MAGNETIC RECONNECTION AT URANUS' MAGNETOPAUSE. A. Masters, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, 3-1-1 Yoshinodai, Chuo-ku, Sagamihara, Kanagawa 252-5210, Japan.

The magnetosphere of Uranus has barely been explored by spacecraft, but is distinct from other solar system magnetospheres in many respects. Determining how this magnetosphere is coupled to the solar wind is central to understanding energy flow through the system. Here we use an analytical model to assess how the solar wind interacts with the Uranian magnetosphere via magnetic reconnection. The modeling results highlight the variable conditions at the magnetopause boundary, where the expected location of reconnection sites is dependent on not only the interplanetary magnetic field orientation but also shows a strong dependence on planetary longitude and season. Compared to the magnetopause boundaries of planets closer to the Sun, at Uranus' magnetopause we expect reconnection onset to be typically restricted to regions where the interplanetary and planetary magnetic fields are closer to anti-parallel, and we expect the sub-Alfvénic magnetosheath regime (favorable for reconnection) to be more confined to the subsolar region. We suggest that solar wind-magnetosphere coupling via magnetic reconnection may be more efficient under near-solstice conditions than under near-equinox conditions. The modeling results suggest a typical reconnection electric field strength of order 0.01 mV m-1, and reconnection voltages below an estimated upper limit of ~30 kV. Complimentary assessments of other means of coupling to the solar wind (e.g. via a "viscous-like" interaction) are needed to establish the overall nature of solar wind-magnetosphere coupling at Uranus.