BY PAOLO GAMBA

Looking for a "Normal" Issue

While we wait for *IEEE Geoscience and Remote Sensing Magazine* (*GRSM*) special issues to be completed and published later this year, this June 2024 issue contains only three technical and seven column articles. Technical articles have somehow reduced their number because most of the submissions in these months have been targeting the three open special issues. Therefore, the limited number of technical articles in this issue was somehow expected. Instead, despite the continuous efforts by many members of the *GSRM* Editorial Board, having a continuous flux of column articles from the different elements of the Society's wide portfolio of activities has proved to be an "impossible task." Therefore, we had to surrender to the fact that, most likely, we will never be able to get at least one column article for each column article type every four months, which was one of the targets of my editorship. It looks strange, because we are sure that there are many more activities that are performed than those that we publish in columns, but maybe their organizers are not aware of the opportunity to publish in *GRSM* and showcase their work, or maybe they are not willing to use this opportunity. This is a pity, both for them and for this magazine.

Back to the issue content. The three technical articles describe new trends in remote sensing data processing and provide an interesting set of review/state-of-the-art analyses, as well as suggest open points and future challenges. They are very relevant for both young and experienced researchers who want to get a very good basic information to start with.

The first article, entitled "Open World Recognition in Remote Sensing: Concepts, Challenges, and Opportunities" [A1], deals with the issue of unknown classes that are present in the data to be analyzed. "Open set" approaches are becoming more and more relevant, especially because of large amount of data increasingly available on wide geographical areas. Indeed, being able to recognize classes that are not considered in existing ground truth data allow coping with the Earth's complex and ever-changing environment. Despite that there are multiple articles on this subject, a reasoned review was missing, and this article fills that gap.

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The following article, "Vision-Language Models in Remote Sensing: Current Progress and Future Trends" [A2], introduces a preliminary review of vision-language models, which are booming in current technical literature. I echo the words by the authors in the article abstract [A2]:

> Existing AI [artificial intelligence] related research in remote sensing primarily focuses on visual understanding tasks while neglecting the semantic understanding of the objects and their relationships. This is where vision language models excel, as they enable reasoning about images and their associated textual descriptions, allowing for a deeper understanding of the underlying semantics. Vision-language models can go beyond visual recognition of RS [remote sensing] images and can model semantic relationships, as well as generate natural language descriptions of the image. This makes them better suited for tasks that require both visual and textual understanding, such as image captioning, and visual question answering.

Vision models are getting more and more attention, and foundation models are a next step. This work helps us to understand more in this interesting area.

Finally, the work about "How Big Data Can Help to Monitor the Environment and to Mitigate Risks Due to Climate Change" [A3] connects Earth observation, big data, and climate change, three of the most relevant research areas these days. The need to integrate remotely sensed observations, additional layer of information, ancillary datasets, and geodynamics, as well as climate models, into a consistent framework is a huge task. It is an area that encompasses physics, computer science, data science, and complex geodynamical models. This article accepts the challenge to introduce a review of this complex topic by focusing on regional and national/supranational geodynamical models, hydrological extremes' monitoring, and climate variable extraction and analysis.

The second part of the issue, as mentioned earlier, is a subset of what could be provided here in terms of column article types, but it still includes a set of very important informative articles about ongoing activities in the IEEE Geoscience and Remote Sensing Society (GRSS).

Specifically, the first column article [A4] provides the highlights of the Awards Ceremony at the 2023 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) conference. While we are close to this year's IGARSS edition, and we look forward to meeting everybody in July 2024 in Athens, this article reminds us of the large number of excellent colleagues that form part of the GRSS "community of communities" and allows us to celebrate their achievements and recognize their value. Congratulations to all of the awardees!

The following column [A5] provides details about the activities of the Southern California GRSS/Antennas and Propagation Society/Solid-State Circuits Society Joint Student Chapter, which is the winner of the 2023 Chapter Excellence Awards. Student chapters are very important for the Society, as they enable young researchers to be involved in its activities and be prepared to become the leaders of the future.

The following column [A6] by the IDEA (Inspire, Develop, Empower, Advance) Committee describes career development activities for African women, students, and young professionals, showcasing the efforts by GRSS to reach out to this community. It is great to read about the well-designed outreach program that this committee has prepared and proposed, with the support by the local community. It is inspiring to all of the other members to see how the different groups in our Society may be engaged and become testimonials of the advantages of being part of it.

We are then reminded, thanks to two column articles, of the remarkable activities of the GRSS Modeling in Remote Sensing and Image Analysis and Data Fusion (IADF) Technical Committees. The 2023 Summer School Modeling in Microwave and Optical Remote Sensing [A7] and the Data Fusion Contest [A8] have already established themselves as traditional events in the GRSS yearly timeline. More specifically, the Data Fusion Contest (this year on "rapid flood mapping") is a challenge that very often open the path toward new research lines and always engages teams all over the world in that "good rivalry" that is the core of academic and industry research. Be sure to read the columns by the IADF to stay on top of these activities!

Finally, the last two columns introduce two benchmark datasets, useful for applications in the analysis of extreme events [A9] and in interferometric synthetic aperture radar phase unwrapping [A10], respectively. Our Society is proud to provide information and spread the word about initiatives like these, because they, on the one hand, help new researchers to find data useful for their research, to validate their approaches, and to find new research lines. On the other hand, these publications help the teams whose efforts have led to these datasets to be rewarded by a wider use of their results to the advantage of many more groups.

Finally, a few personal words, because this is my last "Editorial Column" as editor-in-chief of this journal. It has been quite an experience, very different and more challenging than I expected. I thought I was an experienced editor, thanks to my five years as editor in chief of the *IEEE*

Geoscience and Remote Sensing Letters and my duties for other scientific journals. I was wrong: There is always something new and different, and the experience is never enough. I am grateful to the GRSS Administrative Committee for its support and for giving me this opportunity. I was unable to complete the tasks that were assigned to me, and I apologize for that. I am sure that whomever will be selected in July to take care of this journal will do better, and I wish him/her all the best for the future. Goodbye!

APPENDIX: RELATED ARTICLES

[A1] L. Fang et al., "Open-world recognition in remote sensing: Concepts, challenges, and opportunities," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 8–31, Jun. 2024, doi: 10.1109/MGRS.2024.3382510.

[A2] X. Li, C. Wen, Y. Hu, Z. Yuan, and X. X. Zhu, "Vision-language models in remote sensing: Current progress and future trends," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 32–66, Jun. 2024, doi: 10.1109/MGRS.2024.3383473.

[A3] J.-P. Montillet et al., "How big data can help to monitor the environment and to mitigate risks due to climate change," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 67–89, Jun. 2024, doi: 10.1109/MGRS.2024.3379108.

[A4] F. Bovolo, D. Long, A. J. Plaza, and A. Moreira, "2023 GRSS Awards Presented at the IGARSS Night 2023 'Space and Magic'," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 90–96, Jun. 2024, doi: 10.1109/MGRS.2024.3383652.

[A5] K. B. Dogaheh, A. Kannan, M. Rustom, D. Aslanyan, S. Chakrabarti, and T. Wang, "Activities of the University of Southern California IEEE GRSS–AP-S–SSCS Joint Student Chapter: Winner of the 2023 Student Chapter Excellence Award," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 97–98, Jun. 2024, doi: 10.1109/MGRS.2024.3385415.

[A6] K. Kalinaki, C. Shoko, M. I. N. Fru, A. Aribisala, M. A. Chaurasia, and S. K. P. Kushwaha, "Career development activities for African women, students, and young professionals in geoscience and remote sensing," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 100–104, Jun. 2024, doi: 10.1109/MGRS.2024.3387929.

[A7] J. Shi, Y. Lei, and J. Zhang, "2023 IEEE GRSS summer school on modeling in microwave and optical remote sensing," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 104–108, Jun. 2024, doi: 10.1109/MGRS.2024.3369110.

[A8] C. Persello et al., "2024 IEEE GRSS data fusion contest: Rapid flood mapping," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 109–112, Jun. 2024, doi: 10.1109/MGRS.2024.3367006.

[A9] M. Gonzalez-Calabuig et al., "The AIDE toolbox: Artificial intelligence for disentangling extreme events," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 113–118, Jun. 2024, doi: 10.1109/MGRS.2024.3382544.

[A10] L. Zhou and H. Yu, "InSAR-DLPU: A benchmark dataset for deep learning-based synthetic aperture radar interferometry phase unwrapping," *IEEE Geosci. Remote Sens. Mag.*, vol. 12, no. 2, pp. 118–124, Jun. 2024, doi: 10.1109/MGRS.2024.3359691.

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