

(A) - IAG - International Association of Geodesy**JAS006****Oral Presentation****406****Preliminary kinetic simulations of the transient electron driven air plasma chemistry stimulated by Sprites: impact on the formation of nitride oxides**

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The understanding of the impact of Transient Luminous Events (TLE) on the chemistry of the mesosphere remains nowadays a subject of scientific debate. In particular, the microscopic kinetic mechanisms underlying the formation of very reactive species in the upper atmospheric discharges and their interaction with neutral components of the atmosphere remain not well understood. In this presentation, we will show preliminary results on a model of the transient air plasma chemistry generated by sprites. We will first describe the model built including the electron, neutral and ionic chemical paths taken into consideration. The model is based on the self-consistent time-dependent solution of a set of rate equations for each of the species considered coupled to a Boltzmann equation. The electric fields needed for these calculations are taken from recent altitude profiles of E/N associated to sprite events as estimated from ISUAL measurements. Finally, the simulations will give a first quantitative estimation on the impact of upper atmospheric transient discharges (sprites) on the formation of nitride oxides which role in the ozone cycle of the Earth might be important.

Keywords: sprite plasma chemistry, nitride oxides, mesosphere

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