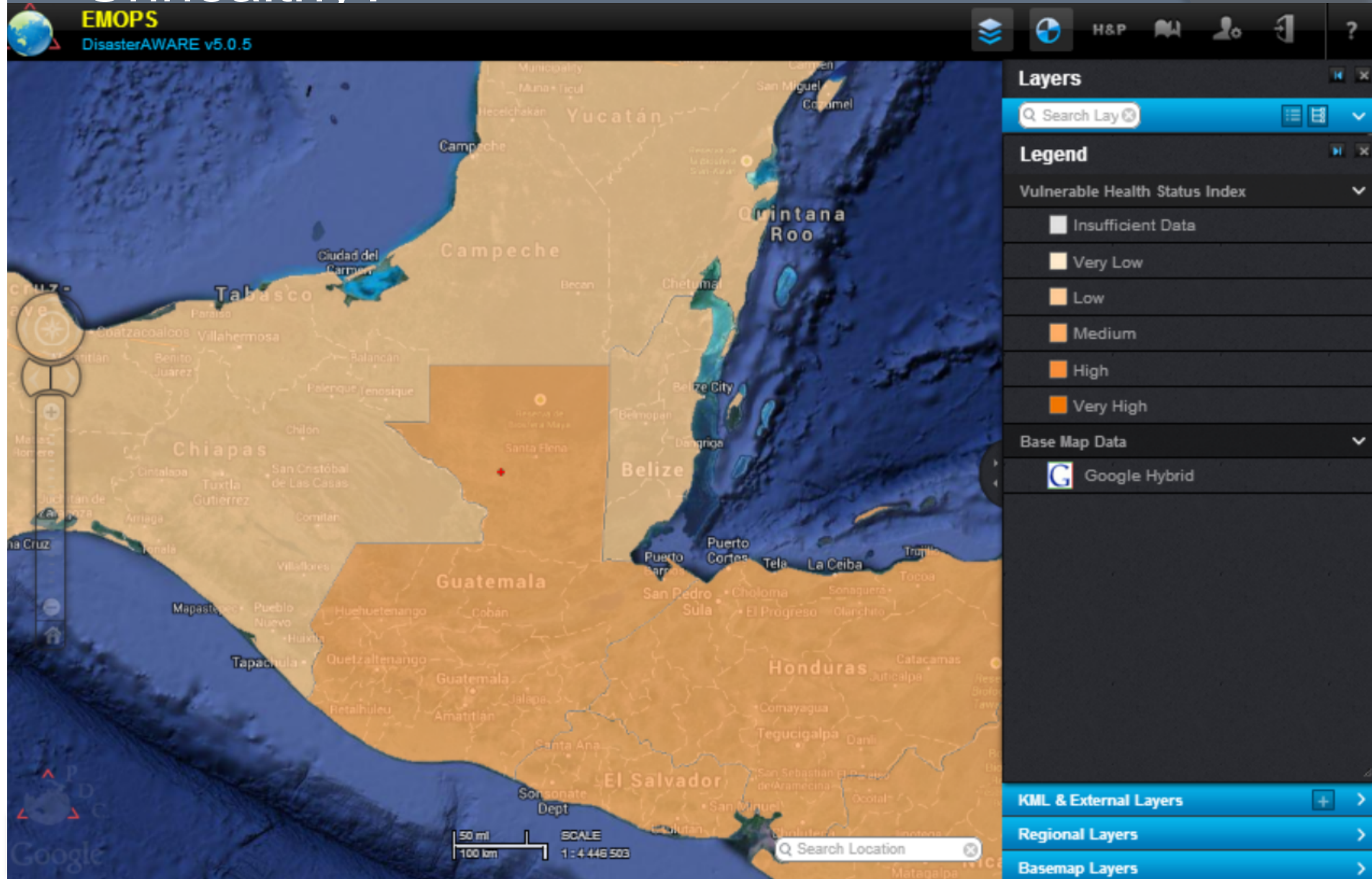
Do We Have the Right Supplies?



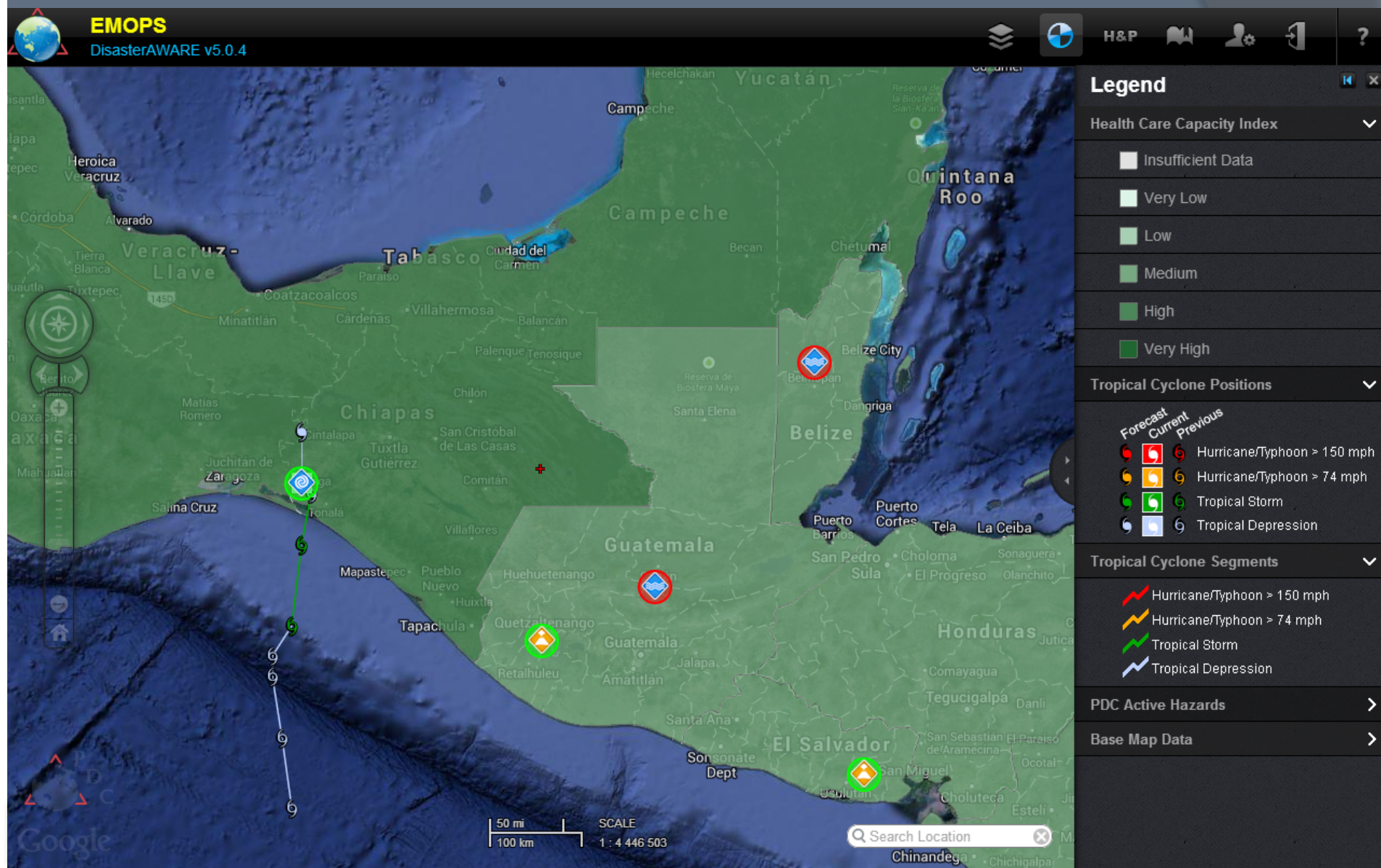
Where Might Lack of Clean Water Be of Particular Concern?



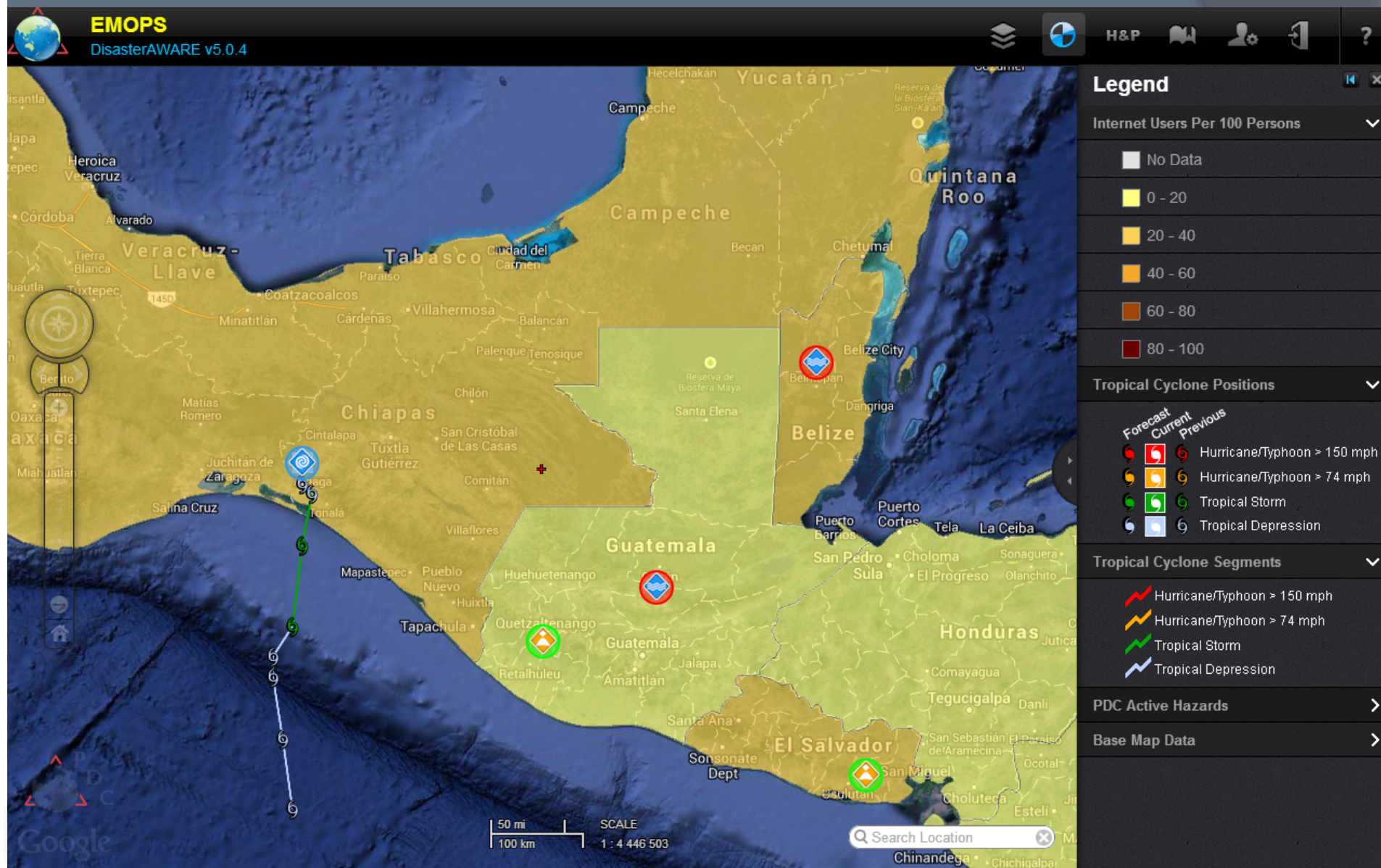
Is the Population Relatively Healthy or Unhealthy?



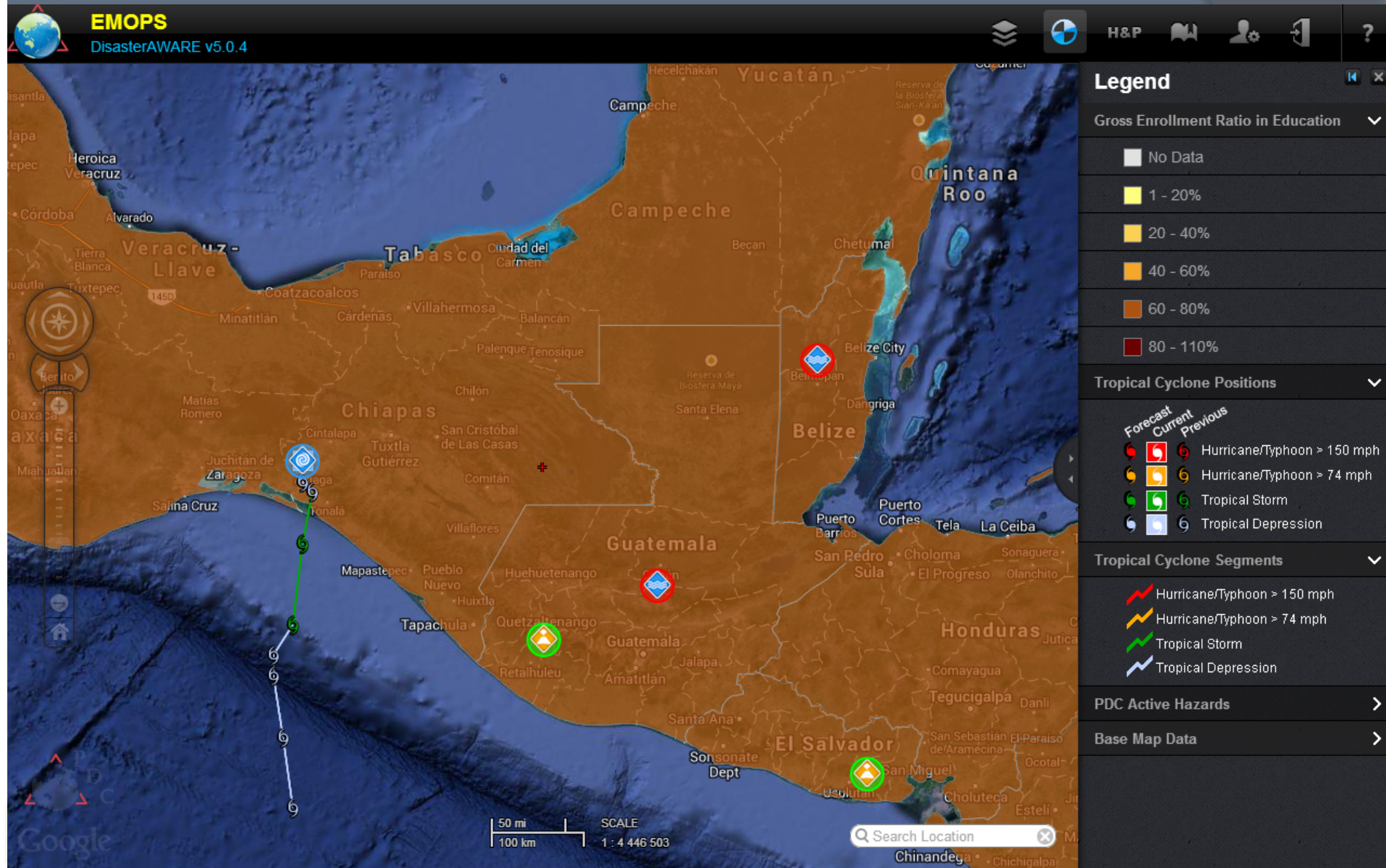
Where Would the Health Care System Be Less Likely to Handle an Influx?



Would the Internet Be a Useful Means of Outreach?



What About School Based Campaigns?





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Questions?

