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Sulfur and Nitrogen Wet Deposition trends at three background monitoring stations of the Russian EANET region.

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The purpose of our research was to evaluate spatial and temporal variations of major acidifying compounds in precipitation. Sulfur (from sulfates), Nitrogen (Dissolved Inorganic Nitrogen), and other major ions. Wet deposition data from three stations of the Russian EANET region was processed and analyzed. The period under investigation is framed from 2007 to 2019.

Mondy station (51.4 ° N, 101.0 ° E) is located on Mount Chasovye Sopki (plateau between the Eastern Sayan and Khamar-Daban mountain ranges) at an altitude of 2005 meters above sea level. Yailu station (51.5 ° N, 87.4 ° E) is located at the spurs of the Abakan range on the shore of Lake Teletskoye at an altitude of 491 meters above sea level. Primorskaya station (43.4° N; 132.1° E) is located on the western slope of a branch of the Southern Sikhote-Aline Ridge, in the valley of Komarovka river at an altitude of 85 meters above sea level. Yailu station is operated under a Russian integrated background monitoring network, while Mondy and Primorskaya sites are included in EANET.

For evaluation of temporal variations, Mann-Kendall Test and Sen's Slope estimation were applied to check the statistical significance of seasonal and year trends and speed of changes in wet depositions and average weighted concentrations. For calculations, R-statistics and MAKESENS were used. For Mondy station, statistically significant trends at the level over 95% were found for non-sea-salt sulfur and potassium average weighted mean concentrations (with the negative slope approximately 28% and 16 % respectively) and at the level from 90 to 95 % for ammonium nitrogen and conductivity. There was no linear trend found at this station for total wet depositions. At the same time for Komarovka station, statistically significant linear trends were found in average weighted concentrations and wet deposition for magnesium and hydrogen at the level over 95%. For Yailu station, slightly increasing linear trend with the significance of over 90% was found for non-sea-salt sulfate and calcium weighted mean concentrations. And for ammonium nitrogen and calcium wet deposition – with significance over 95%.

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