

PREFACE

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# Special issue “VLF/ELF remote sensing of ionospheres and magnetospheres”

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## Graphical Abstract



The present collection of papers is the result of collaborations and discussions fostered in the 9th VLF/ELF Remote Sensing of Ionospheres and Magnetospheres (VERSIM) Workshop, which was held successfully as a virtual meeting during the week of 16–20 November 2020. The VERSIM working group is an international group of scientists interested in studying the behavior of the magnetosphere and ionosphere by means of

Extremely Low Frequency (ELF: 300–3 kHz) and Very Low Frequency (VLF: 3–30 kHz) radio waves, both naturally and artificially generated. We had 59 invited oral papers and 83 poster papers presented during 10 sessions consisting of morning sessions (9–12 am JST) and evening sessions (9–12 pm JST) with 174 registered participants from 20 countries. Two years after the 9th VERSIM meeting the 10th VERSIM Workshop was held as a hybrid meeting, online and in-person at Sodankylä, Finland in November 2022.

We solicited papers for the special issue of the 9th VERSIM Workshop, and currently have 13 papers in it. Among them, we asked Daniel Baker to write a review paper (Baker 2021) summarizing the achievements by the NASA Radiation Belt Storm Probes program (renamed the “Van Allen Probes” mission in November 2012). We received 5 other papers (Foster et al.

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2021; Martinez-Calderon et al. 2021; Parrot et al. 2022; Bezděková et al. 2022; Briand et al. 2022; Redoplado et al. 2022) related to spacecraft and ground-based observations of VLF/ELF waves. We also asked David Nunn to write a paper (Nunn 2021) describing the detailed technical issues surrounding the Vlasov Hybrid Simulation code which he has been developing for more than 30 years to reproduce whistler-mode chorus emissions. We also received 4 other papers (Grach et al. 2021; Liu et al. 2021; Fujiwara et al. 2022; Katoh et al. 2023) on particle simulations describing wave-particle interactions and related particle dynamics taking place in the background dipole magnetic field. We also have a paper by Kikukawa et al. (2022) on developing compact plasma particle detectors for use on board future satellite missions.

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#### Author contribution

YO, JB, MC, AD, and YM served as guest editors for this special issue.

#### Declarations

#### Competing interests

The authors declare that they have no competing interests.

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