



And the 2024 Krumbein Medalist of the IAMG is...

Eric Grunsky¹

© International Association for Mathematical Geosciences 2024



Prof. Jennifer McKinley

The William Christian Krumbein Medal is the highest award given by the Association, and the recipient shall be so honored and acknowledged. The Krumbein Medal is awarded to senior scientists for career achievement, which includes (i) distinction in application of mathematics or informatics in the earth sciences, (ii) service to the

✉ Eric Grunsky
egrunsky@gmail.com

¹ IAMG Outreach Committee, Department of Earth & Environmental Sciences,
University of Waterloo, Ottawa, ON, Canada

IAMG, and (iii) support to professions involved in the earth sciences. There is no stipulated preference for fields of application within the earth sciences. Professor Jennifer McKinley, as a senior research scientist along with her service and commitment to the IAMG, meets above and beyond all of the requirements for the Krumbein medal.

Jennifer's interest in geology began at an early age and is rooted in the outdoor activities of family life in Northern Ireland. As she recalls, "My interest in geology grew originally from many family adventures to the mountains and coastlines around the island of Ireland. Guided by my Dad—and inspired by the rocks and fossils we found—I was curious to learn more. I owe my subsequent career in geology to an enthusiastic secondary School teacher who decided to run an extra course in Geology for three very keen students. Captivated by my new knowledge I continued my studies in Geology and Geography at Queen's University Belfast (QUB)."

Professor McKinley's early career began with her first role as a secondary level teacher in geology and geography. This was followed by a period as an assistant lecturer with the Open University, developed further through postgraduate studies before taking up an academic lectureship position in Queen's University Belfast, UK, in 2004, becoming a full professor in 2019. Throughout this busy time, she was also a parent of four young children.

Maintaining a healthy work–life balance has played a critical part in Jennifer's academic development, which helped shape her enduring passion and commitment to gender equality, diversity and inclusion. Throughout her career, she has been actively involved in supporting and shaping the Athena SWAN (Scientific Women's Academic Network) Charter at university level across the globe. An awareness of the importance of embracing diversity was an important aspect of her role as the IAMG President from 2016 to 2020.

Professor McKinley's research covers a broad area: the application of spatial analysis techniques, including geostatistics, compositional data analysis and geographical information (GI) science in the natural environment and to nature-based solutions in the urban environment. The scope and application of her geospatial research is diverse, covering soil geochemistry, environmental and criminal forensics, natural stone heritage weathering and conservation, human health, ground instability, renewable energy, airborne geophysics and peatland conservation. These areas of applied research emphasize the real-world relevance and impact of research in addressing the United Nations Sustainable Development Goals (SDGs).

As a chartered geologist, Jennifer has maintained a diverse connection to the geoscience community at large from which she has developed creative and collaborative relationships. This has been illustrated through her involvement with several professional bodies including the Geological Society of London and the Royal Irish Academy Geoscience and Geographical Sciences committees. Additionally, Professor McKinley was Communications Officer (2011–2020) for the IUGS-IFG (International Union of Geosciences Initiative on Forensic Geology), an international network that increases awareness and provides training in the use of GI science and geoinformatics in forensic geoscience. This enabled Professor McKinley to assist in delivering training workshops in the UK, Europe, Australia, Russia, Brazil, Argentina and India.

Professor McKinley's service and support of the IAMG includes the following:

- Member and Chair of the Lectures Committee 2008–2016
- IAMG Executive Vice President (2012–2016)
- President (2016–2020)
- Past President (2020–2024)
- Founding partner representing IAMG of the global science program, Deep-time Digital Earth (DDE) initiative of the International Union of Geosciences (IUGS)
- Executive Council Member of IUGS (2020–2024) <https://www.iugs.org/>
- President of Governing Council of the DDE science program <https://www.iugs.org/dde>
- A strong commitment to combating racism in response to the Black Lives Matter movement, through active promotion of diversity, inclusion, fairness, impartiality and democracy.

Jennifer has published in all four IAMG journals: *Mathematical Geosciences*, *Computers & Geosciences*, *Natural Resources Research* and *Applied Computing & Geosciences*. Professor McKinley serves on the editorial board of *Mathematical Geosciences* (MG) and was the lead editor of a MG Special Issue on the Importance of Geostatistics in the Era of Data Science, which contained a collection of articles from *geoENV* 2018 (MG 52, issue 3). She is a co-editor for the IAMG Encyclopedia of *Mathematical Geosciences*. <https://doi.org/10.1007/978-3-030-26050-7>.

Jennifer has supervised 35 PhD students to date, supervised UK postdoctoral fellows and shaped a large interdisciplinary doctoral training program. Additionally, she has worked with several international visiting researchers through a collaborative agreement with the Institute of Geophysical and Geochemical Exploration, UNESCO International Centre on Global-Scale Geochemistry, China.

Collaboration with non-academic partners has enabled the delivery of high research impact. These partners include the Geological Survey of Northern Ireland (GSNI) and the Irish Geological Survey (IGS). This successful and enduring partnership resulted in sustained interdisciplinary research on the links between health and the natural environment, spawning many fruitful collaborations on chronic diseases, including cancer and renal disease, within the UK, Europe and globally.

Professor McKinley's contribution to a range of professional organizations—both nationally and globally—has underscored the benefits of cross border and international collaboration in geoscience research to address growing global environmental and climate issues. Her deep knowledge and experience in scientific research development, education and communication among international, interdisciplinary scientists, industry and governmental bodies underpins a highly personable and high impact approach within the quantitative geoscience community. Without question, Professor McKinley's hallmark collaborative research style and creative, strategic ability to generate new insights from her interdisciplinary work have earned her the respect and affection of many colleagues and make her a worthy recipient of the Krumbein Medal.