

Justin A. Daniels  
Editor



Volume 109

Advances in  
Environmental  
Research

Contributor Copy

## Contents

|                  |                                                                                                                                                      |            |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Chapter 1</b> | <b>Mapping the Intersection of Organizational Justice and Sustainability Development in Asian Higher Education: A Bibliometric Perspective .....</b> | <b>1</b>   |
|                  | Nazaria Md. Aris<br>and Muhammad Harith Hakimi Razman                                                                                                |            |
| <b>Chapter 2</b> | <b>The Contribution of Seaweed to the Blue Economy and Sustainable Development.....</b>                                                              | <b>47</b>  |
|                  | Ambo Tuwo, Joehamnani Tresnati, Asri Yanti,<br>Risal Aprianto and Dedy Muhammad Iqbal                                                                |            |
| <b>Chapter 3</b> | <b>The Role of Microbial Diversity in Health, Agriculture, and the Environment.....</b>                                                              | <b>77</b>  |
|                  | Kapinder, Manish Sharma, Arup Acharjee,<br>Anusha Singh, Munendra Kumar<br>and Prateek Kumar                                                         |            |
| <b>Chapter 4</b> | <b>The Dissemination, Treatment and Control of Drugs: A Review .....</b>                                                                             | <b>115</b> |
|                  | Danieli Brandler, Eduardo Pavan Korf<br>and Gean Delise Leal Pasquali                                                                                |            |
| <b>Chapter 5</b> | <b>Biodiesel Production from Waste Vegetable Oils: An Evaluation of Process, Cost, and Environmental Benefits.....</b>                               | <b>137</b> |
|                  | Sumeyye Adali and Melike Yalili Kilic                                                                                                                |            |

|                  |                                                                                                    |            |
|------------------|----------------------------------------------------------------------------------------------------|------------|
| <b>Chapter 6</b> | <b>Consumer Perspectives Towards Edible<br/>Insects in a Western Country .....</b>                 | <b>159</b> |
|                  | Raquel P. F. Guiné, Sofia G. Florença,<br>Manuela Ferreira, Sofia Campos<br>and Ana Paula Cardoso  |            |
| <b>Chapter 7</b> | <b>From Waste to Resource:<br/>Evaluating Greywater Recycling Systems<br/>in Rural Bharat.....</b> | <b>177</b> |
|                  | Priti Kaushik and Randhir Singh Baghel                                                             |            |
| <b>Chapter 8</b> | <b>Vertical Wind Variation in<br/>the Upper Troposphere.....</b>                                   | <b>197</b> |
|                  | Rina Dutta                                                                                         |            |
| <b>Index</b>     | <b>.....</b>                                                                                       | <b>213</b> |

## Chapter 8

# Vertical Wind Variation in the Upper Troposphere

**Rina Dutta<sup>\*</sup>, PhD**

Department of Basic Science and Humanities, Institute of Engineering and Management (IEM), University of Engineering and Management, Kolkata, India

### Abstract

In this study an attempt has been made to investigate the vertical wind variability in the vicinity of tropopause. Vertical wind measurements are very important in understanding the cross-tropopause transport. Such transport may influence the dynamics of both troposphere and stratosphere. The atmospheric stability which is one of the main characteristics of the troposphere that splits it from the stratosphere is denoted as tropopause. Several discrete overlapping levels, known as multiple tropopauses, exist at the upper level of troposphere. From the equator to the pole, tropopause level slopes down which is at a height near about 16 Km in equator and 8 Km in polar region. The greater vertical extent of tropopause is due to warm temperature and highly developed thermal mixing. In this communication MST radar observations have been utilized to study the direct and indirect measurement of vertical wind near tropopause. Further, we extend our analysis to study the diurnal variation of vertical wind as well as its daily variation in the vicinity of tropopause. Moreover, vertical wind measurements from MST radar observations clearly show considerable day-to-day variation of vertical velocity during the presence of tropical easterly jet. It suggests enhanced mass transport through the tropopause from troposphere to stratosphere.

---

<sup>\*</sup> Corresponding Author's Email: [rina.dutta@uem.edu.in](mailto:rina.dutta@uem.edu.in).

In: Advances in Environmental Research. Volume 109

Editor: Justin A. Daniels

ISBN: 979-8-89530-951-3

© 2026 Nova Science Publishers, Inc.

**Contributor Copy**



Justin A. Daniels  
Editor



Volume 109

Advances in  
Environmental  
Research

Contributor Copy