2017 Workshop: Hydrogen

Long title
Hydrogen in the Upper Atmosphere
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Description

Evaluating the distribution of hydrogen in the Earth's atmosphere, and how that distribution responds to external forcing factors (e.g., solar activity), is important to our understanding of the mechanisms that shape the evolution of planetary atmospheres. Knowledge of this distribution can also guide atmospheric photochemical modeling of hydrogen containing species (e.g., CH4 and H2O), and be used for benchmark studies for these models. Further, hydrogen plays an important role in the mesosphere, thermosphere and exosphere as well as being the dominant species in the topside ionosphere. In this session we solicit contributions from the modeling and the observational community to address our current understanding, identify gaps / challenges, and establish a path forward. We look forward to contributions from across the entire spectrum of inquiry into hydrogen ranging from lower atmosphere exchange to plasmaspheric processes.

Justification

The 'CEDAR New Dimension' document highlights the upper atmosphere as a link between the atmosphere below and the interplanetary environment. Nowhere is this link stronger than in the exosphere/topside ionosphere where the terrestrial atmosphere literally merges with interplanetary space. As we explore the complex processes that govern the coupling, energetics, and dynamics of the upper atmosphere as a whole, our understanding of this important interface, through observations of its mean state and its response to external forcing, will provide important constraints as we seek to develop a complete picture of this complicated

space-atmosphere system.

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