

# **CRED CRUNCH**



### Issue No. 36 "Where are the population affected by natural disasters located?" June 2014

# Georeferencing the footprint of natural disasters<sup>1</sup>

#### from 2000 to 2013

CRED has launched an initiative to georeference natural disasters in EM-DAT. By locating more precisely the zone most affected by disasters, one can undertake in depth investigations (such as vulnerability analyses) in order to decrease human felt impacts of natural disasters. According to EM-DAT, 5270 disasters occurred in 202 countries between 2000 and 2013. As a result, around 3 billion people were affected with more than 1 million deaths, and economic losses adding up to 1900 billion US\$.

At this time, the EM-DAT georeferencing project is complete for earthquakes (402 events) and will continue with volcanic disasters.

#### What is the purpose of georeferencing the footprint?

• Identify and easily visualize the footprint of the disaster on communities and built environments (A) as well as the amplitude of the impact. It is possible to identify events where impacts were spatially separated. For example, when a earthquake occurs, one area can be affected by the ground movement and another area can be affected by a landslide. It has to be noted that the spatial spread of the disaster will not necessarily determine the death toll. This will also depend on other factors such as population density and the amplitude of the event.

• Merging spatial and numeric data from different sources (B): The footprint can be associated to other data like population density; the income distribution; the location of conflicts; etc... Population data will allow the identification of the "Population Potentially Exposed (PPE)" by a disaster, in present time or in the future. This, in turn, allows for more focused studies on economic and human vulnerability and exposure in space and time.

- Data management: identify lack of information (C)
- Disaster management (D):

It enables the development of targeted prevention and mitigation measures to the most risky and vulnerable areas. It can also aid efficiency assessments of different mitigation measures.

• Modeling:

It can enhance existing models for assessing future consequences and impacts; or compare the footprint of human consequences with the physical footprint of the disaster.

• Communicative power of maps for policy makers and wide public.

The development of interactive maps and graphs available on our website is a priority.

<sup>1</sup>The study does not include epidemics and insect infestations as natural disasters

Key information about the methodology

- Standardized methodology
- Disasters are recorded to the 2nd administrative level<sup>2</sup> thanks to the GAUL database (FAO) and include information about the precision and availability of the location data.
- For each disaster, the GAUL code system is implemented at every administrative level affected. Therefore, the information about the location is now in code format instead of text format.
- The latitude and longitude of the center of the 2nd administrative unit is recorded.

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<sup>2</sup> 333 disasters are recorded until Admin2. 69 disasters recorded until Admin0 or Admin1 because of missing data or by the fact that the event actually affects a large area (Maldives)

# <u>A) Districts affected by earthquakes in 2001</u> <u>El Salvador</u>



All figures presented come from "EM-DAT: The OFDA/CRED International Disaster Database"

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# B) Area affected by the January 2001 earthquake in India & Pakistan and population density<sup>3</sup>



<sup>3</sup> Source: Center for International Earth Science Information Network - CIESIN - Columbia University, and Centro Internacional de Agricultura Tropical - CLAT. 2005. Gridded Population of the World, Version 3 (GPWv3): Population Density Grid. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC).





D) Application of geocoding for flood vulnerability analysis in Vietnam



# **CRED** News

- ♦ In the context of the Understanding Risk Forum, which will be held in London, CRED is organizing a technical session entitled « Winners and Losers: Measuring the Impacts and Costs of Disasters ». This technical session will take place on Wednesday July 2<sup>nd</sup> at 11:00. Details on : https://understandrisk.org/page/abstracts-technical-sessions
- ♦ CRED is pleased to announce the publication of the article in Journal of Tropical Pediatrics: « Health Trends in Iraq with a Focus on Children: No Cause for Optimism», Debarati Guha-Sapir & Frederick M. Burkle Jr.
- The Annual Statistical Review 2013 will be released in August 2014.
- ♦ CRED announces our involvement in two FP7 projects funded by the European Commission : Caerus & Snowball.

Please note that disaster data are subject to change as validation and cross-referencing of the sources is undertaken and as new information becomes available. For any enquiries please contact <u>contact@emdat.be</u> or visit <u>www.emdat.be</u>