Polar Cameras

- Dual advanced all-sky imagers for auroral and airglow studies
- Fisheye objective, telecentric optics, 5-position filter wheel
- Bare CCD detector cooled below -40 C
- Advanced readout technology for low-noise images
- Long exposures (up to 60 s) yield high sensitivity (~10 R)
- Programmable automatic data acquisition and archiving
- Rugged construction for winter operation in Arctic environment
- Developed at University of Calgary with CNSR support

- Study of very low-brightness auroral phenomena
  - e.g., Polar diffuse aurora (no prior observations reported)
- Simultaneous two-wavelength imaging of auroras and airglow

Aurora:

- Remote sensing of precipitating electron energy using
  - [OI] 630.0 nm / N_2^+ 785 nm intensity ratio (*E* region)
  - [OI] 630.0 nm / [OI] 557.7 nm intensity ratio (*F* region)

Polar patches:

- Estimation of patch emission altitude using [OI] 630.0 nm / [OI] 557.7 nm intensity ratio

Mesopause airglow:

- Estimation of mesopause temperature using OH (6,2) 829 nm (P branch) / 835 nm (Q branch) intensity ratio
- Mesopause dynamics revealed by airglow intensity and temperature perturbations