ECLAC-CANTO Collaboration on Disaster Risk Management in the Telecoms Sector

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Storm costs to the telecoms industry

Year	Storm	Country	Cost *(Millions of USD)*
2004	Hurricane Ivan	Jamaica	**25.6**
2004	Hurricane Ivan	Cayman Islands	**95.4**
2004	Hurricane Francis	The Bahamas	**21.6**
2004	Hurricane Jeanne	The Bahamas	**15.5**
2007	Hurricane Dean	Saint Lucia	**0.7**
2007	Hurricane Dean	Dominica	**5.7**
2008	Tropical Storm Hannah Hurricane Ike	Turks and Caicos Islands	**3.3**
2008	Hurricane Paloma	Cayman Islands	**4.7**
2010	Hurricane Tomas	Saint Lucia	**6.7**
2012	Hurricane Sandy	Jamaica	**0.8**
2015	Tropical Storm Erika	Dominica	**10.0**
2015	Hurricane Joaquin	The Bahamas	**22.0**

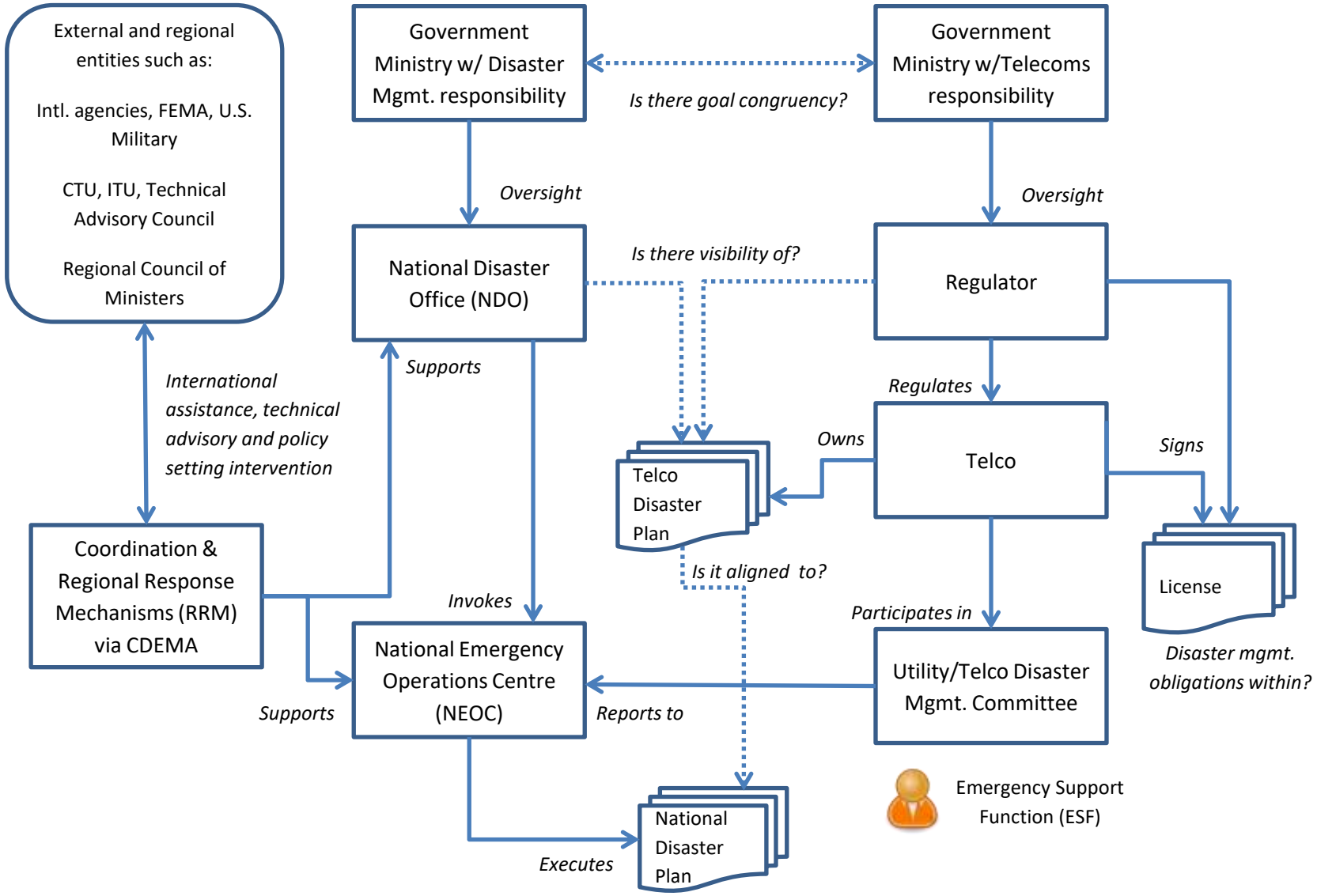
Source: ECLAC; collected from official figures

ECLAC and CANTO

- Goal: To strengthen the relationship between telecommunications companies and National Disaster Offices (NDOs) to support…
  - Disaster planning
  - Public early warning systems
  - Improved disaster response
  - Outreach to disaster-affected communities
  - Post disaster damage and loss assessment

Sources of information

- 2013 ECLAC Study on ICT for Disaster Risk Management in the Caribbean
- Participation in CANTO Disaster Recovery Planning (DRP) Committee
  - Simulated Hurricane Drill
- Interviews with National Disaster Organizations and CDEMA
  - British Virgin Islands
  - Cayman Islands
  - Jamaica
  - Montserrat
  - Saint Lucia
  - Trinidad and Tobago
  - CDEMA
- Damage and Loss Assessments


External and regional entities such as:
Intl. agencies, FEMA, U.S. Military
CTU, ITU, Technical Advisory Council
Regional Council of Ministers
Government Ministry w/ Disaster Mgmt. responsibility
Is there goal congruency?
Government Ministry w/Telecoms responsibility
Oversight
Oversight
National Disaster Office (NDO)
Is there visibility of?
Regulator
International assistance, technical advisory and policy setting intervention
Supports
Regulates
Owns
Telco
Signs
Telco Disaster Plan
Coordination & Regional Response Mechanisms (RRM) via CDEMA
Is it aligned to?
License
Invokes
Participates in
Disaster mgmt. obligations within?
National Emergency Operations Centre (NEOC)
Utility/Telco Disaster Mgmt. Committee
Supports
Reports to
Emergency Support Function (ESF)
National Disaster Plan
Executes

COMMONWEALTH OF DOMINICA

Rapid Damage and Impact Assessment

Tropical Storm Erika – August 27, 2015

- Measures need to be put in place to ensure first responders and disaster response personnel have priority access to networks.
- The Emergency Operations Center (EOC) should be the information and communications focal point of the government during and immediately after the disaster.
- Telecommunications companies should be required to make regular daily reports to the EOC as they assess and repair damages.
- The EOC should provide a standard template for reporting which is linked to an emergency management information system.

UNITED NATIONS

ECLAC

Economic Commission for Latin America and the Caribbean
Subregional Headquarters for the Caribbean

Expert group meeting on information and communication technologies for disaster risk management in the Caribbean
16 September 2013
Port of Spain, Trinidad and Tobago

LIMITED
LC/CAR/L.419
21 October 2013
ORIGINAL: ENGLISH

REPORT OF THE EXPERT GROUP MEETING ON INFORMATION AND COMMUNICATION TECHNOLOGIES FOR DISASTER RISK MANAGEMENT IN THE CARIBBEAN

Recommends that telecommunications operators and National Disaster Offices enter into **"formalized agreements with regard to supporting disaster response and recovery operations."**

Formalized agreements between Telecoms and National Disaster Offices (NDOs)

- There are already some formalized documents and processes
  - Operators license
  - National Disaster Plan
  - Telecom participation in disaster management committees
- Gaps:
  - Operational agreements are with regulators, not NDOs
  - Lack of congruency between telecom recovery plan and National Disaster Plan
  - Absence of clear reporting lines and post-disaster information sharing mechanism
  - Telecom reluctance to share status information
  - Lack of telcom participation in Post Disaster Needs Assessment/Damage and Loss Assessment process

Checklist for formalized agreements

- Pre-disaster information sharing
  - Capability of networks and information systems
  - Sharing of GIS mapping data
    - Telecoms overlay
    - Hazard maps
    - Alignment of disaster plans
  - Priority service needs for first responders and Emergency Operations Center
  - Emergency contact listing

- Emergency scenario testing
- Information dissemination protocol
  - Early warning
  - Post disaster status and needs
  - Damage and loss assessment

Post-disaster status reporting

CANTO

DISASTER STATUS REPORT

Name of telecom organization:		**Contact name:**	
Date:		**Contact telephone:**	
Time:		**Contact e-mail:**	
Diasater type		**Alternate contact:**	
		Alternate telephone:	
		Alternate e-mail:	

Summary of current network status:

Include estimated percentage of customers without service, list of areas without service, and other pertinent information.

Summary of response efforts:

Include information on assets deployed in the field, forcasted timeframes for service restoration, status in fulfilling any requests for special assistance by external agencies, and any current challenges to response efforts.

Requests for assistance:

References to any current or outstanding requests for assistance, including the name of the agency from which assistance has been requested.

Damage and impact log

	Damage description	Location			Current Status		Notes
Ref. #		Name of locale	Latitude	Longitude	Impact on service	Response efforts	
1							
2							
3							
4							
5							

Standardized Damage and Loss Reporting Form

ECLAC Damage and Loss Assesment for the Telecommunications Sector

Costing report on disaster damages and additional costs

Name of telecom organization:	
Name of disaster event:	
Contact name and email:	
Date:	
Currency:	

Damages Assesment

- Damages may be reported as line-item costs, or in the aggregate.
- Costs should be estimated based on the replacement value of damaged equipment or facilities.
- Labour costs should not be included in this section of the estimate; these are covered elsewhere under "additional costs."

Damage to wireless telecommunications facilities

This category may include items such as tower and radio equipment, antennas, microwave equipment, routers, generators, batteries, and other equipment associated with the operation of wireless networks.

Description	Cost of damage
Total damage to wireless telecommunicaitons facilities:	0

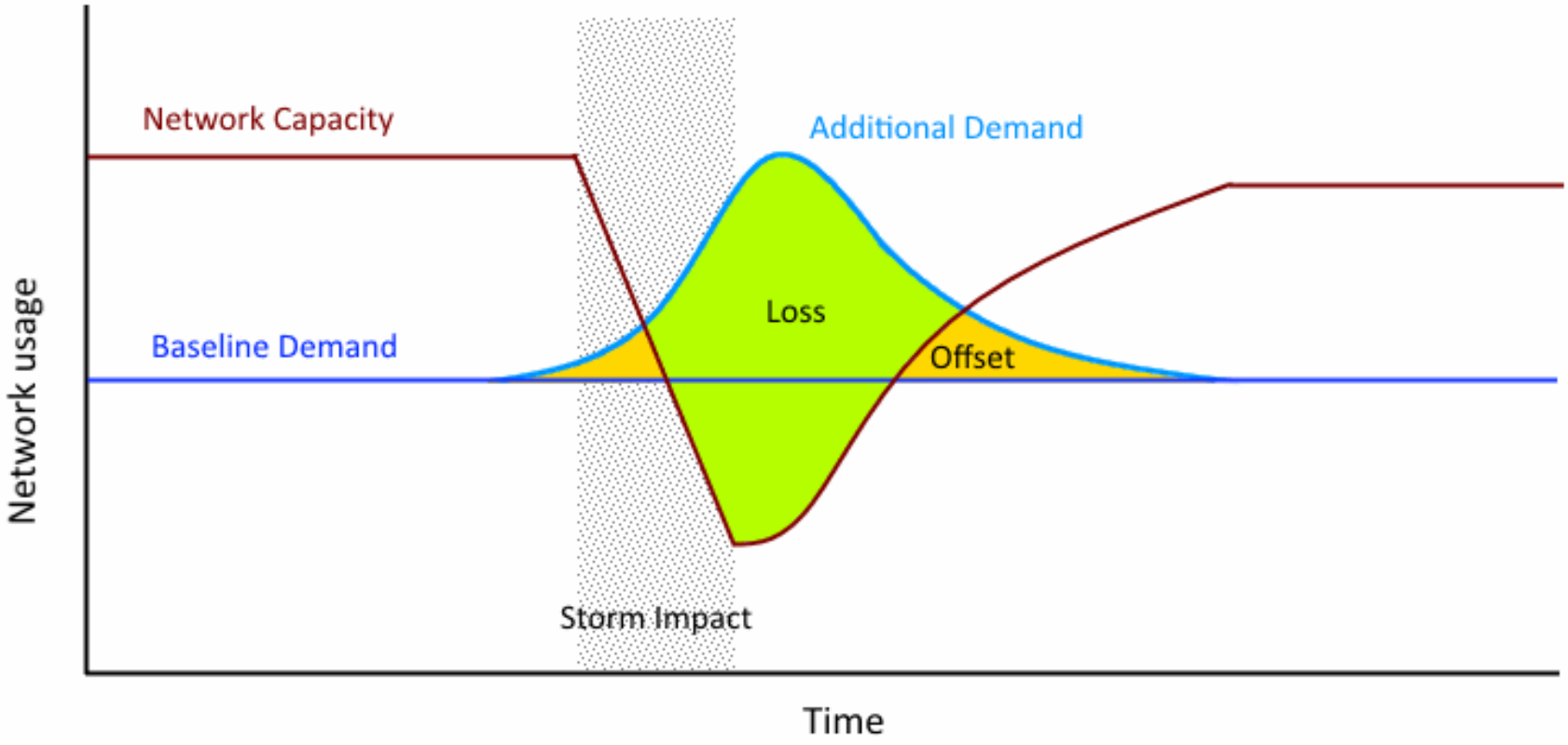
Damage to wired telecommunications facilities

This category may include items such as fiber and copper cables, pylons and posts, submarine landing stations, and networking equipment associated with the operation of wired networks.

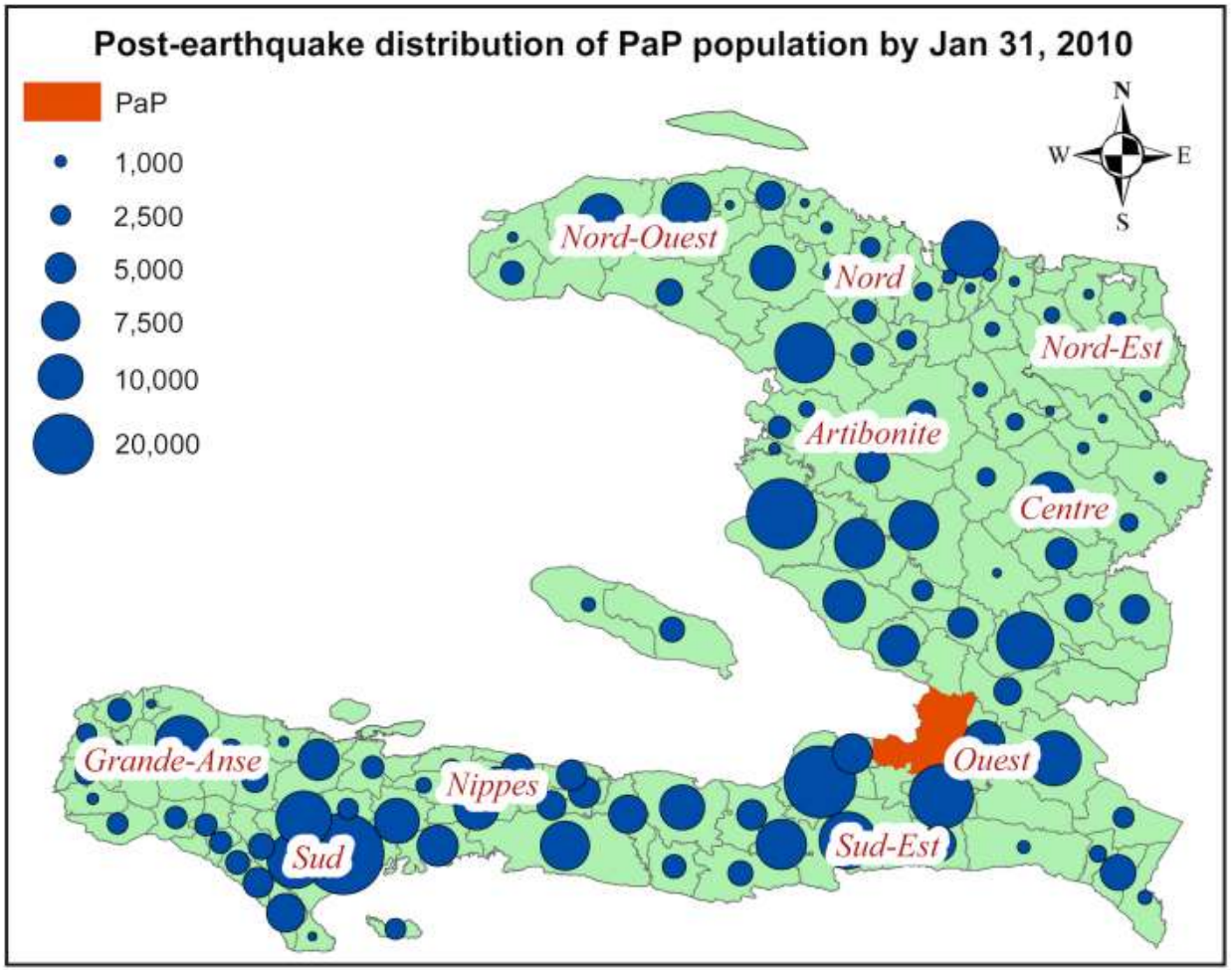
Description	Cost of damage
Total damage to wired telecommunications facilities:	0

Damage to other telecommunications facilities

Model of service losses associated with storm impact on a cellular network



Using Call Detail Records to Analyze Population Displacement



Mobility patterns have been identified by analyzing CDRs, providing more accurate post-analysis of population migration during the Haiti earthquake.

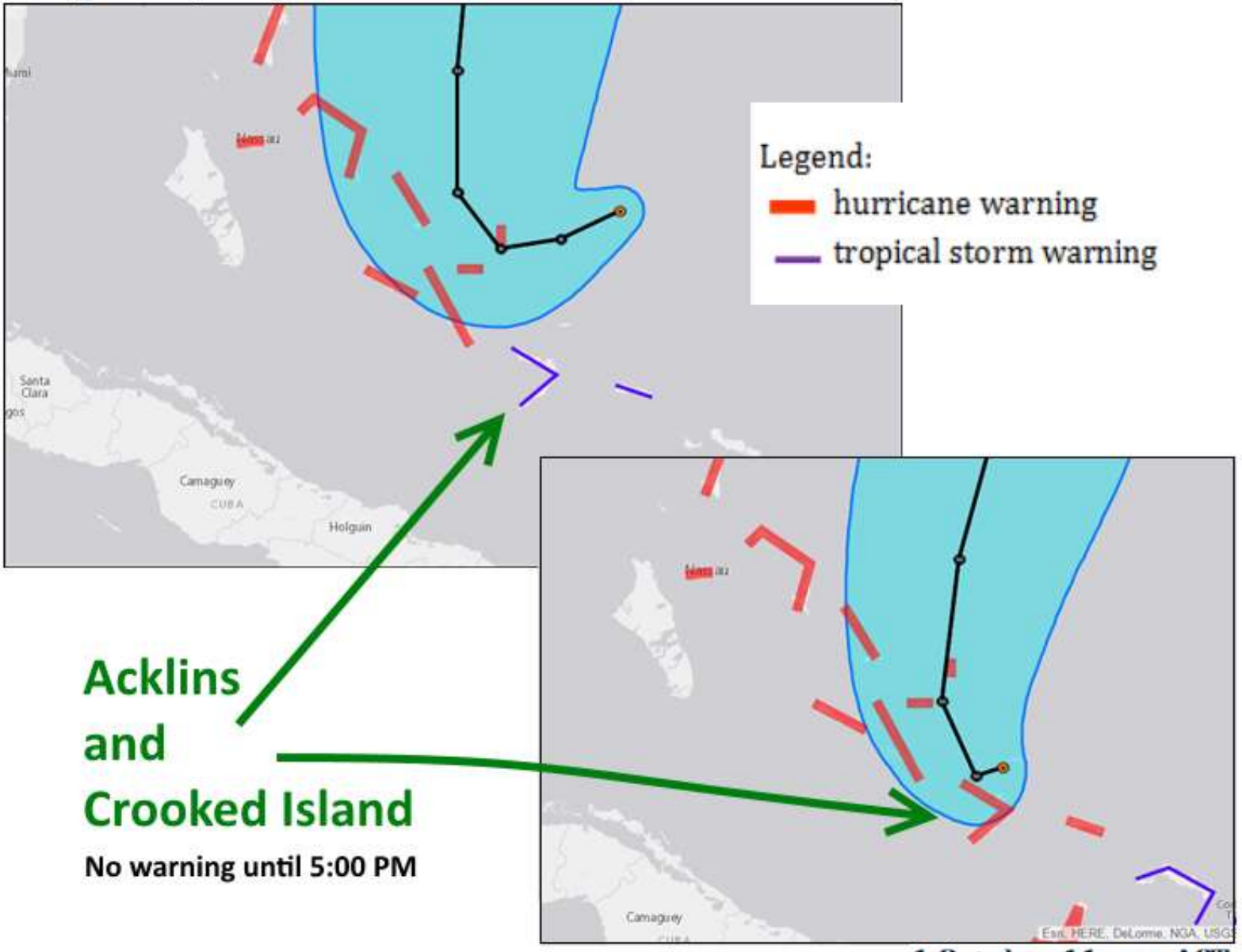
Figure 1: The visualization shows the distribution of population migration from Port au Prince (PaP) after the Haiti earthquake obtained by analyzing CDRs. The circles represent locations that received at least 500 people from the estimated distribution of those in PaP on the day of the earthquake, but outside the city 19 days after the earthquake. Source: Lu et al., 2012.

Source: UN Global Pulse / Mobile Phone Network Data for Development

“There was no warning.”

Hurricane Joaquin in The Bahamas: A Late Warning

30 September, 5:00 p.m. AST



1 October, 11: a.m. AST

Source: NOAA and US National Hurricane Center

SMS-based Public Warning Systems

- Frequency of testing ranges from every 4 weeks to “one time 4 years ago” to “never.”
  - Systems are not tested at scale
- Past experience has shown delay in message delivery and messages delivered out-of-sequence.
  - “up to 24 hours later”
- There is no “geo-fencing” capability to target users in a particular region.
- Can contribute to post-disaster network congestion.

Cell Broadcasting

- One to many messaging avoids network congestion
- Recipients can be targeted based on the location of cell towers
- Deployed for emergency alert systems in United States and Europe
- Investment required - $$$

“The telephone company is just not interested in supporting cell broadcasts, even in a limited way.”

- Head of a National Disaster Office

Source: Report of the Expert Group Meeting on Information and Communication Technologies for Disaster Risk Management in the Caribbean
http://repositorio.cepal.org/bitstream/handle/11362/38258/LCCARL419_en.pdf?sequence=1

Possible way forward

- CDEMA / CANTO / CTU / ECLAC collaboration to recommend a regional standard for technology and an administrative model

- Telecoms, NDOs, and Regulators work together to make the case for support from national governments

- Search for funding sources
  - Universal Service Funds
  - Development Banks
  - Caribbean Catastrophe Risk Insurance Facility (CCRIF)
  - Climate Change Adaptation Fund
  - Capitalism

Thank you

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