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Monitoring air pollution levels in the Horton Plains National Park using passive gas sampling technique

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The technique of passive gas sampling was carried out to monitor air pollution in Horton Plains National Park (HPNP), a cloud forest and the highest plateau in Sri Lanka. This technique was used to analyse sulphurdioxide (SO_2) and nitrogendioxide (NO_2) in the ambient air at five different locations within the park.

The variations of NO_2 and SO_2 levels were analysed from 11th July 2005 to 25th May 2006. NO_2 levels had slight variations and, the highest average value (0.0005 ppm) was observed during April to May, while the lowest values (3.2–4.0 x 10^{-5} ppm) were obtained during August to December. Thereafter the values increased till May. This increase may be due to North–East monsoon wind effect and increased number of tourist vehicles during the Sinhala and Tamil new year festival season. SO_2 levels were significantly higher than those of NO_2 levels in the same study period. The highest values for SO_2 (0.01–0.02 ppm) were obtained from September to November while the lowest values (0.001–0.002 ppm) were obtained from July to September and December to January. There was an inverse relationship between rainfall and the concentration of SO_2, since SO_2 is removed from the atmosphere by dissolution in rainwater. A similar correlation was observed with the NO_2 concentration as well.

The Sri Lanka standards for 24 h average of NO_2 and SO_2 in ambient air are 0.05 ppm and 0.03 ppm, respectively. The concentration of each pollutant obtained during the entire period showed, that these standard values were not exceeded in HPNP. Average concentration of NO_2 and SO_2 for a period of 10 months gave very low values, indicating that the ambient air quality in HPNP is very pure and no considerable amount of NO_2 or SO_2 is present. It would be desirable to monitor NO_2 and SO_2 in air for a long period of time to check whether there is any trans boundary pollution in this area due to North-East and South-West monsoons.

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