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Research Highlight

'Effect of planetary boundary layer evolution on new particle formation events over Cyprus'

Summary

This study investigates how the evolution of the planetary boundary layer (PBL) influences new particle formation (NPF) events over Cyprus, a region impacted by both local and transported atmospheric conditions. Utilizing a combination of long-term ground-based observations and meteorological data, the research study emphasizes the presence of distinct patterns in PBL dynamics that correspond to the timing, intensity, and frequency of NPF events during the year 2022. The study's key findings indicate that rapid morning PBL growth and vertical mixing processes play a critical role in transporting precursor gases and freshly formed particles, thereby modulating the onset and development of NPF.

Impact

The present study demonstrates that the diurnal variations in the lower atmospheric layer, otherwise known as the planetary boundary layer, exerts a significant influence on the formation of new particles in the atmosphere over Cyprus. These findings are significant because they contribute to our understanding of the conditions under which new particle formation occurs more frequently. This knowledge can enhance our capacity to predict air quality and gain a more profound comprehension of particle formation in analogous environments.

Authors' bios

Neha Deot is a Graduate Research Fellow and Ph.D. Candidate at the Climate and Atmosphere Research Center (CARE-C) in Cyprus and at INAR at the University of Helsinki. Her research focuses on the physical and chemical characteristics of New Particle Formation (NPF) in Cyprus.

Reference

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