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Title:

Reevaluation of a Feasibility Study to Measure the Vibrational Temperature of Nitrogen in the Upper Atmosphere by Chemical Release of Hydrogen Iodide.

Fields and Groups :

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Corporate Author:

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Personal Author(s):

Young, Stephen J

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Abstract:

A reevaluation has been made of a proposed hydrogen iodide (HI) chemical release experiment to measure the vibrational temperature of nitrogen $T_v(N_2)$ in the upper atmosphere. Recently reported laboratory measurements of important production and loss mechanisms for $N_2(H)$ in the upper atmosphere are considered. A consideration of recently measured temporal and spatial fluctuations in the infrared hydroxyl airglow brought about a revision of the estimate of the minimum measurable $T_v(N_2)$ to 1200K. An analysis is also given to the limitations of the experiment by the necessity to consider evaporation from a release of liquid HI. It is concluded that the probability of obtaining meaningful results from the proposed experiment is not high enough to warrant its continuance. (Modified author abstract)

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