International Society for Photogrammetry and Remote Sensing
ISC GeoUnions Standing Committee on Disaster and Risk Reduction

Geoinformation for Disaster Management

Geospatial intelligence: bridging AI, environmental management and disaster resilience

Universidade Federal do Pará, auditório Setorial do Básico
Belém, Brazil. November 2-3, 2024

workshop organized as a pre-event
of the ISPRS Technical Commission III Mid-Term Symposium on Remote Sensing and the XXI SELPER Symposium

The awareness of new geospatial technologies and their successful utilization in disaster management is crucial. National governments, international organizations or research institutions worldwide have set to work to improve disaster management in all its phases: mitigation, preparedness, relief and response, and recovery and reconstruction. Looking ahead geospatial technologies are emerging very fast. Disaster management requires a collaborative approach that spans disciplines and sectors, bringing together experts in technology, emergency management, ethics, and policy. This conference is organized by ISPRS ICWG III/IVa on November 2-3, 2024. It is a pre-event of the ISPRS Technical Commission III Mid-Term Symposium on Remote Sensing and the XXI SELPER Symposium of the Sociedad Latinoamericana en Percepción Remota y Sistemas de Información Espacial.

Saturday, November 2nd, 2024

8:00 – 8:30	**Registration**
8:30 – 9:00	**Welcome addresses**

Sisi Zlatanova (Australia)
Welcome from the International Societry for Photogrammetry and Remote Sensing (ISPRS)
Presentation of the Gi4DM workshop series

Orhan Altan (Turkey)
Welcome from the ISC GeoUnions Standing Committee on Disaster Risk Reduction

Fabiola Yepez (Mexico)
Welcome from the ISPRS Intercommission Working Group on Disaster Management

Mapping and Modelling (1)		
9:00 - 9:25	306	**Employing Transfer Learning in Land-use Land-cover for Risk Management**	*Marjan Ahangarha, Hassan Rezvan, Mohammad Javad Valadan zoej, Fahimeh Youssefi*
9:25 - 9:40	299	The Evolving Morphology of Pool Malebo, Congo River: A Remote Sensing-Based Assessment of Land Use Land Cover Impacts	*Raphael Tshimanga, Abdelhadi Ammari, Ahmed Anis Babesse*
9:40 – 9:55	302	Identification of Aquatic Habitats of Anopheles Mosquito Using Time-series Analysis of Sentinel-1 Data through Google Earth Engine	*Hassan Rezvan, Mohammad Javad Valadan Zoej, Gholamreza Hassanpour, Fahimeh Youssefi, Ahmad Ali Hanafi-Bojd*
9:55 – 10:10	303	Detection of change in built-up area of Pokhara Valley using multiple indices from 2013 to 2020	*Shova Acharya, Shahnawaz Shahnawaz*

10:10 – 10:25	311	Modelling urban green space accessibility to evaluate Sustainable Development Goal 11.7, case study of the Monterrey Metropolitan Area	*Roberto E Huerta Garcia, Fabiola D. Yépez-Rincón, Adrián L. Ferriño-Fierro, Víctor H. Guerra-Cobián*
10:25 – 10:40	313	Flood prediction model in Rio Grande do Sul based on data from the May 2024 flood	*Carlos Henrique de Moura Silva*

<h3 style="text-align:center; color:#3b6fb5;">Coffee Break & Networking</h3>

11:00-12:00	**Workshop on Geospatial Infrastructure Management Ecosystem (GeoIME)** *Saied Pirasteh* Monitoring safety infrastructures is a significant means of a resilient environment, protecting people's safety and reducing property loss. However, some countries may challenge determining pre-and-post earthquake vulnerability and risk estimation of infrastructures like buildings. This workshop presents a GeoIME web application to determine the vulnerability of buildings and risk estimation.

<h3 style="text-align:center; color:#3b6fb5;">Lunch</h3>

Mapping and Modelling (2)

14:00 – 14:25	316	Cadastral Survey of Urban Areas Susceptible to Flooding Using Remotely Piloted Aircraft (RPA) for Hydrological Risk Classification: Case Study Santa Luzia Island, Mossoró, Rio Grande do Norte, Brazil	*Betania Queiroz Da Silva, João Santiago Reis, Sara Fernandes Flor De Souza, Ana Claudia Almeida Calado*
14:25 – 14:40	317	Past and Present of Geo-Information Technologies in River Engineering: A Case Study of the La Silla Post-Hurricane Alex Flooding	*José L. Brúster-Flores, Adrián L. Ferrino-Fierro, Víctor H. Guerra-Cobián, David C. López-Pérez, Fabiola Yépez-Rincón*
14:40 – 14:55	318	Back analysis of a debris-flow event in mountain areas with numerical simulation: an application on the coast of São Paulo State, Brazil	*Claudia Vanessa dos Santos Corrêa, Fábio Augusto Gomes Vieira Reis, Lucilia do Carmo Giordano, Victor Carvalho Cabral, Vinicius Queiroz Veloso, Caiubi Emanuel Souza Kuhn*
14:55 – 15:10	321	Flood Projection in Support of Dike Structure Improvements in New Brunswick, Canada	*Hossein Amini, Shabnam Jabari, Heather McGrath, Mikhail Sokolov, Othman Nasir*
15:10 – 15:25	323	Regiões Hidrográficas Como Unidade De Análise Das Ameaças de Desastres No Pará	*Leonardo Sousa dos Santos*
15:25 – 15:40	324	Flareless	*Marcos Benedito Schimalski, Veraldo Liesenberg, Leonardo Josué Biffi, João Victor Schimalski, Marchante Olímpio Assura Ambrósio, Bill Herbert Ziegelmaier Neto*
15:40 – 15:55	112	Enhancing Disaster Response and Resilience through Near-time GIS for Flood Monitoring and Analysis in Niger River Basin, Nigeria	*Mercy Akintola*

<h3 style="text-align:center; color:#3b6fb5;">Coffee Break & Networking</h3>

16:30 – 18:00	**Open discussion 1 : GeoAI** The integration of AI in disaster management has range of challenges, despite its undeniable benefits. Some of these considerations are about ethical, privacy or decision-making issues, but also still about technical limitations that may affect the reliability and effectiveness of AI systems. - How AI and geospatial data integration enhances disaster preparedness, response, and recovery. - The role of real-time data analytics for early warning systems. - The role of satellite imagery, drones, IoT, and cloud-based platforms in disaster management. - Ethical and privacy challenges and data privacy concerns in using AI for disaster management.

		- The importance of capacity building, leadership, and international collaboration in advancing geospatial technologies for disaster management. - How do you see GeoAI transforming disaster management practices in your region or industry? - Can you share any challenges you've faced in integrating AI or geospatial data in disaster scenarios?	

Sunday, November 3rd, 2024

Monitoring, rescue and restoration (1)

9:00 – 9:25	314	Mapping displacements of a dam crest based on the synergy of high-precision remote sensing	*Fabiola D. Yépez-Rincón, Adrián L. Ferriño Fierro, Andrea N. Escobedo Tamez, Víctor H. Guerra Cobián, Olmo E. Pinedo Sandoval, Jorge H. Chávez Gómez, Luis C. Alatorre Cejudo, Saied Pirasteh*
9:25 - 9:40	301	Efficient Flood Detection through Hybrid Machine Learning and Metaheuristic Methods using Sentinel-1	*Behnam Ebadati, Mohammad Alikhani, Fahimeh Youssefi, Saied Pirasteh*
9:40 – 9:55	307	Leveraging Python for data modeling, visualization and remote sensing of fire hotspots in the Amazon: a case study of Santana do Araguaia, Brazil	*Jackon Vinícius Mendes da Silveira*
9:55– 10:10	310	Lessonia-1 SAR Time-Series to Support the Flooding in Rio Grande do Sul	*Sidney Andrade Lima, Felipe André Lima Costa, Edilson de Sousa Bias, Edson Eyji Sano*
10:10 – 10:25	312	Project Lessonia-1 SAR for Improving the Disaster Management	*Felipe André Lima Costa, Fábio Henrique Ferreira Rocha, Matheus Rodrigues Gotelip*
10:25 – 10:40	327	Monitoring Land Degradation in Caatinga	*Washington de Jesus Sant'anna Franca-Rocha, Soltan Galano Duverger, Diego P. Costa, Deorgia T. M. Souza, Rodrigo N. Vasconcelos*

Coffee Break & Networking

11:00 – 12:00	**Workshop on Application of Remote Sensing in Controlling Vector-Borne Diseases** *Fahimeh Youssefi* As global health challenges continue to escalate, it is essential to understand the environmental factors that influence disease transmission. This workshop delves into the innovative integration of remote sensing data and climate data, harnessed through cutting-edge machine learning techniques, to uncover critical insights into vector habitats and disease patterns. By employing this research methodology, health organizations can significantly enhance their strategies for controlling carriers of infectious diseases such as malaria, dengue fever, and yellow fever.

Lunch

Monitoring, rescue and restoration (2)

14:00 – 14:25	329	**Regional Rapid Mapping for First Responders - Turkey 2023 Earthquake**	*Joerg Brauchle, Matthias Gessner, Thomas Kraft, Daniel Hein, Michael Lesmeister, Julia Gonschorek, Ralf Berger*
14:25 – 14:40	308	Near-realtime Location Specific Messaging During Extreme Bushfire Events	*Jack Barton, Akihiko Nishino, Naohiko Kohtake, Hitomi Westrin, Manabu Shimada, Ismet Canbulat, Sisi Zlatanova*
14:40 – 14:55	322	Towards a Risk-Informed Decision to Create Early Warning Systems: Case study of a simulation hypothetical supply dam failure scenario in Mexico	*Fabiola D. Yépez-Rincón, Daniel Vega, Aylet Vega Aguilar, Victor H. Guerra Cobián, Adrian L. Ferriño Fierro, Luis C. Alatorre Cejudo, Fausto Lugo*

14:55 – 15:10	328	Economic analysis based on geoinformation for the mitigation measures of human and infrastructure losses by floods in the Stream Frontera, Coahuila, Mexico	*Daniel Vega Garza, Juan Rodriguez Rodriguez, Sergio Esquivel Puente, Victor Guerra Cobián, Adrián Fierro Fierro, Fabiola D. Yépez-Rincón*
15:10 – 15:25	309	Rapid Post-Wildfire Burned Vegetation Assessment with Google Earth Engine (Case Study: 2023 Canada Wildfires)	*Behnam Ebadati, Mohammad Alikhani, Fahimeh Youssefi, Saied Pirasteh*
15:25 – 15:40	325	A benchmark dataset for Detecting Earthquake-damaged Buildings from Single Post-event VHR SAR Imagery	*Yao Sun, Yi Wang, Michael Eineder*
15:40 – 15:55	211	Training for Emergencies - How Germany is Preparing for Large-Scale Emergencies Using the EUROMED 2024 Civil Protection Exercise as an Example	*Veronika Gstaiger, Nils Machinia, Nina Merkle, Dominik Rosenbaum, Ronald Nippold, Manuel Muehlhaus, Pablo d'Angelo, Corentin Henry, Xiangtian Yuan, Reza Bahmanyar1, Franz Kurz, Christa-Maria Krieg*

Coffee Break

16:15 – 17:45	**Open discussion 2 : Regional and global best practices on Disaster Management** Are we prepared for response and recovery? Which regions are lacking on preparation? What can we learn from the new emergency response players? Examples of AI models predicting disaster events like floods, wildfires, and earthquakes. Where are we today, and what future direction do we aspire to shape and share

17:45 – 18:00	**Closing Notes** GeoAI for disaster management and the future of the Gi4DM workshop series

Social programme

Friday November 1st — **Welcome dinner** (19:00 – 22:00) Ver-o-Açai restaurant with the musician Allan Roffê (free for registered participants)

Saturday November 2nd — **Optional dinner** (19:00 – 22:00)

Sunday November 3rd — **Optional dinner** (19:00 – 22:00)

Monday November 4 — **Optional tour to Combu Island** (8:00 – 14:00) Morning and lunch before ISPRS Symposium opening ceremony (fee 120 US$)

Boating along the Guamá River banks among the famous popopós until the Combú Stream, considered the 1st River Gallery of the Amazon, result of an art collective led by graffiti artists under the project of Sebastião Tapajós Jr. Visit to Dona Nena´s cocoa plantation and organic chocolate factory. Walk through the Amazon forest ecosystem. Lunch based on local fish in typical riverside restaurant, with free time for swimming and enjoying nature (includes transport to and from hotel).

Venue

Universidade Federal do Pará (UFPA)
Auditório Setorial Básico

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Brazil