



## **Exospheric hydrogen density estimates from GOES solar Lyman-alpha measurements**

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We use extreme ultraviolet (EUV) measurements of solar irradiance from GOES satellites to derive daily hydrogen (H) density distributions of the terrestrial upper atmosphere. GOES satellites are in geostationary orbit and measure solar irradiance in a wavelength band around the Lyman-alpha line. When the satellite is on the night-side of the Earth looking through the atmosphere at the Sun, the measured irradiance is decreased by scattering by H in the upper atmosphere. Using these daily dips in the measured irradiance, we derive a simple H density distribution for the exosphere. We compare preliminary results from this technique with H density distributions derived from other data sets. Continues GOES observations will be available for many years into the future and potentially can provide exospheric H densities for use in whole atmosphere, ring current, and satellite drag models. Long-term observations of trends can be used to monitor impacts of climate change.