

ISSN: 2160-0414

Volume 13, Number 4, October 2023



Atmospheric and Climate Sciences

ISSN: 2160-0414



9 772160 041001 04

<https://www.scirp.org/journal/acs>

Journal Editorial Board

ISSN 2160-0414 (Print) ISSN 2160-0422 (Online)

<https://www.scirp.org/journal/acs>

Editor-in-Chief

Prof. Shaocai Yu North Carolina State University, USA

Editorial Board

Dr. Omid Alizadeh University of Tehran, Iran
Dr. Shaik Ghouse Basha National Atmospheric Research Laboratory, Department of Space, India
Dr. Jørgen Brandt University of Aarhus, Denmark
Prof. Chak K. Chan City University of Hong Kong, China
Prof. Yoon-Seok Chang Pohang University of Science and Technology, South Korea
Prof. Yassine Charabi Sultan Qaboos University, Oman
Dr. Ke Du University of Calgary, Canada
Dr. Guobin Fu CSIRO Land and Water, Australia
Prof. Barbaros Gönençgil Istanbul University, Geography Department, Istanbul, Türkiye
Dr. Tao Gao College of Urban Construction, Heze University, China
Dr. Paolo Di Girolamo Università degli Studi della Basilicata, Italy
Dr. Dimitris G. Kaskaoutis National Observatory of Athens, Greece
Prof. Yanqing Lian University of Illinois at Urbana-Champaign, USA
Prof. Ioannis Liritzis University of the Aegean, Greece
Prof. Anthony R. Lupo University of Missouri, USA
Prof. Venu G. Nair Centre for Earth Research & Environment Management (CEREM), India
Dr. Charles Okech Odhiambo Maseno University, Kenya
Dr. Vincent Nduka Ojeh Taraba State University, Nigeria
Prof. Gustavo Gabriel Ovando Universidad Nacional de Córdoba, Argentina
Dr. Morteza Pakdaman Atmospheric Science and Meteorological Research Center (AS MERC),
Climatological Research Center (CRI), Mashhad, Iran
Prof. Junboun Park Seoul National University, South Korea
Dr. Augusto José Pereira Filho Departamento de Ciências Atmosféricas, Instituto de Astronomia, Geofísica e
Ciências Atmosféricas, Universidade de São Paulo, Brazil
Prof. Alessandro Pezzoli Turin Polytechnic, Italy
Prof. El-Sayed M. Robaa Cairo University, Egypt
Dr. Basanta Kumar Samala National University of Ireland Galway, Ireland
Prof. Maria A. F. Silva Dias Department of Atmospheric Sciences – Universidade de Sao Paulo, Brazil
Prof. Ying I. Tsai Chia Nan University of Pharmacy and Science, China
Dr. Nicu Constantin Tudose National Institute for Research and Development in Forestry and Transilvania
University of Brasov, Romania
Prof. Julian Wang US NOAA Air Resources Laboratory, USA
Prof. Tijian Wang Nanjing University, China
Dr. Yunheng Wang The Cooperative Institute of Severe and High-Impact Weather Research and
Operations (CIWRO), University of Oklahoma, USA
Prof. Qiang Zhang Beijing Normal University, China

Table of Contents

Volume 13 Number 4

October 2023

Charging Mechanism of Lightning at the Molecular Level

S. L. Chin, X. L. Guo, H. Schroeder, D. Song, A. D. Xia, F. A. Kong, H. B. Xu, T. J. Wang, R. X. Li..... 415

Northeastern Tropical Atlantic SST and Sahel Rainfall Variability

D. Wane, A. L. Dieng, C. Niang, A. T. Gaye..... 431

Simplified Penman-Monteith Equation Determined by Temperature-Based Global Radiation Data and Its Multilocal Validation under Subhumid Climatic Conditions in Hungary

Z. Varga-Haszonits, É. Szalka, D. Vasas, Z. Giczi, P. Szakál, T. Szakál..... 455

A Review of Thermo- and Diffusio-Phoresis in the Atmospheric Aerosol Scavenging Process. Part 2: Ice Crystal and Snow Scavenging

G. Santachiara, F. Prodi, F. Belosi, A. Nicosia..... 466

Investigation of a Possible Link between Solar Activity and Climate Change in Saudi Arabia: Rainfall Patterns

A. H. Maghrabi, H. A. Alamoudi, A. S. Alruhaili..... 478

Enhancement of East African Monsoon Long Rainfall (March to May) Variability from Weekly to Annual Scale by Climatic Extremes

J. Kazora, W. J. Zhu, T. O. Kyaw, J. N. Sebaziga, F. Rusanganwa, J. Kagabo..... 491

Application of Machine-Learning-Based Objective Correction Method in the Intelligent Grid Maximum and Minimum Temperature Predictions

J. Liu, C. Ren, N. L. Yuan, S. Zhang, Y. Wang..... 507

Air Pollution, Global Warming and Difficulties to Replace Fossil Fuel with Renewable Energy

C. J. Liu, Q. H. Li..... 526

Evaluation of Candidate Predictors for Seasonal Precipitation Forecasting

P. M. González-Jardines, M. Sierra-Lorenzo, A. L. Ferrer-Hernández, A. Bezanilla-Morlot..... 539

Influence of Climate on Sugarcane Yield in Côte d'Ivoire: Case of the Ferkessédougou Region

S. Dosso, A. Koba, F. Yoroba, B. Kouassi, K. Kouadio, A. Diawara, A. Diedhiou..... 565

A Wavelet-Based Deep Learning Framework for Predicting Peak Intensity of Hurricanes in the Atlantic Ocean

J. H. Liu, X. D. Wang..... 587

Using Python to Predict Global City Temperatures for 400+ Cities

R. Manjure..... 607

Atmospheric and Climate Sciences (ACS)

Journal Information

SUBSCRIPTIONS

The *Atmospheric and Climate Sciences* (Online at Scientific Research Publishing, <https://www.scirp.org/>) is published quarterly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2023 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

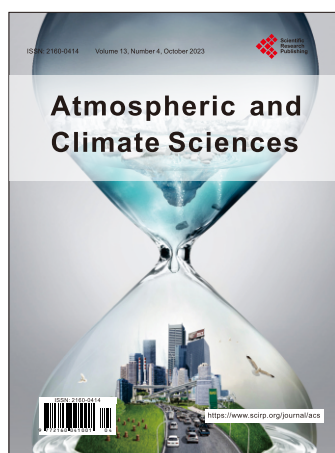
Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: acs@scirp.org



Atmospheric and Climate Sciences (ACS)

ISSN 2160-0414 (Print) ISSN 2160-0422 (Online)

<https://www.scirp.org/journal/acs>

Editor-in-Chief

Prof. Shaocai Yu

North Carolina State University, USA

Subject Coverage

ACS aims to rapidly publish original scientific papers in all the fields of applied and/or climate atmospheric science. It covers the latest achievements and developments in the applied climate and atmospheric sciences, including but not limited to the following scopes as well as the theoretical and practical aspects of these disciplines:

This journal invites original research and review papers that address the following issues. Topics of interest include, but are not limited to:

- Agricultural climatology
- Air chemistry and the boundary layer, clouds and weather modification
- Air quality, atmosphere & health
- Applied meteorology
- Atmospheric acoustics, electricity, optics, physics, radiation and sounding
- Atmospheric and oceanic physics
- Atmospheric and solar-terrestrial physics
- Atmospheric chemistry
- Atmospheric environment
- Aviation climatology
- Biometeorology
- Building climatology and forestry climatology
- Climate change and broadcast meteorology
- Climate dynamics and variability
- Climate policy
- Clouds and precipitation physics
- Cosmical meteorology
- Dendroclimatology
- Dynamics of atmospheres and ocean
- Geology and Climate Change
- Hydrology, oceans and atmosphere
- Hydrometeorology
- Marine meteorology and meteorology-associated geophysics
- Medical meteorology and medical climatology
- Meteorological, climatological and atmospheric environmental issues
- Navigation climatology
- Phenology and paleoclimatology
- Polar meteorology
- Radar meteorology and radio meteorology
- Remote sensing
- Satellite meteorology and synoptic meteorology
- Theoretical and applied climatology
- Tropical meteorology
- Weather systems, numerical weather prediction

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the **ACS**.

Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

Website and E-Mail

<https://www.scirp.org/journal/acs>

E-mail: acs@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Scientific
Research
Publishing**

Website: <https://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org