

Bridging Geoscience and Technology: From the NMGS 59th Annual Conference to China

As an aspiring geospatial analyst and tech enthusiast, attending the 59th NMGS Annual International Conference and Exhibition (AICE) in Jos, Nigeria (March 17–22, 2024) was electrifying. Themed “*Emerging Global Perspectives, Trends and Sustainable Development of Minerals and Energy Resources*,” the conference offered cutting-edge insights, but two moments stood out: the keynote unveiling of the Deep-Time Digital Earth (DDE) platform and a post-conference African Geodata workshop.



(Image 1: Flier for the African Geodata workshop at NMGS 59th AICE in Jos, Nigeria)

At the workshop, while supporting the technical setup, I seized an opportunity during Professor Mike Stephenson’s DDE demo to showcase how my MSc borehole data could be uploaded and visualized on the DDE platform. Using just a few lines of Python, I live-uploaded a CSV file into DDE’s cloud-based workbench, surprising the audience and prompting Prof. Stephenson to invite me for an impromptu demo. That spontaneous moment became the spark of my journey with DDE.



(Image 2: Participants during the African Geodata workshop)

The DDE platform is a globally significant science initiative that harmonizes deep-time geological data spanning millions of years and makes it accessible for researchers

worldwide. Integrating AI, cloud computing, and data science tools like Python, R, and Julia, DDE enables geoscientists to visualize, analyze, and share data interactively. It supports 3D geological modeling, cross-regional dataset comparison, and cloud-based computation, offering geoscientists powerful capabilities to collaborate and innovate.

DDE's mission is to break down data silos and democratize access to geoscience tools. Whether you're a researcher in Lagos or London, you can explore the same high-quality datasets and analytical tools. This vision of "geoscience without borders" is what excites me most, enabling inclusive and integrative scientific discovery on a global scale.

My experience with DDE didn't stop there. In June 2025, I traveled to China, visiting Hangzhou, Suzhou, Chengdu, and Beijing, and engaging in collaborative meetings, field visits, and cultural exploration, all fueled by the momentum that began in that workshop room in Jos.

Hangzhou – Zhejiang University and Innovation

I kicked off my visit in the scenic city of Hangzhou, renowned for its rich historical heritage and rapidly growing tech sector. My first stop was Zhejiang University, one of China's top research institutions. I was warmly welcomed by the School of Earth Sciences, where I had the opportunity to meet with faculty members and graduate students working on a range of earth sciences projects powered by the Deep-time Digital Earth (DDE) platform. We shared ideas on how the DDE infrastructure, particularly its cloud computing environment, integrated big data system, and AI-driven analytical tools, is helping researchers overcome traditional barriers in earth science research. From large-scale data processing to collaborative geological modeling, DDE is enabling more inclusive, global research, especially for early-career scientists with limited access to computing resources. We also discussed upcoming international geoscience events, such as the 30th Colloquium of African Geosciences (CAG) happening in Nairobi this September, and GSA Connects in San Antonio, Texas. It's inspiring to see how committed DDE is to fostering global outreach and building research bridges across continents.

A personal highlight of my visit was a guided tour of the faculty's geological museum. The museum features an impressive collection of regional and international mineral, rock, and fossil specimens, serving as an educational hub for students and researchers alike. It was a great reminder of how geology connects the past to the present and why platforms like DDE are so vital in preserving and studying that legacy with modern tools.

On June 10th, Deep-time Digital Earth (DDE) participated in a SaltAges research meeting. SaltAges is an international network of researchers and innovators engaged in multidisciplinary, collaborative research on salt and its deposits. Supported by the European Cooperation in Science and Technology (COST) programme, the initiative aims to connect geoscientists, biologists, archaeologists, sociologists, historians, economists, engineers, and artists to the capabilities of the DDE platform. The meeting focused on enabling participants to investigate the formation of salt giants and their influence on local, regional, and global climatic and biological events; examine the role of salt in the evolution of human society and culture across time; and foster a network of early-career researchers equipped to drive future scientific, industrial, and societal advancements in this and other complex domains.

During the meeting, I delivered a presentation highlighting DDE's cloud computing capabilities. I demonstrated how early-career researchers, especially those with limited or no computing infrastructure, can utilize these resources to process and analyze their data efficiently.



(Image 3: Zhejiang University campus in Hangzhou with faculty members)

Deep-time.org SaltAges Training Course
Deep-Time Digital Earth (DDE) and GeoGPT
Tuesday 10th June 2025 (Online)
 08:00-12:00 BST (London) | 09:00-13:00 CET (Vienna) | 15:00-19:00 CST (Beijing)

Want to learn about big data in geosciences and available resources such as the DDE Platform (including MyDDE, Earth Explorer, DataExpo, DeepShovel) and GeoGPT?

Do not miss this exciting opportunity to hear about the Deep-Time Digital Earth (DDE) initiative from its founders! This workshop is open to all interested audiences, including students, academic researchers and professionals.

Led by **Mike Stephenson**; speaking: **Mike Stephenson, Grant Boquet, Xinhua Fan, Gu Tang, Enjiang Yue, Shadrach Sheriff**

*** Register to participate (free) by 1st June 2025 on: <https://forms.office.com/e/j7kJdeiX9V> ***

Logos for the European Union, COST, and SaltAges are displayed at the bottom.

Organised by the EU COST Action SaltAges "Social, biological and climatic impacts of salt ages" <https://sites.google.com/view/saltages>

(Image 4: Flier for the SaltAges Workshop)

I visited the Second Institute of Oceanography, part of the Ministry of Natural Resources (MNR), where I had the opportunity to present my previous research and engage with the institute's scientific community. One of the highlights was meeting Bassem Jalil, a Tunisian researcher specializing in paleoclimatic data. We quickly found common ground and have since begun a collaborative effort, utilizing the Deep-time Digital Earth (DDE) platform for statistical analysis in his ongoing climate data research. These meetings greatly expanded

my understanding of Asia's cutting-edge geoscientific research and highlighted the interdisciplinary potential of platforms like DDE in fostering international collaboration.

Outside the lab, I made time to explore the cultural and natural beauty of Hangzhou. Took a tour of the famous West Lake, with its serene waters and historic temples, which contrasts strikingly with the backdrop of towering science parks, a blend of tradition and modern innovation that characterizes much of the city. And on the many nights, I found myself unable to sleep. I became something of a nightcrawler—wandering the quiet streets of Hangzhou under the soft glow of streetlights. These peaceful walks not only helped me reflect but also served as a silent reminder of China's remarkable level of public safety and hospitality.



(Image 5: Visit to West Lake Park, Hangzhou)

Field Mapping in Tonglu

On June 13–14, I had the privilege of joining Professor Kongyang Zhu and the Zhejiang Geological Survey Team for a two-day field mapping exercise in Tonglu County, located just south of Hangzhou. The experience was both immersive and intellectually rewarding. Our work focused on detailed geological mapping of outcrop exposures across the region's rolling hills. We observed and recorded various lithologies and structural features, delineated formation boundaries, logged stratigraphic sections, and carefully documented sedimentary features. Among the highlights were rhyolitic breccias unconformably overlying basaltic conglomerates, an impressive volcanic-sedimentary sequence, and beautifully veined limestones rich in calcite. One of the most unforgettable moments for me was encountering my very first karst landscape. Seeing the intricate dissolution features in person, shaped over time by natural processes, was a truly inspiring moment in my geological journey.

Beyond the technical learnings, the experience of living in the quiet, scenic town of Tonglu was equally enriching. Surrounded by lush green hills and serene countryside, I got a glimpse of rural life in China that few outsiders get to see. Evenings were calm and reflective, and I often took late-night walks through the town to soak in its atmosphere, finding peace and

inspiration in its simplicity. This fieldwork experience reinforced a powerful truth for me: geoscience truly knows no borders. Whether in Nigeria, China, or anywhere else in the world, the language of rocks, time, and earth processes unites us.



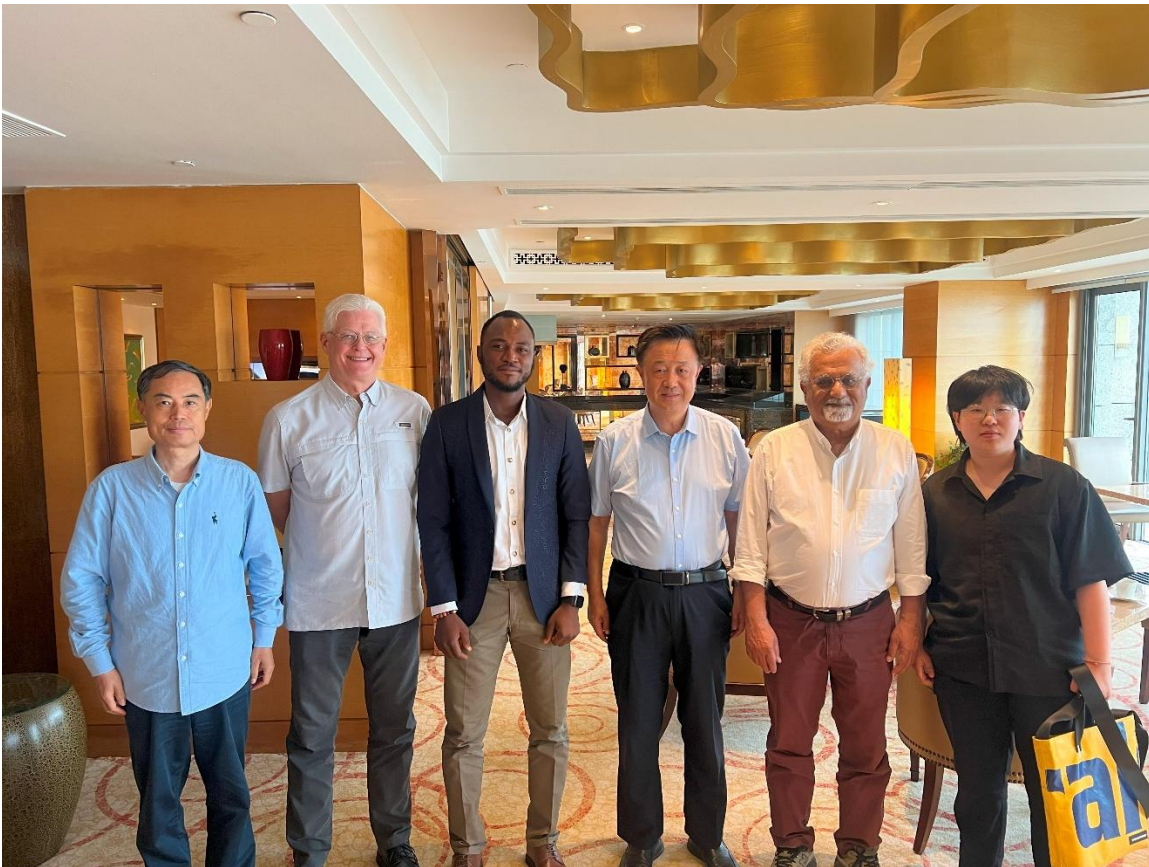
(Image 6,7,8: With Professor Zhu and the Zhejiang Geological Survey team conducting field mapping in the mountains of Tonglu)



Kunshan – Collaboration Amidst Rain

On the rainy morning of June 15, I traveled to Kunshan, Suzhou Province, to attend the DDE consortium meeting. Despite the weather, the atmosphere was warm and invigorating. I was delighted to reunite with Dr. Ishwaran Gaja and, for the first time, meet several prominent figures in the geoscience community, including Professor Harvey Thorleifson (President of DDE), Professor Qiuming Cheng, Professor James Ogg, Dr. Gabi Ogg, Dr. Linshu Hu, and many other distinguished leaders in the field. Our initial conversations held over an informal pre-lunch session at the Fairmont Hotel encompassed a range of topics, from research updates and global collaboration efforts to travel stories and personal reflections. It was inspiring to see how geoscientists from different continents could come together with a shared vision for open, data-driven earth science.

After lunch, we ascended to the eighth floor of the hotel, where a meeting room with a panoramic view of the lake served as the setting for more in-depth discussions. There, the leaders gathered to outline DDE's ongoing global strategy, with a particular focus on expanding its footprint across Africa. I was formally introduced to Professor Harvey and Professor Cheng, who both shared insights into DDE's upcoming plans, including preparations for the upcoming CAG30 conference in Nairobi. They emphasized the importance of fostering data accessibility, supporting young researchers, and building capacity across underrepresented regions. I felt both honored and inspired to be part of these forward-thinking conversations, ones that reaffirmed DDE's commitment to building a genuinely inclusive, globally connected geoscience community.



(Image 9: With Dr. Linshu, Dr. Ish, Prof. Cheng, and Prof. Harvey at the Fairmont Hotel)

Chengdu – Paleogeography and Pandas

On June 17, I flew to Chengdu, famously known as the “Land of Abundance” in Sichuan Province, accompanied and hosted by Professor Jim and Dr. Gabi Ogg. As soon as we landed, I could feel the temperature shift; Chengdu was noticeably hotter than Hangzhou, but the city's vibrant energy made up for the heat. I was especially excited to explore its renowned cultural heritage and, of course, meet the city's famous residents—the giant pandas.

At Chengdu University of Technology (CUT), I had the pleasure of meeting a dedicated and enthusiastic paleogeographic research team. They were developing a digital atlas that reconstructs Earth's paleogeography across deep time, a visually rich and scientifically ambitious platform. We spent several engaging hours reviewing the atlas, discussing its structure and features, and brainstorming improvements. I offered suggestions on integrating more paleoclimate datasets and enhancing user interactivity to make the platform more intuitive and engaging for both researchers and educators.

Lunch at the university cafeteria turned out to be a delightful cultural crossover. Alongside traditional Sichuan dishes, I was surprised and amused to find a familiar favorite from home: stir-fried rice, served on cafeteria trays among the chatter and movement of bustling students. It was a small, unexpected reminder of how interconnected our worlds can be.

Later that afternoon, I rejoined Professor Jim Ogg to work on GeoLex, a geoscience lexicon project he and Dr. Gabi Ogg are building to support education and communication in the earth sciences. We spent the rest of the day coding, adding new geological terms and definitions, and brainstorming ways to expand the lexicon's accessibility and relevance across disciplines. It was a rewarding collaboration that stretched well into the evening.

To cap off the night, we visited a local Chengdu restaurant to experience the city's iconic Sichuan hot pot. I quickly developed a taste for the bold, numbing spice of the Sichuan peppercorns, especially when paired with a crisp German beer. The evening also featured a captivating live stage performance, including the famous Bian Lian (face-changing) opera act, a dazzling display of Chinese cultural artistry. It was a magical and unforgettable night.

On my final day in Chengdu, we visited the Chengdu Research Base of Giant Panda Breeding, where I finally got to see the pandas I had been eagerly anticipating. Watching the cubs play and feed was an absolute joy. To my surprise, I also discovered the red panda, a lesser-known but equally charming species I hadn't known existed before. The visit was a perfect culmination of a richly rewarding trip, filled with science, culture, and moments of wonder.



(Image10: With Professor Jim and Gabi Ogg, at the Chengdu Research Base of Giant Panda Breeding)



(Image 11, 12: Experiencing China's Rich culture while enjoying Sichuan's famous hot pot dish)

Beijing – Wrapping Up

From June 21 to 25, I spent an exciting and insightful leg of my trip in Beijing, China's bustling capital, accompanied by Hu Haofan, a postgraduate student from Zhejiang University. Our days were filled with enriching meetings and cultural exploration, combining academic exchange with a deep dive into China's historical landmarks.

One of the highlights was our visit to the Chinese Academy of Geological Sciences, where we met with Professor Song Yang. We each presented our current research projects, and I was especially captivated by Professor Yang's presentation titled *"Advances in the Utilization of Geological Maps and Multimodal Large Language Models for Geological Mapping."* She also shared progress on the ambitious 1:5 million-scale geological map of the world, with a focus on Africa. Our conversation probed into the persistent challenge of obtaining geological data from some African nations and institutions. We exchanged ideas on possible solutions to bridge these data gaps and improve collaboration across continents.

After the session, I toured the Institute's impressive collections, where the meticulous detail, especially in the 1:5 million geological map of Asia, particularly inspired me. The experience offered a vivid glimpse into the scope and precision of Chinese geoscientific efforts.

Cultural exploration was equally memorable. For lunch, I had the famous Beijing roast duck, a delicious local specialty. And as Chairman Mao once said, *"He who has not climbed the Great Wall is not a true man."* Motivated by those words, we visited the Mutianyu section of the Great Wall. Climbing from Tower 14 to the steep ascent at Tower 20 was physically demanding, but the panoramic views made every step worthwhile a truly unforgettable moment.

I also explored several of Beijing's iconic sites, including Jingshan Park, Tiananmen Square, the Bird's Nest (National Stadium), and numerous world-class museums. My time in Beijing was not only exhilarating but deeply educational—a remarkable blend of science, culture, and lifestyle that left a lasting impression.



(Image 13: Presentation at the Chinese Academy of Geological Sciences with Prof Song Yang)



(Image 14,15: A visit to the Great Wall of China)



(Image 16: At the Bird's Nest – Olympic Games Center, Beijing)



(Image17, 18, 19: At Jiangshi Park Tiananmen Square, and also enjoying some roasted duck)



Reflections

My journey from Nigeria to China, sparked by a spontaneous moment during the 59th NMGS Annual Conference in Jos, marked a defining chapter in my growth as a geospatial analyst and early-career geoscientist. What began as a live demonstration of the Deep-Time Digital Earth (DDE) platform during a post-conference workshop evolved into a springboard for international collaboration, scientific innovation, and cultural discovery.

The significance of this trip lies in its powerful message: that geoscience is no longer bound by geography, infrastructure, or access to legacy institutions. Across five cities, Hangzhou, Suzhou, Tonglu, Chengdu, and Beijing, I engaged with leading earth scientists, participated in field mapping exercises, visited renowned research institutions, and collaborated with peers and mentors from around the world. From discussions on geological data harmonization and paleogeographic reconstruction to workshops on AI and digital mapping, each interaction emphasized the role of technology in modern geoscience.

The DDE platform, in particular, stands out as a transformative force. It represents the future of global geoscience, an open, cloud-based ecosystem that brings together deep-time geological data, advanced analytics, and collaboration tools. With support for Python, R, and Julia, and the ability to visualize and analyze large datasets in real time, DDE makes cutting-edge tools available to researchers anywhere, whether in Lagos, Lima, or London. It breaks down data silos and promotes truly inclusive science. For young professionals, this is a game-changer: we now have access to tools that once seemed out of reach.

China's warmth and hospitality added a deeply human layer to this scientific journey. Whether walking the peaceful streets of Hangzhou, sharing hot pot in Chengdu, or climbing the Great Wall outside Beijing, I was constantly met with kindness, curiosity, and generosity. The country's commitment to research, innovation, and cultural preservation is inspiring, and so is its openness to young voices from across the globe.

For the average young professional in geoscience, this trip offers a powerful lesson: opportunities arise when curiosity meets courage. Engaging with global platforms like DDE, building cross-border collaborations, and immersing oneself in other cultures are no longer optional; they are essential steps toward becoming part of a globally connected scientific community.

This journey reaffirmed my belief that geoscience, when supported by the right tools and networks, can be a unifying force in solving some of the planet's most pressing challenges. It also showed me that the next generation of geoscientists equipped with digital fluency, interdisciplinary thinking, and a collaborative mindset can lead the charge.

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