

Desert bacteria rides in the wind to affect health in the Himalayas

प्रविष्टि तिथि: 28 JAN 2026 11:48AM by PIB Delhi

A new study has identified airborne pathogens carried along with elevated desert dust plume from Western India to the top of the Eastern Himalayas that are associated with respiratory and skin diseases.

The Himalayan hill-top atmosphere is widely considered beneficial for human health vulnerability in these regions have been found to be intensified by cold climatic conditions & hypoxia. There are limited evidences connecting airborne microbial exposure to respiratory disease outcomes in high-altitude Himalayan populations and the microbiological dimension of transboundary dust transport remains poorly understood. This gap in knowledge prompted researchers to take up the present study.

Through over two years of continuous monitoring of dust storms rising from the arid regions of western India, Researchers from Bose Institute, an autonomous institute of the Department of Science and Technology (DST), found that powerful dust storms can travel hundreds of kilometers, crossing densely populated and polluted Indo-Gangetic Plain before finally settling over Himalayan hilltops.

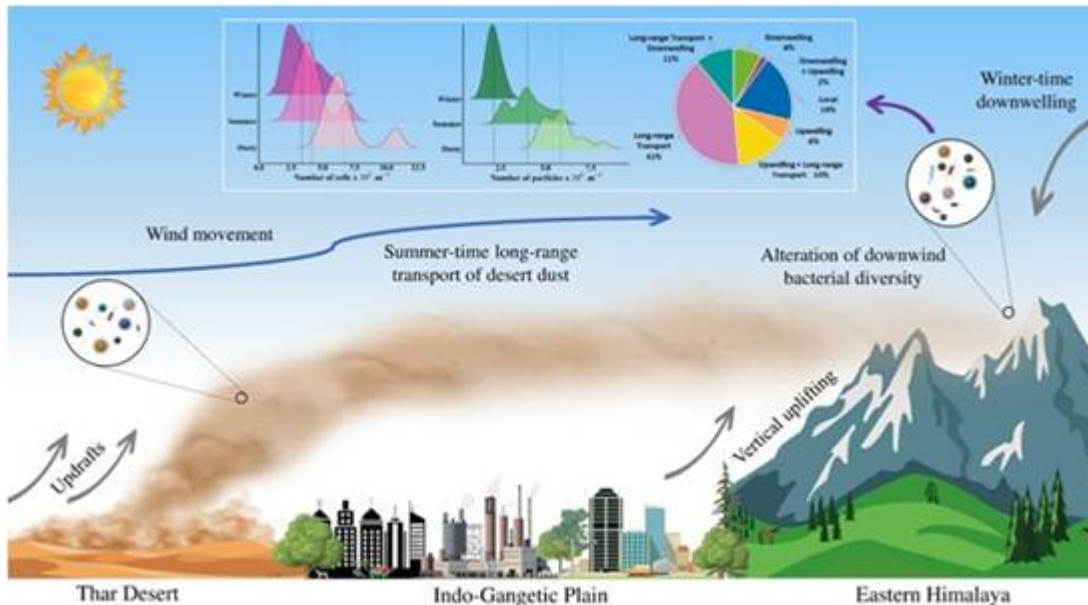


Fig: Schematic illustrating the Himalayan hill-top atmospheric bacterial community influenced by horizontally transported desert dust-associated pathogens and vertically uplifted polluted air carrying airborne pathogens from the Himalayan foothills, collectively contributing to human health impacts over the Eastern Himalayas.

They carry airborne bacteria, including pathogens that can affect human health.

In addition to respiratory and skin diseases due to the transported pathogens, vertical uplift injects locally sourced pathogens into high-altitude atmosphere, where they mix with long-range travellers arriving from afar. Together, they reshape the bacterial community floating above the Himalayas, contributing to

gastrointestinal infections as well.

The results of this first of its kind study published in the Journal,” *Science of the Total Environment*”, quantitatively demonstrates the perturbation of atmospheric bacterial community over Himalayas due to horizontal long-range dust transport and vertical uplifting of foothill air pollution, which has direct implications on public health.

This research provides critical insights to strengthen national action plans for human health and development of health forecast systems aligned with the vision of Viksit Bharat @ 2047.

NKR/FK/NM

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