Under rapid variations in weather conditions and atmospheric-pollution regimes on both regional and global scales, researchers have observed hypervigilance in human organisms to such pathogenic effects and their consequencess for the health of people. In order to better understand the complexity of these phenomena, a team of scientists from the Obukhov Institute of Atmospheric Physics of the Russian Academy of Sciences (Moscow, Russia), the Pyatigorsk Research Institute of Curortology of the Federal Medical and Biological Agency of Russian Federation (Pyatigorsk, Stavropol region, Russia), and Federal Medical and Biological Agency of Russian Federation (Moscow, Russia) conducted a comprehensive analysis and presented their findings in a recent publication.

The study integrated findings from various disciplines, including atmospheric science, meteorology, and human health, to develop a new approach to assessing weather conditions and aerosol pollution at mountain resorts. The research team focused on the impact of weather and atmospheric pollution on the health of patients who visit mountain resorts for treatment. They utilized advanced methods for environmental monitoring, such as satellite data from MODIS Terra/Aqua satellites, to analyze pollution plumes and their impact on human health.

In the study, researchers considered a wide range of factors, including the concentration of submicron aerosol particles, atmospheric contamination, and the effects on respiratory function and metabolic pathways. They also took into account the medical history of patients, such as asthma and metabolic syndromes, to identify patterns and develop personalized treatment plans.

The findings, presented in Table 1, indicate that increases in submicron aerosol concentration are associated with changes in the medical condition of patients. For example, increases in aerosol concentration can lead to respiratory symptoms, cardiovascular responses, and changes in metabolic parameters.

The study also highlighted the importance of considering the background pollution levels in mountain resorts, as these can influence the effectiveness of treatment. The researchers found that in areas with high background pollution, the treatment effects might be less pronounced compared to areas with lower pollution levels.

In conclusion, this study provides a comprehensive approach to assessing the impact of weather and atmospheric pollution on human health, particularly in mountain resorts. The findings can be used to develop more effective treatment strategies and improve the overall health outcomes of patients visiting these resorts.