

Announcement of a Special Issue
Advances in Space Research

Recent Scientific Advances in Global Navigation Satellite Systems and Technologies

Papers are invited for a special topical issue of *Advances in Space Research* (ASR) entitled Recent Scientific Advances in Global Navigation Satellite Systems and Technologies.

The impact of global navigation satellite systems (GNSS) goes beyond its original objectives extending to a variety of activities and contributing to the progress of science and the development of society. This Special Issue aims at presenting new possibilities to use GNSS satellite constellations and, in general, Position, Navigation and Timing (PNT) systems and technologies, for scientific purposes, introducing recent achievements in the field, and updating of ongoing projects and initiatives. The main topics will be:

Scientific applications in meteorology, geodesy, geodynamics, geophysics, space physics, oceanography, land surface and ecosystem studies, using either direct or reflected signals, differential measurements, phase measurements, radio occultation measurements, using receivers placed on the ground, in airplanes or on satellites.

Perspectives and opportunities of planned and ongoing satellite missions, e.g. GENESIS.

Scientific developments in physics with a potential impact on future GNSS, particularly in testing fundamental laws of physics (general relativity, quantum technologies, etc.).

Aspects of metrology such as reference frames, on-board and ground clocks, precise orbit determination and time and frequency transfer.

Scientific aspects of satellite navigation, positioning and its applications, such as signal propagation, tropospheric and ionospheric corrections, multi-constellation aspects, hybridization with additional sensors and integrated navigation, and precise positioning.

Transversal topics of interest to a wide number of scientific fields including collection of GNSS Big Data (baseband data recording), and GNSS scientific data archives, Internet of Things positioning for science, scientific payloads in GNSS satellites, novel disruptive technologies for science, the use of Cubesats, HAPS, UAVs, for GNSS science, software receivers and low-cost SDR platforms, and the topic of GNSS science and education.

Systems and technologies for navigation in space: use of GNSS in terrestrial orbits and beyond terrestrial orbits (e.g. GNSS to the Moon), dedicated systems for exo-navigation (e.g. new systems for PNT on the Moon, Mars, in the solar system, etc.) and their scientific possibilities, including ongoing or new planned space missions (e.g. Moonlight, Novamoon).

Optical and quantum PNT principles and technologies, and new related satellite missions (e.g. OpStar).

We welcome high quality and relevant manuscripts from all scientists involved in these topics. Papers must be submitted electronically to <https://www.editorialmanager.com/AISR>. To ensure that all manuscripts are correctly identified for inclusion into the special issue, authors must select “**Special Issue: GNSS Advances**” when they reach the "Article Type" step in the submission process. **The Elsevier Editorial Manager System (EM) will be opened on 1 October 2026 to accept appropriate manuscripts.**

The general format for submission of papers can be found on the *ASR* Elsevier web site at <http://www.journals.elsevier.com/advances-in-space-research/>

Submitted papers must be written in English and should include full affiliation postal addresses for all authors. Only full-length papers will be considered for publication, subject to peer review by a minimum of two reviewers. There are no page limits although the length of the paper should be appropriate for the material being presented. While the firm deadline for submissions is **1 June 2027**, papers will be published electronically as soon as they are accepted. The printed issue will be assembled within a reasonable time with late papers being printed in regular issues of *ASR*. All articles will be typeset at no cost to the author. There is a charge for printing color figures; there is no charge for color figures on the electronic version.

Dr. Krzysztof Sośnica (krzysztof.sosnica@upwr.edu.pl) is the Guest Editor for this special issue. Questions can be directed to Dr. Sośnica or to the Co-Editor for Special Issues, Dr. Peggy Ann Shea (sssrc@msn.com).