



The terrestrial, neutral Exosphere under solar maximum conditions (2012) using TWINS Lyman-alpha data

Jochen Zoennchen, Uwe Nass, and Hans Fahr

Argelander Institut für Astronomie, Universität Bonn, Bonn, Germany (zoenn@astro.uni-bonn.de)

Solar Lyman-alpha radiation at 121.5 nm is resonantly scattered at exospheric, neutral hydrogen (H). Under optically thin conditions, the backscattered Lyman-alpha intensity is proportional to the H-column density along the line of sight (LOS). Therefore the 3D exospheric H-density distribution can be enfolded from a larger sample of corresponding Lyman-alpha LOS-data. In the presented analysis we are using data of the years 2008 and 2012 from the Lyman-alpha detectors (LADs) on the Two Wide-angle Imaging Neutral-atom Spectrometers (TWINS) mission. We discuss the enfolding method, the datasets, a recalibration procedure, and present structural differences of the 3D exospheric H-density distributions found above 3 Earth radii at solar minimum (2008) and near solar maximum (2012). Furthermore variations of H-densities at the Earth's night side at solar minimum and solar maximum are compared, particularly to answer the question, if there is a region of a significantly enhanced H-density (Geotail-region) at the night side.