

**MOPOS-69**

Trends in Relative Humidity in Canada from 1953-2003, **W.A. van Wijngaarden**<sup>1</sup> and L.A. Vincent<sup>2</sup>, <sup>1</sup> York University and <sup>2</sup> Meteorological Service of Canada — This study reports the analysis of relative humidity data collected at 75 stations throughout Canada. For data at each station, a best fit linear trend estimated the change during 1953-2003 and a statistical t test determined whether the trend was significant. Large decreases in relative humidity occur throughout Canada in winter and spring. These results correlate closely to changes in dew point, temperature and precipitation. This study shows that relative humidity is a potentially useful indicator of climate change

**MO-POS-70**

A Quantitative Analysis on the Effects of Physical Sputtering in Meteoroid Ablation\*, **Kyle A. Hill**, *Mount Allison University* — Conventional meteor ablation theory assumes that during atmospheric flight, a meteoroid undergoes intensive heating and meteoric atoms evaporate from its surface. Light is then produced as the ablated (evaporated) constituents undergo collisions with the atmospheric molecules and become excited. Our research has investigated whether another process, physical sputtering, could play a significant role as an alternative disintegration process. Using a 4th order Runge-Kutta numerical integration technique, we ran computer simulations which simultaneously solved the ablation and sputtering equations during the atmospheric flight for these meteoroids. We modeled asteroidal, cometary, and porous meteoroids with masses ranging from  $10^{-3}$  kg to  $10^{-13}$  kg and velocities ranging from 11.2 km/s to 71 km/s. We find that while in many cases (particularly at low velocities and for relatively large meteoroid masses) sputtering contributes only a small amount of mass loss during atmospheric flight, in some cases sputtering is responsible for a large fraction of the mass loss. The impact of this work will be most dramatic for the very small meteoroids observed with large aperture radars, whose ablation process may possibly be dominated by sputtering. The heights of ablation and decelerations observed using these systems may provide evidence in the future for the importance of sputtering.

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