



## **The Coupling of Saturn's Atmosphere and Ionosphere to the Rings**

J. Hunter Waite (1), Mark Perry (2), Jared Bell (3), Rebecca Perryman (1), Kelly Miller (1), Don Mitchell (2), Bill Kurth (4), Ann Persoon (4), Jan-Erik Wahlund (5), Michele Dougherty (6), and Gregory Hunt (6)

(1) Southwest Research Institute, Space Science and Engineering Division, San Antonio, United States, (2) Johns Hopkins Applied Physics Laboratory, Laurel, Maryland, USA, 20723, (3) National Institute of Aerospace, Hampton, Virginia, USA 23666, (4) Physics and Astronomy, The University of Iowa, Iowa City, Iowa, 52242, (5) Physics Department, Uppsala Universitet, Uppsala, Sweden, (6) Physics Department, Imperial College London, London, United Kingdom

Cassini's Grand Finale provided a treasure trove of data while flying between Saturn's atmosphere/ionosphere and the D ring. The INMS instrument measured both neutrals and light ions during this time period – observing the most complex mass spectra of the entire mission. The RPWS measured the electron density along track and registered the presence of heavy positive and negative ions. MIMI observed energetic ions as well as an important population of nanometer-sized grains. MAG observed field-aligned currents and characterized the magnetic field geometry. Taken together these data sets characterize the complex chemical and dynamical interconnection of the rings to Saturn's equatorial atmosphere/ionosphere. This presentation will emphasize the structure of the Saturn/ring atmosphere and the chemical coupling of ring material to the equatorial atmosphere of Saturn. It will also attempt to place this within the context of the other measurements that will be more completely covered in separate presentations.