



**Asia-Pacific  
Economic Cooperation**

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**2019/EPWG/DIA/015**

Agenda Item: 10A.1

## **Information Intelligence for Early Warning and Decision Support**

Submitted by: United States



**APEC Resilience Week  
Taipei, Chinese Taipei  
30 September - 2 October 2019**





# Information Intelligence for Early Warning & Decision Support

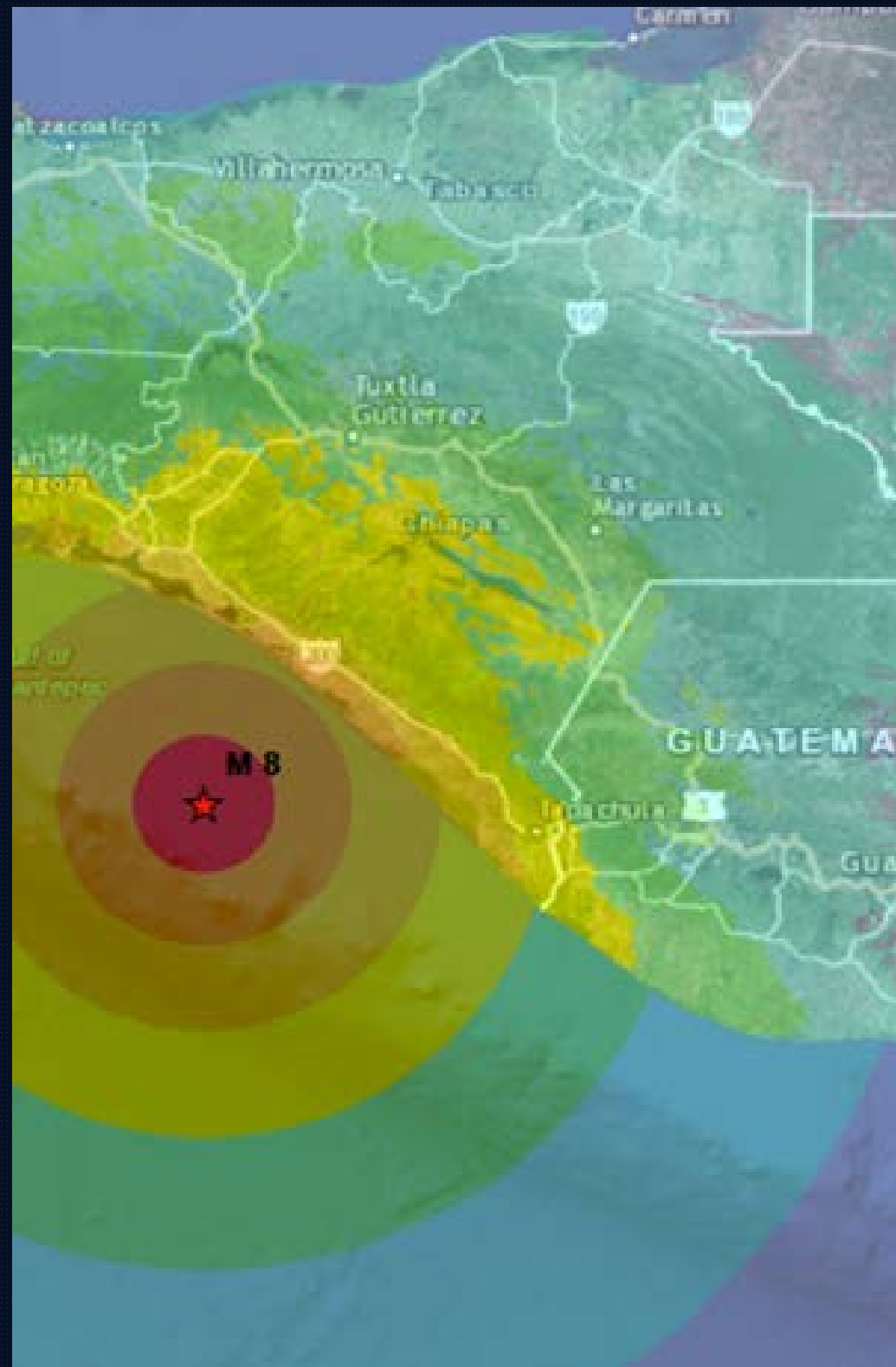
APEC Resilience Week | October 1, 2019

Ms. Victoria Leat, Asia Program Advisor



# Fostering Resilience

**We use science and technology to help ...**



**executives and disaster managers worldwide make informed decisions to ...**



**reduce disaster risk and prepare for and respond to disasters**



# Who is PDC?



**More than 60**

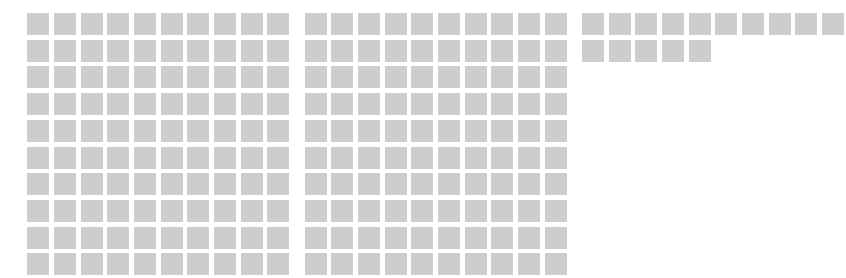
Staff and industry experts

**6 Global**

Locations

**200+**

Partner projects and engagements



**Thousands**

of disasters



**Over 65**

Partner Countries



**Managed by**  
**University of Hawaii**  
since 2006





# Some of the places we've worked...



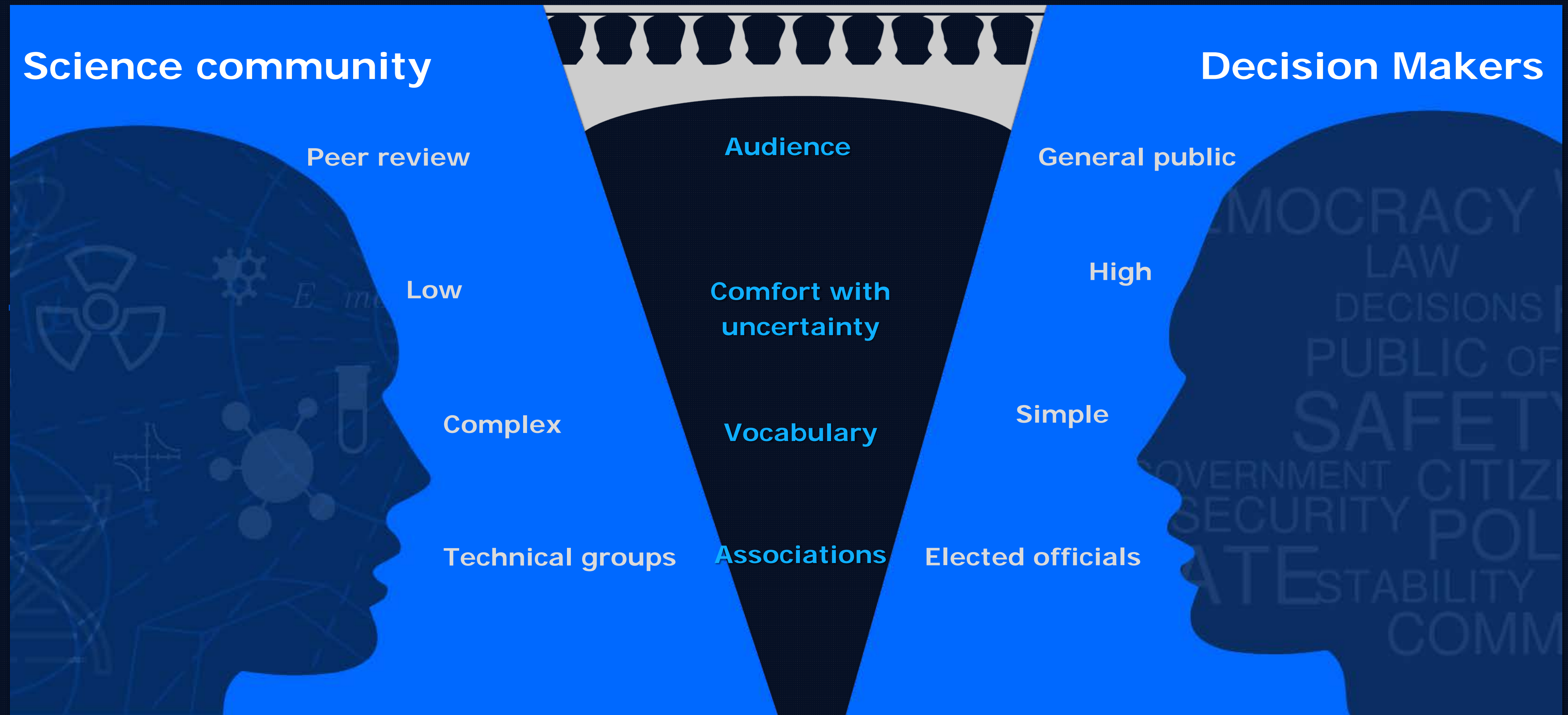
## Our Global Mission

To provide **evidence-based** research, applied science, information, and cutting-edge technology solutions for more effective disaster risk reduction (DRR) **policies, practices**, and humanitarian assistance and disaster relief (HA/DR) operations in the Asia Pacific region and beyond.

**Preventing hazards from becoming disasters,  
disasters from becoming catastrophes.**



# Building a bridge





# Who is using our systems?

## A glance at our partners

We're working hand-in-hand with partners around the globe to reduce disaster risk, prevent losses, and protect the lives and livelihoods of millions of people.



Photo: PDC and AHA Centre sign Memorandum of Intent (2017)



# Who is using our systems?

## A glance at our partners

We're working hand-in-hand with partners around the globe to reduce disaster risk, prevent losses, and protect the lives and livelihoods of millions of people.

### United States

- DoD – Pentagon
- COCOMs (PACOM, SOUTHCOM, NORTHCOM)
- White House (EOPUS)
- DHS / FEMA (R IX)
- State Department (Global Operations Center, US Embassies, OFDA, USAID)
- Veterans Affairs
- National Guards (Hawaii, Rhode Island, New York, New Jersey, Oregon...)
- State EOCs





# Who is using our systems?

## A glance at our partners

We're working hand-in-hand with partners around the globe to reduce disaster risk, prevent losses, and protect the lives and livelihoods of millions of people.

**1.7 million mobile users**

### Nations

- Indonesia
- Thailand
- Vietnam
- Philippines
- Bahamas
- Peru
- El Salvador
- Cambodia
- Myanmar
- Honduras
- Nicaragua
- Guatemala
- Dominican Republic
- Australia
- China
- Ecuador
- Brazil
- Fiji
- Palau
- Nepal
- Paraguay
- Japan
- Jamaica
- Bangladesh
- Haiti
- More...

### International

- United Nations (IAEA, OCHA...)
- ASEAN (AHA Centre)
- CDEMA
- CEPREDENAC
- American Red Cross
- World Food Programme
- Salvation Army
- More...

### Public

- International community
- Friends, family, etc.



# PDC's integrated approach



## Observational and collection systems

### Advances in ...

- Observational and collection systems





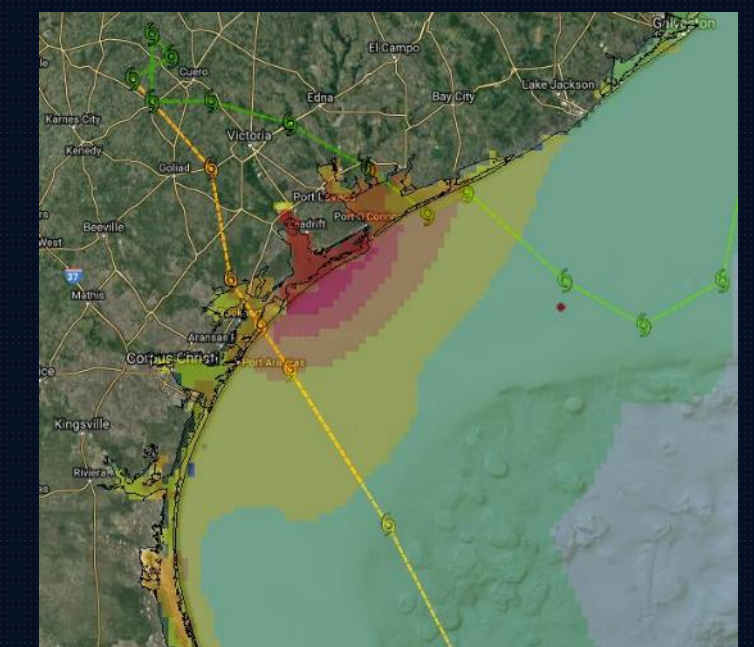
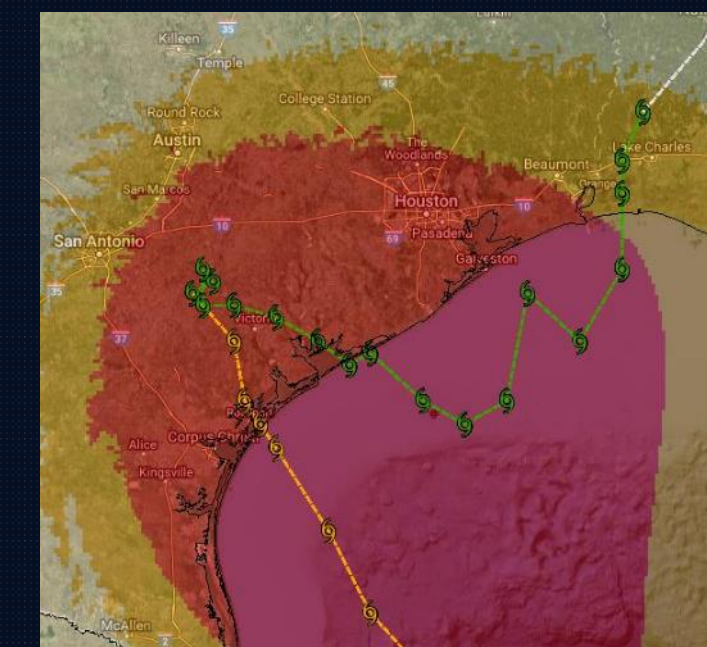
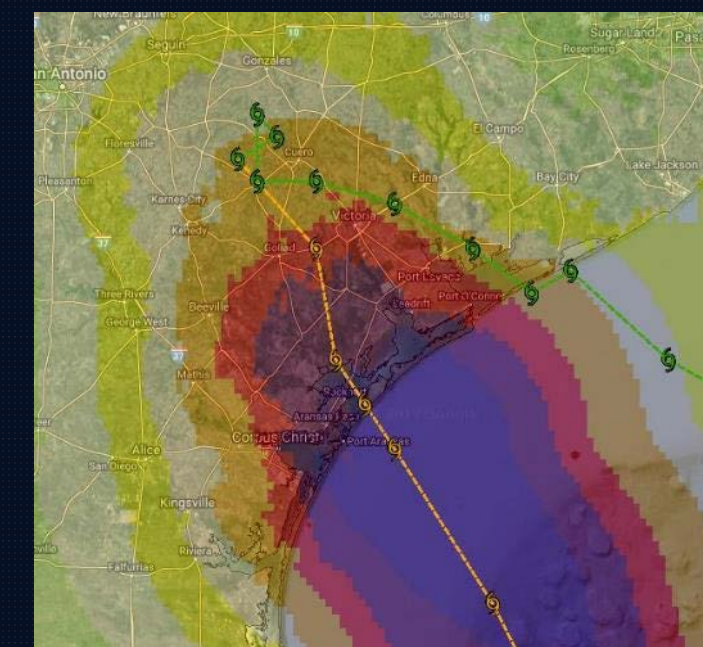
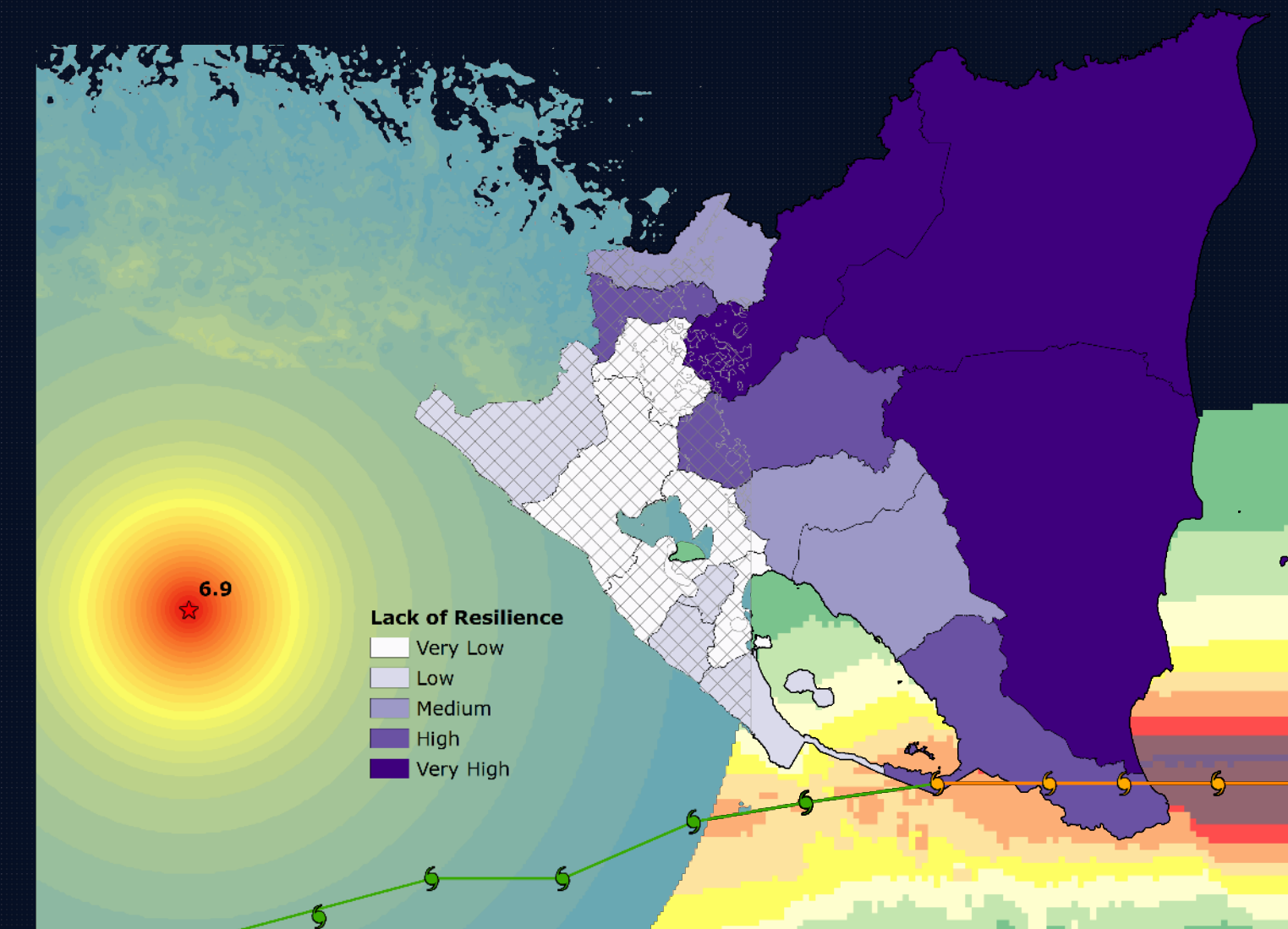
# PDC's integrated approach



## Advances in ...

- Observational and collection systems
- Advanced modeling and risk analysis

### Advanced modeling and risk analysis





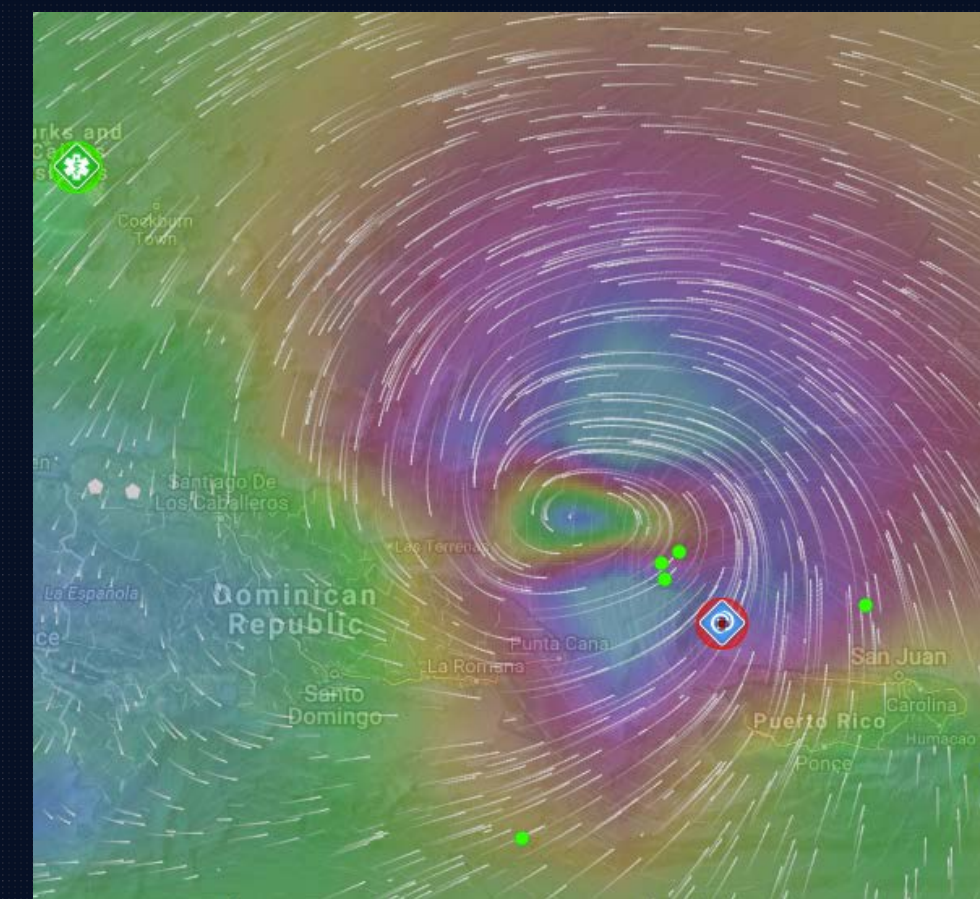
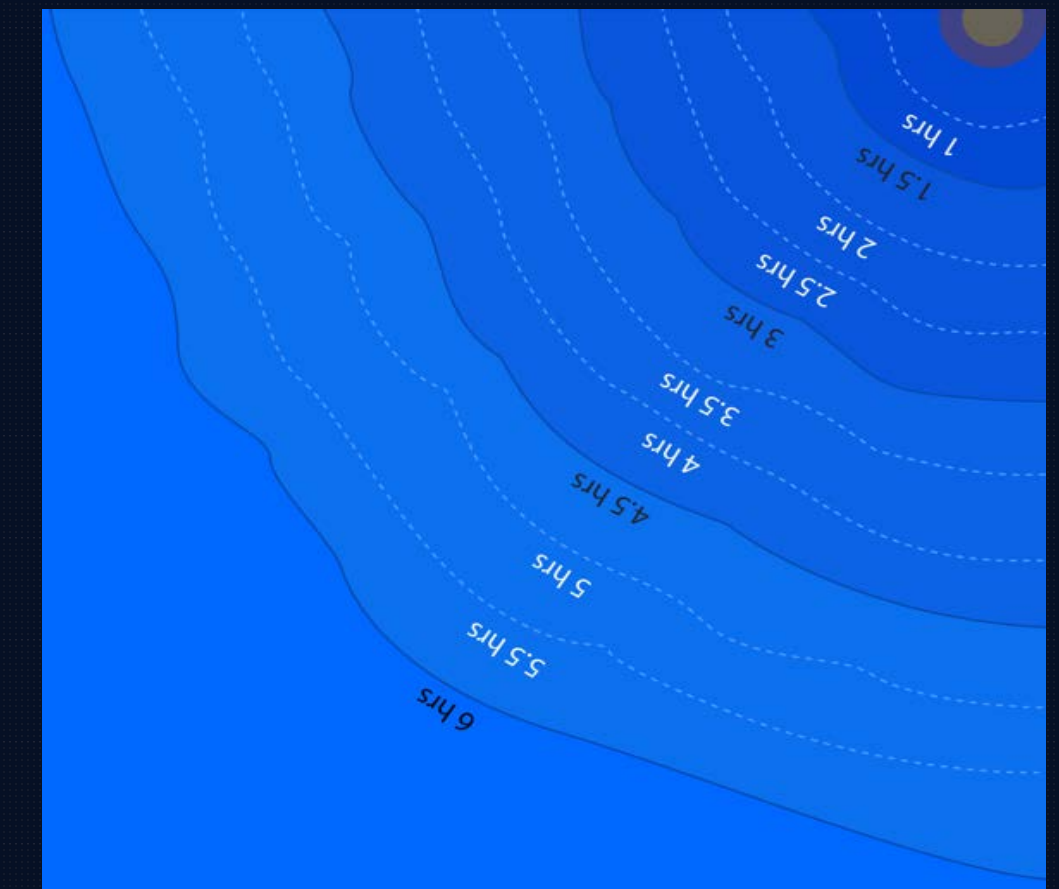
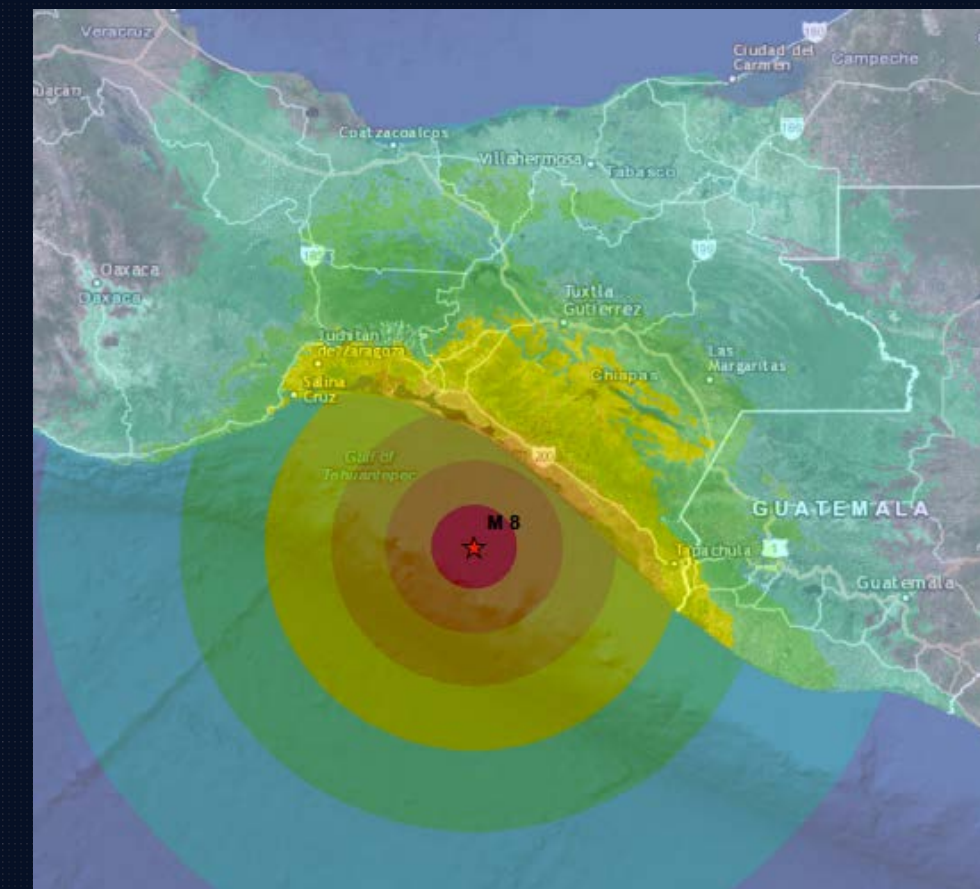
# PDC's integrated approach



## GIS and visualization systems

### Advances in ...

- Observational and collection systems
- Advanced modeling and risk analysis
- GIS and visualization systems





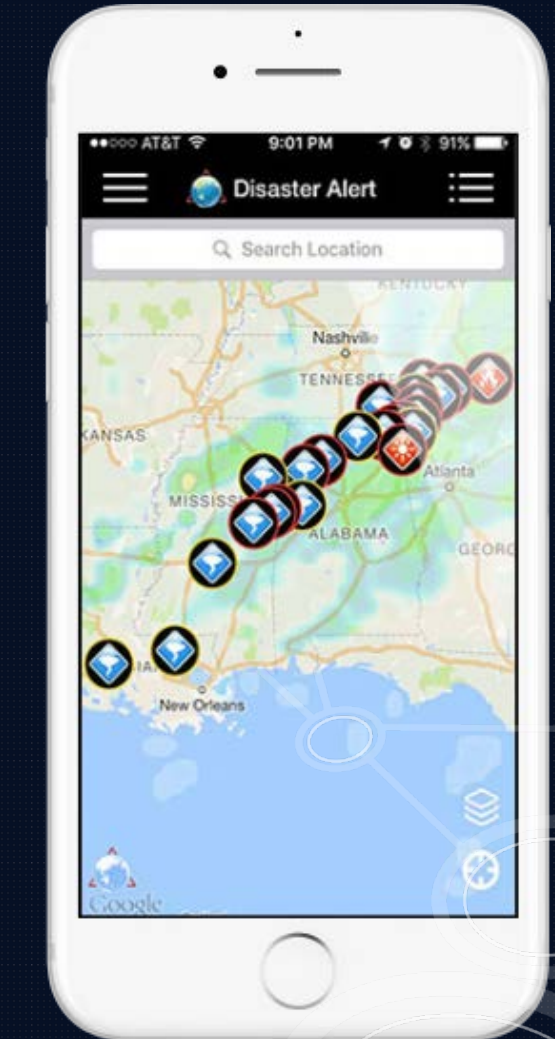
# PDC's integrated approach



## Computing and communication technologies

### Advances in ...

- Observational and collection systems
- Advanced modeling and risk analysis
- GIS and visualization systems
- Computing and communication technologies





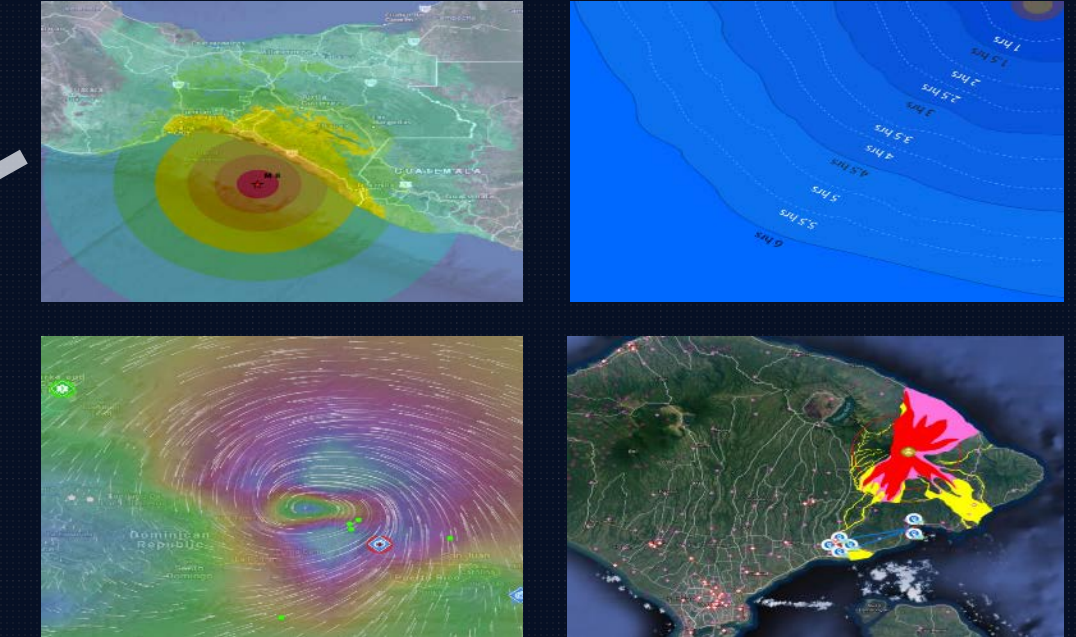
# PDC's integrated approach



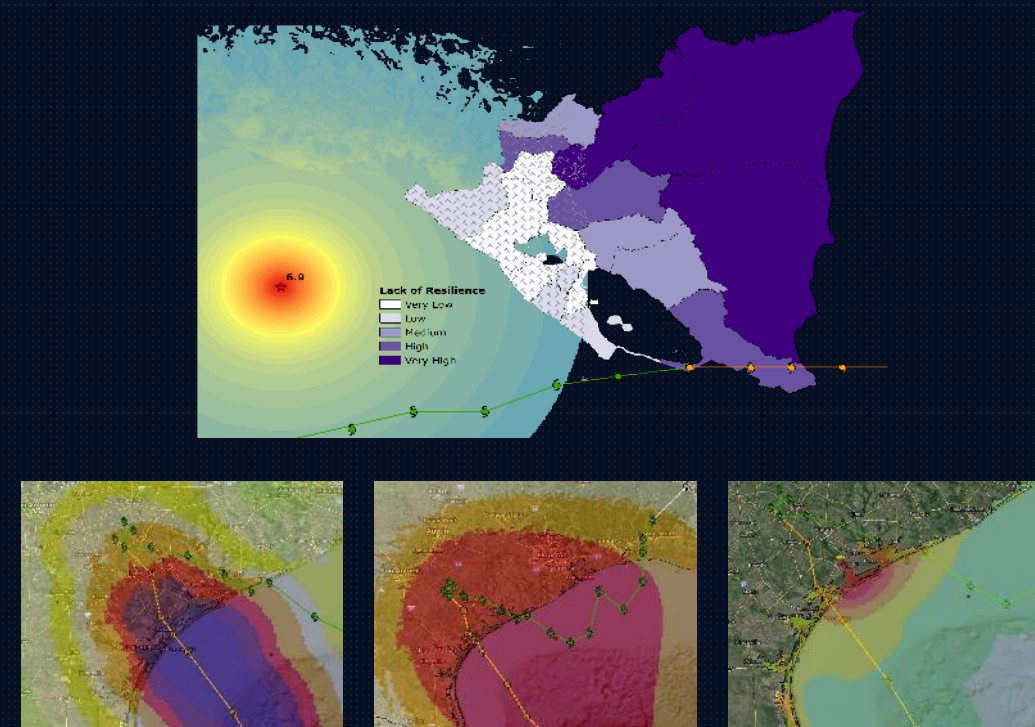
Observational and collection systems



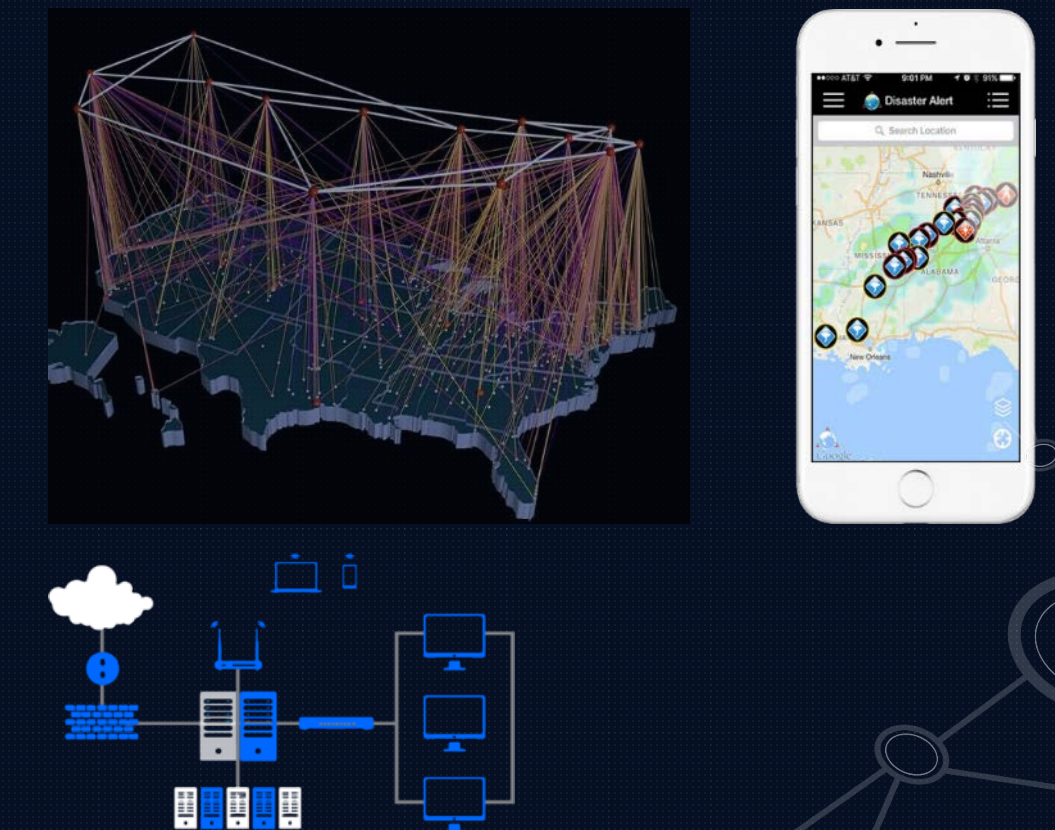
GIS and visualization systems



Advanced modeling and risk analysis



Computing and communication technologies



Improved  
decision support capabilities



Informed decision making

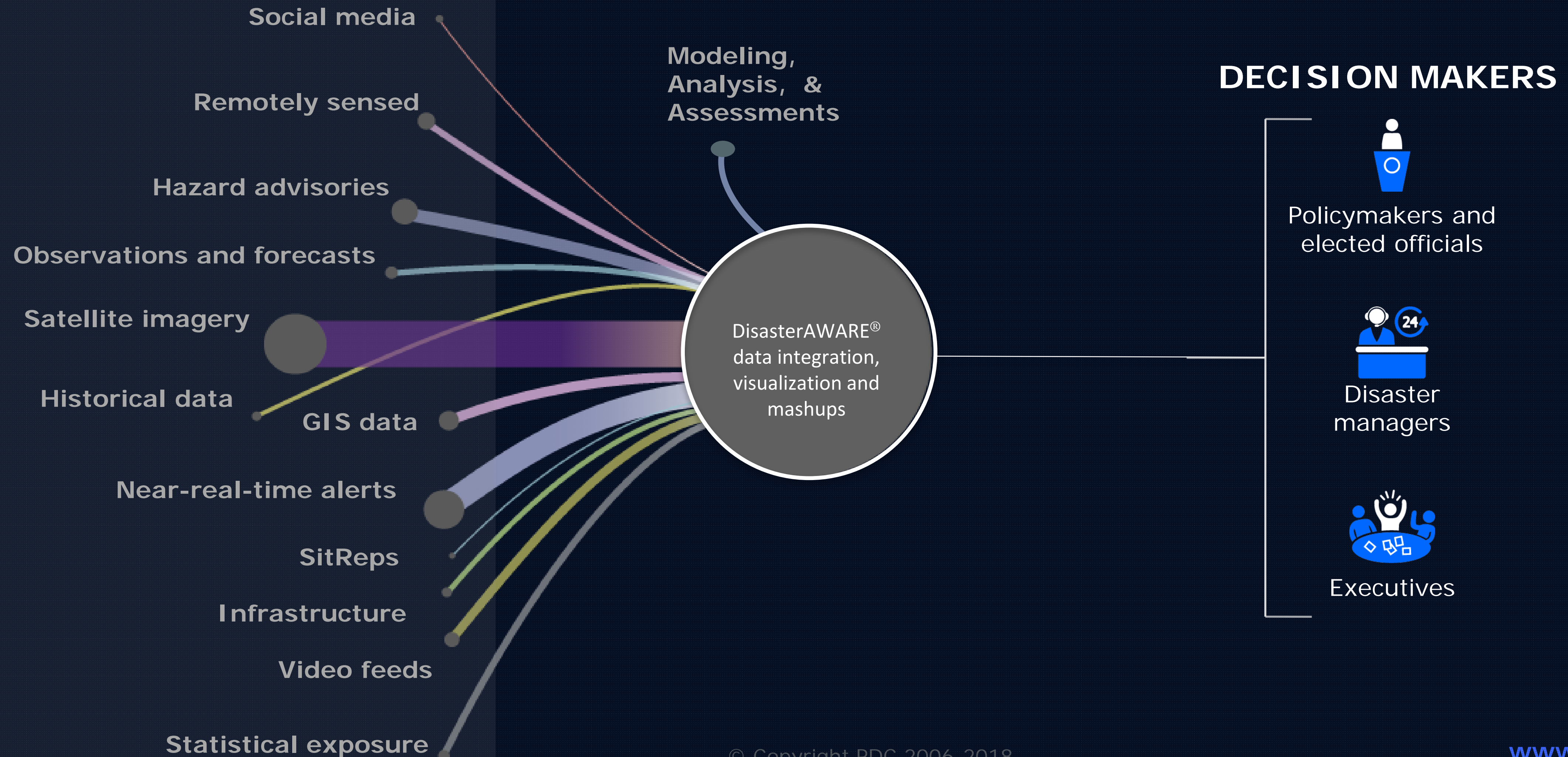


# Making Information Meaningful

## Unparalleled access to data

## Information and Insight

## Actionable Risk Intelligence





# Inform Decision Making

## Gaps and Challenges

### Inadequate meaning

- Warnings are hard to digest
- Information is scattered
- Lack of situational awareness
- Dissemination is limited

### Inadequate insight

- Risks are not understood

Information not easily understood  
isn't particularly useful...



### Hurricane Advisory

HURRICANE DAVID FORECAST/ADVISORY NUMBER  
NATIONAL WEATHER SERVICE MIAMI FL EP0402  
0000Z WED AUG 29 1979

HURRICANE CENTER LOCATED NEAR 13.7N 58.0W  
POSITION ACCURATE WITHIN 30 NM

MOVEMENT TOWARD THE WEST-NORTHWEST

MAXIMUM CENTRAL PRESSURE 942 MB  
WINDS 120 KT WITH GUSTS 135 KT  
WINDS VARY GREATLY IN EACH QUADRANT  
LARGEST RADII EXPECTED ANYWHERE

HURRICANE CENTER LOCATED NEAR 13.7N 58.0W  
HURRICANE CENTER LOCATED NEAR 13.7N 58.0W

### Tsunami Advisory

Starting time: HST 11/14/2005 11:39  
Starting time: UTC 11/14/2005 21:39  
Location: longitude 144.8 EAST latitude 38.2 NORTH  
Magnitude: 7.3

Arrival Time is in HST

Longitude	Latitude	Arrival Time	Location
141.750E	39.000N	2005/11/14 12:22:45	Ofunato, Honshu
145.570E	43.280N	2005/11/14 13:05:57	Hanasaki, Hokkaido
138.230E	34.600N	2005/11/14 13:13:24	Omaezaki, Honshu
132.970E	32.780N	2005/11/14 13:50:29	Tosashimizu, Shikoku
163.000E	56.000N	2005/11/14 14:39:53	Ust-Kamchatsk
156.000E	50.600N	2005/11/14 14:49:05	Severo-Kurilsk
127.670E	26.220N	2005/11/14 14:58:13	Naha, Okinawa
166.618E	19.290N	2005/11/14 15:06:46	Wake
166.621E	19.289N	2005/11/14 15:06:47	Wake
144.652E	13.438N	2005/11/14 15:11:36	Guam
174.103E	52.731N	2005/11/14 15:16:28	Shemya

### Earthquake Advisory

MAG	UTC DATE-TIME y/m/d h:m:s	LAT deg	LON deg	DEPTH km	Region
5.9	2006/04/29 04:06:13	-11.313	118.534	30.0	SOUTH OF S
5.1	2006/04/28 18:01:28	41.766	80.669	31.8	SOUTHERN
5.2	2006/04/28 09:05:26	23.978	121.655	8.2	TAIWAN
		6.050	-173.789	75.2	TONGA
		5.337	-105.586	10.0	EASTER ISL
		6.174	147.711	87.8	EASTERN NE
		0.321	30.026	10.0	LAKE EDWA
		4.499	95.944	74.5	NORTHERN



# Overcoming challenges

## For Informed Decision Making



### Tools for decision makers

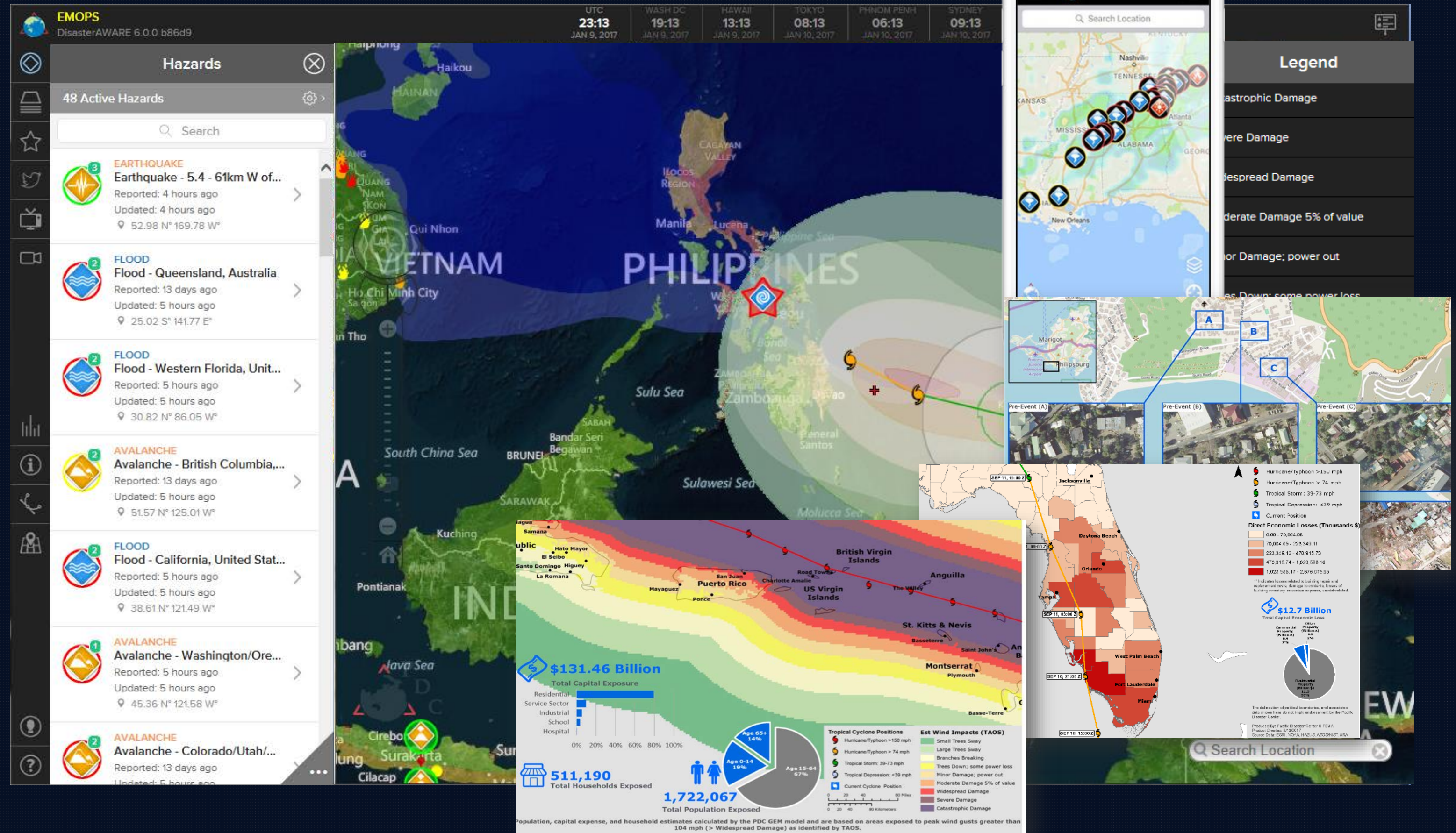
Simplify, automate, integrate

Identify risks and exposure

Estimate impacts

Widely disseminate

Update assessments





# Overcoming challenges

## For Informed Decision Making

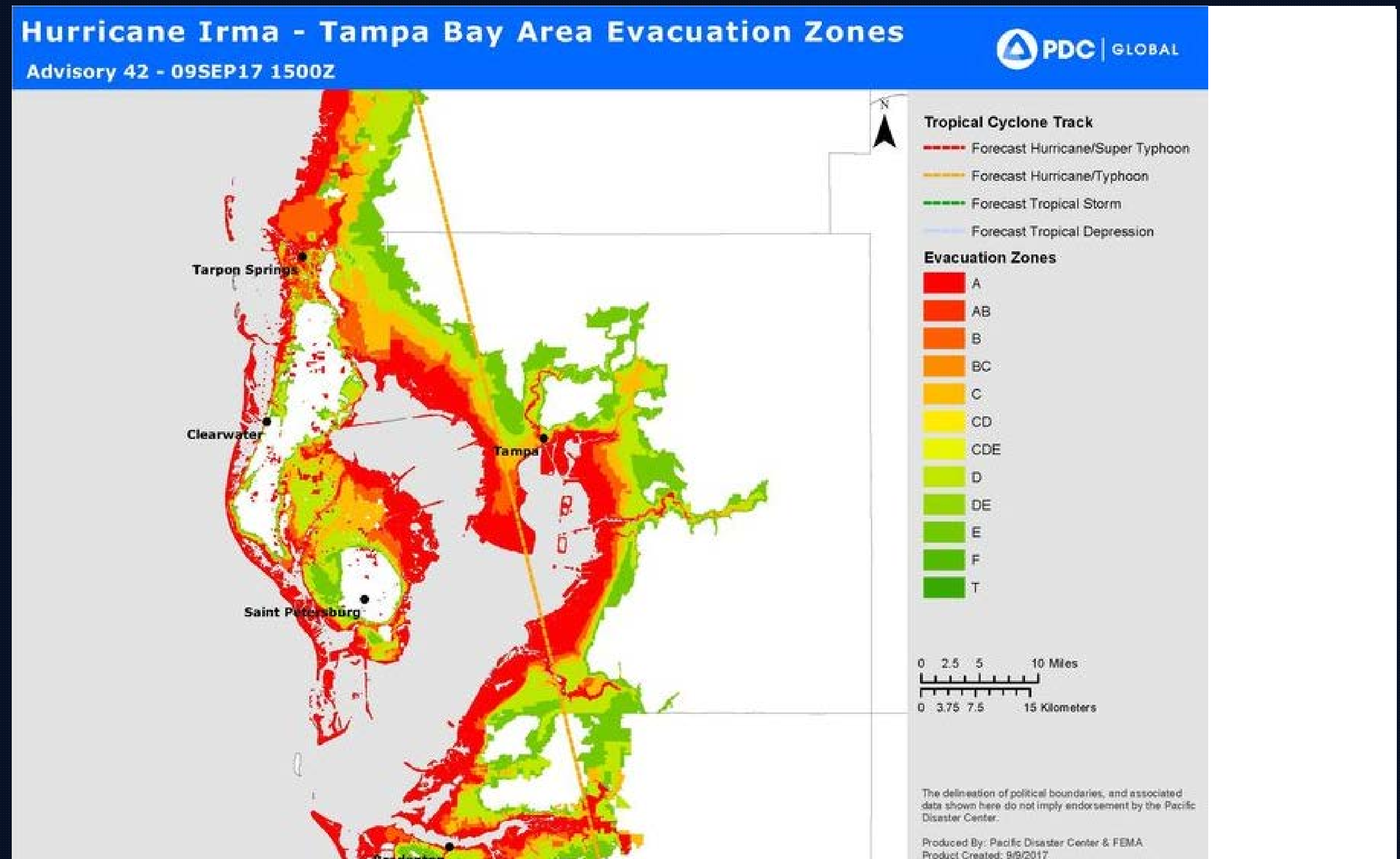
Tools for decision makers

Knowledge for policymakers

Anticipate needs

Understand socioeconomic risk  
and vulnerability

Translate scientific data  
into actionable information





# Overcoming challenges

## For Informed Decision Making

Tools for decision makers  
Knowledge for policymakers  
Capacity for practitioners

Exercises and Workshops

Training





# Evidence-based decision making



Tools for  
decision makers

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Knowledge for  
policy makers

---



Capacity for  
practitioners

---



# DisasterAWARE®

## Key features



Hazard information  
real-time and historical



Integrated  
modeling



Spatial Maps  
& notifications



Analytical reports  
& assessments



Infrastructure  
& baseline data



Observations  
and forecasts



Collaboration  
& SITREPS



Population



# DisasterAWARE®

## Key features



Touch friendly  
for mobile devices



Compatible with  
all devices & browsers



User imports of  
geospatial data



Bookmark  
sharing of geospatial  
layers



Data file  
exchange  
geospatial layers



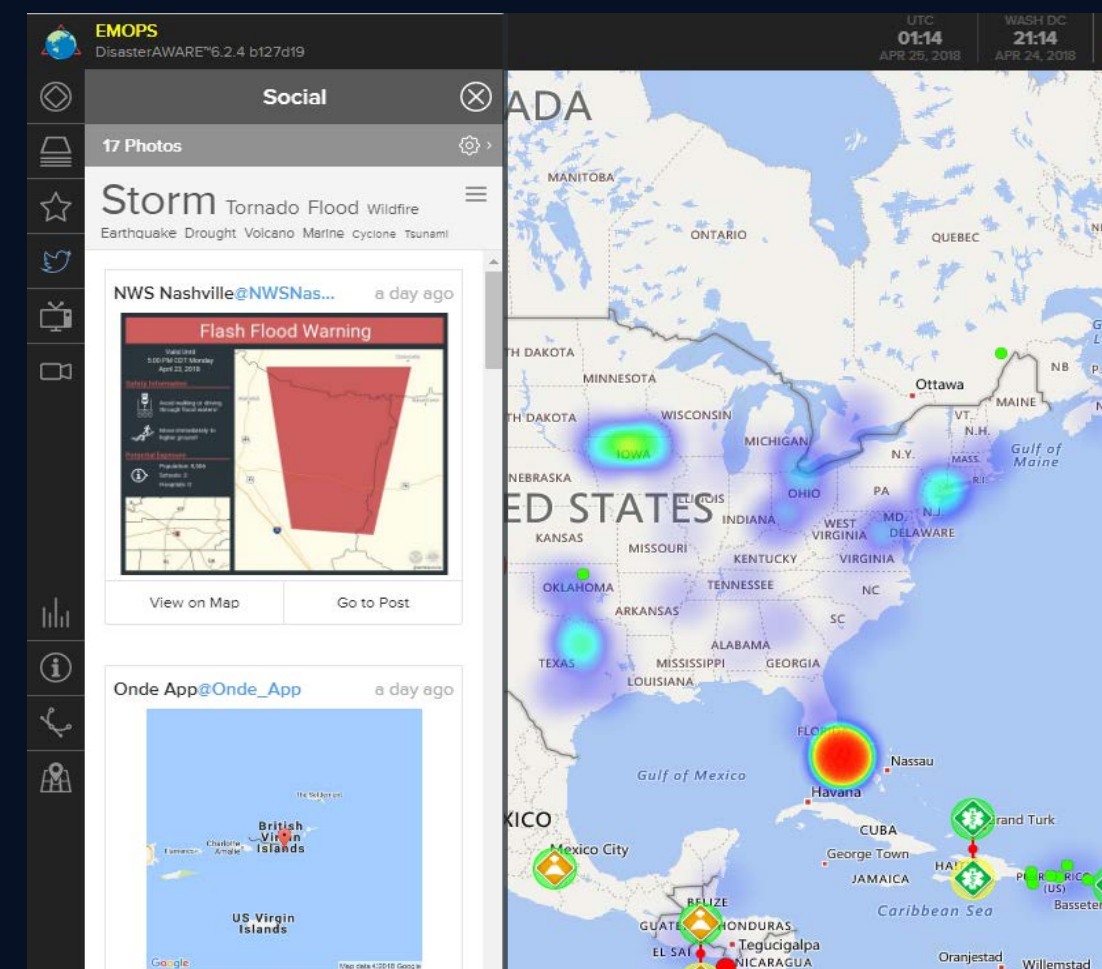
Offline mode for  
remote areas or  
lost network



# DisasterAWARE®

## Other key features

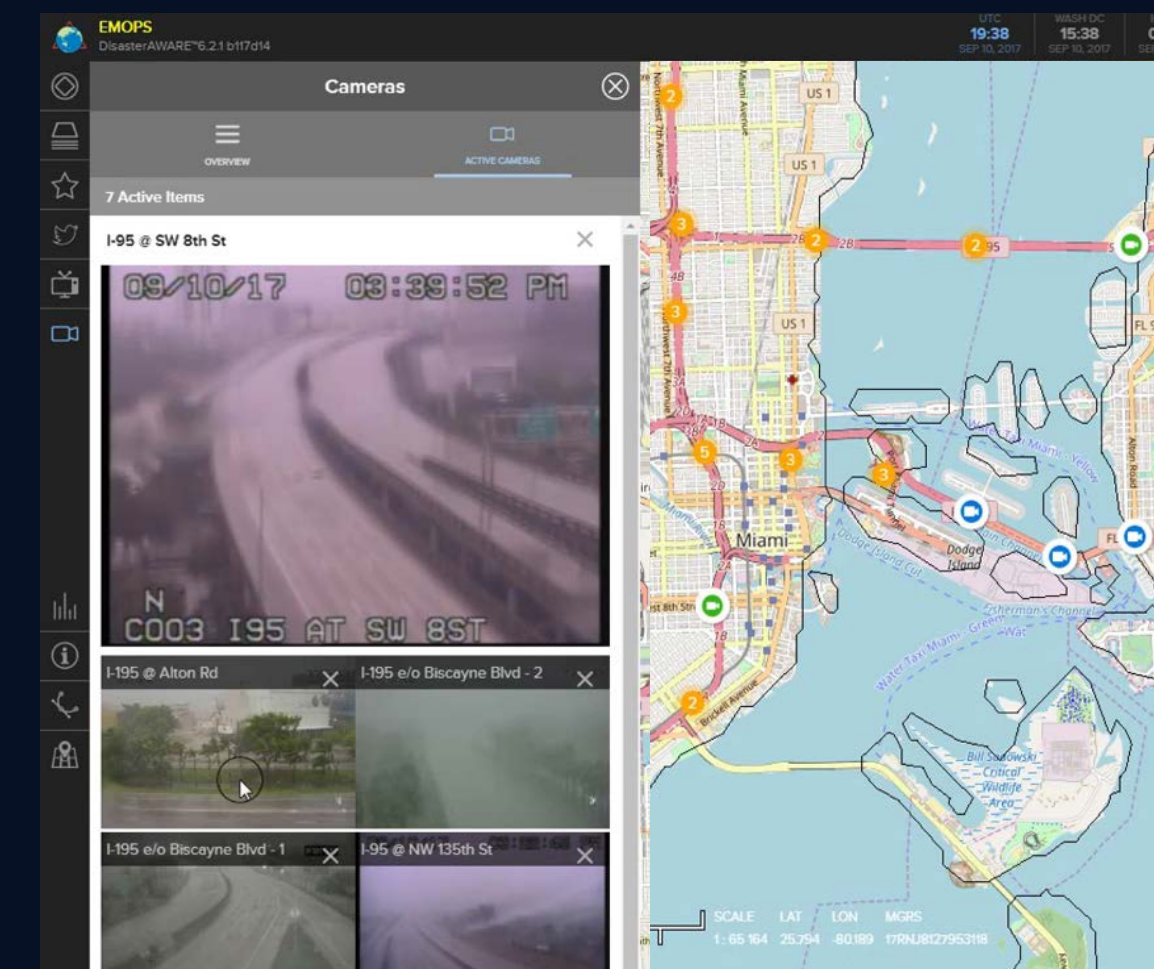
### Twitter Heat Maps



### TV News Streaming



### Live Traffic Cams



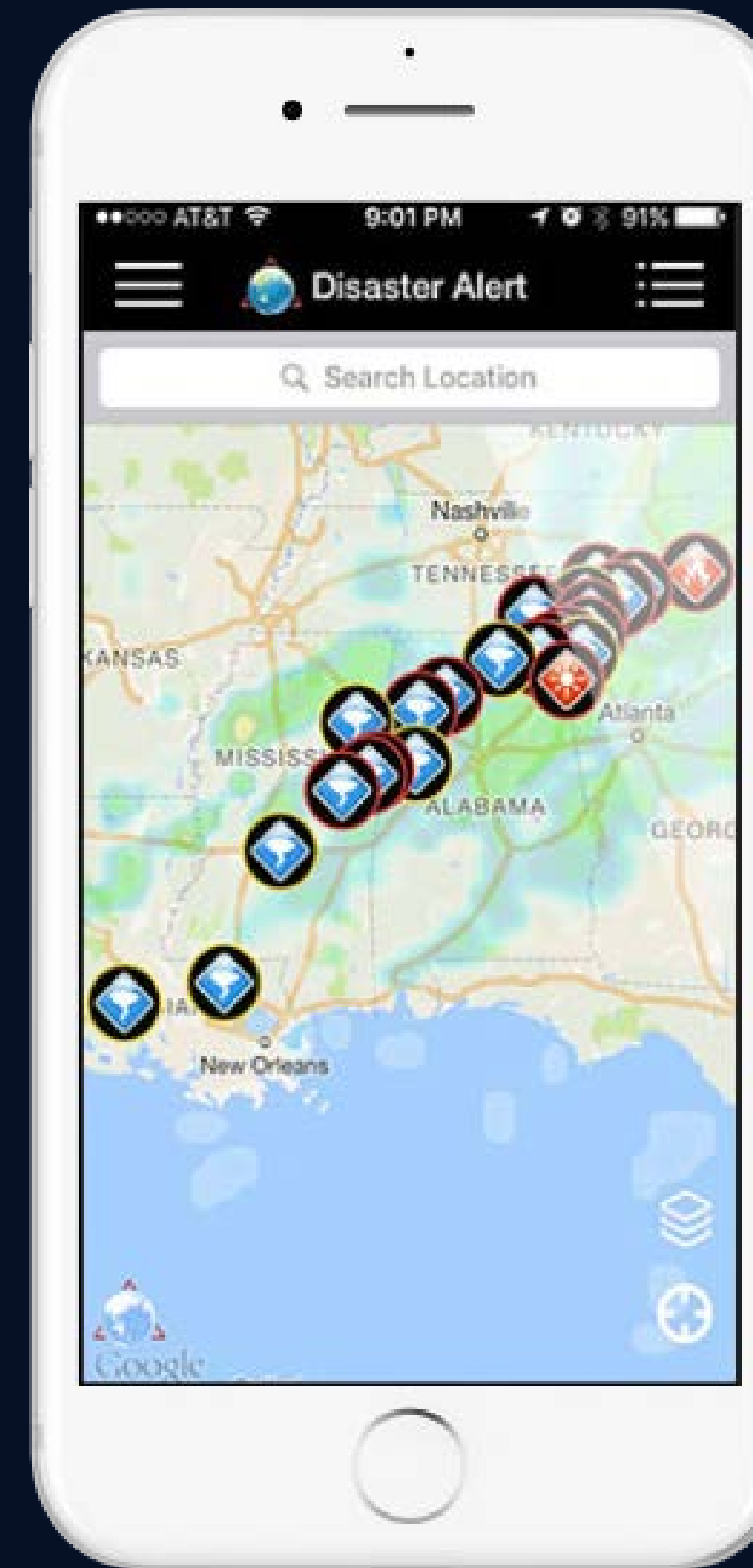


# Disaster Alert™ App



**Disasters happen fast.  
We alert you faster.**

Free to the public (iOS and Android),  
covering active hazards around the globe.

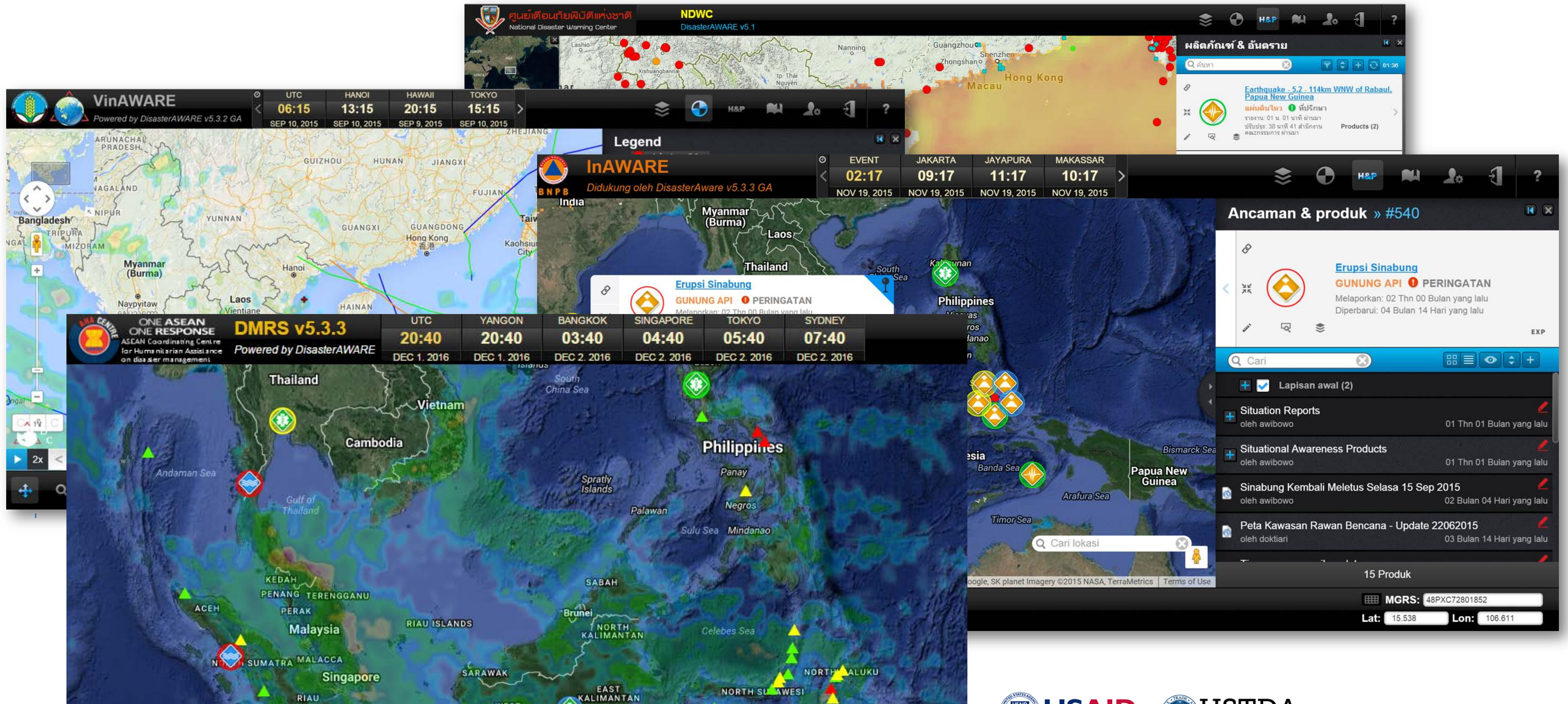


**Over 1.7 million  
downloads.**

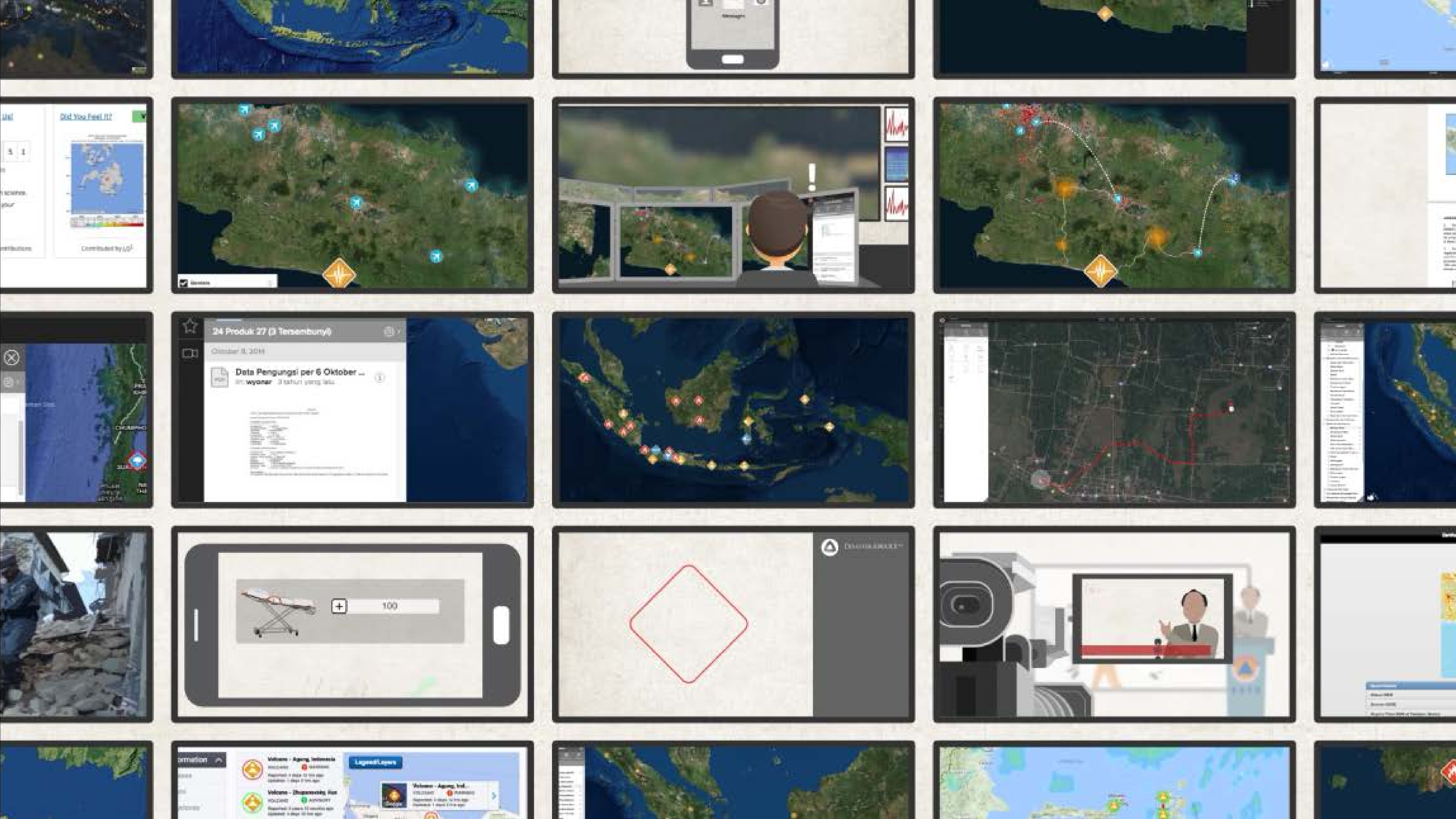




# DisasterAWARE™ in Southeast Asia









# Regional and National Capacity Development for Hazard Monitoring, Early Warning, and Disaster Management Decision Support

Enhance capabilities of AHA Centre and AMS NDMOs through access to reliable, timely, and authoritative information via DisasterAWARE disaster monitoring, warning, and decision support system.



**Funding**



**Duration**

18 months  
Mar 2019 to  
Sept 2020



**Beneficiaries**

ASEAN Region  
Population:  
645.57 M



Enhanced capacity to access automated international, regional, national, and local (including crowdsourced) hazard information and supporting infrastructure data



Information shared between agencies



Alerts and warnings disseminated to at-risk communities and their populations.





# Regional Program Activities



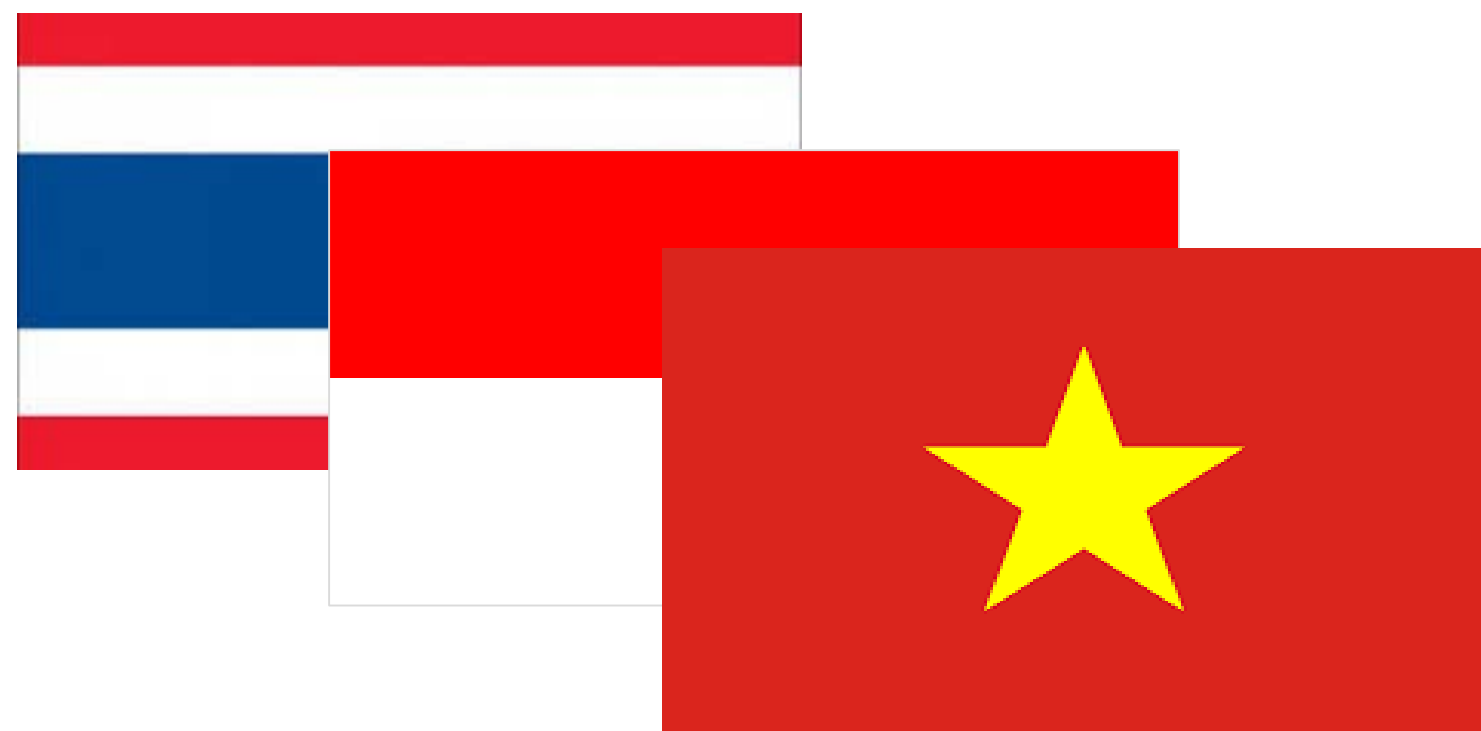
AHA Centre: Continued technical assistance to AHA Centre for the maintenance, operations, and institutionalization of DMRS within the ASEAN region



## 01

### Custom Deployments

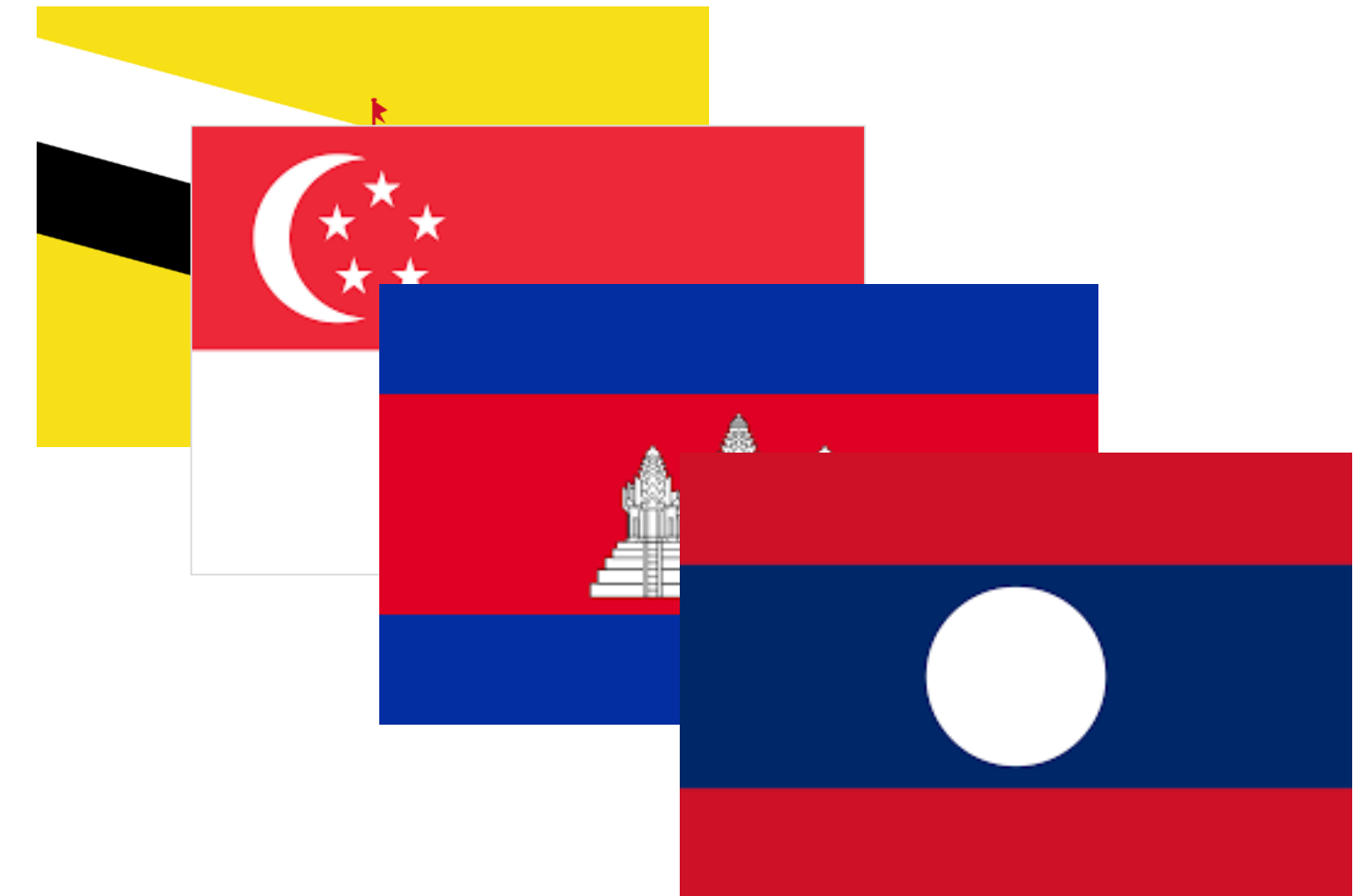
- Deployment of a Philippines-national version of DisasterAWARE: **PhilAWARE**



## 02

### System Upgrades and Enhancements

- Upgrade Thailand's **DisasterAWARE NDWC** and Deliver Training
- Upgrade Vietnam's **VinAWARE** and Deliver Training
- Upgrade Indonesia's **InAWARE** and Deliver Training



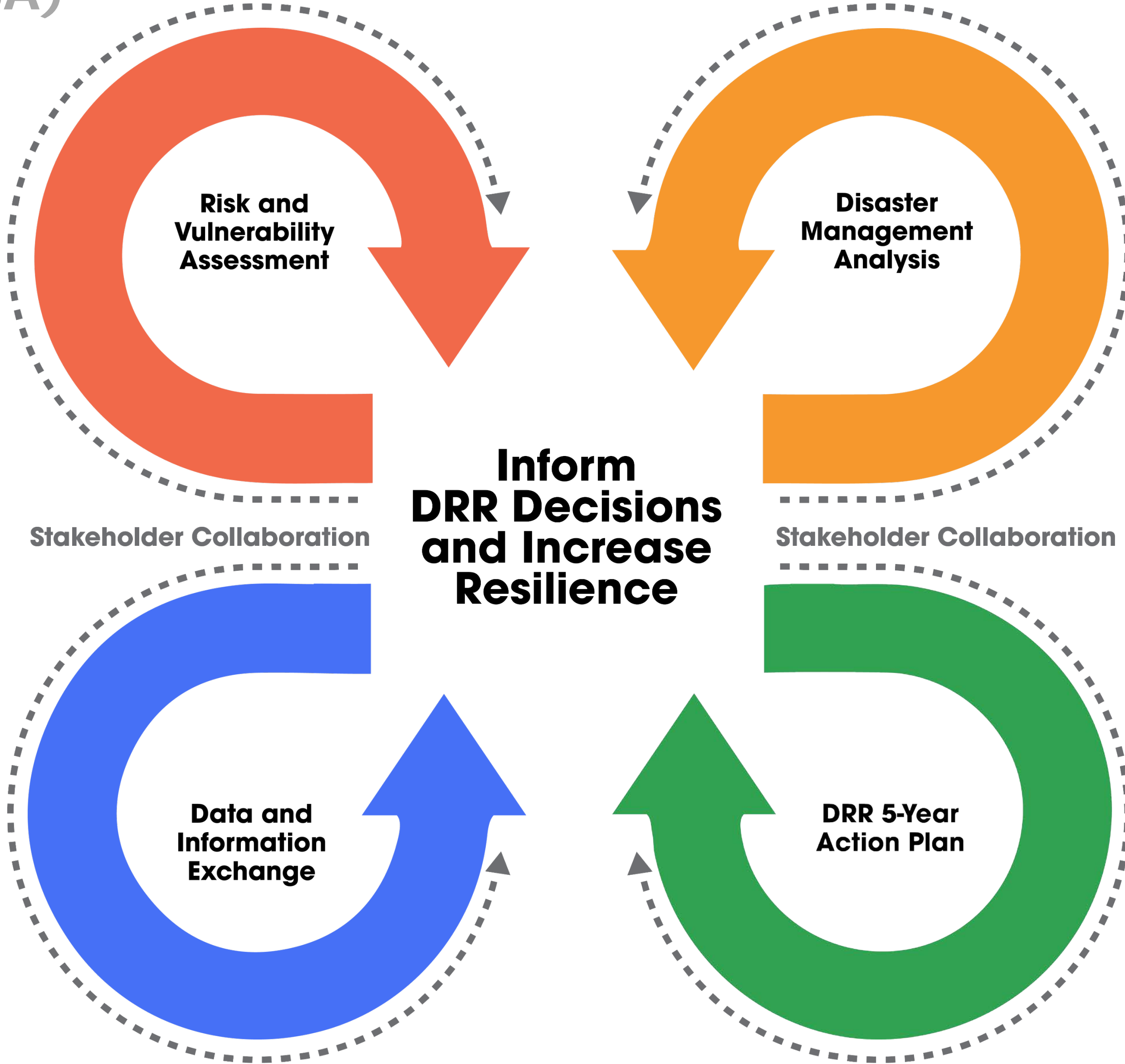
## 03

### Technical Assistance

- Strengthen Brunei, Cambodia, Laos, and Singapore NDMO capacity to access, operate and apply **DMRS** for national and regional DM/DRR and HA coordination activities



# National Disaster Preparedness Baseline Assessment (NDPBA)





# NDPBA Locations

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## NDPBA Nations

- Argentina (2018)
- Belize
- Dominican Republic
- El Salvador
- Guatemala
- Honduras
- Indonesia (2018)
- Jamaica
- Nicaragua
- Panama (2018)
- Paraguay (2018)
- Peru
- Philippines (2018)
- Sierra Leone (2018)
- Trinidad and Tobago (2018)
- Viet Nam (2018)





Better solutions.

# Safer, more resilient world.



@PDC\_Global



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[www.pdc.org](http://www.pdc.org)



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