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Scientific & Technical Advisory Group (STAG) Meeting of the Emergency Events Database (EM-DAT)

Potchefstroom - South Africa

18th – 19th March 2024

MINUTES REPORT

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Introduction

This report summarizes the presentations and discussions held on March 18-19, 2024, during the second Scientific & Technical Advisory Group (STAG) Meeting of the Emergency Events Database (EM-DAT).

Day 1 – 18 March 2024

Moderator: Hamish Patten

Ongoing EM-DAT Work

Joris van Loenhout

The presentation covered several key focus areas, challenges, and future directions. Database maintenance and development efforts are focused on maintaining global data quality and enhancing dissemination. This includes streamlining search functions to minimize manual efforts and incorporating expert input to ensure scientific data quality. In 2023 alone, over 550 new disasters were added to the database, with ongoing data automation and API linkage efforts. The release of the new EM-DAT platform in September 2023 marks a significant improvement in accessibility and usability. To enhance user experience, EM-DAT plans to introduce visual dashboards, public tutorials, and comprehensive documentation. Additionally, a scientific publication submitted to Nature Scientific Data underscores EM-DAT's commitment to transparency.

EM-DAT maintains regular communication with stakeholders through the quarterly CRED Crunch newsletter, covering various disaster-related topics. Periodic meetings with the newly established Scientific Committee broaden expertise and perspectives, while collaboration with local partners in four countries and creating a designated hub for the Southern African Development Community (SADC) region in South Africa strengthens data collection efforts. Focused initiatives are underway to improve data collection on specific disaster types, such as infectious disease outbreaks and heatwaves, including a Delphi study to enhance epidemic data accuracy and a case study in Madagascar on local heatwave impacts. Additionally, ongoing research on economic impact and disability-adjusted life years (DALY) aims to assess the health burden of disasters, taking the 2015 Nepal earthquake as an example case. The presentation highlights EM-DAT's dedication to maintaining a comprehensive and credible disaster database, addressing challenges, and leveraging opportunities for improvement in data collection, analysis, and dissemination.

Plenary Session

Creation of a New EM-DAT Platform and Data Automation

Objectives

The primary objective of the plenary session was to present and discuss the creation of a new EM-DAT platform and advancements in data automation. The session aimed to provide an overview of the recent developments in EM-DAT, including improvements in transparency,

data quality, classification systems, and the introduction of an Application Programming Interface (API).

Presentation

*The New EM-DAT Platform and Ongoing Activities in Automized Data Searches –
Damien Delforge*

The presentation of the new EM-DAT platform and ongoing activities in automated data searches highlighted significant advancements in data transparency, metadata quality, and hazard classification. These improvements are crucial for serving accurate data that informs decision-making. The presentation emphasized the modernization of the database's software technology to enhance its functionality and user experience. It also addressed the need for interoperability with other classification systems and the importance of minimizing biases in hazard documentation.

A key focus was the introduction of the EM-DAT API, which is currently in its testing phase. This API is designed to facilitate easier access to EM-DAT data for users and enable automating data analysis processes. The presentation detailed the comprehensive revamping of the database model to improve efficiency and accuracy alongside modernizing the underlying software technology. New websites and tools, including a dedicated documentation portal with detailed guidelines and tutorials, have been developed to enhance user accessibility and understanding. Efforts have also been made to simplify the hazard classification system, ensuring it is more user-friendly and interoperable across different contexts and systems.

Several initiatives are currently underway to further enhance EM-DAT's functionality and accessibility. These include developing and testing the EM-DAT API, ongoing pilot studies to integrate EM-DAT with other disaster databases, and creating a dashboard tool to provide users with convenient access to summary metrics and various analysis options. Additionally, there is a planned transition from the Global Administrative Unit Layer (GAUL) to an up-to-date reference system for disaster geolocation aimed at improving accuracy and alignment with international standards.

Looking ahead, EM-DAT has outlined strategic initiatives to enhance its capabilities in disaster data management further. These plans include refining the classification system to better accommodate multi-hazard events, bolstering data transparency and accessibility, and exploring the integration of advanced technologies such as natural language processing (NLP) and artificial intelligence (AI). These technologies promise to automate data analysis and extraction processes, improving efficiency and accuracy in handling large datasets. Recommendations for EM-DAT include harmonizing terminology internationally, exploring additional analytical tools and resources, and maintaining ongoing collaboration and engagement with stakeholders to ensure the platform continues to meet the evolving needs and expectations of its diverse userbase.

Breakout Sessions

EM-DAT Platform Development from Different Perspectives

Questions: *How can we improve the EM-DAT website to make it more user-friendly? Think about making it better for all users, such as researchers, students, government workers, companies, and everyone else.*

Group 1 - UN and International Organizations

Recommendations and discussions: The group discussed the potential implementation of interactive features on the EM-DAT website, such as a review chat box for user interaction and audience mapping to understand who accesses the data. There was enthusiasm for leveraging Python scripts to develop interactive dashboards and improve data visualization, particularly with maps. Transparency in data sources and validation procedures emerged as a critical theme, with suggestions for a reliability index and clear documentation of data origins and validation methodologies. Addressing limitations and biases in data collection and reporting to improve the accuracy and relevance of information available on EM-DAT was also emphasized. Participants advocated for an upload function to allow users to contribute additional data or reports, thereby enriching the database. Discussions further emphasized the importance of standardizing data classification and methodologies to ensure consistency across different regions and meet user needs. Symbolic representations, such as data quality indicators, universally recognized icons and color coding, were highlighted as crucial for enhancing user understanding and trust.

Group 2 - Research and Academic

Recommendations and discussions: Participants applauded recent improvements in the EM-DAT platform's user-friendliness and layout. They proposed practical enhancements, such as creating a frequently asked questions (FAQ) section and appointing a feedback moderator to facilitate user interaction and support, as well as user forums or discussion board to interact with other users. A suggestion was made to develop a video series to guide first-time users and to learn from successful platforms to enhance user engagement. The session underscored the importance of data validation and trustworthiness in maintaining EM-DAT's credibility among its diverse userbase. It was also suggested to make the website available in multiple languages.

Group 3 - Global Data Perspective

Recommendations and discussions: This breakout session focused on a global data perspective and explored innovative approaches to improve EM-DAT's functionality and reach. Participants discussed leveraging artificial intelligence (AI) to facilitate Q&A sessions and sharing Python notebooks for flexible hazard and disaster analysis. They emphasized the need to map and cater to diverse user groups, proposing platforms like Discord for moderated information dissemination and tailored website features for educational purposes. There was consensus on refining hazard definitions with visual aids and implementing clear communication strategies to update users on data changes and historical trends. The session

also addressed the differentiation between global and local data collection methodologies and advocated using social media platforms for broader information dissemination. A traffic light color-coding system was suggested to visually track the progress of data validation efforts. In addition, it was suggested to update the visual design.

STAG Member Presentations

In the afternoon, STAG members delivered presentations highlighting ongoing work related to disaster data collection and analysis:

- **Viviana Aguilar-Munoz** (CEMADEN). *The Natural Hazards Disaster Impact Reduction in the Americas and Caribbean after the 1990s: beyond the counting of deaths*
- **Mariana Madruga de Brito** (UFZ). *Using large language models for the creation of a global database on the impacts of extreme events*
- **Juan Armando Torres Munguía** (GWDG). *A global dataset of pandemic- and epidemic-prone disease outbreaks*
- **Robyn Pharoah** (Stellenbosch University). *Disaster surveillance in South Africa: Gaps and prospects in the Western Cape*
- **Albert Kettner** (DFO). *Satellite Sensing: Detectable and Elusive Floods in Our Modern World.*
- **James Douris** (WMO). *Hazardous Event Tracking System.*
- **Roelof Burger** (NWU). *Harnessing Gridded Databases for Meteorological Hazard Characterization.*
- **Sylvain Ponserre** (IDMC). *Geolocation: A Key Component for Interoperability.*

Day 2 – 19 March 2024

Plenary Session (Morning)

Local Data Collection and Regional Data Hubs

Moderator: Iria Touzon Calle

Objectives

The main objective of this plenary session was to discuss and deliberate on enhancing the EM-DAT database through localized data collection activities. The session aimed to explore the potential of collecting retrospective local data and integrating it with regional and national levels to improve the quality and comprehensiveness of disaster-related data.

Presentation

Data Collection Activities in Pilot Countries - Joris van Loenhout

Pilot studies in Bangladesh, Cameroon, the Philippines, and Uganda mark an important step toward integrating local-level data into national and regional databases. These studies focus on collecting retrospective local data to improve the EM-DAT database by utilizing sources previously unavailable to the EM-DAT team. This approach aims to improve the quality and accessibility of disaster data.

Recommendations and discussions: The recommendations highlight strategic actions to improve the effectiveness and scope of these regional activities. First, strengthening partnerships with local, national, and regional entities is vital for accessing diverse data sources and expertise. Second, prioritizing the collection of historical data is critical to filling gaps within EM-DAT, thereby creating a more comprehensive disaster information repository with clear source information. Third, implementing rigorous integration and validation processes is essential to ensure the data's quality and reliability. This includes allowing partners to use their entry criteria while aligning with EM-DAT standards during validation. Lastly, enhancing collaboration with academia and civil society organizations is useful for fostering innovation in data collection and analysis methodologies. These recommendations are designed to improve the overall quality, accessibility, and relevance of EM-DAT for global disaster risk management and mitigation.

Presentation

R-EMDAT: Current State of Data Collection in the SADC region - Dewald van Niekerk

The first Regional Emergency Events Database (R-EMDAT) is designed to consolidate disaster impact data within the Southern African Development Community (SADC) region, thereby enhancing disaster management and response mechanisms. As a crucial tool for data consolidation and analysis, R-EMDAT prioritizes the collection of disaster impact data at subnational levels across all SADC countries. This initiative is essential for addressing the escalating frequency and intensity of disasters, which are increasingly attributed to climate change and other anthropogenic factors.

R-EMDAT will provide a preliminary database for disaster events within the SADC region, but it faces several challenges that hinder its effectiveness. Fragmented and inconsistent data collection and reporting mechanisms across member states are significant obstacles. Additionally, there is a noticeable gap in capturing data related to "unseen" disasters, such as traffic accidents, air pollution, and epidemics, which are underreported despite their significant impact. Collaboration with academic partners is essential to address these gaps, enhance the quality and scope of data collected, and foster a culture of knowledge sharing and capacity building within the region.

Recommendations and discussions: Strategic enhancements and future directions for advancing R-EMDAT have been outlined to elevate its capabilities and relevance in disaster management. Collaboration with academic institutions and government bodies is pivotal, offering expertise and aligning national priorities. Academic partners contribute innovative data analysis and pattern recognition skills essential for effective preparedness planning, while government partnerships ensure database congruence with regulatory frameworks. Furthermore, training and capacity building are crucial, with tailored programs being developed to address diverse needs, ranging from foundational data collection skills to advanced analytical techniques. Quality assurance and data verification mechanisms will be strengthened to uphold data integrity and accuracy, including establishing stringent validation criteria for disaster events and integrating community-based reporting systems to capture on-the-ground realities.

Technological advancements are a key component of R-EMDAT's modernization strategy. Plans include integrating automated data entry systems and harnessing machine learning algorithms for predictive analytics and trend identification. Ensuring sustainability beyond the pilot phase is a priority, emphasizing long-term engagement with local communities and governments to secure ongoing project management and funding.

Presentation

The Impact of Heatwaves on Local Populations: Ongoing Case Studies – Damien Delforge

The presentation highlighted the critical need for comprehensive local case studies, in order to effectively understand global implications. It began with an overview emphasizing the necessity of comparability across regions to achieve a holistic perspective on heatwave impacts. The discussion included detailed case studies from Madagascar, focusing on defining heatwaves beyond temperature thresholds and considering factors like the Universal Thermal Comfort Index. This approach takes into account the varying vulnerabilities of different populations, such as the elderly, individuals with disabilities, and athletes. The presentation also underscored the significant disparities in heatwave reporting and health monitoring, noting that nearly half of all recorded heatwaves are reported from just nine countries. This highlights the gaps in mortality data accessibility at high spatial and temporal resolutions across many regions.

The presentation illuminated the discrepancies in research focus and media coverage, predominantly favoring developed countries, which skews global awareness and data availability on heatwaves. Challenges in comparing heatwave impacts due to varied

methodologies across countries were also discussed. This prompted the project's goals to enhance data collection efforts in developing countries by improving reporting systems, establishing standardized practices, and engaging experts through rigorous case studies. These efforts aim to mitigate the adverse impacts of heatwaves on vulnerable populations globally.

The Madagascar case study highlighted the unique climate variability across the country, which posed challenges in defining heatwaves using a single temperature threshold. Instead, the study utilized relative percentiles compared to a reference period to identify heat anomalies, particularly focusing on events during the hot season. The analysis underscored an increasing trend in heatwave occurrences and their impact on the population, especially vulnerable groups such as the elderly.

Recommendations and discussions: Several recommendations and next steps were proposed. Improving data collection and analysis capabilities is crucial for accurately monitoring heatwave impacts. This includes developing robust systems to gather data on heatwave-related health outcomes and community vulnerabilities. Engaging with local stakeholders and academic institutions in Madagascar was recommended to bolster awareness, preparedness, and the quality of data collected on heatwave impacts. The standardization of metrics to facilitate global comparisons of heatwave impacts was also suggested, enabling more effective analysis and assessment across different regions. Additionally, exploring alternative datasets and tools, such as Google Trends and the South African Weather Service's Calum Dataset, was proposed. These tools could improve the identification of heatwave events and provide insights into at-risk populations, enriching the data available for decision-making and policy development.

Summary of Plenary Session

Local Data Collection and Regional Data Hubs

The plenary session on local data collection and regional data hubs within the context of EM-DAT focused on strategies to enhance disaster-related data quality and accessibility through localized data collection and regional partnerships. Discussions included capacity building and ongoing pilot studies in four countries collecting retrospective local data to understand available information and its potential to enhance the EM-DAT database. The session also highlighted the pivotal role of the R-EMDAT initiative in expanding the EM-DAT database through regional-level data collection. This initiative aims to identify and integrate currently absent sources, emphasizing a phased approach that starts with testing and collaboration with regional partners. This approach is crucial for effectively scaling up data collection efforts and ensuring that the database reflects a comprehensive spectrum of disaster events and impacts at the regional level, while standardizing as much as possible the data collection strategy and inclusion criteria. Additionally, specific disaster studies, such as those on heatwaves in Madagascar, were emphasized to refine data collection methodologies and strengthen partnerships with academics and countries for improved data accuracy.

The session also provided recommendations for enhancing disaster data management, highlighting strategic initiatives to strengthen the EM-DAT database. Enhancing partnerships with local, national, and regional entities is essential for effectively harnessing diverse data

sources and expertise. Prioritizing retrospective data collection is crucial to filling existing gaps in the database, ensuring a comprehensive repository of disaster information. Expanding pilot studies to other regions and disaster types is recommended to validate successful models and scale them up accordingly. Additionally, establishing robust validation processes for integrating collected data into EM-DAT is emphasized to maintain high standards of quality and reliability. Engaging academia and civil society in innovative data collection and analysis methodologies is essential for fostering continuous improvement and relevance in disaster data management practices.

Breakout Sessions

Group 1 - Local Data Collection

Question: *What is the potential use of local-level disaster databases within EM-DAT (e.g., extra entries within the database) and beyond?*

Recommendations and discussions: The breakout session focused on strategies and considerations to optimize the utilization of local-level disaster databases within and beyond EM-DAT, emphasizing enhanced disaster data management. Key discussions centered on the urgent need to strengthen data verification processes to improve the accuracy and reliability of disaster data. Participants highlighted gaps in data coverage, particularly in low-income countries and historically underrepresented regions, advocating for additional entries in EM-DAT tailored to capture local-level disaster events.

Standardizing data collection protocols emerged as a crucial recommendation to ensure consistency in data categorization, reporting, and to prevent duplication across different regions. The session also proposed capacity development initiatives to strengthen local data collection and disaster risk assessment skills, stressing the importance of context-specific risk assessments based on geographic and historical disaster trends. Participants explored the potential for collecting additional data not currently captured by EM-DAT, such as demographic details and subnational administrative-level information, while cautioning against redundancy in existing efforts.

Moreover, the session underscored the value of long-term monitoring and evaluation in assessing disaster risk reduction efforts using local-level data. This approach enables ongoing progress tracking, identification of emerging trends, and adaptation of strategies over time. Participants concluded by recognizing the multifaceted benefits of local disaster databases, including enhanced data verification, expanded coverage, standardized protocols, and improved decision-making supported by local-level data. They emphasized the importance of cross-sector collaboration for fostering a holistic approach to disaster risk reduction and management while acknowledging the risks associated with potential duplication of efforts.

Group 2 - R-EMDAT

Questions: *How can the R-EMDAT approach and protocol be optimized for efficiency? What are the regional (SADC) sources of data you know? How do we ensure data validity? Who will be the users benefiting from R-EMDAT? What are reasonable expectations of R-EMDAT?*

Recommendations and discussions: Participants explored ways to enhance the efficiency of the R-EMDAT approach and protocol, emphasizing optimizing data verification through rigorous processes. They highlighted the importance of sourcing data from credible entities such as UNDRR, WFP, Red Cross, and NDMCs, supplemented by academic research. The group proposed instituting a bulk data entry system overseen by a scientific committee to meticulously review and refine data before publication, stressing the need for traceable scientific input and robust data collection protocols. Regional data sources within SADC were mentioned, including the Caelum dataset, UN databases, governmental records, humanitarian datasets, insurance company reports, and historical archives. Strategies to ensure data validity within R-EMDAT were deliberated, advocating for comprehensive data collection methodologies and rigorous validation processes to foster trust with governmental and other verification agencies. Emphasis was placed on referencing all data sources, implementing internal validation mechanisms, and interacting with governmental entities to maintain accuracy and reliability.

Identifying the primary beneficiaries of R-EMDAT data, the group recognized governments, universities, NGOs, research institutes, and community leaders as key users. Discussions on reasonable expectations from R-EMDAT highlighted the importance of structured learning processes encompassing data collection, analysis, and publication. Recommendations included establishing interfaces with other databases for comparative analysis, enhancing user interaction, and ensuring effective stakeholder communication to foster collaboration and support. Looking ahead, the session outlined actionable next steps, including developing a comprehensive plan to implement proposed optimizations and data validation procedures within R-EMDAT. They stressed expanding outreach efforts to engage more stakeholders, diversifying data sources, and establishing clear communication channels with end users and member states to manage expectations and gather feedback. Concluding on a positive note, the group expressed confidence that enhancing R-EMDAT's efficiency and data validity will significantly elevate its impact within the SADC region and globally.

Group 3 - Heatwaves

Questions: *What are the advantages and disadvantages of seasonal versus event-based approaches in risk understanding and emergency management? Should EM-DAT favour one method? How can it deal with different counting methods that affect the reported numbers? Should EM-DAT play an active role in harmonizing heatwave definitions and impact evaluation globally? Which one?*

Recommendations and discussions: Group 3 discussed heatwave risk understanding and management, addressing key questions related to seasonal versus event-based approaches, EM-DAT methodology preferences, data counting methods, and global harmonization of heatwave definitions. The group explored the merits and drawbacks of seasonal and event-based approaches in risk assessment and emergency response. Consensus favoured event-based approaches for their consistency and compatibility with disaster event data recorded in EM-DAT. It was recommended that EM-DAT prioritize event-based approaches to align with its existing database structure and facilitate consistency in data reporting and analysis. In addition to considering the temporal extent, the importance of spatial resolution was emphasized. Documenting the spatial extent, such as country-scale versus local/city-scale analysis, can significantly impact the numbers and insights derived from the data.

Participants emphasized the importance of maintaining transparency in data reporting by documenting mortality estimation methods and associated confidence levels. Acknowledging uncertainties in data collection was highlighted as crucial for providing context to reported numbers. Dedicated mortality estimation protocols could be implemented by EM-DAT for countries with available data and highlight figures calculated by other institutions using different protocols. The global challenges of harmonizing heatwave definitions due to spatial and temporal variability were acknowledged. The group recommended engaging with international organizations such as WMO and WHO to contribute to developing standardized definitions.

Plenary Session (Afternoon)

Moderators: Niko Speybroeck and Rhonda Stewart

Presentation

Planned Activities within EM-DAT for the Coming 18 Months - Joris van Loenhout

Introduction: The presentation focused on key initiatives to enhance data collection, improve data outputs, and strengthen partnerships to bolster EM-DAT's capabilities and impact.

Data Activities: In the realm of data-related activities within EM-DAT, the focus of efforts includes manual data handling and initiatives aimed at automation and enhanced accessibility. Daily manual data entry and collection procedures persist as foundational tasks to maintain the database's integrity and reliability. Simultaneously, implementing automated pilot projects targeting specific disaster types represents a forward-thinking approach to complement manual processes effectively.

One significant development involves extending the Application Programming Interface (API) capabilities. A continuous survey initiative is underway to gather feedback on the API pilot project. This feedback will play a pivotal role in refining strategies and functionalities based on the insights and suggestions provided by stakeholders and users.

Output Activities: Within EM-DAT's operational framework, significant efforts are dedicated to effectively disseminating critical information and maintaining stakeholder engagement. A focus lies on finalizing and releasing the 2023 annual report, which comprehensively reviews the preceding year's disaster data trends and insights. This report informs stakeholders and contributes valuable insights to global discussions on disaster risk reduction and response strategies.

Quarterly newsletters are also a key component of EM-DAT's communication strategy, providing timely updates on current topics relevant to disaster management and data collection. These newsletters serve as a platform to convey recent developments, highlight emerging trends, and showcase best practices in disaster risk management worldwide. Regarding meeting documentation, EM-DAT prioritizes transparency and collaboration by sharing detailed meeting minutes with stakeholders for review and input. Looking ahead, EM-DAT plans to organize future scientific committee meetings to foster continuous dialogue and innovation in disaster data management practices.

Local Disaster Impact: EM-DAT is actively enhancing training materials to improve disaster preparedness and response efforts globally. This includes revising and publicly releasing training manuals and related resources on the EM-DAT website. Additionally, EM-DAT is progressing with pilot studies in specific countries, aiming for completion by September 2024. These pilot projects are designed to test and refine disaster data collection methodologies and response strategies in real-world scenarios. Upon completing these studies, EM-DAT will conduct comprehensive retrospective data analysis and evaluation.

Specialized Data Improvements: Specialized data improvements within EM-DAT are being conducted through focused initiatives to enhance epidemic and heatwave data capabilities. A manuscript based on a Delphi study, scheduled for submission by August 2024, aims to revise methodologies for epidemic data collection. EM-DAT is also collaborating with partners to refine the data collection framework, ensuring robustness and applicability in global health contexts.

In parallel, EM-DAT is conducting a survey among non-governmental organizations (NGOs) in Nepal to gather comprehensive data on epidemic occurrences. These initiatives aim to augment EM-DAT's repository with localized insights from frontline responders, enriching the database's epidemic data coverage and relevance. Additionally, EM-DAT is conducting a literature review and case study analysis focusing on heatwave events. This research seeks to deepen the understanding of heatwave impacts through empirical evidence and scholarly discourse, providing valuable insights for enhancing global disaster preparedness and response strategies.

Economic Impact Analysis: In the domain of economic impact analysis, EM-DAT is focusing on evaluating the health burden resulting from disasters. Efforts are underway to assess Disability-Adjusted Life Years (DALYs), a measure used to quantify the overall health impacts caused by disasters. This approach allows comparison of disaster-related health impacts with those from other health problems, helping to understand the long-term health consequences for affected populations and providing crucial insights into the societal and economic repercussions of disasters.

Furthermore, EM-DAT is conducting a study to examine gender disparities in years of life lost following the 2015 Gorkha earthquake in Nepal. This study aims to identify variations in the impact of disasters across different demographic groups, particularly highlighting the differential effects on gender.

Recommendations and discussions: Participants stressed the importance of expanding the database scope to encompass evolving global emergencies, such as those driven by urbanization, which significantly impacts disaster outcomes. Another key focus was continuous monitoring and assessment of emerging risks and the reassessment of risk thresholds. Road accidents are included under transport accidents when a single event meets the inclusion criteria of EM-DAT.

To address concerns about data quality, participants discussed strategies to enhance accuracy, comprehensiveness, and timeliness. This includes rigorous validation of data sources and improvements in data collection processes to maintain high-reliability standards.

Technological advances were also highlighted, particularly in leveraging machine learning and artificial intelligence to preprocess data, improve efficiency in data validation, and enhance EM-DAT's overall operational capabilities. Lastly, the importance of collaboration and data sharing was underscored, with participants emphasizing the need to strengthen collaboration with other organizations and establish formal communication channels to access complementary datasets.

Breakout sessions (Afternoon)

Questions: *Considering the evolving nature of global emergencies, including climate change, pandemics, and technological disasters, what strategies should EM-DAT implement to improve the comprehensiveness, accuracy, and timeliness of its data collection and quality? This may include exploring new data sources, using technology for data gathering and analysis, and enhancing collaboration with national and international agencies. How can EM-DAT use these to stay ahead of future challenges and make the database more useful for understanding disasters?*

Group 1 – UN and International Organizations

Recommendations and discussions: The discussions emphasized the need for a comprehensive, accurate, and timely approach to data management. Utilizing advanced technologies, strengthening partnerships, and prioritizing strategic initiatives were seen as essential steps. The group highlighted the importance of data independence and transparency in guiding future initiatives. They emphasized a holistic approach to data management in EM-DAT, focusing on several key areas. Participants stressed the importance of enhancing data collection comprehensiveness by sourcing information from diverse national, regional, and local sources, including verified government reports and social media data. They emphasized the establishment of comprehensive databases spanning historical to current data and outlined principles for systematic data collection and government engagement to ensure thorough coverage. Leveraging new technologies to identify emerging data and flag impacts was considered crucial.

Ensuring data accuracy and transparency was seen as a priority. The group proposed documenting data from multiple sources used in cross-referencing, implementing clear inclusion criteria, and collaborating with regional agencies for validation. They advocated describing disaster events in narrative formats to enhance understanding and transparency while documenting methodologies and significant changes in structures and classifications. Justification for decisions, such as selecting heatwaves for pilot data automation, was deemed essential. Acknowledging limitations in data, particularly in underestimating human and environmental impacts, and providing clarity on process timelines like 'end of year closing' were also emphasized.

Further recommendations included the preparation of a multi-year strategy document with concrete objectives for the EM-DAT team or STAG members. Suggestions for additional data incorporation encompassed distinguishing impacts between urban and non-urban areas and linking cascading effects of disasters like those attributed to El Niño. Efforts to enhance

timeliness and efficiency centred on decentralizing data collection for prompt updates, optimizing workflows with AI and cloud-based verification, and facilitating bulk uploads for improved accessibility. Key themes were collaboration with international research partners to access firsthand data and maintaining data independence through transparent engagement with diverse stakeholders. Establishing clear communication channels with advisory groups and stakeholders, and creating specialized working groups within STAG were proposed to advance specific objectives.

Group 2 – Research and Academic

Recommendations and discussions: The breakout session extensively discussed strategies to enhance the comprehensiveness, accuracy, and timeliness of data within EM-DAT. Participants emphasized the need to collect data from diverse sources, including national, regional, and local databases, to achieve comprehensiveness. They proposed integrating verified social media data and government reports while acknowledging the cost implications associated with sources like Twitter data. Establishing databases that cover historical and current data was considered essential, along with designing data-sharing principles and systematic collection methods such as literature reviews. Engagement with governments was highlighted to ensure thorough coverage across all governance areas. It was suggested to develop a multi-hazard classification system, which can accommodate complex and cascading disasters.

Accuracy was another critical focus. Recommendations included documenting data from multiple sources for cross-referencing to enhance reliability and setting clear inclusion criteria for data sources. Collaborating with regional agencies for data sharing and comparison was proposed as a strategy. Using narrative descriptions for disaster events aimed to improve understanding, particularly regarding economic impacts. Incorporating official documents and inclusive disaster terminologies was also suggested to maintain accuracy, with a call for implementing version control to track data changes over time. These measures aim to ensure that EM-DAT data remains robust and reliable.

Regarding timeliness, the group advocated for decentralizing data collection to improve both timeliness and accuracy. They suggested leveraging bulk data uploads, cloud-based verification tools, and integrating AI and observational technologies to enhance efficiency. Optimizing workflows to integrate seamlessly with existing structures was considered crucial for maintaining data quality and timeliness. Ensuring high-quality data involves close collaboration with universities and specialized organizations proficient in data collection. Introducing automated checks and balances, and precise location tagging of data were highlighted as imperative steps. The strategic use of technology and partnerships, including AI and Python for data analysis, was emphasized to advance data quality goals. Strengthening partnerships with governments, international agencies, universities, NGOs, archives, and historians was deemed essential, alongside maintaining updated communication channels to prevent duplication of efforts and ensure robust data validation processes.

Group 3 – Global Data

Recommendations and discussions: Participants in this group engaged in discussions to enhance disaster data management's comprehensiveness, accuracy, and effectiveness. A central theme was the integration of diverse data sources to ensure a comprehensive dataset encompassing various sources and publishers, thereby enhancing the availability of data from diverse backgrounds. The group emphasized including localized data, such as data on regional storms with significant economic impacts, through pilot initiatives in specific regions to broaden the scope and relevance of global disaster data.

Diversity in data sources was another key focus, emphasizing avoiding monopolization by expanding to include alternative and open-access data platforms. This approach captures a broader spectrum of economic, human, and environmental losses, enriching the dataset's depth and reliability. The group stressed the importance of accuracy in data collection, advocating for the continuous analysis of emerging risks like cyber hazards. New findings are to be initially placed in an 'unclassified' section until fully validated, ensuring the integrity and reliability of the classification process.

Technological advancements featured prominently in Group 3's recommendations with a call to employ AI, including machine learning and large language models, to streamline data collection, screening, and filtering processes. Advanced data protection measures were also highlighted to safeguard user privacy and data security amidst the increased use of digital tools for data management. Collaboration and communication were underscored as critical, with a proposal to establish formal communication channels with data sources and researchers to foster a collaborative data ecosystem and facilitate seamless data sharing, and a potential expansion of data sources to include open-access platforms.

Looking forward, the group discussed strategies for adaptation and innovation in addressing future challenges, advocating for trend extrapolation to anticipate emerging risks and deepen partnerships for comprehensive data coverage. They emphasized the importance of user feedback and interaction, proposing AI-driven surveys and tools to engage with data users continuously. Enhancing the user interface and accessibility were essential steps, including implementing predictable data update schedules and improving the user interface with updated tutorials and infographics to cater to a broader audience beyond specialized researchers.

APPENDIX A: LIST OF PARTICIPANTS



LIST OF PARTICIPANTS

Scientific & Technical Advisory Group (STAG) Meeting of the Emergency Events Database (EM-DAT)

Potchefstroom - South Africa

18th – 19st March 2024

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APPENDIX B: AGENDA AND PROGRAM

EM-DAT International Disaster Database Scientific & Technical Advisory Group (STAG) Meeting

18th – 19th March 2024

The principal objective of the STAG is to assemble a group of experts in the scientific community to provide advice on the quality of EM-DAT data and its future developments. The meeting is organized by the Centre for Research on the Epidemiology of Disasters (CRED), based at UCLouvain in Belgium, in collaboration with North West University, located in Potchefstroom, South Africa. The meeting receives support from the Bureau for Humanitarian Assistance of the United States Agency for International Development (BHA/USAID). The meeting will cover prominent topics, such as:

- ✦ The creation of a new EM-DAT platform and data automation
- ✦ Creating a regional disaster database for Africa
- ✦ Improving heatwave data

Most of the meeting will be dedicated to presentations and discussions regarding current developments related to EM-DAT and the aforementioned topics. As an expert, your opinions and feedback are highly valued and welcomed during these sessions.

We hope this meeting will be successful in addressing current, key issues within disaster research.

Address:

NWU Sports Village, Room G17, Building K22, 36 Loop St, Noordbrug,
Potchefstroom, 2520, South Africa

Note:

A **dinner** will be organized for the evening of Day 1 (18th of March 2023). We will go to The Feather Hill, 1133 Dagbreek Estate, Vyfhoek

Day 1 – 18th of March 2024 a.m

08:20 – 08:45	Arrival + Registration: Regina Below, NWU staff <i>Registration is expected to be at Sports Village</i>
08:45 – 09:45	<i>Welcome:</i> Niko Speybroeck (UCLouvain) – Eunice Wavomba (BHA/USAID) – Dewald van Niekerk (NWU) <i>Rapporteur of plenary sessions: Fortune Mangara (NWU)</i> Meeting objectives Icebreaker session
09:45 – 10:15	<i>Presentation:</i> Ongoing EM-DAT work, Joris van Loenhout (Sciensano/UCLouvain)
10:15 – 10:30	Tea & coffee break
10:30 – 11:00	<i>Plenary session:</i> Creation of a new EM-DAT platform and data automation Moderator: Hamish Patten (IFRC) <i>Presentation:</i> Damien Delforge (UCLouvain). <i>The new EM-DAT platform and ongoing activities in automatized data searches</i>
11:00 – 11:55	<i>Breakout session in three groups on the EM-DAT platform development from different perspectives</i> <u>Group 1:</u> UN and international organizations <i>Lead: Gatkuoth Kai (UNDP) – Rapporteur: Paul Chipangura (NWU)</i> <u>Group 2:</u> Research and academic <i>Lead: Leandri Kruger (NWU) – Rapporteur: Annegrace Zembe (NWU)</i> <u>Group 3:</u> Global data <i>Lead : Sylvain Ponserre (IDMC) – Rapporteur : PW Bredenkamp (NWU)</i>
11:55 – 12:30	<i>Re-group + review:</i> one rapporteur per breakout group <i>Moderator: Hamish Patten (IFRC)</i>
12:30 – 13:30	Lunch

Day 1 – 18th of March 2024 p.m.

	<p><i>Expert Presentations</i></p> <p>Moderator: Joris van Loenhout (Sciensano/UCLouvain)</p>
13:30 – 13:50	Viviana Aguilar-Munoz (CEMADEN). <i>The Natural Hazards Disaster Impact Reduction in the Americas and Caribbean after the 1990s: beyond the counting of deaths</i>
13:50 – 14:10	Mariana Madruga de Brito (UFZ). <i>Using large language models for the creation of a global database on the impacts of extreme events</i>
14:10 – 14:30	Juan Armando Torres Munguía (GWDG). <i>A global dataset of pandemic- and epidemic-prone disease outbreaks</i>
14:30 – 14:50	Robyn Pharoah (Stellenbosch University). <i>Disaster surveillance in South Africa: Gaps and prospects in the Western Cape</i>
14:50 – 15:15	Tea & coffee break
	<p><i>Expert Presentations</i></p>
15:15 – 15:35	Albert Kettner (DFO). <i>Satellite Sensing: Detectable and Elusive Floods in Our Modern World</i>
15:35– 15:55	James Douris (WMO). <i>Hazardous event tracking system</i>
15:55 – 16:15	Roelof Burger (NWU). <i>Harnessing Gridded Databases for Meteorological Hazard Characterization</i>
16:15 – 16:35	Sylvain Ponserre (IDMC). <i>Geolocation: A Key Component for Interoperability</i>
16:35 – 17:00	<p><i>Wrap-up of day 1</i></p> <p>Rhonda Davis (BHA/USAID) – Niko Speybroeck (UCLouvain) – Dewald van Niekerk (NWU)</p>
18:30	Dinner – The Feather Hill

Day 2 – 19th of March 2024 a.m.

09:00 – 09:15	<i>Arrival:</i> Regina Below, NWU-staff
09:15 – 09:30	<i>Recap of day one</i> – Niko Speybroeck (UCLouvain)
09:30 – 11:00	<p><i>Plenary session:</i> Local data collection and regional data hubs: R-EMDAT Moderator: Iria Touzon Calle (UNDRR)</p> <p><i>Presentations:</i></p> <p>Niko Speybroeck (UCLouvain). <i>Localizing data collection – Introduction</i></p> <p>Joris van Loenhout (Sciensano/UCLouvain). <i>Data collection activities in pilot countries</i></p> <p>Dewald van Niekerk (NWU). <i>R-EMDAT: current state of data collection in SADC region</i></p> <p>Damien Delforge (UCLouvain). <i>The impact of heatwaves on local populations: ongoing case studies</i></p> <p>Discussion</p>
11:00 – 11:15	Tea & coffee break
11:15 – 12:00	<p><i>Breakout session in 3 groups</i></p> <p><u>Group 1:</u> Local data collection <i>Lead: Lucia Bevere (SwissRe) – Rapporteur: Paul Chipangura (NWU)</i></p> <p><u>Group 2:</u> R-EMDAT <i>Lead: Robyn Pharoah (SU) – Rapporteur: Annegrace Zembe (NWU)</i></p> <p><u>Group 3:</u> Heatwaves <i>Lead: James Douris (WMO) – Rapporteur: PW Bredenkamp (NWU)</i></p>
12:00 – 12:45	<p><i>Re-group + review:</i> one rapporteur per breakout group</p> <p><i>Moderator: Petra Löw (MünichRe)</i></p>
12:45 – 13:45	Lunch

Day 2 – 19th of March 2024 p.m.

13:45 – 14:00	<p>Looking to the future: priorities and recommendations for EM-DAT</p> <p>Moderators: Niko Speybroeck (UCLouvain) and Rhonda Davis (USAID) <i>Presentation</i></p> <p>Joris van Loenhout (Sciensano/UCLouvain): <i>Planned activities within EM-DAT for the coming 18 months</i></p>
14:00 – 15:00	<p><i>Breakout session in three groups on the EM-DAT priorities from different stakeholder perspectives</i></p> <p><u>Group 1:</u> UN and international organizations <i>Lead: Gatkuoth Kai (UNDP) – Rapporteur: PW Bredenkamp (NWU)</i></p> <p><u>Group 2:</u> Research and academic <i>Lead: Roelof Burger (NWU) – Rapporteur: Annegrace Zembe (NWU)</i></p> <p><u>Group 3:</u> Global data <i>Lead: Adrian Phiri (Mulungushi University) – Rapporteur: Paul Chipangura (NWU)</i></p>
15:00 – 15:30	Tea & coffee break
15:30 – 16:15	<p><i>Re-group + review: one rapporteur per breakout group</i></p> <p>Moderator: Petra Löw (MünichRe)</p>
16:15 – 16:45	<p><i>Wrap-up of day 2</i></p> <p>Rhonda Davis (BHA/USAID) – Niko Speybroeck (UCLouvain) – Dewald van Niekerk (NWU)</p>
16:45	Meeting close and goodbye