ALBERTO MOREIRA, FRANCESCA BOVOLO, ANTONIO PLAZA, AND JAYA SREEVALSAN-NAIR, IEEE GRSS AWARDS COMMITTEES CHAIRS

44th IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2024)—Athens, Greece, 7–12 July 2024

Impressions of the first days

For the first time, the IGARSS 2024 Symposium was held in Athens, Greece, the cradle of democracy and civilization. The city of Athens is not solely defined by its ancient monuments. It is a city with a rich history and a vibrant modern European identity, where ancient ruins coexist harmoniously with modern buildings. The conference was held at the Megaron Athens International Conference Center (MAICC), offering the finest facilities, stunning aesthetics, and cutting-edge technology (Figure 1). The event was hosted by the National Observatory of Athens, Operational Unit "BEYOND – Center of Earth Observation Research and Satellite Remote Sensing" of the Institute of Astronomy, Astrophysics, Space Applications and Remote Sensing. The National Technical University of Athens and the Foundation for Research and Technology – Hellas provided support for the event.

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The conference was guided by the motto "Acting for Sustainability and Resilience," with a scientific program that underscored sustainable development in alignment with the goals set forth by the United Nations 2030 Agenda. This encompassed a range of activities, including scientific publications, lectures, presentations, and engaging forums with a focus on remote sensing. Delegates were afforded the opportunity to become acquainted with the latest scientific achievements in geoscience and remote sensing research, education, and industry activities. The conference was attended by scientists, representatives from the industrial sector, and startup companies as well as a high number of students from around the world. During the symposium, the participants were able to obtain a wide overview of the latest research and technological advances in the field of remote sensing and its applications with excellent networking opportunities with peers. Following are some highlights from the IGARSS 2024 Plenary Session, held on Monday, 8 July 2024.

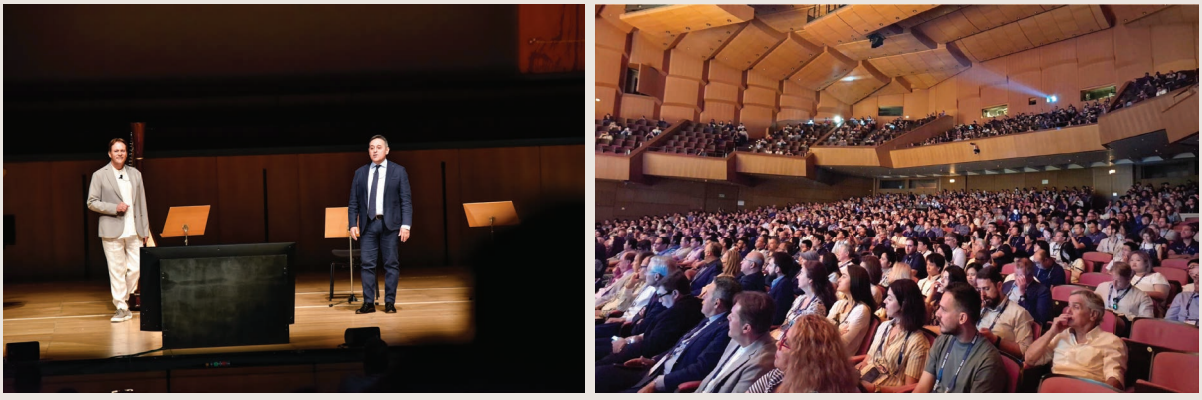
(a) (b)

FIGURE 1. (a) The city of Athens, Greece. (b) The Megaron Athens International Conference Center (MAICC), the Venue of IGARSS 2024. (Source: (a) Copyright Getty Images Pro. (b) Copyright IGARSS 2024.)

WELCOME ADDRESSES AT THE PLENARY SESSION

The Plenary Ceremony of IGARSS 2024 commenced on Monday with an opening address by the IGARSS 2024 general cochairs, Dr. Haris Kontoes and Prof. Vito Pascazio, welcoming the participants (Figure 2). Dimitrios Papastergiou, the minister of Digital Governance, representing the Greek Government, Prof. Athanasios Kyriazis, the secretary-general for Research and Innovation, Prof. Stamatios Krimigis, the president of the Academy of Athens, and Prof. Christos Zerefos, the president of the Hellenic National Committee of the International Union of Geodesy and Geophysics (IUGG) and secretary-general of the Academy of Athens as well as Prof. Manolis Plionis, the president of the National Observatory of Athens, delivered welcoming addresses as well, which were warmly received by the participants.

After the opening remarks, 2024 IEEE President Dr. Tom Coughlin's introduction followed (Figure 3). IEEE is the largest technical professional organization in the world, its members are involved in all aspects of technology creation and use, its research drives patents, and it creates the world's technical standards. IEEE also fosters efforts in future directions, technical road maps, and tracking of megatrends as well as informing public policy and being a resource for technical discussions. IEEE has more than 460,000 Members in more than 190 countries, it sponsors more than 2,000 conferences annually in 96 countries, and it has not only 46 Societies and technical councils but also many volunteer opportunities that help members build networks and learn new things. IEEE is the most cited publisher of new patents from top patenting organizations, and IEEE research is increasingly valuable to innovators. As part of his IEEE presidency, Dr. Coughlin is taking action to increase the outreach to younger members and the broader public, to increase engagement with industry, and to invest in new products and services.



(a) (b)

FIGURE 2. Opening remarks of IGARSS 2024 general chairs. (a) Dr. Haris Kontoes and Prof. Vito Pascazio. (b) Participants of the IGARSS opening and plenary session in the main hall of the MAICC.

(a) (b) (c)

FIGURE 3. (a) 2024 IEEE President Dr. Tom Coughlin and (b) 2023/2024 IEEE GRSS President Dr. Mariko Burgin giving welcome remarks to the IGARSS participants. (c) 2024 IEEE Division IX, director Prof. Aylin Yener, was invited to recognize the GRSS members elevated to IEEE Fellow in 2024.

In her welcome and introduction note, IEEE Geoscience and Remote Sensing Society (GRSS) president, Dr. Mariko Burgin, discussed the nature of the GRSS as a global community (Figure 3). The Society's scope is expansive, encompassing the theoretical, conceptual, and technical aspects of the remote sensing of Earth, oceans, atmosphere, and space as well as the processing, interpretation, and dissemination of this information. GRSS has a total membership of 6,200 individuals from 144 countries worldwide. Dr. Burgin then proceeded to enumerate the benefits of attaining senior membership in the GRSS, after which she provided a concise overview of the Society's activities. The GRSS sponsors four peer-reviewed journals (*IEEE Transactions on Geoscience and IEEE Remote Sensing*, *IEEE Geoscience and Remote Sensing Letters*, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, and *IEEE Geoscience and Remote Sensing Magazine*), cosponsors *The Journal on Miniaturization for Air and Space Systems* and *IEEE Transactions on Radar Systems*, leads a GRSS section in *IEEE Access*, and also distributes a GRSS eNewsletter.

A number of technical activities are organized by GRSS Technical Committees. GRSS provides members with an opportunity to engage in professional networking at a number of international conferences, symposia, and workshops. GRSS facilitates professional activities through its Distinguished Lecturers, Young Professionals, and Inspire, Develop, Empower, Advance (IDEA) programs, among others. GRSS offers its members the chance to develop their knowledge and skills through a variety of learning opportunities. In conclusion, GRSS is a community of communities, the professional home of its members, which has the objective of making a difference in the world through remote sensing.

MAJOR AWARDS CEREMONY

Following the opening remarks for IGARSS 2024, Prof. Alberto Moreira, chair of the major awards of the GRSS, opened the awards ceremony. As in the past, the opening and plenary session of IGARSS 2024 was chosen to recognize the GRSS members elevated to the grade of IEEE Fellow and the four major awards of the GRSS. For the IEEE Fellows, IEEE Division IX Director Prof. Aylin Yener (Figure 3) and 2024 IEEE GRSS President Dr. Mariko Burgin presented the recognitions and congratulated the awardees.

IEEE FELLOW AWARDS

The grade of IEEE Fellow is reserved for individuals who have demonstrated an exceptional level of distinction in their field. It is bestowed by invitation of the IEEE Board of Directors upon an individual with outstanding and extraordinary qualifications and experience in IEEE-designated fields. In accordance with the bylaws of IEEE, the number of members who may be elevated to Fellow grade in any given year is limited to one per mil of the total Institute membership, excluding students and affiliates. To qualify, the candidate must be a Senior Member and be nominated by an individual with a detailed knowledge of the candidate's achievements. A minimum of five endorsements from IEEE Fellows is required as well as input from an IEEE Society that is best suited to evaluate the candidate's qualifications. The GRSS Fellow Committee is responsible for conducting the initial assessment of the nominees. Subsequently, the IEEE Fellow Committee, comprising approximately 50 IEEE Fellows, carefully evaluates all nominations, considering the Society rankings, and presents a list of recommended candidates to the IEEE Board of Directors for the final decision.

On average, the GRSS performs above the mean with respect to the number of elected Fellows each year. In the current year, five members of the GRSS have been elevated to the rank of IEEE Fellow.

The first Fellow recognition went to Prof. Devis Tuia with the citation (Figure 4) "For contributions to artificial intelligence and machine learning applied to Earth observation data."

Prof. Devis Tuia obtained his doctoral degree from the University of Lausanne in Switzerland, where he conducted research on kernel methods for hyperspectral satellite data. He subsequently undertook postdoctoral research in various locations, including the University of Valencia, the University of Colorado Boulder, and finally, the École Polytechnique Fédérale de Lausanne (EPFL).

FIGURE 4. IEEE Fellow Award recipient Prof. Devis Tuia (middle) with Dr. Mariko Burgin (right) and Prof. Aylin Yener (left).

In 2014, he was appointed as an assistant professor at the University of Zurich. The following year, he moved to Wageningen University in The Netherlands, where he served as the chair of the Geo-Information Science and Remote Sensing Laboratory. Since September 2020, he has been back at EPFL, where he is the director of the Environmental Computational Science and Earth Observation Laboratory (ECEO) in Sion. His research employs machine learning and computer vision to study Earth from an aerial perspective.

The second Fellow recognition went to Prof. Vito Pascazio with the citation (Figure 5) "For contributions to statistical signal processing in imaging radars."

FIGURE 5. IEEE Fellow Award recipient Prof. Vito Pascazio (middle) with Dr. Mariko Burgin (right) and Prof. Aylin Yener (left).

FIGURE 6. IEEE Fellow Award recipient Dr. Pau Prats-Iraola (middle) with Dr. Mariko Burgin (right) and Prof. Aylin Yener (left).

Vito Pascazio graduated (cum laude) in 1986 from the University of Bari, Italy, and he received in 1990 a Ph.D. degree in electronic engineering and computer science from the University of Napoli "Federico II," Italy. In 1990, he was a researcher at the Research Institute on Electromagnetics and Electronic Devices (IRECE) of the Italian National Council of Research (CNR) in Naples, Italy. He subsequently joined the Università di Napoli "Parthenope" in Naples, Italy, where he is currently a full professor. His primary research interests are in the fields of synthetic aperture radar (SAR) image processing, SAR interferometry, SAR tomography, ground-based SAR, microwave tomographic image reconstruction, ground-penetrating radars, through-the-wall imaging, and, more recently, the application of deep learning techniques to radar and remote sensing imaging. He has been selected to serve as the general chair for two recent editions of the International Geoscience and Remote Sensing Symposium (IGARSS). The first was held in Milan in 2015, and the second took place in Athens in 2024.

The third Fellow recognition was received by Dr. Pau Prats-Iraola with the citation (Figure 6) "for contributions to the multimodal processing of airborne and spaceborne synthetic aperture radar data."

Dr. Pau Prats-Iraola received the Ingeniero degree and the Ph.D. degree, both in telecommunications engineering, from the Universitat Politècnica de Catalunya (UPC) in Barcelona, Spain, in 2001 and 2006, respectively. At UPC, he developed several sophisticated techniques for airborne SAR data processing, including differential SAR interferometry. In 2006, he joined the Microwaves and Radar Institute, German Aerospace Center (DLR). Since 2009, he has served as the head of the Multimodal Algorithms Group. He is the initiator and principal developer of the TanDEM-X Interferometric (TAXI) processor, which has been employed to demonstrate innovative SAR acquisition modes and techniques. He has made significant contributions to the field of SAR processing and interferometry in the context of numerous spaceborne SAR missions, including TerraSAR-X/TanDEM-X, Sentinel-1, Tandem-L, SAOCOM-CS, BIOMASS, and ROSE-L,

being responsible for the ground processor prototype development of BIOMASS and ROSE-L. He is currently a member of the Mission Advisory Group and scientific team for the European Space Agency's (ESA's) Harmony mission. His research interests include high-resolution airborne/spaceborne monostatic/bistatic SAR processing, SAR interferometry, advanced interferometric acquisition modes, persistent scatterer interferometry, SAR tomography, and end-to-end SAR simulation. He has coauthored more than 60 peer-reviewed journal articles in these areas.

The fourth Fellow recognition was presented to Manuel Martín-Neira with the citation (Figure 7) "For contributions and leadership in innovative remote sensing techniques."

FIGURE 7. IEEE Fellow Award recipient Manuel Martín-Neira (middle) with Dr. Mariko Burgin (right) and Prof. Aylin Yener (left).

Manuel Martín-Neira received M.S. and Ph.D. degrees in telecommunication engineering in 1986 and 1996, respectively, from the Polytechnic University of Catalonia, Spain. Since 1992, he has been employed by ESA, where he has been responsible for radiometer activities within the Payload, Equipment and Technology Section. In 2010, he assumed the role of remote sensing senior engineer within the Payload Systems Division. He has devised novel concepts for constellations of small satellites for Earth observation. In particular, he holds several patents related to aperture synthesis radiometry, including the use of GNSS signals reflected from the ocean [the passive reflectometry and interferometry system (PARIS) concept] and in frequency distribution. In this context he has been engaged in the PARIS in-orbit demonstration mission, the GEROS-ISS experiment on the International Space Station, the PRETTY GNSS-R CubeSat, and the GNSS-R Spire Global satellites. He is also an instrument engineer on the HydroGNSS project team. In 2001, he assumed the role of instrument principal engineer for ESA's Soil Moisture and Ocean Salinity (SMOS) mission, which he continues to support within the calibration and image processing team. He received the Confirmed Inventor Award from ESA in 2002, the Salva i Campillo Award and the Premio Jaime I in 2010 from Spain, and a Certificate of Recognition for the SMOS mission from IEEE in 2011. He is a member of the French Academie des Technologies.

The fifth Fellow recognition was presented to Dr. Shumpei Kameyama with the citation (Figure 8) "For leadership in fiber-based lidar technology for environment sensing applications."

Dr. Kameyama could not attend IGARSS in Athens, but he recorded a message that was played back during the awards ceremony. He received his M.E. degree from Keio University in 1995 and his D.E. degree from Chiba University in 2011. Since 1995, he has been employed by Mitsubishi Electric Corporation. In 1999, he commenced his role in the development of laser remote sensing systems at the Information Technology R&D Center. He is currently a general manager of the Sensing Information Processing Department at the Advanced Technology Research & Development Center of Mitsubishi Electric. His research has encompassed coherent Doppler lidar, differential absorption lidar, and range imaging laser sensors. He is a Member of IEEE, Optica, the Japan Society of Applied Physics, and the Laser Radar Society of Japan. He received the Technology Award from the Japan Society for Aeronautical and Space Science, the Technology Management Innovation

FIGURE 8. IEEE Fellow Dr. Shumpei Kameyama sent a video message to the IGARSS participants that was played back during the awards ceremony in the plenary session.

FIGURE 9. 2024 IEEE Fellow recipients (second from left to the right) Manuel Martín-Neira, Dr. Pau Prats-Iraola, Prof. Devis Tuia, and Prof. Vito Pascazio with Dr. Mariko Burgin (right) and Prof. Aylin Yener (left).

Award from the Japan Techno-Economics Society, and the Significant Contributor Award from RTCA.

Before concluding the IEEE Fellow recognitions, a group photo was taken with the four IEEE Fellows present at IGARSS (Figure 9).

FIGURE 10. 2024 IEEE GRSS Outstanding Service Award recipient Prof. Werner Wiesbeck sent a video message to the IGARSS participants that was played back during the awards ceremony in the plenary session.

GRSS MAJOR AWARDS AT THE AWARDS CEREMONY

The call for nominations for the IEEE GRSS Education Award, the IEEE GRSS Outstanding Service Award, the IEEE GRSS Industrial Leader Award, and the IEEE GRSS Fawwaz Ulaby Distinguished Achievement Award was posted in 2023 on the GRSS website and announced in the GRSS eNewsletter, social media, and via e-mail distribution to all members of the GRSS. The nomination forms were available at http://www.grss-ieee.org/about/awards/. Any member, with the exception of GRSS Administrative Committee (AdCom) members, may submit nominations to recognize deserving individuals. Typically, the lists of nominees comprise three to five names each year. An independent Major Awards Evaluation Committee makes the selection, which is approved by the IEEE GRSS president and finally endorsed by the AdCom. The following major awards were presented at IGARSS 2024:

- Outstanding Service Award
- Education Award
- Industry Leader Award
- Fawwaz Ulaby Distinguished Achievement Award.

IEEE GRSS OUTSTANDING SERVICE AWARD

The Outstanding Service Award was established to recognize an individual who has performed outstanding services for the benefit and advancement of the GRSS. The award shall be considered annually but will not be presented unless a suitable candidate is identified. The following factors are suggested for consideration: leadership innovation, activity, service, duration, breadth of participation, and cooperation. GRSS membership is required. The awardee receives a certificate and a plaque.

The 2024 IEEE GRSS Outstanding Service Award was presented to Prof. Werner Wiesbeck with the citation (Figure 10) "In recognition of his outstanding service for the benefit and advancement of the GRSS."

Prof. Werner Wiesbeck could not attend IGARSS in Athens, but he recorded a message that was played back during the awards ceremony. He received the Dipl.-Ing. (M.S.E.E.) and the Dr.-Ing. (Ph.D.E.E.) degrees from the Technical University Munich in 1969 and 1972, respectively. From 1972 to 1983, he held a position with product responsibility for millimeter-wave radars, receivers, direction finders, and electronic warfare systems in industry. From 1983 to 2007, he served as the director of the Institut für Höchstfrequenztechnik und Elektronik (IHE) at the University of Karlsruhe (TH). He is currently a distinguished senior fellow at

the Karlsruhe Institute of Technology (KIT). His research interests encompass a range of topics, including antennas, wave propagation, radar, remote sensing, wireless communication, and ultrawideband technology. He has authored and coauthored numerous books and more than 900 publications, holds more than 60 patents, and served as a supervisor for more than 90 doctoral candidates.

He served as chair of the GRSS Awards Committee from 1993 to 2017, as vice president of the GRSS from 1998 to 1999, and as president of the GRSS from 2000 to 2001. He has been the recipient of numerous awards, including the IEEE Millennium Award, the IEEE GRSS Distinguished Achievement Award, three honorary doctorates (University of Budapest, Hungary, University of Duisburg, Germany, and Technische Universität Ilmenau, Germany), and the IEEE Electromagnetics Award in 2008. He is a Life Fellow of IEEE, an Honorary Life Member of the GRSS, a member of the Heidelberger Akademie der Wissenschaften, and a member of the German Academy of Engineering (acatech).

IEEE GRSS EDUCATION AWARD

The Education Award was established to recognize an individual who has made significant educational contributions to the field of GRSS. In selecting the individual, the factors considered are the significance of the educational contribution in terms of innovation and the extent of its overall impact. The contribution can be at any level, including K-12, undergraduate and graduate teaching, professional development, and public outreach. It can also be in any form (e.g., textbooks, curriculum development, and educational program initiatives). GRSS membership or affiliation is required. The awardee receives a certificate and a plaque.

The 2024 IEEE GRSS Education Award was presented to Prof. Franz Meyer with the citation (Figure 11) "In recognition of his significant educational contributions to Geoscience and Remote Sensing."

Prof. Meyer received a Diploma degree in geodetic engineering and a doctor of engineering degree from the Technische Universität München, Munich, Germany, in 2000 and 2004, respectively. From 2003 to 2007, he was employed by the German Aerospace Center (DLR), where he contributed to the TerraSAR-X mission. Since March 2007, he has been employed by the Geophysical Institute, University of Alaska Fairbanks, Fairbanks, AK, USA, where he currently holds the position of professor of radar remote sensing. Since 2014, he has also served as the chief scientist of the NASA Alaska Facility (ASF) Distribute Active Archive Center (DAAC), where he oversees interactions with the expanding SAR user community. Prof. Meyer's research interests include the formation of SAR images, the correction of ionospheric and atmospheric data, interferometric SAR, and the application of SAR to geophysical and meteorological hazards. He has been extensively involved in the advancement of SAR capabilities through the creation of enhanced products and services as well as through the provision of webinars, short courses, online certificate programs, and full-semester classes to a diverse range of scientific and applied communities. Prof. Meyer has published more than 140 articles, five of which have been recognized with best paper awards. He was the recipient of the GRSS GOLD Early Career Award in 2011, the Terris and Katrina Moore Prize in 2014, and a NASA/USAID SERVIR Collaboration Award in 2019.

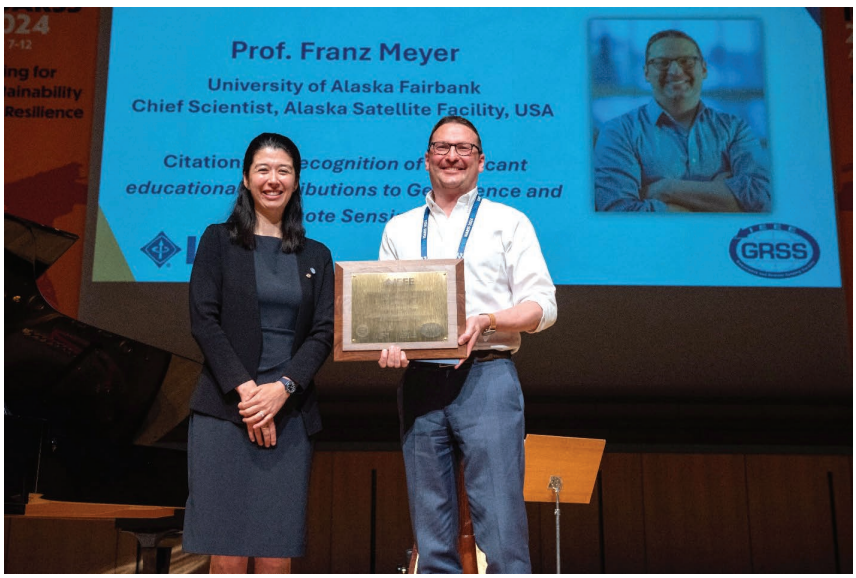


FIGURE 11. 2024 IEEE GRSS Education Award recipient Prof. Franz Meyer (right) and Dr. Mariko Burgin (left).

IEEE GRSS FAWWAZ ULABY DISTINGUISHED ACHIEVEMENT AWARD

The Fawwaz Ulaby Distinguished Achievement Award was established to recognize an individual who has made significant technical contributions, within the scope of GRSS, usually over a sustained period of time. In selecting the individual, the factors considered are quality, significance, and impact of the contributions; quantity of the contributions; duration of significant activity; papers published in archival journals; papers presented at conferences and symposia; patents granted; and advancement of the profession. IEEE membership is preferred but not required. The award is considered annually and presented only if a suitable candidate is identified. The awardee receives a plaque and a certificate.

The 2024 IEEE GRSS Fawwaz Ulaby Distinguished Achievement Award was presented to Dr. Simonetta Paloscia with the citation (Figure 12) "For outstanding contributions to active and passive microwave remote sensing of land processes."

Dr. Paloscia has been with the National Research Council (CNR) since 1984. Her research activities have focused

on agrometeorology and microwave remote sensing studies of natural surfaces, including microwave emission and scattering in soils (both bare and snow covered) and in vegetation. In 2001, she was appointed senior scientist at the Institute of Applied Physics (IFAC) of CNR, and in 2010, she was promoted to the research director. Since 2004, she has been the scientific leader of the Microwave Remote Sensing Group as well as the principal investigator for the research line "Microwave Remote Sensing of Natural Surfaces" within the CNR Earth Observation Project. In 2010, she was appointed head of research at the CNR. She served as principal investigator and co-investigator on numerous national and international research projects, funded by agencies including the Italian Space Agency, the European Commission, ESA, and the Japan Aerospace Exploration Agency. She is a member of the SMAP JPL/NASA science team.

She is a member of the permanent Steering Committee of the MicroRad Specialist Meeting and served as the general cochair of the MicroRad 1999 and 2008 meetings and the URSI-F 2010 meeting, which were held in Florence. She serves as an associate editor for the *International Journal of Remote Sensing*, the *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, and the *European Journal of Remote Sensing*. She has been a Fellow of IEEE since 2012, a Fellow of the URSI, and a Fellow of the Electromagnetics Academy of Cambridge, Cambridge, MA, USA. She has authored or coauthored more than 100 articles published in international journals and books and more than 200 papers published in the proceedings of international meetings.

IEEE GRSS INDUSTRY LEADER AWARD

The GRSS established the Industry Leader Award to recognize an individual who has made significant contributions to the industrial and/or commercial remote sensing discipline over a sustained period of time. The evaluation awards committee may give preference to an individual who 1) is a GRSS member, 2) has made significant contributions to remote sensing system engineering, science, and/or technology, 3) has made significant contributions to the dissemination and commercialization of remote sensing products, and 4) has demonstrated leadership in advancing remote sensing science and technology. Criteria for selection are the significance, quality, and impact of activities, contributions, and achievements. The award shall be considered annually and presented if a distinguished candidate is identified.

The 2024 IEEE GRSS Industry Leader Award was presented to Massimo Comparini with the citation (Figure 13) "For exceptional leadership in the Earth observation and geospatial industry."

Massimo Comparini is the deputy CEO and senior executive vice president of Observation, Exploration and Navigation at Thales Alenia Space as well as the CEO of Thales Alenia Space Italy. He has a long and proven track record in the space industry, from technology to services, and in the Earth observation domain. In 2016, he was appointed as the CEO of e-Geos, a joint venture between Telespazio (80%) and the Italian Space Agency (20%). Concurrently, he assumed the role of the director of the Geo-Information Line of Business at Telespazio. He was also the chair of GAF AG and EarthLab Luxembourg. In 2013, Comparini was appointed chief technology officer of Telespazio,

FIGURE 12. 2024 IEEE GRSS Fawwaz Ulaby Distinguished Achievement Award recipient Dr. Simonetta Paloscia (right) and Dr. Mariko Burgin (left).

FIGURE 13. 2024 IEEE GRSS Industry Leader Award recipient Massimo Comparini (right) and Dr. Mariko Burgin (left).

a joint venture between Leonardo (67%) and Thales (33%). He commenced his career in 1983 at Selenia Spazio (subsequently renamed Alenia Spazio), occupying a series of managerial roles until he was appointed chief technology officer. Comparini holds a master's degree in electrical engineering, remote sensing, and radar systems from the University of Rome La Sapienza and a degree in strategy from the Graduate School of Business at Stanford University. He serves on the technical-scientific advisory board of the Research, Development and Higher Studies Center in Sardinia, Italy, known as *CSR4*.

Before concluding the awards ceremony, a group photo was taken (Figure 14). Prof. Alberto Moreira also recognized Prof. Kamal Sarabandi, past president of the GRSS, as the recipient of the 2024 IEEE Electromagnetics Award with the citation "for contributions to electromagnetic sensing technology and metamaterials for antenna miniaturization." This prestigious technical field award of IEEE was presented to Prof. Kamal Sarabandi by 2024 IEEE President Tom Coughlin during the IEEE International Symposium on Antennas and Propagation, held in Florence, Italy, on 14–19 July 2024.

KEYNOTE SPEECHES AT THE PLENARY SESSION

After the awards ceremony, the plenary session started with the presentations by three distinguished plenary speakers.

1) Dr. Rune Floberghagen, head of the Climate Action, Sustainability and Science Department of the Earth Observation (EO) Program Directorate of ESA, presented "The ESA Earth Observation Program."
2) Prof. Stamatios Krimigis, president of the Academy of Athens, presented "Flying an Instrument to Every Planet, Ad Hoc: How to Get Lucky."
3) Prof. Roderick Beaton, Emeritus Koraes Professor of Modern Greek and Byzantine History, Language & Literature Department of Classics, King's College London, presented "The Greeks and the Cosmos—A Tale of Two-and-a-Half Millennia."

The first keynote speech was given by Rune Floberghagen, head of the Climate Action, Sustainability and Science Department of ESA's EO Program Directorate, who introduced ESA's Observation Program, a comprehensive effort to monitor our planet. ESA prides itself on delivering reliable data through well-established missions [Figure 15(a)]. This data collection effort has reached a massive scale, with hundreds of petabytes of information used to track various aspects of Earth. The speaker highlighted several key points about ESA and its EO initiatives. ESA is an intergovernmental organization with about 6,000 employees and 22 member states, with Slovenia in the process of joining. The agency has a budget of nearly €8 billion, with almost one-third dedicated to Earth observation. Floberghagen emphasized that ESA's EO Program is closely aligned with international agreements and initiatives, such as the 17 Sustainable Development Goals, the Paris Agreement, and the European Green Deal. The ESA is also involved in efforts related to land degradation, urban quality, biodiversity, and ecosystem preservation.

ESA's EO activities are comprehensive, covering future technologies, mission development, data quality assessment, and data distribution. Recognizing the need to go beyond observation, Floberghagen noted that ESA is shifting toward an "Earth Action" approach, focusing on translating Earth observation data into actionable information for society. This initiative focuses on transforming collected data into actionable information that can be used to address real-world challenges. ESA is not going at it alone. The agency is collaborating with partners like the European Union (EU), ECMWF, EUMETSAT, and the European Center for Medium-Range Weather Forecasts on initiatives such as Destination Earth (DestinE). This digital platform integrates various Earth observation data and models, offering functionalities like predictive capabilities. ESA is also

FIGURE 14. A group photo at the end of the major awards ceremony. (From left): Dr. Mariko Burgin, IEEE GRSS president, 2024 IEEE GRSS Education Award recipient Prof. Franz Meyer, 2024 IEEE GRSS Fawwaz Ulaby Distinguished Achievement Award recipient Dr. Simonetta Paloscia, 2024 IEEE GRSS Industry Leader Award recipient Massimo Comparini, and GRSS major awards chair, Prof. Alberto Moreira.

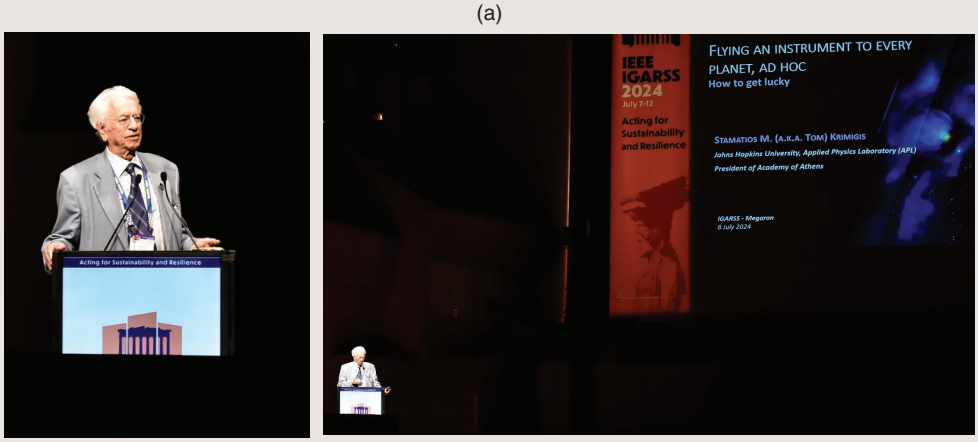
supporting innovation and industrial development in the space sector, connecting new companies with investors and market players.

Innovation is another pillar of ESA's program. The speaker highlighted ESA's fleet of satellites, including Earth Explorer missions, Copernicus Sentinel satellites, and meteorological missions. He discussed ongoing and future Earth Explorer missions, emphasizing their importance in pioneering new science and technical excellence. ESA actively supports new companies and fresh ideas in the space data sector, fostering a dynamic environment. The workhorse of the observation program is the Copernicus satellite, continuously providing a high volume of data. Additionally, ESA invests in Explorer missions, pushing the boundaries of scientific discovery and technological advancement.

The speech concluded with updates on specific missions, including EarthCARE, Biomass, and Harmony, as well as information about the Copernicus program's data dissemination and user base. The presentation highlighted the success of EarthCARE, a collaborative mission with the United States and Japan that studies Earth's energy balance, which was launched on 29 May 2024. Looking ahead, ESA is preparing for the launch of *Sentinel-1C* with the return to flight of the *Vega-C*, scheduled for late 2024. ESA is also finalizing a new Earth observation and science strategy. This strategy places user needs and societal benefits at the forefront, aiming to publish it soon after approval by member states. In conclusion, ESA's EO Program demonstrates its commitment to leveraging Earth observation data to tackle global challenges and pave the way for a sustainable future.

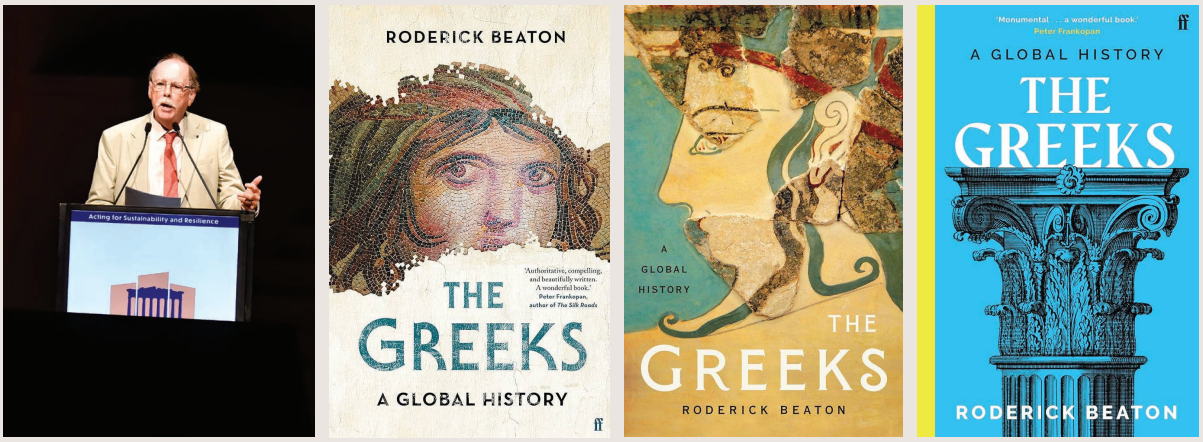
The second keynote speech was presented by Prof. Stamatios Krimigis, a renowned Greek astrophysicist and academic, president of the Academy of Athens, who has made significant contributions to space exploration throughout his distinguished career [Figure 15(b)]. He is currently the director of the Space Physics Department at the Applied Physics Lab of Johns Hopkins University. Prof. Krimigis began by reflecting on his extensive experience in space missions, emphasizing the historical context of space exploration, starting with the launch of

(a)



(b)

FIGURE 15. (a) Plenary Session speech "The ESA Earth Observation Program" by Dr. Rune Floberghagen, head of the Climate Action, Sustainability and Science Department of the EO Program Directorate of ESA. (b) Plenary session speech on "Flying an instrument to every planet, ad hoc: How to get lucky" by Prof. Stamatios Krimigis, president of the Academy of Athens and director of the Space Physics Department at the Applied Physics Lab of Johns Hopkins University, USA.



(a) (b) (c) (d)

FIGURE 16. (a) Plenary session speech, "The Greeks and the Cosmos—A Tale of Two-and-a-Half Millennia," by Prof. Roderick Beaton, emeritus professor of Modern Greek and Byzantine History, Language & Literature, King's College London, U.K. (b)–(d) Three books written by Prof. Beaton are depicted.

Sputnik and the subsequent discovery of radiation by the *Explorer 1* satellite. He discussed his involvement in various missions, including *Mariner 4*, which was the first to successfully reach Mars in 1964, and highlighted the importance of understanding radiation across different planets in the solar system. He elaborated on the Voyager missions, launched in 1977, which utilized gravity assist to explore the outer planets. Prof. Krimigis explained the challenges and successes of these missions, including the determination of the heliosphere's boundary and the unexpected findings regarding the Martian atmosphere and radiation levels. The talk also covered the Cassini mission to Saturn, where Prof. Krimigis and his team developed instruments to study plasma dynamics and magnetic fields. He showcased the innovative techniques used to acquire data and images of Saturn's environment, illustrating the advancements in space science.

Prof. Krimigis concluded by discussing the New Horizons mission to Pluto, which provided groundbreaking images and data, marking a significant achievement in the exploration of the solar system. He emphasized the collaborative nature of these missions and the ongoing quest for knowledge about planetary systems while also reflecting on the evolving understanding of magnetic fields and cosmic interactions. Throughout the speech, Prof. Krimigis conveyed a sense of wonder and excitement about the future of space exploration and the importance of continued scientific inquiry.

The third keynote speaker of the plenary session was Prof. Roderick Beaton, emeritus professor of Modern Greek and Byzantine History, Language & Literature Department of Classics, King's College London (Figure 16). Prof. Beaton drew the audience's attention to the surprising origins of modern science—ancient Greece. He highlighted the curiosity of the ancient Greeks, who, unlike modern scientists with their advanced technology, turned to the heavens to gain insight into humanity itself. Their guiding principle, "know thyself," underscored this introspective approach

FIGURE 17. Members of the IGARSS 2024 organizing and supporting team. From left to the right, top to bottom: Haris Kontoes and Vito Pascazio (IGARSS cochairs), Stamatios Krimigis, Christos Zerefos, Upendra Singh, Aspasia Trevlaki, Iphigenia Keramitsoglou, Giampaolo Ferraioli, Konstantinos Karantzalos, George Choumos, Eleni Athanasopoulou, Alexia Tsouni, Gerasopoulos Evangelos, Vassilis Amiridis, Nektarios Chrysoulakis, Panagiotis Tsakalides, Maria Vakalopoulou, Vassilia Karathanassi, Nikolaos Stathopoulos, Elpidoforos Anastasiou, Diofantos Hadjimitsis, Ioannis Papoutsis, Hesham El-Askary, and Barbara Ryan.

TABLE 1. STATISTICS FOR THE 2024 IGARSS SYMPOSIUM IN ATHENS.

PRESENTATIONS AND ATTENDANCE AT IGARSS 2024							
TOTAL PAPERS SUBMITTED	TOTAL PAPERS ACCEPTED	ORAL PAPERS	POSTER PAPERS	ORAL SESSIONS	POSTER SESSIONS	TOTAL REGISTERED	STUDENTS
3,847	2,978	1,725	1,251	252	160	3,146	1,205

to science. He then traced the lineage of the first European scientists back to Thales, Anaximander, and Anaximenes, three philosophers from Miletus who called their study of nature "physis," the root of our modern word "physics." These thinkers relied on logic and evidence, laying the foundation for a scientific method.

Heraclitus, another Greek philosopher, emerged as a key figure for his concept of the cosmos. He used this term to describe the universe, which he believed functioned according to a set of natural laws rather than divine intervention. While Heraclitus may not have envisioned the Big Bang, his ideas paved the way for the concept of a measurable and orderly universe.

Prof. Beaton further explained how Greek science transcended geographical boundaries. Alexander the Great's conquests disseminated the Greek language and scientific ideas throughout the Middle East. Aristotle, Alexander's tutor, established a school in Athens where he may have even conducted experiments, potentially influencing the development of the experimental method. The Library of Alexandria became a hub for scientific exploration, with Eratosthenes achieving fame for calculating Earth's circumference.

The Roman conquest did not diminish the influence of Greek science. Ptolemy, a prominent astronomer, made significant contributions, though he mistakenly placed Earth at the center of the universe. Aristarchus of Samos, however, correctly identified the sun as the center, but his idea remained obscure for centuries.

The rediscovery of Greek scientific thought during the Renaissance fueled the fire of the Scientific Revolution. Prof. Beaton then shifted his focus to Greece's modern connection to science. The establishment of the National Observatory in Athens in 1842 stood as a testament to the nation's commitment to scientific progress. This very observatory carried on the torch lit by the ancient Greeks, striving to understand our place in the universe through the exploration of the heavens. Prof. Beaton concluded by expressing his gratitude to the audience and emphasizing the lasting legacy of Greek science on our current understanding of the world and humanity's place in it.

FIGURE 18. The participants of the GRSS AdCom meeting in Athens prior to the IGARSS symposium.

INTRODUCTION OF THE SYMPOSIUM AND CLOSING OF THE PLENARY SESSION

At the end of the plenary session, Prof. Vito Pascazio presented an overview of the IGARSS 2024 conference, providing all participants with relevant information. The conference was attended by approximately 3,146 participants from 69 countries. A total of 3,847 papers were submitted for review, of which 2,978 were accepted for presentation. A total of 252 oral sessions and 160 poster sessions were conducted. Moreover, six technical committee meetings, one student paper competition, and one industry workshop were conducted. A total of 23 Technology, Industry, and Education (TIE) Forum events were held, addressing the domains of remote sensing and geoscience. Additionally, participants had the opportunity to participate in a variety of social activities. The symposium cochairs and the entire organizing team (Figure 17) have worked very hard over the past few years to make IGARSS 2024 a highly rewarding and enjoyable symposium and are to be congratulated for the great success achieved. See Table 1 for detailed data about the presentations and attendance at IGARSS 2024.

FUTURE IGARSS SYMPOSIA

The GRSS AdCom met on 4–6 July 2024, just prior to IGARSS (Figure 18). In this meeting, all the Society's operational and technical issues were discussed, and major decisions were made. The follow road map for the future IGARSS conferences was confirmed:

- IGARSS 2025, Brisbane, Australia, 3–8 August 2025
- IGARSS 2026, Washington DC, USA, 9–14 August 2026
- IGARSS 2027, Reykjavik, Iceland.

The final selection process for the site of IGARSS 2028 took place in an executive session of the GRSS AdCom, and more news will be announced soon. You are cordially invited to participate in future IGARSS symposia, and we look forward to meeting you all at IGARSS 2025 in Brisbane, Australia, 3–8 August 2025 (for more information, please refer to https://www.2025.ieeeigarss.org/).

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FRANCESCA BOVOLO, JAYA SREEVALSAN-NAIR, ANTONIO PLAZA, HANWEN YU, AND ALBERTO MOREIRA

GRSS Awards Presented at the IGARSS 2024 Banquet

The 2024 IEEE Geoscience and Remote Sensing Society's (GRSS's) publications, symposium, special awards, and best reviewers were presented at the IEEE International Geoscience and Remote Sensing Symposium (IGARSS) award banquet held at the Zappeion Megaron, Athens, Greece, on 10 July 2024 (see Figure 1). The Zappeion Megaron historic venue was built in the late 19th century amid the lush greenery of the National Gardens. It stands as a testament to Greece's rich cultural heritage and architectural splendor, with its neoclassical facade adorned with intricate details and majestic columns. Originally constructed as part of the revival of Athens for the first modern Olympic Games, in 1896, the Zappeion Megaron has since served as a venue for significant events.

The award banquet is held to recognize the excellence of GRSS members who distinguished themselves in various aspects of their scientific career. The award ceremony was led by Prof. Lorenzo Bruzzone (University of Trento).

GRSS President Dr. Mariko Burgin, GRSS Special Awards Chair Dr. Jaya Sreevalsan-Nair, GRSS Publications Awards Chair Prof. Antonio Plaza (represented by Dr. Hanwen Yu), and GRSS Symposium Awards Chair Dr. Francesca Bovolo presented the following awards:

- IEEE GRSS Chapter Excellence Award
- IEEE GRSS Student Branch Chapter Excellence Award

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