

# SEMINAR NOTICE

*Department of Physics and Engineering Physics  
University of Saskatchewan*

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**SPEAKER:** Dr. Doug Degenstein & Atmospheric Sensing Group  
Physics & Engineering Physics

**TOPIC:** *Atmospheric Remote Sensing at the University of Saskatchewan*

**DATE:** January 16th, 2018

**TIME:** 3:30-4:30 p.m.

**PLACE:** Physics 103

## **ABSTRACT:**

The Institute of Space and Atmospheric Studies within the Department of Physics and Engineering Physics at the University of Saskatchewan has been actively involved in remote sensing of the atmosphere for over six decades. During this time everything from optical instruments on high altitude balloons to ground based radar systems have been used to measure atmospheric state parameters such as temperature, winds and the ozone number density. In February of 2001 ISAS researchers joined the space age with the launch of the OSIRIS instrument onboard the Odin satellite. OSIRIS, a Canadian led optical instrument that measures spectrally dispersed limb scattered sunlight to infer vertically resolved atmospheric constituent information, is still in operation and its results continue to contribute to international policy relevant documents such as the World Meteorological Organization (WMO) Quadrennial Ozone Assessment and the Intergovernmental Panel on Climate Change (IPCC) Assessment. From the beginning, OSIRIS has been led by members of the ISAS Atmospheric Remote Sensing Group who have been responsible for all aspects of its data production and the scientific results generated from these observations. This talk will highlight many of these achievements.

The SASKTRAN radiative transfer computer model was developed at the University of Saskatchewan to simulate UV-visible radiance measurements made by OSIRIS. Since then it has been expanded beyond limb scattered sunlight and is now used internationally by research groups to compute signals that are thermally and photochemically generated as well. This talk will detail how the SASKTRAN model is used to derive atmospheric constituent information made by the NASA led OMPS-LP optical instrument, the European Space Agency led ALTIUS measurement system and the NASA led TEMPO sensor. These three satellite based instruments make measurements that are important for air quality and weather forecasting and therefore impact the lives of average Canadians. The long term goal of the Atmospheric Remote Sensing Group is to once again design, build and operate a space based instrument. The political winds currently blow in a favourable direction and there is much interest, at a senior governmental level, for Canada to once again do science from space. Our group is ready for this opportunity. Over the past ten years the group has designed, developed and tested four novel optical instrument prototypes (CATS, ALI, SHOW and LIFE) that are close to space ready. This talk will highlight the development of these instruments and their testing on high altitude stratospheric balloons as well as the NASA ER-2 high flying aircraft. The talk will finish with a discussion of Raven, a joint Swedish-Canadian endeavour, to fly the Canadian CATS, ALI and SHOW along with the Swedish STEAMR, on a low earth orbit satellite. A funding decision for Raven is expected before the next federal budget.

*Coffee and Cookies will be served in Physics lounge at 3:00 p.m. for those attending the seminar.*