EPSC Abstracts,
Vol. 4, EPSC2009-496, 2009
European Planetary Science Congress,

Thermospheric flows at Jupiter for differing solar wind conditions

N. Achilleos

Atmospheric Physics Laboratory / Centre for Planetary Sciences, UCL, London, UK (nick@apl.ucl.ac.uk)

Abstract

The magnetosphere-ionosphere coupling at Jupiter is known to play a central role in generating auroral emissions at this planet. The strength of these emissions is partly determined by the relative rotational flows in the upper atmosphere (thermosphere) and in the magnetodisc. We present simulations of the atmospheric flow which employ an azimuthally symmetric global circulation model. In order to make preliminary estimates of the effects of upstream solar wind conditions on these flows, we calculate models which assume different profiles of magnetic field and plasma angular velocity in the magnetodisc, corresponding to compressed and expanded states of the planet's magnetosphere. We use these simulations to comment on the relationship between global magnetospheric configuration and the global pattern of winds and energy inputs into the thermosphere.