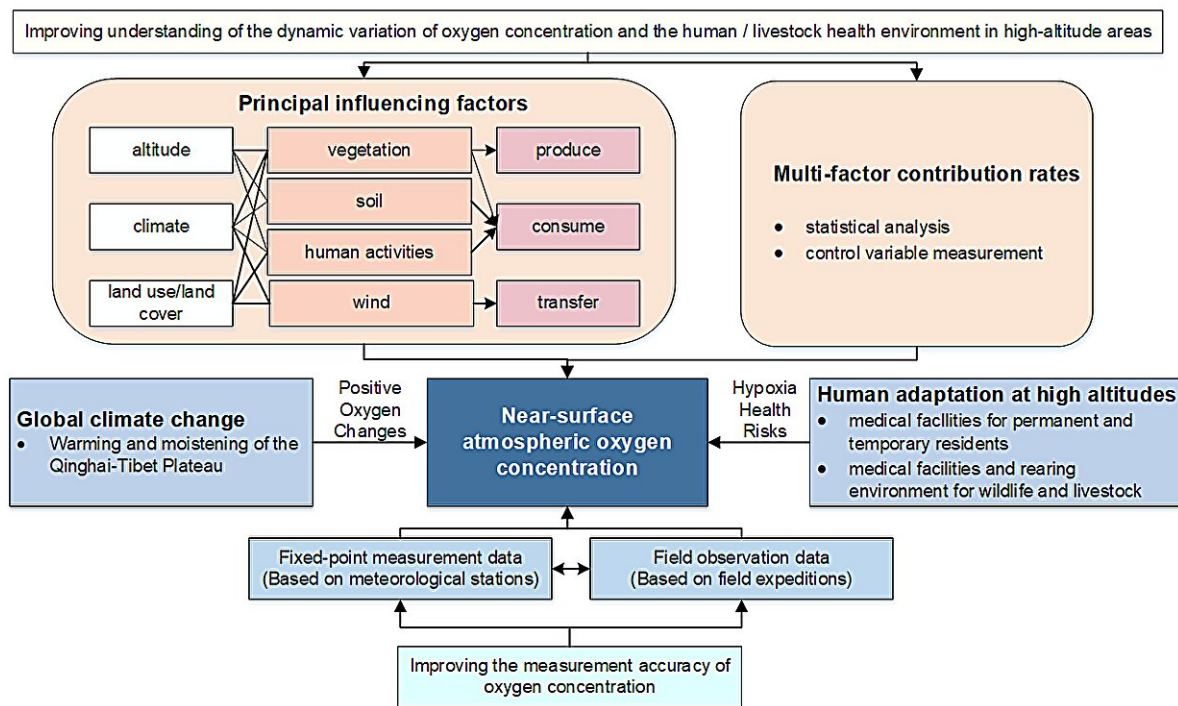


Influencing factors and contribution rates of oxygen concentration over the Qinghai-Tibetan Plateau recalculated

February 8 2024



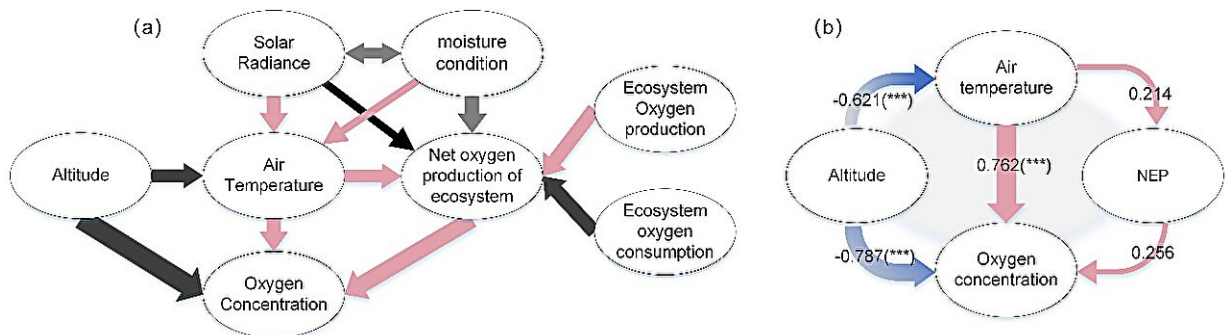
This figure mainly explains the analysis of the primary influencing factors and their contribution rates to oxygen concentration, enables a systematic understanding of the mechanisms driving oxygen variations, thereby laying the foundation for understanding the health environments of humans, wildlife, and livestock. Credit: Science China Press

In a study [published](#) in the journal *Science China Earth Sciences*, a research team conducted joint observations of ecosystem oxygen production and carbon sinks and near-surface atmospheric oxygen concentrations on the Qinghai-Tibetan Plateau and meteorological elements at Beijing Fangshan Station from 2018 to 2020.

They obtained 422 sets of [oxygen concentration](#) route/sample data, 173 sets of fixed-point respiration/ photosynthesis observations data on the Qinghai-Tibetan Plateau, and over 160,000 measurements from the Beijing Fangshan Station.

Through the analysis of measured data, the research team found that [solar radiation](#), atmospheric humidity, and ecosystem oxygen consumption and production have a significant impact on atmospheric oxygen concentration, and the impact shows temporal and spatial differences.

Vegetation significantly impacts oxygen concentration, with a relative contribution rate of 16.7–24.5%, which is underestimated in existing research.



This picture mainly explains the relationship between factors affecting the oxygen concentration (such as altitude, air temperature, radiance, moisture condition, vegetation, etc.) and oxygen concentration (The red arrow in Figure a

indicates a positive impact and black or blue indicates a negative impact. Gray arrows are directions to be verified) as well as the results of path analysis (Figure b). Credit: Science China Press

These new measurement data and the analysis results provide an important basis for understanding the factors that influence atmospheric oxygen concentration and also remind us that in order better to understand the oxygen dynamics of the Qinghai-Tibetan Plateau, further field observations of soil respiration and vegetation photosynthesis are needed to clarify the contributions of carbon storage, [carbon sinks](#) and other factors to the near-surface atmospheric oxygen concentration.

The study was led by Dr. Peijun Shi and Dr. Jiang Lu from the State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University.

More information: Peijun Shi et al, Factors contributing to the oxygen concentration over the Qinghai-Tibetan Plateau and its contribution rate calculation, *Science China Earth Sciences* (2024). [DOI: 10.1007/s11430-023-1238-7](https://doi.org/10.1007/s11430-023-1238-7)

Provided by Science China Press

Citation: Influencing factors and contribution rates of oxygen concentration over the Qinghai-Tibetan Plateau recalculated (2024, February 8) retrieved 28 April 2024 from <https://phys.org/news/2024-02-factors-contribution-oxygen-qinghai-tibetan.html>

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