Minutes of the EM-DAT Technical Advisory Group Meeting

October 24th and 25th, 2016, Washington D.C., USA

Scope of the Meeting and Topics Discussion

The EM-DAT Technical Advisory Group meeting aims to invite a core group of advisors who have followed EM-DAT progress over the past two years as well as special guests to speak on a variety of topics related to the EM-DAT project. This year, as well as discussing our achievements, challenges and plans for the year, issues such as user's needs, collaborations, spatial applications and reporting of mortality and economic losses have been discussed.

The main topics presented during those two days meeting and discussed in a round table debate were as follow:

Session 1 & 2: Update on EM-DAT, its activities of the last two years and users perspective on improving data

Session 3 & 4: Potential for collaborations and building bridges

Session 5 & 6: Geographical applications on disaster data

Session 7: Expanding and improving data quality and scope

Session 8: Wrap up and conclusions

The **first introductory session** aimed at summarizing what were the main outputs of the previous TAG meeting, held in 2014 in Washington D.C., highlighting the main activities conducted in the last two years, what has been achieved and describing the future plans. The **second session** highlighted how EM-DAT is used by different users and what are their perspectives on improving data.

Outputs of the discussion and future action plans

- **EMDAT visibility and usability**
  - Some users are frustrated because of the time it takes to **fill in the Letter of Understanding (LoU) and accessing the data.** The "open data access" will be rethink to including an automatized system to get access to the data.
  - PPA (Population Potentially affected) should be added to the list of our definitions.
  - Some users would like to have an **uncertainty parameter**, **a reliability variable**. A suggestion would be to give the **minimum and maximum value (range)**. It will be considered but there is a **circularity issue in the reporting**.

- A **user survey** will be launched to understand what could be done better, who are the users, what are their expectations, the gaps, what are the most important variables, the most visited sections, which products are used or not, if there is a need for spatially disaggregated data and what are their requirements for the online mapping tool.

- There is a need to **improve disaster data collection at national and regional level**. USAID as highlighted that the **development of regional hubs is a high priority**.

  A first case study about Typhoon Haiyan that stroke Philippines is ongoing: the aim is to better estimate the demographic proportion among victims in disaster situations. Two other case studies will be conducted. The next step is to organize several workshops and develop a software including guidelines and training based on those concrete case studies.

  That regional hub would only be sustainable if based in a technical institution such as the University of Bangladesh, Kyoto University, University of Singapore, or ASEAN School of Public Health. That database would be inspired by EM-DAT structure but would collect less variables but with a higher level of details. The idea would be to create a common template/web based format interface, where countries could enter their data into a centralized database, managed by CRED. Therefore, data would be stored in a similar format and could be comparable. That would allow to keep a remote control on the quality of data and work closely with them to watch out for missing data. They would have a "database manager" in their country who would submit their information directly and the EM-DAT team would then validate or not their data. We could have someone from CRED team sitting in the regional hub for 6 to 12 months in order to provide intensive support before they would be able to run on their own. They could keep the ownership of their data and could use it for their own purposes.

  In the view of the Sendai and SDGs framework, the countries will all have to report on the indicators that will be setting stone in two weeks' time. It would be helpful for them to have those regional hubs in order to get the data they need.

The **third and fourth sessions** looked at potential collaborations and building bridges with different partners and institutions to fill in the gaps in EM-DAT.

Outputs of the discussion and future action plans.

- An **assessment of the entire EM-DAT database by type of event** will be performed to find out what are the missing data. (E.g. 70% of the EQ don't have a local time, 20% don't have a magnitude, 13% don't have a latitude/longitude, 0.5% have no information on the location). There is a need to validate some of the EM-DAT data with other sources of information.

- **A protocol for data exchange** should be established to develop an **automatic way to synchronize other databases/websites with EM-DAT.**

Preliminary discussions with USGS (PAGER group and Charter program), Smithsonian Institute and NASA are already ongoing. The next step will be to continue this effort and start other collaborations.

- A collaboration MoU will be established with the **USGS/Pager group** to complete the missing information and link the two databases (EM-DAT and http://earthquake.usgs.gov/earthquakes/pager) using their respective ID number. It has also been suggested to merge Pager shape maps and the geo-referencing of EM-DAT earthquakes data.

- The **USGS/International Charter program** is using EM-DAT data on an annual basis. They promote remote sensing data, which could assist to determine some variables such as flood extent and damages. In the near future, exchanging products on current events to see what could be done (i.e. provide the EM-DAT team with the footprint of a specific disaster to help/contribute with the georeferencing of EM-DAT data) should be considered.

- The group of the **Smithsonian Institution Global Volcanism Program** is collecting and tracking information on volcanic activities. The database is searchable online (http://www.volcano.si.edu/#). The book entitled "Volcanoes of the World" may be an additional source of information and will add a value to EM-DAT. It has been decided to establish a collaboration with the Smithsonian Institution to improve the start and end date of the volcanoes reported in EM-DAT, add their ID number, exchange impact information and add specific variables such as the eruption rate, the tephra/lava erupted volume associated with the VEI (Volcanic Explosivity Index) and the location (latitude/longitude/elevation). Moreover, they have photographs and remote sensing imagery that could help to define the affected areas. Finally, they also record relevant information on evacuations that we could added in EM-DAT.

- The **National Aeronautics and Space Administration (NASA)** group also proposed to fill some data gaps of EM-DAT by making some of their products available, more specifically on drought and flood data. Their online tool (Worldview.earthdata.nasa.gov) allows to look by type of disaster - stored by mission- and search for historical data by date or by location. They can provide satellite images that would show the extent of droughts and floods. More discussion is needed in the future to determine what the possible collaborations are.

- **Dartmouth Flood Observatory (DFO)** archives include over 4,400 flood events from 1985. They are using satellite derived data to provide daily river discharge and flood extent. The first step would be to integrate their ID number to facilitate the comparison between single country events. By summer/autumn 2017, one map showing the extent of each flood event will be available. This could help refine the georeferencing of EM-DAT.

- **World Meteorological Organization (WMO)** products (mainly their loss and damage database) could be used as a proxy for identifying events: timeline, geographical extent, severity, possible impacts and origin of the event. They are starting their initiative by looking at South East Europe and could make those databases available to CRED. Possible linkages could be done with EM-DAT in 2018.

The **German Aerospace Center** is a high resolution mapping community, working on a request basis to cover certain disasters. A pilot case study to try and bring EM-DAT together with their data could be a starting option. It might help to retrieve some information on the estimation of human and physical impacts, extend of the disaster, and highlight damages grades for specific disasters.

- Possible collaboration on exposure data for population, settlements and infrastructure with **The Center for International Earth Science Information Network (CIESIN) (Columbia University)** could be thought of. They have developed GPWv4 based on census and are creating population grids by sex ratio for some countries. They are also mapping urban vs rural areas, settlements and infrastructures based on remote sensing imagery (how tall, how strong are the buildings, what are the characteristics of the household living in those buildings,…). They also have data at SEDAC on nuclear power plants, roads, map of the slums (See: SEDAC HazPop mobile application).

- **The Federal Emergency Management Agency (FEMA)** is collecting a lot of data on the US. We could open a collaboration with them in order to use their data more systematically.

- In addition, collaborations with **Sheldus database** (US Data), **NOAA** (US data), **UNICEF** (mapping the maximum extend of flood events), **UNEP** (flood risk maps) and **WFP** (droughts) could be taken into consideration within this process.

The **fifth and sixth sessions** were dedicated to geographical applications on disaster data such as the EM-DAT georeferencing activity and development of an online mapping tool, satellite-based emergency mapping activities, spatial analysis experience from DFO, the combination of EM-DAT disaster data with crop production data, and the interpretation of environmental variables in terms of hazard and exposure.

Outputs of the discussion and future action plans.

- Analyses will be performed in order to provide an **overview of the georeferencing activity**, which data need to be improved and how it can be done.
- If the **centroid** isn't unique, users recommended to keep the different centroids but analyses must be conducted to determine if two events have been georeferenced under one single event in EM-DAT. Data from WMO could help us determine whether or not it is two separate events or not. The need to have the data reviewed for consistency by technical specialists has been brought up.
- We will also make sure that the geopolitical breakup of countries such as Sudan and South Sudan will not engender problems in the georeferencing and their centroids.
- Instead of using the total PPA (**Population Potentially Affected**) for a specific country, partners advised to use the **population potentially affected by year**.
- Joshua Busby, from University of Texas, presented the work he is doing based on EM-DAT data. His team geocoded EM-DAT natural events from 1997 at Admin 1 level and they also split the number of deaths by the number of affected provinces or based on the population density (based on LandScan 2014). **Those methods of assigning impact data to specific sub-geographical units** will require more discussion to decide whether or not we want to investigate further in that direction.
- Partners seemed delighted by the online mapping tool project that will be developed in the next 4 years.

The **final session** looked at expanding and improving data quality and scope.

Outputs of the discussion and future action plans.

- Mortality data differ according to the source of information used but there are also clear trends in the reporting through time.
- A deepest investigation on the way sources are collecting their data should be performed. It could also be linked to the available capital in human resources of each organization in a specific country.
- In the analysis, the official values reported by the government, as well as PAGER estimates of deaths, should be added and see whether or not it matches with the other sources.
- Investigation is needed to see if it differs from the type of disaster, and its magnitude.
- There is a problem of circularity in data reporting.
- When looking at the economic losses data, Reinsurance companies have presented a wide range of sources they are using. It would be interested to investigate whether or not we couldn't use one or more other sources to have better economic impact data.

Wrap up and conclusion

The meeting ended with positive and rich discussions giving clear directions to be taken:

- Formalize, in the near future, our cooperation with the following partners: USGS, Smithsonian institute, DFO and organize a first meeting to concretely work on data gaps and information sharing.
- Continue to work closely with the satellite community in the context of the georeferencing process of EM-DAT.
- Invest our time in automatizing several functions within EM-DAT (i.e. the validation, data entry and georeferencing process), as well as developing our online mapping tool.
- Divert our resources to do more work at the sub national level as there is a need to have a better understanding of what is happening on the ground. The regional hub initiative will be a challenge, and there is a need to work more closely to design how to do it but also to have the right connections in order to have the intuitional weight it should have to be sustainable.