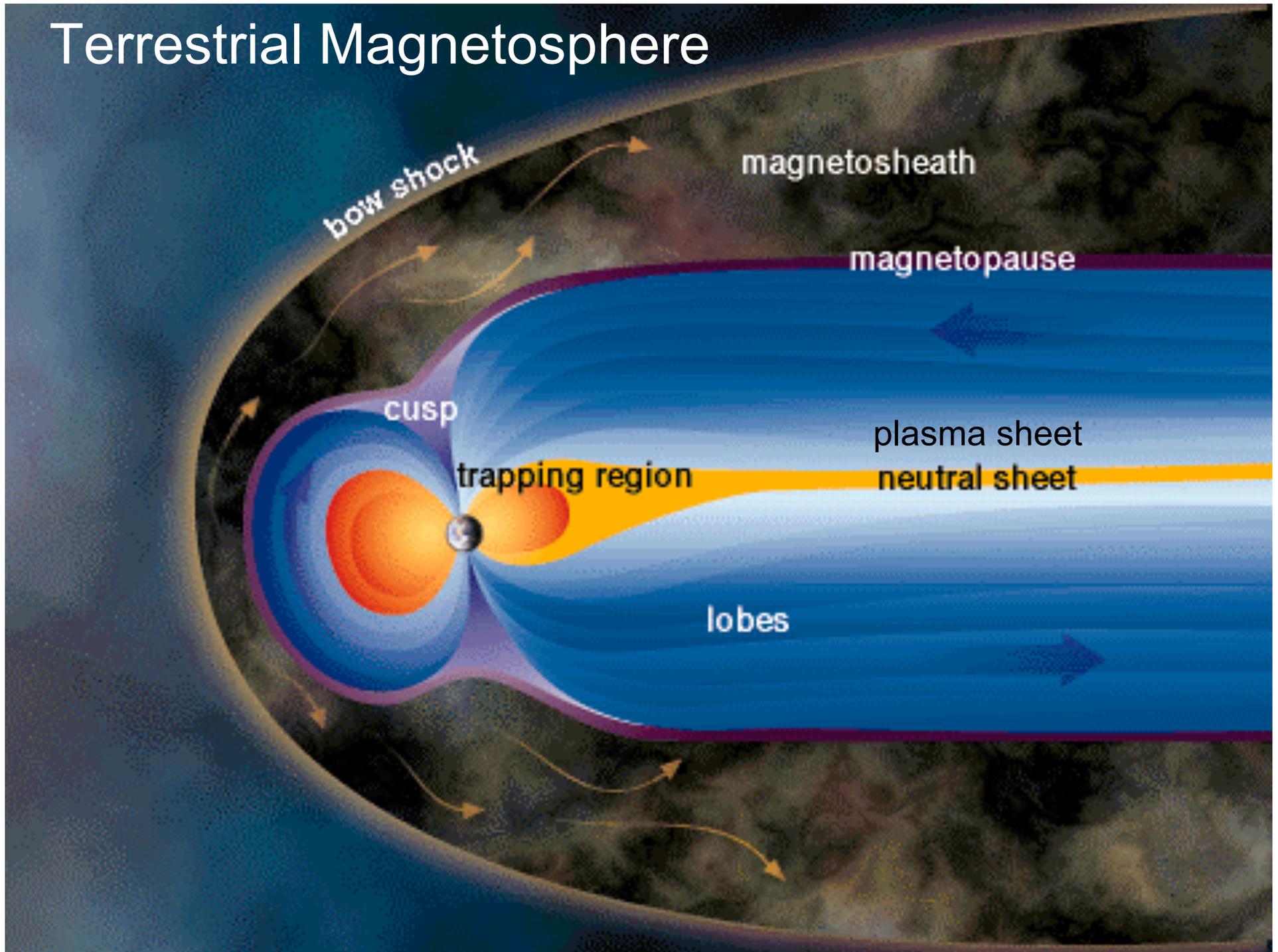


Energetic Particle Flux at the Moon While in the Terrestrial Magnetosphere

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Earth and Space Sciences
University of Washington



Terrestrial Magnetosphere

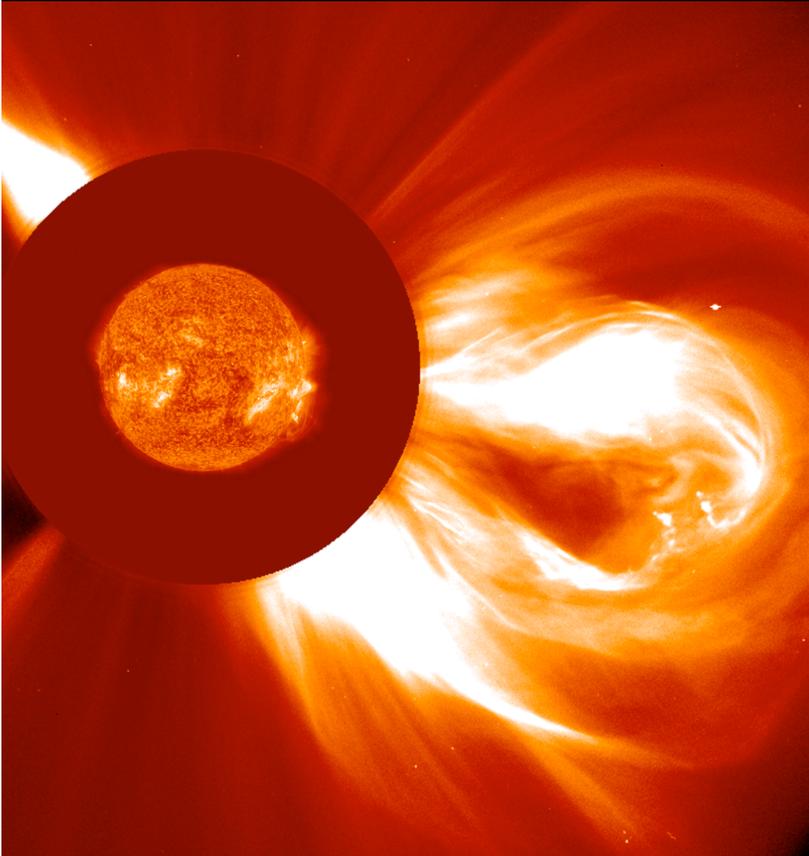


Halloween 2003 Storm

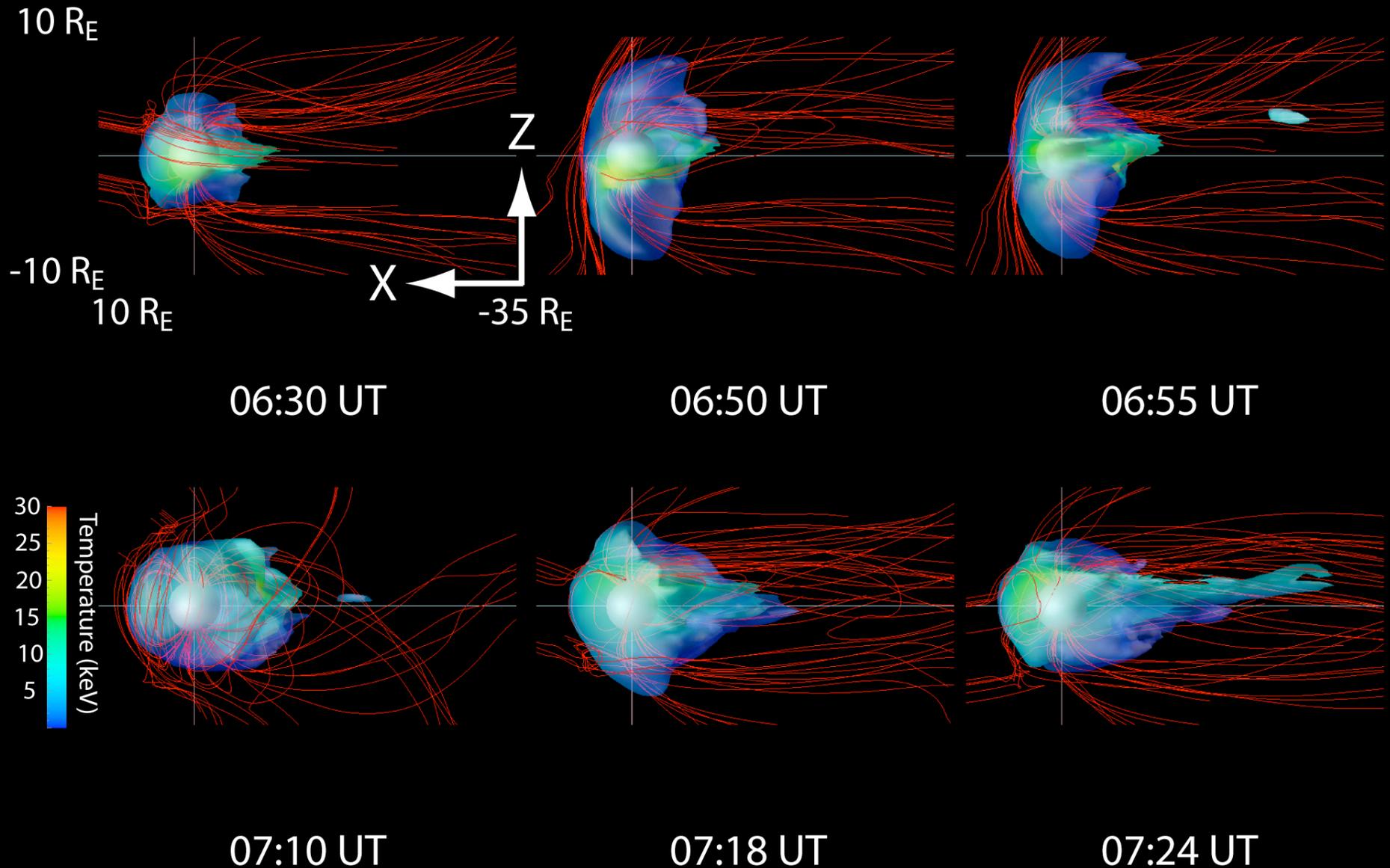
- Multiple CMEs and flares
- High speed (> 2000 km/s) flows

March 10, 1998 Storm

- Not preceded by CME or flare
- Density enhancement

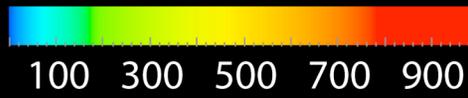


3D Multi-fluid simulations of Oxygen Outflow Halloween 2003

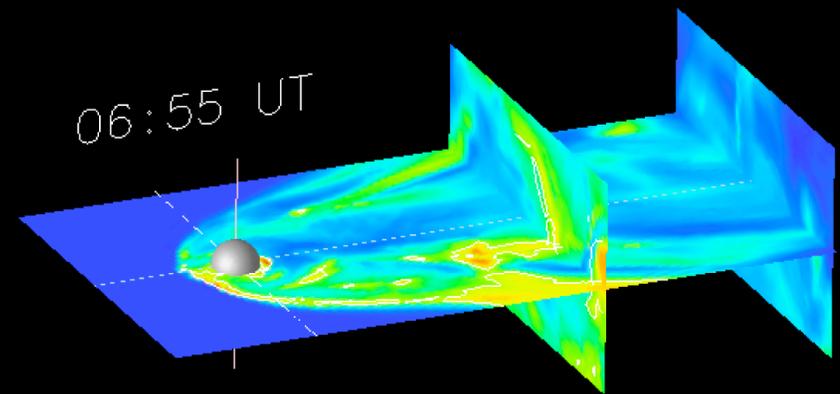
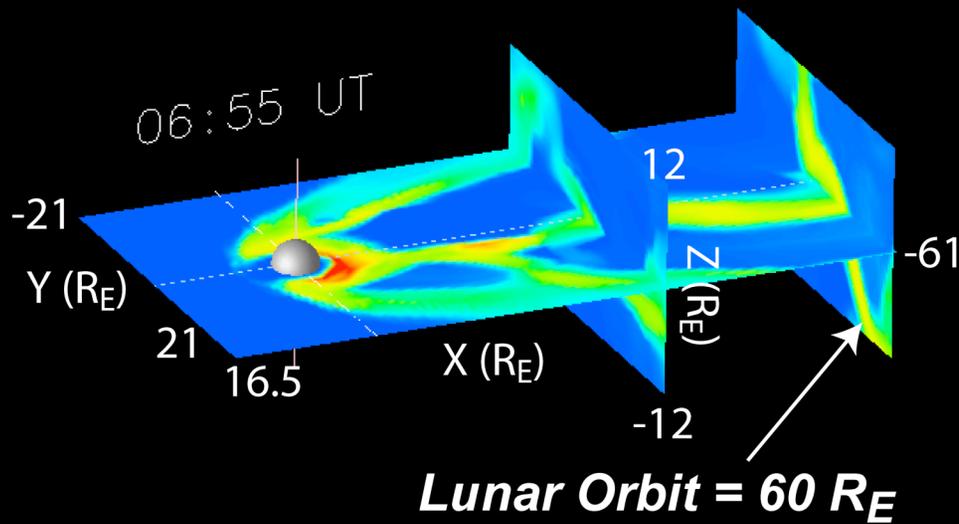


High Energy Oxygen at the Moon - Halloween 2003

Oxygen Temperature (keV)

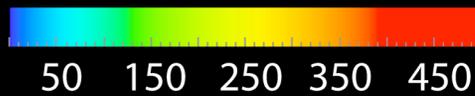


Oxygen Concentration

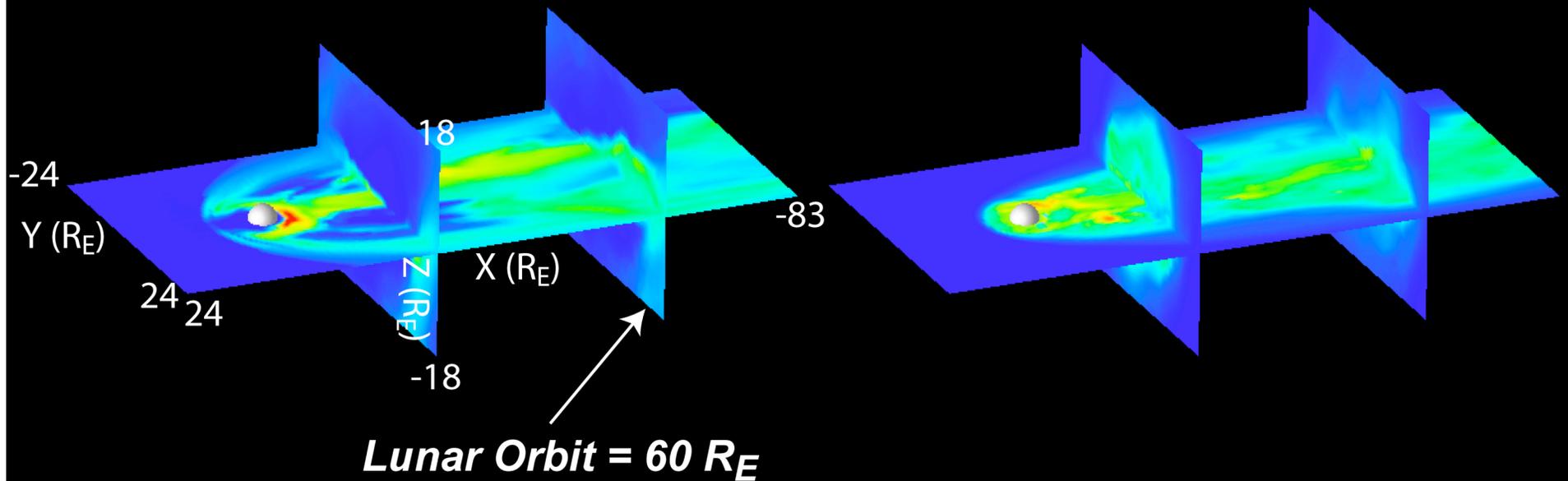
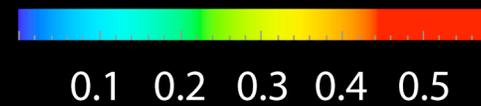


Energetic Oxygen at the Moon - March 1998

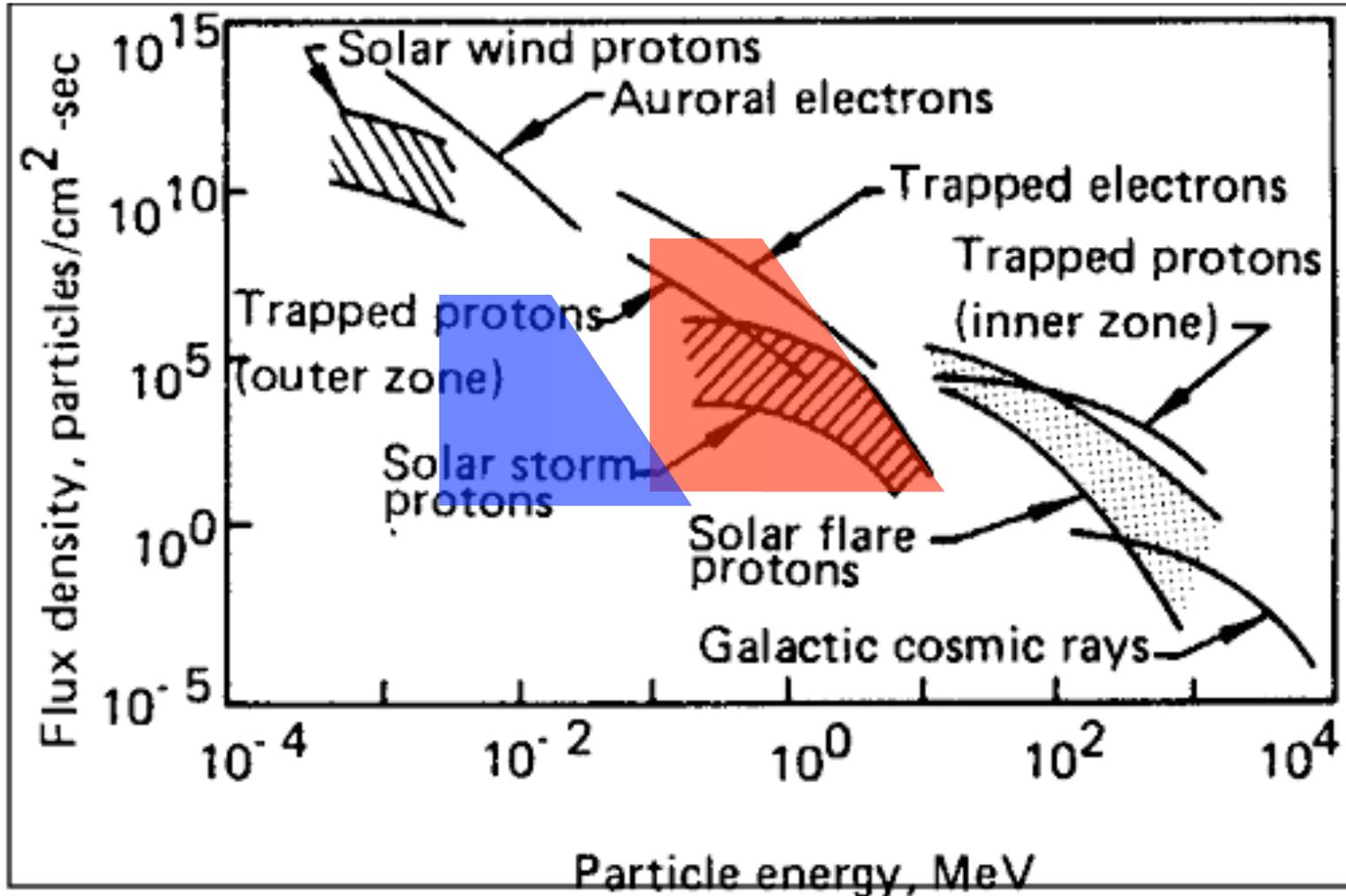
Oxygen Temperature (keV)



Oxygen Concentration



Radiation Spectra



Red = Halloween 2003; Blue = March 1998

Conclusions

- *The flux of oxygen ions at lunar radii in the magnetotail can have fluxes and energies similar to low energy SEP events.*
- *During outflow events the high concentration of oxygen ions means they constitute the major source of energy density.*
- *The high concentration and temperature of ions during outflow events could lead to significant charging of both the lunar surface and man-made objects.*

