SWCX spectrum for an optical line of sight for an observer located on Earth.

SWCX spectrum provided by Daniel Kontoravdis with updated $\xi_0$ in and jet data from VFI/DEER Studies.

Can you find the SWCX emission? Separation of the spectra will not be easy.

Model Cosmic Spectrum

Model SWCX Spectrum

DOS Spectrum

Model SWCX

DOS Spectrum - SWCX From Earth's Magnetosphere

DOS Datas vs. Model SWCX Emission

The X-ray emission here differ
What can be Learned? Geospheric SWCX

- Remote sensing of the solar wind and magnetosphere
- SPHAG: FOV around 3 AU (distance to the magnetosphere, solar wind)
- Corotation - 3 Au
- Currents - L 3 Au
- Spectra of the abundances and isotopes in the solar wind
- Angular structure provides information on the magnetosphere


What can be Learned? Heliospheric SWCX

- SWCX may provide a mechanism to remotely observe solar CMEs moving outward from the Sun. Again, a high resolution X-ray spectrometer could determine luminosity states and abundance ratios.
- Add a second observatory and the CME could be triangulated providing advance warning for impending storms.

Random Thoughts

The SWCX, as measured by Chandra, XMM, and Swift, is relatively a different animal from the SWCX as measured by the balloon. It is not yet clear whether there is a hot component to the LIES.

No model of the SWCX

SUMMARY

- High resolution soft X-ray spectroscopy of diffuse emission can provide a routine tool for understanding the relative contributions of the Local Hot Bubble and SWCX
- What is the LIES? How hot is it?
- What is the ionization state?
- What are the abundances in the LIES?

- What is the ionization level of SWCX?
- Heliospheric versus geospheric (magnetosphere) SWCX
- Absorbed at 2 keV by the Loop I, the Galactic HII region and supergiants
- Dominated at 3.5 keV by the saturated extragalactic background

New mission — Spectrum Recover Geomagnetic
Pipe dream: whistling — Members for the magnetosphere and CME
Local Bubble and Beyond II
Philadelphia, USA, 2004 April 21-24
http://lsf.nsf.gov/

References

Collins et al., 2007, ApJ, 653, 224, Geospheric SWCX, A bar for the magnetosphere and CME
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