Announcement of a Special Issue
Advances in Space Research

Long-Term Changes and Trends in the Stratosphere-Mesosphere-Thermosphere-Ionosphere System

Papers are invited for a special topical issue of *Advances in Space Research* (ASR) entitled "Long-Term Changes and Trends in the Stratosphere-Mesosphere-Thermosphere-Ionosphere System"

Anthropogenic greenhouse gases, solar variability, and other natural and human-induced drivers produce long-term changes throughout the atmosphere. In the middle and upper atmosphere, these changes are often substantially larger than those observed in the troposphere and have important implications for atmospheric structure, composition, dynamics, and coupling processes. Long-term changes in the thermosphere and ionosphere are also increasingly important for satellite operations, orbital debris evolution, space situational awareness, and satellite-based navigation and communication systems.

Observations from space-based platforms provide a critical foundation for detecting and understanding long-term changes and trends in the middle and upper atmosphere. Satellite measurements have been instrumental in documenting changes in atmospheric temperature, density, composition, and ionospheric properties, making the topic highly relevant to space research.

General topics for this special issue include, but not limited to, the following:

- Long-term changes and trends in the Stratosphere-Mesosphere-Thermosphere-Ionosphere system
- Dynamic, chemical, radiative, electrodynamical, and solar drivers of these long-term changes and trends.
- Coupling processes linking different atmospheric regions within the system, and their roles in long-term changes and trends.
- Impacts of long-term changes and trends on satellite operations, navigation systems, and orbital debris.
- Emerging observations, modeling capabilities, and data-analysis approaches for trend studies.
- Overall changes in the middle and upper atmosphere space climate.

Submissions are open to all individuals involved in long-term changes and trends in the middle and upper atmosphere. In particular, we welcome papers from participants at the 13th International Workshop on Long-Term Changes and Trends in the Atmosphere (TRENDS 2026) held in May 2026

Papers must be submitted electronically to https://www.editorialmanager.com/AISR. To ensure that manuscripts are correctly identified for inclusion into the special issue, authors must select **"Special Issue: Long-term trends"** when they reach the "Article Type" step in the submission process.

The general format for submission of papers can be found on the ASR Elsevier web site at

https://www.sciencedirect.com/journal/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 deadline for submissions is **15 January 2027**, papers will be published electronically as soon as they are accepted. The entire issue will be assembled within a reasonable time with late papers being included in regular issues of ASR. All articles will be typeset at no cost to the author.

Dr. Liying Qian (lqian@ucar.edu) and **Dr. Ana G. Elias (aelias@herrera.unt.edu.ar)** are the Guest Editors for this special issue. Questions can be directed to Dr. Qian and Dr. Elias or to the Co-Editor for Special Issues, Dr. Peggy Ann Shea (sssrc@msn.com).