



The Geological Society of America

## Geoinformatics & Data Science Division



# GSA Geoinformatics and Data Science (GIDS) Division Newsletter

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July 2025

# Table Of Contents

|  |           |
|--|-----------|
| <u>A Message from the Chair</u>  | <u>3</u>  |
| <u>Division Mission</u>  | <u>4</u>  |
| <u>Who are the Geoinformatics Officers?</u>                              | <u>5</u>  |
| <u>Join the GIDS Leadership!</u>   | <u>5</u>  |
| <u>M. Lee Allison Award</u>  | <u>6</u>  |
| <u>Annual Meeting in San Antonio, Texas, October 19-22, 2025</u>         | <u>7</u>  |
| <u>Division Technical Sessions</u>                                       | <u>8</u>  |
| <u>GSA 2025 Annual Meeting Sessions listed under the GIDS Discipline</u> | <u>9</u>  |
| <u>Additional Sessions Co-Sponsored by the Geoinformatics Division</u>   | <u>12</u> |
| <u>Contact</u>   | <u>16</u> |



## *A Message from the Chair*

**Dear Members of the Geoinformatics and Data Science Division,**

I hope this message finds you well. On behalf of our divisional leadership team, thank you for being part of our vibrant and growing community. Your continued contributions across research, teaching, and outreach are advancing the frontiers of geoinformatics and data science in the Earth and planetary sciences.

We're pleased to share a few important updates. **First, a divisional ballot will open later this summer to select our next Vice Chair.** Alongside this election, members will be asked to vote on proposed modifications to our bylaws. These updates aim to expand our leadership structure by creating two new roles—Second Vice Chair and Member-at-Large—to better support our expanding activities and community engagement.

In 2025, we were also able to provide supplementary funding to two GSA Graduate Student Research Grant awardees whose projects align with the mission of our division. Supporting early-career scientists remains a top priority, and we are glad to offer additional recognition to outstanding student research.

Looking ahead, the 2025 GSA Annual Meeting in San Antonio (October 19–22) will feature a strong slate of GIDS-sponsored sessions. We are also organizing a student poster competition and planning a divisional meet-up event. **If you are planning to attend the meeting—or are interested in joining the GIDS gathering—we invite you to indicate your interest by visiting [geosociety.co/3UIQadk](https://geosociety.co/3UIQadk).**

Finally, please join me in congratulating Prof. Wenwen Li, recipient of the 2025 M. Lee Allison Award for Geoinformatics. Her work exemplifies innovation and leadership in our field. We look forward to celebrating this recognition at the award session in San Antonio.

Thank you again for your continued support. We look forward to staying connected and hope to see many of you at GSA 2025!

Warm regards,

Tao Wen

Chair, GSA Geoinformatics and Data Science Division





# Division Mission

GSA's Geoinformatics and Data Science (GIDS) Division advances "Data to Knowledge," providing GSA members with an opportunity to participate in the emerging fields of cyberinfrastructure and data science. The Division actively promotes information technology-supported discovery and integration of geoscience data leading to a more comprehensive understanding of Earth and the planets as complex, integrated systems. The purpose of the division is to bring together scientists interested in Geoinformatics and Data Science approaches; to facilitate the presentation and discussion of their problems and ideas; to stimulate communication among earth scientists and computer scientists; to promote research and the publication of results; to support development of new educational technologies; to support workshops in assisting the community to benefit from the use of technological and scientific infrastructure to advance integrative science; and to advise and assist the officers and committees of the Society in matters pertaining to Geoinformatics and Data Science.



Established  
**29 April 2006**



Members  
**500**

# GIDS Officers?

**Chair:**

Tao Wen (Syracuse University)

**First Vice Chair:**

Anirudh Prabhu (Carnegie Institution for Science)

**Student Representatives:**

Jarrod Burges (California State University, Fullerton), Viktoria Cercone (University of Pittsburgh), Kate Hendrickson (Rutgers University)

**Secretary/Treasurer:**

Sam Shaheen (Yale University)

**Past Chair:**

Shanan E Peters (University of Wisconsin-Madison)



## Join the GIDS Leadership!

**Join our close-knit team and help guide sessions, awards, and events.**

As Chair-Elect, you'll co-chair the GSA Annual Meeting program, attend monthly board meetings, and become Chair after one year. The Secretary-Treasurer serves a two-year term (renewable). If the recently proposed modifications to the divisional bylaws are approved, two additional officer positions—Second Vice Chair and Member-at-Large—will also be open for nominations. Learn more in our bylaws. Ready to nominate someone, self-nominate, or just chat? Email any of the current divisional officers. We'd love to have you on board!



### **2025 M. Lee Allison Award for Geoinformatics**

Presented to Wenwen Li, Arizona State University

Congratulations to Prof. Wenwen Li, recipient of the 2025 M. Lee Allison Award for Geoinformatics! Wenwen Li's research interest is geographic information science with a focus on cyberinfrastructure, big data, semantic interoperability, spatial information retrieval, and distributed geospatial information processing. She heads the CyberInfrastructure and Computation Intelligence Lab in the School of Geographical Sciences and Urban Planning.

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*Past awardees in 2024 and 2023*

### **2024 M. Lee Allison Award for Geoinformatics**

Presented to Xiaogang (Marshall) Ma, University of Idaho

The 2024 M. Lee Allison Award was presented to Prof. Xiaogang (Marshall) Ma for his pioneering work in data-driven geoscience research, semantic technologies, and user-friendly cyberinfrastructure, which has made geoscience data more FAIR and accessible worldwide, reducing barriers and expanding collaboration across Earth science communities.

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### **2023 M. Lee Allison Award for Geoinformatics**

Presented to Simon J. Goring, University of Wisconsin-Madison

The 2023 M. Lee Allison Award was presented to Dr. Simon J. Goring for his visionary leadership in advancing geoinformatics through tools like the Neotoma Paleoecology Database and the EarthCube Throughput project, his dedication to FAIR and CARE data principles, and his tireless support for open science, early career researchers, and global data access.

## **Announcement!**

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### **GIDS-Sponsored Webinar to Spotlight Dr. Simon Goring**

#### **Save the date!**

GIDS will be hosting a seminar by Dr. Simon Goring from 12-1pm EST on July 15, 2025. **More details coming soon!**





# GSA Annual Meeting in San Antonio, Texas, October 19-22, 2025

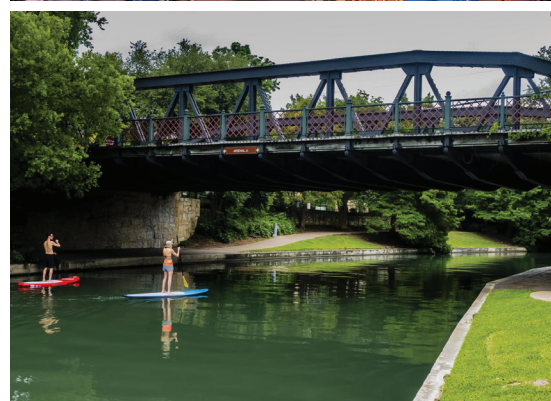
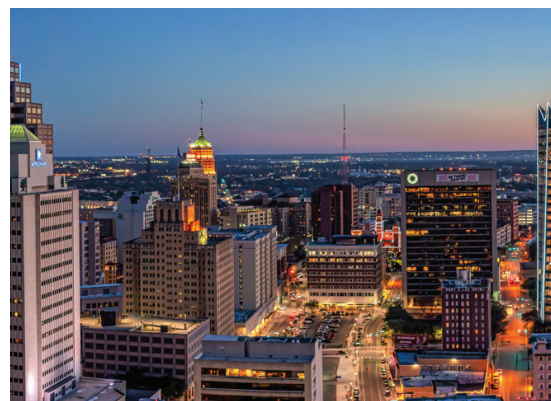
The 2025 GSA Annual Meeting is in  
Texas from October 19-22.

Join the GSA Geoinformatics and Data Science Division (GIDS) for topical and technical sessions, our Division booth in the exhibit hall, and consider indicating your interest in attending the GIDS gathering by filling out the poll linked below.

This year, the GSA GIDS divisional booth will once again be located in the GSA HQ zone. For the first time, we will have merchandise available for sale at the booth. Please stop by to check them out and consider making a purchase to support divisional activities!

If you are planning to attend the GSA annual meeting—or are interested in joining the GIDS gathering—we invite you to indicate your interest by visiting [geosociety.co/3UIQadk](https://geosociety.co/3UIQadk).

**Abstracts are due August 5, 2025! Submit yours here [geosociety.co/CallforAbstracts](https://geosociety.co/CallforAbstracts).**



# Highlights of GSA 2025 Technical Sessions Sponsored by the GIDS Division

## Student Poster Competition Session at GSA Connects 2025

### Call for Student-led Abstracts!

Early Option Decision: 15 May 2025 (decision made in June)

Final Deadline: 5 August 2025

### T42. A Showcase of Student Research in Geoinformatics and Data Science (Posters)

Students are invited to present original research posters relevant to geoinformatics and data science, including geospatial analysis, machine learning, big data, modeling, and visualization.

Posters will be judged for divisional awards.



Scan to Submit



## A Session on Geoinformatics, Data Science, and Open Data at GSA Connects 2025

### Call for Abstracts!

Early Option Decision: 15 May 2025 (decision made in June)

Final Deadline: 5 August 2025

### T47. Expanding Geology's Horizons: Geoinformatics, Open Science, and Open Data

This session highlights the development of new methodologies for collecting, sharing, and analyzing geological datasets and the advancement of FAIR (findable, accessible, interoperable, and reusable) data practices.



Scan to Submit



See a list of all Annual Meeting sessions with Geoinformatics and Data Science Discipline, Sponsor, or Co-sponsor at the end of this newsletter.



# GSA 2025 Annual Meeting Sessions listed under the GIDS Discipline

This year's meeting themes are-

- Energy and Resource Innovations in the 21st Century
- Geology without Borders
- From Earth to the Cosmos: Geoscience beyond Our Planet

Visit <https://connects.geosociety.org/> to know more!

**View all sessions.** Submit your abstracts by August 5, 2025!



| T number | Session Title  | Session Description   |
|----------|--|---|
| 8        | Estimating Natural Resources Using Geoscience Data   | Methods to estimate the availability, location, and quantity of natural resources (e.g., geothermal, petroleum, critical minerals) vary by resource type, scale, and the availability of data. This session addresses resource modeling that targets any of these aspects.  |
| 19       | Advances in Geospatial Applications for Environmental and Engineering Geology  | Recent advancements in geospatial technologies have enhanced our ability to analyze, model, and predict geological and environmental processes with high precision. This session will explore the latest innovations in remote sensing, GIS, and data analytics applied to environmental engineering geosciences. |
| 22       | Fixing the Silent Leak: Identifying, Quantifying, Prioritizing, and Mitigating the Environmental and Health Impacts of Legacy Oil and Gas Drilling in North America. | This session invites abstracts applying field studies, laboratory experiments, process-based and machine learning modeling, or multidisciplinary datasets to identify, quantify, and mitigate impacts from oil/gas wells of all types and statuses (active, abandoned, orphaned).                                 |

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| 42 | A Showcase of Student Research in Geoinformatics and Data Science (Posters)                     | Students are invited to present original research posters relevant to geoinformatics and data science, including geospatial analysis, machine learning, big data, modeling, and visualization. Posters will be judged for divisional awards.   |
| 43 | Advancing Geologic Analysis with Digital Outcrops and Close-Range Remote Sensing Data           | This session highlights close-range remote sensing techniques (e.g., photogrammetry, LiDAR, hyperspectral imaging) in geologic analysis, focusing on innovative methodologies, workflows, case studies, and applications in structural geology, sedimentology, paleobiology, and critical mineral exploration. |
| 44 | Bridging the Past and Future: AI-Driven Insights from Paleoclimate to Modern Climate Adaptation | This session explores how AI integrates paleoclimate reconstructions with modern Earth system models to uncover mechanisms, controls, and tipping points in climate systems, fostering insights for adaptation and mitigation strategies amidst contemporary climate change.                                   |
| 45 | Deep-Time Digital Earth   | We invite overviews related to compiling and deciphering large regional to global-scale datasets on the fascinating history of our Earth and Solar System, and to unraveling the interplay of processes that shaped the past.  |
| 46 | Digital twin in Geosciences: Combining Real-Time Monitoring Data, AI, Modeling and Simulation   | This session invites papers on all aspects of digital twins, from foundations to applications. Of particular interest are different case studies that the community would have used the DT applications ranging from subsurface to atmosphere.   |
| 47 | Expanding Geology's Horizons: Geoinformatics, Open Science, and Open Data                       | This session highlights the development of new methodologies for collecting, sharing, and analyzing geological datasets and the advancement of FAIR (findable, accessible, interoperable, and reusable) data practices.  |
| 48 | Geologic Maps and Their Derivatives (Posters)   | This poster session will highlight new geologic maps, mapping programs, and innovations in geological mapping, including data management, web accessibility, 3D, and applications in water and land management.  |

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| 49 | GIS-Based Risk Assessment and Hazard Mapping   | This session on "GIS-Based Risk Assessment and Mapping" aims to explore the critical role of Geographic Information Systems (GIS) in identifying, analyzing, and visualizing various types of risks, including natural hazards, environmental threats, and public health challenges.   |
| 50 | Harnessing Earth Intelligence to Promote Data-driven Geoscience Innovation and International Collaboration   | Artificial intelligence (AI) is rapidly being integrated into Earth Science, and Geology also needs empowerment through AI and advanced technologies. This session will discuss how Earth Intelligence can help geoscientists to innovate and foster future international cooperation.   |
| 51 | LLMs and other AI Tools – A Revolution for Geoscience Research   | We will explore the transformative potential of large language models (LLMs) and related AI tools for deciphering geoscience datasets and for unraveling the interplay of processes that govern the Earth System.  |
| 52 | Transforming Earth and Planetary Science Through Data and Data Management: In Honor of MSA Distinguished Public Service Medal Awardee, Kerstin Lehnert | This session honors MSA Distinguished Public Service Medalist Kerstin Lehnert, celebrating her transformative contributions to geoinformatics and data stewardship. We invite studies on data-driven science, FAIR data practices, and large-scale data resources in Earth and planetary science.                                  |
| 78 | Quantitative and Data Analytics Skills in Geoscience Education – Supporting Student, Course, and Program Outcomes                                      | Quantitative and data analytics skills are critical for geoscientists but often a barrier for students. This session includes strategies for skill development, from activities to geoscience-focused quantitative skills courses to departmental innovations supporting quantitative and analytics skills across degree programs. |
| 89 | Advance Ground Surface Modeling for Hydrological and Environmental Applications  | This session will highlight advancements in ground surface modeling for hydrological and environmental applications, focusing on innovative techniques, integration with remote sensing, GIS, and hydrological models. We invite submissions on new methodologies, case studies, challenges, and interdisciplinary approaches.     |



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| 92 | Advancing the Understanding and Management of Groundwater Pollution with Arsenic and Other Geogenic Contaminants Using Geospatial Tools, Machine Learning, and Data Science | The growing trend of data aggregation and analysis, along with emerging technologies like machine learning, has significantly improved our understanding of groundwater basins, enabling better assessments of water quality for direct consumption and treatment in groundwater supply management.               |
| 93 | Big Data and Machine Learning Applications in Hydrogeology  | This session welcomes research into the use of big data and machine-learning techniques to address complex problems in hydrogeology that were previously intractable.   |
| 8  | Estimating Natural Resources Using Geoscience Data  | Methods to estimate the availability, location, and quantity of natural resources (e.g., geothermal, petroleum, critical minerals) vary by resource type, scale, and the availability of data. This session addresses resource modeling that targets any of these aspects.  |
| 19 | Advances in Geospatial Applications for Environmental and Engineering Geology   | Recent advancements in geospatial technologies have enhanced our ability to analyze, model, and predict geological and environmental processes with high precision. This session will explore the latest innovations in remote sensing, GIS, and data analytics applied to environmental engineering geosciences. |

## Additional Sessions Co-Endorsed by the Geoinformatics Division

| T number | Session Title   | Session Description   |
|----------|---|---|
| 3        | Critical Mineral Resources and Recovery in the Americas: Emerging Methods in Exploration and Sustainable Extraction | This session explores the role of critical minerals in technology and the low-carbon economy, focusing on geological discoveries, sustainable extraction methods, and recycling to support secure, environmentally responsible mineral supply chains in the Americas.   |
| 9        | Faults, Fractures, and Geomechanics for the Energy Transition   | This session explores the critical role of structural geology and geomechanics in the energy transition, emphasizing multidisciplinary research on faults, fractures, and deformation processes to ensure sustainable and efficient management of subsurface resources. |

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| 29 | The Future of Geoarchaeology—Advancing Methods, Accessibility, and Applications                            | This session explores the evolving role of geoarchaeology in cultural resource management, methodological advancements, and increasing accessibility to data. We invite discussions on training new researchers, expanding digital resources, and shaping the discipline's future in archaeological science.      |
| 16 | Landslide Inventory Mapping and Next Steps: Assessing Susceptibility, Hazard Models, Risk, and Policy      | This session will showcase approaches to landslide inventory mapping, landslide susceptibility, debris flow modeling, risk assessments, and data implementation at many stakeholder levels.   |
| 19 | Advances in Geospatial Applications for Environmental and Engineering Geology                              | Recent advancements in geospatial technologies have enhanced our ability to analyze, model, and predict geological and environmental processes with high precision. This session will explore the latest innovations in remote sensing, GIS, and data analytics applied to environmental engineering geosciences. |
| 50 | Harnessing Earth Intelligence to Promote Data-driven Geoscience Innovation and International Collaboration | Artificial intelligence (AI) is rapidly being integrated into Earth Science, and Geology also needs empowerment through AI and advanced technologies. This session will discuss how Earth Intelligence can help geoscientists to innovate and foster future international cooperation.                            |
| 71 | Current Advances in Geoscience Education Research  | This session will highlight empirical research being done in the field of geoscience education. We welcome submissions from geoscience education researchers at all career stages to showcase projects that highlight current areas of interest in the discipline.  |
| 74 | Geoscience Outreach Efforts to Broaden Participation   | This session will highlight interdisciplinary outreach efforts that aim to broaden participation among high school and undergraduate students in the geosciences.   |
| 84 | Transforming Water Data into Actionable Information for Policy, Planning, and Management                   | An exploration of contemporary methods, tools, and processes to transform the myriad available hydrologic data into information that is actionable by policymakers and water resource managers and planners. Presentations are expected to address: forecasting and planning tools, info "dashboards", and more.  |

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| 93  | Big Data and Machine Learning Applications in Hydrogeology                                       | This session welcomes research into the use of big data and machine-learning techniques to address complex problems in hydrogeology that were previously intractable.  |
| 97  | Geoscience in the AI Era: From Predictive Models to Real-Time Applications                       | This session offers a unique platform to showcase advancements in Artificial Intelligence (AI), Machine Learning (ML), and physics-informed methodologies, focusing on subsurface flow and transport, real-time geophysical inversion, critical minerals, and energy applications.                 |
| 99  | Hydrology and Hydrogeology of Thawing Cold Regions   | Ongoing amplified climate change at high latitudes and altitudes is driving hydro(geo)logic regime shifts by transforming snow-rain partitioning, snowmelt timing, and the spatiotemporal extent of frozen ground. This session welcomes all cold-region surface and subsurface hydrology studies. |
| 115 | Understanding Karst Aquifer Complexity using Innovative Tracers and New Technologies             | We welcome submissions applying innovative tracers and new technologies to investigate karst aquifers, such as complex interactions between surface water and groundwater, recharge processes, flow pathways, sediment transport, sustainability, and susceptibility to contaminants.              |
| 121 | Mineralogical Characterization of Economic Resources: From Critical Minerals to Gemstones        | From ore materials to precious gemstones, minerals play an important role in almost every aspect of our lives. This session will focus on characterization of economic minerals employing spectroscopic techniques, geochemical analysis, and microanalytical techniques.                          |
| 129 | Harnessing the Potential of Mafic and Ultramafic Rocks for the Energy Transition                 | This session examines how mafic and ultramafic rocks contribute to the energy transition by (1) generating hydrogen gas, (2) trapping CO <sub>2</sub> through carbon mineralization, and (3) providing critical minerals for climate change mitigation and renewable energy production.            |
| 139 | Environmental Instability During Greenhouse Periods: Impact on Terrestrial and Marine Ecosystems | Greenhouse conditions and transitions to and from such climate states put environmental stress on terrestrial and marine ecosystems. We invite contributions that leverage multidisciplinary/proxy approaches to constrain the impact of environmental changes on paleobiodiversity.               |



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| 142 | Joint SGD-SEPM-IAS Focus on the Sedimentary Record of Climate Change   | Explore how sedimentary records reveal Earth's climatic history and processes driving environmental change. This session highlights proxies, stratigraphy, and emerging technologies, advancing understanding of past climates and informing predictions of future climate dynamics through interdisciplinary collaboration. |
| 144 | New Perspectives on Beringian Paleoecology, Paleoclimate, and Paleoceanography   | This session will showcase the use of new sedimentary records and analytical techniques to augment reconstructions of Beringian and North Pacific Gateway paleoclimate and paleoecology and elucidate the role of terrestrial and marine linkages.   |
| 159 | Phylogenetic and Computational Approaches in Paleobiology and Paleoecology   | This session highlights recent advances integrating phylogenetics, modeling, and computational methods with fossil data to address evolutionary and ecological questions through deep time. Topics include macroevolutionary trends, diversification dynamics, trait evolution, macroecology, and paleobiogeography.         |
| 171 | Planetary Geologic Mapping Across the Solar System   | We invite abstracts that showcase planetary geologic maps, discuss mapping strategies, and leverage map-based investigations of planetary surfaces at multiple scales.   |
| 179 | Advances in Mountain Hydrology: Connecting Cryosphere, Surface, and Subsurface Processes   | We aim to highlight studies addressing the spatial and temporal complexity of mountain hydrology across diverse climatic, geological, and ecological contexts.   |
| 186 | Critical Zone Science: Intersection of Processes Linked to Geomorphology, Ecology, Fire and Climate  | This session welcomes interdisciplinary studies that investigate the rates and processes of soil development, regolith formation, carbon storage and the role of ecological and/or hydrologic feedbacks in shaping the landscape (both past and present).  |
| 219 | Presentaciones de Geociencias en Español: Continuamos con la experiencia en la GSA 2025/Geoscience Presentations in Spanish: Continuing the Experience at GSA 2025 | This session invites Geosciences presentations in Spanish at all proficiency levels; abstracts can be submitted in English or Spanish and they do not count towards the GSA's limit of one abstract oral presentation per person.  |



# An Open-Source Microbialites Database for the Geoscience Community: Mini-workshop and Listening Session

**GSA Connects San Antonio, Division-sponsored event**

**Date:** Monday, October 20, 5:30–7:30pm

**Location:** TBA

**Leaders:** Tom Hickson (University of St. Thomas) and Julie Bartley (Gustavus Adolphus College)

We are developing an open-source, image-rich database on microbialite morphologies, textures, and geochemistry for the scientific community and the public. This combined mini-workshop and listening session is a chance for microbialite sedimentologists to provide input and feedback on a demo version of the database and to discuss the definition of a controlled language for the non-genetic description of microbialites at all scales. We believe that important scientific questions can be addressed if we come together to develop this resource. We welcome sedimentologists, geomicrobiologists, and data scientists to attend to help us create a useful resource for all. Feel free to check out our website for more information.

We have booked a space for two hours but feel free to come and go as you please. We will likely start with an introduction to where the database stands at present, then move forward with informal discussions and a couple of hands-on activities to get people thinking about how to describe microbialites in non-genetic terms, including those proposed by Grey and Awramik (2020).

This event is co-sponsored by the Geobiology and Geomicrobiology, Sedimentary Geology, and Geoinformatics and Data Science Divisions of GSA.

## Contact us for more information

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