

# WMO cataloguing of hazardous events and the Global Multi-Hazard Alert System



**WMO OMM**

**World Meteorological Organization  
Organisation météorologique mondiale**

# International Disaster Databases



WMO OMM

About 325,000,000 results (0.25 seconds)



EM-DAT

<https://www.emdat.be>

## EM-DAT - The international disaster database

**EM-DAT** is a global database with information on over 26000 mass disasters from 1900 to present day. It's compiled from various sources, including UN ...

### EM-DAT

News, project overview and staff. EM-DAT Documentation. Go ...

### Publications

EM-DAT is a global database with information on over 26000 mass ...

### Annual reports

EM-DAT is a global database with information on over 26000 mass ...

### CRED Crunch (Newsletter)

EM-DAT is a global database with information on over 26000 mass ...

[More results from emdat.be »](#)



# INVENTORYING HAZARDS & DISASTERS WORLDWIDE SINCE 1988

EM-DAT contains data on the occurrence and impacts of over 26,000 mass disasters worldwide from 1900 to the present day. The database is compiled from various sources, including UN agencies, non-governmental organizations, reinsurance companies, research institutes, and press agencies. The **Centre for Research on the Epidemiology of Disasters (CRED)** distributes the data in **open access** for non-commercial use.

 [Access the data](#)

 [Documentation](#)

## Documentation

[Introduction](#)[Data Accessibility](#)[Data Structure and Content Description](#)[Protocols](#)[Known Issues and Limitations](#)[Additional Resources and Tutorials](#)[About](#)[Legal Texts](#)[Documentation](#)[Print entire section](#)

# Welcome to the EM-DAT Documentation

## Learn to use EM-DAT

This comprehensive documentation will help users by explaining the basics of the EM-DAT international disaster database.

Start by exploring one of the following options:

- Use the **Table of Content** in the left sidebar or the **menu** below to navigate through the documentation.
- Use the **search** engine in the top-right corner.
- Print or export the documentation to PDF or one of its sections using the **print** option in the right sidebar.

### [Introduction](#)

Overview of EM-DAT and Latest Updates

### [Data Accessibility](#)

How to Access the Data and Legal Conditions for Using EM-DAT

### [Data Structure and Content Description](#)

In-depth Presentation of the Structure and Content of the Database





### Classification

Climatological × Hydrological × Meteorological ×

### Countries

Oman ×

### Time period

From 2000

To 2023



*Pre-2000 data is particularly subject to reporting biases. To download this data, activate the button below.*

Include Historical events (pre-2000).

Reset

Download

Records found: 14



dewetra cambodia



Images

Maps

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Books

Flights

Finance

All filters ▾

Tools

About 302 results (0.34 seconds)



mydewetra.world

<https://cl.mydewetra.world>

## myDEWETRA 2.0

The CREWS **Cambodia** and Lao PDR project aims to strengthen capacities at national and regional level to provide Hydromet, early warning and response services to ...



CIMA Research Foundation

<https://bolivia.mydewetra.cimafoundation.org>

## myDEWETRA 2.0

myDEWETRA is a real-time system for hydro-meteorological forecasting and monitoring. A web based platform that systematically organizes data and information ...

Missing: cambodia | Show results with: [cambodia](#)



CIMA Research Foundation

<https://wikisrv.cimafoundation.org>

## CIMA Foundation - MyDewetra World

Apr 22, 2021 — ... **Cambodia**, Laos PDR and Myanmar. This has resulted in an operational ... world **Dewetra** platform], a system for real time monitoring ...



WMO OMM



# myDEWETRA

Observation. Prediction. Prevention.



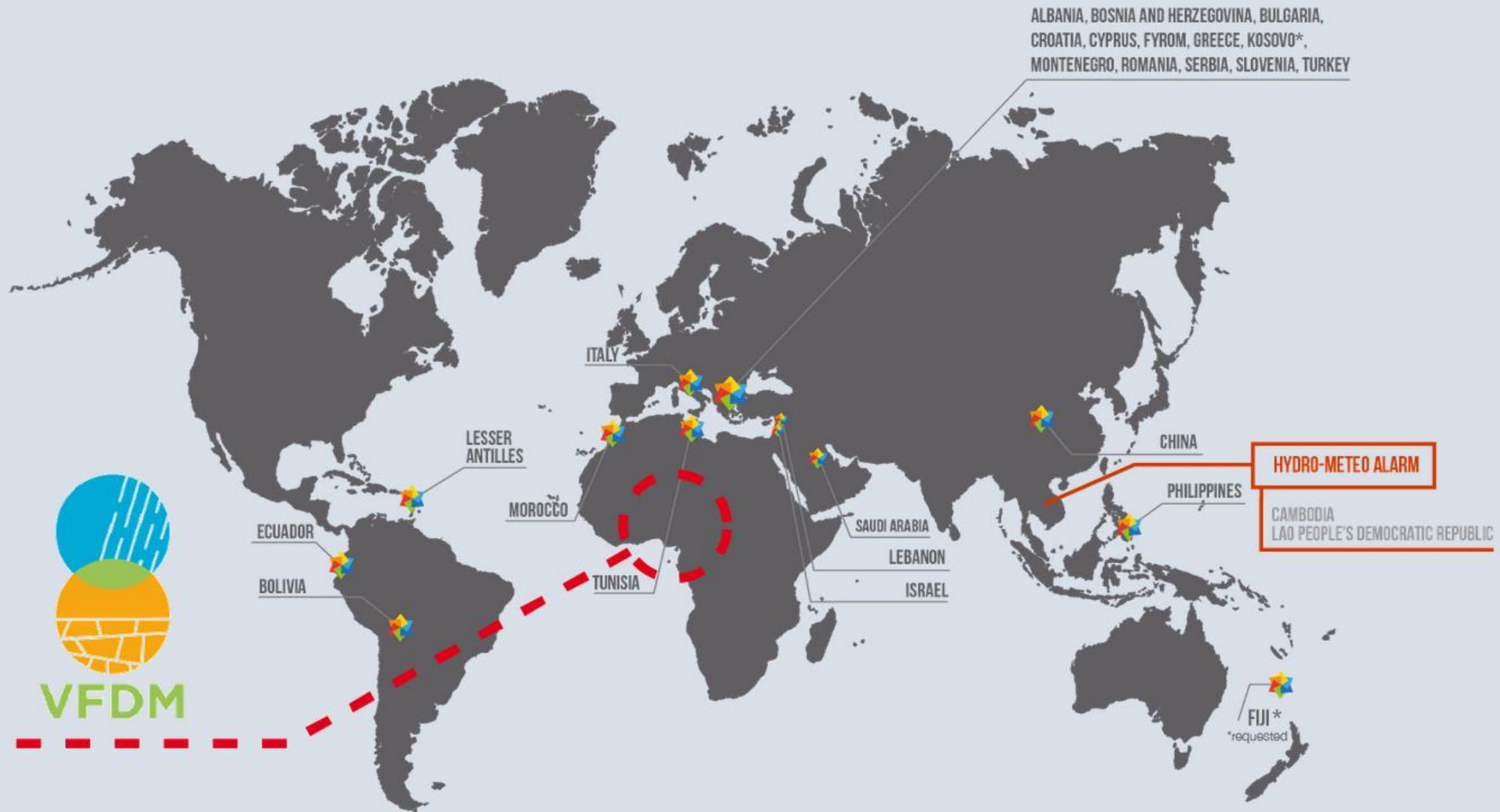
**PROTEZIONE CIVILE**

Presidenza del Consiglio dei Ministri  
Dipartimento della Protezione Civile





# Portal



## Disaster losses and damages tracking

UNDRR and partner organisations support countries in monitoring their progress in reducing losses and damages at national and sub-national levels through a publicly-accessible DesInventar disaster information management system.



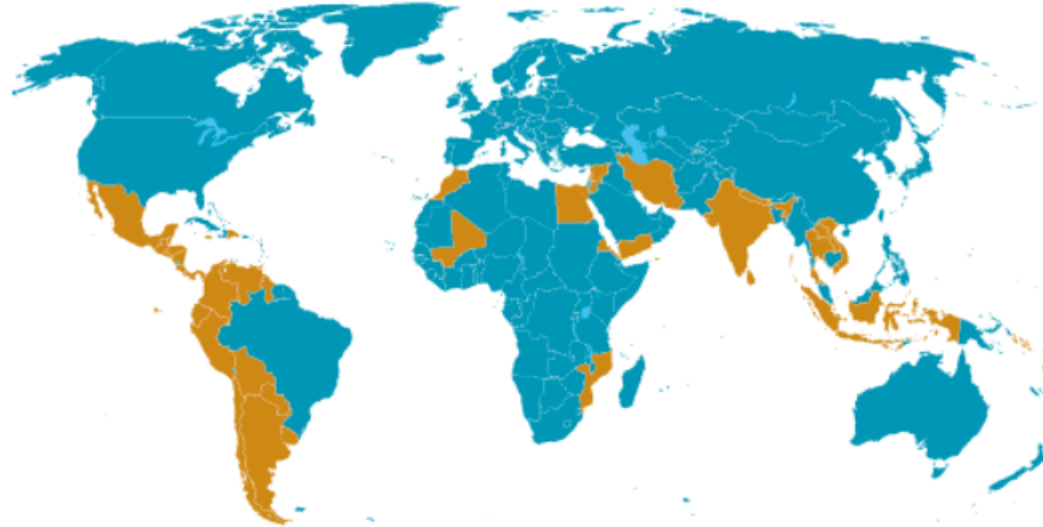
### Coming soon! A new disaster losses and damages tracking system

Aware of the emerging user needs and the existence of modern solutions, UNDRR, UNDP and WMO are collaborating to develop a new hazardous event and disaster losses and damages tracking system. The new system will replace the existing DesInventar with a more comprehensive and interoperable tracking system that will cover both hazardous events, as well as disaggregated losses and damages at localized scales.





SOME OF THE AVAILABLE DATASETS WORLDWIDE



**Americas**

Argentina  
Bolivia  
Chile  
Colombia  
Costa Rica  
Ecuador  
El Salvador  
Guatemala  
Guyana  
Honduras  
Jamaica  
Mexico  
Nicaragua  
Trinidad & Tobago  
Panama  
Paraguay  
Peru  
Republica Dominicana  
Uruguay  
Venezuela

**Asia Pacific**

India (Orissa)  
India (Tamil Nadu)  
India (Uttar Pradesh)  
India (Mizoram)  
Indonesia  
Iran  
Jordan  
Laos  
Lebanon  
Maldives  
Nepal  
Solomon Islands  
Sri Lanka  
Syria  
Timor Leste  
Vietnam  
Yemen

**Africa**

Angola  
Djibouti  
Egypt  
Ethiopia  
Equatorial Guinea  
Ethiopia  
Gambia  
Guinea  
Kenya  
Mali  
Morocco  
Kenya  
Mozambique  
Uganda

**Indian Ocean Commission:**

Comoros  
Madagascar  
Mauritius  
Seychelles  
Zanzibar/Tanzania

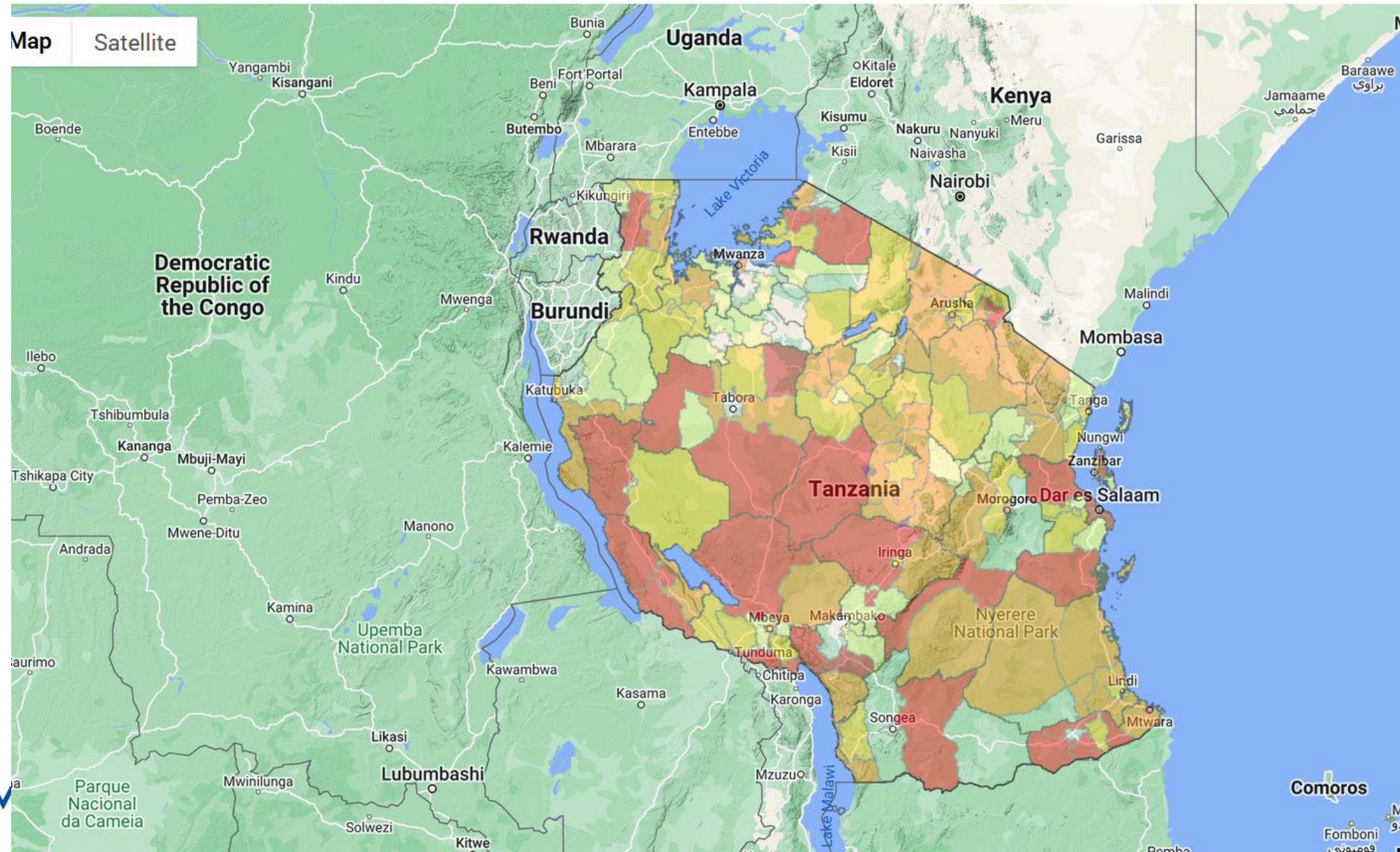


WMO OMM

Region: Tanzania - [ tza ]

Thematic Map Generator

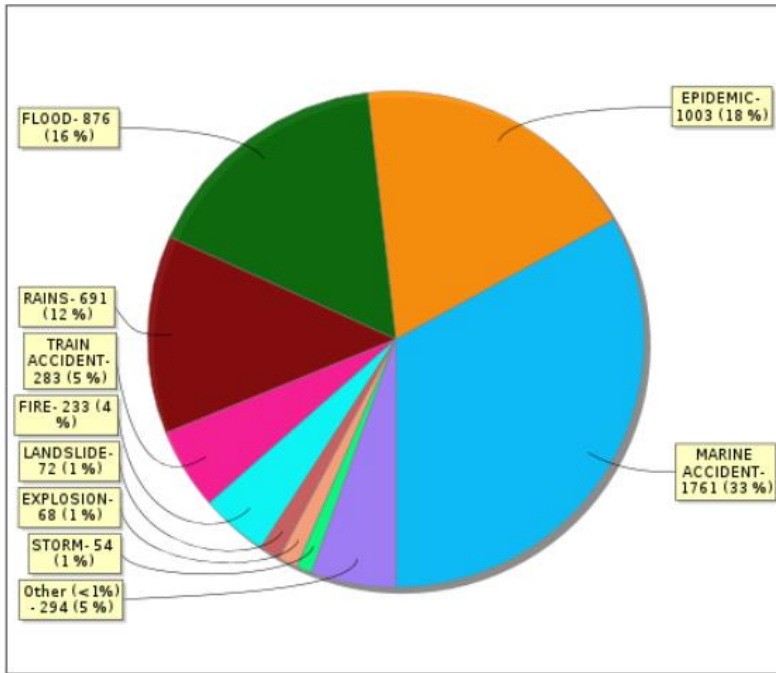
[Back to thematic definition..](#) | [Dynamic Map](#) | [Virtual Earth](#) | [KML](#) | [KML-Vector](#) | [SVG](#)



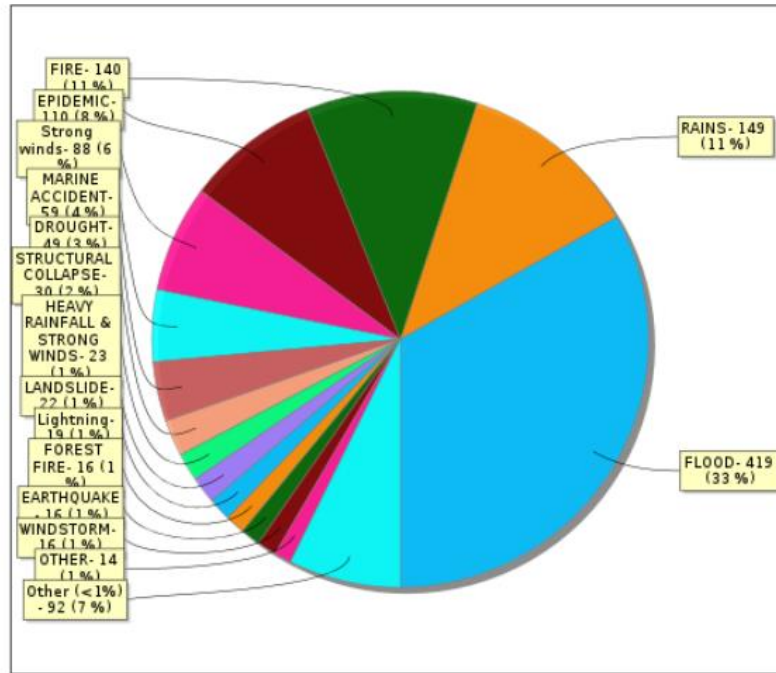
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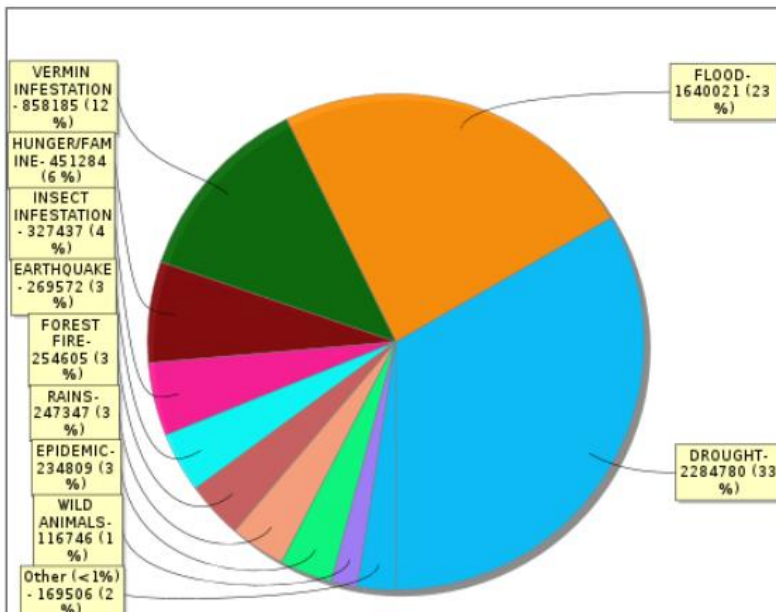
### Deaths



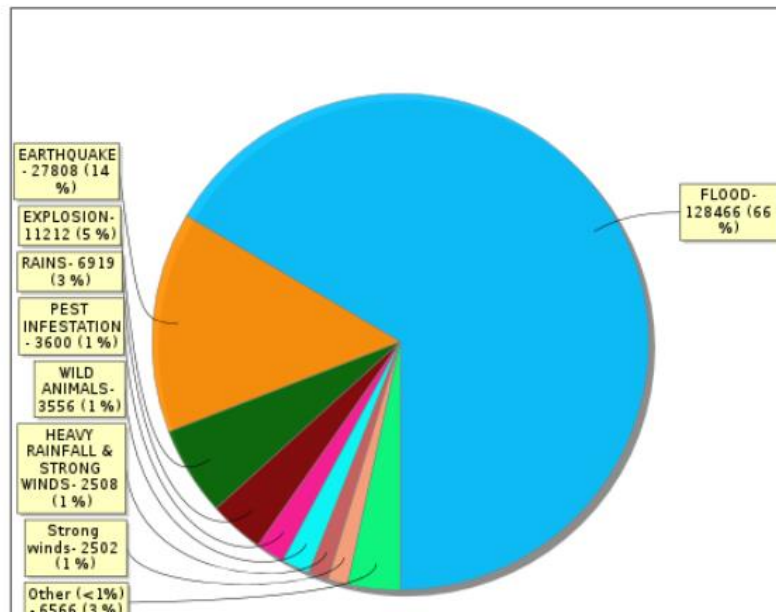
### DataCards



### Indirectly Affected + Directly affected



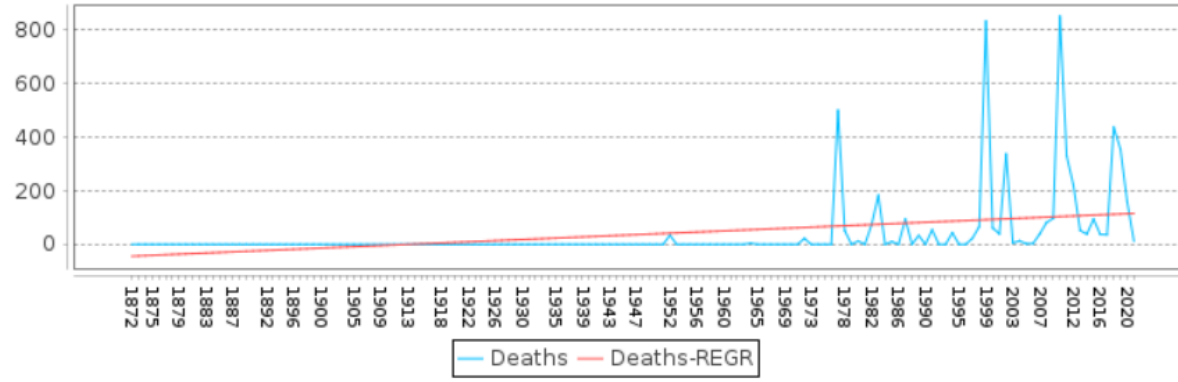
### Houses Destroyed + Houses Damaged



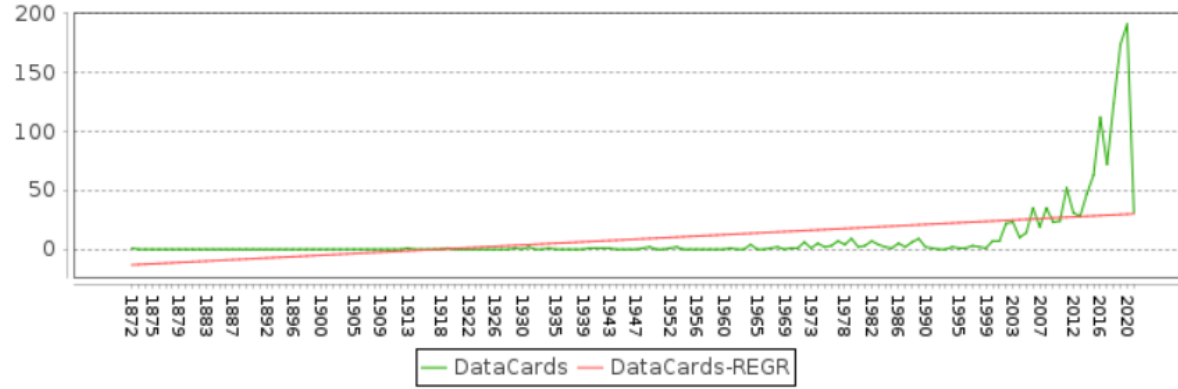


# Temporal Behaviour

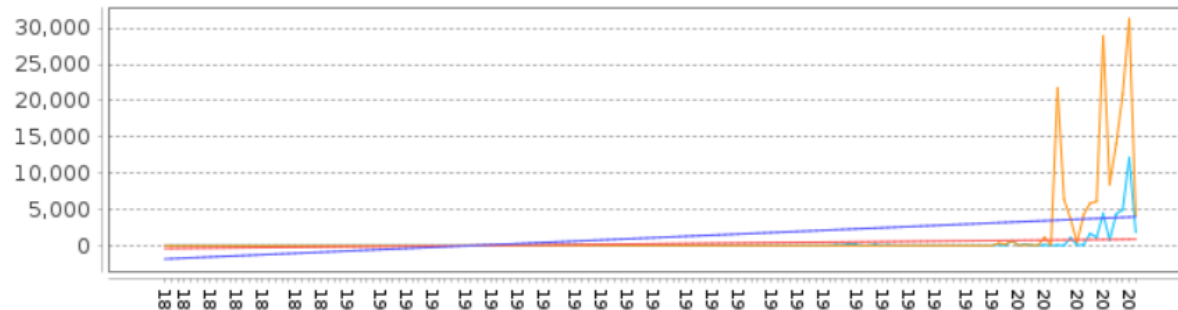
## Deaths



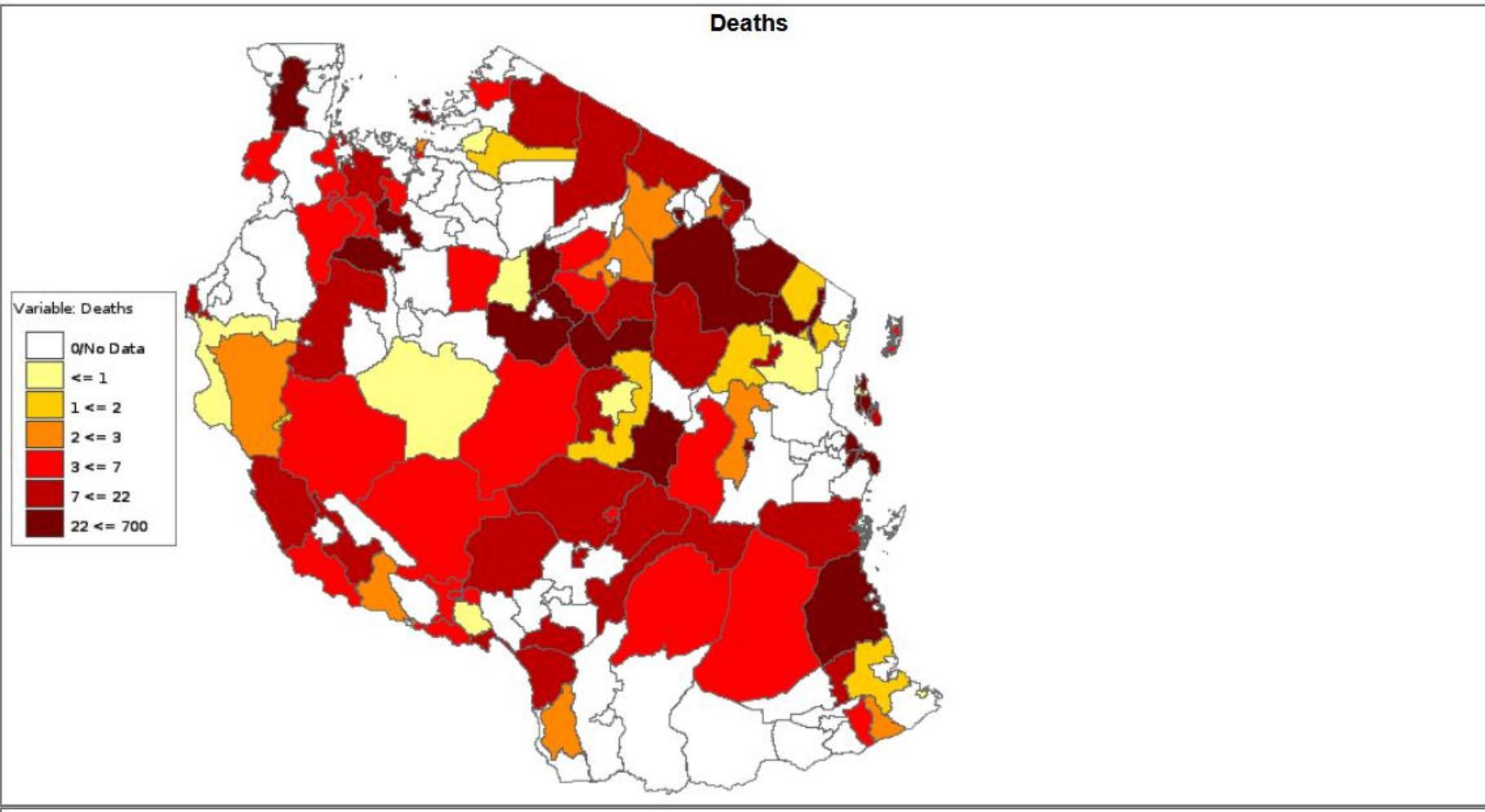
## DataCards



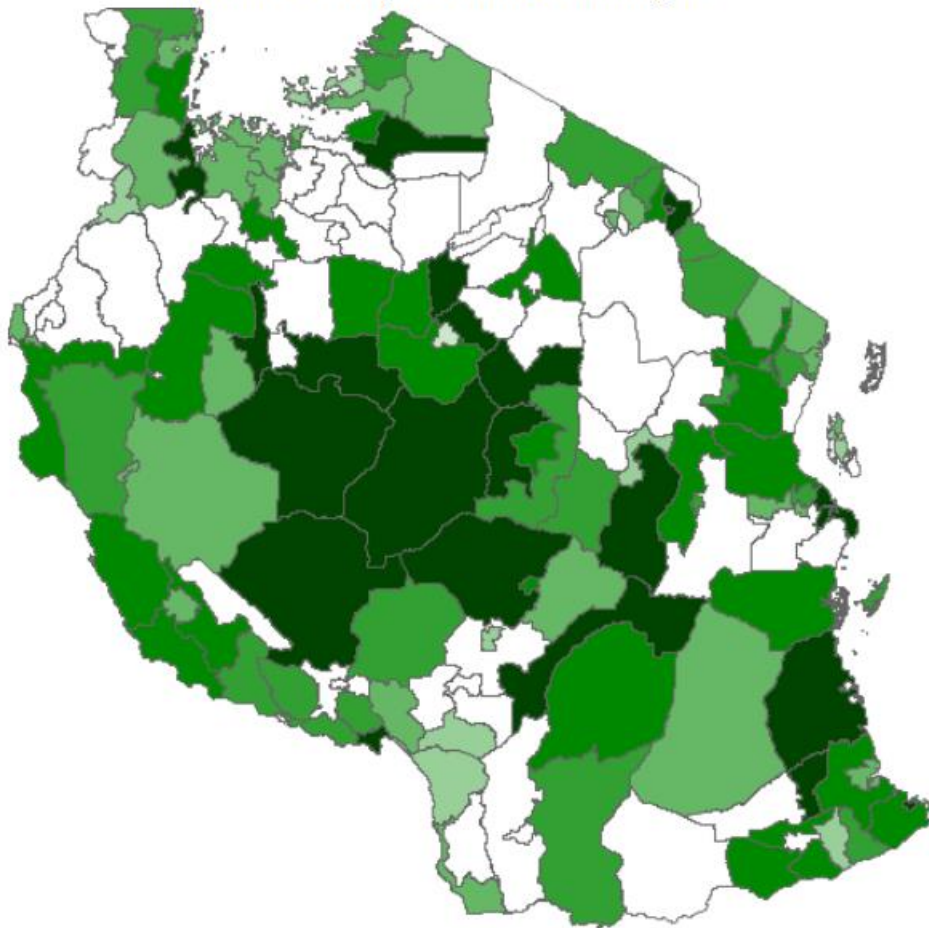
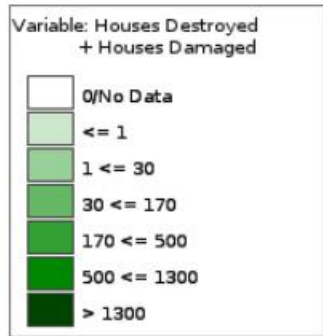
## Houses Destroyed , Houses Damaged



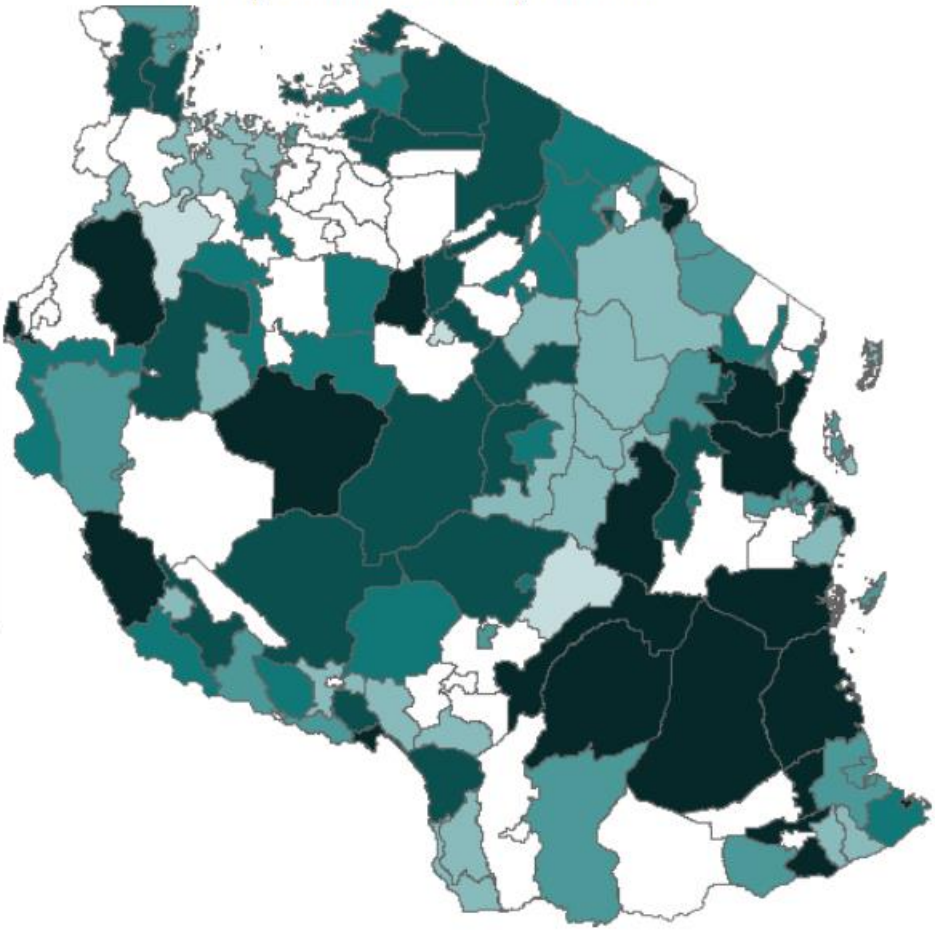
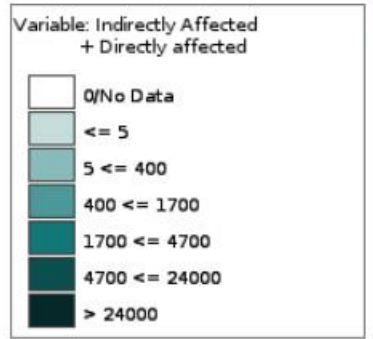
### Deaths



### Houses Destroyed + Houses Damaged



### Indirectly Affected + Directly affected



Composition of Disasters

[get it as Excel](#)

Event	DataCards	Deaths	Injured	Missing	Houses Destroyed	Houses Damaged	Indirectly Affected	Directly affected	Relocated	Evacuated	Losses \$USD	Losses \$Local	Education centers	Hospitals	Damages in crops Ha.	Lost Cattle	Damages in roads Mts
ACCIDENT	6	5	1				128	128			2687	6000000	3				
AFLATOXIN	3	4					47	48									
ANIMAL DISEASES	1						10	10			8627	19750000				79	
CONFLICT	1	27	23		54												
CYCLONE	10	36	7		216	64	470	5		5	1498	285991955		1			137
DROUGHT	49	12					2256027	28753			765050	2069100000			31412		6025
EARTHQUAKE	16	38	579		2924	24884	147759	121813			2542850	5550034375	35	13	2		47
EPIDEMIC	110	1003	182				223526	11283	87								
EXPLOSION	5	68	18			11212	22351	12647			375741	496884550					
FIRE	140	233	91		646	37	11220	11222	118	376	19204980	15759694981	56	3	3227		51
FLOOD	419	876	1073		21406	107060	1224142	415879	6599	3864	33654924	66419424670	257	35	385912		101252
FOREST FIRE	16				491		254605					38350000			7180		
fungal toxins	2	11					88	88			10663	20300000					
HAILSTORM	10		3		1	972	6799	1772			7053	12198000	4		1022		
HEAVY RAINFALL & STRONG WINDS	23	6	65		471	2037	10023	7669			194763	347023041	13	1	686		26
HOUSE FIRE ACCIDENT	3	1	3		1						1254	2882500	1				
HUNGER/FAMINE	1						225642	225642									
INSECT INFESTATION	4						327437					3496750000			50		
LANDSLIDE	22	72	25		86	38	488	489					29		16		60
Lightning	19	34	154	7		80	147	100			32688	59440000	3				94
MARINE ACCIDENT	59	1761	488	1607			1164	128		1178							
MINE ACCIDENT	6	52	9	5			11	8		3							
MURDER	3	4					3	3	1								
OTHER	14	2	2		5		39	27		40	9456	17000000					
PEST INFESTATION	4				1400	2200	20928	14550			2633	5734400			2701		
PLANT DISEASE	1						166	166			2517380	4526250000			761		
RAINS	149	691	45		4138	2781	128178	119169		155	12866246	9292392738	48	9	11126		326
RATE IN FIELD	2						2351	2351			1248	2780000			629		
RICE YELLOW MOTTLE VIRUS	1				1880		5782	5782			8179	18360000			372		
STORM	2	54				634	3500		3500								67
Strong winds	88	4	24		435	2067	13185	8551			669271	3181121287	57	6	168		288
STRUCTURAL COLLAPSE	30	46	26		165	253	1707	1443			34664	77613040	17	4			51
SURGE	2		178		50	49	175	175		210							
THUNDERSTORM	2	1						1			3477	8000000					
TRAIN ACCIDENT	1	283	466														
VERMIN INFESTATION	9	7					858185					16970000000			130965		
VOLCANO	2				5		25	25									
WILD ANIMALS	11	4			46	3510	97885	18861			164398	177417451		1	2970		
WINDSTORM	16		6		30	773	682	629				15000000	5		156		





# Recording Event /impact

## Issue

In many cases the **attribution and context of a recorded loss is not accurately associated to the hazard that was responsible for the impacts.**

## Example:

Typhoon Yolanda / Haiyan

November 2013, Philippines and Vietnam

## Characteristics

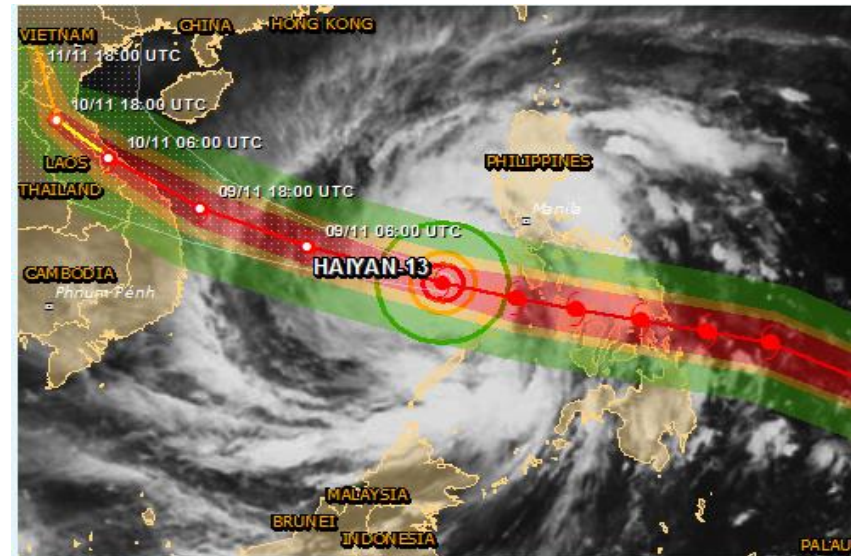
- Max wind: 230 Km / h
- Costal surges: up to 5 metres

## Initial reported loss and damage

- More than 6352 deaths with 1071 still missing
- 14 millions people affected
- 850 million USD damage

How are loss and damages attributed to the each causal hazard in a systematic and authoritative way? (Wind, storm surge, rain, flooding, disease outbreak, loss of power... etc)?

How do we ensure loss and damage is recorded for the lifespan of the hazard (e.g. impacts from all countries Philippines, Vietnam, SIDS)



Cloud map. The map shows the areas affected by tropical storm strength winds (green), 58mph winds (orange) and cyclone wind strengths (red). (Source: JRC)



# A new Standard for cataloguing Hazards

18<sup>th</sup> Congress (2019) **Adopted the cataloguing methodology** hereafter referred to as “WMO Cataloguing of Hazardous Events” (WMO-CHE)

**Uniqueness of event record** - Assigning a universally unique identifier (UUID) number to each event including key attributes of the event into a data record; and,

**Events List** - A standard living list defining typology of events that could have impact on society.

**Scalable** - Enables empirical linking of events (e.g. a cyclone, leading to heavy rain, strong winds, storm surge flooding and landslides) to better reflect the larger system (synoptic scale).

**Flexible** - Provides the flexibility for addressing regional and national specificities

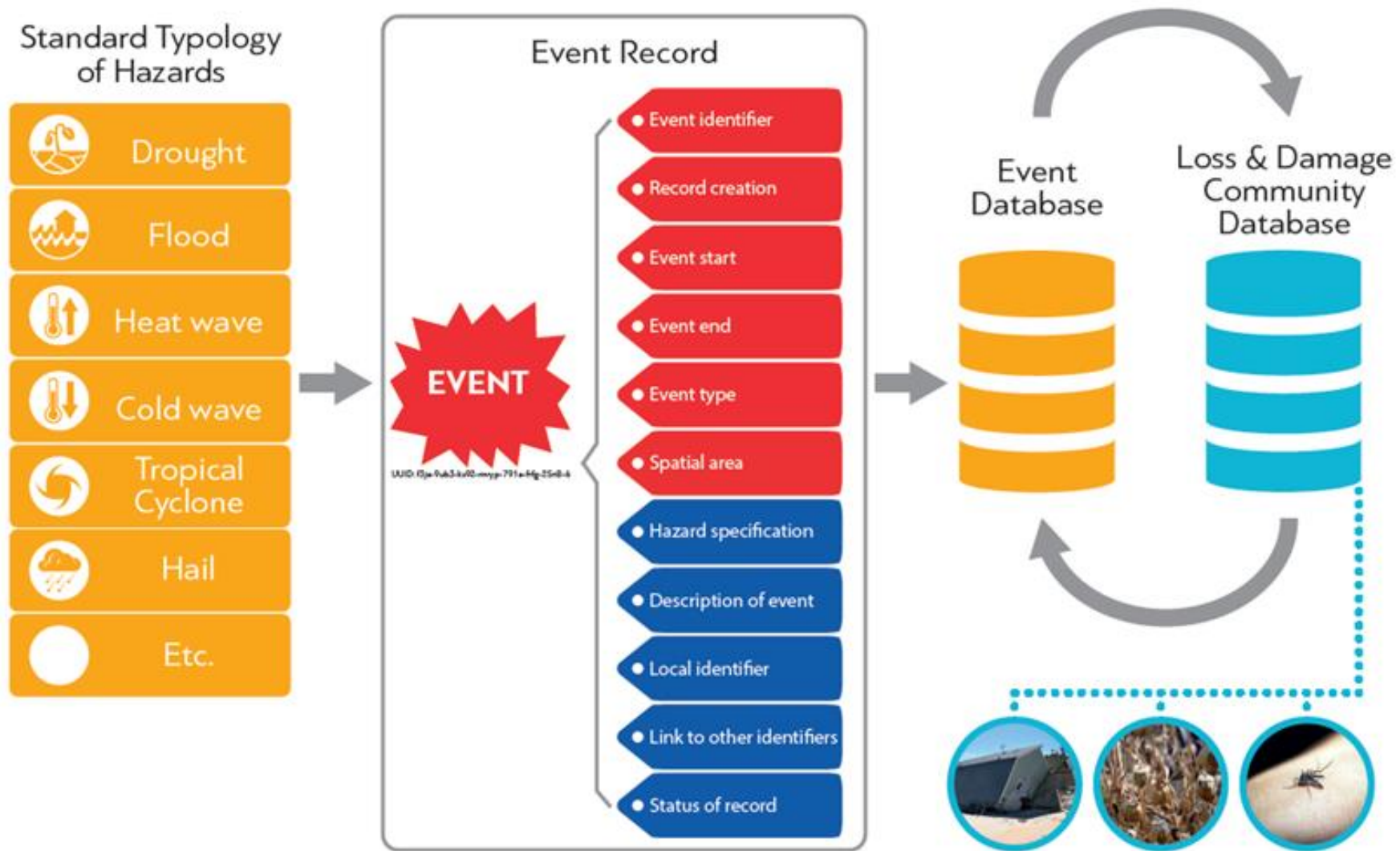
# Principles of the cataloguing methodology

- a. **Simple** and feasible considering the costs, resource and time to implement
- b. Preserve the right of each country to state how they choose to record and warn for hazards
- c. **Do not categorize hazards or events into groups** (e.g. , meteorological, hydrological, climate)
- d. **Do not quantify and qualify hazard** definition or express its severity (e.g. extreme, heavy, high)
- e. Align to the Common Alert Protocol (CAP) for warnings to avoid duplication, confusion and misinterpretation





# The Cataloguing Methodology





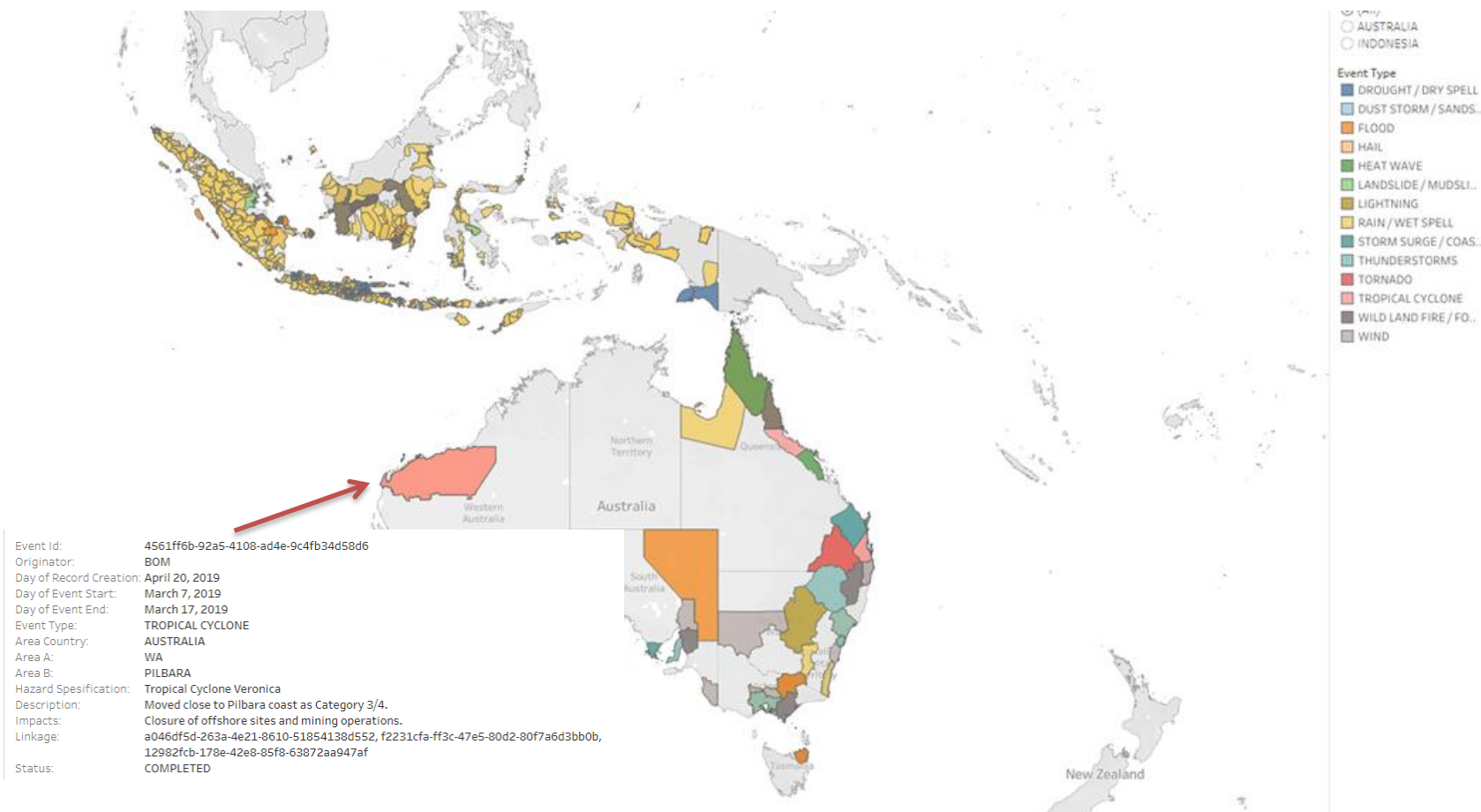
# Events list (global common list)

1. Avalanche
2. Cold wave
3. Drought
4. Dry spell
5. Dust storm
6. Sandstorm
7. Extra-tropical cyclone
8. Flood
9. Fog
10. Freezing rain
11. Frost
12. Hail
13. Haze/Smoke
14. Heat wave
15. High Seas
16. Rogue waves
17. High UV radiation
18. Icing
19. Landslide
20. Mudslide
21. Debris flow
22. Lightning
23. Pollen pollution/Polluted air
24. Rain
25. Wet Spell
26. Snow
27. Snowstorm
28. Space weather event
29. Storm surge/Coastal flood
30. Thunderstorms
31. Squall lines
32. Tornado
33. Tropical cyclone
34. Tsunami
35. Volcanic ash
36. Wild land fire/Forest fire
37. Wind

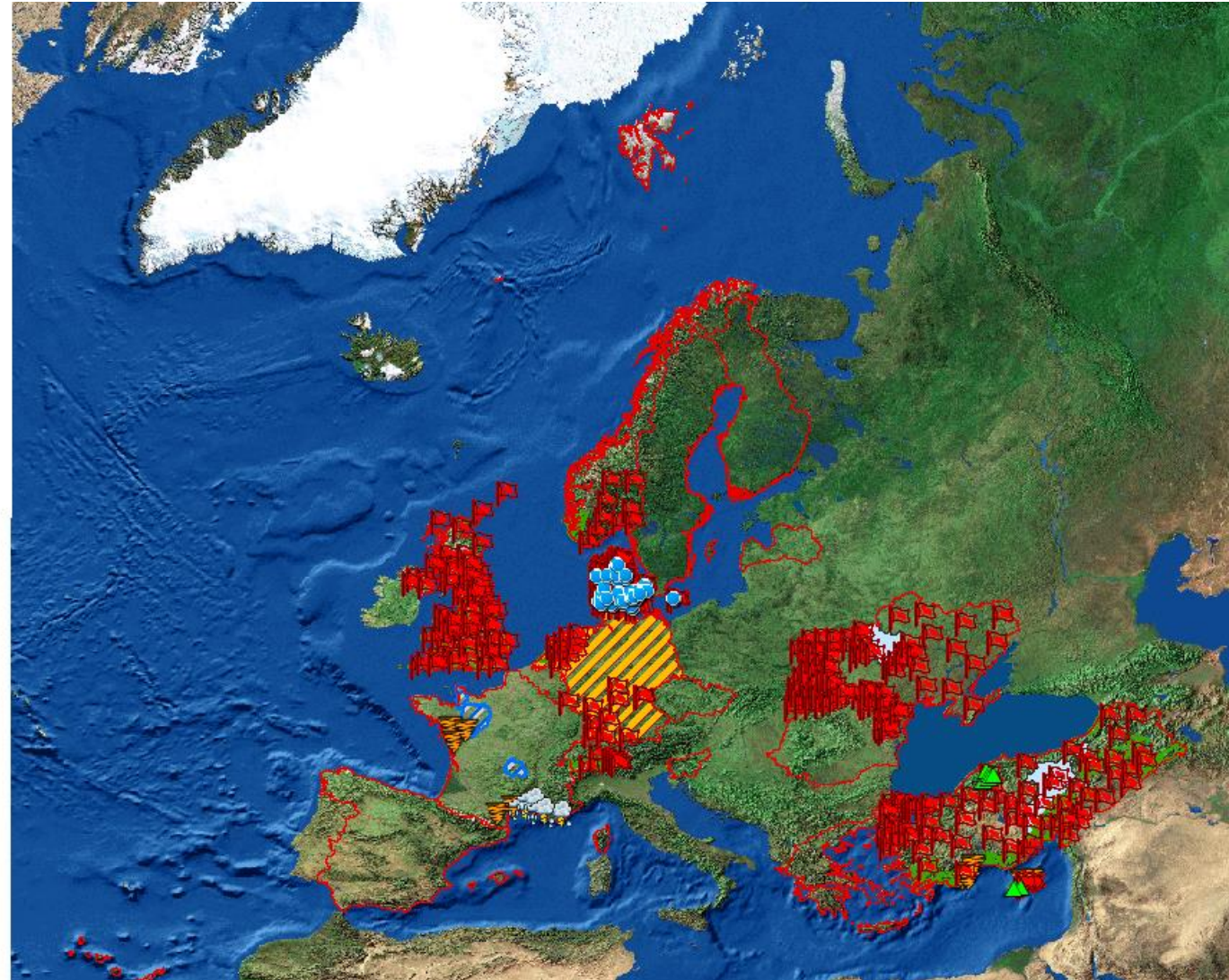
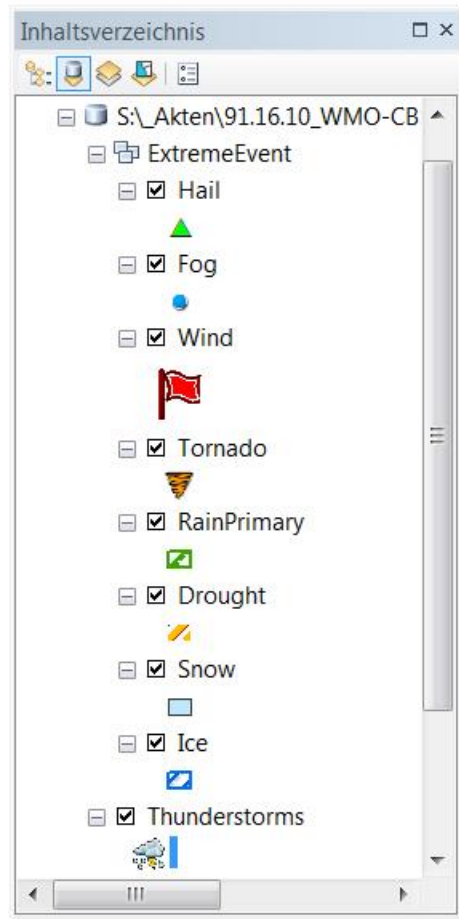


# Testing the new Standard Asia and South Pacific

1,300 records of hazardous events from August 2018.



# in Europe



# NMHS use cases for disaster loss data

What quality and disaggregated loss and damage data and information would improve:

- Forecast and warning products: Impact based forecasting and inclusion of potential impacts by empirical methodologies during the forecast production process
- Forecast verification processes
- Understanding of the impacts of hazards and especially for slow onset, cascading and complex hazard impacts

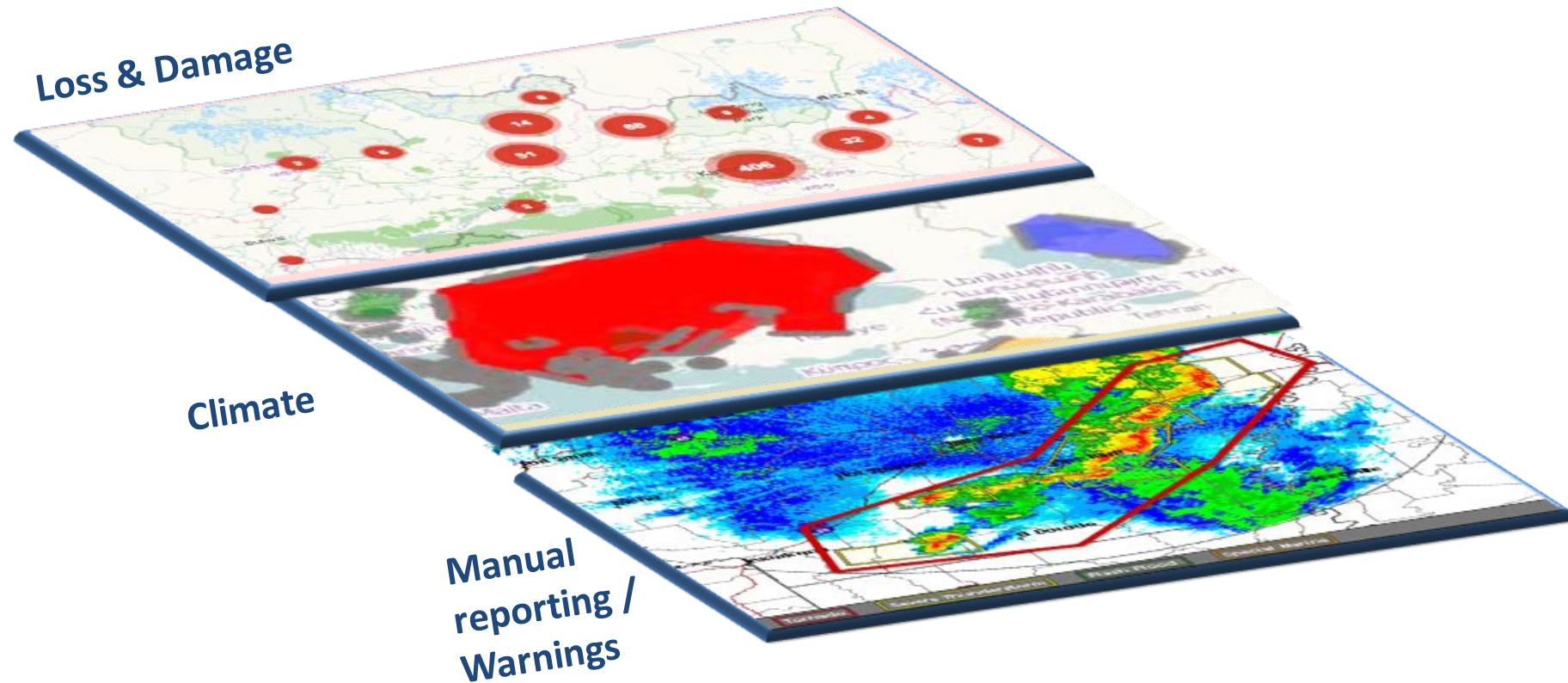


## Further Development Steps...

- Development of an **implementation plan** and related guidance products for countries and regions
- Leveraging experiences in countries and regions that have started implementation
  - Strengthening the data partnership between the national loss and damage stakeholders (i.e. disaster risk management authority) and the NMHSs
  - Developing national / regional process for recording, post processing and quality control.
- Further implementation in the South West Pacific and Europe and other regions including South America, Africa, North America... (2020 – 2024)



# Layering of Information Enables New Possibilities for Analysis and Application



# Linking Hazards and Impacts at National Level

Decide which Hazardous Events to catalogue (Yellow-level? Orange-level??)

Give each Hazardous Event a unique identifier

➤ For example, 2023/001 for the first event in 2023

Record the start and end dates/times of the warnings, the nature of the Hazard, the location, and the level of severity

➤ For example, Rainfall of >50mm/hr in Muscat

Gather together all of the available impact data afterwards

# Linking Hazards and Impacts at National Level

Warnings can be validated in a number of ways

1. The “traditional” way – by comparing observations to what was in the warning.
  - a. This is not a perfect method – the heaviest rain may not have fallen at the locations of the rain recorders.
2. By “Impacts” – to see if these were close to what we expected
  - a. River/wadi flooding resulting from the rain
  - b. Road closures due to flooding
  - c. Damage to boats from strong winds
  - d. Injuries / deaths due to lightning etc..





# Linking Hazards and Impacts at National Level

## Problems with validating Warnings using Impacts

- Difficult and time-consuming to collect the data
- Data exists in many forms; text, photographs, tables, reports, on social media etc....
- Organising the impact data is a big job.
- The Warning may (hopefully!) have influenced the Impacts
  - Fewer people killed or injured
  - Less damage to property because of good preparation
  - Reduced loss of livestock to farmers
  - Less damage to cars, motorbikes and other moveable goods



# Linking Hazards and Impacts at National Level

Validating Warnings by reference to Impacts is very challenging..

...but we learn a great deal by doing so; we understand better the relationship between Hazards and Impacts