Bay Area Geophysical Society Seminar Series

Rosemary Knight

July 15th 2020 5 pm

Zoom talk—see below

Title: The Use of Geophysical Methods to Support Groundwater Management in California

Abstract: The passage of the Sustainable Groundwater Management Act (SGMA) by the California Legislature in 2014 has highlighted the need to develop new ways to map and monitor our groundwater systems. Geophysics has a critical role to play. Over the past two years, Knight and colleagues have explored the use of the airborne electromagnetic method (AEM) to support groundwater management. Along the California coast, AEM images have revealed the complexity of the salinity distribution related to saltwater intrusion. In the Central Valley, AEM images have been used to capture the variation in sediment texture and map out the large-scale structure of the groundwater systems. At a smaller scale, a ground-based EM system (tTEM) has been used as a way to assess potential recharge sites, by mapping out permeable pathways. Of specific interest in Knight's research, regardless of the scale, is determining the link between the geophysical properties that are measured, and the material properties that we want; i.e. determining the field-scale rock physics transform.

Speaker Bio: **Rosemary Knight**, the George L. Harrington Professor of Earth Sciences at Stanford University, has worked for more than 30 years on the challenge of using geophysical methods to characterize groundwater systems. Her research ranges from carefully controlled laboratory experiments to large-scale field experiments. In 2008 Knight founded, with Adam Pidlisecky, the Center for Groundwater Evaluation and Management (GEM Center), with the vision of advancing and promoting the use of geophysical methods through the development of partnerships with local water agencies. In 2017 the GEM Center was awarded the Kevin J. Neese Award from the Groundwater Resources Association of California "in recognition for their groundbreaking research and application of geophysics to the evaluation and management of groundwater resources". At Stanford, Knight has taught numerous courses that engage students in service learning by bringing her partnerships into the classroom. She has served as department chair, as Associate Vice-Provost for Graduate Education, on the University Budget Group for 15 years, and was elected chair of the Faculty Senate. Knight has been active within the Society of Exploration Geophysicists (SEG), serving as Second Vice-President, Distinguished Lecturer and last year's Near-Surface-Geophysics Honorary Lecturer; and has been recognized by SEG with awards for research, teaching and service. Within the American Geophysical Union, Knight has served as the founding Chair of the Near-Surface Geophysics Focus Group, and as Associate Editor for Water Resources Research and the Journal of Geophysical Research.

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