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Enhancement of N₂O during the October–November 2003 solar proton events

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Abstract. In this paper we present evidence of enhanced N₂O concentrations in the upper stratosphere/lower mesosphere polar regions after the solar proton events that occurred during October–November 2003. The observations were performed by the MIPAS instrument on the Envisat satellite. Simulations performed using the Canadian Middle Atmospheric Model (CMAM) show that such enhancements are most likely produced by the reaction of N(⁴S) with NO₂, both of which species are largely enhanced just after the solar proton events in the winter polar night.

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