

## Ozone depletion in the plume of a solid-fueled rocket

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**Abstract.** The local effects of the emission of a solid-fueled rocket on the stratospheric ozone concentration have been investigated by photochemical model calculations. A one-dimensional horizontal model has been applied which calculates the trace gas composition at a single atmospheric altitude spatially resolved around the exhaust plume. Different cases were tested for the emissions of the Space Shuttle concerning the composition of the exhaust and the effects of heterogeneous reactions on atmospheric background aerosol.

The strongest depletion of ozone is achieved when a high amount of the emitted chlorine is  $\text{C}_2$ . If it is purely  $\text{HCl}$ , the effect is smallest, though in this case the heterogeneous reactions show their largest influence. From the results it may be estimated whether ozone depletion caused by rocket launches can be detected by satellite instruments. It appears that the chance of coincidental detection of such an event is rather small.

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