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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing

Special Issue on
“GNSS Ionosphere Remote Sensing: Modelling, Monitoring, Mitigation and Innovative Applications”

GNSS-based technologies are essential for ionospheric remote sensing, providing critical insights into ionospheric dynamics and their effects on GNSS-based positioning, navigation, and timing (PNT) solutions. This special issue aims to gather state-of-the-art research focused on the modelling, monitoring, and mitigation of ionospheric effects, along with innovative applications of GNSS data across multiple fields. Contributions that foster interdisciplinary collaboration and introduce innovative approaches to addressing ionospheric challenges are particularly encouraged.

The broad topics include (but are not limited to):

- **Ionospheric Modelling:**
 - Reliable specification of data-driven and physics-based ionosphere models using multisource data, such as global networks of GNSS stations, and LEO satellite-based radio occultation and reflectometry missions, etc.
 - Ionospheric tomography using data from multiple GNSS satellites and ground stations to reconstruct 3D electron density models.
 - Comparisons of various modelling approaches and their effectiveness in different ionospheric conditions.
- **Monitoring Techniques:**
 - bubbles/irregularities/scintillation and TID signatures, and analysis of their effects on communication and navigation systems especially during severe space weather events
 - GNSS ionosphere integrity monitoring to support high-precision PPP/RTK performance.
- **Mitigation Strategies:**
 - Methods for mitigating ionospheric impacts on GNSS and LEO-PNT systems.
 - Analysis of the effectiveness of ionospheric correction algorithms and their practical implementations.
- **Innovative Applications in Geoscience:**
 - Innovations in (near) real-time ionosphere monitoring systems for natural hazardous events (e.g., earthquakes, tsunamis, volcanic eruptions, and hurricanes) early warning.
 - Case studies demonstrating the integration of GNSS-derived ionospheric TEC and irregularities into existing or potential operational models/systems for space weather monitoring and forecasting.

Schedule

Oct 1, 2025, Submission system opening

Mar 31, 2026, Submission system closing

Format

All submissions will be peer reviewed according to the IEEE Geoscience and Remote Sensing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on <http://mc.manuscriptcentral.com/jstars>, using the Manuscript Central interface and select the “**GNSS Ionosphere Remote Sensing: Modelling, Monitoring, Mitigation and Innovative Applications**” special issue manuscript type. Prospective authors should consult the site <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9082768> for guidelines and information on paper submission. All submissions must be formatted using the IEEE standard format (double column, single spaced).

Please visit http://www.ieee.org/publications_standards/publications/authors/author_templates.html to download a template for transactions. Please note that since Jan. 1, 2025, IEEE J-STARS, as a fully open-access journal, is charging a flat publication fee \$1,800 per paper.

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