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PREFACE

This thematic issue of the *Annals of Glaciology* on five decades of radioglaciology is the result of a solicitation to the glaciological community in 2019. Also, on June 8-12 of that year, the International Glaciological Society (IGS) held a symposium on that theme in Stanford, California. This meeting was the third IGS international symposium on radioglaciology, with the previous symposia held in Lawrence, Kansas in 2013 and Madrid, Spain in 2008. Since that time, dramatic advances have occurred in our understanding or radar sounding and its use in physical glaciology.

Radio-echo sounding is a powerful geophysical technique for directly characterizing the subsurface conditions of terrestrial and planetary ice masses at the local, regional and global scales. As a result, a wide array of orbital, airborne, towed and in situ instruments, platforms and data analysis approaches for radar sounding have been developed, applied or proposed. Terrestrially, airborne radar-sounding data have been used in physical glaciology to observe ice thickness, basal topography and englacial layers for more than five decades. More recently, radar-sounding data have also been exploited to estimate the extent and configuration of subglacial water, the ice-sheet surface, the geometry of subglacial bedforms, the spatial variation of basal melt, englacial temperature, and the transition between frozen and thawed bed. Planetary radar sounders have been used or are planned to observe the subsurface and near-surface conditions of Mars, Earth's Moon, comets and the icy moons of Jupiter. These instruments provide critical subsurface context for surface-sensing, particle, and potential-field instruments in planetary exploration payloads. This issue highlights advances in radar-sounding systems, mission concepts, signal processing, data analysis, modeling and scientific interpretation.

The Annals of Glaciology is a peer-reviewed, thematic journal published by Cambridge University Press on behalf of the International Glaciological Society. We thank the ten Scientific Editors, listed above, who applied their broad range of expertise to assessing the articles of this volume and IGS Chief Editor, Hester Jiskoot, for handling some of the articles as Associate Chief Editor. We are also grateful to the reviewers of these articles who worked to evaluate and improve manuscripts with constructive criticism. The symposium was sponsored, in part, by the Stanford School of Earth, Energy, and Environmental Sciences, the Stanford Woods Institute for the Environment, the NASA Cryospheric Science Program, and the NSF Office of Polar Programs.

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