



## **Modelling vibrationally excited hydroxyl in electric discharges in the mesosphere**

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There is a number of model simulations on the chemical processes in mesospheric discharges (sprites), and the corresponding emissions from excited species. However, there are only a few investigations on the effects of sprites on vibrationally excited hydroxyl molecules OH\*. A numerical plasma chemistry model has been used to simulate the response of OH\* to an electric breakdown pulse in the mesosphere. The model accounts for the first 9 vibrational states of OH\*, chemical production and loss processes including quenching as well as radiative de-excitation. Preliminary results indicate that there is an increased production of OH\* through reaction  $O_3 + H \rightarrow OH^* + O_2$  as both H and  $O_3$  increase due to the breakdown pulse. This is counteracted by an increase of atomic oxygen which removes OH\* by quenching.