ISSN: 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: IJAR-52206 Date: 13-06-2025

Title: RESEARCH OF CONCENTRATIONS OF POLLUTANTS IN THE VERTICAL PROFILE OF THE ATMOSPHERE OF THE ZENICA VALLEY USING UNMANNED ARIEAL VEHICLES

Recommendation:
Accept as it is……**YES……**
Accept after minor revision……
Accept after major revision ……
Do not accept (*Reasons below*) ……

Rating	Excel.	Good	Fair	Poor
Originality			√	
Techn. Quality			√	
Clarity			√	
Significance		√		

Reviewer's Name: Tahir Ahmad

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)
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Reviewer's Comment / Report

The manuscript titled **"Research of Concentrations of Pollutants in the Vertical Profile of the Atmosphere of the Zenica Valley Using Unmanned Aerial Vehicles"** presents a scientifically sound and contextually significant study on atmospheric pollution dynamics within a geographically and industrially complex region.

The **summary** is concise and well-structured. It clearly outlines the core objective of the research, the methodology involving unmanned aerial vehicles (UAVs), the comparative temporal framework (periods with and without temperature inversion), and the key finding that pollutant concentrations are significantly affected by the inversion layer. The reference to specific locations within the Zenica Valley enhances the geographic precision of the study.

The **introduction** provides a comprehensive and relevant background. It effectively introduces the orographic and meteorological specificity of the Zenica basin, particularly the frequent occurrence of temperature inversions during the colder months. The text correctly identifies the dual nature of inversion (ground and elevated) and its implications for pollutant dispersion.

The discussion of pollutant sources—industrial and domestic (coal-based heating)—adds valuable context to the pollution profile of the region. The inclusion of phenomena such as **mountain breezes** that

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transport pollutants from the slopes into the valley underscores the complexity of local atmospheric dynamics.

The manuscript demonstrates clear familiarity with previous literature, citing studies that have established a connection between temperature inversion and pollution levels, while also noting gaps in quantitative correlation data. This helps position the current study within the broader research landscape and justifies its approach using vertical profiling via UAVs.

The **methodological approach**—using drones equipped with pollutant and meteorological sensors—is appropriate, innovative, and well-suited to capturing fine-grained vertical data that would be difficult to obtain through traditional fixed monitoring stations.

Overall, the manuscript presents a well-articulated, methodologically robust, and environmentally important investigation. It contributes valuable empirical data and regional insight to the ongoing discourse on air pollution, especially under inversion conditions. The focus on UAV-based vertical profiling is timely and enhances the technical relevance of the study in atmospheric science and environmental monitoring.