Saying Goodbye to Two Great Geoscience Educators

Anne Marie Ryan
Chris King

For an Ocean of Information . . . Push Play
From the Editor: A La Niña Year
By Redina Finch, Western Illinois University, Macomb, IL

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Traveling Workshops Program

ON THE COVER: The ocean is essential to life on Earth. Most of Earth’s water is stored there. Although 40 percent of Earth’s population lives within, or near coastal regions, the ocean impacts people everywhere. Without the ocean, our planet would be uninhabitable. This animation helps to convey the importance of Earth’s oceanic processes as one component of Earth’s interrelated systems.

The video linked to the cover photo uses Earth science data from a variety of sensors on NASA Earth observing satellites to measure oceanography parameters such as ocean currents, ocean winds, sea surface height, and sea surface temperature. These measurements, in combination with atmospheric measurements such as surface air temperature, precipitation and clouds can help scientists understand the ocean’s impact on weather and climate and what this means for life here on Earth.

NASA Earth Observing System Data and Information Systems (EOSDIS) is a distributed system of data centers and science investigator processing systems. EOSDIS processes, archives, and distributes data from Earth observing satellites, field campaigns, airborne sensors, and related programs. These data enable the study of Earth from space to advance scientific understanding. For more information about the data sets used in this resource please visit http://earthdata.nasa.gov.

This video is in the public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11056.
From the Editor: A La Niña Year

Have you ever wondered why winter hangs on so long some years? This is certainly one of those years in the north central part of the US! Farmers are usually in the fields by now in Central Illinois, but today (mid-April) it snowed... again! It snowed just enough to let us know that winter is holding on a little longer this year. The reason winter is holding on longer this year is because this a particularly strong La Niña year.

La Niña is characterized by a cooler than normal equatorial Pacific Ocean. The sea surface temperature map below shows this cooler region very well. The trade winds near the equator blow from east to west, which pushes the ocean water from Ecuador toward Indonesia. Upwelling occurs in the eastern Pacific Ocean near Ecuador, which brings cold, deep ocean water to the surface. During La Niña, trade winds are stronger than normal (much stronger this year) which pushes the cold water toward the west. This region of cold water changes the wind patterns worldwide.

La Niña causes wetter, cooler temperatures in the north-central US and warmer, drier conditions in the southeast and southwest. The northwest tends to get too much rain and earth flows if the previous year’s fire season was bad. There are colder waters off the California coast, which brings in more squid and salmon. If La Niña lasts through summer, then Atlantic and Gulf of Mexico hurricane season can be more severe.

It’s pretty incredible that cooler waters in one part of the ocean will affect air flow globally. It reminds us that everything is connected. Changes brought on by one person or group can propagate and have lasting impacts. That is certainly one of the goals for NAGT. In this issue we celebrate the lives of two geoscientists (Anne Marie Ryan and Chris King) whose changes propagated far and wide and will have lasting impacts. — Redina

Click to see animation of the daily sea surface temperatures (SST) for a week. [Data/image provided by the NOAA/OAR/ESRL PSL, Boulder, Colorado, USA at https://psl.noaa.gov/map/clim/sst.shtml, from their web site at http://psl.noaa.gov/]
Every now and then someone comes along who will be remembered long after they’ve moved on because of the contributions they have made to an entire field. I received two letters remembering the lives of two great geoscience educators who fit this description: Anne Marie Ryan and Chris King.

Anne Marie Ryan recently started as associate editor with *Journal of Geoscience Education (JGE)*, and she has left a mark not just in the geoscience community but for science teaching overall. Our geoscience community has lost an inspirational teacher, supportive mentor, extraordinary colleague, and thoughtful friend. These are the words of Carl-Georg (Charly) Bank, Associate Professor, Department of Earth Sciences, University of Toronto. I would like to thank Charly for sharing his tribute to Ann Marie Ryan with us.

Chris King was an associate editor of *JGE* from 2009 to 2017, so there are probably many NAGT members who worked with him. He was also a visionary when it came to improving geoscience education internationally. I would like to thank Dr. R. Shankar, past chair, IGEO (International Geoscience Education Organisation) for sharing his tribute to Chris King with us.

I met Anne Marie Ryan at a teaching conference in 2007. We were the only geoscientists in a workshop, and immediately following that session I enjoyed the first of many insightful conversations with Anne Marie. Her enthusiasm for teaching, her curiosity for geoscience, her dedication to her students, and her support of colleagues provided helpful insights and thoughtful ideas. At that first meeting we recognized that both of us valued including undergraduates in research; reflecting on this became our first project, and a first presentation and also publication, together. Over the following years our discussions centered on the intersection between geoscience and society, and more specifically geoethics.

Working with Anne Marie was a treat; I could always count on her feedback, her being open to new ideas, and her deep thinking about issues. She was a colleague and became my mentor and friend. I visited her at home in Halifax, she came to see me in Toronto, and we even met at my favourite café in Berlin, Germany (quite fittingly located at Bergmannstrasse, “the miner’s road”).

Anne Marie’s influence went beyond teach-
Chris King, emeritus professor of Earth science education, Keele University, Keele, United Kingdom, passed away on February 17, 2022. I was totally devastated on hearing of this news. May his soul rest in peace. My deep sympathies to Phoebe and family. Chris has left behind not only his beloved wife, Phoebe, and his loving children, Will, Tom, Dave and Pete, but also colleagues and friends around the globe. He was an educationist par excellence, a committed trainer, a visionary, a great institution-builder, and an initiator of novel programs in Earth science education (ESE).

Chris received his geology degree from Bristol University. He completed M. Sc. with distinction in sedimentology at Reading University and received teacher training in science and geology education at Keele University. He was a diamond prospector, geology teacher, and head of Lower School Science and School Development Officer, and a professor of Earth science education at Keele University. He was director, Earth Science Education Unit in Keele.

Her teaching was grounded in research; last year she joined NAGT’s Journal of Geoscience Education as an associate editor. This January Anne Marie was just starting a sabbatical. She was looking forward to thinking more about teaching and work on a book. She was scheduled to give a presentation at my department and we had started discussing ideas for another project that we would start. In her last email to me, two weeks before her passing and while I was still traveling, she listed several ideas for such a project, pointing to Equity, Diversity, and Inclusion or the United Nations Sustainable Development Goals; either would form a link between geoscience and society and continue the theme we had started. “Talk to you soon,” she ended, and how I was looking forward to that conversation! Our geoscience community lost a true champion, inspirational teacher, supportive mentor, extraordinary colleague, and thoughtful friend when she passed away on January 20, 2022, after an emergency surgery.

For more about Anne Marie Ryan’s life and accomplishments, go to this memorial, posted at Dalhousie: https://www.dal.ca/faculty/science/earth-environmental-sciences/in-memoriam--anne-marie-ryan.html.

R. SHANKAR (rshankargeo@gmail.com) is a member of the International Union of Geological Sciences’ Commission on Geoscience Education, Training and Technology Transfer (IUGS-COGE).
My maiden encounter with Chris was during the international conference on Geoscience Education (GeoSciEd) in Hilo, Hawai‘i in 1996 where his wonderful presentation made an impact on me. There, he held discussions with colleagues (me included) at a café that paved the way for starting the International Geoscience Education Organisation (IGEO; www.igeoscied.org) in 2000 of which he was Founding Chair. He served as its Adviser too, later. He was a signatory to the document registering IGEO in India in 2015.

Chris was instrumental in starting the International Union of Geological Sciences’ Commission on Geoscience Education (IUGS-COGE; www.iugscoge.org). Chris was Commissioner for many years and its most recent Chair. He was Chair, Committee on Education, European Geosciences Union (www.egu.eu/education/committee) at the time of his demise. He initiated the Earth Learning Idea program (ELI; www.earthlearningidea.com), along with his colleagues—Peter Kennett and Elizabeth Devon—in 2007 when the International Year of Planet Earth was launched.

Chris had a well thought out plan and strategy to enhance the quality of ESE in schools. He was involved in global and regional surveys to gain insights into the state of Earth science education. From this, he recognised the problems afflicting ESE and devised and implemented programs to solve them:

1) School teachers’ lack formal education/training in imparting ESE: He offered several teacher training workshops, short ones at ESE conferences and full-fledged, one- to four-day ones (e.g., GIFT workshops) where teacher participants carried out experiments, made observations, and understood Earth processes/phenomena. The teachers, in turn, could effectively teach their students. Impressed by his workshops, I invited him and Prof. Nir Orion (Israel) to conduct similar workshops at Mangalore, Bangalore, and Goa (India). Realising the difficulty of training thousands of teachers across the world, he proposed the concept of Field Officers wherein Earth scientists would be trained and be ambassadors of ESE to train school teachers in their respective countries. He created a synergy amongst IGEO, IUGS, COGE, and EGU to fund and implement this ongoing program. Chris firmly believed that well-trained teachers are the backbone of ESE.

2) Lack of proper syllabus in school curriculum and teaching-learning resources: He organised group discussions at IGC’s and GeoSciEd conferences and collaborated with ES educationists to draw up a syllabus and prepare a textbook. The syllabus included aspects of earth science that every child must learn to grow up to be responsible citizens of the world (www.igeoscied.org/activities/international-geoscience-syllabus). He prepared a text-book (titled EXPLORING GEOSCIENCE ACROSS THE WORLD) and revised it based on comments from colleagues that serves as a useful teaching resource (www.igeoscied.org/teaching-resources/geoscience-text-books). One can use it as a template and replace examples and photographs with local ones to produce a country- or region-specific textbook to provide a local flavour.

3) Lack of simple, doable experiments, hands-on training and field learning: Chris and his colleagues started the Earth Learning Idea program (ELI; www.earthlearningidea.com) that publishes on the web simple experiments using inexpensive, locally available materials to demonstrate earth processes and phenomena for the benefit of school students and teachers. ELI activities have been translated to 11 languages and the total downloads as of February 2022 was > 5.7 million. He demonstrated how earth science could be effectively taught in the field setting.

To pass on the good work done by ES educators to, and enthuse, the next generation, he initiated the “My Earth Science Educator Story” series (www.igeoscied.org/activities/my-earth-science-educator-story), where ES educators could share their ES educational experiences during their careers. So far, 71 have shared their experiences.


Chris’ contributions were recognised by many
organisations. He received the "Distinguished Service Award" of the Geological Society of London, the "Halstead Medal" of the Geologists’ Association, and the "Geoethics Medal" of the International Association for Promoting Geoethics.

Above all, Chris was a fine human being. He was warm and gentle, committed and industrious, humorous and jovial, understanding and accommodative. He never hurt anyone with his words or actions. He practised what Basavanna, a 13th century social reformer from southern India, said: Work itself is heaven! That goes beyond the WORK IS WORSHIP tenet.

Very few people reveal their terminally ill diagnosis. Chris’ conviction and openness enabled him to share this as well with colleagues and friends whom he considered as family. Even fewer people have the level of satisfaction that Chris had while looking back in the dusk of their lives. He has helped so many people in the world, and wonderfully, marvelously, and superbly at that. I fondly recall my association with him, which was most memorable.

To me, Chris, who worked at the University of Keele, was the keel of the “Earth Science Education” ship! Chris was not a star, but an ever-shining superstar in the galaxy of Earth science educators. He will always remain a fountain of inspiration and a treasure house of admiration for me and all ES educators across the world.

On January 28, 2022, days before he passed away, he called and spoke to me for 21 minutes. Though his voice was hoarse because of hospitalisation, his mind was calm and thoughts crystal clear. He wished me “Aum” and said, “Goodbye, Shankar.” When it was my turn to reciprocate, it was emotional for me, and I barely managed to say, “Goodbye, My Dear Friend!”

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**Traveling Workshops Program**

The Traveling Workshops Program (TWP) brings national leaders in environmental, sustainability, and geoscience education to your campus, regional, or national event.

**Fall/Winter workshops:**
Apply by June 15, 2022

For more info, visit http://nagt.org/91429
Registration and abstract submissions are open for the eighth annual Earth Educators’ Rendezvous, taking place in the Twin Cities of Minneapolis and St. Paul, Minnesota, from July 11-15, 2022! Register by Tuesday, May 3, for the best rates. NAGT members receive $100 off registration. If you’re not a member, you can join today!

The Rendezvous program features a combination of workshops, contributed talks and posters, round table discussions, plenary sessions, and working groups discussing a rich mix of topics. This year’s Rendezvous provides special opportunities for:

- Interactive multi-day workshops, featuring strategies for supporting all students, education research, curriculum design, and more
- Half-day mini-workshops, featuring a variety of topics, teaching methods, professional development, career resources, and more
- A contributed program to share your work and learn from the community, including oral and poster sessions, teaching demonstrations, and Share-a-thon
- Plenary talks, forums, and roundtable discussions

Check out the Rendezvous website and Participant Info for more details. We hope to see you there!