

Modeling

- Adapt torus chemistry model of Delamere and Bagenal [2003] to include azimuthal variations
- Model includes: ionization, recombination, charge exchange, radiative cooling, and Coulomb collisions between the ion and electron populations
- A small population ($\sim 0.2\%$ of total electron density) of hot electrons is required to provide the necessary energy to the torus
- Five basic model parameters: neutral source rate, O/S neutrals ratio, fraction of hot electrons, temp. of hot electrons and radial transport rate
- Possible Mechanisms for modulating amplitude by System III longitude
 - Source of hot electrons varies with System III longitude
 - Rate of plasma subcorotation is not uniform, but instead varies with System III longitude
 - Radial transport of plasma is more efficient at certain System III longitudes