Astronomical Drivers of Terrestrial Phenomena

11:00-12:00 Friday 13 October 2006
Gamble Hall, 615 Booth Street, Ottawa, Natural Resources Canada

This session will provide an update of evolving, and sometimes surprising, knowledge of astronomical drivers (geomagnetic, solar, and galactic). It is intended for specialists in policy and science program management, as well as for scientists with an interest in the area.

11:00-11:10 *Geomagnetism and Space Weather – a quick introduction*

David Boteler, Research Scientist, Geomagnetic Laboratory, Natural Resources Canada

The Earth's magnetic field is an ever-changing phenomenon that influences human activity and the natural world in a variety of ways. The geomagnetic field changes from place to place, and on time scales ranging from seconds to decades to eons. The geomagnetic field, along with its associated phenomena, can both assist and degrade navigation and surveying techniques; it can impede geophysical exploration; it can disrupt electric power utilities, and pipeline operations; and it can influence modern communications systems, spacecraft, and more. This talk will provide a brief overview of the space weather phenomena that cause geomagnetic disturbances and how different technological systems are affected. The presentation will also describe that is being done at NRCan, in close collaboration with industry, to reduce the risk to critical infrastructure from space weather hazards.

11:10-11:25 Astronomical drivers of terrestrial phenomena

David Thomson, Canada Research Chair in Statistics and Signal Processing, Queen's University

For several hundred years scientists have observed sometimes tenuous or short-lived correlations between astronomical processes and terrestrial phenomena such as agricultural cycles, tree ring indications of forest growth, disease, and climate change. However, models are improving, far better data is available, and advanced mathematical and statistical tools are evolving. These hold promise for a much better understanding of the influence of Astronomical drivers of Earth processes. In turn, this may lead to much improved understanding, forecasting, and planning and preparations for changes in the Earth processes that have a major impact on the environment and humanity.

11.25-12:00 Question and discussion period

The intent of this part of the session is to provide an open format to pursue curious observations, fun results and insight into terrestrial-astronomical links, and possible lines of inquiry. It will be a rare opportunity to ask questions of a wide range of experts from geology, math, astrophysics, health, and areas like the vulnerability of complex systems like telecommunications.

- *To ensure yourself of a seat in Gamble Hall (capacity limit of 60 people), and to assist with the new security procedures, please confirm your attendance by email to: bhowell@nrcan.gc.ca*
- *Immediately prior to this session, from 10:00-11:00 and in the same room, Paul Charbonneau, Canada Research Chair in Solar Physics at the University of Montreal, will present "Physical origin of fluctuations in the amplitude of the solar activity cycle". Those interested in the current advanced understanding of solar physics and the mathematical and statistical tools used for its analysis will want to attend that session as well.*