

Announcement of a Special Issue

Advances in Space Research

SPACE ENVIRONMENT MANAGEMENT AND SPACE SUSTAINABILITY

Papers are invited for a special topic issue of *Advances in Space Research (ASR)* entitled "Space Environment Management and Space Sustainability".

Recent years have witnessed an unprecedented growth of space traffic due to a combination of mega-constellations, growth of debris population and services offered by small satellites. Driven by the so-called New Space movement and Space 4.0, the space branch of the fourth industrial revolution, the exploitation of space has grown to an unprecedented level. This has quickly placed the question of sustainability at the centre of the space agenda of the United Nations and most space agencies. Areas like space environment management, which are central to the sustainable human presence in space, have emerged as new research imperatives to mitigate the risk of an exponential growth of space junk, known as the Kessler syndrome, which would render the space around the Earth unusable.

Space environment management is a combination of space situational awareness, active debris removal, space traffic management and related governance and legal issues. Understanding the evolution of the space environment is the first step toward a sustainable human presence into space.

This special issue invites authors to submit high quality original contributions that address the many aspects of space environment management and space sustainability.

Authors are invited to submit papers on one or more of the following topics:

- Space situational awareness,
- Space sustainability and life cycle sustainability assessment
- Space environment modelling and risk analysis,
- Uncertainty quantification on orbital mechanics
- Conjunction analysis and collision avoidance
- Space debris detection and characterization,
- Space debris mitigation strategies,
- On-orbit servicing
- Re-entry analysis and design for demise
- Active debris removal,
- Guidance, navigation and control,
- On-board autonomy and intelligent control,

- Future missions,
- AI for operations and space traffic management
- Large constellations and future trends in space traffic management.
- Governance and legal aspects

Papers on the results of national and international programmes and initiative related to current and future mega-constellations, New Space and the sustainability of the space environment are particularly welcome.

Papers must be submitted electronically <https://www.editorialmanager.com/AISR>. To ensure that all manuscripts are correctly identified for inclusion into the Special Issue, authors must select “**Special Issue: SEM**” when they reach the “Article Type” step in the submission process.

Submitted papers must be written in English and should indicate full affiliation addresses for all authors. All manuscripts will be subject to a standard peer-review process, including at least two independent reviewers. There are no page limits, but the length of the paper should be appropriate to the scientific material being presented. Manuscripts should follow the general format used in ASR:

(http://www.elsevier.com/wps/find/journaldescription.cws_home/644/authorinstructions).

The deadline for submission is 31st of December 2021. Manuscripts will be accepted on a paper-by-paper basis and available on-line with a DOI shortly after acceptance. Contributors to this issue will have an opportunity to purchase individual issues once the issue is finalized. All articles will be typeset at no cost to the author. Color figures are free for the electronic version of the manuscript; a fee will be charged to the authors for color figures for the print version.

Prof. Massimiliano Vasile (massimiliano.vasile@strath.ac.uk) is the Guest Editor for this Special Issue. Authors will be regularly informed on the progress of this Special Issue by email until its final publication. Questions can be directed to Prof. Massimiliano Vasile or to the Co-Editor for Special Issues, Dr. Peggy Ann Shea (sssrc@msn.com). The pre-submission questions regarding topics-of-interest can also be directed to stardust@strath.ac.uk.