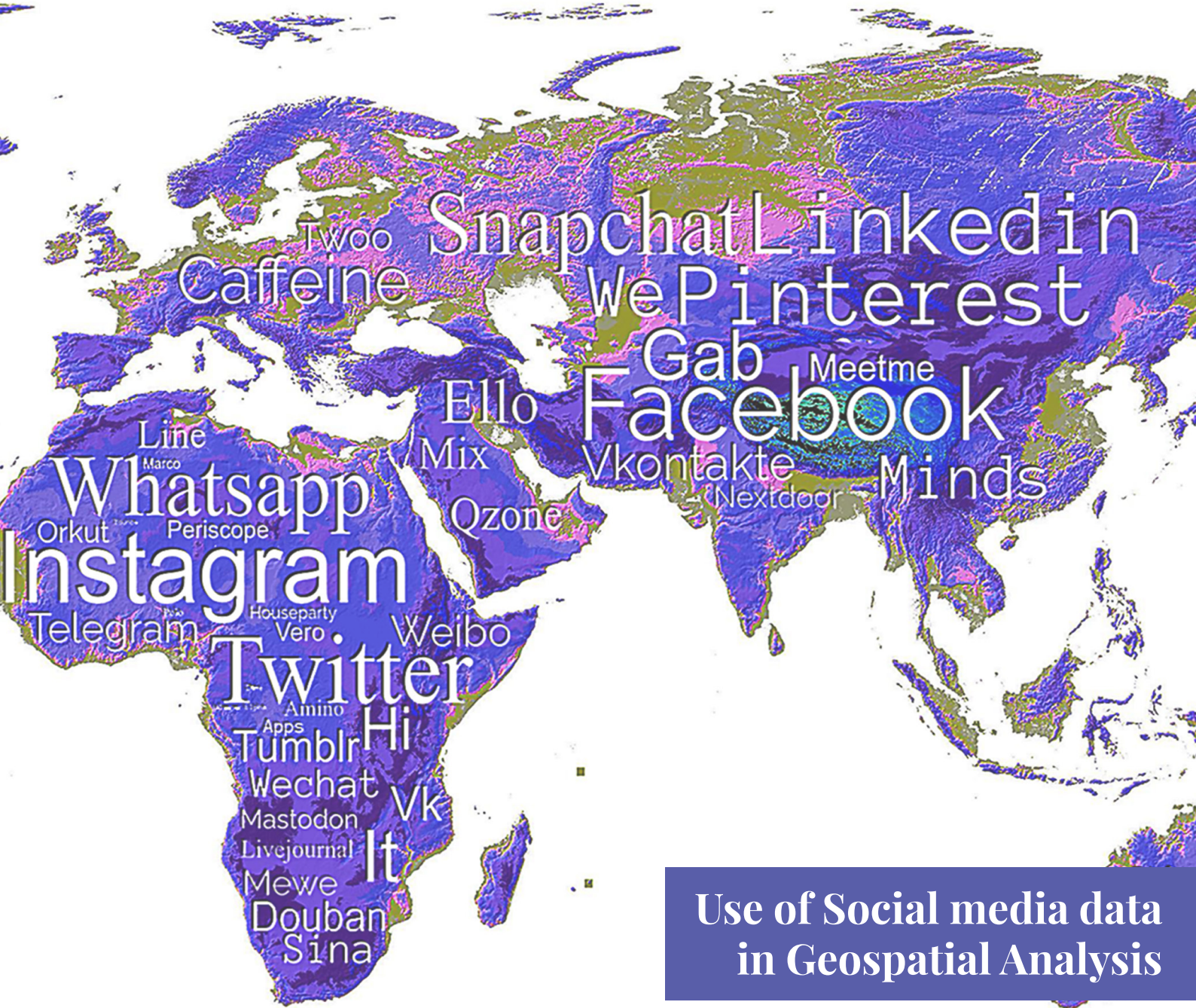


THE OFFICIAL NEWSLETTER OF THE ISPRS STUDENT CONSORTIUM

# SPECTRUM

VOL. NO. 16 ISSUE NO. 2 | AUGUST 2023

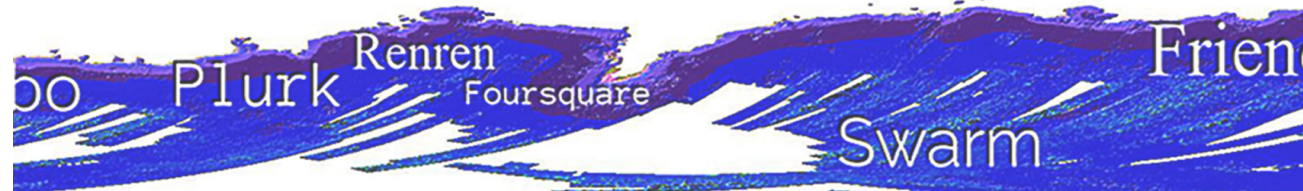


## Use of Social media data in Geospatial Analysis

**WEBINAR - HOW TO COUNT INDIVIDUAL TREES AT CONTINENTAL SCALE WITH DEEP LEARNING WITH PROF. MARTIN BRANDT**

**BUCEA 2023 SUMMER SCHOOL ON SMART CITIES**

Cover page designed by **Abhishek Rai**



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Greetings people!

I want to warmly welcome you to this new issue Spectrum, on behalf of all the Board of Directors of the ISPRS Student Consortium.

A world where what you post on social media such as photos, videos or text messages, connects with satellite imagery taken from space, is not a thing of a dystopian future anymore. Nowadays, scientists are blending social media, remote sensing and geoinformation sciences to change the way we understand our world.

This particular research niche heavily relies on multi-scale and multi-disciplinary approaches which seem daunting to scientists outside of this field, myself included.

Therefore, it is with immense pleasure that I invite you to read this Spectrum issue, where you will find the contributions of worldwide respected scientists in the field of social media geospatial analysis. We have Dr. Liyanage Kithsiri Perera in our IFOV section and Dr. Zainab Akhtar in our spotlight section speaking about their research activities.

Finally, I wish to extend my gratitude to the authors whose valuable articles have played a crucial role in shaping this newsletter. A big thank you to our hardworking editorial team, led by Sunni, and dedicated Board of Directors for their efforts in bringing this publication to fruition.

Wishing to see you all at the upcoming ISPRS Geospatial Week 2023 in Cairo, Egypt, from September 2nd to 7th, I will now leave you to delve into the pages of this amazing Spectrum issue.

Best Regards,



**DR. NICOLAS PUCINO**  
Vice President, ISPRS SC

北京建筑大学  
第七届暑期国际学校：智慧城市  
2023 Summer School on Smart Cities

主办：北京建筑大学、国际摄影测量与遥感学会、“一带一路”建筑类大学国际联盟  
Jointly Organized by BUCEA & ISPRS & BRAUIC

# BUCEA 2023 SUMMER SCHOOL ON SMART CITIES

## UNLOCKING THE FUTURE

The landscape of urban development is rapidly evolving, fueled by the integration of technology, sustainability, and innovation. The 2023 Summer School on Smart Cities, a collaborative effort by the International Society for Photogrammetry and Remote Sensing (ISPRS) SC, ISPRS TC V, Beijing University of Civil Engineering and Architecture (BUCEA), and the Belt and Road Architectural University International Consortium (BRAUIC), stood as a beacon of knowledge and inspiration in the heart of Beijing from July 3rd to 10th, 2023.



The group photo of the 2023 Summer School on Smart Cities

## A CONFLUENCE OF MINDS

Bringing together 100 students from 11 universities and 5 countries, including China, Russia, Poland, Ukraine, and Nepal, the summer school embodied diversity and cross-cultural learning. The opening ceremony, graced by Professor Junqi Li, Vice Dean of BUCEA, set the stage for a week of intellectual exploration and cultural exchange. Esteemed experts from ISPRS and international universities delivered a series of lectures that covered a broad spectrum of topics, from architectural planning to intelligent transportation, under the overarching theme of smart city construction and management.



The opening ceremony of the summer school

illuminated the fusion of spatial data and real-time sensor streams to create accurate digital replicas of urban environments. Her insights demonstrated the potential of smart city technologies to enhance safety, sustainability, and quality of life.

The lectures didn't just focus on technology; they also emphasized the human aspect of urban transformation. Dr. Yassar Khadour's exploration of city transformation highlighted the intricate interplay between architecture and society, shedding light on the evolving nature of urban spaces.



Participants of the summer school enthusiastically involved in social activities

## EMPOWERING MINDS THROUGH KNOWLEDGE

The heart of the event lay in its 11 informative lectures. The program took students on a journey through the intricacies of architectural design, digital technology, urban planning, and more. Each lecture held a treasure trove of insights, providing a platform for attendees to grasp the multifaceted nature of smart city development.

The first lecture, delivered by Dr. Wei Chen from BUCEA, delved into the structural marvels of the Forbidden City, unraveling the architectural intricacies that make it a timeless masterpiece. Dr. Chen's exploration into the fusion of tradition and innovation set the tone for the subsequent lectures.

Professor Sisi Zlatanova, President of ISPRS TC IV on Geospatial Information Science at the University of New South Wales, Sydney, Australia, captured the audience's imagination with her discourse on "Digital Twins for Liveable and Safe Cities." She



This summer school had 11 academic lectures

## Highlights of Summer School



## Aims and Objectives

- Global Engagement  
present the superior courses of BUCEA to the world and introduce the advanced courses from abroad to BUCEA at the same time.
- Well-designed courses and teachers  
academic lectures are offered based on the leading majors in BUCEA to create a wise and advanced academic atmosphere.
- Innovative education model  
world-class teaching methods to improve online participation and research ability for interdisciplinary study.

## Agenda

Note: the time in the agenda is Beijing Time (UTC+8) ... 8 hours ahead of GMT.

TIME	ACTIVITY
<b>July 3 (Monday)</b>	
9:00-10:00 AM	Opening Ceremony
10:00-11:00 AM	Lecture I
1:00-4:00 PM	History & Modern in Beijing the Forbidden City
<b>July 4 (Tuesday)</b>	
9:00-10:00 AM	Lecture II
10:00-11:00 AM	Lecture III
1:00-4:00 PM	History & Modern in Beijing National Museum of China
<b>July 5 (Wednesday)</b>	
9:00-10:00 AM	Lecture IV
10:00-11:00 AM	Lecture V
1:00-4:00 PM	History & Modern in Beijing Olympic Park and Stadium
<b>July 6 (Thursday)</b>	
9:00 AM - 4:00 PM	History & Modern in Beijing: The Great Wall
<b>July 7 (Friday)</b>	
9:00-10:00 AM	Lecture VI
10:00-11:00 AM	Lecture VII
1:00-4:00 PM	History & Modern in Beijing Central Business District & CCTV
<b>July 8 (Saturday)</b>	
9:00-10:00 AM	Lecture VIII
10:00-11:00 AM	Lecture IX
1:00-4:00 PM	Student Gala
<b>July 9 (Sunday)</b>	
9:00-10:00 AM	Lecture X
10:00-11:00 AM	Closing Ceremony
1:00-4:00 PM	Free Time

## Fees and Payment

Fee: 5,000 yuan / person (accommodation, tuition fee, food, activities, group transportation, pickup service)  
Accommodation: Apartment (2-3 persons/room)  
Dining: University canteen (3 meals/day)  
Pay in cash: Please bring cash in RMB (exchange at airport or bank) or credit card (withdraw RMB at ATM).

## Contact information

Email: buceass@hotmail.com  
Tel.: 0086-10-68361635 / 0086-10-61209538  
People in Charge: Mr. HUANG Xing / Mr. Qi Ji  
Address: No. 1 Zhantian Road, Xicheng District, Beijing, P.R.China, 100044

## BUCEA International Summer School Profile

As the one and only architectural university in Beijing, the Beijing University of Civil Engineering and Architecture (BUCEA) was jointly sponsored by the Peoples Government of Beijing Municipality and the Ministry of Housing and Urban-Rural Development of China. BUCEA is home to over 70,000 outstanding alumni.


BUCEA has set up the Belt and Road International Urban Innovation Center and 7 international innovation cooperation platforms, working in partnership with 87 universities and research institutions across 43 countries and regions for pragmatic academic exchanges and joint research. The university has proposed the initiative of establishing the BRUAIIC, Belt and Road Architectural University International Consortium, committed to building it into a world-famous specialized international university alliance. Thousands of Chinese and international students have benefited from Sino-foreign Cooperatively-running Programs and programs for international students.



From 2016 to 2022, BUCEA has successfully held Six International Summer schools. A total of more than 1100 Chinese and foreign teachers and students from more than 20 domestic and foreign universities gathered together to study.

BUCEA is dedicated to the mission of cultivating talents with morals and the positioning of a top-notch featured university, building itself into a top-notch, inclusive and innovative university in China with world-wide recognition and great emphasis on architectural education.






2023 International Summer School

# Smart Cities

Days: July 3rd - 9th, 2023

Institutions  
Beijing University of Civil Engineering and Architecture  
International Society for Photogrammetry and Remote Sensing

Domains  
Architecture and Planning  
Civil Engineering  
Environmental Science and Engineering  
Construction Management  
Robotics Engineering



Summer school flyer

## VOICES OF INSPIRATION

The participants were not mere observers; they were active learners, engaging in architectural and landscape design experiential sessions and immersing themselves in activities like hutong tours. This fusion of theoretical and hands-on learning offered a holistic educational experience, nurturing creativity and innovative thinking.

Amidst the lectures and workshops, testimonials echoed the transformative impact of the event. Ms. Tianyue Yang, a graduate student from BUCEA, eloquently conveyed the sentiment of all students, highlighting how the summer school acted as a catalyst for personal growth and progress. The sense of belonging to a global community of young minds was palpable, fostering connections that are likely to resonate well beyond the event's conclusion.

## PAVING THE PATH FORWARD

The BUCEA 2023 Summer School on Smart Cities concluded with a sense of accomplishment and the promise of a brighter urban future. The event served as an incubator of ideas, fostering the exchange of knowledge and the cultivation of critical skills required for shaping smart cities of tomorrow.

As the attendees dispersed, they carried with them not just certificates of participation, but a wealth of insights, networks, and inspirations. The lessons learned and the connections forged during this week-long intellectual journey are bound to influence their future careers, shaping the very cities they will contribute to building. In this ever-evolving landscape, the 2023 Summer School on Smart Cities stood as a beacon of hope, wisdom, and transformation.

# ISPRS SC WEBINAR SERIES-MAY 23, 2023

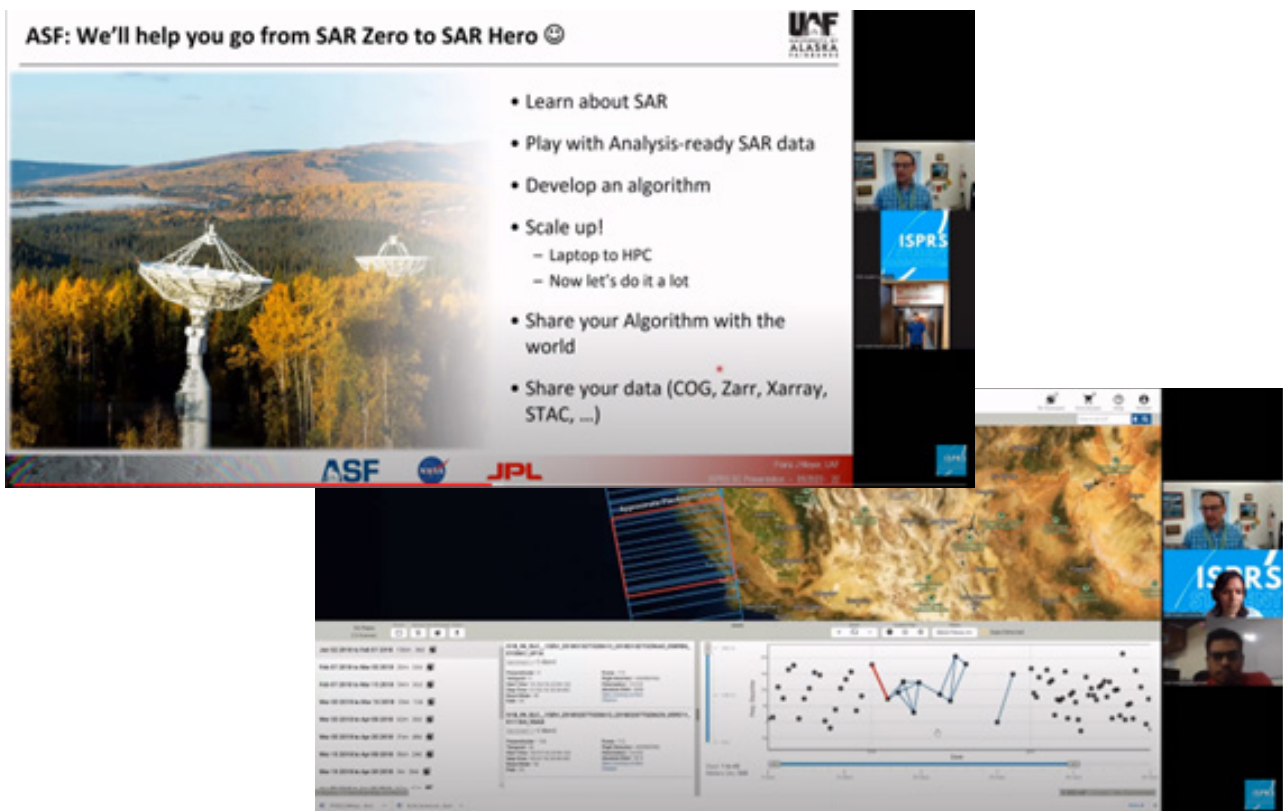


Figure: Dr. Franz Meyer delivering the lecture during ISPRS SC Webinar Series on May 23, 2023.

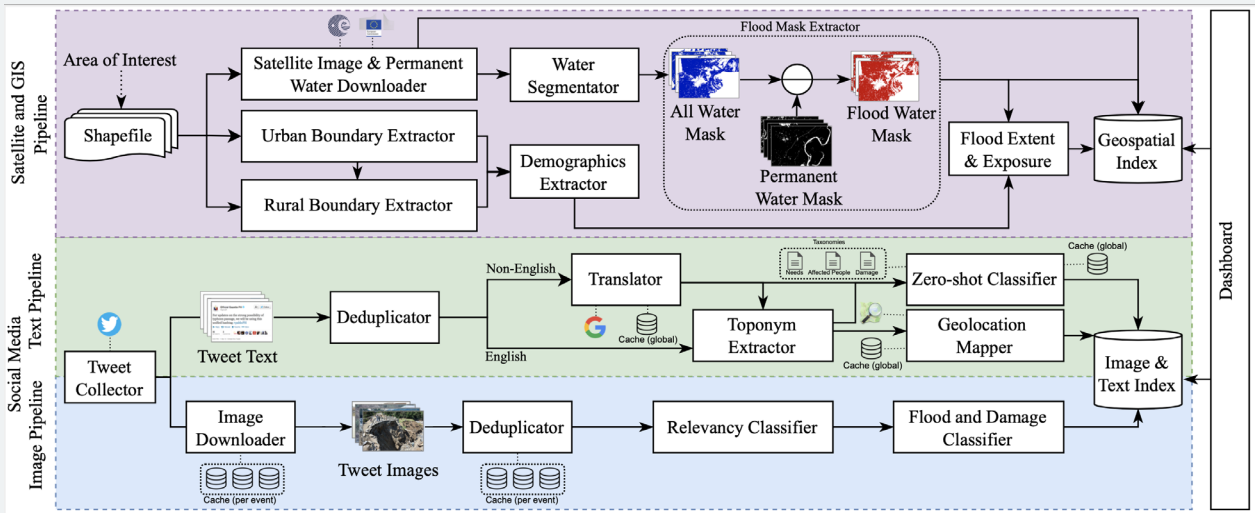
As part of the ISPRS SC Webinar Series, we organized a Webinar on 23rd May 2023 and our speaker was Professor Franz Meyer, a Research Professor of Earth & Planetary Remote Sensing at the Geophysics Institute of the University of Alaska Fairbanks. With his expertise on SAR, InSAR and PolInSAR techniques, he lectured the webinar on the title- “The Alaska Satellite Facility (ASF): Radar-based Earth Observation from the Center of Alaska”. During his lecture, he presented about the applications of SAR remote sensing focusing on the topics like SAR-based monitoring of global ice masses, permafrost change analysis, assessment of natural hazards related to volcanoes, earthquakes and flooding. He also talked about the research activities done by his research group at ASF and the training and capacity building activities available for enhancing the skills in the application of SAR data.

The webinar session was very informative with lots of case studies on SAR data applications and analysis. Out of 164 participants registered for the event, 25 % were female and the rest were male whereas it was interesting to see 44.5% of the registrants were young professionals followed by 33.5 % of them being students, 9.1% being faculty members and the remainder were from the backgrounds like public administration, industry experts, teachers, etc. We received emails from some of the registrants for the technical problem experienced while joining the webinar and we immediately acted to resolve the issue too. We apologise for any inconveniences caused by this and will try our best to ensure a seamless experience in our future events. We appreciate the inquisitiveness of the participants during the event and for interacting with our speaker with lots of queries during the Q/A sessions. The recording of this webinar is available on our YouTube channel @ISPRSSC.

# FLOOD INSIGHTS

The Flood Insights system ingests data from multiple non-traditional data sources and employs state-of-the-art natural language processing and computer vision models to identify flood exposure, ground-level damage reports, and the urgent needs of the affected people. The system aims at answering 6 vital humanitarian questions:

agency for flood extent mapping. This information is then combined with various GIS datasets to provide insights into the exposed population in urban and rural regions. The second pipeline employs a series of computational models to identify expressed needs or requests (i.e. basic necessities like food, water, shelter etc.) from the textual content of tweets. The



1. Which regions are flooded?
2. What is the flood extent in urban/rural regions?
3. How many people are exposed to flooding?
4. Which age groups and genders are at higher risk?
5. What type of damage is caused by floods?
6. What are the urgent needs of the affected people?

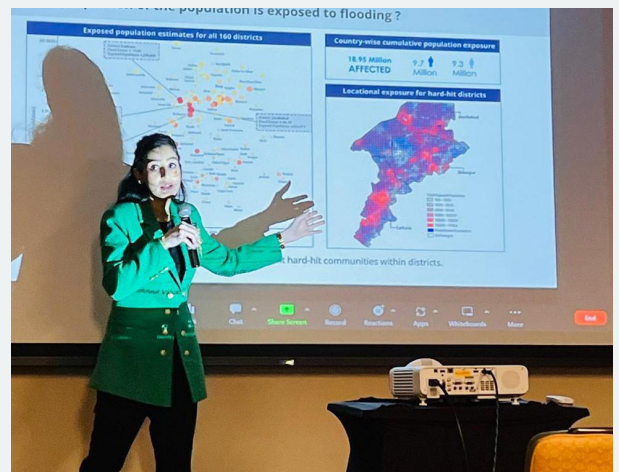
last pipeline deals with processing the image content of tweets through computer vision models to identify damage and flood scenes. Together these pipelines are seamlessly integrated with ArcGIS Dashboard, to provide a comprehensive visualization of the data, thus facilitating efficient disaster response.

The system architecture comprises of three data processing pipelines, (i) satellite and geographic information systems (GIS), (ii) social media text, and (iii) social media image. In the first pipeline, deep learning models are utilized to process satellite im-

The Flood Insights system is the culmination of extensive research efforts, where a full list of the team’s publications can be found at <https://crisis-computing.qcri.org/publications/>.

# REAL WORLD DEPLOYMENT

The Flood Insights system was activated for one-month duration during a real flood disaster that hit Pakistan. We found overall, 11.48% of the country was inundated, putting 18.9 million people at risk across 160 districts. With the help of social media, we identified districts with high flood damage and found shelter requests to be highest. An extensive analysis of our findings is presented in our conference paper “Mapping Flood Exposure, Damage, and Population Needs Using Remote and Social Sensing: A Case Study of 2022 Pakistan Floods” which Zainab Akhtar presented at WWW ‘23: The ACM Web Conference.





# Pakistan Floods 2022

View Flood Insights Dashboard at this URL:  
[https://flood-insights.qcri.org/pakistan\\_floods\\_2022](https://flood-insights.qcri.org/pakistan_floods_2022)

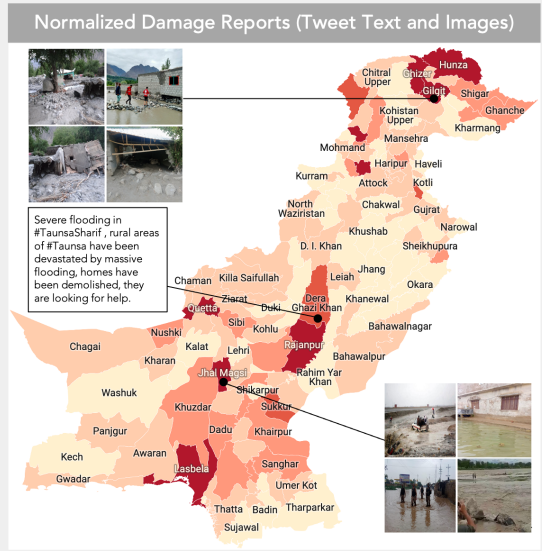
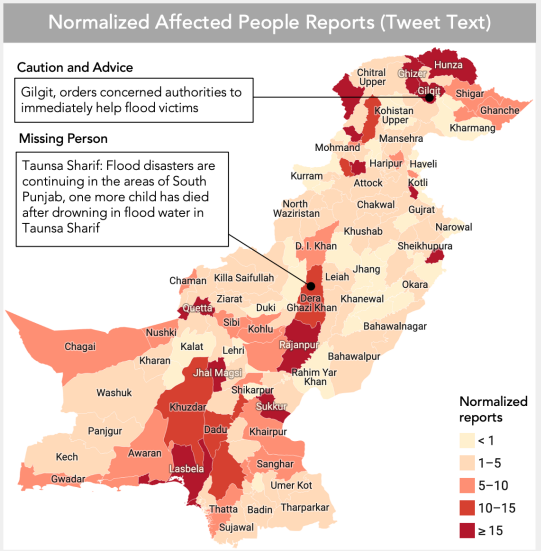
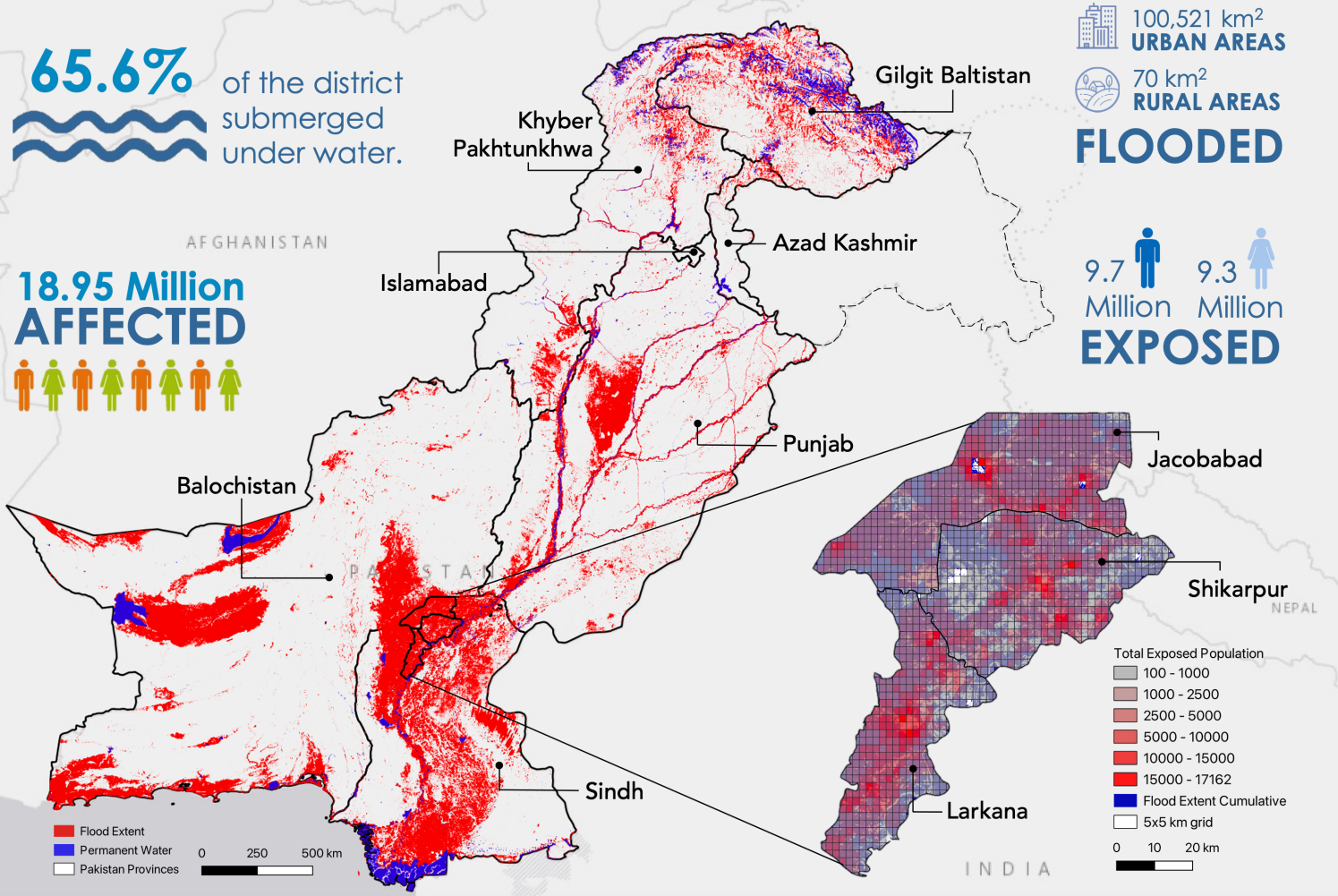
As of 25 August – 25 September, 2022

**65.6%** of the district submerged under water.

**18.95 Million** AFFECTED

100,521 km<sup>2</sup> URBAN AREAS  
 70 km<sup>2</sup> RURAL AREAS  
**FLOODED**

9.7 Million  
 9.3 Million  
**EXPOSED**



### Total Tweet Text Reports

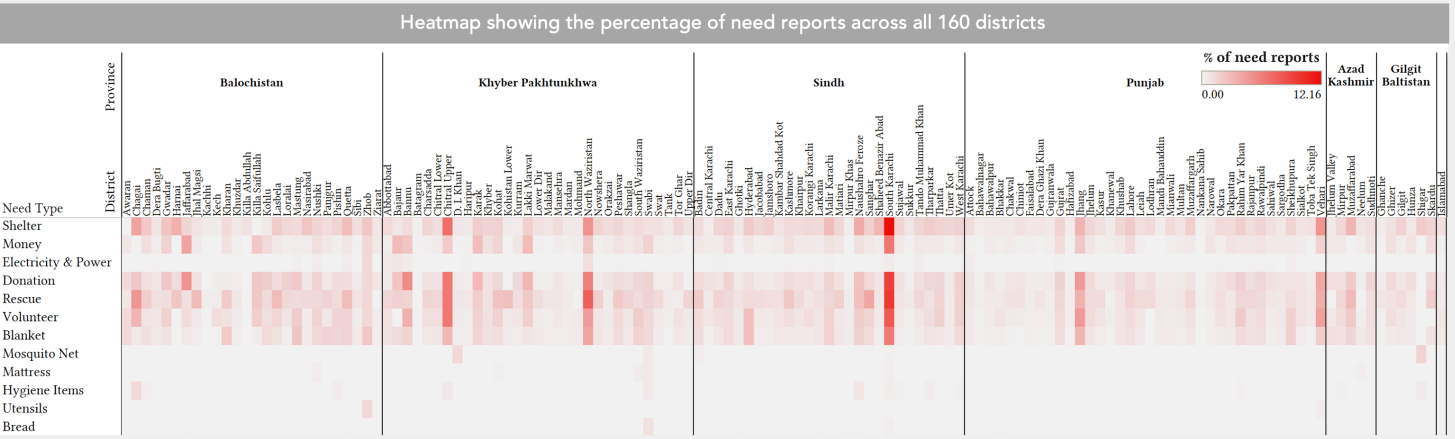
Affected People	Damage
250.3k	74.6k

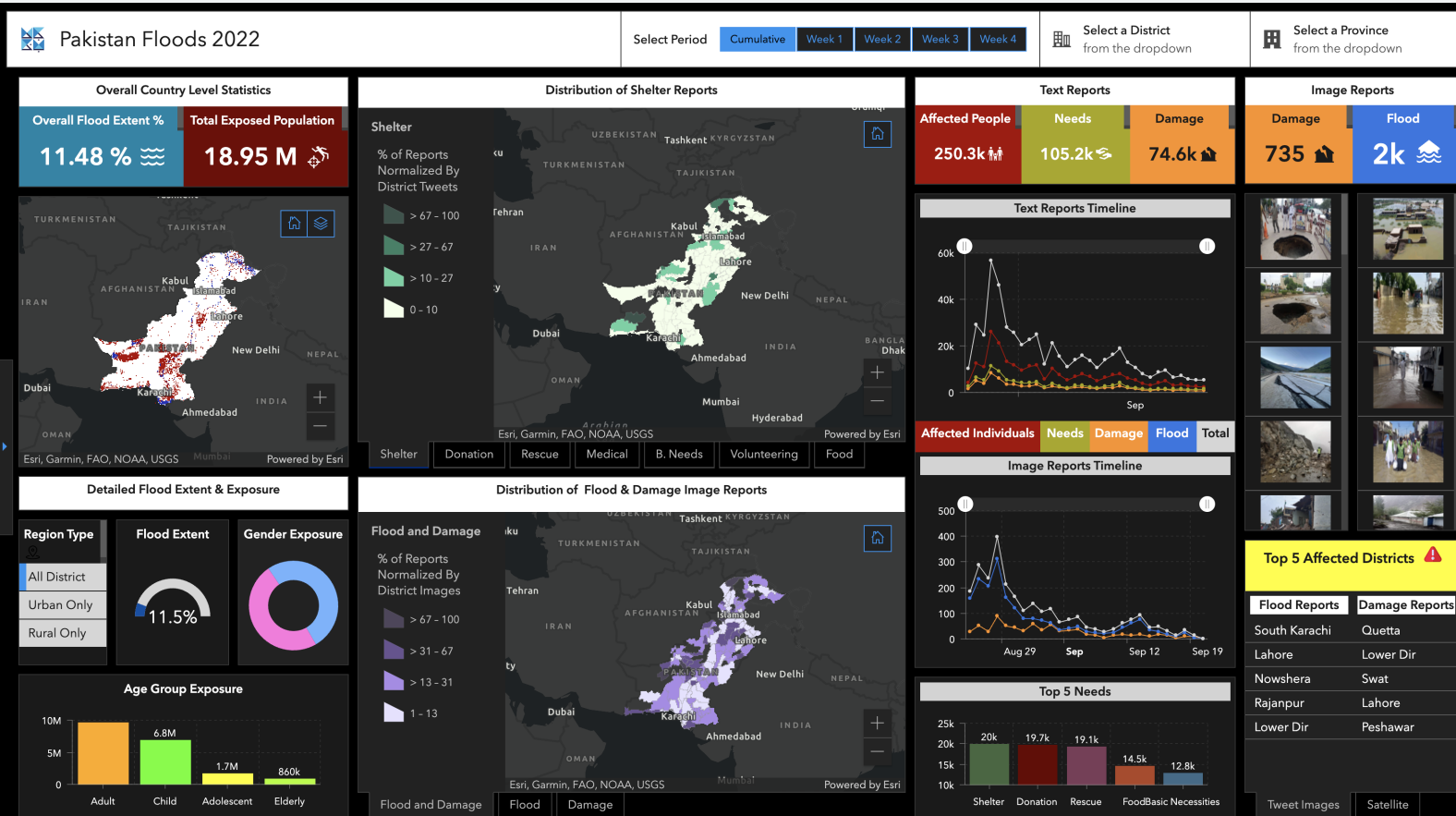
### Total Tweet Image Reports

Flood	Damage
2k	735

### Top 5 Need Requests

Shelter	20K
Donation	19.7K
Rescue	19.1K
Food	14.5K
Basic Necessities	12.8K





The Flood Insights Dashboard can be accessed at [https://flood-insights.qcri.org/pakistan\\_floods\\_2022](https://flood-insights.qcri.org/pakistan_floods_2022)

## SUCCESS STORIES

**Empowering Experts in AI4CI Workshop:** Zainab Akhtar and Dr. Rizwan Sadiq demoed the “Satellite Image Downloader & Flood Detector” to a group of experts in the Artificial Intelligence for Collective Intelligence (AI4CI) workshop organized by the UNDP Programme Accelerator Labs and QCRI on June 14, 2022.

**Showcasing at Al Jazeera’s Conference:** Zainab Akhtar and Dr. Muhammad Imran conducted a live demo of the “Flood Insights Dashboard: Pakistan Floods 2022” at the Al Jazeera Conference: Artificial Intelligence In The Media on March 11 and 13, 2023. We received significant interest from esteemed individuals in academia and industry.

**Best GIS Technology Day Award:** Dr. Ferda Ofli presented the integration of remote sensing and social sensing for disaster response and received the best GIS presentation award on 17 May 2023.

**QCRI Summer Internship Award:** Zainab Akhtar and Dr. Rizwan Sadiq mentored two students during the summer internship period (May - July 2022). Abhigyan Kishor, mentored by Zainab, secured 2nd Place for developing “A Robust Pipeline for Downloading and Processing Satellite Imagery for Flood Detection” and William Gitta Lugolobi, mentored by Dr. Rizwan, received 3rd Place for his project titled “Social Media Disaster Image Processing, Retrieval, and Visualization.”

## THE TEAM



Zainab Akhtar



Umair Qazi



Dr. Rizwan Sadiq



Aya El-Sakka



Dr. Ferda Ofli



Dr. Muhammad Imran

# ABOUT THE AUTHOR

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Zainab Akhtar has been working for nearly three years at Qatar Computing Research Institute (QCRI), within the crisis computing team. She has been a critical member of the “Re-Energize DR3” Belmont Forum funded project.

During her time at QCRI, Zainab has led several research publications, been at the forefront of all public facing presentations, collaborated with external researchers and end users, as well worked on developing pipelines for the Flood Insights system. The system has been filed successfully for US provisional application and is currently in progress for US patent application.

Moving forward, Zainab is keen on exploring the intersection between AI and geospatial science to drive meaningful change and solutions. She aspires to be at the forefront of Geospatial Artificial Intelligence (GeoAI) to revolutionize our understanding and mitigation of issues like climate change, disaster risk reduction, and sustainable development.

## Research Interests and Expertise

GIS and Earth Observation, Spatial Data Science and Mapping, Remote Sensing Analysis, and Geospatial System Development



**Zainab Akhtar**

zakhtar@[alumni.cmu.edu, hbku.edu.qa]

Research Assistant

Qatar Computing Research Institute

Hamad Bin Khalifa University in Doha, Qatar

**I** MPORTANT  
**F** OCUSED  
**O** UTSTANDING  
**V** ALUABLE

**Full Name:** Dr Liyanage Kithsiri Perera  
[geoguardian.com](http://geoguardian.com)

**Current Position - Lecturer**  
**Affiliation:**

*University of Southern Queensland, Australia*

**Research Interests and Expertise:**

*Specialised in GIS, satellite data processing for mapping and environmental studies, natural disaster monitoring, combining GIS with social media, and digital cartography.*



**LIYANAGE KITHSIRI  
PERERA**

I was born in Sri Lanka and obtained my Geography special degree from the University of Colombo in 1985. After serving 4 years in academia, I enrolled at Chiba University, Japan, in 1989 and completed my MEng and DEng in remote sensing and GIS. After graduation, I worked for 12 years in the weather forecasting industry in Tokyo. In 2007 I settled in Australia and joined the University of Southern Queensland, presently working in the School of Surveying and Built Environment. My teaching areas include GIS, Remote sensing and Web-based GIS, and my primary research interests are in applying GIS and remote sensing for environmental management, disaster monitoring and mapping, land cover/land use mapping, and spatial data visualisation. Since 2005, I run a website ([geoguardian.com](http://geoguardian.com)) to publish environmental content and recently developed an App (seesatview) to publish satellite image-based contents to present near-real-time data about natural disasters to deliver through the mobile platform.

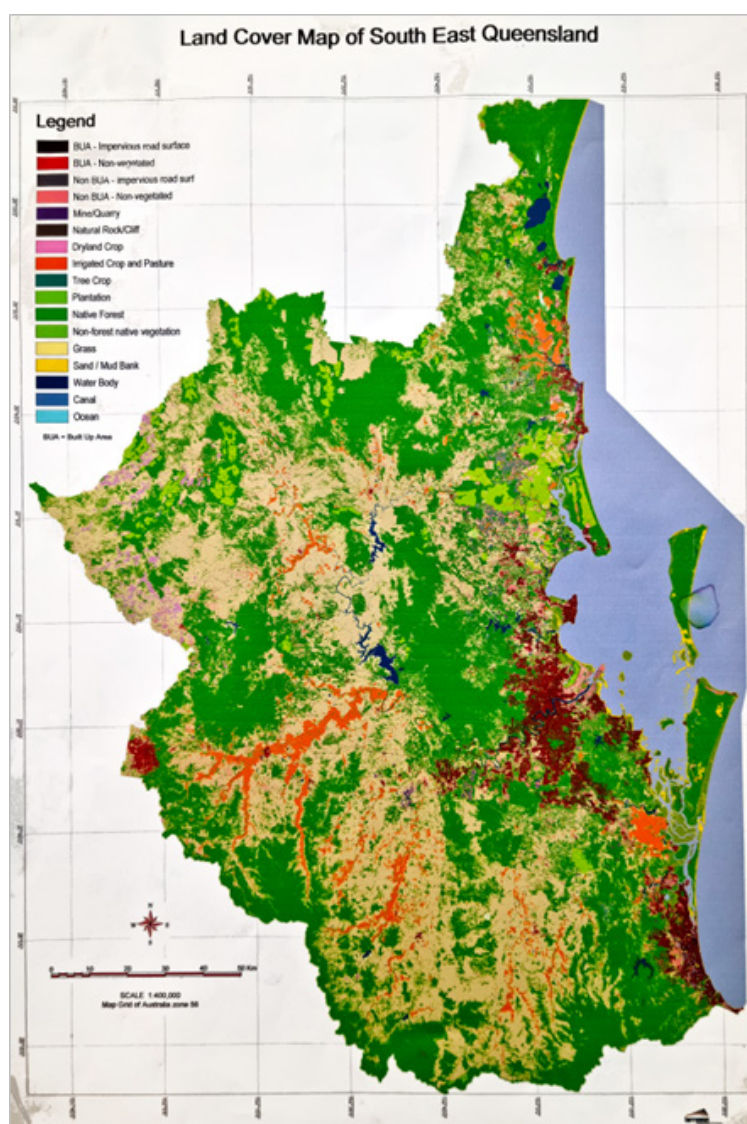
**Can you briefly tell us about your research interests?**

At the very beginning, my interest in the visual presentation of facts set the foundation of my academic and research career. I improved my academic communication skills through visual content, and in the 1980s, visual interpretation of areal photographs directed my interest in remote sensing as an undergraduate student at the University of Colombo. The success of my final year thesis was the 1st in Geography at the University of Colombo to use satellite remote sensing. My career research path was firmly established in remote sensing when my proposal for a Master's degree was selected by Chiba University, Japan, to study the impact of deforestation on micro-climatic changes using remote sensing data. Master in engineering (1992) directed me to start EngD studies at the same university combining remote sensing and GIS. For my EngD, I produced the 1st Landsat image mosaic of Sri Lanka using Landsat MSS data, then combined it with GIS data to produce land suitability classifications for forest and rice for Sri Lanka. Since I started all my engagements in the transition period of global computer technology from analogue to digital, I got the opportunity to be in the pioneering generation to use satellite data and GIS for various studies. In 1995, I published my 1st international journal research publication about issues of transferring remote sensing and GIS into developing countries ([doi.org/10.1080/01431169508954370](https://doi.org/10.1080/01431169508954370)).

## Who or what inspired you to become a scientist in this research field?

My skill and interest in visualising information are my research career strengths. For my research journey, the invaluable support given by Dr A. H. Dhanapala (University of Colombo), and my supervisors at Chiba University, Japan, Professor Kiyoshi Tsuchiya, Professor Ryutaro Tateishi, and Professor Takahiko Furuya. When I worked as a senior researcher at Weathernews Inc, Japan, Mr Hiro Ishibashi, the company's president, offered me treasured support. They have not only valued my career but also opened opportunities. Also, I must mention my wife, Tilani, who supports my academic and research activities since we met in the early 1980s.

## Among the research projects you have conducted, can you share with us a specific project that you liked the most?



I provide highlights from three of my research projects.

**Land use and land cover map of Southeast Queensland, 2007.** I did this mapping project when I briefly engaged with a company in Brisbane in 2007. I used over 25 SPOT satellite scenes to produce the first high-resolution land use land cover map of Southeast Queensland, which won an industry award that year. Figure 1 shows the map and the moment we won the award in Brisbane, Australia. Southeast Queensland covers 35,331 square km, but over 75% of the state population lives.



Figure 1. South East Queensland Land Cover Map and Industrial Award (2007).

**Human-Elephant conflict of Sri Lanka.** In 2012, I did a conference presentation titled, Supporting Elephant Conservation in Sri Lanka through MODIS Imagery in Japan (DOI: 10.1117/12.979382). This may be one of the early studies to suggest a combination of satellite remote sensing and GIS to support human-elephant conflict mitigation (figure 2). This project has now moved to a second level since one of my PhD students is undertaking a topic in the same field of study. We published a review paper in 2023, with over 900 accesses within first month of publication. The study combines

data, GIS, and field investigations to locate human-elephant conflict hotspots. Due to the seriousness of the conflict in Sri Lanka and other countries, satellite data and a GIS-based approach produces a very low-cost tool to support conflict mitigation efforts. Figure 3 shows the increasing trend in human and elephant deaths due to the conflict in Sri Lanka and one of the elephant death incidents in Sri Lanka.

### Bushfire monitoring and producing Media-GIS content and its App

The third research to highlight is my paper titled, "MODIS data based semi-real time media GIS contents to support natural disaster mitigation" (DOI: 10.4038/ijms.v1i2.47). Through my extensive experience in making satellite image-based environmental stories to support weather forecasting of Weathernews.com, Japan, I introduced scientifically accurate and artistically attractive media GIS content in this research. This field is my other ongoing

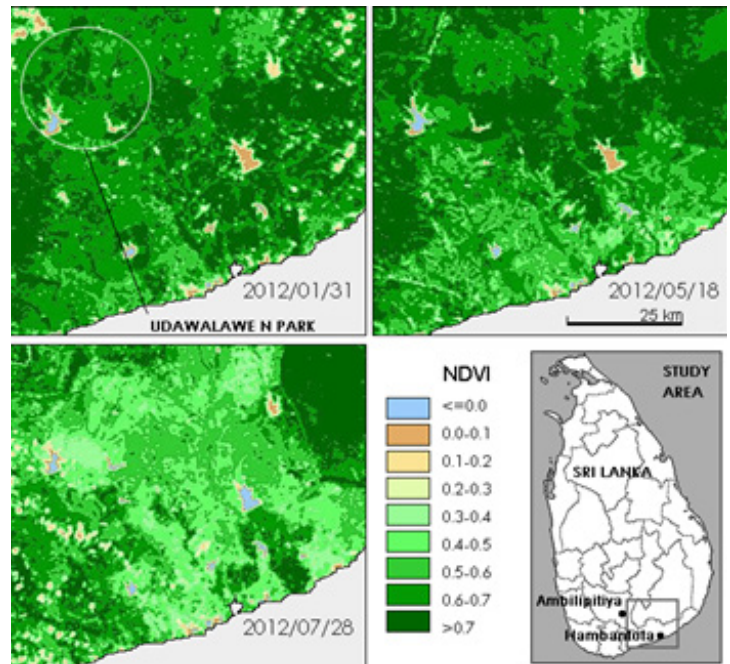


Figure 2. The 1st study's maps to detect vegetation greenery changes using NDVI (Normalised Vegetation Index) calculated with MODIS satellite data to support the mitigation efforts of the human-elephant conflict (2012).

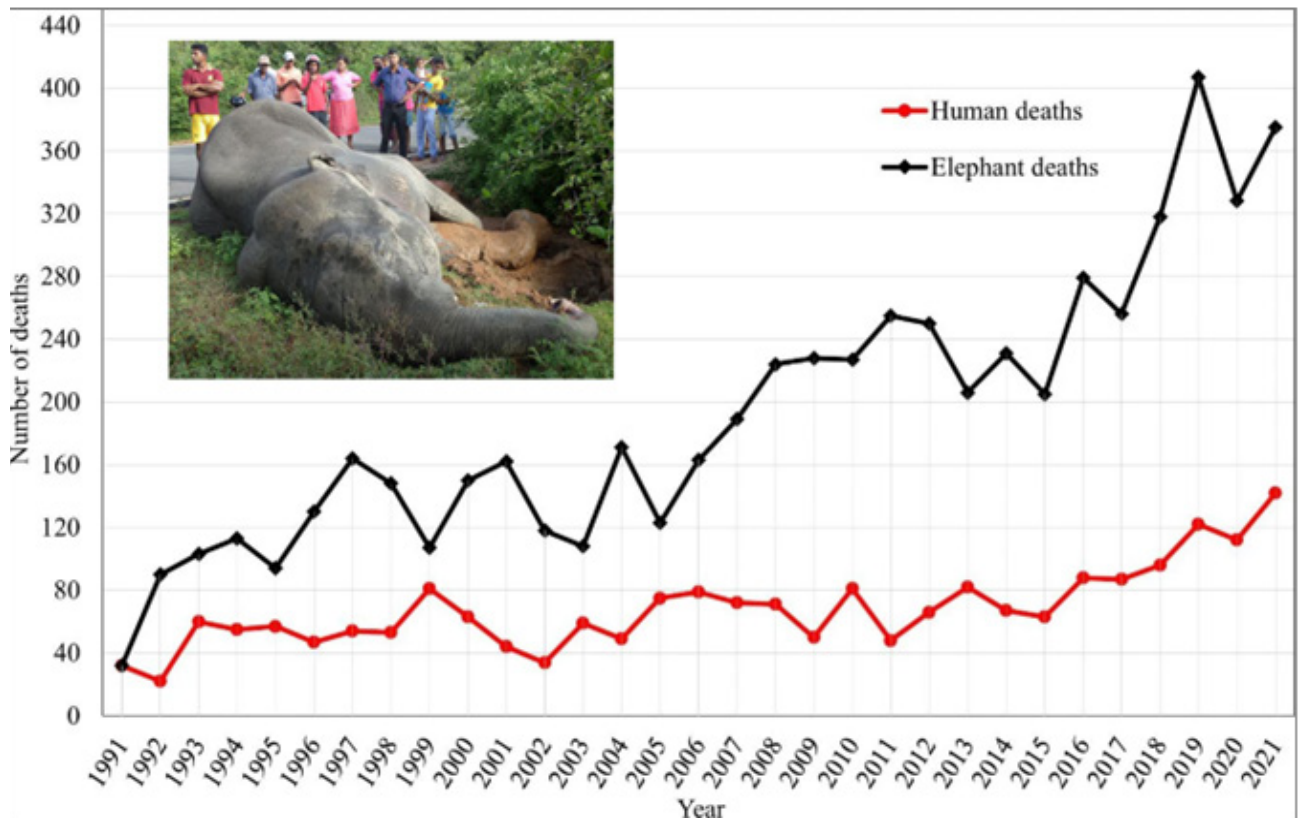


Figure 3. The increasing trend of the severity of Human-Elephant conflict in Sri Lanka.

study, and I published another paper in 2021 titled; "A Combined Approach of Remote Sensing, GIS, and Social Media to Create and Disseminate Bushfire Warning Contents to Rural Australia" (DOI: 10.3390/earth2040042). Figure 4 is extracted from the above-mentioned published paper, which shows one media-GIS product about devastating bushfires in 2019 in New South Wales, Australia. In this paper, I have mentioned the value of accessing people through social media for disseminating disaster information. In the figure you can see in the below-right corner, I started this effort by including a link to Google Maps.

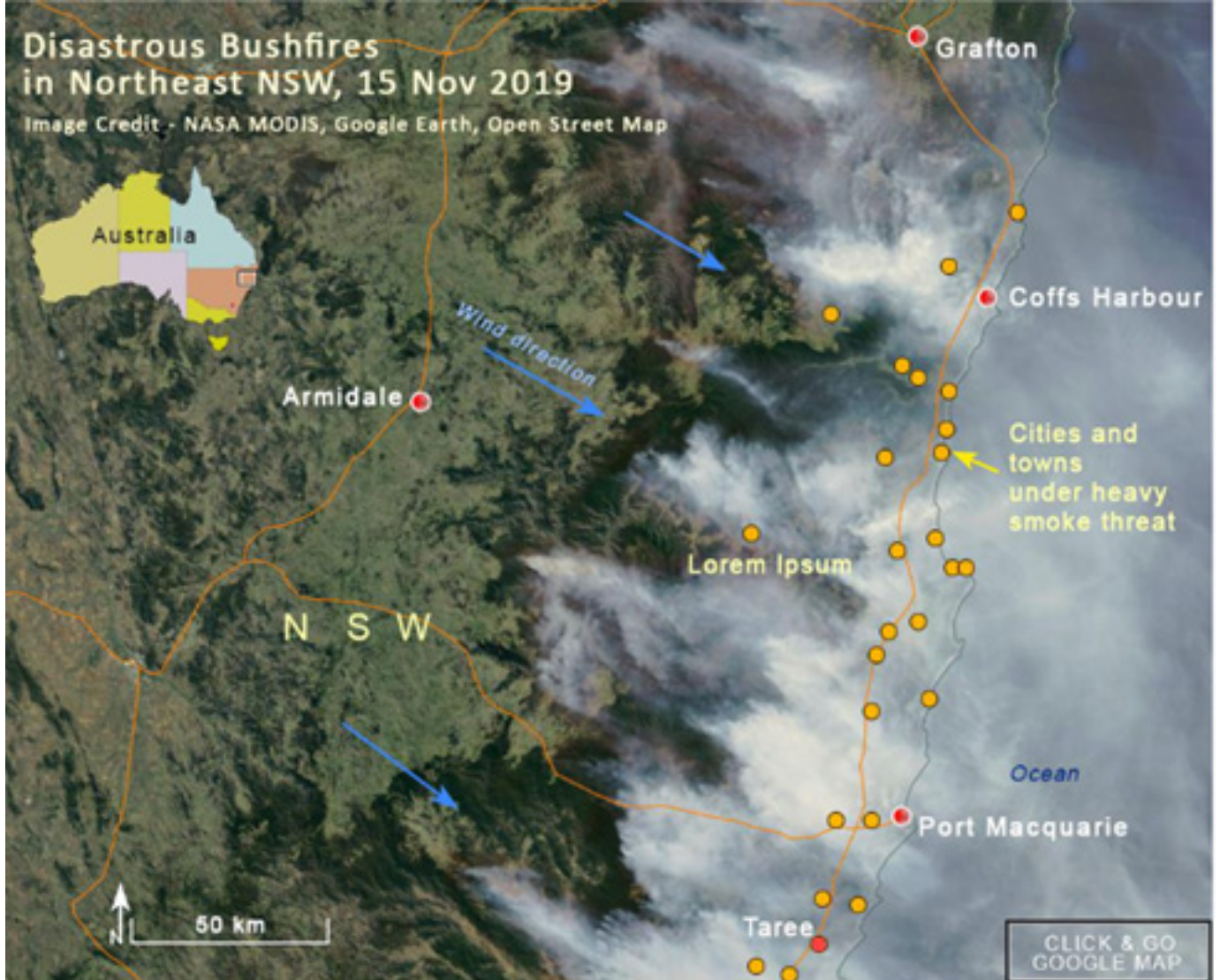


Figure 4. Media-GIS example, Bushfire in NSW, Australia, 2019.

### Why is it important to use social media data in Geospatial Analysis?

In today's world, over 50% of the global population uses mobile phones. When a natural disaster or extreme weather occurs, people must move to safer locations without much preparation, but they carry their mobile phones with them. Some of us even have tools to recharge our phones while moving. Another development is mobile hotspots, where people can share internet access through other services. This means mobile phones or cell phones are the most suitable platform for informing people of some helpful information. While they can access standard emergency information and warnings, media-GIS delivered through the mobile platform can bring people the latest satellite images and related GIS information as an additional source of information about the incident around them. I have mentioned these prospects in my research paper published in 2021 (DOI: 10.3390/earth2040042)

### How have the technologies helped in faster and reliable data acquisition?

Compared to the early era of satellite image application and collecting GIS data, the world has moved many steps forward by applying open-source data and software. Satellite missions such as MODIS and Himawari provide real-time data without cost, and Landsat and Sentinel missions provide higher-resolution satellite data without cost. Apart from the Google platform, there are many sources to extract open source vector and raster data. If a researcher is interested in producing media-GIS content, it is possible to follow free online technical lessons and tutorials. The present-day environment is flexible and user-friendly compared to the situation in the mid-1990s, which I explained in my publication in 1995. Recently, I presented another research paper at a conference held in Italy titled "Promoting Open-source Resources Based Spatial Science Education in Developing Countries" (DOI 10.26352/H629\_2384-9509) and discussed the prospects available for anyone from any country of the world.

**What do you consider your greatest achievement? Can you tell us a challenge that you faced in your career, how you overcame it and what you learnt from the experience?**

My most outstanding achievement is starting a career in Geography and lately completing an MEng and EngD at Chiba University, Japan. When I started my higher studies in Japan, I had no prior experience with computer use, and the language barrier was also there. However, my professors (Professor Tsuchiya, Professor Tateishi, and Professor Furuya) encouraged me and even provided me with some exams in English to overcome the challenges and complete both degrees strictly within five years. Also, I must be grateful for the free education I received in Sri Lanka and the private and government scholarships I received in Japan to complete my three degrees successfully.

**What can you say about the current trends in scientific research related to efficient use of social media data in various geospatial applications?**

The young generation born in the digital era has already adopted electronic media as the basic method of communication. If we started to deliver essential information for the sustainable development of the local and global environment, social media would play an obvious role in spreading that message among young people. Natural disaster-related media-GIS contents have graphic elements (satellite images), which help to understand its content from any location on the earth. Another significant advantage is that cell phones are linked with GPS (Ground Positioning System) and Google Maps, allowing the user to participate in participatory GIS.

**What do you think are the possible contributions of international organisations like the ISPRS Student Consortium in Use of social media data in Geospatial Analysis?**

With the open source software and data, ISPRS can implement many programs to encourage its community to participate in various studies related to Geospatial Analysis. One such contribution can be providing online training courses in GIS using open source data and software. For ISPRS, mainly, the application of satellite data could be important. Applying MODIS satellite data and SRTM (Shuttle Radar Topography Mission) DEM (Digital Elevation Data) for earth surface monitoring and mapping could be an ideal starting point.

**What is your advice to the youth in contributing to the Use of social media data in Geospatial Analysis?**

Use social media to contribute information to sustainable development and disaster mitigation through participatory GIS. Young people understand the use of various mobile phone apps well. They can take the initiative to report local conditions of natural disasters to specific authorities to support mitigation and disaster warning systems. Organisations such as ISPRS can establish such data collection facilities.

**Why social media is valuable in bringing natural disaster information to affected people?**

When people evacuate, mobile phones are becoming the most valuable access point to deliver information to affected people. I also explained the importance of social media and mobile phones under question 4. Another aspect of social media is that the young generation uses social media much more than other conventional media, such as newspapers and TV news. Therefore, social media has become the most efficient way to deliver information to young people who can actively participate in participatory GIS. Under participatory GIS, researchers or authorities can expect ground-level information, such as local flood levels, through participants in the general public.



# WEBINAR - How to count individual trees at continental scale with Deep Learning

with Prof. Martin Brandt

Forests are the unsung heroes of our battle against climate change, absorbing CO<sub>2</sub> emissions and steering us towards a net-zero future. But what about the myriad of trees beyond dense forests? Those isolated trees are often neglected from state mapping agencies and remain unaccounted for in biomass studies and climatic and Green House Gases (GHG) models.

Dr. Martin Brandt, a visionary researcher, is set to unravel this mystery at continental scales. Armed with a very talented team of PhDs and PostDocs based at the University of Copenhagen (Denmark), Prof. Brandt has been on an exciting scientific journey to redefine our understanding of vegetation dynamics. His team mapped billions of individual trees in the Sahel and computed individual-tree biomass, which is impressive.

## Lecturer - Prof. Martin Brandt

Martin Brandt is an accomplished researcher in the fields of remote sensing and physical geography. He earned his PhD from the University of Bayreuth, Germany in 2014 and has since held the position of Assistant Professor at the University of Copenhagen starting in 2015. His primary focus lies in the monitoring of large-scale vegetation dynamics, with particular emphasis on regions like West Africa and Southern China.

One of the remarkable aspects of Martin Brandt's research is his innovative approach, leading to significant contributions. His work has been featured in prestigious journals like Nature and Science. Notably, his recent groundbreaking study, published in Nature, introduced the application of deep learning techniques to analyze an extensive dataset of sub-meter satellite images. Moreover, he co-authored the follow-up study with first author Jim Tucker (the NASA scientist who invented NDVI) that got featured in the cover of Nature. This innovative methodology enabled the mapping and biomass estimation of billions of individual tree crowns in seemingly treeless desert areas.

Prepare to witness the future unfold as Martin Brandt shares his quest to map tree cover, both within forests and in the vast open spaces of the African continent and beyond. With a fresh perspective and cutting-edge technology, he's using very high-resolution satellite imagery and Deep Learning to identify even the most isolated trees.

This webinar promises to unveil the unseen, challenge preconceptions, and inspire a new era of vegetation monitoring.

Don't miss out on this thrilling adventure into the heart of remote sensing and ecological discovery!

**Join the free webinar, planned for November** - follow our socials for updates and registration.



In recognition of his outstanding work, Martin Brandt was awarded an ERC Starting Grant in 2020, along with a DFF Sapere Aude grant. These grants support his global-scale investigation of trees in non-forest environments, showcasing his commitment to advancing our understanding of vegetation dynamics beyond conventional forest settings.

# UPCOMING EVENTS

## 02 Oct 2023

**Collaborative Analysis of Flooding Events with Processing of Earth Observation Datasets: WORKSHOP & LECTURES (Event sponsored by ISPRS Capacity Building Initiatives Program)**

Ankara, Türkiye

<https://lnkd.in/dBVp6jDd>

## 08-11 Oct 2023

**3DCVP 2023**

**3D Computer Vision and Photogrammetry Held in conjunction with 30th International Conference on Image Processing**

Kuala Lumpur, Malaysia

<https://3dcvp.uniwa.gr/>

## 13-15 Oct 2023

**The 2nd International Conference on Advanced Remote Sensing and the 2023 Wuhan Remote Sensing Week**

Wuhan, China

<http://rsw2023.aconf.org/en-us/index.html>

## 14-21 Oct 2023

**Geoinformation Technologies for Cultural Heritage Documentation International Summer school - supported by CIPA**

Istanbul, Türkiye

<https://3dom.fbk.eu/summerschool2023>

## 17-18 Oct 2023

**ISPRS TC IV 2023 International Workshop on National 3D mapping and 8th International Workshop on Dynamic and Multi-dimensional GIS**

Chengdu, China

## 19-23 Oct 2023

**ISPRS WG V/22023 International Conference on Metrology for Archaeology and Cultural Heritage**

Rome, Italy

<http://www.metroarcheo.com/>

## 23-24 Oct 2023

**ISPRS WG I/6, WG I/7, ICWG I/IV GEOBENCH 2nd Workshop on Evaluation and Benchmark of Sensors and Systems in Photogrammetry and Remote Sensing**

Cracow, Poland

<https://geobench.fbk.eu/>

## 30 Oct - 03 Nov 2023

**ACRS 2023 Asian Conference on Remote Sensing**

Taipei, Taiwan

<https://acrs2023.tw/>

## 03-08 Nov 2023

**ISPRS Student Consortium Post-ACRS ISPRS SC Summer School 2023**

Taipei, Taiwan

[https://acrs2023.tw/isprs\\_summerschool.php](https://acrs2023.tw/isprs_summerschool.php)

## 08-10 Nov 2023

**10th International Scientific Conference Environmental Monitoring, Photogrammetry, Geoinformatics - Modern Technologies and Development Perspectives**

Lviv, Ukraine

<http://usprs.com.ua/>

# UPCOMING EVENTS

**10 Nov 2023**

**ISPRS WG III/3 SAR Workshop 2023**

Tokyo, Japan

<https://www.ieee-jp.org/section/tokyo/chapter/GRS-29/events/sarworkshop2023/SARworkshop2023.html>

**20-21, Nov, 2023**

**3rd International Conference on Unmanned Aerial System in Geomatics 2023**

Kuala Lumpur, Malaysia

<https://www.iitr.ac.in/uasg2023/#>

**27 Nov - 01 Dec 2023**

**Pacific Islands GIS and Remote Sensing User Conference**

Suva, Fiji Lands

<https://2023.ieeeigarss.org/>

**04-05 Dec 2023**

**The 2nd Ramon International Geospatial Intelligence 360 Conference Geospatial Intelligence for Sustainable and Resilient Future**

Tel-Aviv, Israel

<https://www.geoint360.com/>

## SCHOLARSHIPS *AND* OPPORTUNITIES

### PhD

**PhD candidate on 3D reconstruction and mixed reality**

**The University of Twente**

Enschede, Netherlands

Deadline: 1 Oct 2023

<https://bit.ly/3QUZIVe>

**PhD candidate on scene understanding and mixed reality**

**The University of Twente**

Enschede, Netherlands

Deadline: 1 Oct 2023

<https://bit.ly/3EbYGnd>

### PostDoc

**Postdoctoral Research Associate**

**UNH Earth Systems Research Centers, The University System of New Hampshire**

Durham, England

Deadline: until filled

<https://bit.ly/44rx88a>

**PostDoc in ecological remote sensing 80-100%**

**Swiss Federal Institute for Forest**

Snow and Landscape Research WSL, Switzerland

Deadline: 14 Nov 2023

<https://bit.ly/3qNnFdr>

## PostDoc

**Postdoc position studying forest dynamics and tree resilience to climate change impacts using high resolution drone-based imagery**

**University of Toronto**

Toronto, Canada

Deadline: until filled

<https://www.earthworks-jobs.com/fas/toronto23081>

**Postdoctoral researcher in spatial data science and algorithm development**

**University of Lausanne**

Lausanne, Switzerland

Deadline: 01 Oct, 2023

<https://www.earthworks-jobs.com/rsgis/unil23081>

## Jobs

**Researches landslide mapping**

**NGU's section of Geohazards and Earth Observation**

Norway

Deadline: until filled

<https://www.earthworks-jobs.com/geoscience/ngu23071>

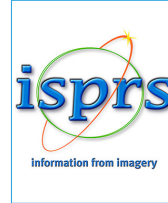
**Senior Project Manager Earth Observation**

**GAF**

Munich, Germany

Deadline: until filled

<https://www.earthworks-jobs.com/rsgis/gaf-ag23081>



Please visit our ISPRS SC web page

[sc.isprs.org](https://sc.isprs.org) 

where you will find more information about Student Consortium, our previous Newsletter issues, SC activities, photo galleries from previous Summer Schools, interesting links etc.

On behalf of the **ISPRS SC Board of Directors**, the Newsletter team would like to thank all the contributors of the featured articles in this issue who shared their knowledge and research experiences with us. We would also like to acknowledge

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**ACKNOWLEDGEMENT**

*Stay safe, everyone!*



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