

2017 – a year of disaster

Hurricane Harvey captured from ISS, Aug 25, 2017



NASA | Reuters

Are We Seeing An Unusual Number Of Natural Disasters In 2017?

Natural Disasters

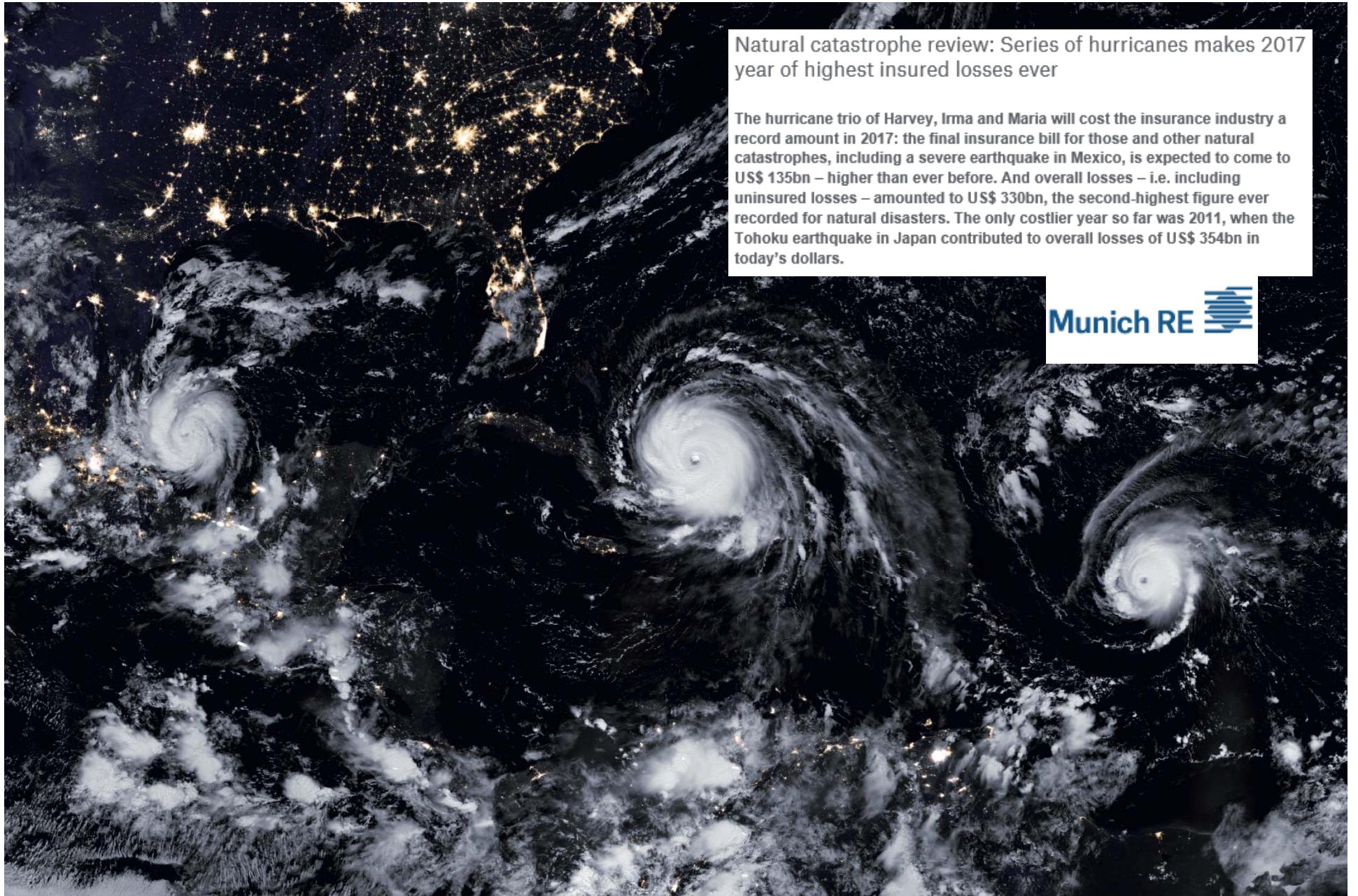
Hurricanes cause record losses in 2017 - The year in figures

In terms of overall losses, 2017 was the second-costliest year ever for natural disasters. Losses from weather-related disasters broke all previous records.

04.01.2018

Petra Löw





Natural catastrophe review: Series of hurricanes makes 2017 year of highest insured losses ever

The hurricane trio of Harvey, Irma and Maria will cost the insurance industry a record amount in 2017: the final insurance bill for those and other natural catastrophes, including a severe earthquake in Mexico, is expected to come to US\$ 135bn – higher than ever before. And overall losses – i.e. including uninsured losses – amounted to US\$ 330bn, the second-highest figure ever recorded for natural disasters. The only costlier year so far was 2011, when the Tohoku earthquake in Japan contributed to overall losses of US\$ 354bn in today's dollars.

Munich RE



Hurricane Irma moving westward over the Caribbean Islands [September 5, 2017]



2017

- Disasters dominated by climate-related events (heavy rains and powerful hurricanes)
- Flooding
- Landslides
- Earthquakes
- Volcanoes
- Wildfires
- Asteroids fly-by

Losses from natural
catastrophes
2017

US\$ 330bn



Costliest hurricane
season on record

US\$ 215bn



© Munich Re NatCatSERVICE

Less than half of the
losses insured

**US\$ 135bn
(41%)**

Floods in South Asia:
a humanitarian disaster

**2,700 people
killed**



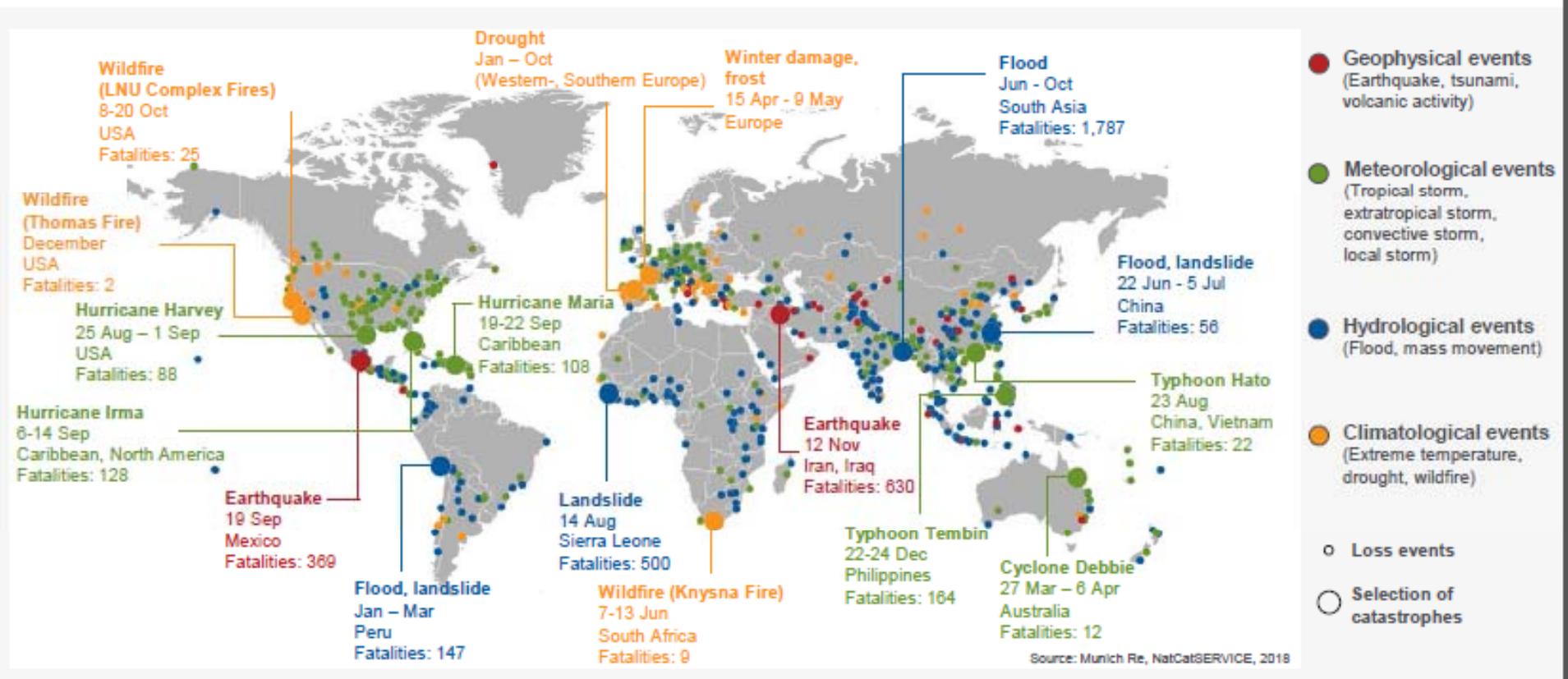
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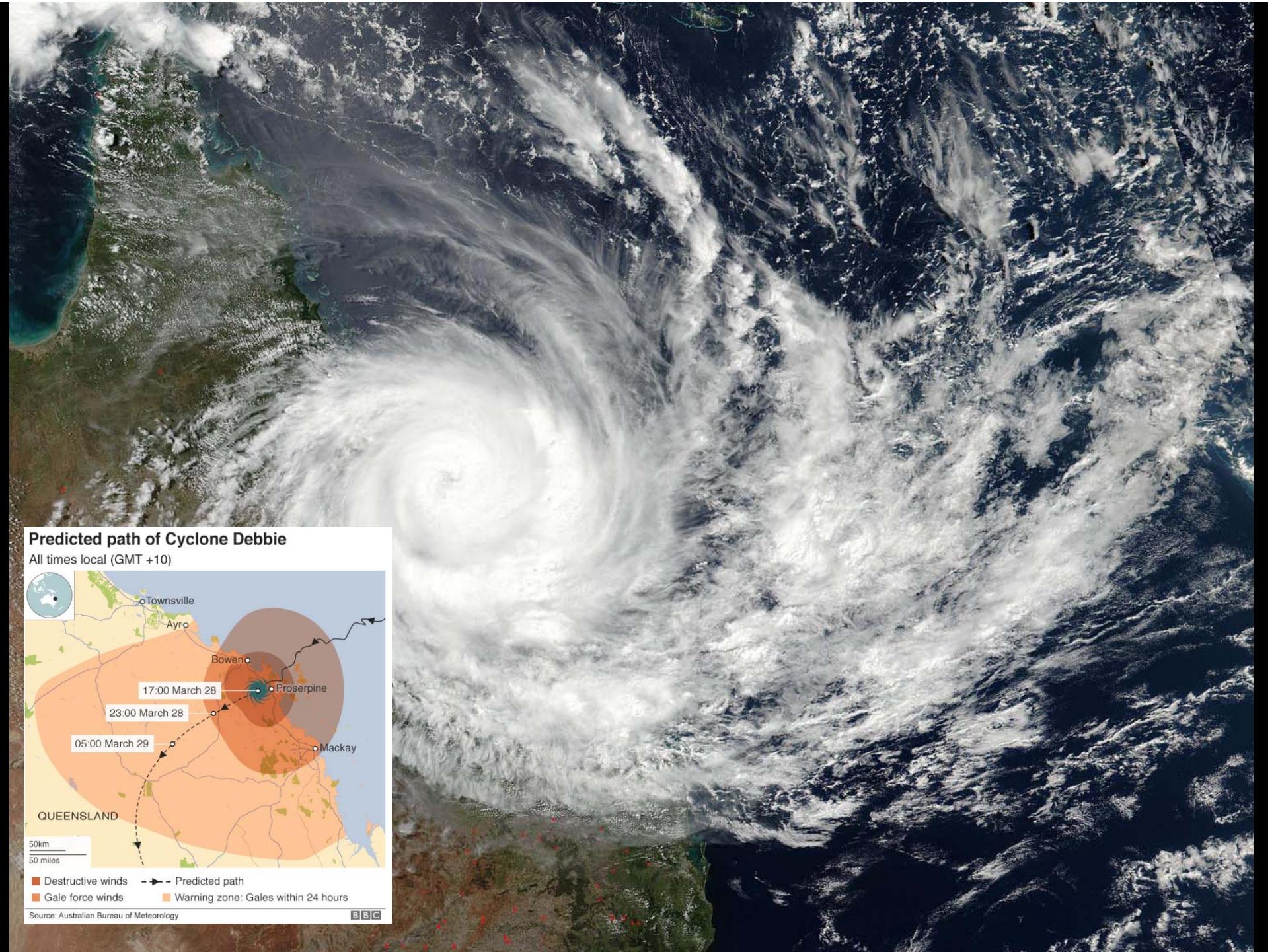
Loss events worldwide 2017

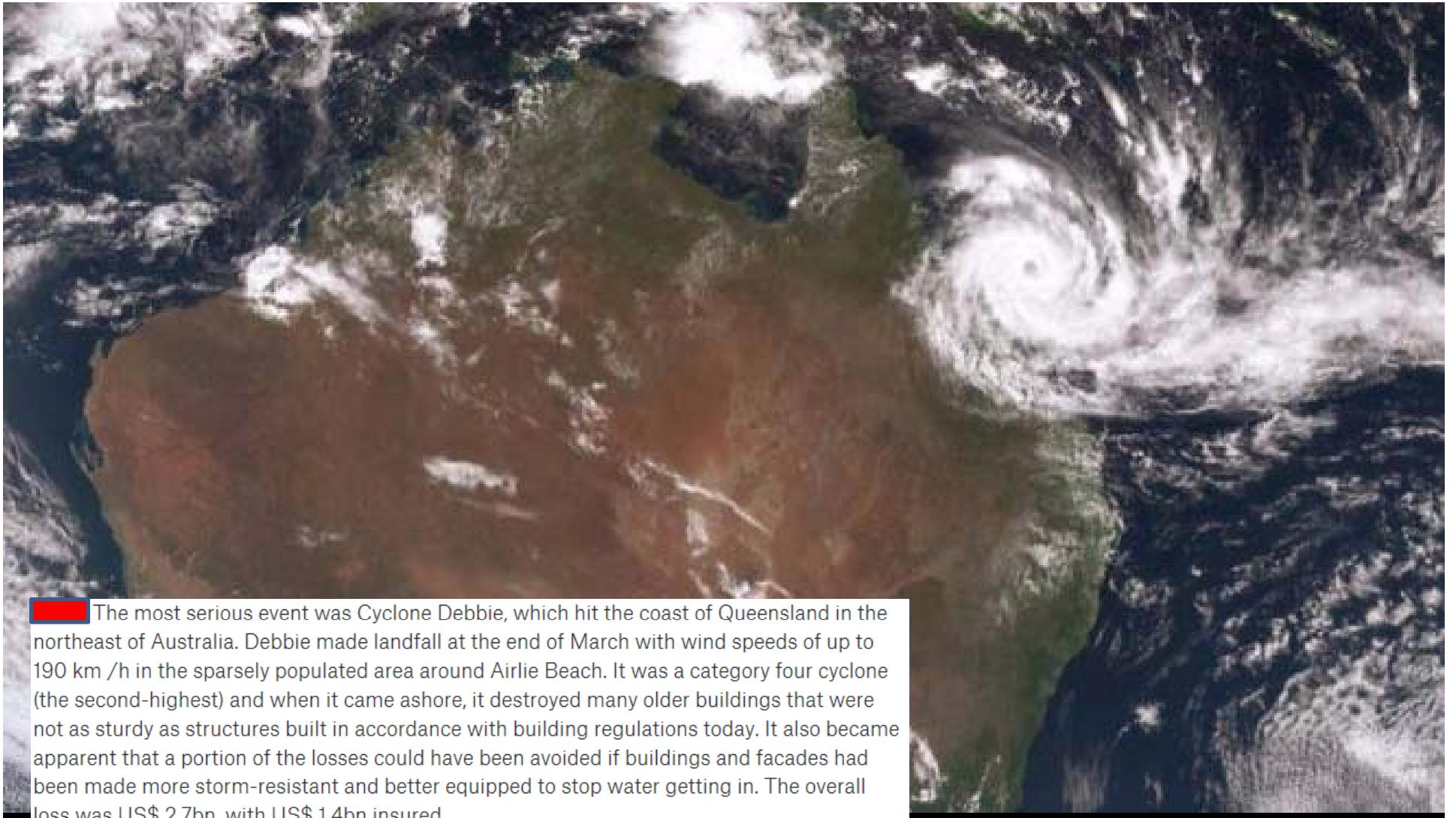
Geographical overview



CYCLONE DEBBIE, QUEENSLAND COAST, NE AUSTRALIA [March 2017]

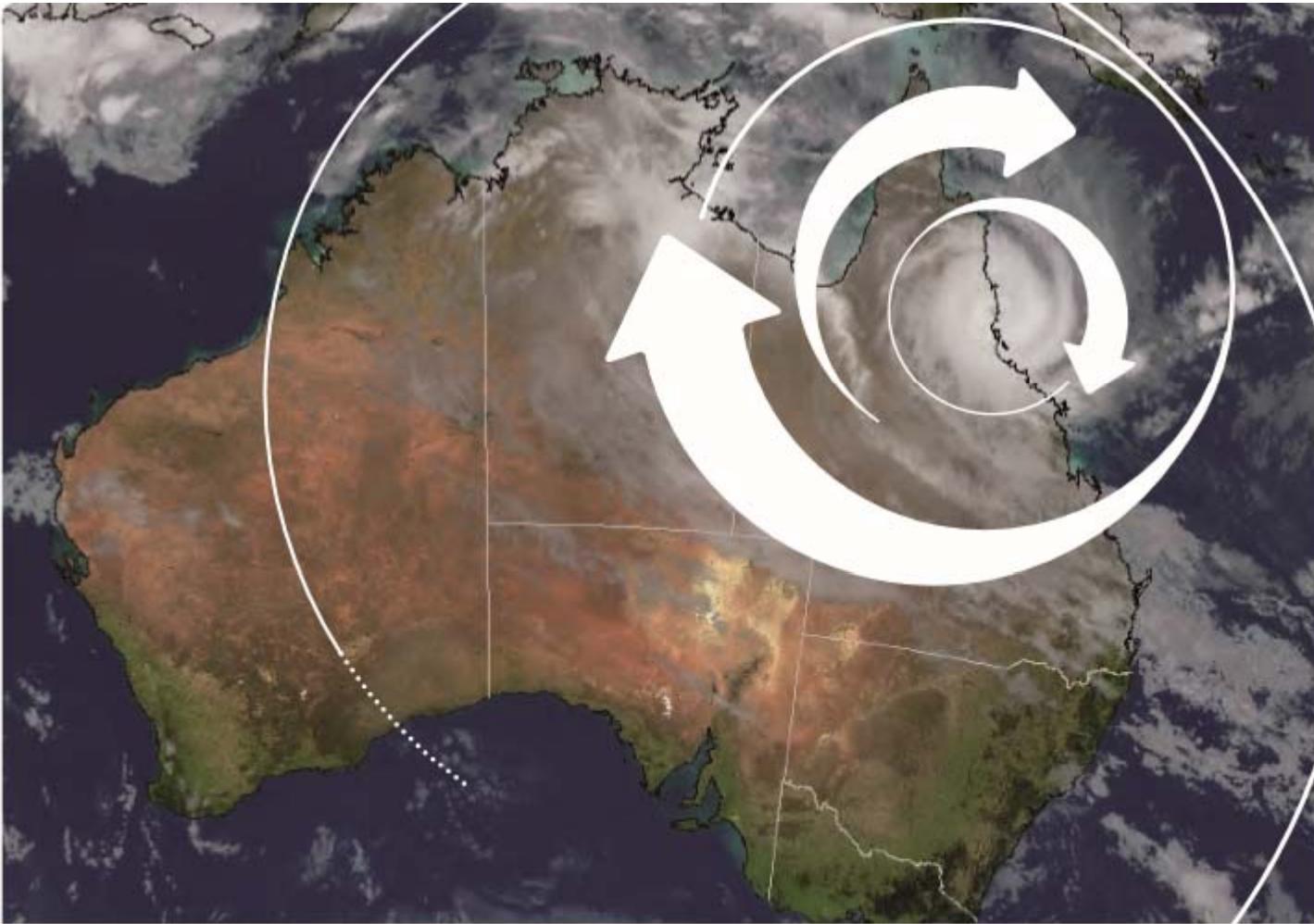






The most serious event was Cyclone Debbie, which hit the coast of Queensland in the northeast of Australia. Debbie made landfall at the end of March with wind speeds of up to 190 km /h in the sparsely populated area around Airlie Beach. It was a category four cyclone (the second-highest) and when it came ashore, it destroyed many older buildings that were not as sturdy as structures built in accordance with building regulations today. It also became apparent that a portion of the losses could have been avoided if buildings and facades had been made more storm-resistant and better equipped to stop water getting in. The overall loss was US\$ 2.7bn, with US\$ 1.4bn insured.



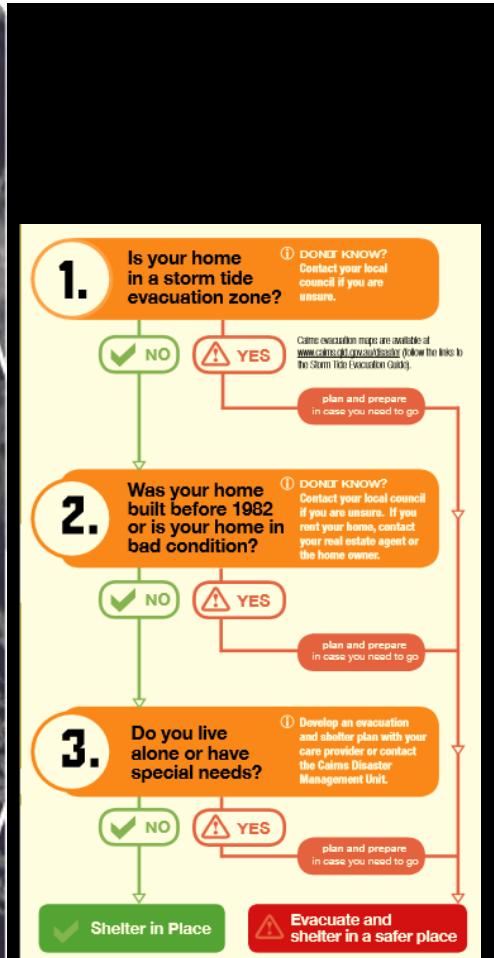


Guideline

Disaster Management Act 2003

Mitigating the adverse impacts of cyclones

Evacuation and shelter



CYCLONE MITIGATION – QUEENSLAND



Tully State High School Cyclone Shelter, Queensland, opened in 2013 [multi-purpose building will hold 800 persons in the event of cyclone]

CYCLONE MITIGATION – QUEENSLAND

Features

The shelters are:

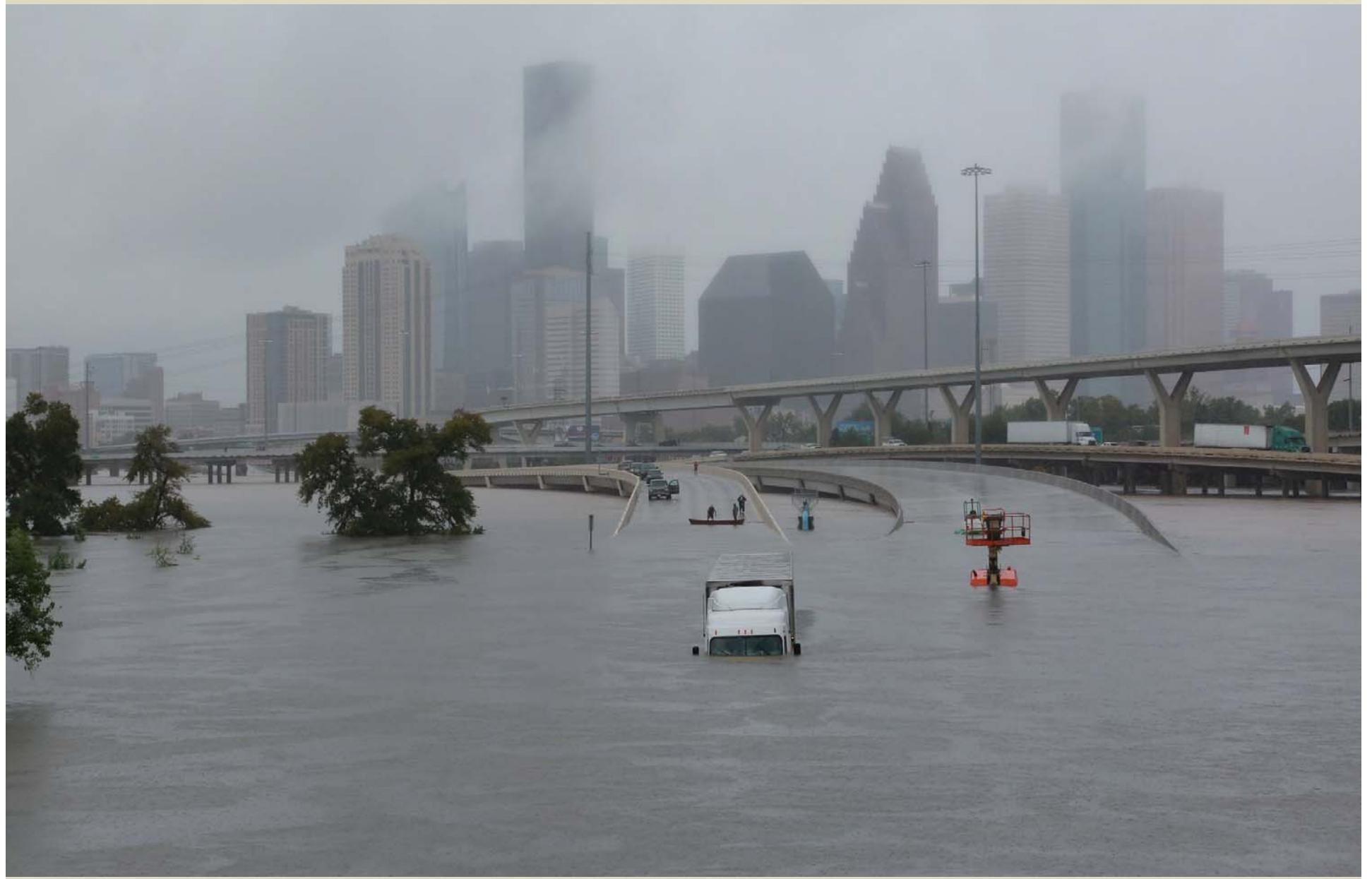
- capable of providing protection from winds up to 306km/h experienced in a Category 5 cyclone
- located outside storm tide inundation areas and not vulnerable to landslip and creek or river flooding
- located so that the floor level of the shelter building will be above the height of a 1-in-10,000-year storm tide event or a 1-in-500-year defined flood event
- located sufficiently away from significant hazards such as hazardous materials, large trees, power or communications towers and potential sources of large windborne debris
- located in communities where large numbers of people are at risk of storm tide inundation, or
- located in a centre away from the coastline to which a coastal community at risk of storm tide inundation can safely evacuate prior to the impact of the cyclone.



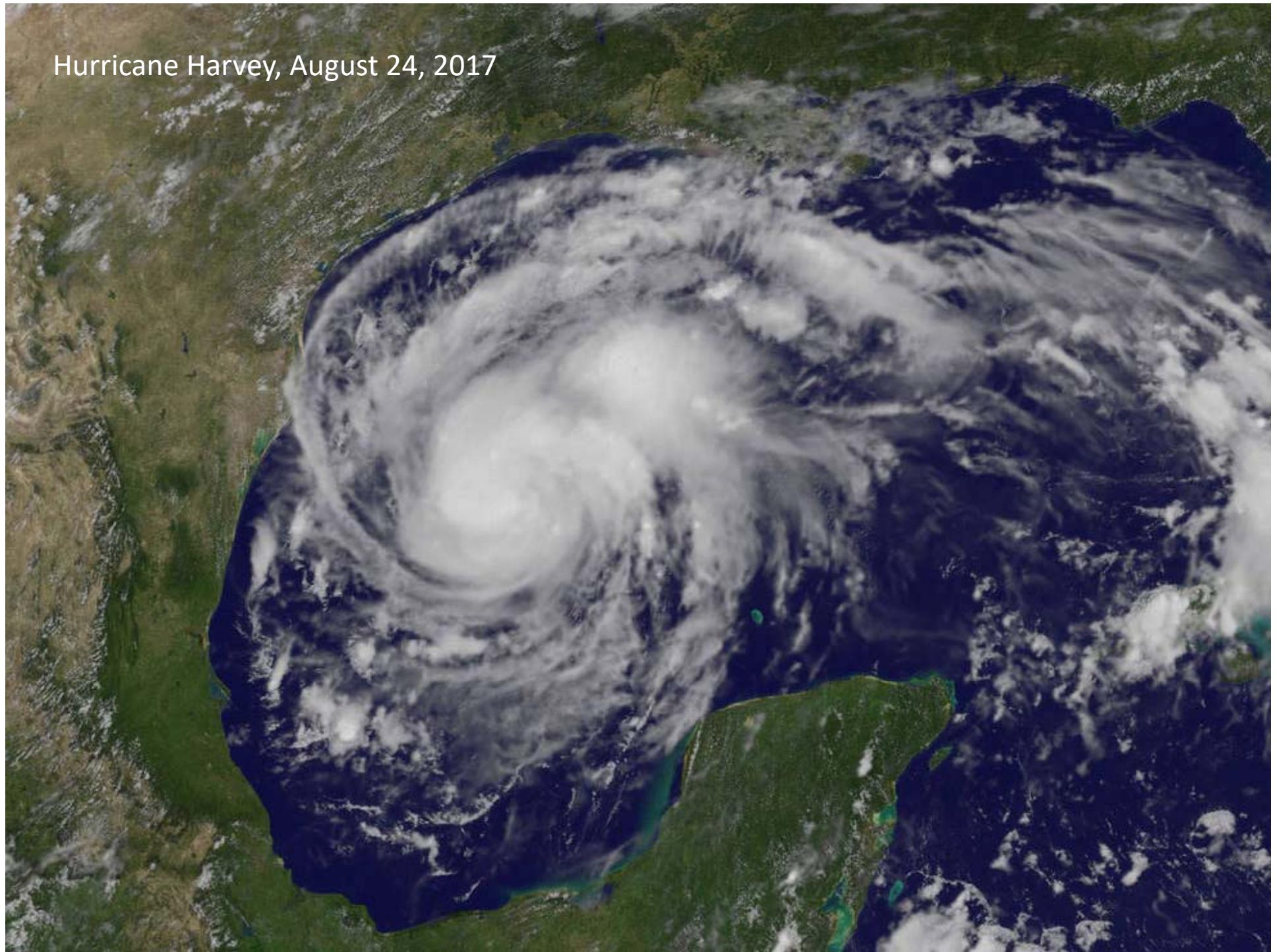
Port Douglas State High School Cyclone Shelter



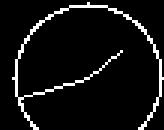
HURRICANE HARVEY (August 2017)



Hurricane Harvey, August 24, 2017



01:42 UTC
08/26/17



01:42 UTC
08/26/17

1 / 12

Max reflectivity 63 dBZ

Vol. cov. pattern 212

5 dBZ

LIGHT

10

15

20

25

MODERATE

30

35

40

45

HEAVY

50

55

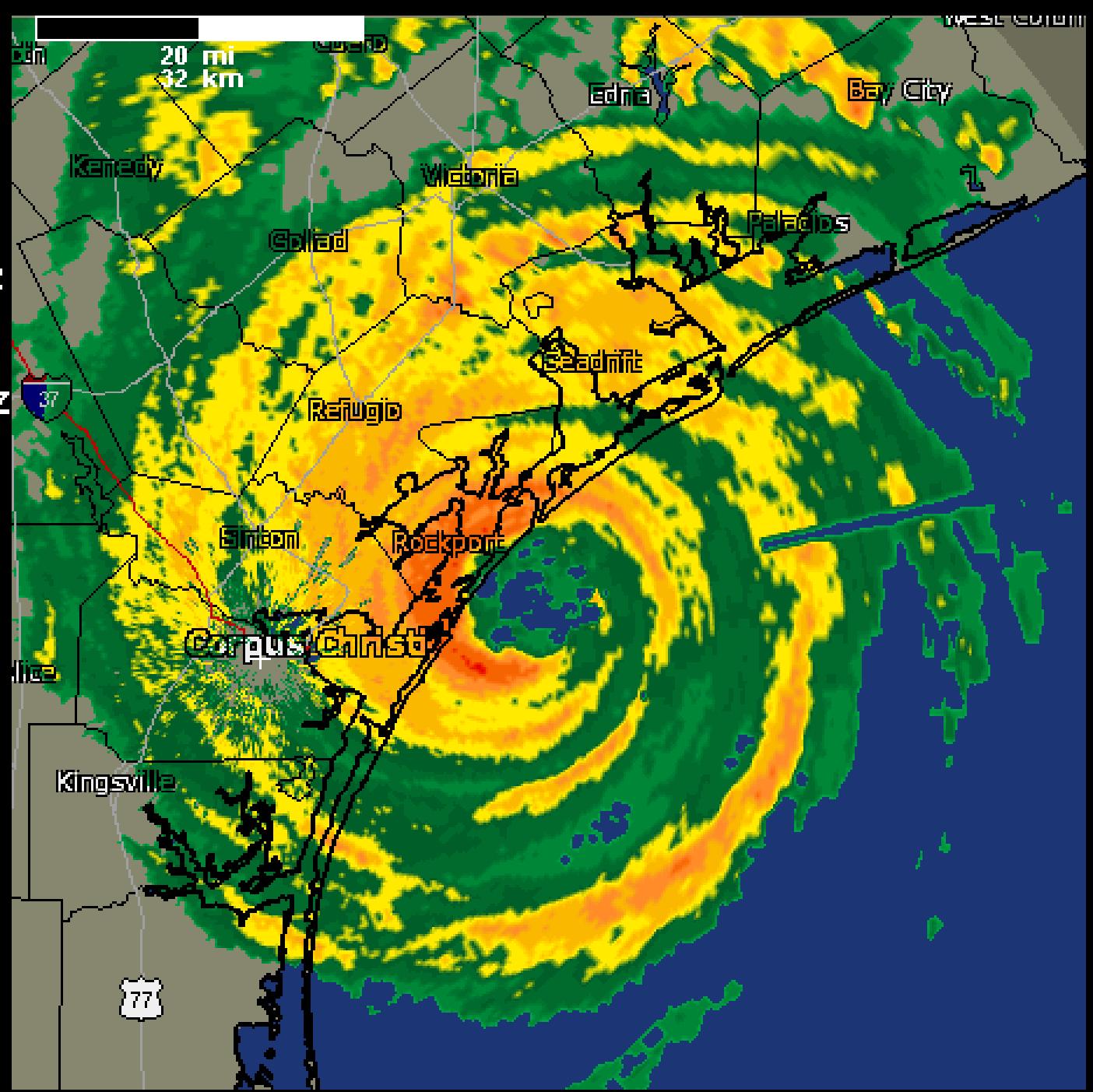
60

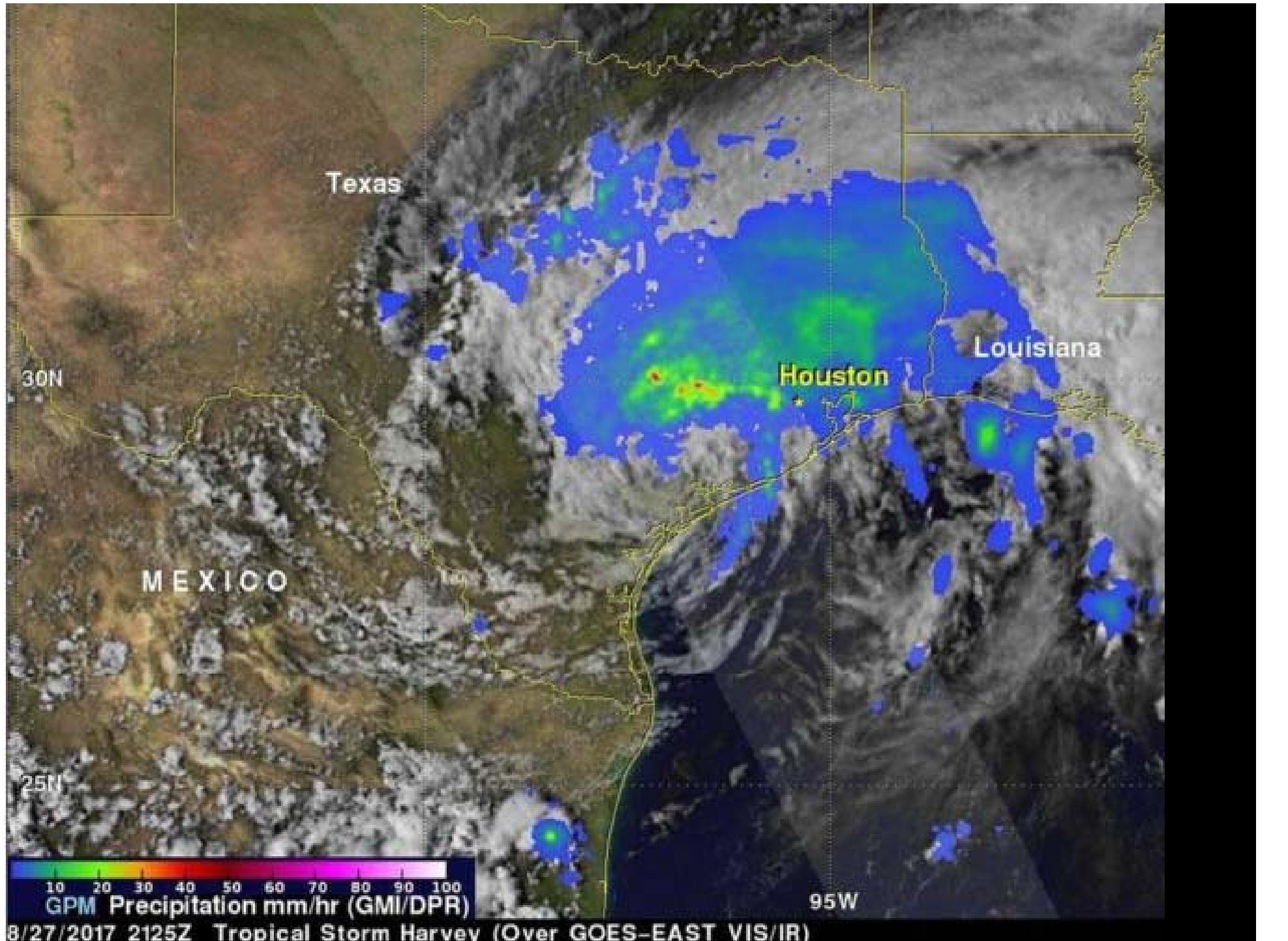
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EXTREME

70

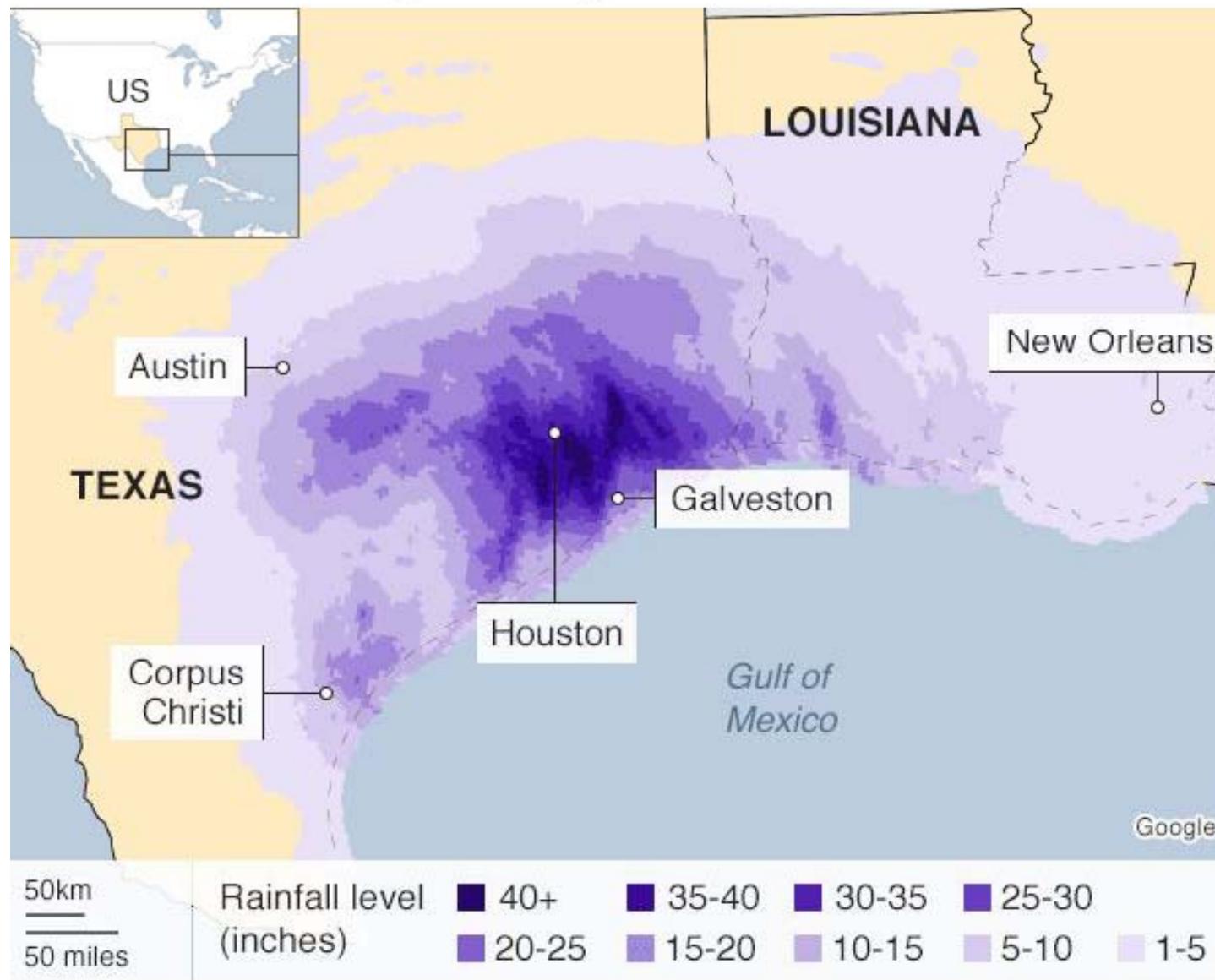
75





Four days of rain

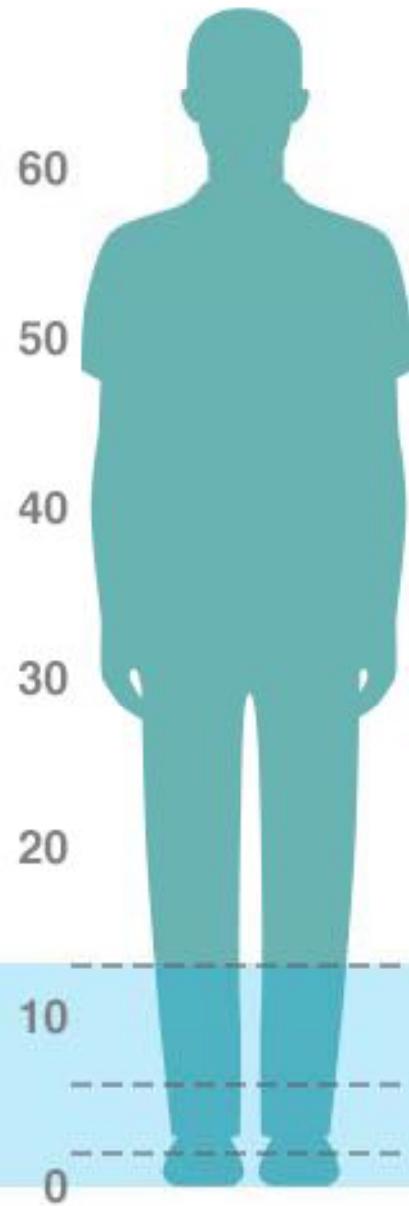
Cumulative rainfall from 09:00 BST, Friday 25th August to 09:00 BST, Tuesday 29th August



BBC



Risks posed by heavy rainfall



“The greatest threat to life and property remains the ongoing extreme rainfall and subsequent prolonged and catastrophic flash flooding”

National Weather Service

Flooding levels will depend on existing groundwater, river levels and sea storm surges

330 mm

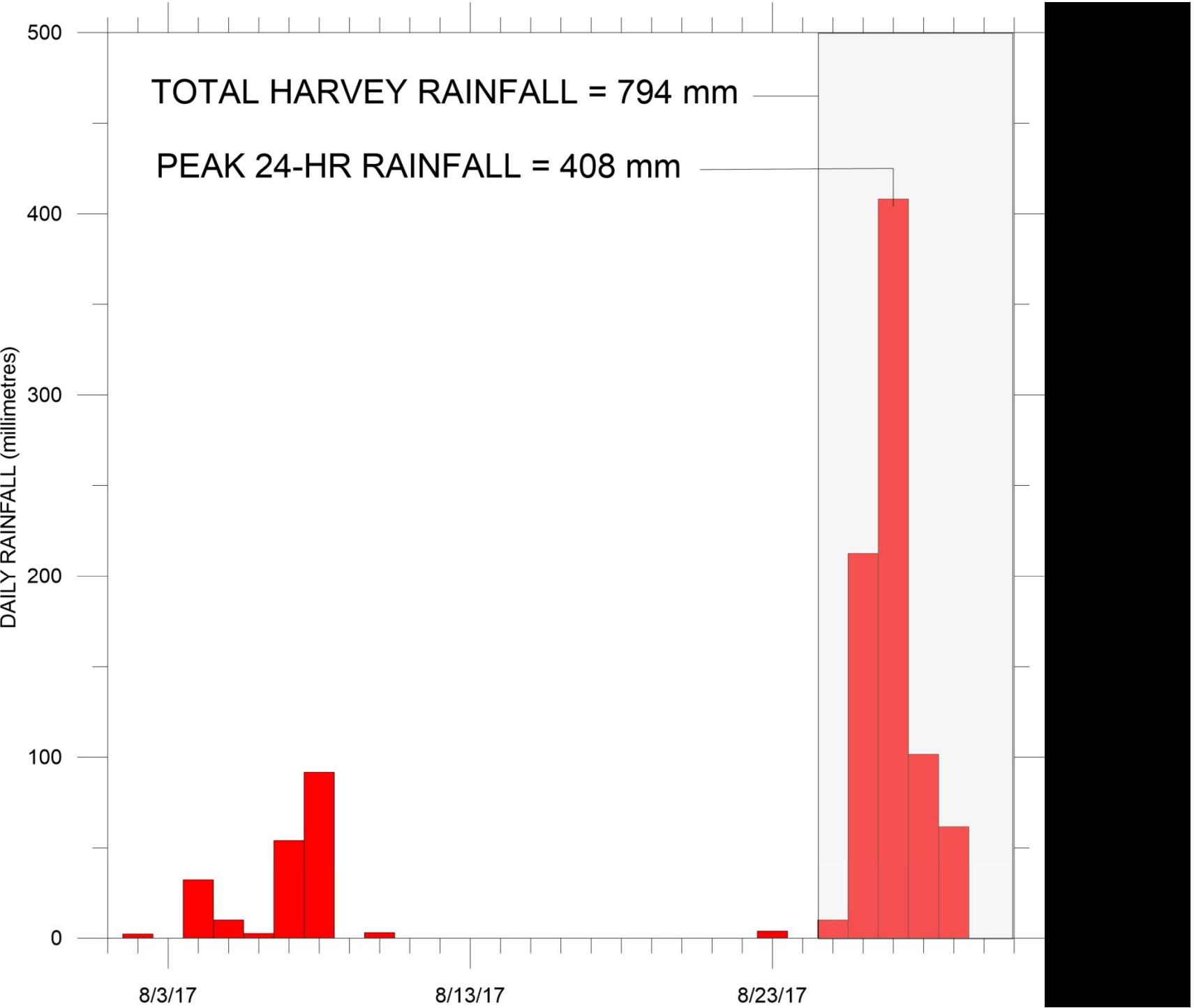
13 inches over 24 hours: **Serious flooding**

4-6 inches in an hour: **Bayous and creeks likely to flood**

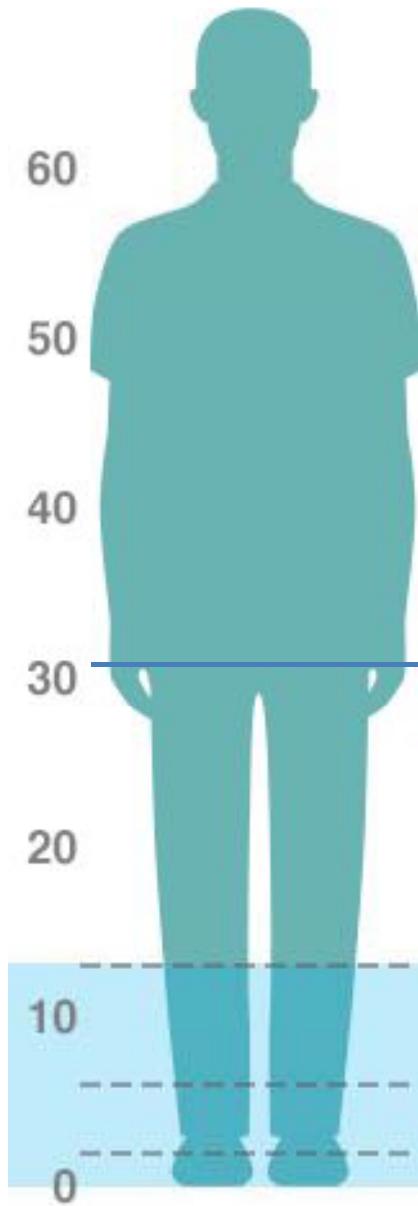
2 inches in an hour: **Street flooding**



AS MEASURED AT HOUSTON INTERNATIONAL AIRPORT



Risks posed by heavy rainfall



"The greatest threat to life and property remains the ongoing extreme rainfall and subsequent prolonged and catastrophic flash flooding"

National Weather Service

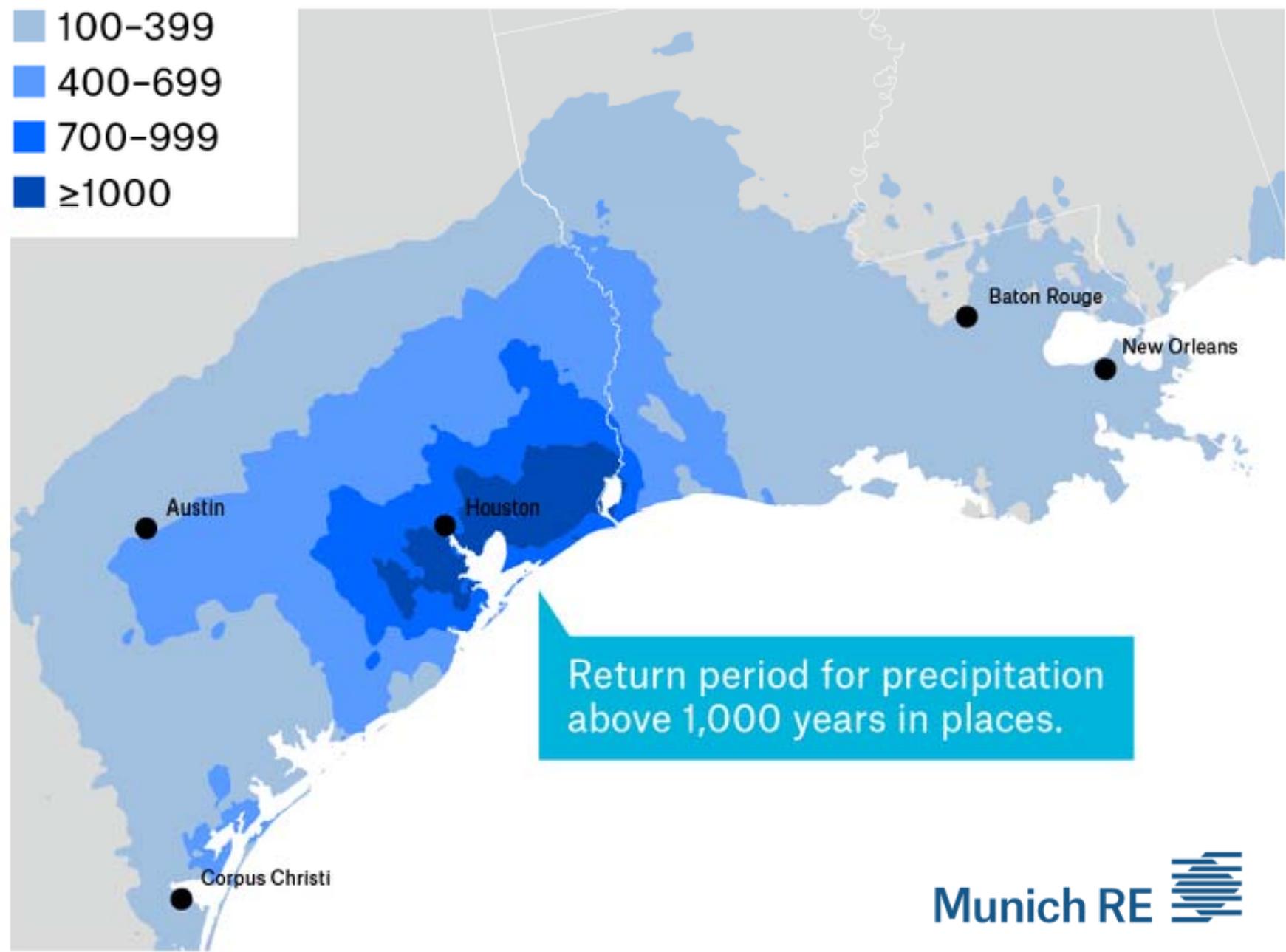
Source: NWS



BBC

Total rainfall in mm

- 100-399
- 400-699
- 700-999
- ≥ 1000





© REUTERS









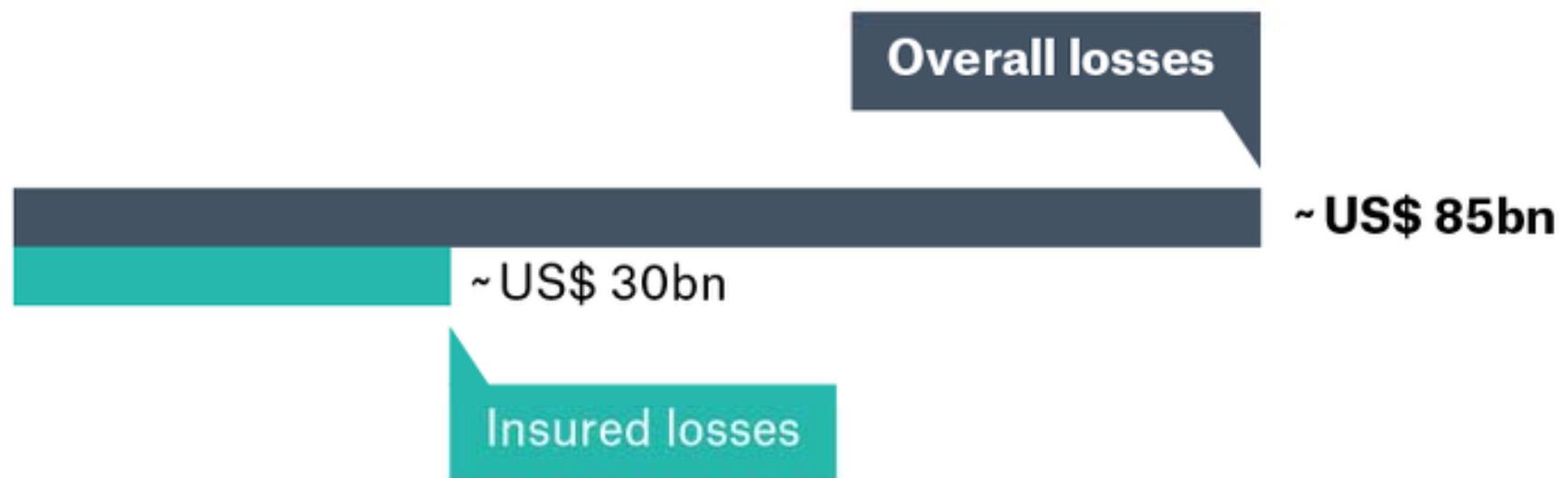


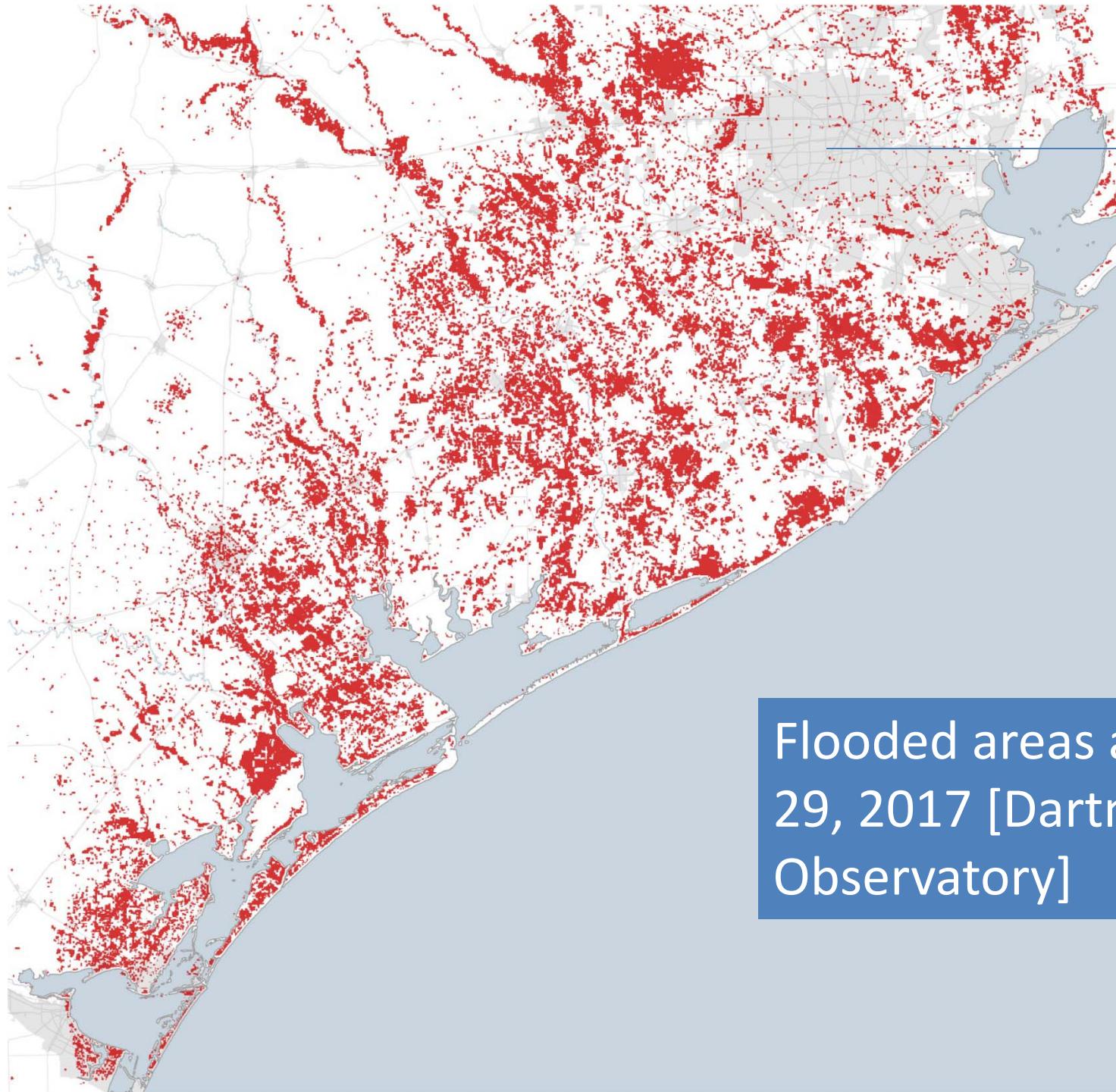
100 YEAR FLOOD

Why 85% of Houston homeowners have no flood insurance

The second-costliest tropical storm ever

Hurricane Harvey





Flooded areas as of August
29, 2017 [Dartmouth Flood
Observatory]



For years, engineers have warned that Houston was a flood disaster in the making. Why didn't somebody do something?

Los Angeles Times, August 29, 2017



Houston Wasn't Built for a Storm Like This

It won't be next time either.



Houston's Flood Is a Design Problem

It's not because the water comes in. It's because it is forced to leave again.



Did Climate Change Intensify Hurricane Harvey?

“The human contribution can be up to 30 percent or so of the total rainfall coming out of the storm.”



Hurricane Harvey was a major storm with extensive rainfall. It was not a natural disaster. The disaster was caused by human decisions to live in a hurricane zone without taking measures.

From a planning and design perspective, so much could have been achieved in the years and decades before the storm loomed on the horizon. The first rule is: if you prefer to stay dry, then do not build in a floodplain.

This can be difficult. Every location has hazards, so it is impossible to avoid the threat of damage. Instead, it is important balance the hazards while designing and building for them.

It starts with siting, land use, and zoning. These have long been lax around Houston. Fuelled by the oil economy, the city expanded without much thought to the consequences. Many others deliberately sought out beautiful coastal locations.

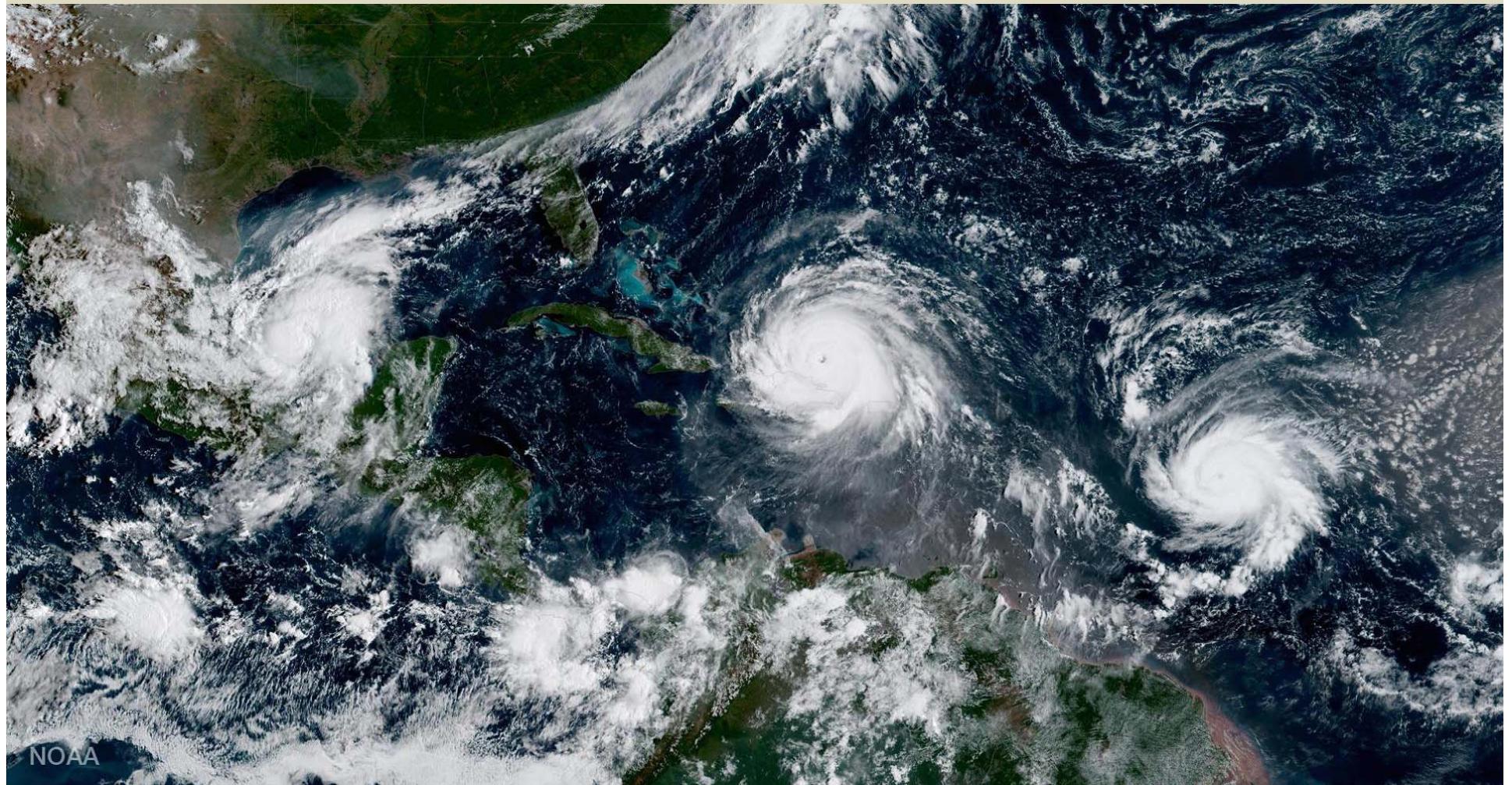
Yet so much can be done to build in floodplains without creating a flood disaster. Permeable surfaces could be used for roads and parking lots. The water then soaks through to the ground rather than immediately running off to the low points.



HOUSTON FLOOD OF 1935

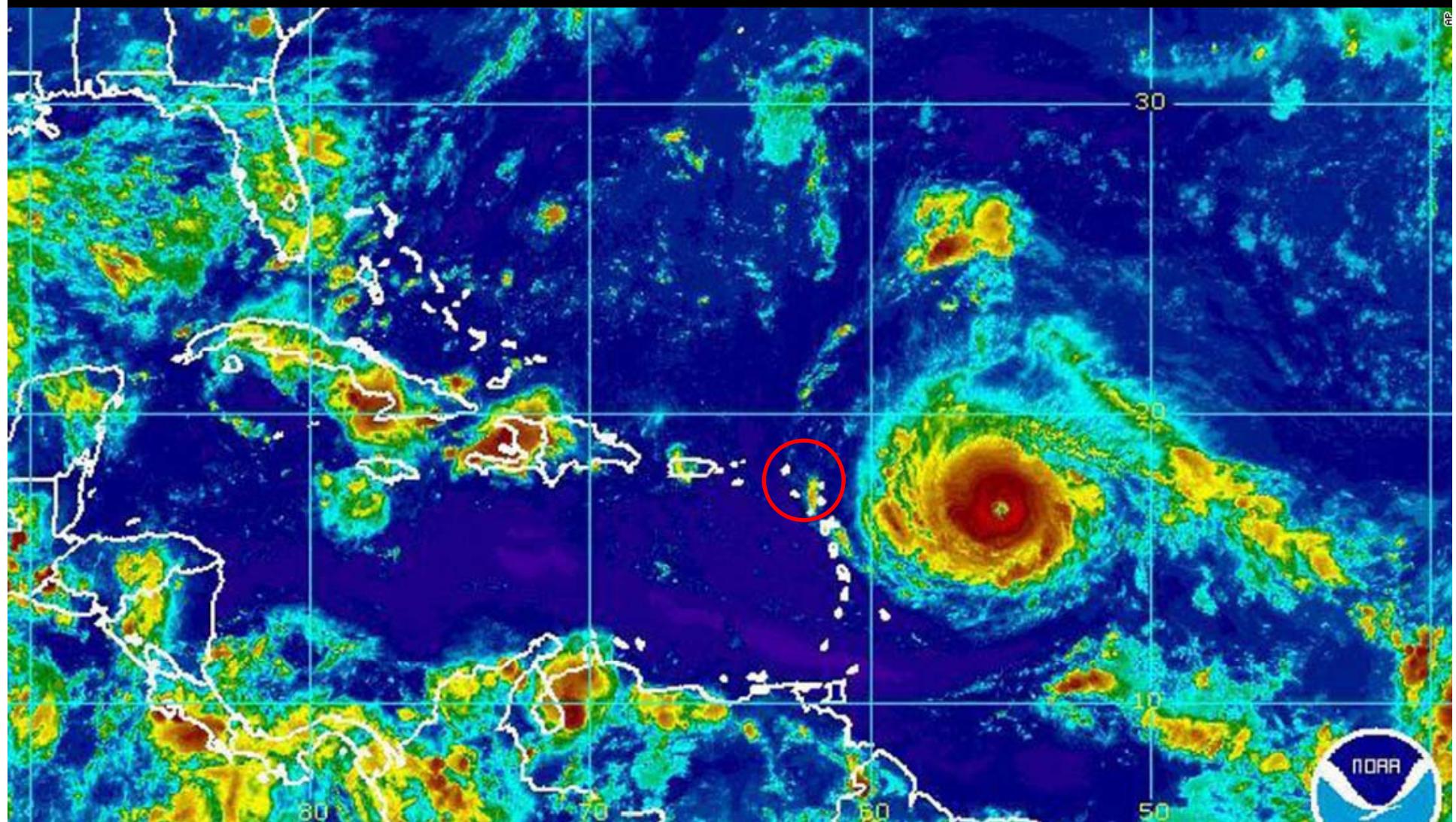
PRECEDENCE ?

HURRICANE IRMA (September 2017)



Hurricane Irma followed by Tropical Storm Jose

Hurricane Irma approaching The Leeward Islands, September 5, 2017



Hurricane Irma damage, St Martin
[September 7, 2017]





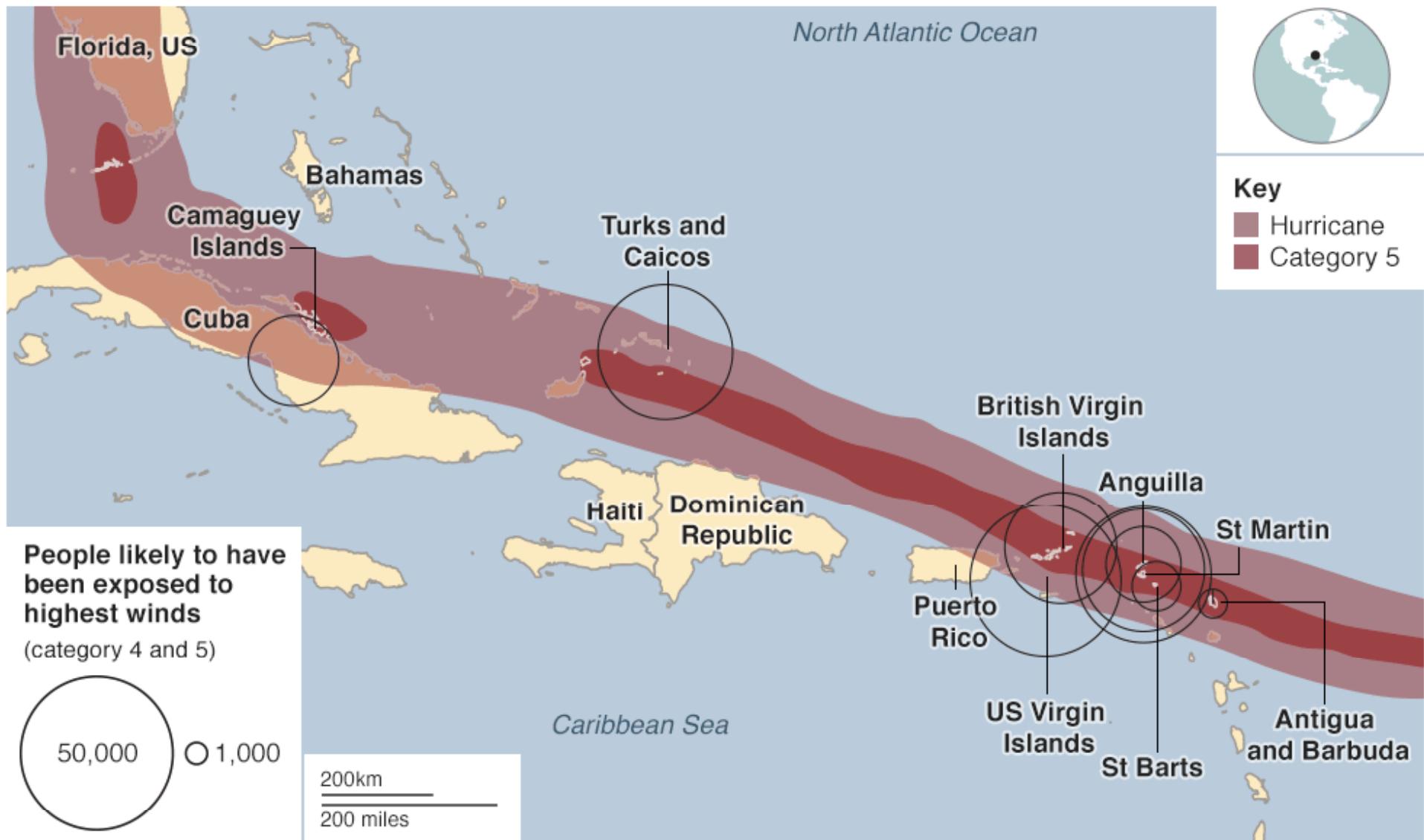
Hurricane Irma damage, St Philipsburg, St Martin [September 7, 2017]



© AFP/Getty Images

Hurricane Irma damage, Marigot, St Martin [September 7, 2017]

The Caribbean islands worst-affected by Hurricane Irma



Source: National Hurricane Center, UNITAR/UNOSAT (preliminary estimates 12 Sep 2017)

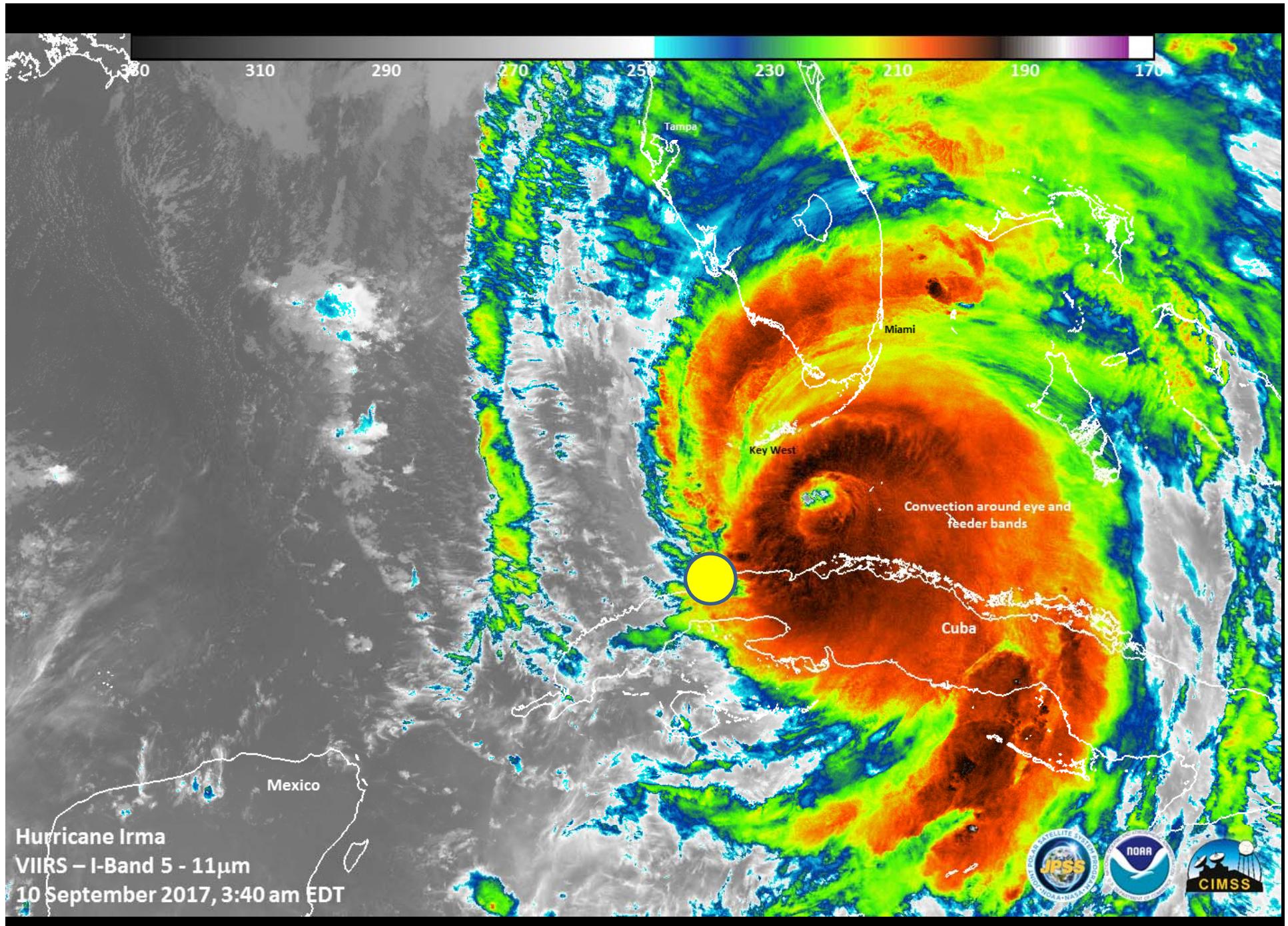
BBC

Hurricane Irma approaching Florida, September 8, 2017





Flooding (generated by storm surge) in Havana, Cuba [Hurricane Irma, September 2017]





Hurricane Irma approaches Miami, Florida

Devastation caused by Hurricane Irma in Florida Keys,
September 11, 2017





Hurricane Irma batters Naples, Florida (September 11, 2017)

Devastation caused by Hurricane Irma in Florida (between Homestead and Florida City), September 8, 2017





NATURAL DISASTERS

Hurricane Irma: Florida's Overdevelopment Has Created a Ticking Time Bomb

Disaster risk expert says intense population growth and urban coastal development have created a huge danger

By Annie Sneed on September 12, 2017



Hurricane Irma Claims Data

This aggregate information is compiled from claims data filed by insurers. It has not been audited or independently verified and covers all claims based on filings received by the Florida Office of Insurance Regulation as of December 15, 2017 at 3:37 p.m. The next update to this information will be published on January 8, 2018.

Lines of Business	Number of Claims	Closed Claims (paid)	Closed Claims (not paid)	Number Claims Open	Percent Claims Closed
Residential Property	719,512	351,524	234,752	133,236	81.5%
Homeowners	566,986	267,221	195,734	104,031	81.7%
Dwelling	91,374	45,691	27,288	18,395	79.9%
Mobile Homeowners	52,723	37,056	9,328	6,339	88.0%
Commercial Residential	8,429	1,556	2,402	4,471	47.0%
Commercial Property	53,947	8,335	13,037	32,575	39.6%
Private Flood	1,538	716	481	341	77.8%
Business Interruption	3,712	1,200	1,361	1,151	69.0%
Other Lines of Business	87,265	57,320	16,094	13,851	84.1%
TOTALS	865,974	419,095	265,725	181,154	79.1%

Total Estimated Insured Losses: \$6,555,954,291

Building codes helped contain losses in Florida Hurricane Irma



Munich Re

Source: PCS, Munich Re NatCatSERVICE



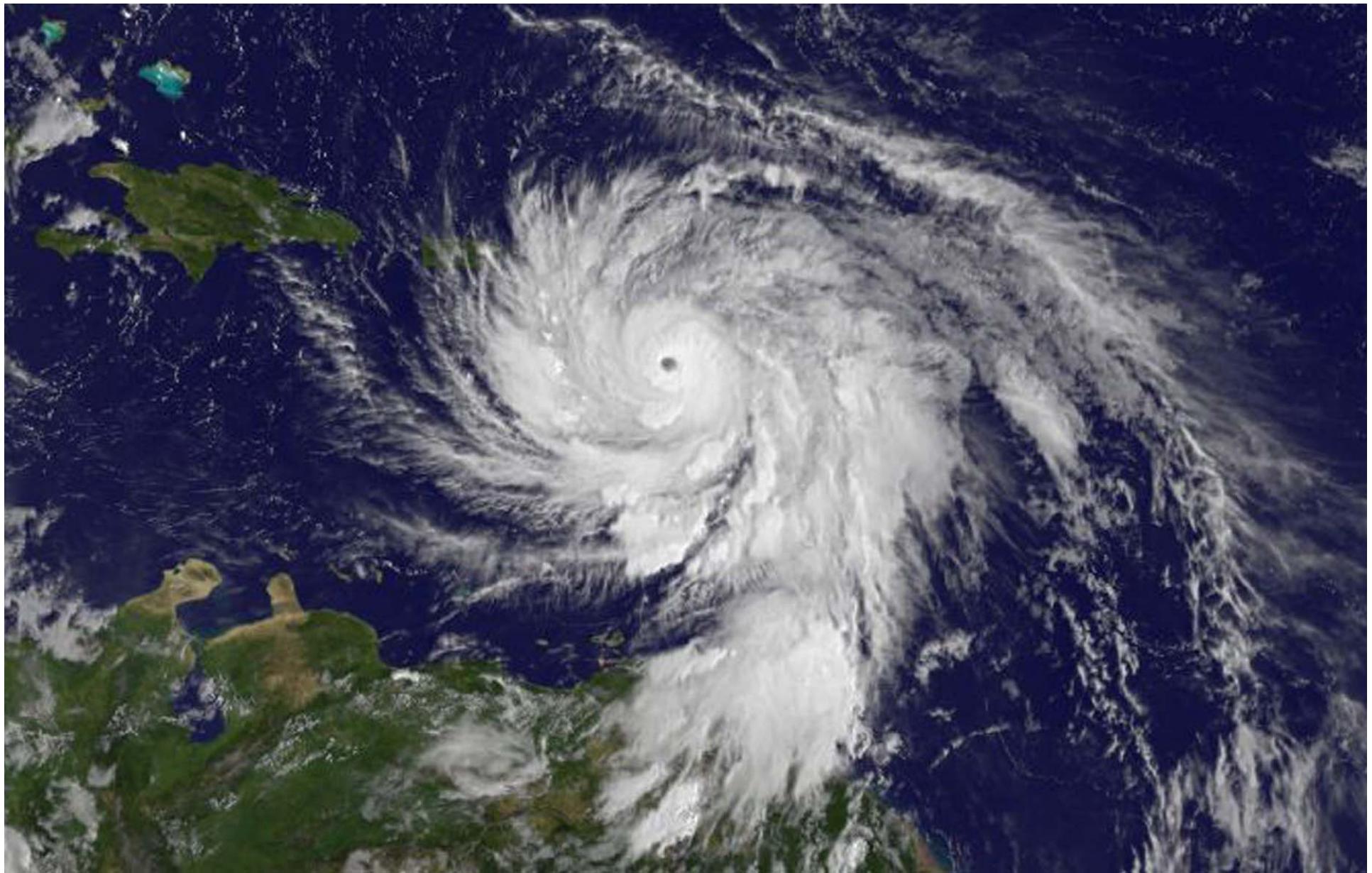
HURRICANE MARIA [September 2017]



Roseau, Dominica [September 21, 2017]



Hurricane Maria moving over Dominica and Puerto Rico (behind Jose) : September 19, 2017

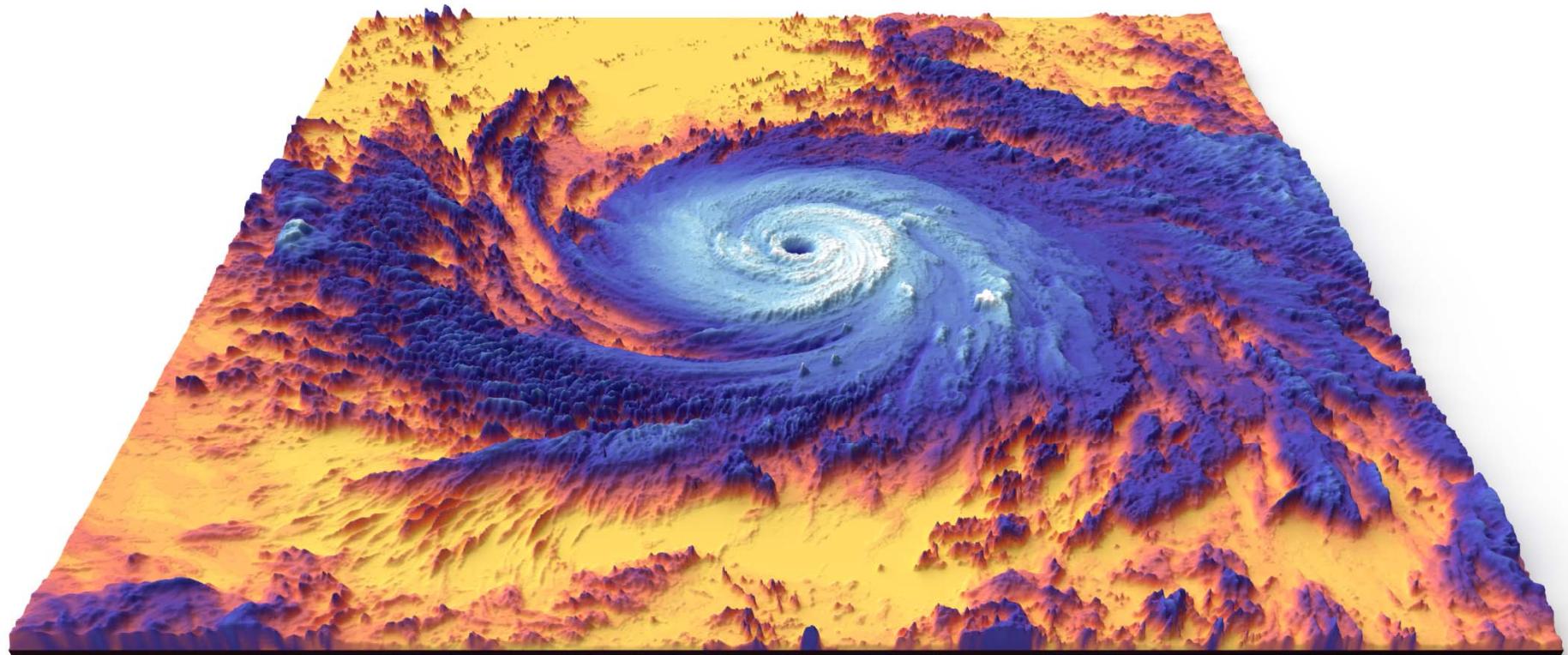


Hurricane Maria moving towards Puerto Rico: September 2017

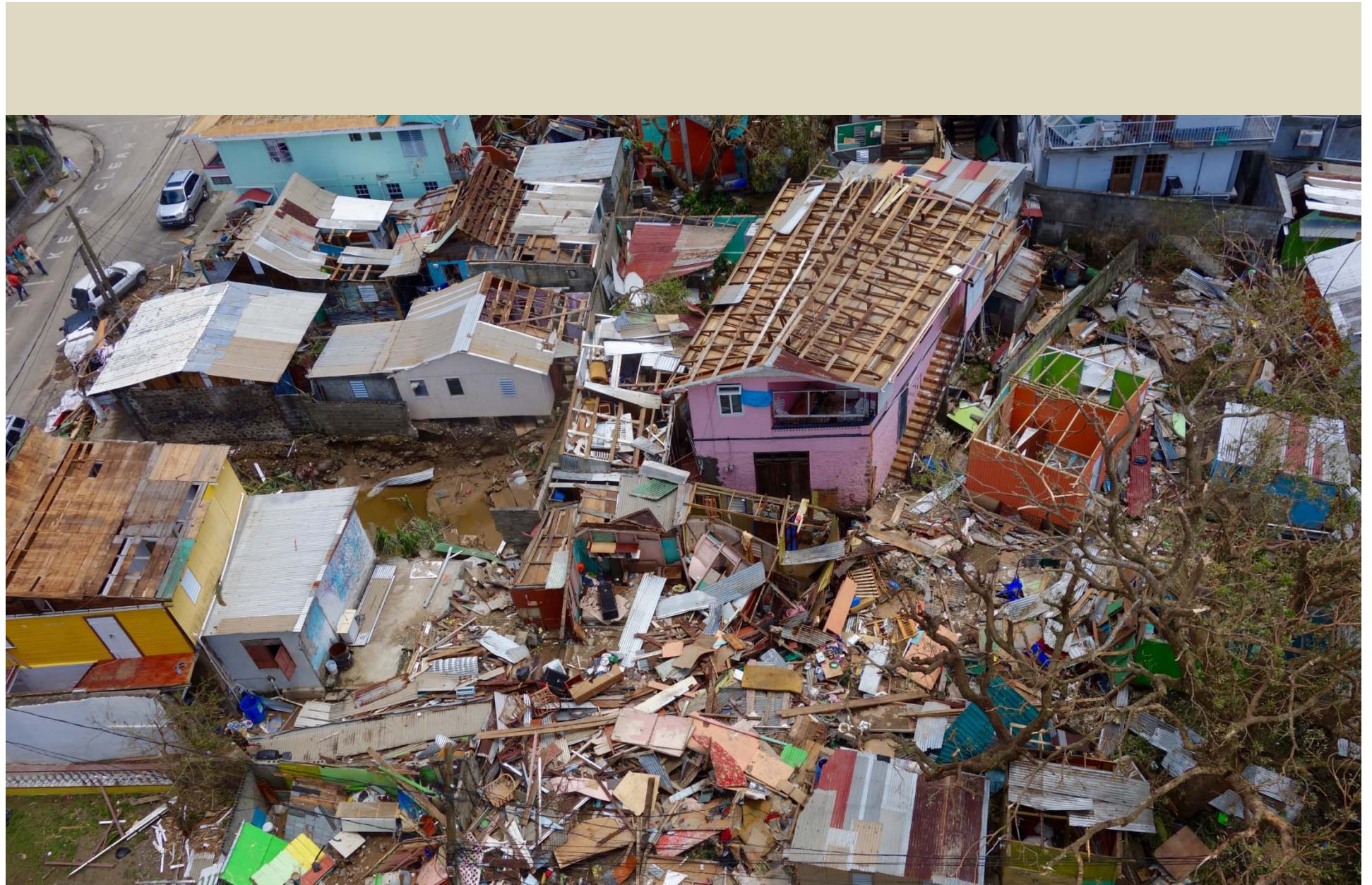


Composite NASA image of Hurricane Maria making landfall at Yabucoa, Puerto Rico [September 20, 2017]

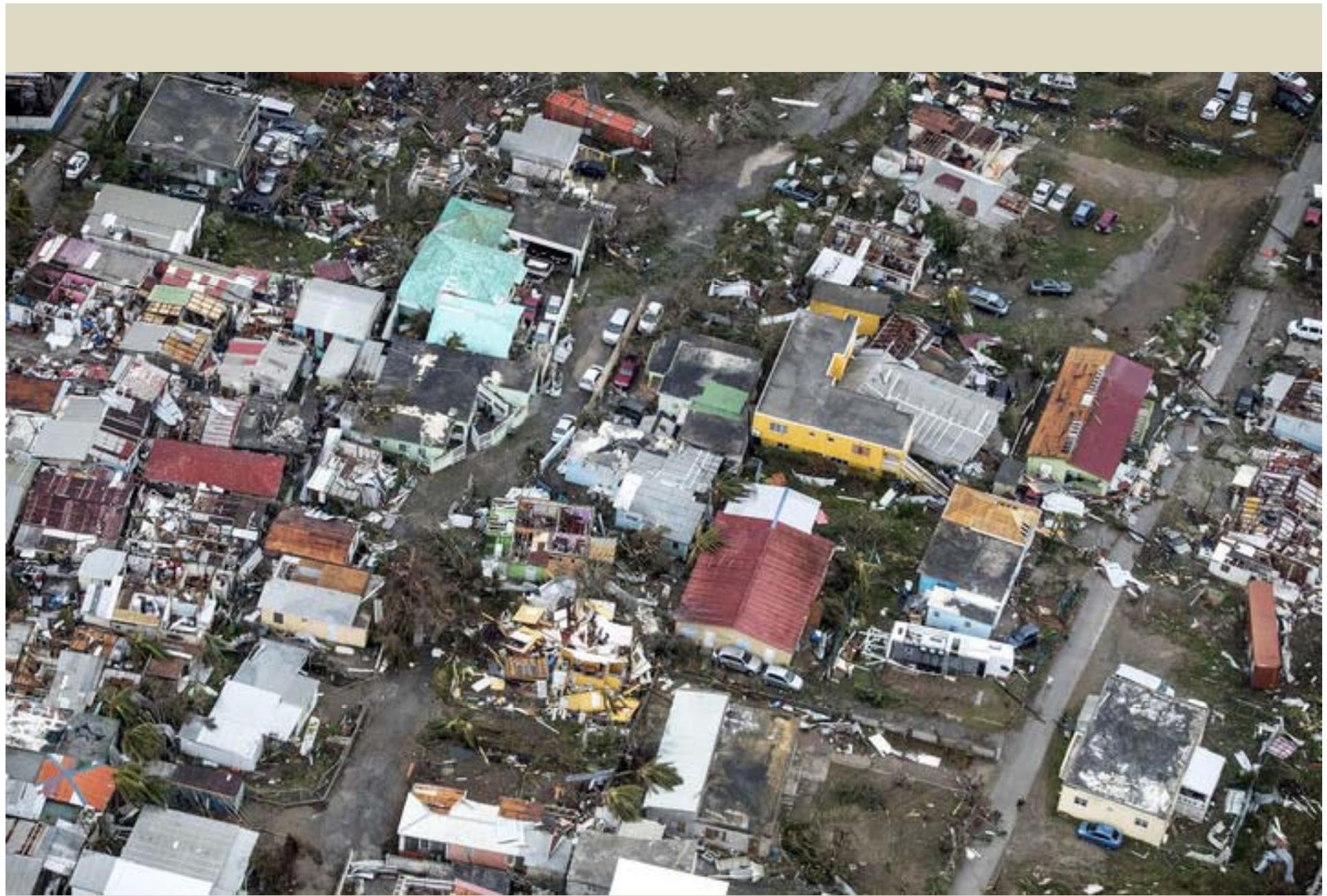
Thermal map of Hurricane Maria, September 20, 2017



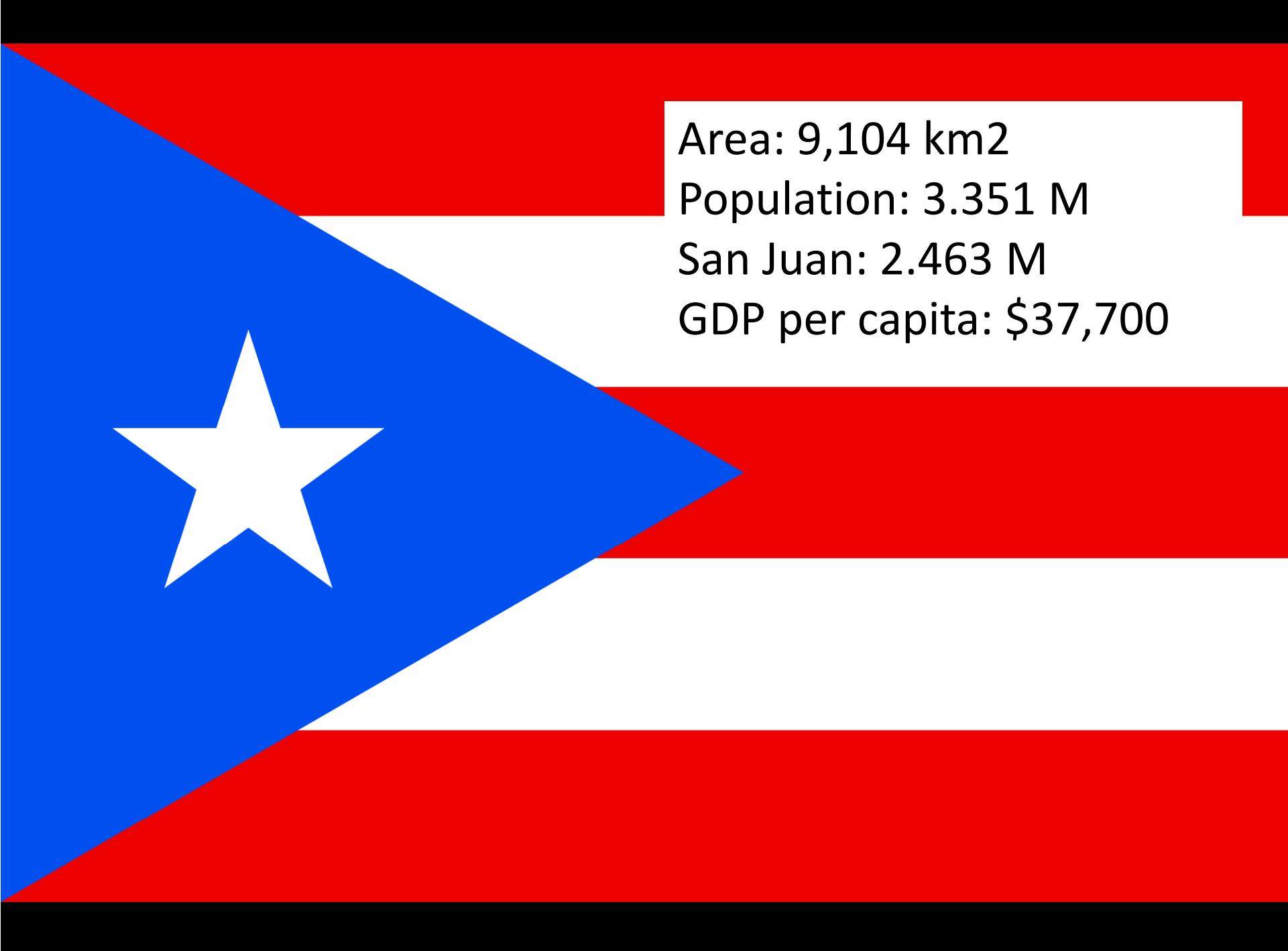
This figure is a thermal image captured by the MODIS on NASA's [Terra](#) satellite. Colder clouds, which are generally higher in the atmosphere, are shown with white. Somewhat warmer, lower clouds appear purple. The image reveals a very well-defined eye surrounded by high clouds on all sides—an indication that the storm was very intense.



Roseau, Dominica [September 21, 2017]



Roseau, Dominica [September 21, 2017]

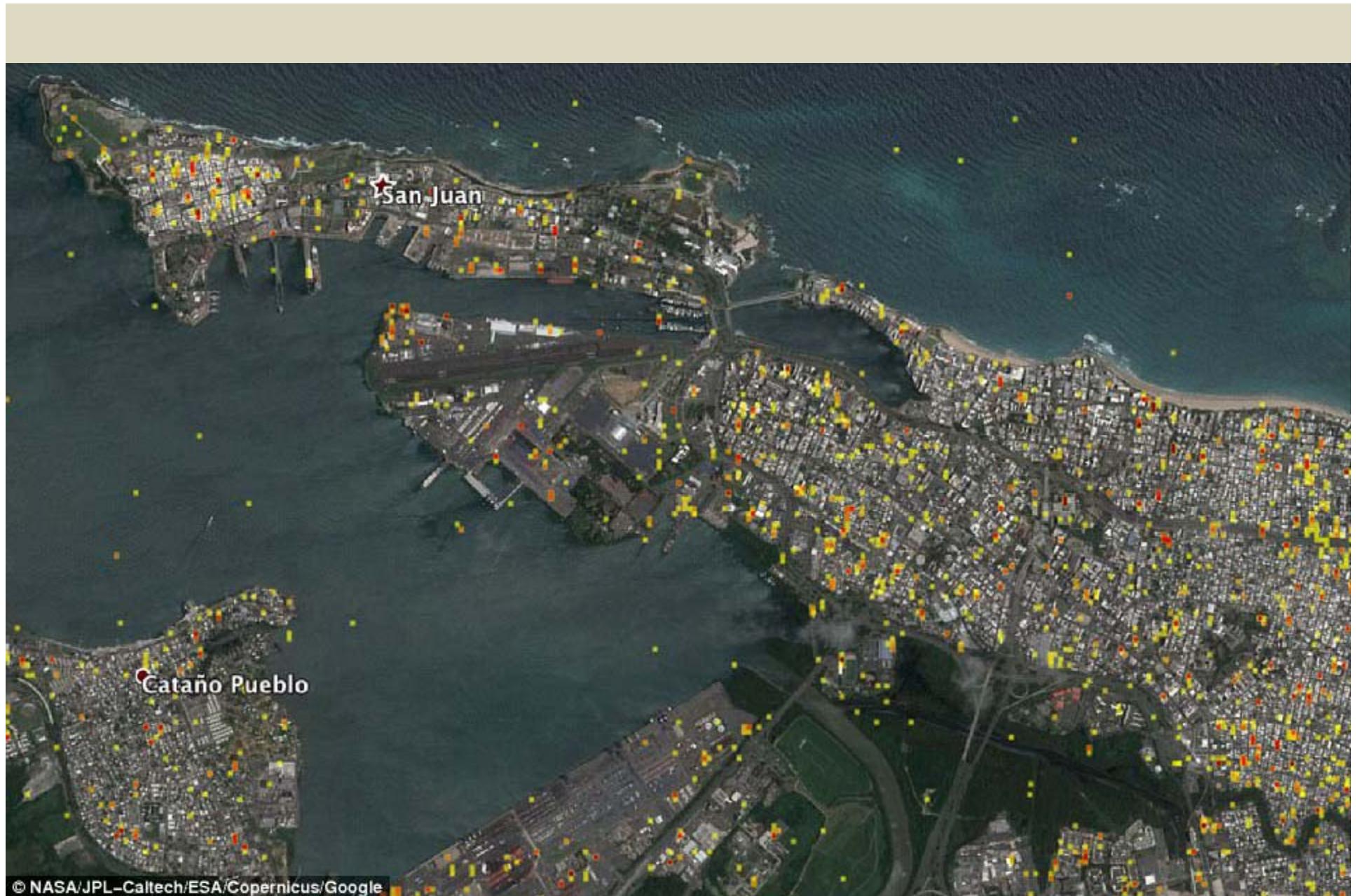
The flag of Puerto Rico is displayed diagonally across the slide. It features a blue field with a white star in the upper left corner, separated from a red field by a diagonal white border. A thin black horizontal bar is at the top and bottom of the slide.

Area: 9,104 km²

Population: 3.351 M

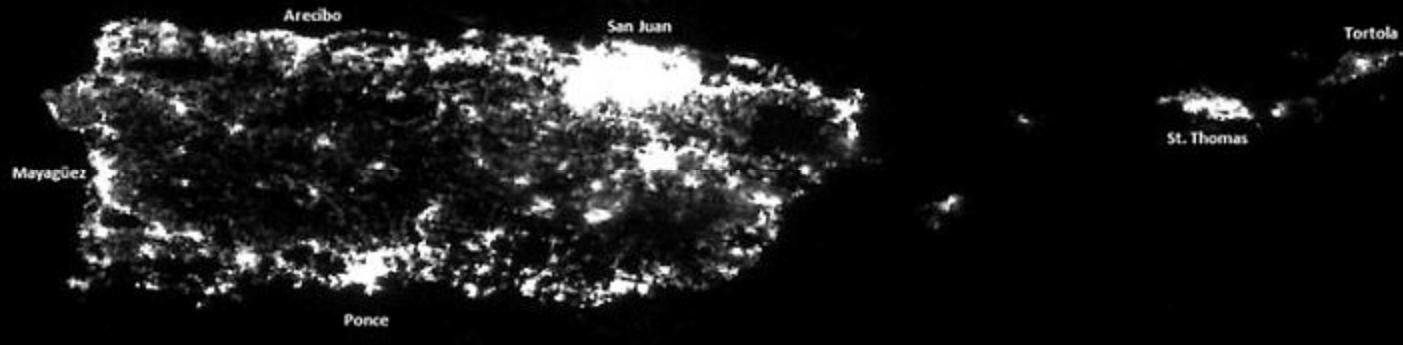
San Juan: 2.463 M

GDP per capita: \$37,700

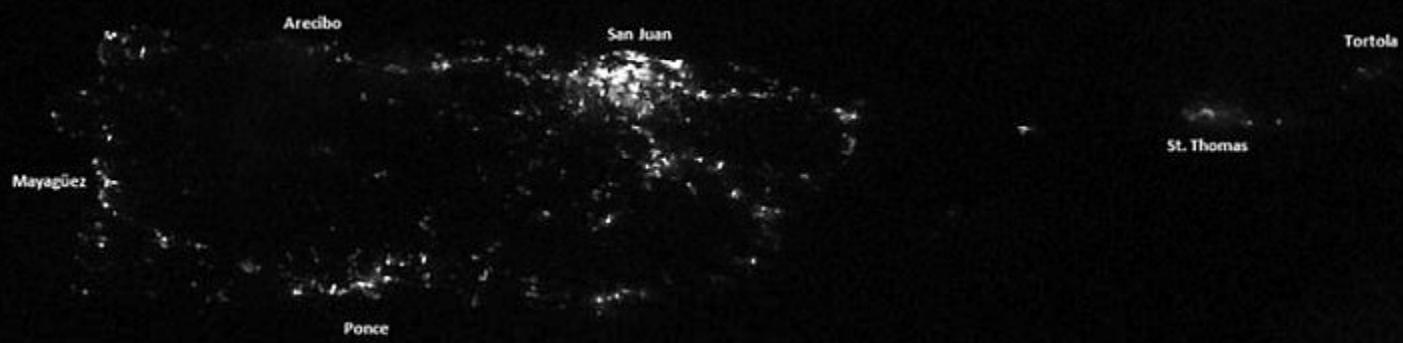


© NASA/JPL-Caltech/ESA/Copernicus/Google

NASA damage map of area of San Juan, Puerto Rico (Hurricane Maria: September 2017)



24 JULY 2017



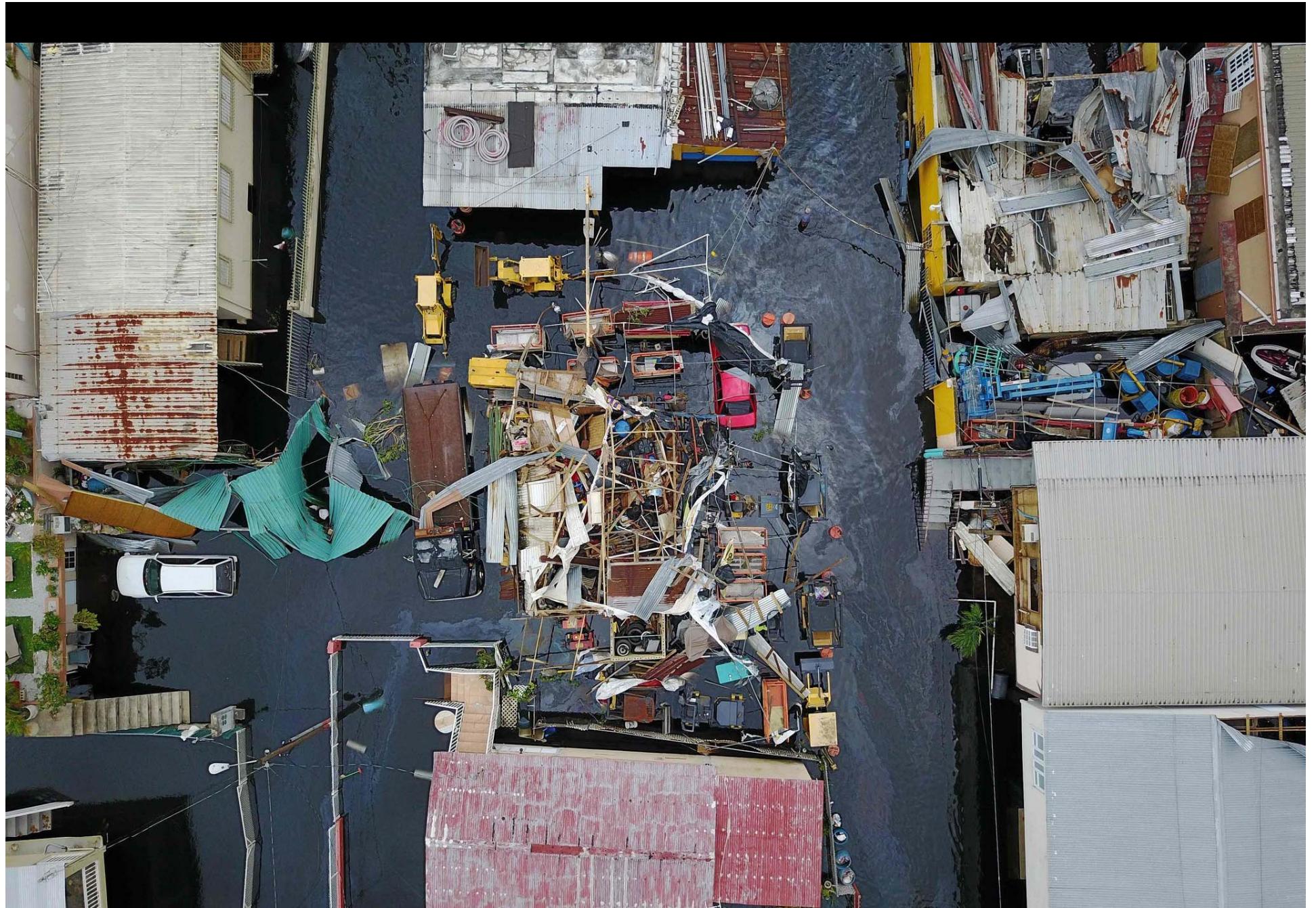
POST HURRICANE MARIA - 24 SEPT. 2017



Off the grid – Puerto Rico in the dark

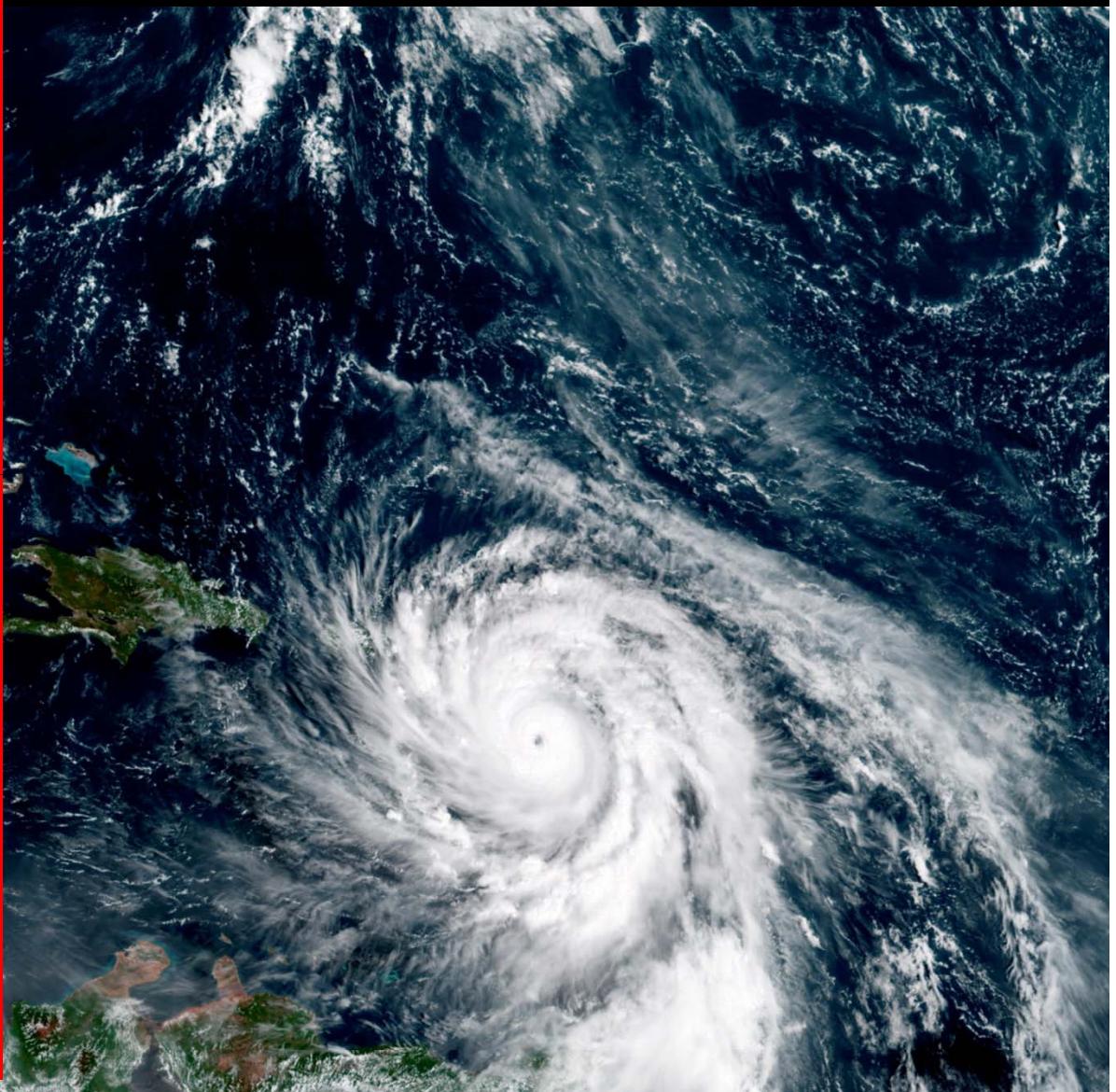


Urban damage in Puerto Rico (Hurricane Maria)



Flooding in Catano, Puerto Rico [September 2017]

1. First Category 4 cyclone to hit Puerto Rico since 1932
2. Winds up to 250 km/hr
3. Extreme rainfall [762 mm in 24 hours]
4. High storm surges along coast
5. Knocks out entire power grid – electrical infrastructure destroyed
6. Transportation infrastructure heavily damaged
7. Catastrophic flooding in mountainous island
8. 85% of cell phone towers knocked out
9. Damage to Guajataca Dam
10. 65 Deaths ?
11. Very heavy damage to housing stock
12. Clean drinking water limited



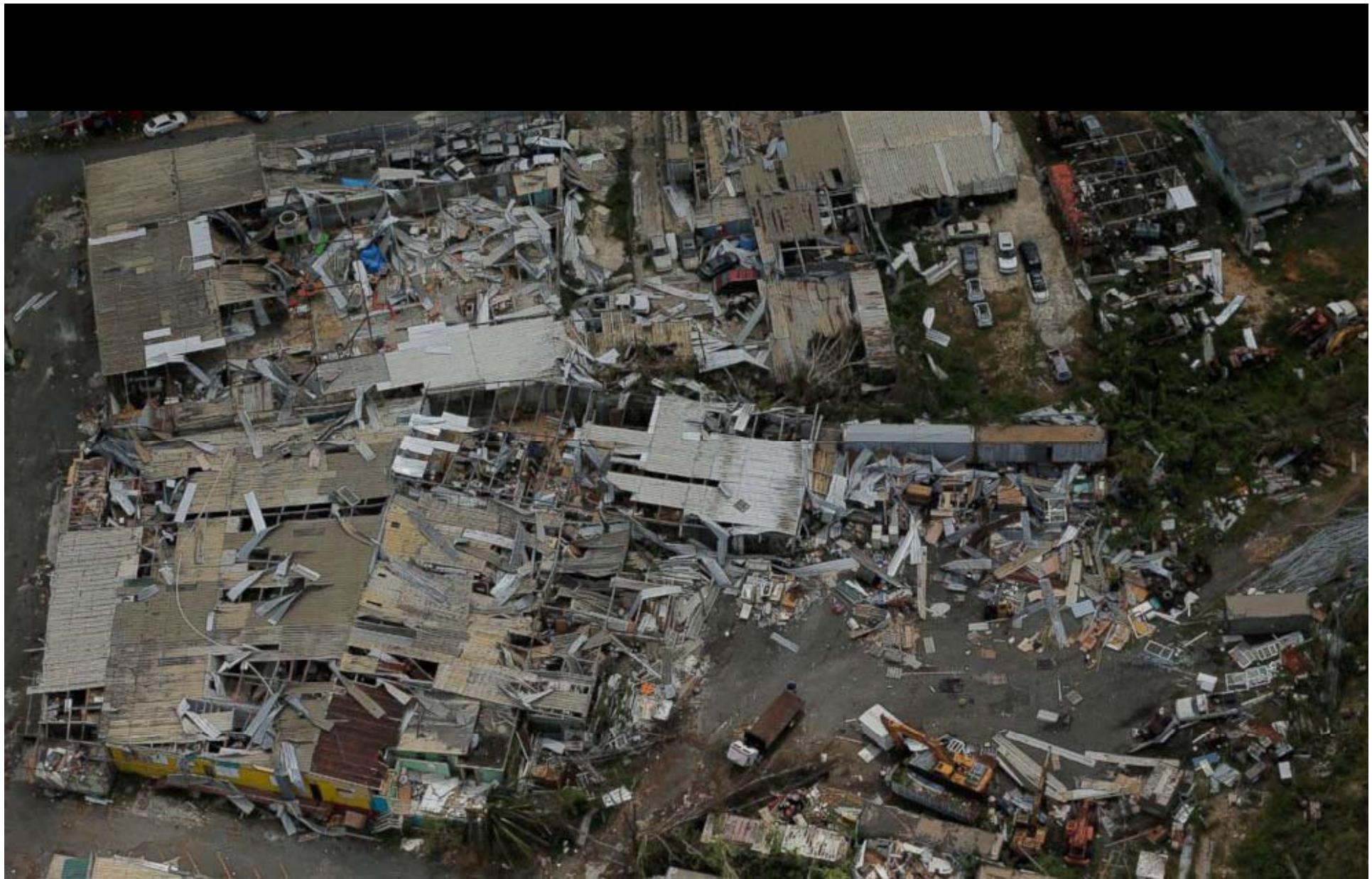
Hurricane Maria approaching Puerto Rico on September 19, 2017

We surveyed 112 Puerto Rican funeral homes to check the accuracy of the hurricane death toll. This is what we found.



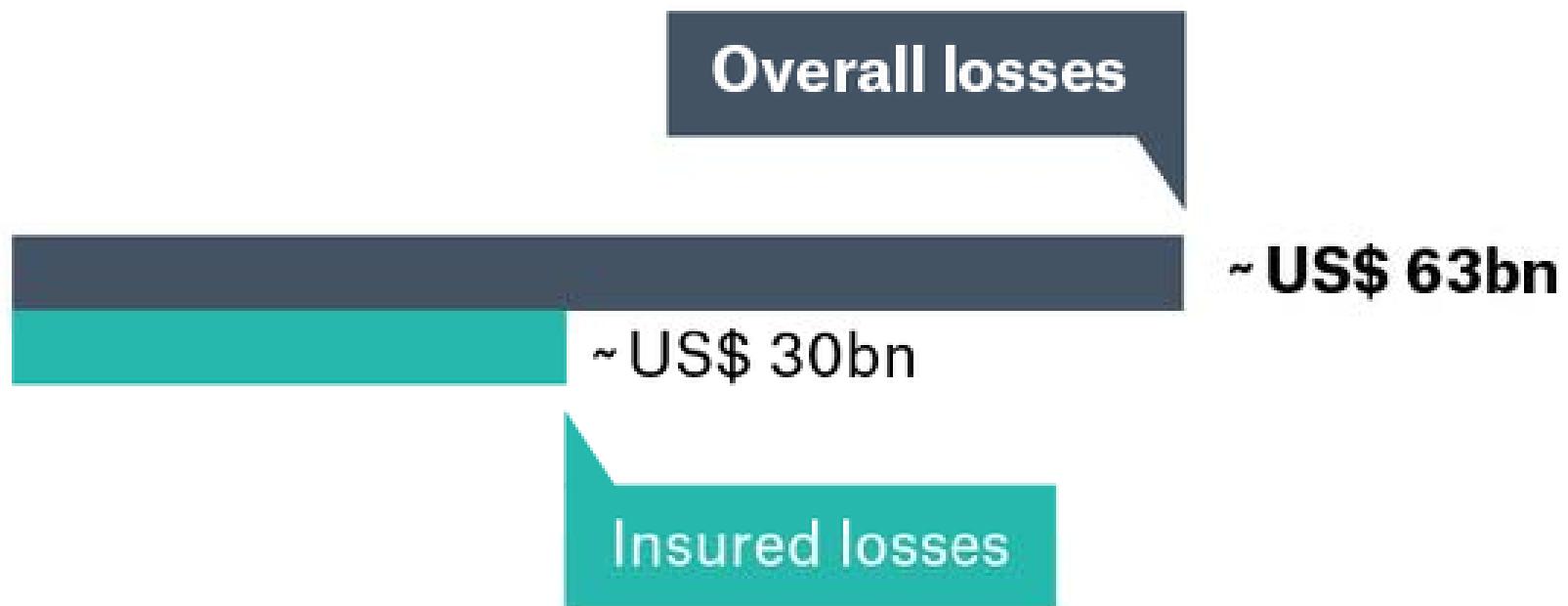
Puerto Rico Orders Review and Recount of Hurricane Deaths

By PATRICIA MAZZEI DEC. 18, 2017

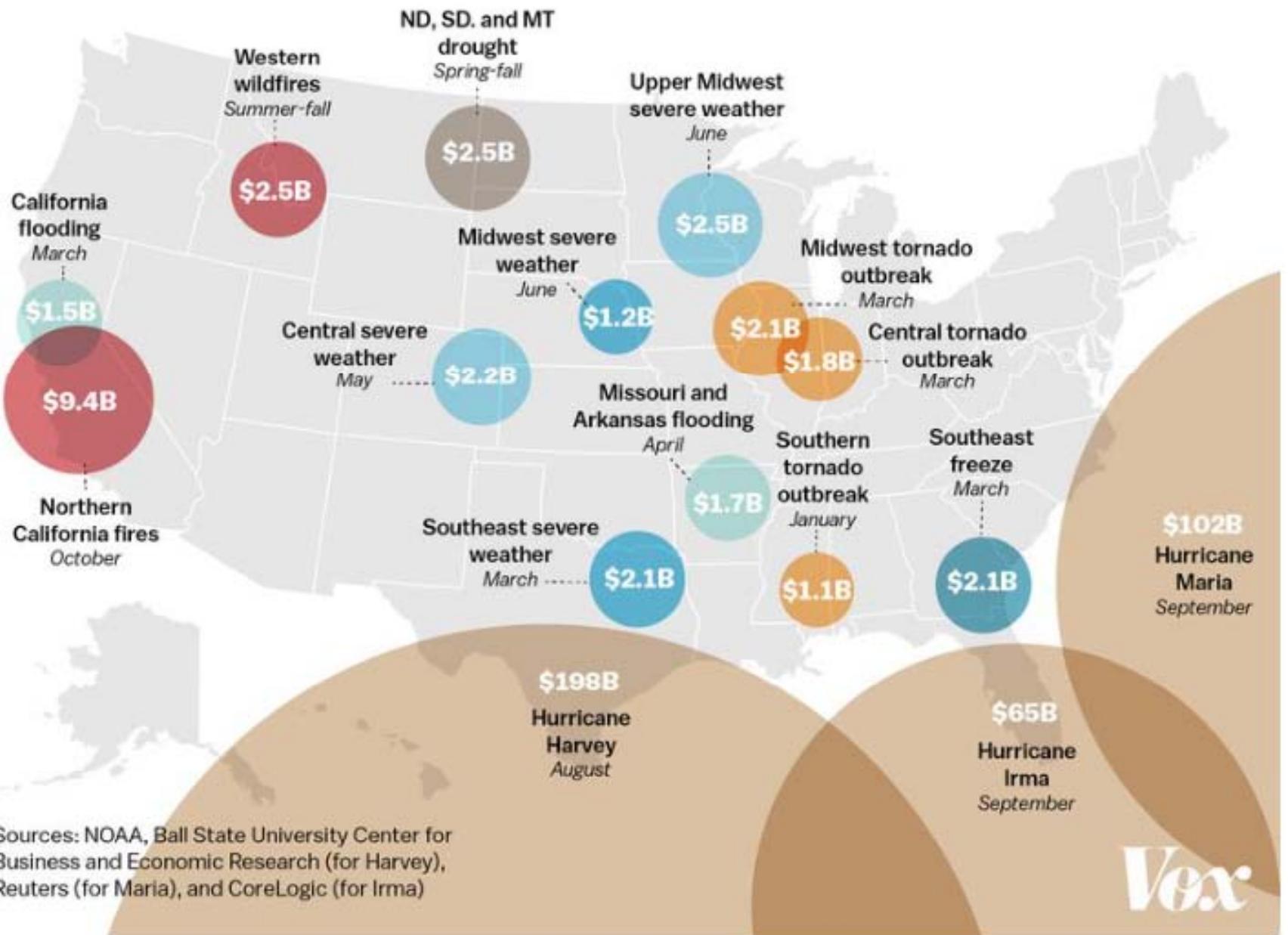


Hurricane Maria: Building damage in Puerto Rico [September 2017]

Extreme damage in Puerto Rico Hurricane Maria



Billion-dollar disasters of 2017 in the US



Sources: NOAA, Ball State University Center for Business and Economic Research (for Harvey), Reuters (for Maria), and CoreLogic (for Irma)

Vox

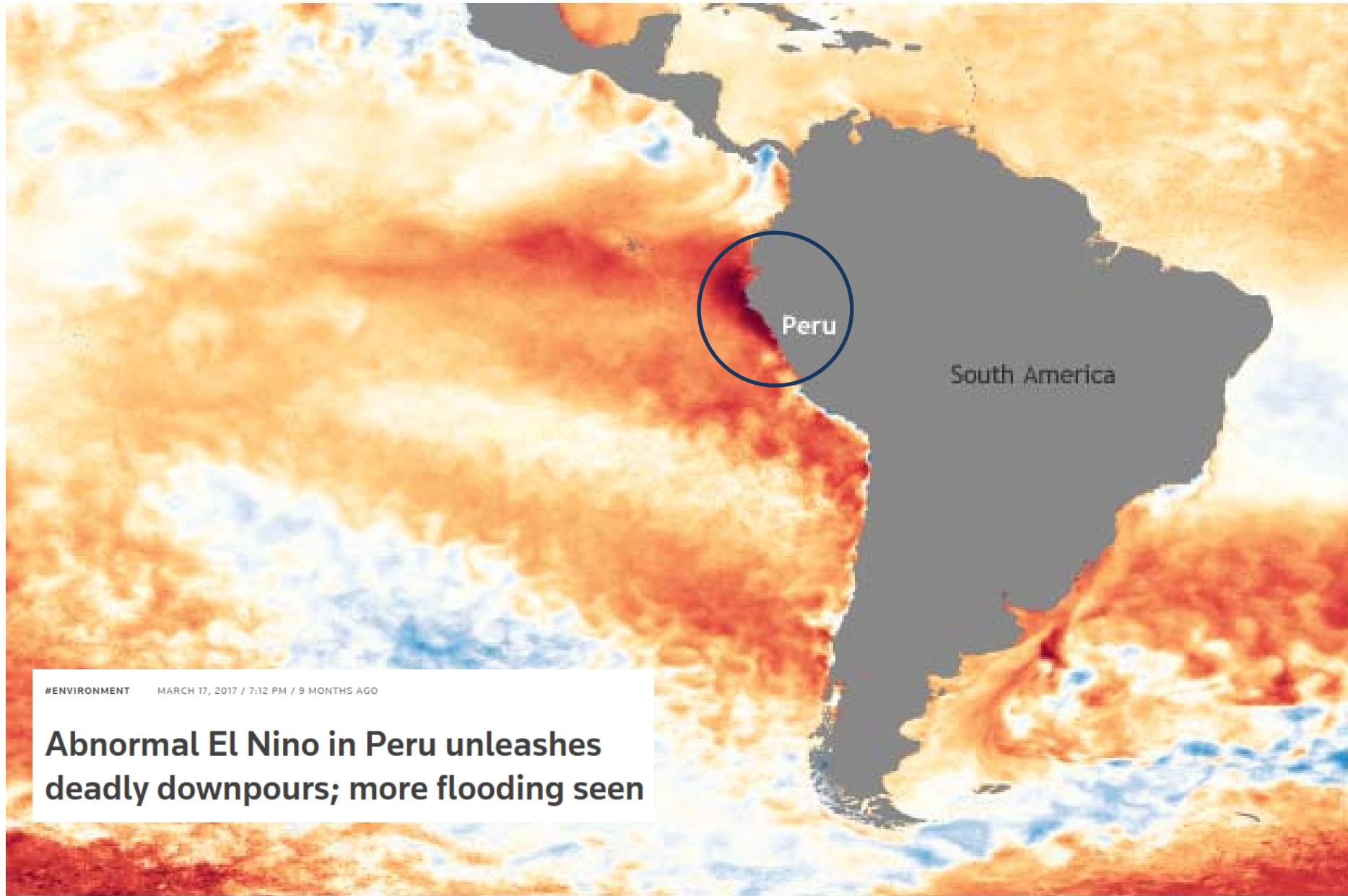
The hurricane season 2017: a cluster of extreme storms

Within a span of four weeks, the hurricane trio of Harvey, Irma and Maria made the 2017 hurricane season the costliest ever. Overall losses reached around US\$ 215bn, according to preliminary estimates, and insured losses are expected to be around US\$ 100bn.

FLOODING DUE TO HEAVY RAINS [EL NIÑO AND MONSOON]



Sea surface temperature anomalies, February 2017



compared to 1981–2010

Difference from average temperature (°F)

-9 0 9

NOAA Climate.gov
Data: NCEI/NNVL



Flooding in Lima [March 2017]



Flooding in Lima [March 2017]



Flooding in Huachipa area of Lima, March 17, 2017

Floods in Peru

Following persistent rain in Peru in February and March, numerous rivers burst their banks, causing severe flooding, landslides and mudflows. Large areas in the north of the country (Piura, Paita, Ayabaca, Tumbes and Lambayeque) were devastated, and even the area around Lima was affected. The Peruvian capital, with its 10 million inhabitants, is situated on the Pacific coast, a flat region that generally experiences only slight rainfall. On dry soil with little vegetation, rainwater accumulates on the surface instead of soaking into the earth. Many people were killed in the floods, with infrastructure and more than 200,000 buildings severely damaged.

Due to the low insurance density, only a small fraction of the overall losses of US\$ 3.1bn was insured. The insured loss was just US\$ 380m. The insured portion was still higher than the national average: in the past, only about 9% of natural catastrophe losses have been covered by insurers.

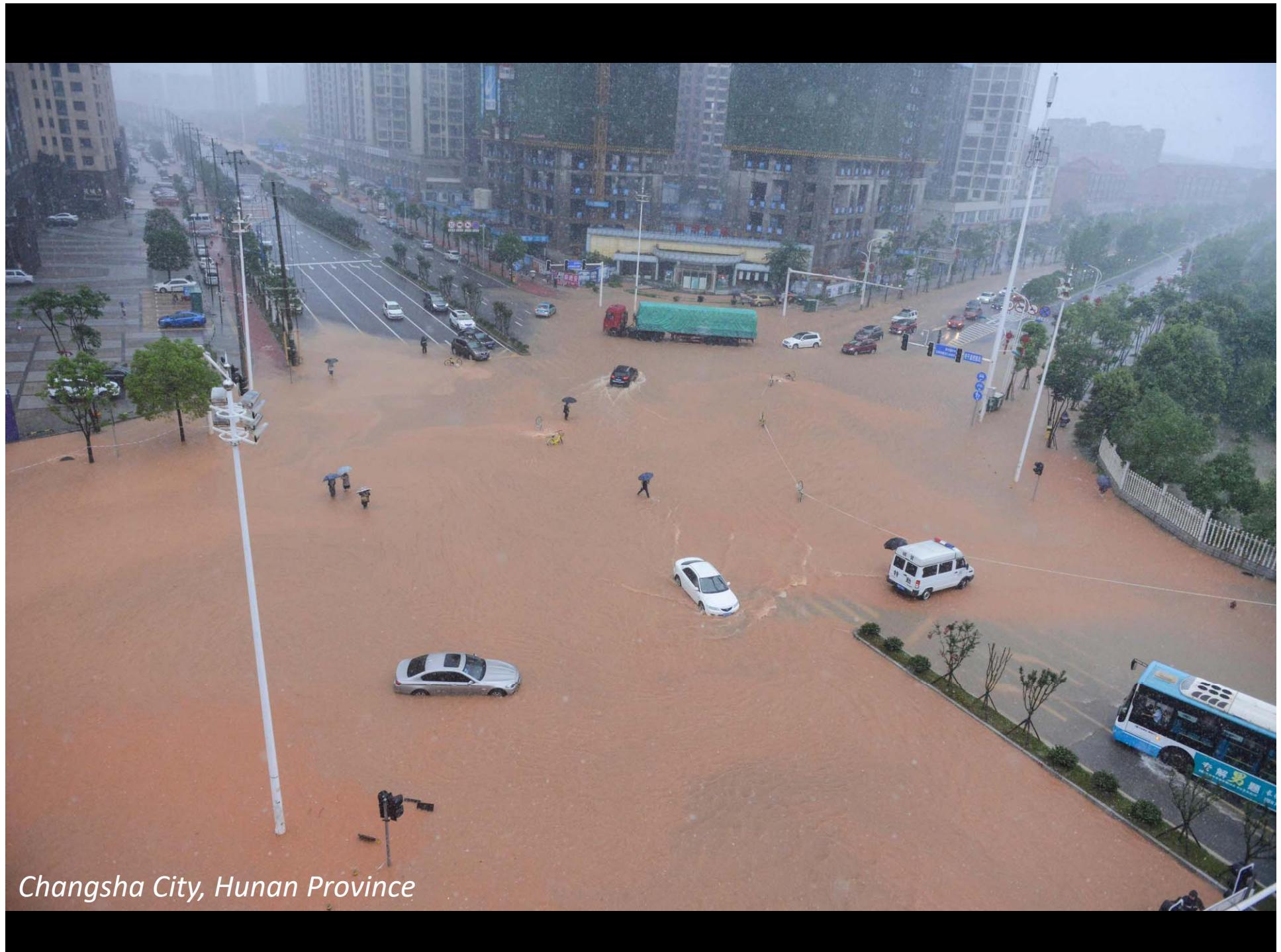




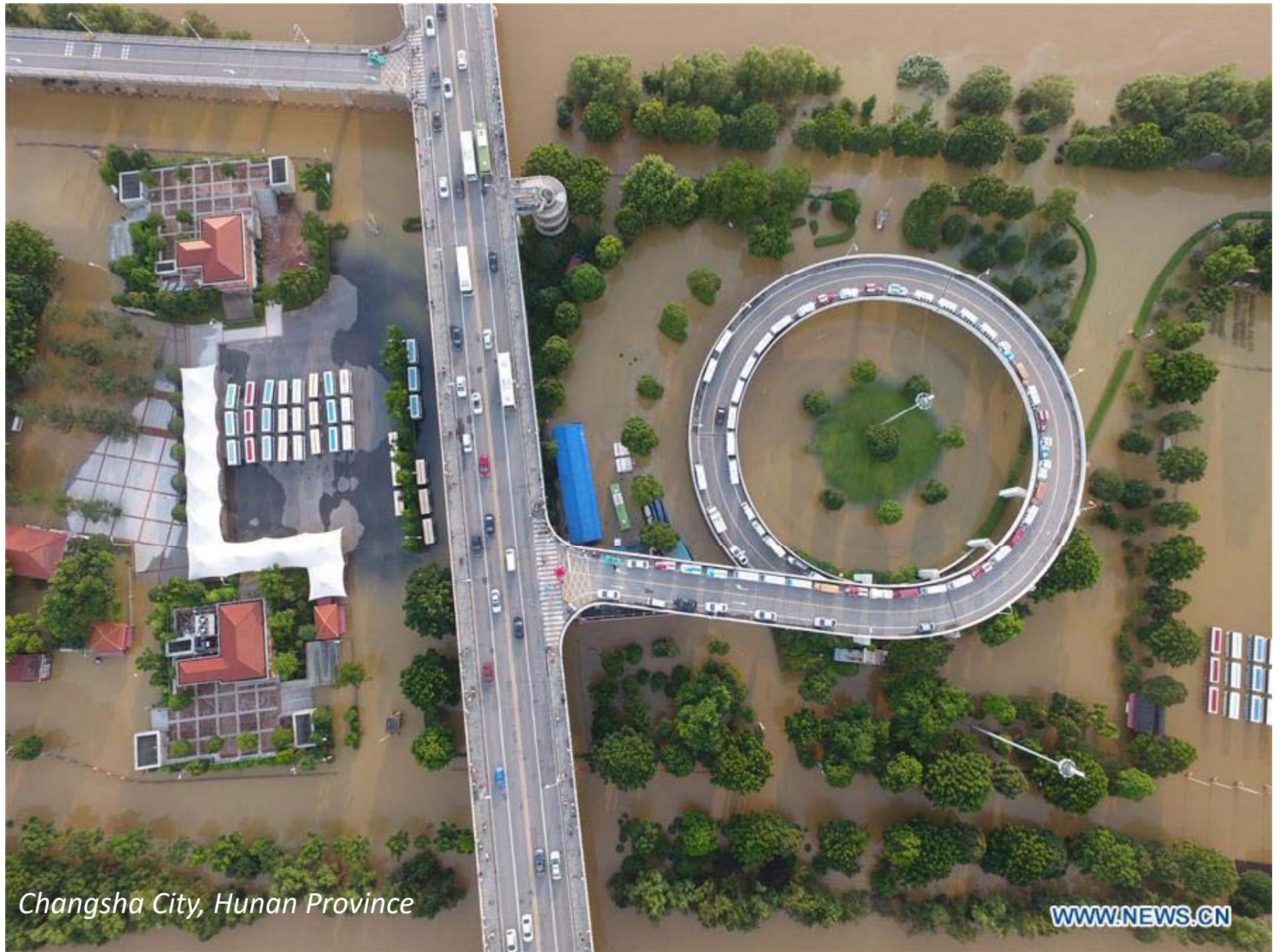
Liuzhou City, Guangxi Province

CHINA FLOODING – June and July 2017

Lasting heavy rainfall leads to floods in China's Hunan



Changsha City, Hunan Province



Changsha City, Hunan Province

WWWNEWS.CN



Floods

Asian floods overshadowed by Houston flooding

In late August 2017, while the global media's attention was focused on the floods in Houston, people on the other side of the world were experiencing even worse misery from torrential rainfall. An exceptionally powerful monsoon in Southern Asia claimed the lives of almost 2,700 people and caused severe damage to the region's agriculture.

04.01.2018

MORE THAN 2,000 DEATHS IN SOUTH ASIA FLOODS, AUGUST 2017

Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 17/08/2017

Nepal, India, Bangladesh | Floods



European
Commission

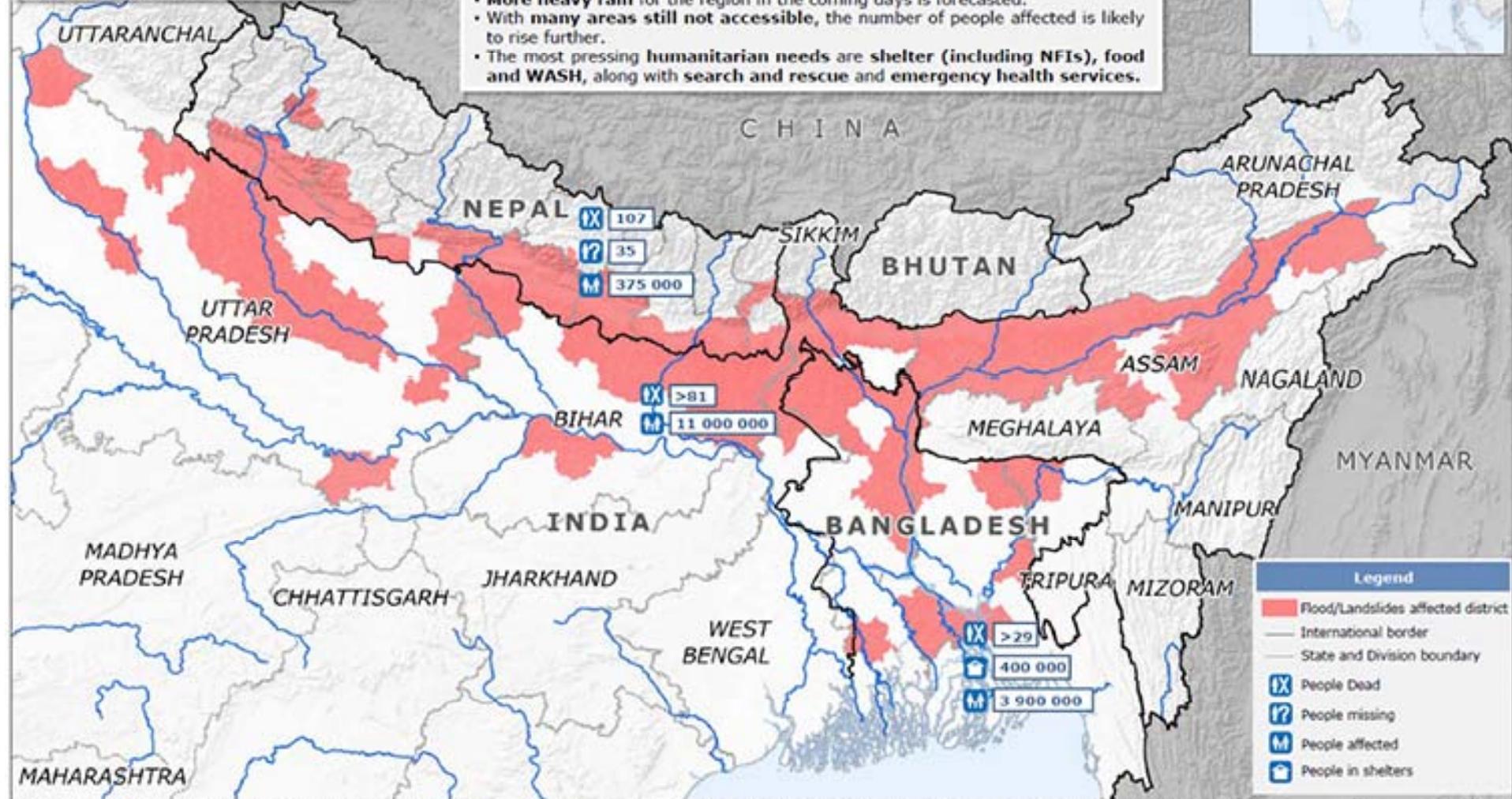
European Civil Protection
and Humanitarian Aid Operations

Situation overview From 9 to 16 August		
X	>200 People dead	
P	>2 000 000 Refugees and/or IDPs	
M	>15 000 000 Affected population	

Sources: Gov. sources, partners, media, ECHO

SITUATION

- Heavy monsoon rains have caused landslides and floods across northern India, southern Nepal and Bangladesh.
- A third of Bangladesh is under water. The situation is expected to worsen, as swollen rivers carry the flood water from upstream India into the low-lying and densely populated Brahmaputra delta.
- More heavy rain for the region in the coming days is forecasted.
- With many areas still not accessible, the number of people affected is likely to rise further.
- The most pressing humanitarian needs are shelter (including NFIs), food and WASH, along with search and rescue and emergency health services.





Flooding in Assam State, India: August 2017

Monsoon South Asia

Devastating floods, almost no insurance



Munich Re

Source: Munich Re NatCatSERVICE

Floods caused by the 2017 monsoon
claimed some 2,700 lives in South
Asia



**SIERRA LEONE MUDSLIDE-DEBRIS FLOW-DEBRIS FLOOD [FREETOWN, AUGUST 14, 2017]
TRIGGERED BY HEAVY RAINS [1,100 dead and missing]**

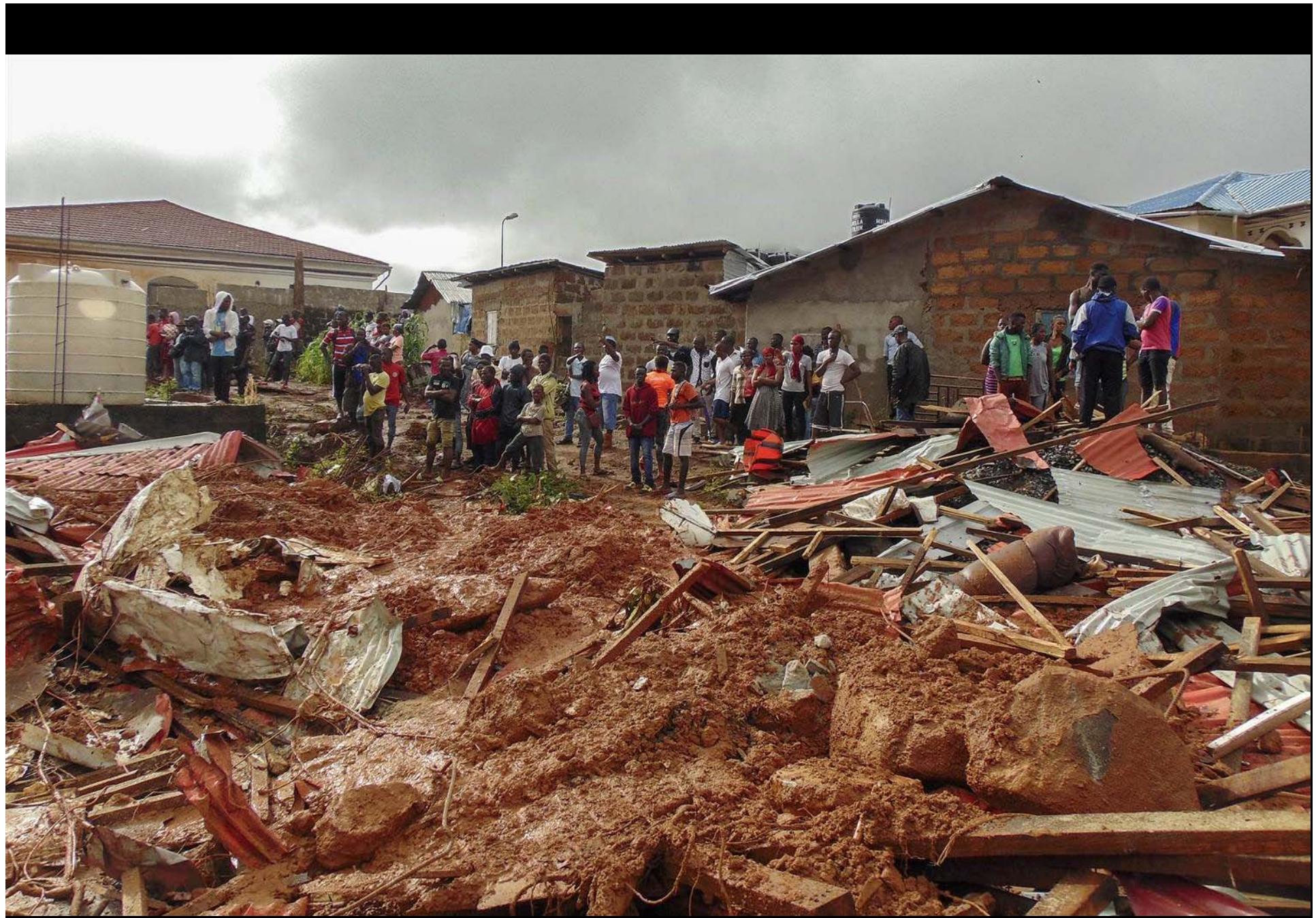


LANDSLIDES



“The scale of the human tragedy in Freetown is, sadly, very much man-made”

Makmid Kamara, Amnesty International's Deputy Director of Global Issues





MOCOA LANDSLIDE (DEBRIS FLOW-DEBRIS FLOOD), COLOMBIA,
TRIGGERED BY HEAVY RAINS: 324 deaths [April 1, 2017]

MOCOA, COLOMBIA

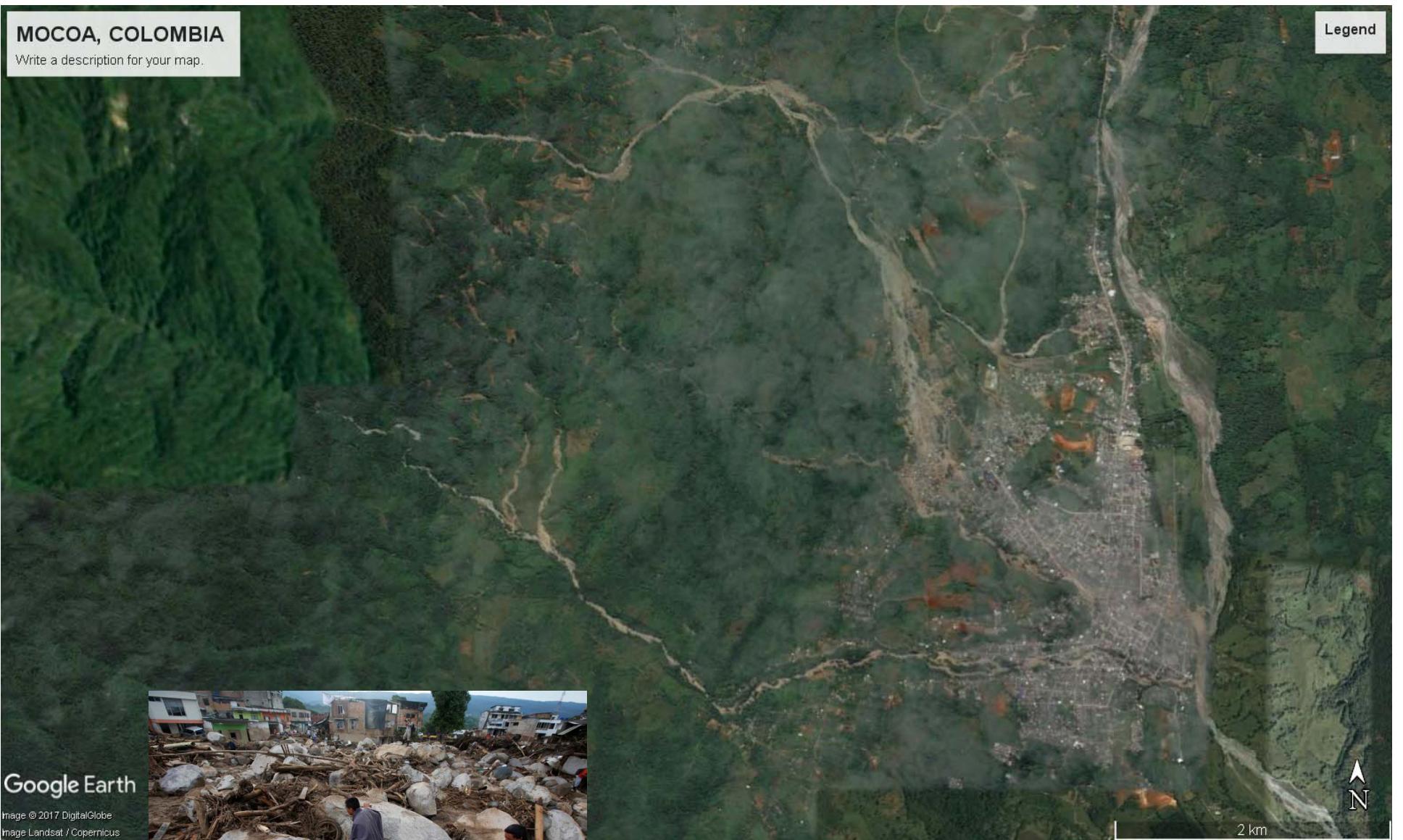
Write a description for your map.

Legend



Google Earth

Image © 2017 DigitalGlobe
Image Landsat / Copernicus

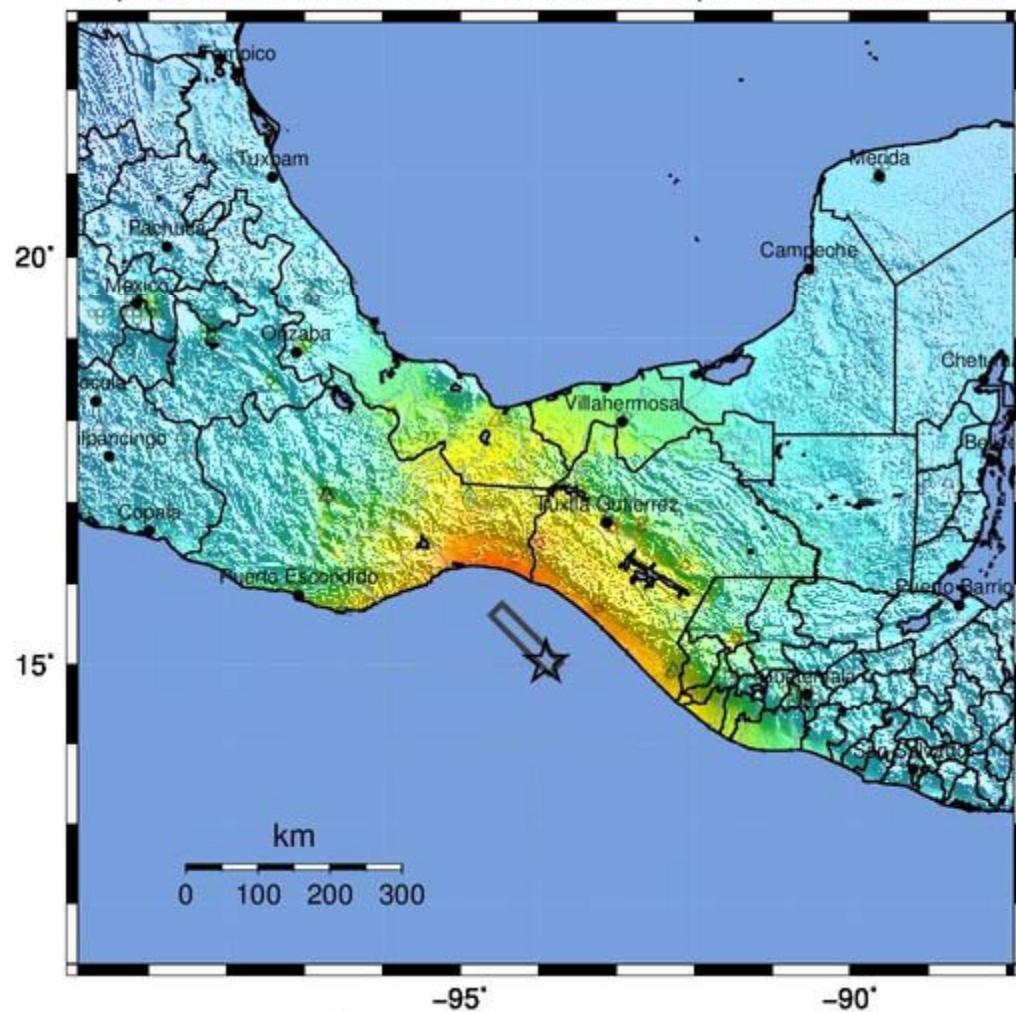


MOCOA LANDSLIDE (DEBRIS FLOW-DEBRIS FLOOD),
COLOMBIA, TRIGGERED BY HEAVY RAINS: 324
deaths [April 1, 2017]

XINMO LANDSLIDE, SICHUAN PROVINCE, CHINA [June 2017; 83 deaths]



USGS ShakeMap : OFFSHORE CHIAPAS, MEXICO
 Sep 8, 2017 04:49:19 UTC M 8.2 N15.02 W93.90 Depth: 47.4km ID:us2000ahv0



Map Version 10 Processed 2017-10-27 21:47:06 UTC

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)

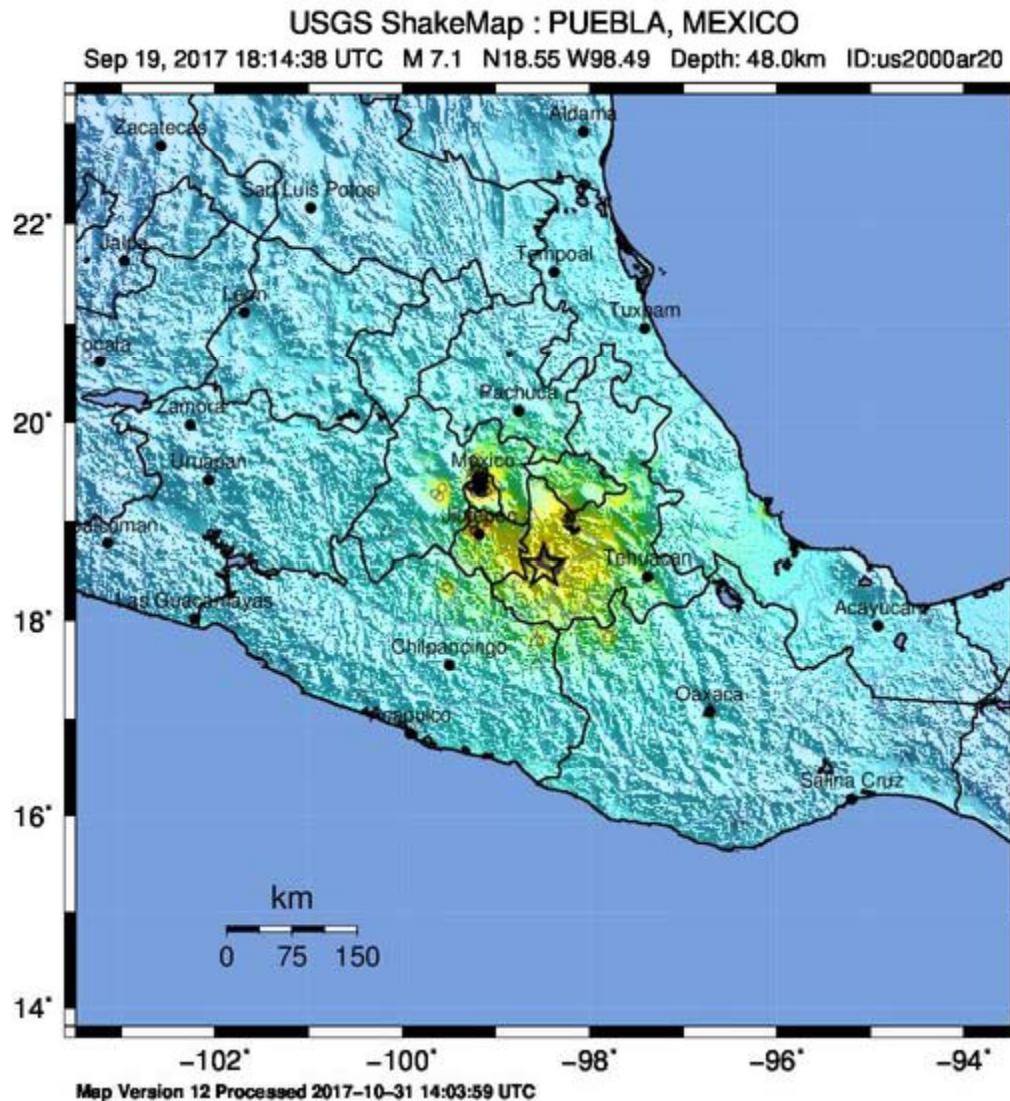
2017 MEXICO EARTHQUAKES 1

- M 8.2 (September 8 2017).
- At least 44 buildings collapsed in Mexico City.
- At least 100 deaths.
- Tsunami along Chiapas coast





Collapsed building in Oaxaca State

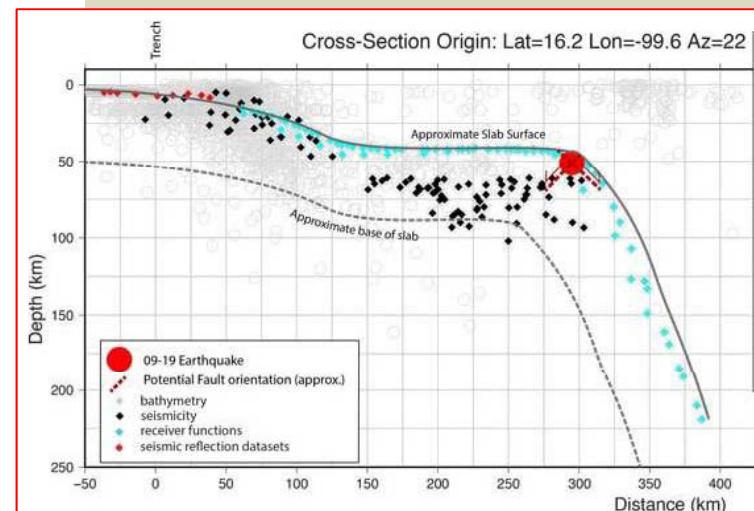


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)

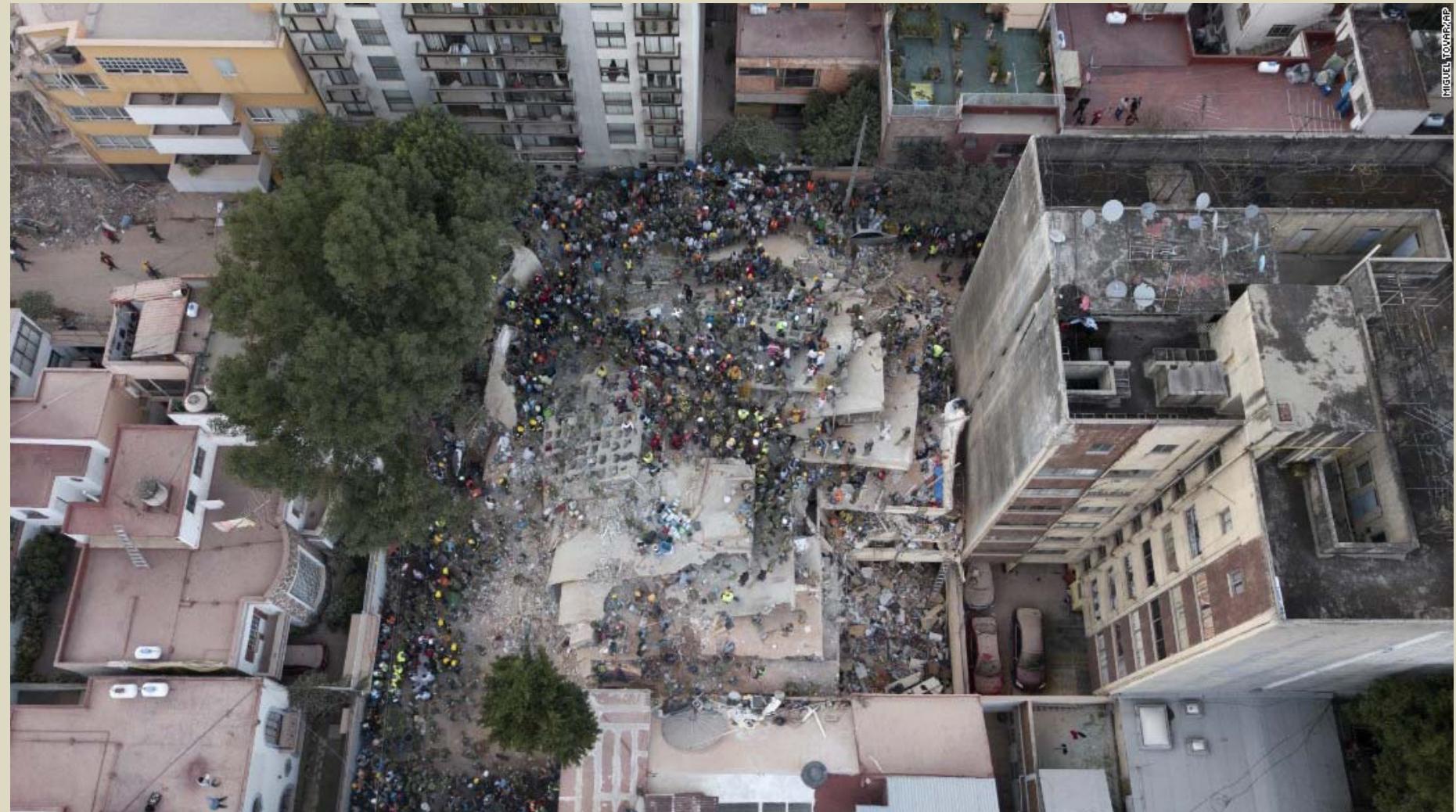
2017 MEXICO EARTHQUAKES 2

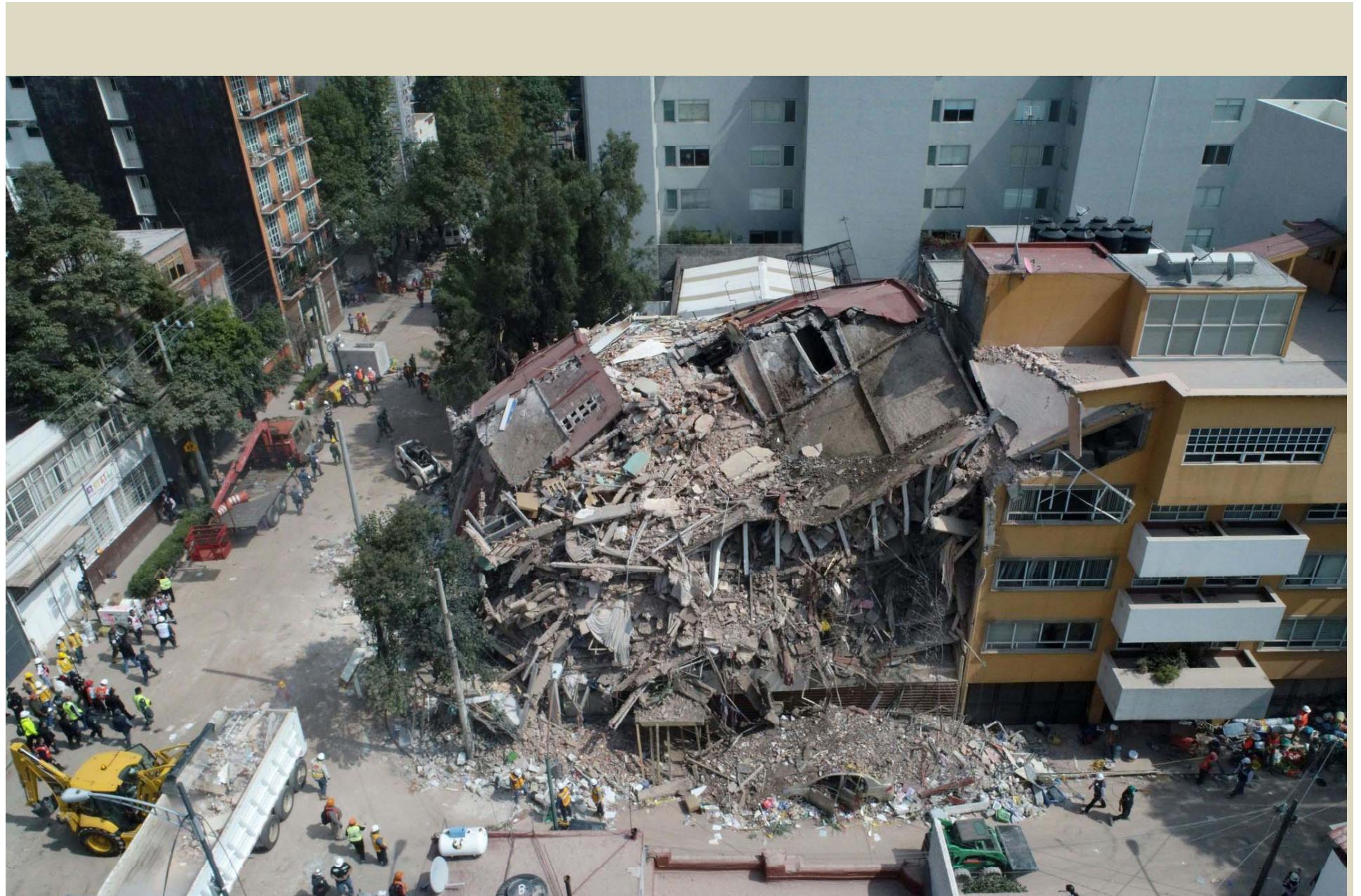
- M 7.1 (September 19 2017).
- At least 44 buildings collapsed in Mexico City.
- At least 375 deaths.
- Exactly 32 years after the M8.0 Great Mexico City Earthquake of 1985 in which about 5,000 people lost their lives



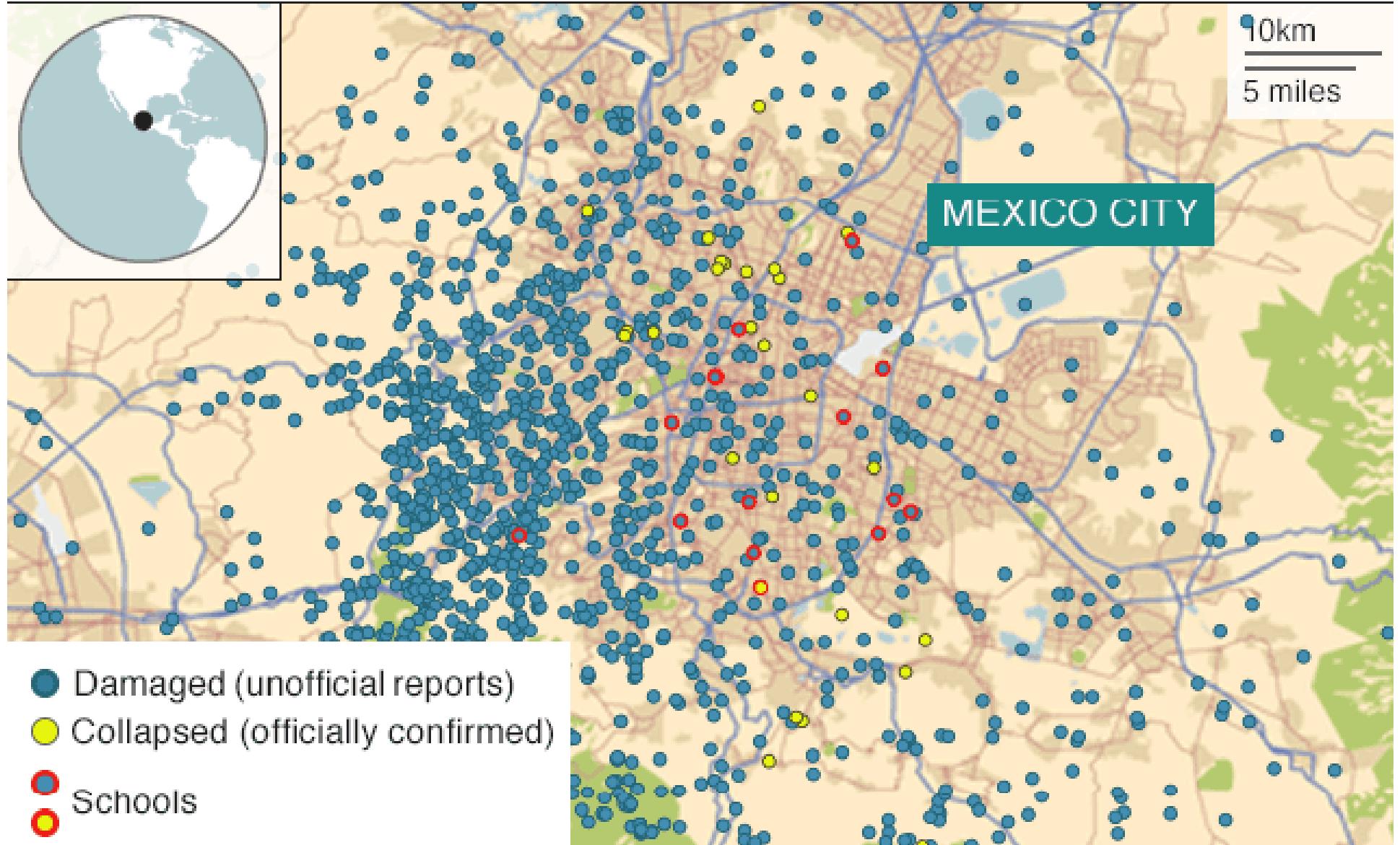
His Mexico City Apartment Block Was Built Only Months Ago. So Why Did It Collapse So Easily?

Headline from *Time Magazine* September 23, 2017





Damaged buildings in Mexico City



Source: Mexican government

BBC

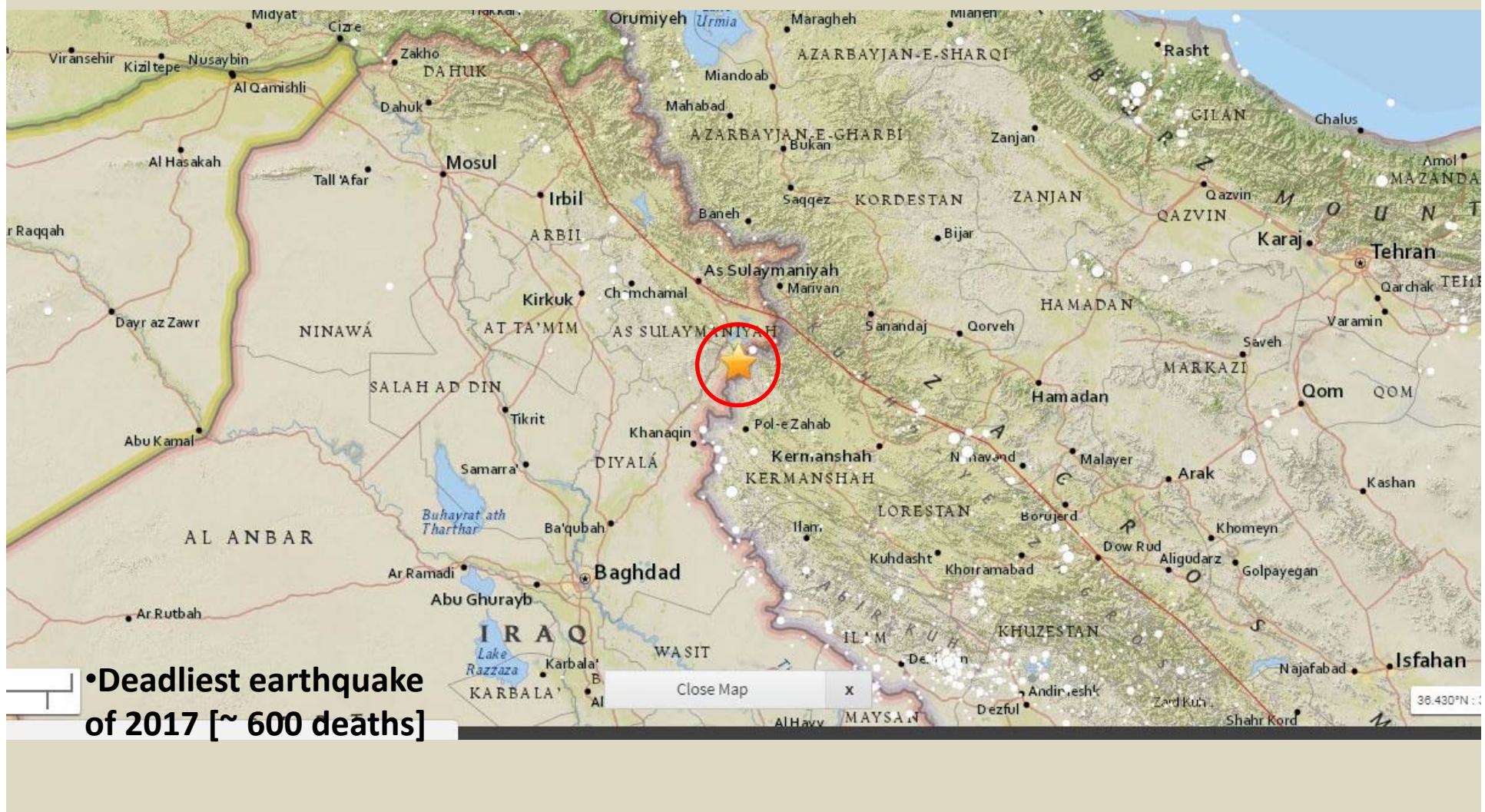


1985 M8.0 Mexico City Earthquake resulted in 5,000 deaths mostly in building collapse. A landmark event in engineering seismology.



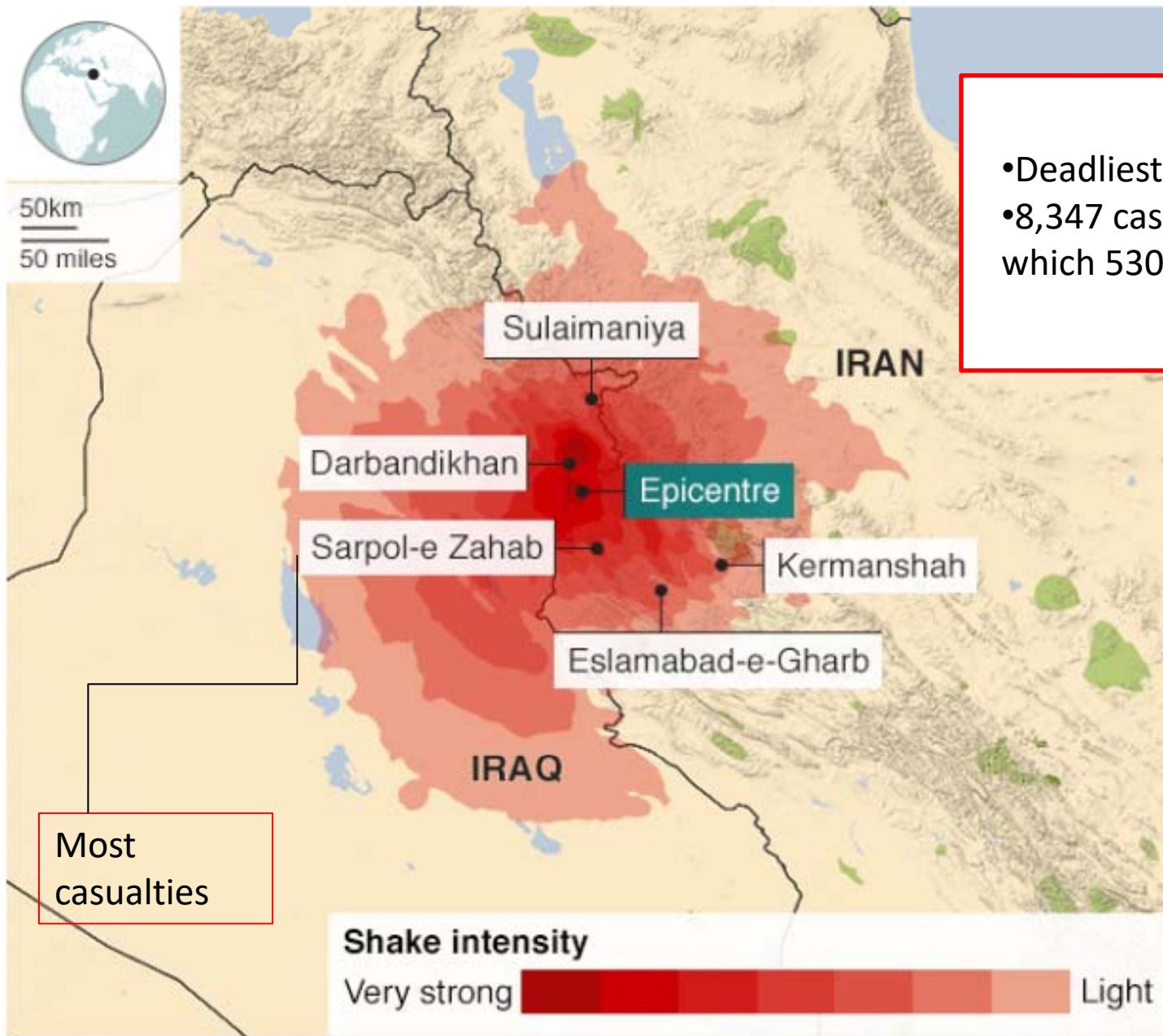
M7.3 EARTHQUAKE November 12, 2017 [IRAN-IRAQ BORDER]

M7.3 EARTHQUAKE November 12, 2017 [IRAN-IRAQ BORDER]



The November 12, 2017 M 7.3 earthquake near the Iran-Iraq border in northwest Iran (220 km northeast of Baghdad, Iraq) occurred as the result of oblique-thrust faulting at mid-crustal depth (~25 km). Preliminary focal mechanism solutions for the event indicate rupture occurred on a fault dipping shallowly to the east-northeast, or on a fault dipping steeply to the southwest. At the location of this earthquake, the Arabia plate is moving towards the north with respect to Eurasia at a rate of about 26 mm/yr. The two plates converge along a northwest-striking plate boundary in the general vicinity of this earthquake, driving the uplift of the Zagros mountains in Iran. The location of the event and the shallow, northeast-dipping plane of the focal mechanism solution are consistent with rupture of a plate boundary related structure in this region.

Tremors from quake on Iran/Iraq border



- Deadliest earthquake in 2017
- 8,347 casualties in Iran of which 530 were deaths (6%)

Why is Iran prone to earthquakes?

Analysis by Jonathan Amos, BBC Science Correspondent

Iran is one of those regions of the world that is all too familiar with quakes, and has experienced some very big tremors in the past.

In general terms, the big driver here is the clash between the Arabia and Eurasia tectonic plates. The former is pushing north by a couple of centimetres a year.

In the south-east of the country, the Arabia plate is actually pushing under the Eurasia plate, but in the north-west these great slabs rub directly against each other. The Zagros mountains are a result of all this compression.

Early reports indicate the quake occurred on a thrust fault. This means the crust on one side of the break in the rocks is moved vertically up and over the other side - which fits exactly with this general picture.

Geological agencies now produce immediate bulletins on the likely expected casualties. This modelling work is based on factors such as the size of the quake, population density and what is known about local construction methods. It's inexact work, but the first bulletins suggested this event could produce many hundreds of deaths and perhaps thousands of injured individuals.

VOLCANOES



Mount Agung, Bali, Indonesia [November 2017]

VOLCANIC HAZARDS – ON THE GROUND AND IN THE AIR

'Red warning' to airlines over Bali volcano

It flags the danger of volcanic ash in the skies after Mount Agung emits a huge smoke plume.

⌚ 1 hour ago | [Asia](#)

- ▶ [Bali volcano ash disrupts flights](#)
- ▶ [Bali's Mount Agung volcano erupts](#)
- ▶ [The last time Agung erupted](#)



November 26, 2017

Thousands leave their houses as Mount Agung volcano erupts

⌚ 21 November 2017 | [Asia](#)

[!\[\]\(b95805d2b7fc6bef10576db0580256f1_img.jpg\)](#) [!\[\]\(078a90b3588cafbfffd7bdd239ccf8d1_img.jpg\)](#) [!\[\]\(68b64b229245a3ff01e63a45da6066a0_img.jpg\)](#) [!\[\]\(d65af450cc009d1a33f3455259eeb4b8_img.jpg\)](#) [!\[\]\(b7dabee85adb2ad680a3c382bbd2090c_img.jpg\) Share](#)



Tens of thousands of people fled their homes near Mount Agung

Indonesia: Volcano nation

⌚ 5 November 2015 | Asia



Share



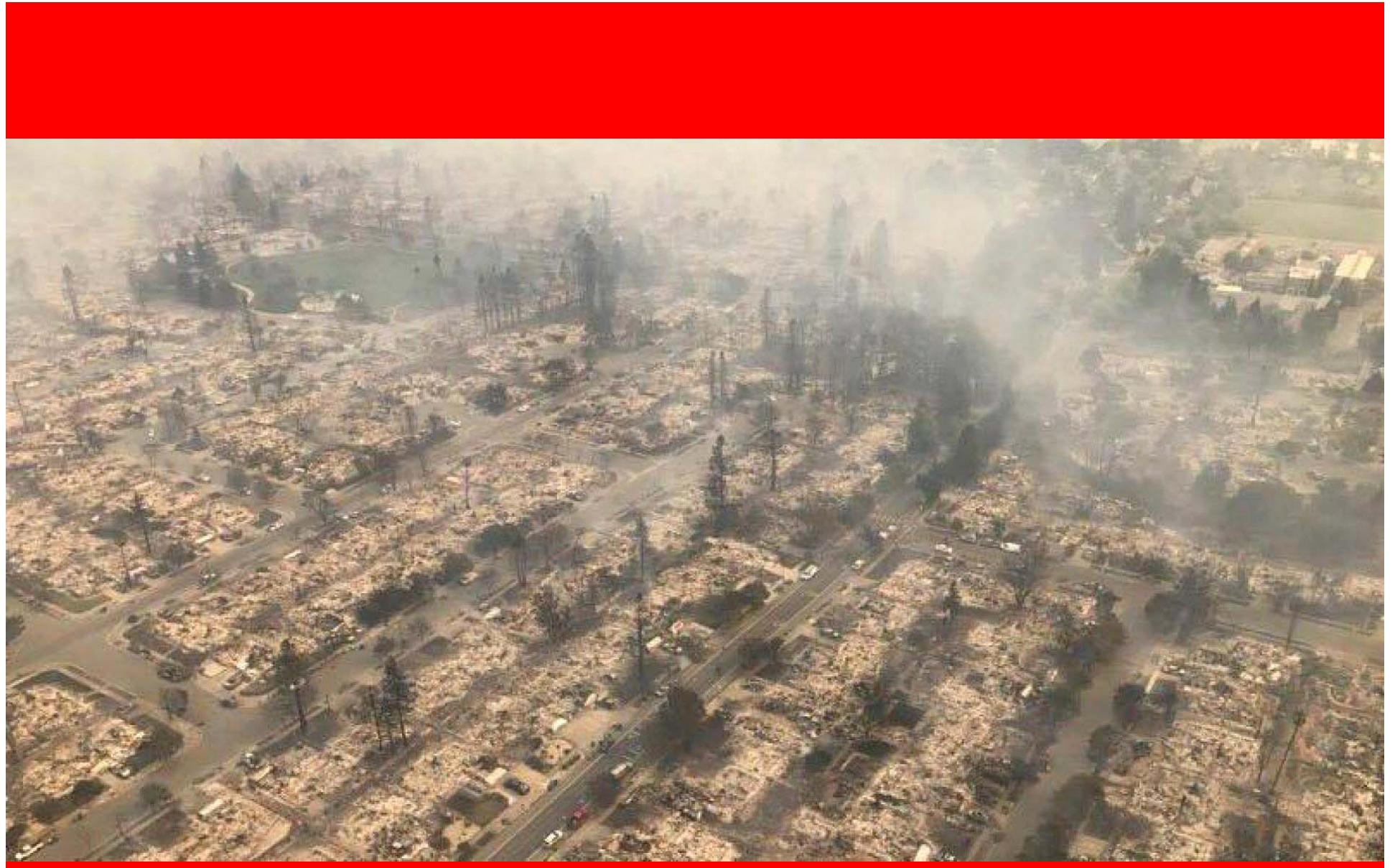
AFP

Indonesia is home to around 130 active volcanoes

WILDFIRES

Oroville, California [December 2017]

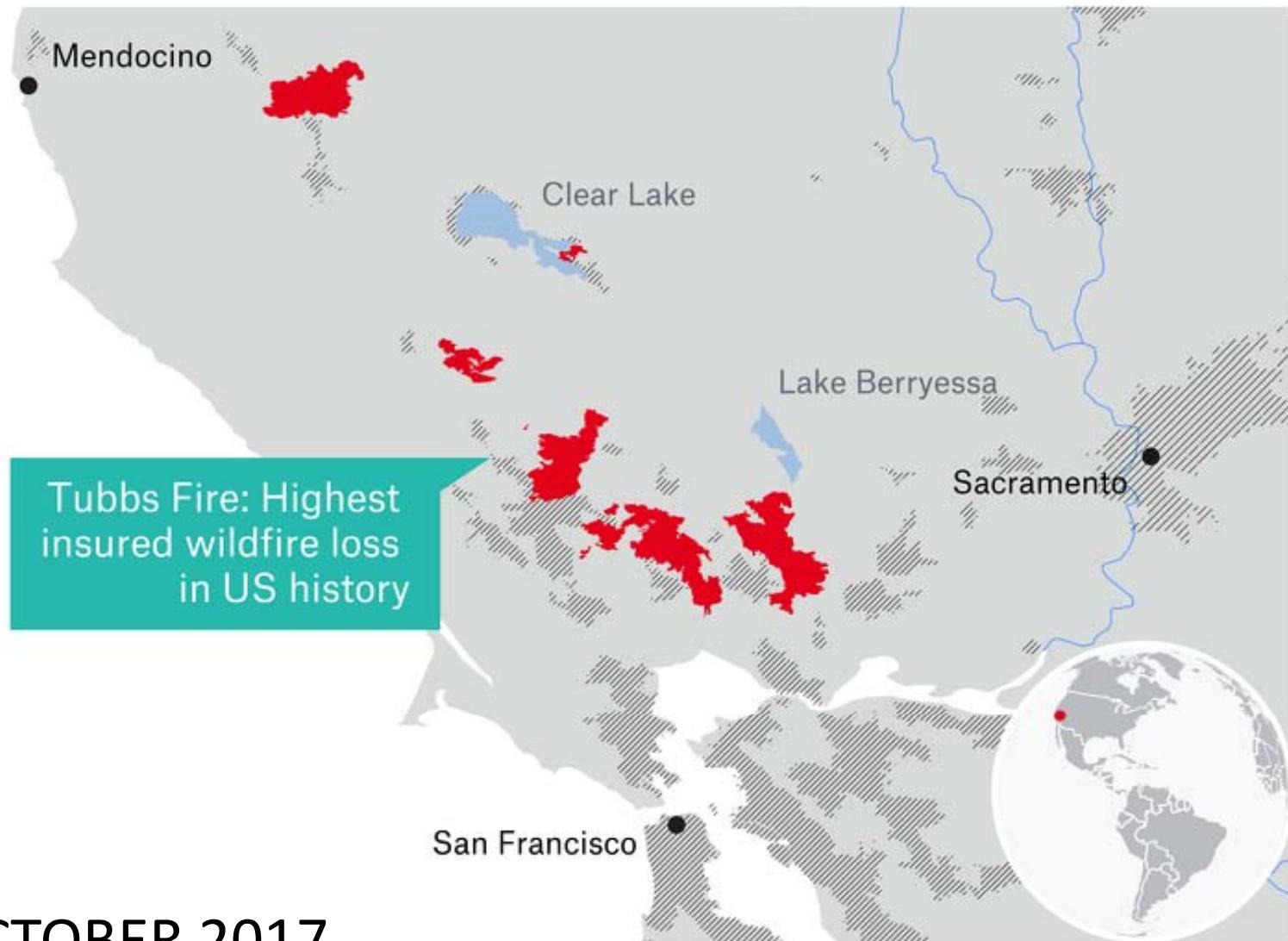




Fire destruction, Santa Rosa, northern California [October 2017]

■ Wildfire-affected areas

■ Urban areas



OCTOBER 2017

■ Wildfire-affected areas

■ Urban areas



DECEMBER 2017

WILDFIRES IN SOUTHERN CALIFORNIA, DECEMBER 2017



Thomas Fire, California [December 16, 2017]

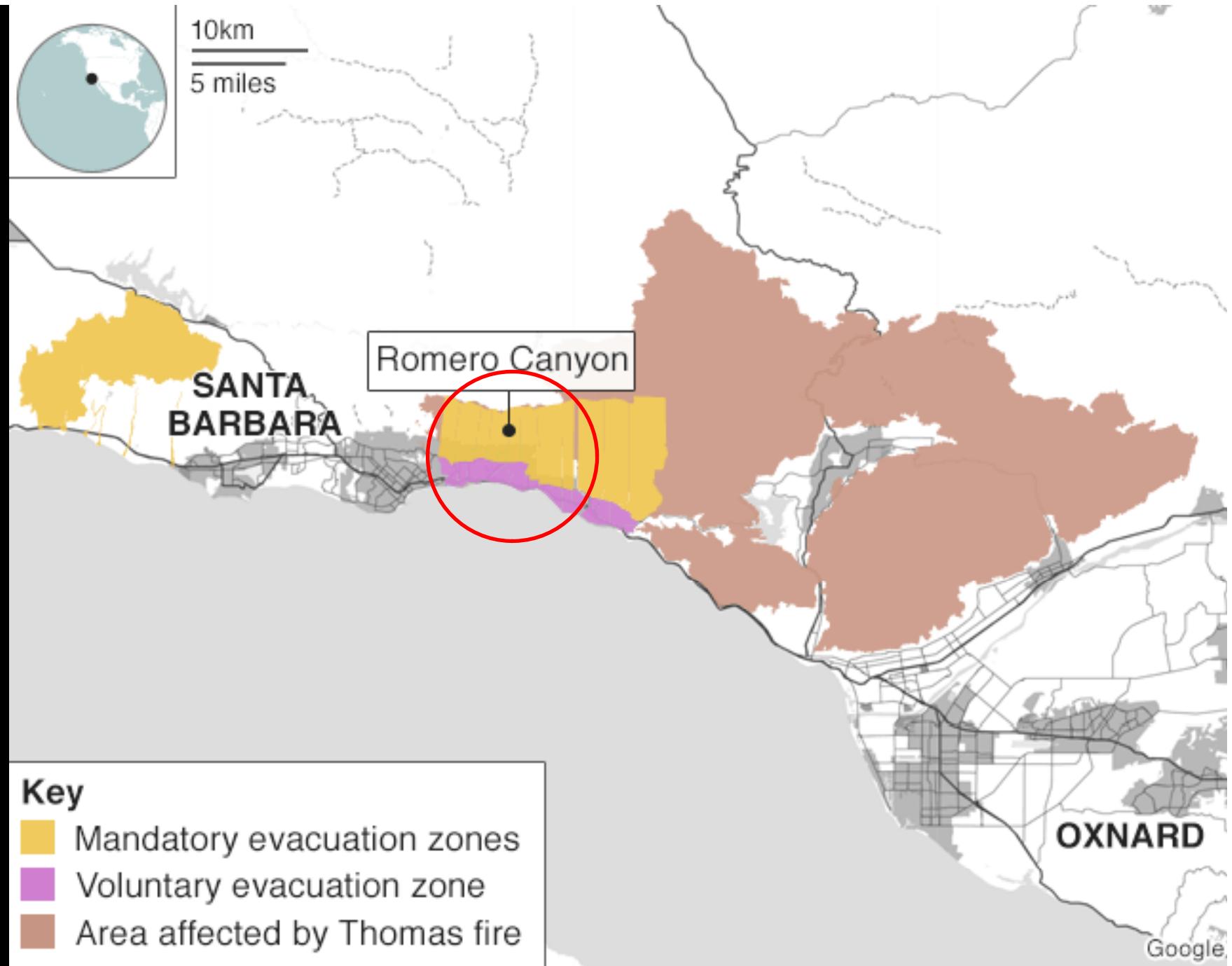


Also in the second half of 2017, hot and dry weather in California created favourable conditions for wildfires to ignite and spread to urban areas. There were three major fire events in October in Northern California: Tubbs, Atlas and Mendocino Lake. Both residential and commercial property (including vineyards) were impacted. According to preliminary estimates from Property Claims Services, the major fire events triggered combined insured property losses of USD 7.3 billion. Fires are still raging in Southern California in December, and the as-yet undetermined full-year losses from wildfires will likely be higher.



Swiss Re

JANUARY 2018 CALIFORNIA MUDSLIDES



Source: Santa Barbara County

BBC



Montecito, Santa Barbara County, CA – January 10, 2018

Debris flows/debris floods triggered by heavy rains falling on slopes affected by wildfire – 15 deaths and more than a dozen missing



Montecito, Santa Barbara County, CA – January 10, 2018

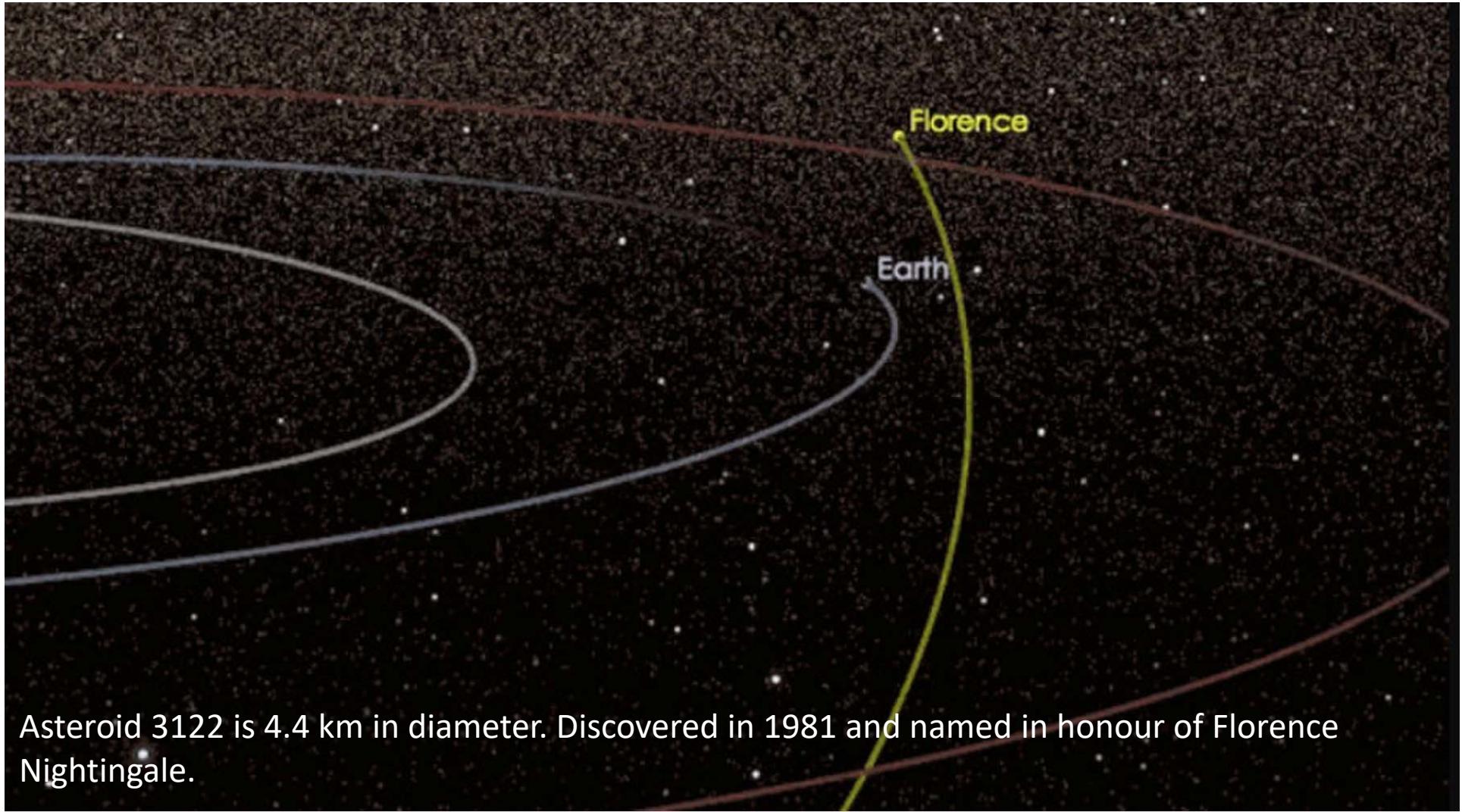
MONTECITO ; VERY-HIGH VALUE EXPOSED ELEMENTS



Hurricanes and heatwaves: stark signs of climate change 'new normal'

This year is set to be the third warmest on record in the US, as scientists say the fingerprints of climate change can be seen in numerous extreme weather events

The Guardian, December 28, 2017



Asteroid 3122 is 4.4 km in diameter. Discovered in 1981 and named in honour of Florence Nightingale.

Florence: Largest asteroid in century to safely fly by Earth

September 1, 2017

2 hours ago | Science & Environment

f t m e Share

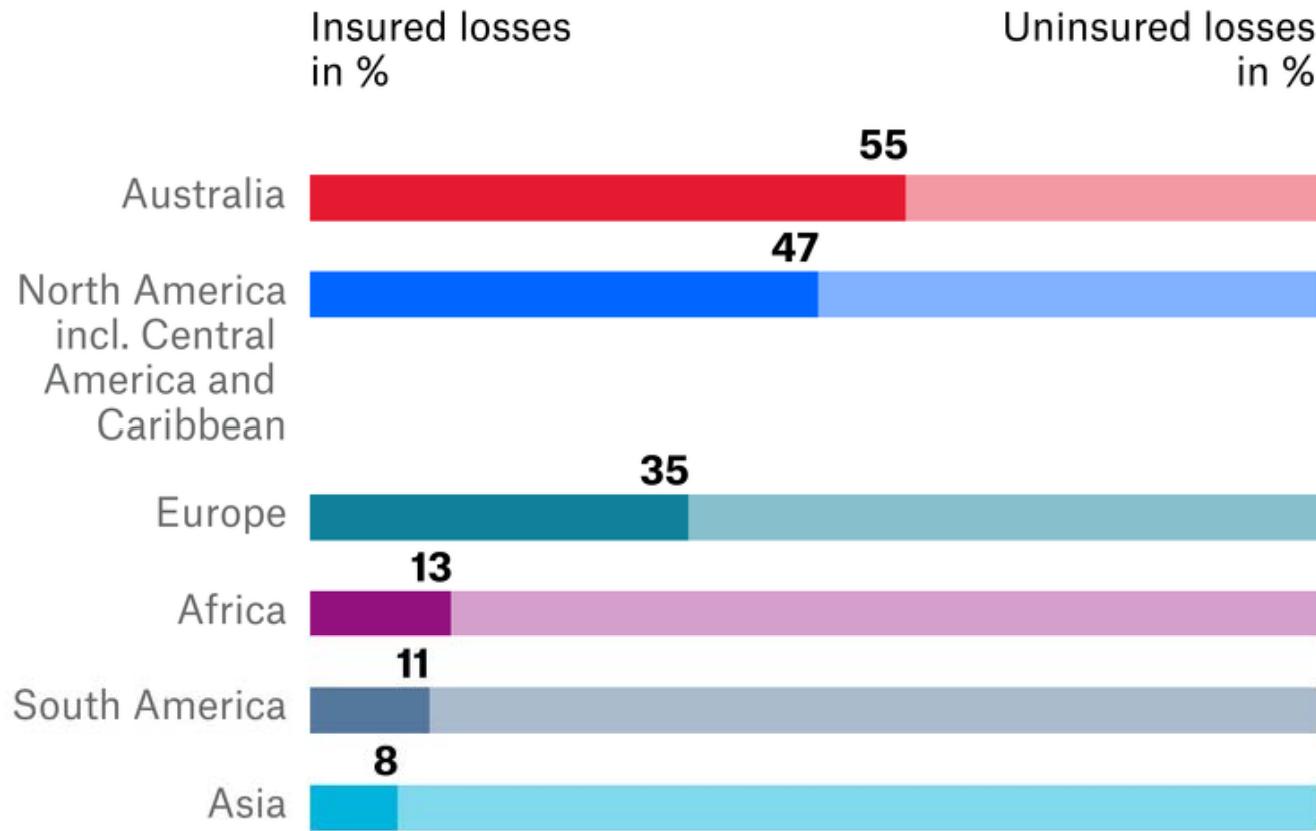


Florence safely flew by Earth by 4.4 million miles [18 Earth-Moon distances] on September 1, 2017



Natural catastrophes 2017

Insurance gap in different regions



Torsten Jeworrek, Munich Re Board member responsible for global reinsurance business: "This year's extreme natural catastrophes show how important insurance is in absorbing financial losses in the wake of such disasters. Munich Re is willing to develop this business further – we have the necessary capacity and expertise. For me, a key point is that some of the catastrophic events, such as the series of three extremely damaging hurricanes, or the very severe flooding in South Asia after extraordinarily heavy monsoon rains, are giving us a foretaste of what is to come. Because even though individual events cannot be directly traced to climate change, our experts expect such extreme weather to occur more often in future."

