Situation overview of EM-DAT products and future directions

The georeferencing activity

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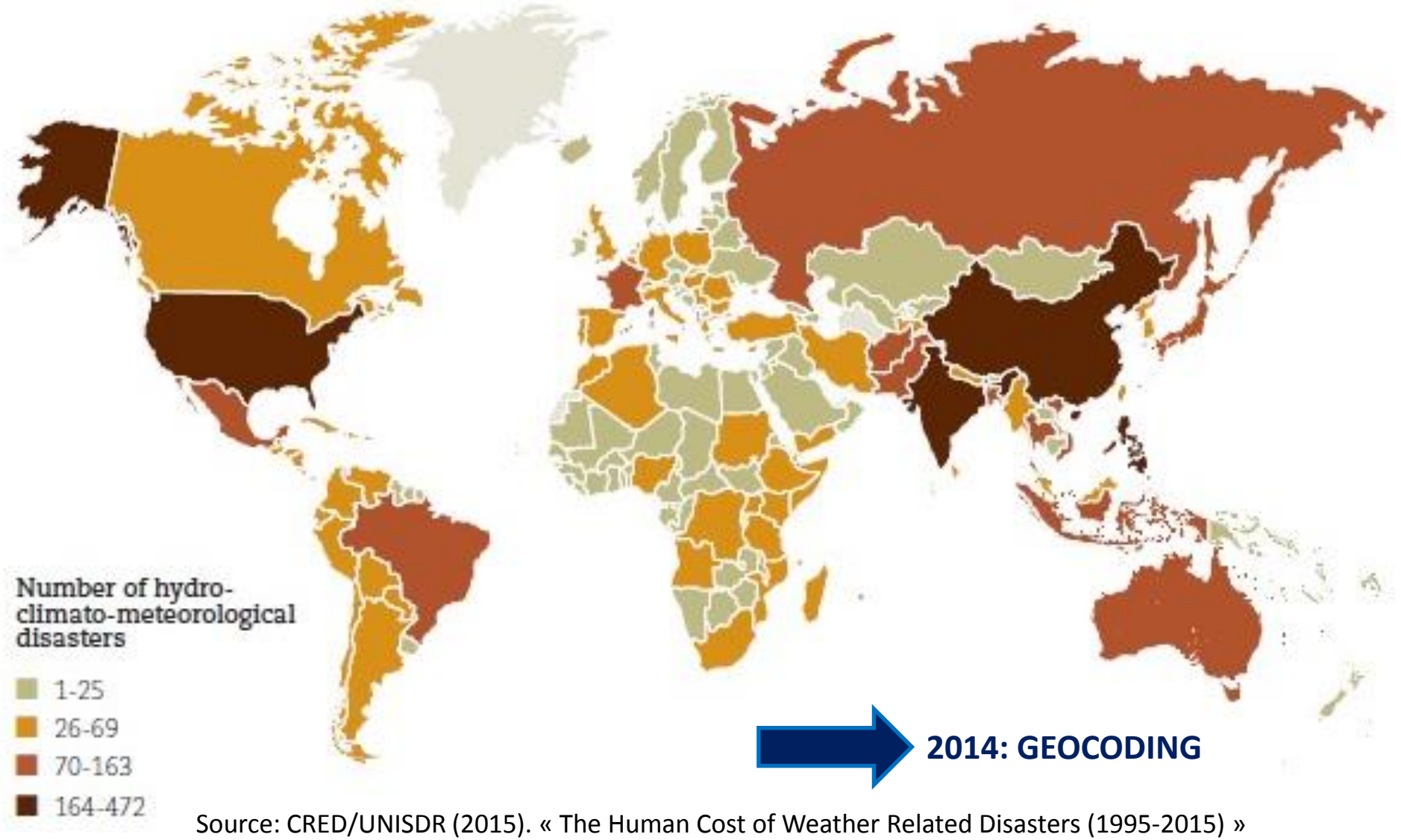
EM-DAT: country level data



Source: CRED/UNISDR (2015). « The Human Cost of Weather Related Disasters (1995-2015) »

Georeferencing activity

State of the activity

State of the activity:

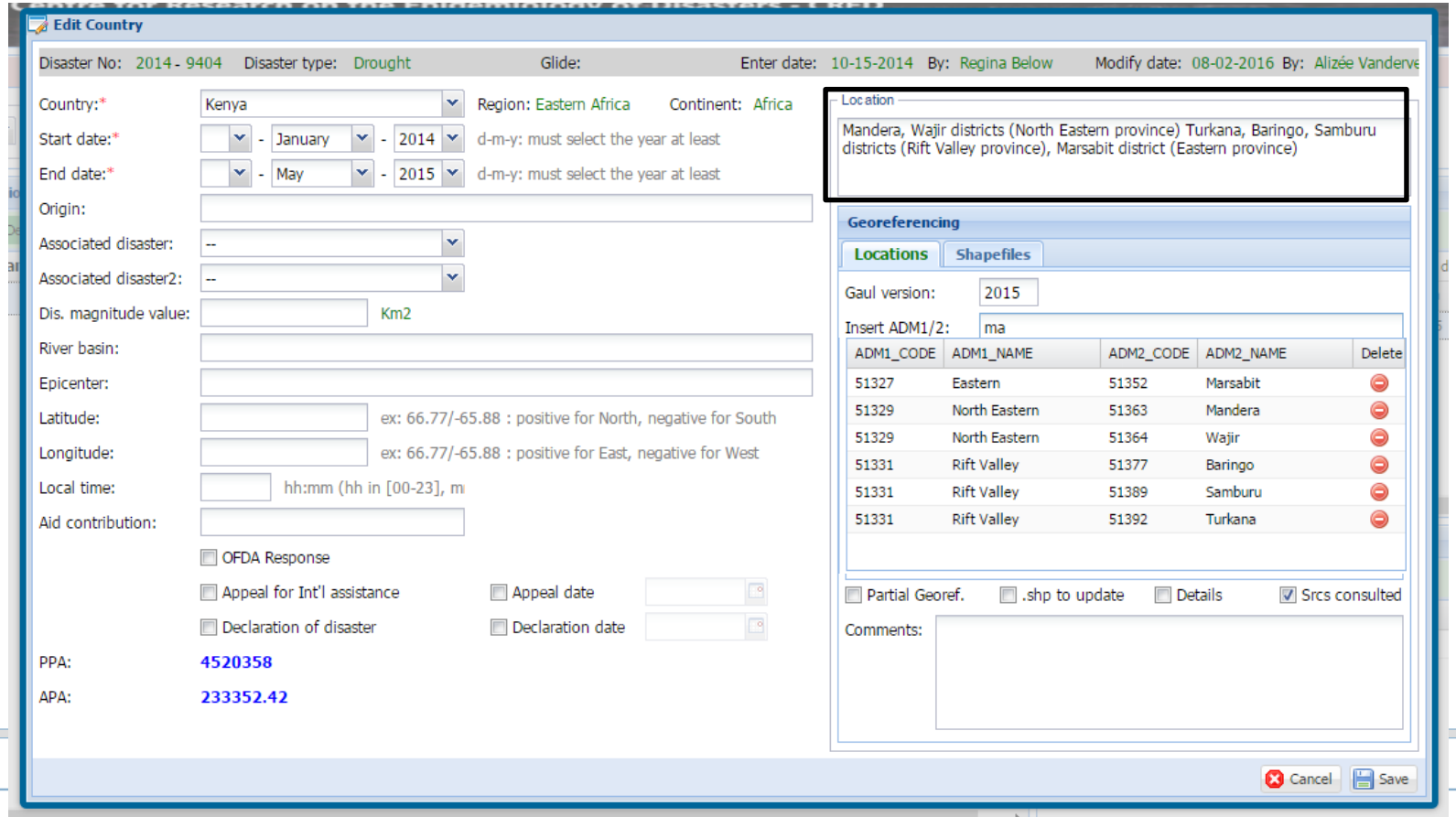
- Earthquakes, volcanic activities, mass movements (dry), floods, landslides, storms, extreme temperatures, droughts and wildfires
- From 2000 to 2015
- Worldwide
- At ADM 2 AND/OR ADM1 level

Georeferencing activity

Methodology

Standardized methodology:

- Location of affected areas: text ➔ GIS format (GAUL 2015 codes (FAO, 2015)), up to the 2nd administrative unit level.

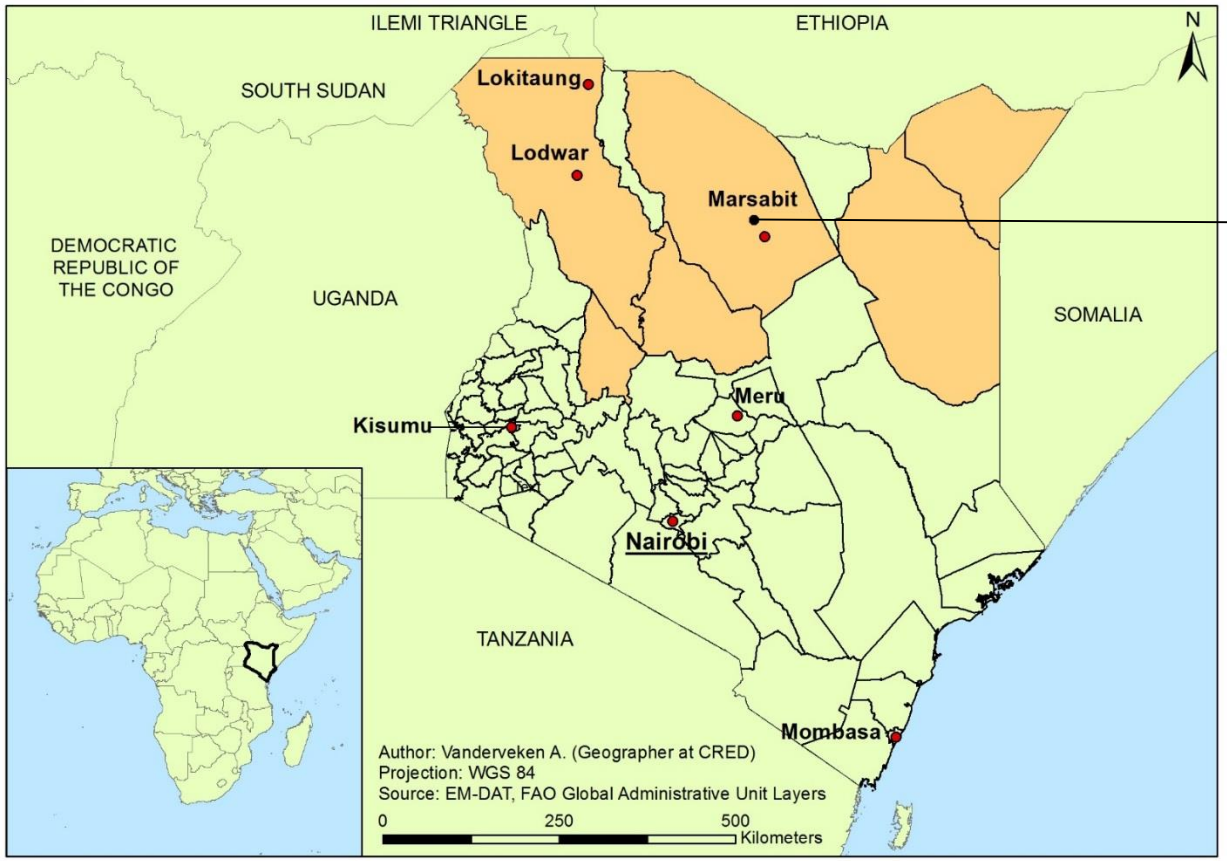


Georeferencing activity

Outputs

Standardized methodology:

- Creation of a shapefile and its centroid for each disaster based on the selected GAUL2015 codes, automatized procedure in R.



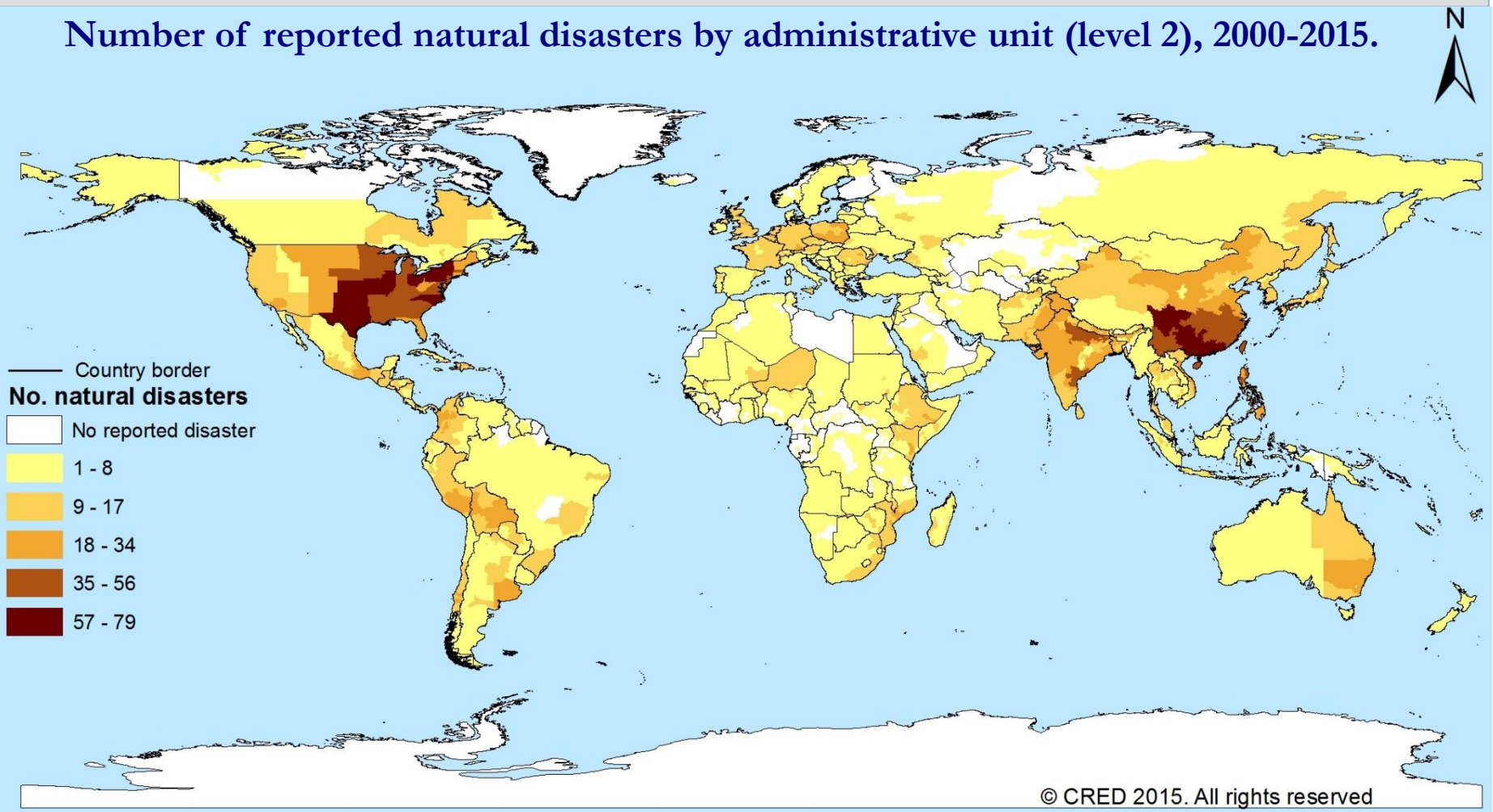
Kenyan drought, 2014

X	Y
2.5432	37.8681

Start Date: Jan 2014
End Date: May 2015
Total victims: 1,600,000

First results

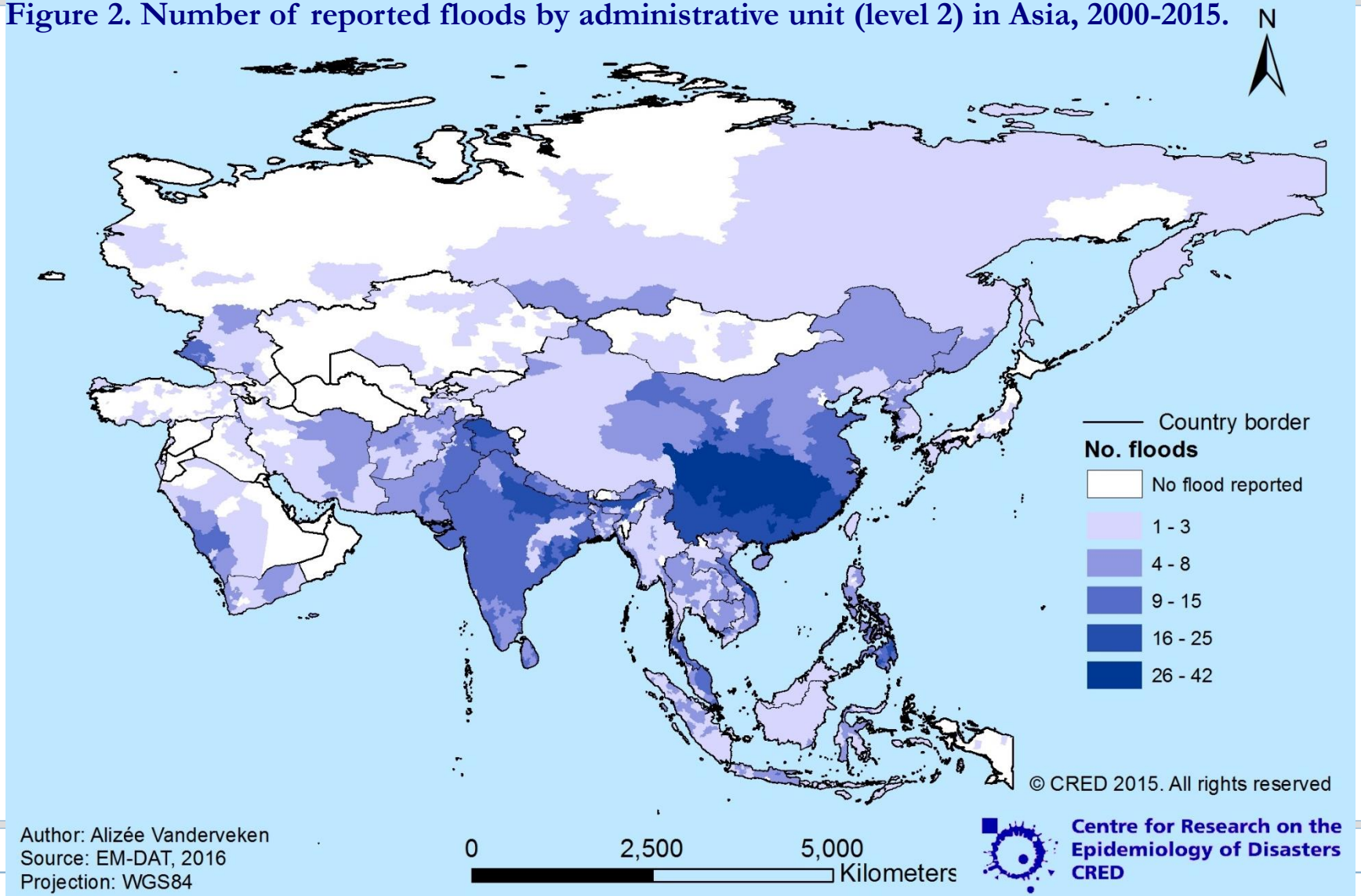
Sub-national Hazard Frequency



First results

Sub-national Hazard Frequency

Figure 2. Number of reported floods by administrative unit (level 2) in Asia, 2000-2015.



First results

Combination EM-DAT with GPWv4
For calculation of population exposure

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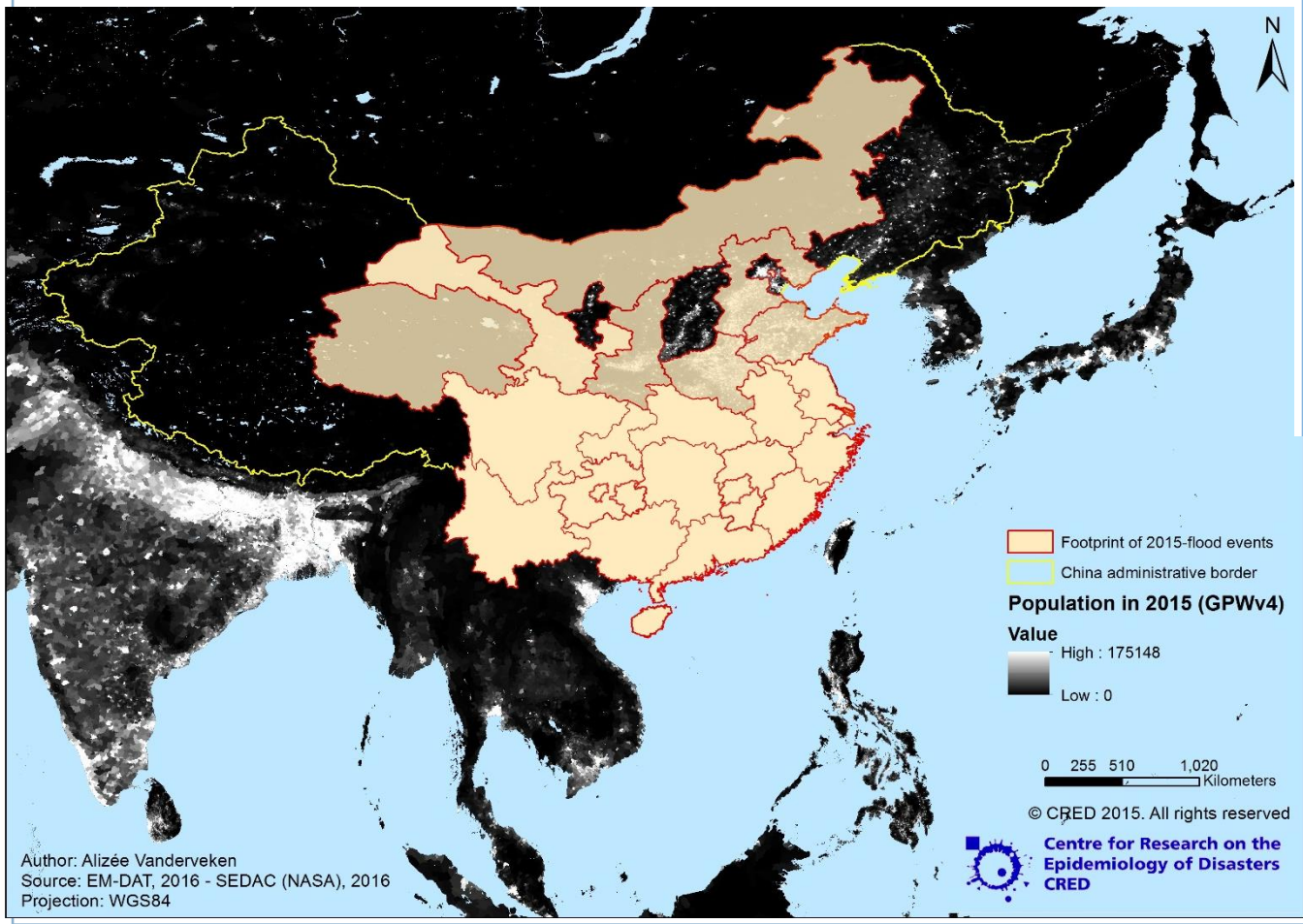
China, 2015-flood events



Start	No. deaths	PPA
13-May	58	690,511,744
13-May	20	622,318,386
28-May	17	178,825,764
16-Jun	15	506,988,922
01-Jun	9	380,271,317
07-Jun	16	490,224,019
26-Jun	35	218,651,269
20-Jul	28	263,901,591
02-Aug	19	686,886,001
16-Aug	41	189,273,640
15-Sep	14	525,918,424
10-Nov	38	66,418,965

$$\Rightarrow \frac{No.deaths}{PPA}$$

Degree of importance of a disaster:

- At the time of the event
- Future: based on population forecast

First results

Importance of the right denominator

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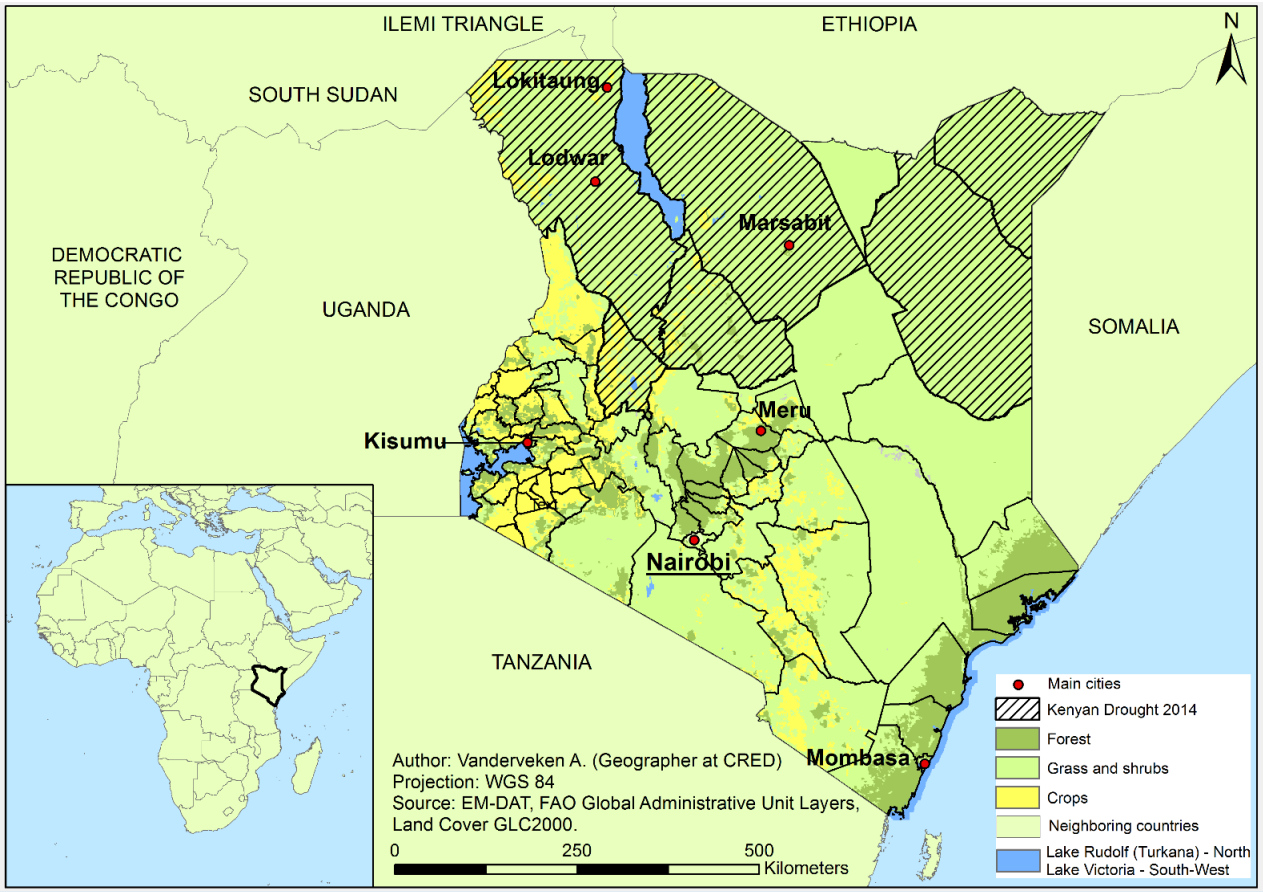
The case of Kenyan drought, 2014



Start Date: Jan 2014
Total victims: 1,600,000

Tot. Pop. Kenya (AfriPop, 2016): 44,863,583

➔ SIDI* (%): 3.6

Tot. Pop.
≠
Pop. Pot. Affected (PPA)

PPA Kenya (Drought-2014) : 4,520,358

➔ Adj. SIDI (%): 35.4

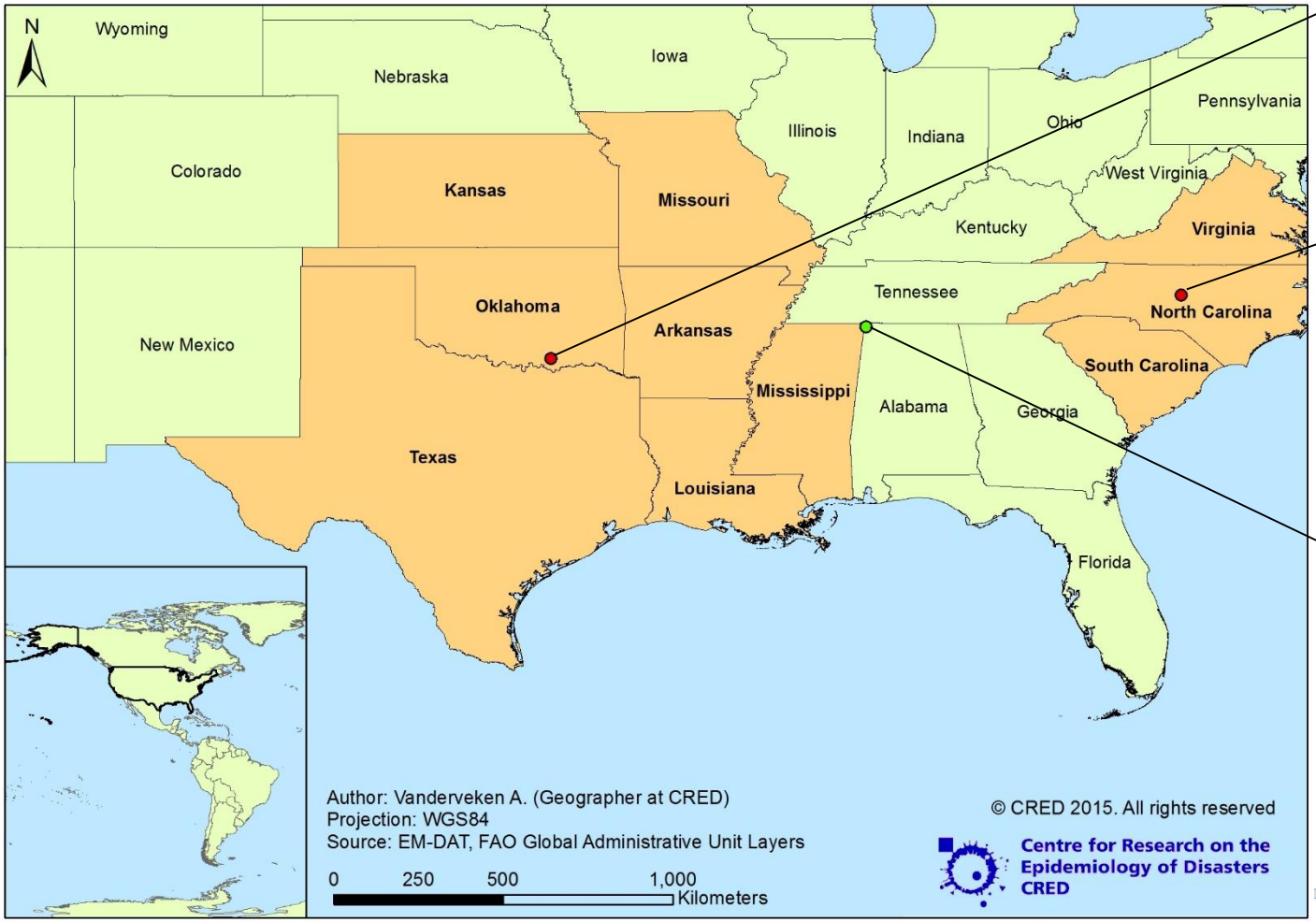
*SIDI = Proportion of victims (deaths, missing, affected) over the **total population** (%) of a country

Georeferencing activity

Challenges

- Centroids?

USA storm, 2004 – 9 deaths, 1749 affected – $300,000 USD losses



X	Y
34.0723	-96.4099

X	Y
35.7382	-79.6947

?

X	Y
34.9053	-88.0523

Georeferencing activity

Challenges

- Challenges:
  - Creation of centroids
  - Impact data stays at the event-scale
    - Possibilities for modelling?
  - Quality of georeferencing depends on:
    - Data reporting
      - Other data sources?
      - Standardization in data collection would be an added value
    - GAUL dataset
      - Reviewed each year
    - Available resources: possibility to automatize?

Georeferencing activity
Conclusion

- Georeferencing activity improves EM-DAT
- Useful material to serve as evidence-based
- Can be combined with a wide range of other data (population, landuse, …)
- Future steps:
  - Assess the level of completeness and precision of georeferenced data
  - Improve the georeferenced data
  - Georeference 2016 events onwards
  - In-depths studies & analyses (e.g. joint paper with P. Rowhani, Z. Mehrabi, N. Ramkutty – What is the effect of disasters on crop yield and price?)
  - Integration of outputs on our website – online mapping tool

Future tasks:
Development of an online mapping tool

EM-DAT

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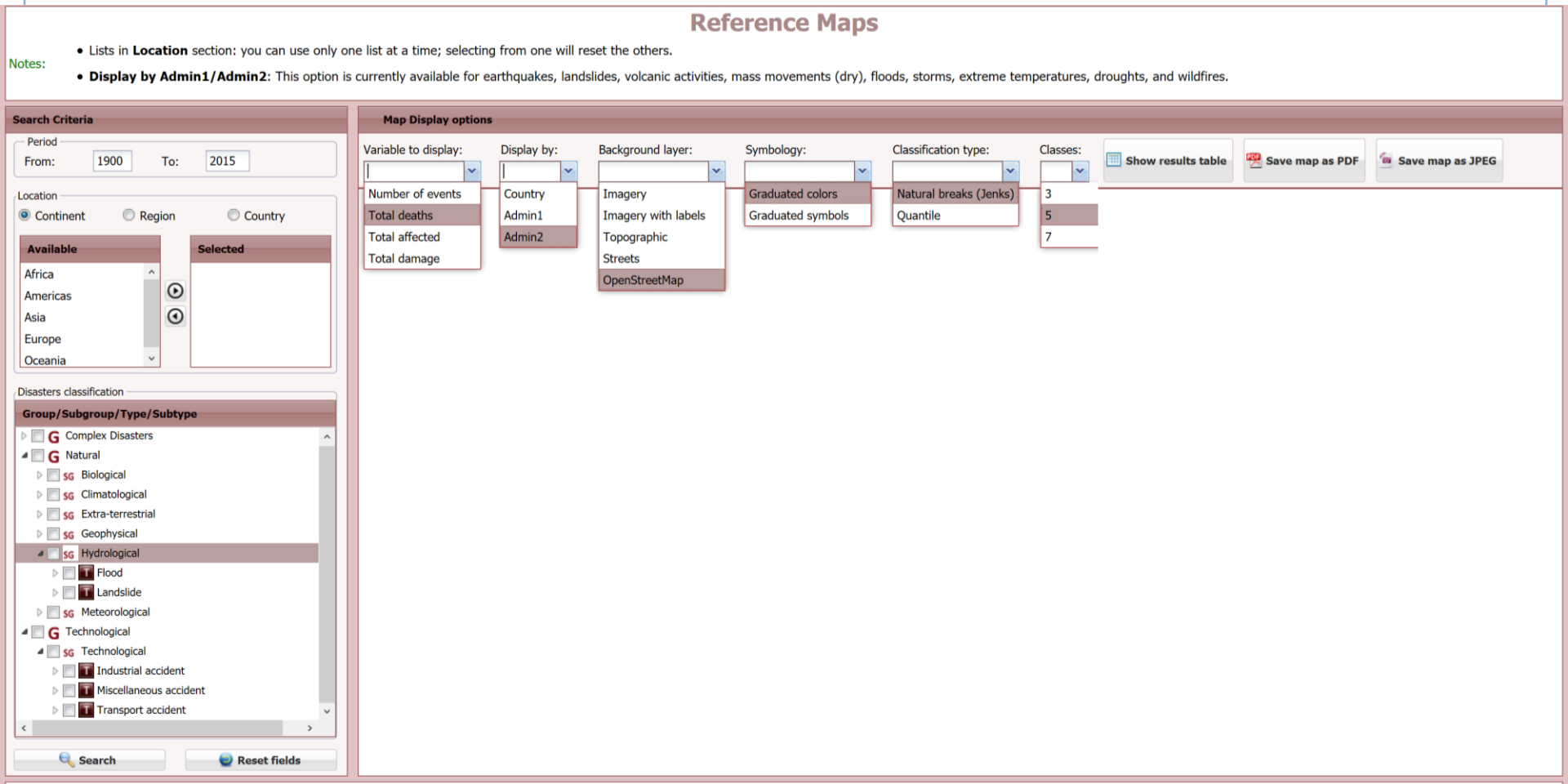
1. Advanced mapping tool

1. Advanced mapping tool

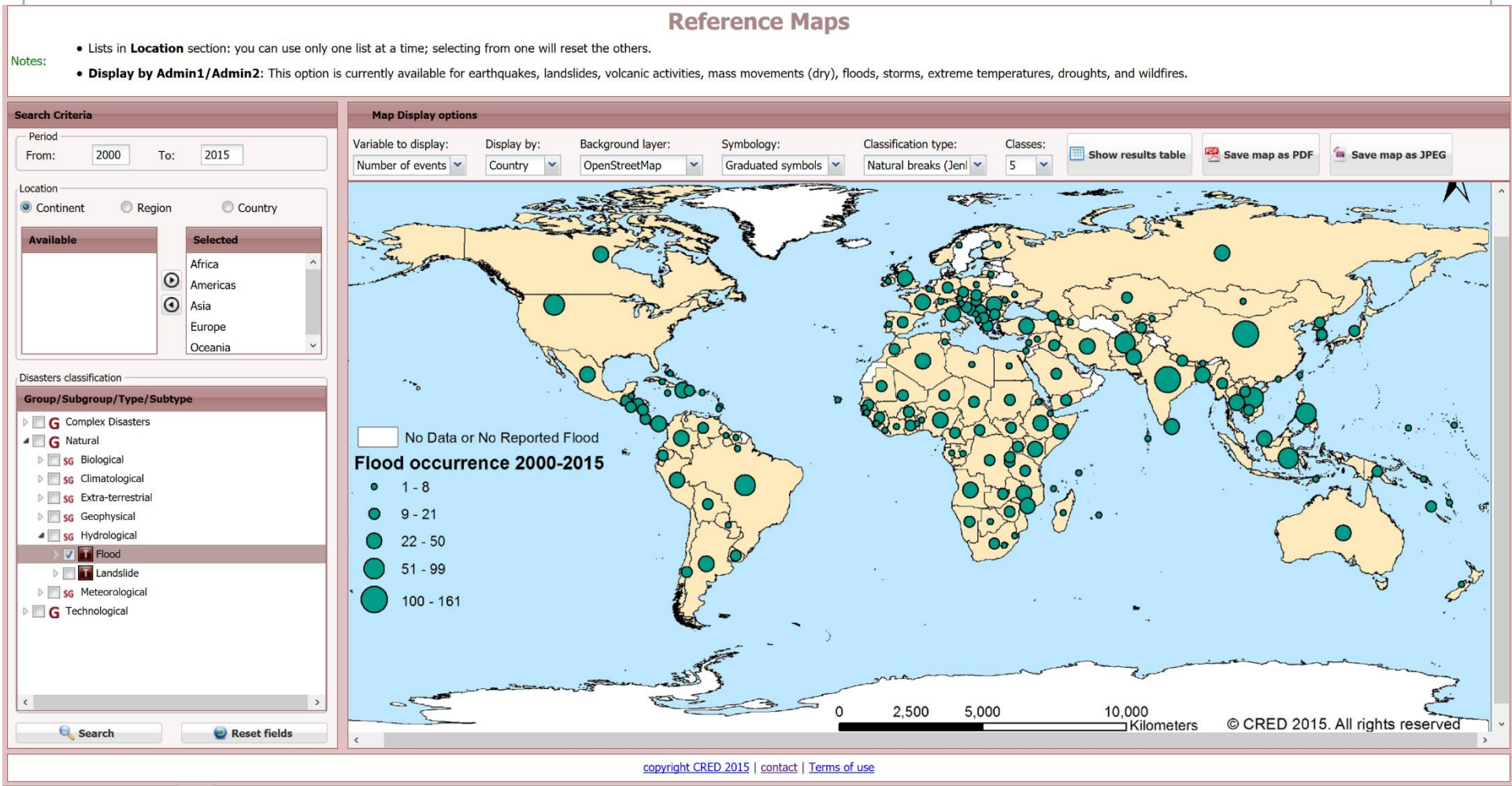
Query options:



1. Advanced mapping tool

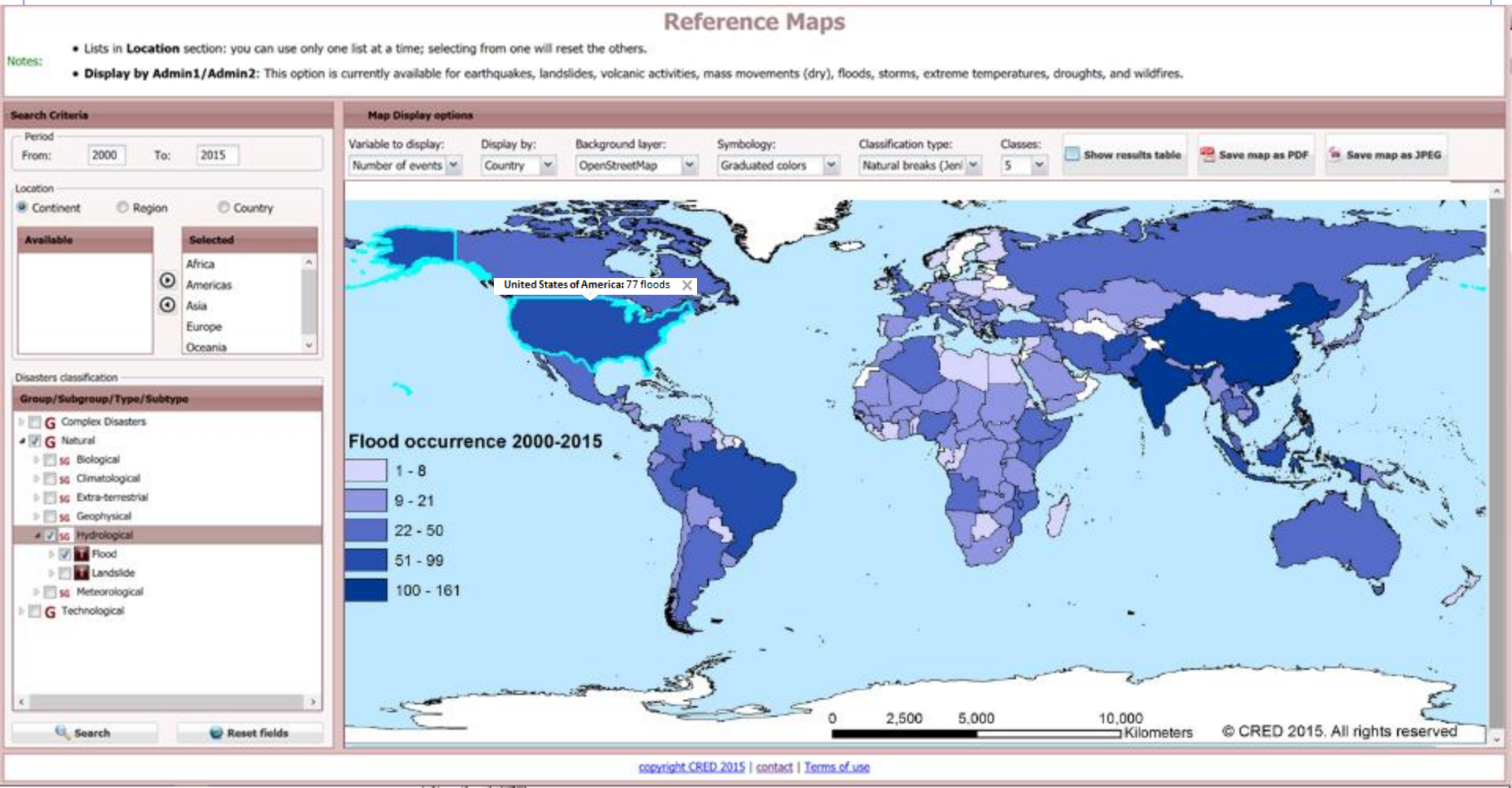
Output 1.1

+ Add transparency



1. Advanced mapping tool

Output 1.2



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1. Advanced mapping tool

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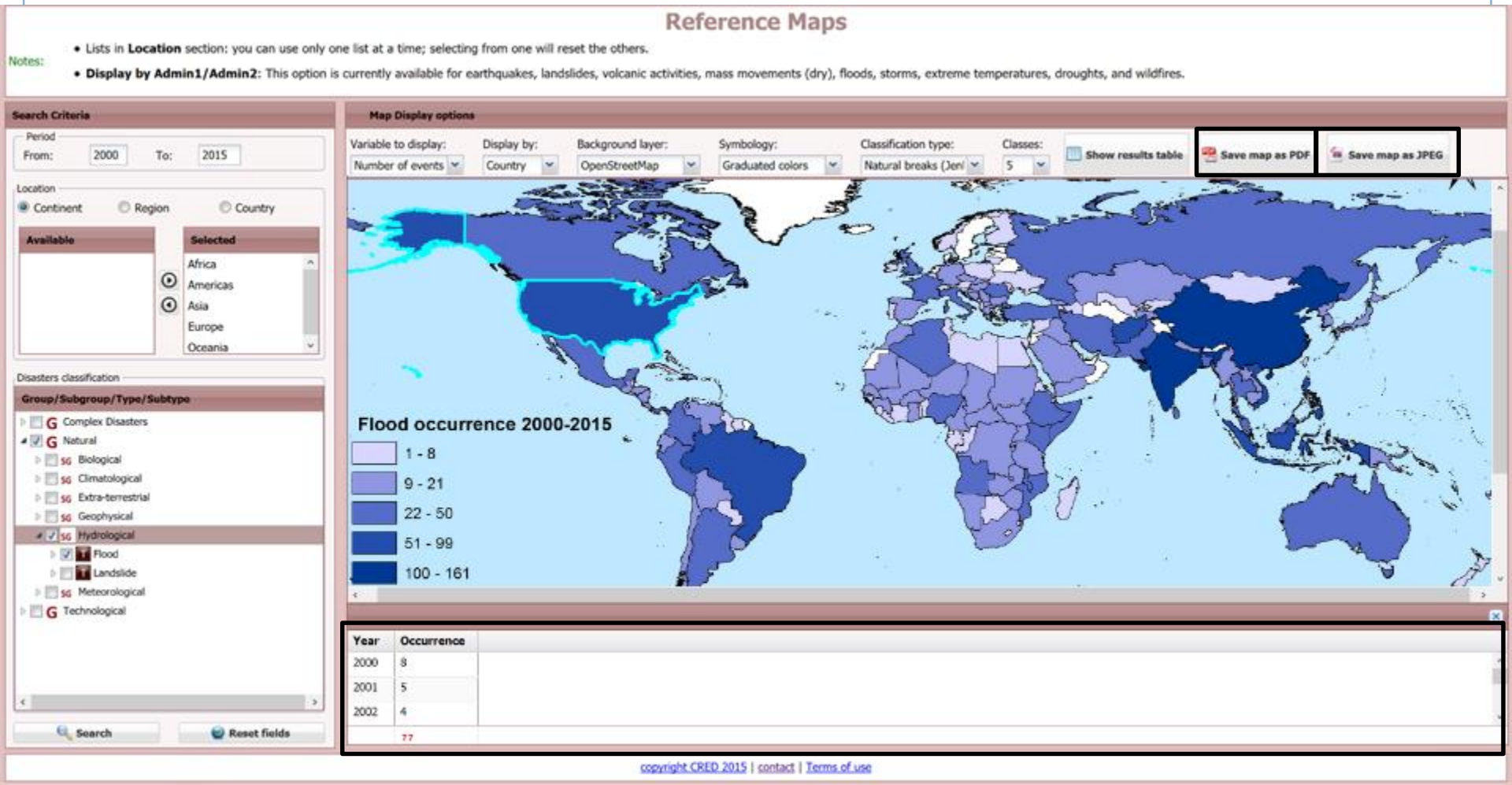
Output 1.2



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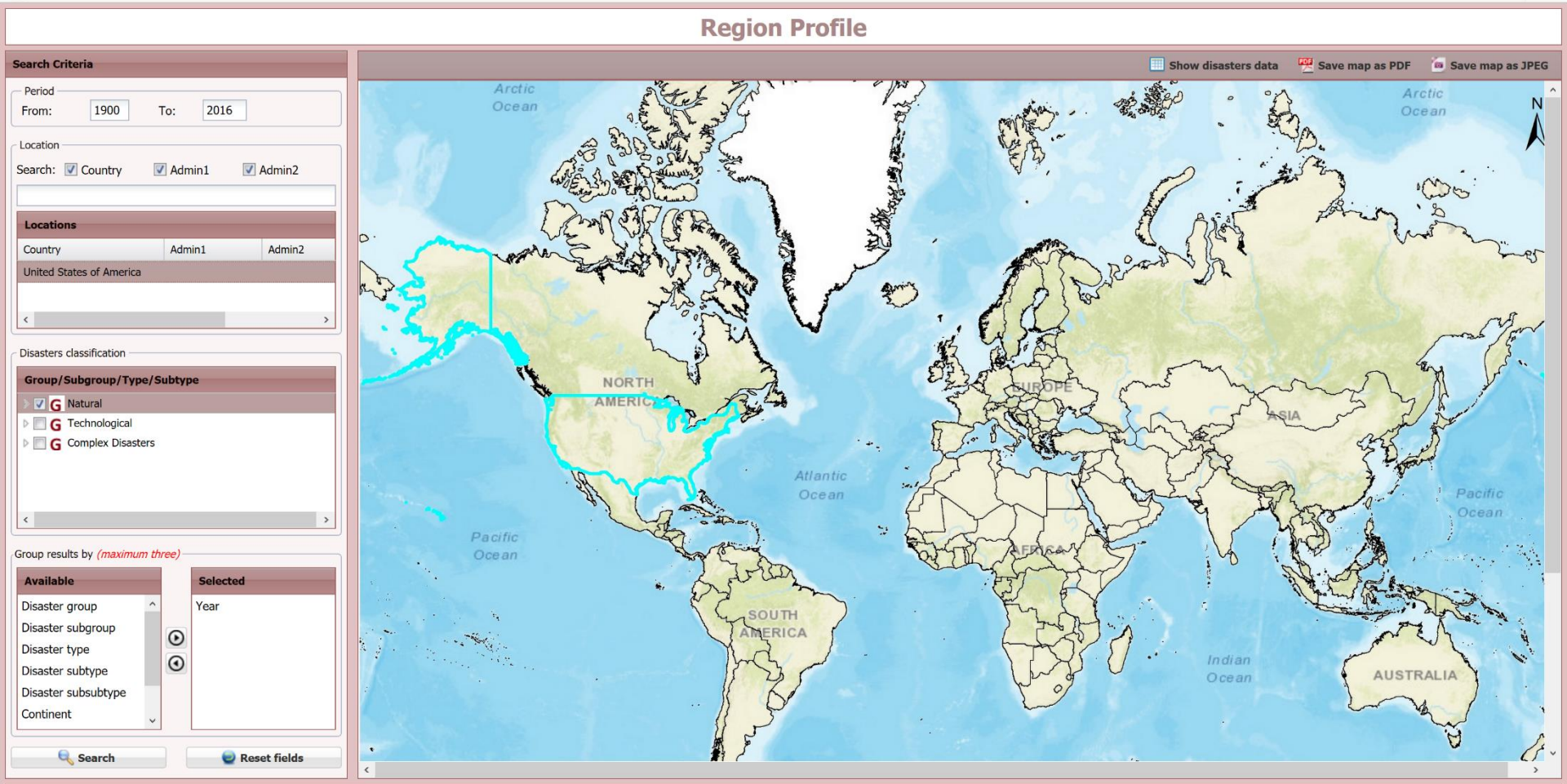
2. Region profile tool

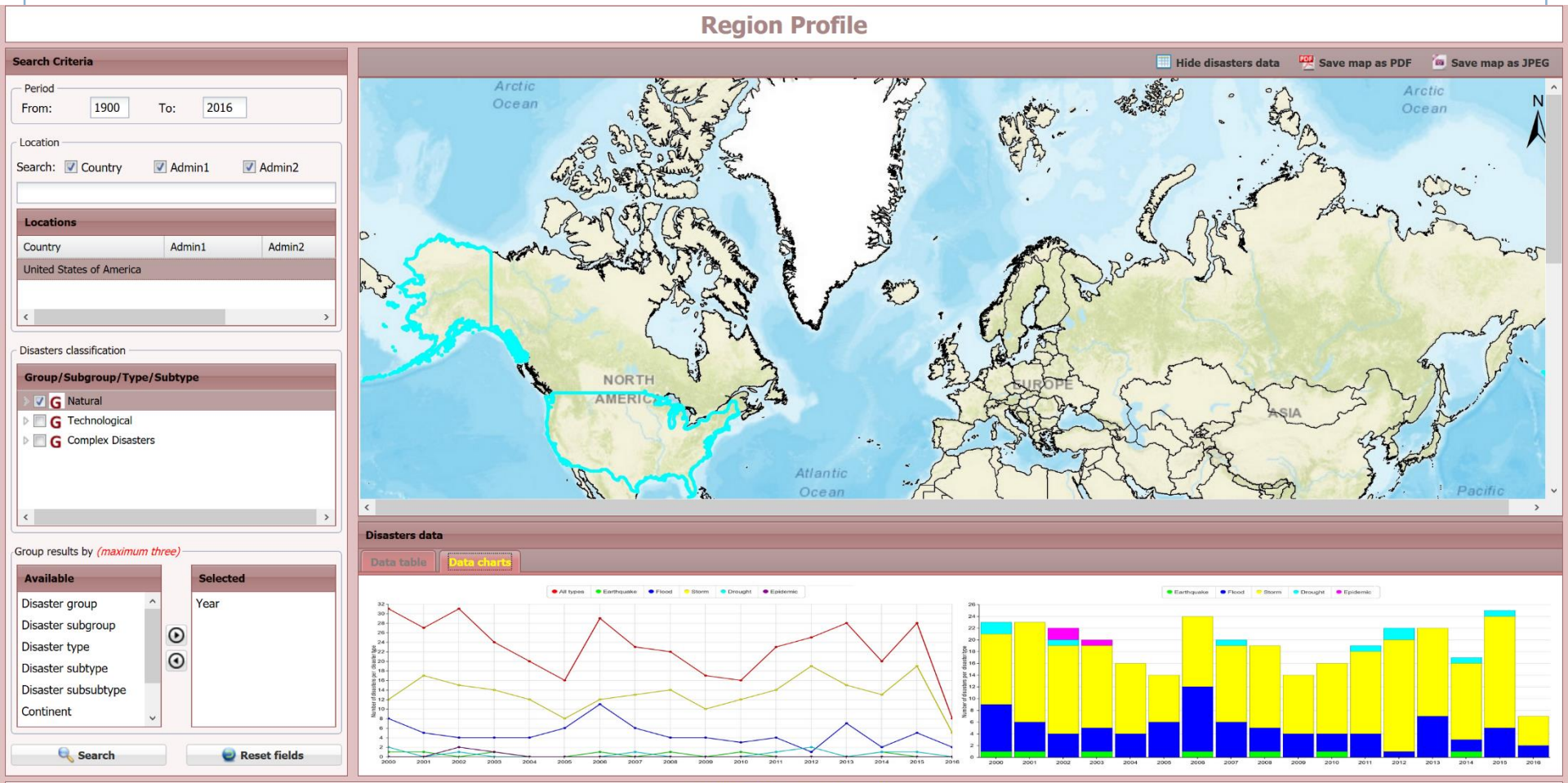
2. Region profile tool

Output 2.1



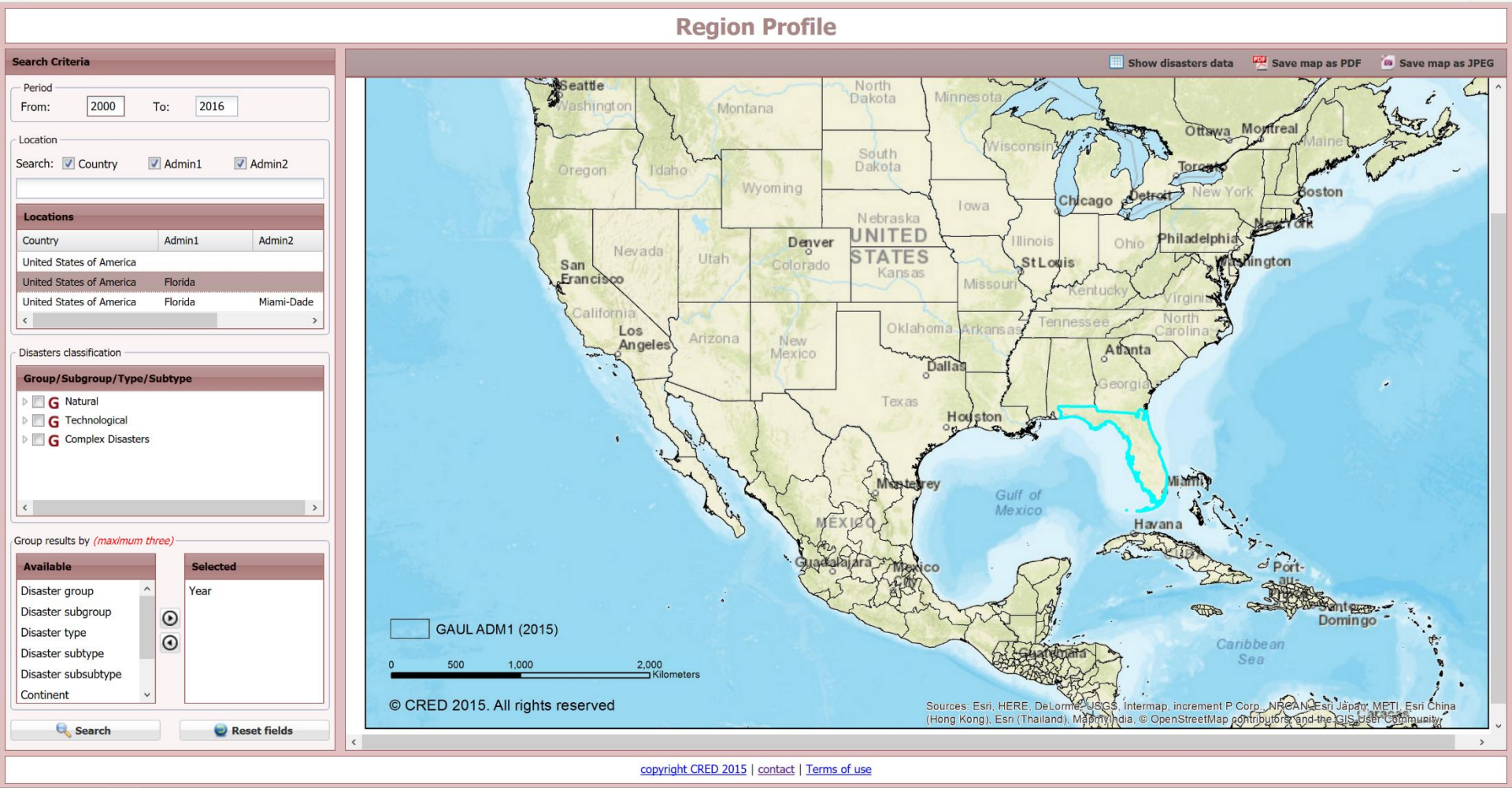
2. Region profile tool

Output 2.1



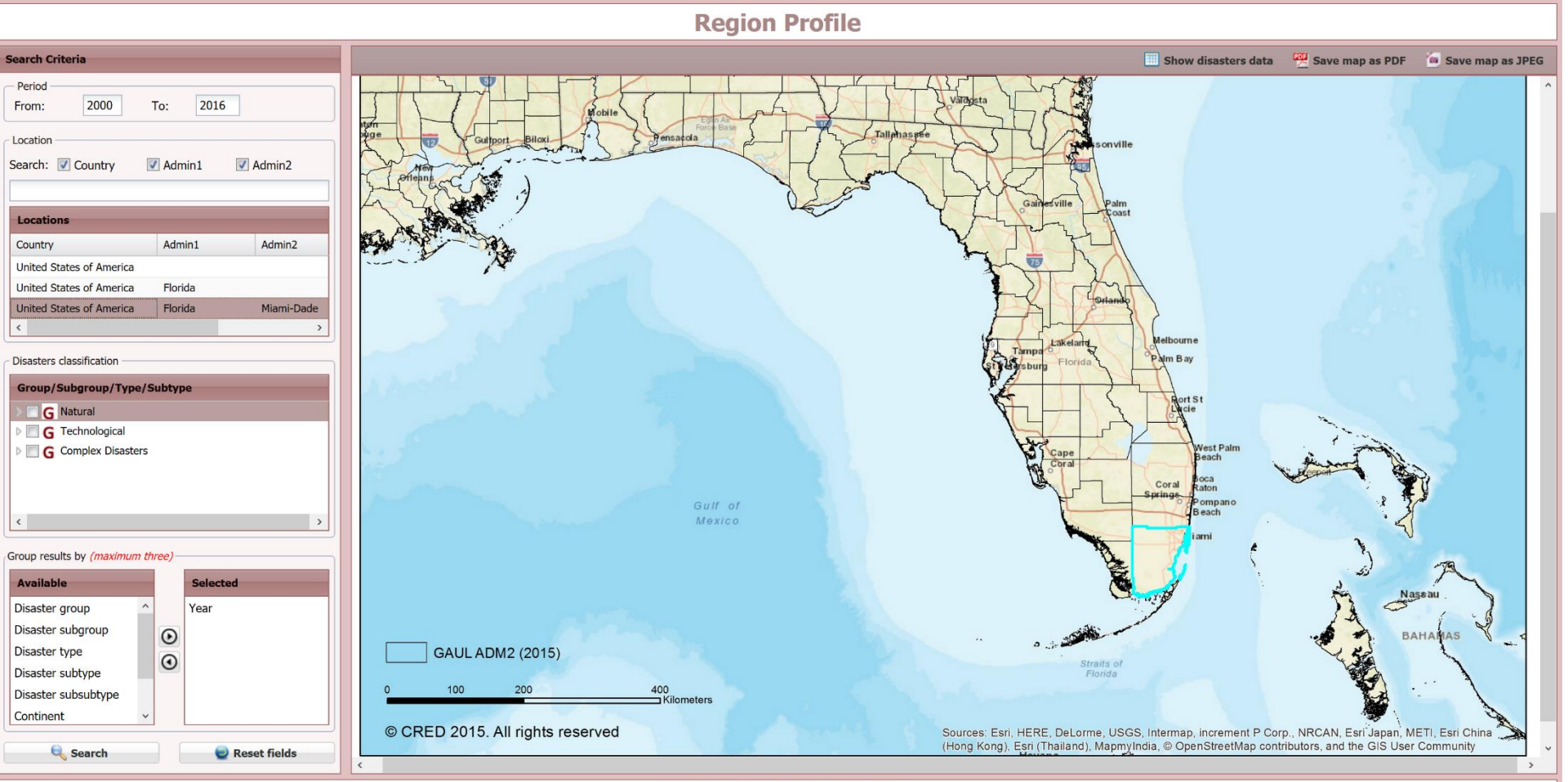
2. Region profile tool

Output 2.2



2. Region profile tool

Output 2.3



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3. Disater maps

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3. Disaster maps tool

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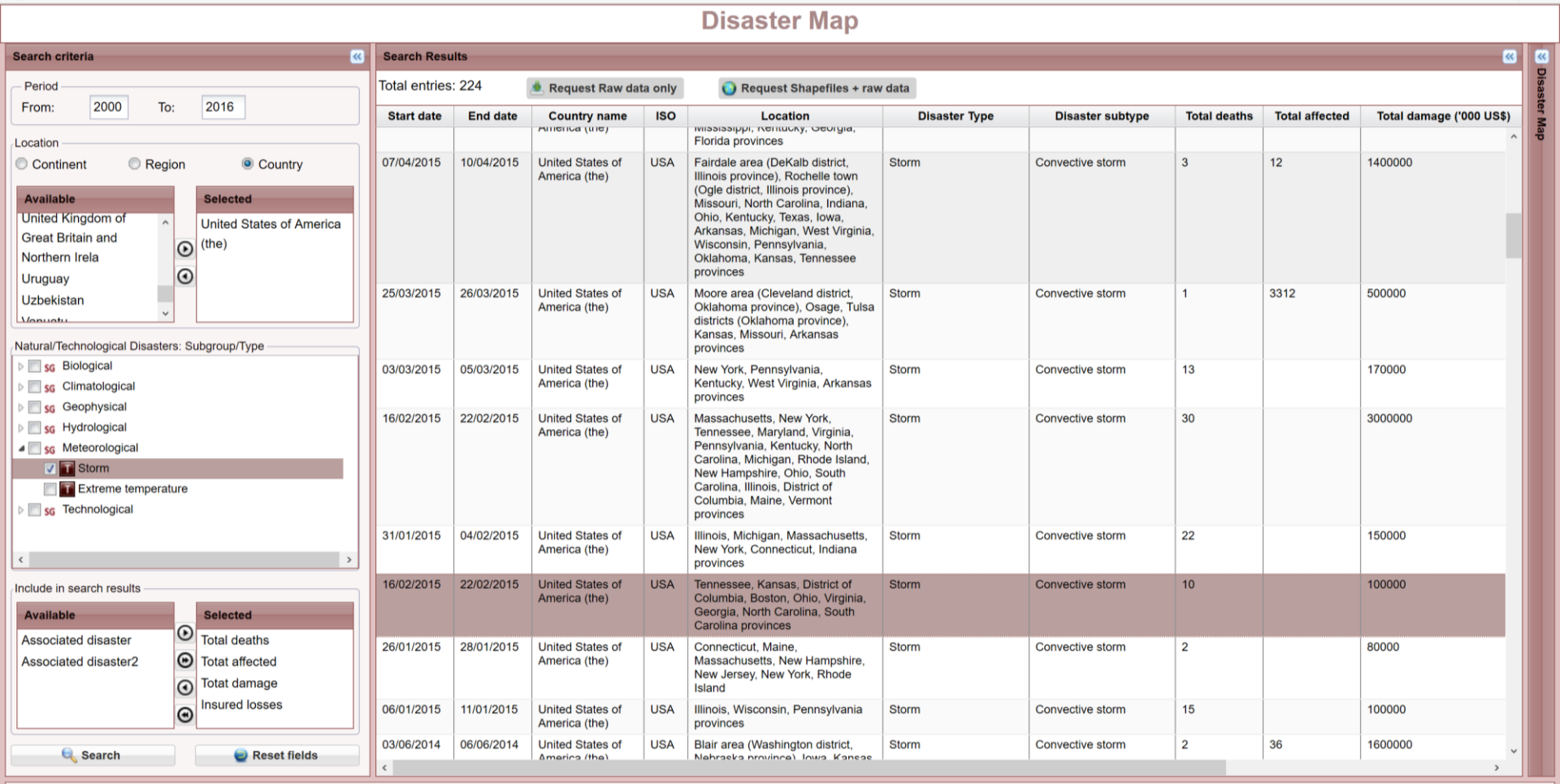
Linked with the disaster list tool



3. Disaster maps tool

Output 3.1

Disaster Map

Search criteria

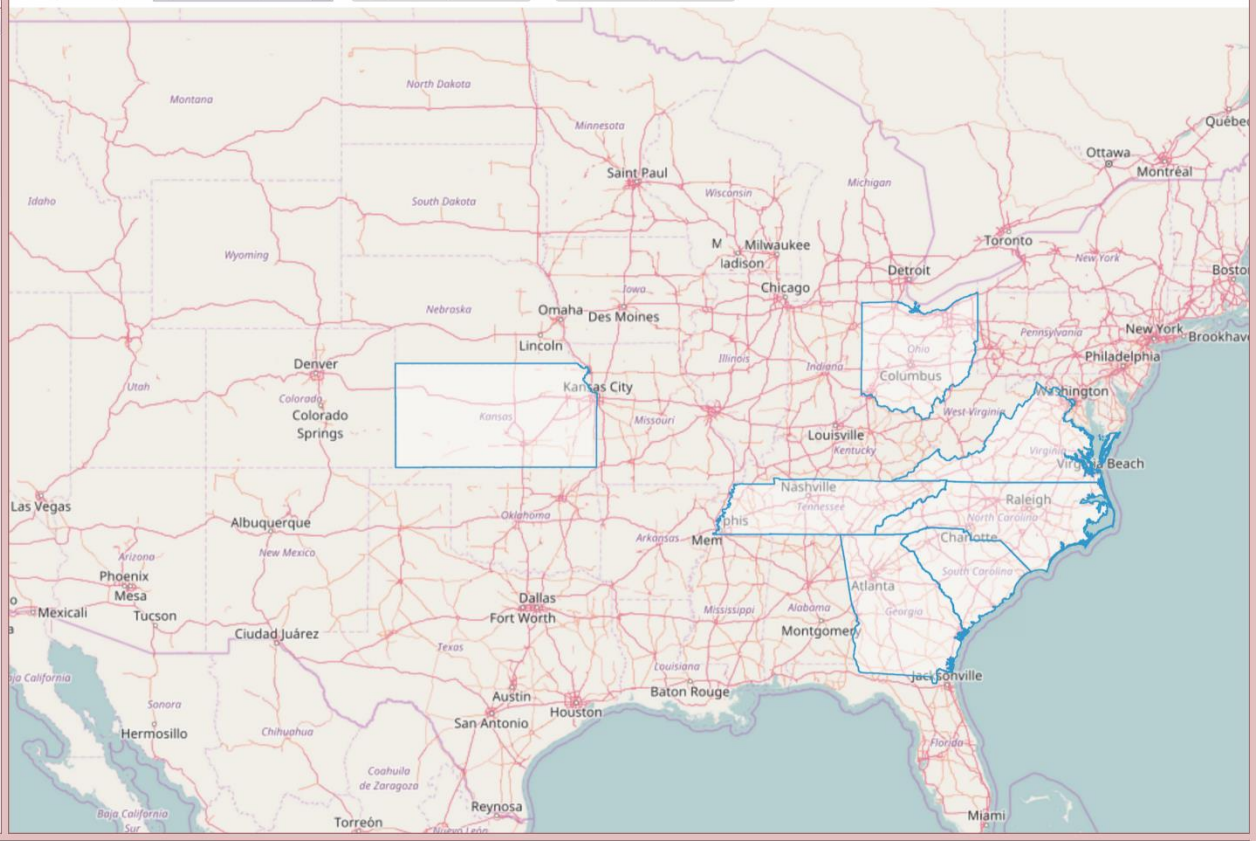
Search Results

Total entries: 224 | Request Raw data only | Request Shapefiles + raw

Start date	End date	Country name	ISO	Location
		America (the)		Mississippi, Kentucky, Georgia, Florida provinces
07/04/2015	10/04/2015	United States of America (the)	USA	Fairdale area (DeKalb district, Illinois province), Rochelle town (Ogle district, Illinois province), Missouri, North Carolina, Indiana Ohio, Kentucky, Texas, Iowa, Arkansas, Michigan, West Virgin Wisconsin, Pennsylvania, Oklahoma, Kansas, Tennessee provinces
25/03/2015	26/03/2015	United States of America (the)	USA	Moore area (Cleveland district, Oklahoma province), Osage, Tul districts (Oklahoma province), Kansas, Missouri, Arkansas provinces
03/03/2015	05/03/2015	United States of America (the)	USA	New York, Pennsylvania, Kentucky, West Virginia, Arkans provinces
16/02/2015	22/02/2015	United States of America (the)	USA	Massachusetts, New York, Tennessee, Maryland, Virginia, Pennsylvania, Kentucky, North Carolina, Michigan, Rhode Islan New Hampshire, Ohio, South Carolina, Illinois, District of Columbia, Maine, Vermont provinces
31/01/2015	04/02/2015	United States of America (the)	USA	Illinois, Michigan, Massachusetts New York, Connecticut, Indiana provinces
16/02/2015	22/02/2015	United States of America (the)	USA	Tennessee, Kansas, District of Columbia, Boston, Ohio, Virginia Georgia, North Carolina, South Carolina provinces
26/01/2015	28/01/2015	United States of America (the)	USA	Connecticut, Maine, Massachusetts, New Hampshire New Jersey, New York, Rhode Island
06/01/2015	11/01/2015	United States of America (the)	USA	Illinois, Wisconsin, Pennsylvania provinces
03/06/2014	06/06/2014	United States of America (the)	USA	Blair area (Washington district, Nebraska province), Iowa, Kans

Disaster Map

Background layer: OpenStreetMap | Save map as PDF | Save map as JPEG



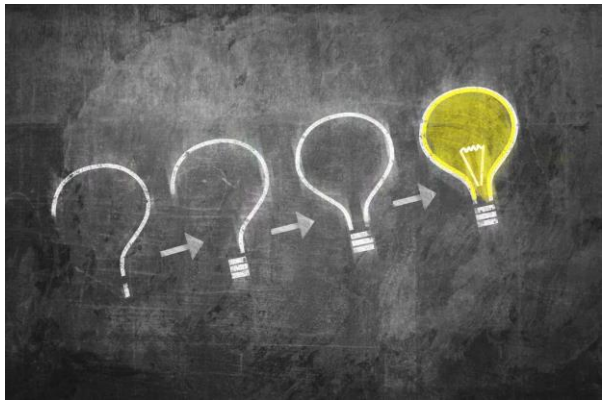
Online mapping tool

Conclusion

- Will be developed in the next 4 years
- Increase EM-DAT value
- Facilitate user visualization

THANK YOU!

Time for discussion



Contacts

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