



## SPACE PHYSICS SEMINAR

Andrew Yau

University of Calgary

### Ionospheric Oxygen Ion Outflows in Magnetosphere-Ionosphere Coupling

**Thursday, October 18, 2012**

**Refreshments at 3:30pm in CAS 500**

**Talk begins at 4:00pm in CAS 502**

#### Abstract:

The fact that oxygen ions and molecules have insufficient energy to escape the Earth's gravity explains their long-term presence in the present-day ionosphere and atmosphere. It also underscores an important question in magnetosphere-ionosphere coupling: How are oxygen ions originating from the Earth's ionosphere capable of reaching the magnetosphere in significant quantities? To gain some insight into how satellite observations have shaped our current understanding of oxygen ion outflows and their influence on the composition and dynamics of the magnetosphere, we will "stroll down memory lane", starting from the surprising discovery of "magnetospheric"  $O^+$  ions: We will discuss earlier observations of energetic ion beams and conics and recent observations of the "cleft ion fountain" and "non-classical" polar wind, as well as the most recent discovery of cold "hidden" ions in the distant magnetosphere.