

Lagrangean Protector Against Solar Emissions (LAPSE):



**How to Save Human Civilization
and Safely Colonize Mars**

Joseph N. Pelton, Ph.D.
Acting Chair of the Board, ACESWorldwide

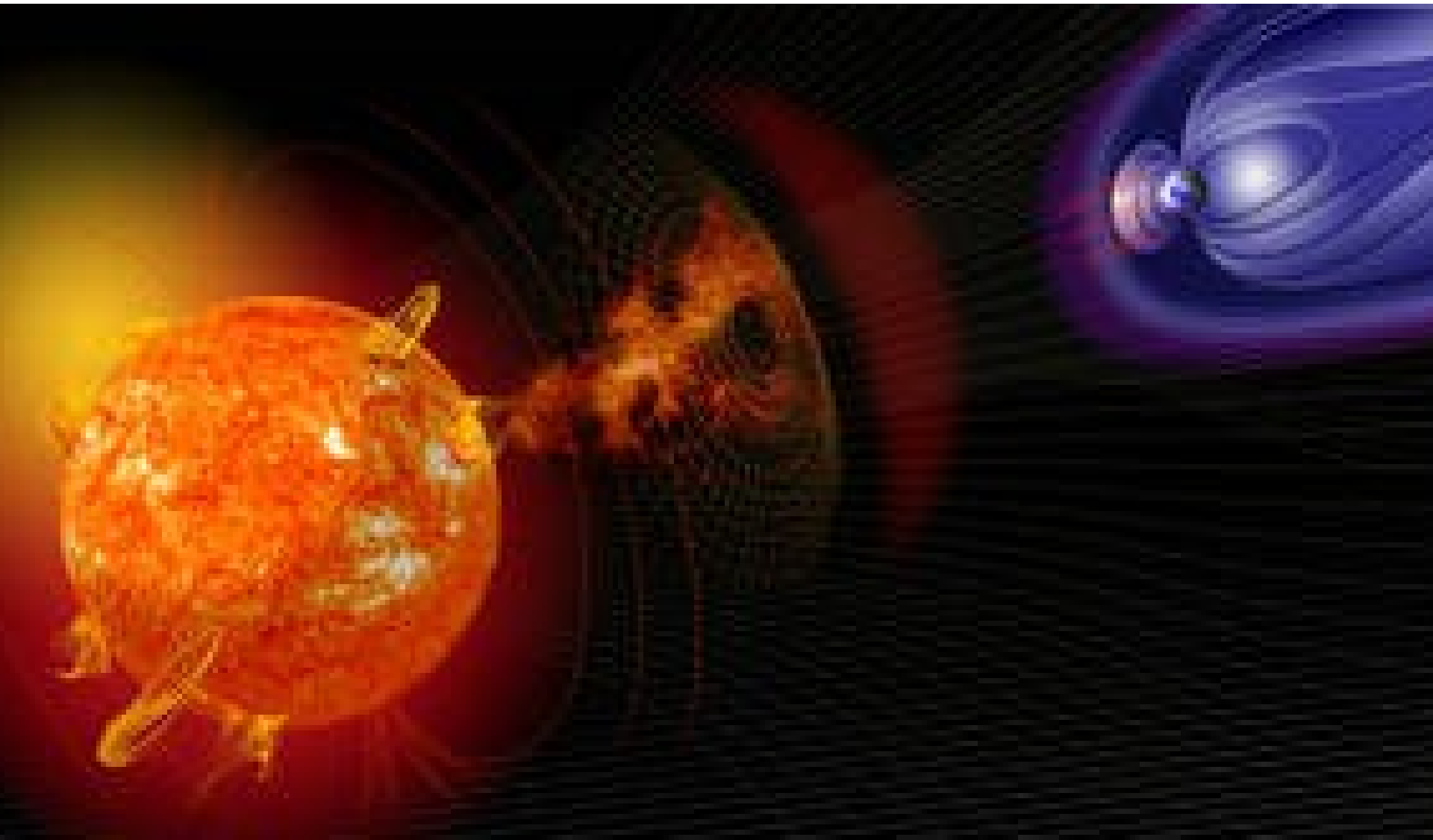
**How to Save Human Civilization
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Earth Now Faces Many Cosmic Threats

- Potentially Hazardous Asteroids & Comets
- Space Debris in Earth orbit & now we even have Lunar orbit debris
- Solar Storms & Coronal Mass Ejections (CMEs)
- Black Holes, Galactic Events such as Super Nova
- Anti-Matter
- But in the near term Coronal Mass Ejections and Orbital Space Debris are the most likely globally devastating events. Defense against CMEs, however, might also hold great opportunity for Mars.

Why are CMEs going to be increasingly Dangerous?

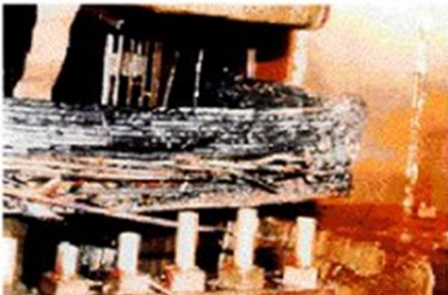


Carrington Event of 1859, Montreal Event of 1989, Halloween Event of 2003



PJM Public Service
Step Up Transformer

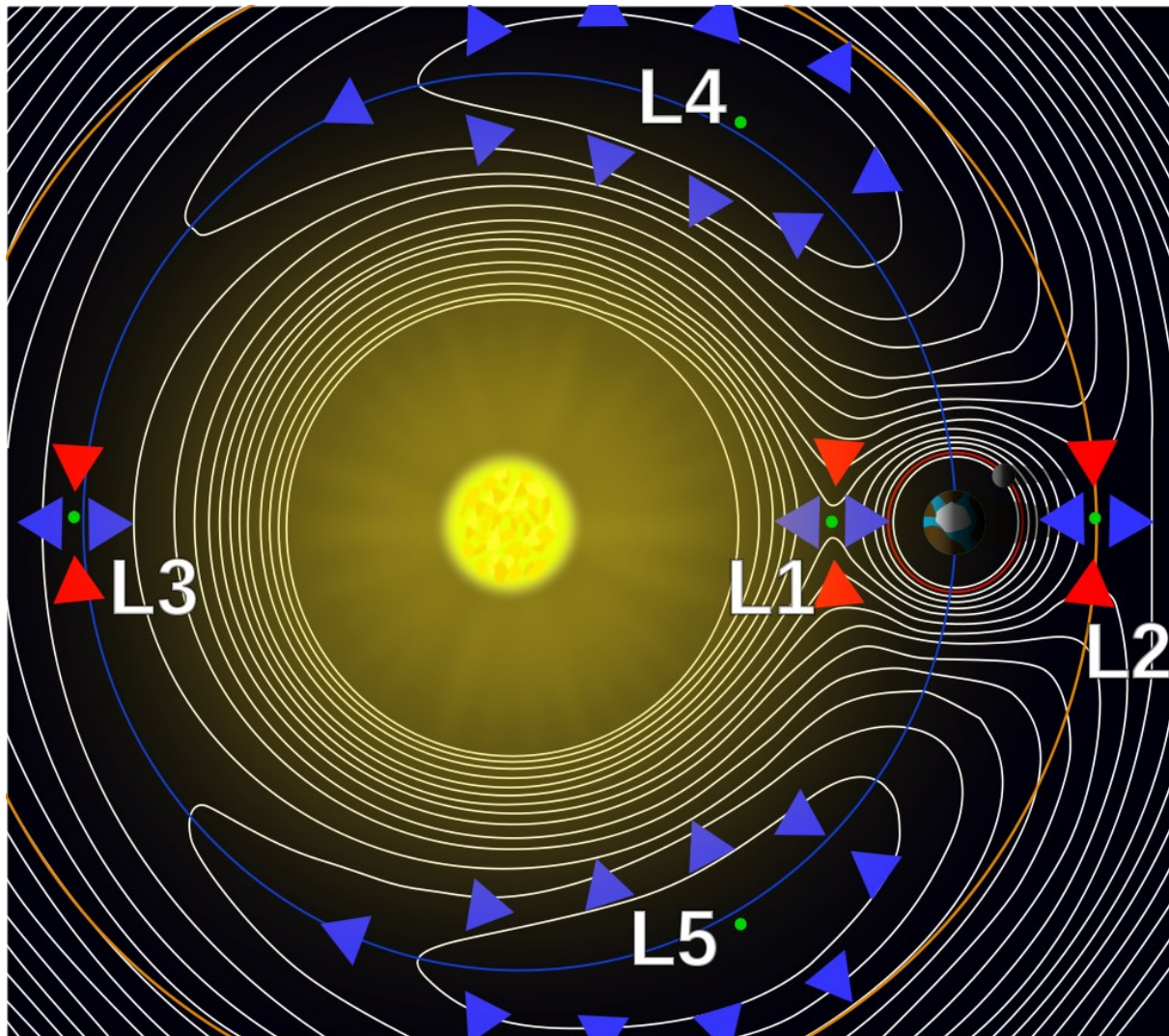
Severe internal damage caused by
the space storm of 13 March, 1989



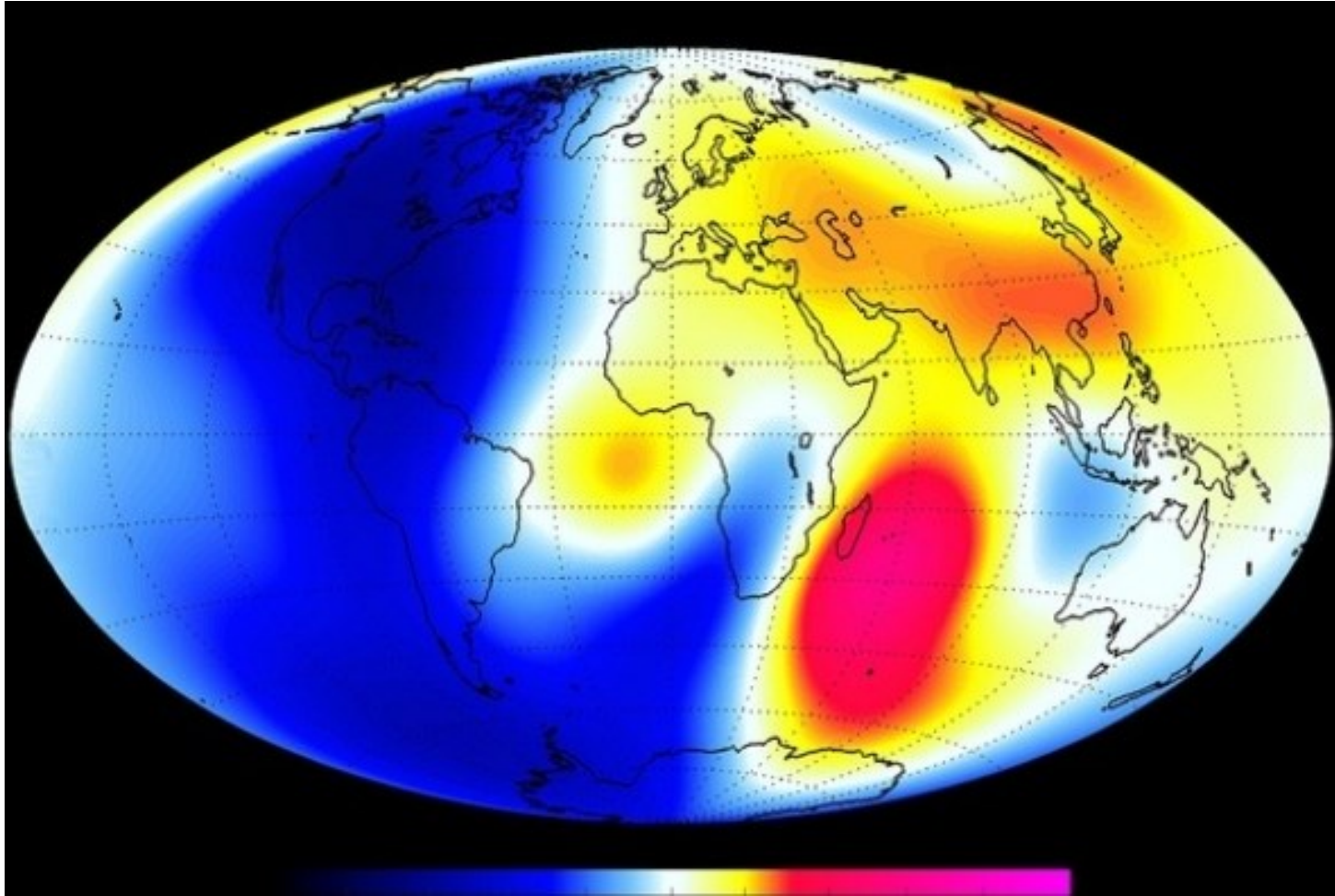
Dangerous Impact of Coronal Mass Ejections (CMEs)

- Electrical Grid Transformers
 - Pipelines
 - Satellites, Comms, GPS, Internet synchronization
 - Computers, Internet of Things, SCADA controls
 - Natural EMP (could be mistaken for Nuke bomb)
 - Most Electronic mechanisms
-
- Montreal Type Event every 25 to 30 years
 - Carrington Type Event every 150 years (Lloyds of London study suggested that this type of strike today would take about \$3 trillion to rebuild No. American electrical grid.
 - What about a World 80 years from now. A world with 12 billion people and that is over 80% urban. A time when 95% of jobs are service jobs needing computers, smart phones, electricity, satellites and the Internet!!

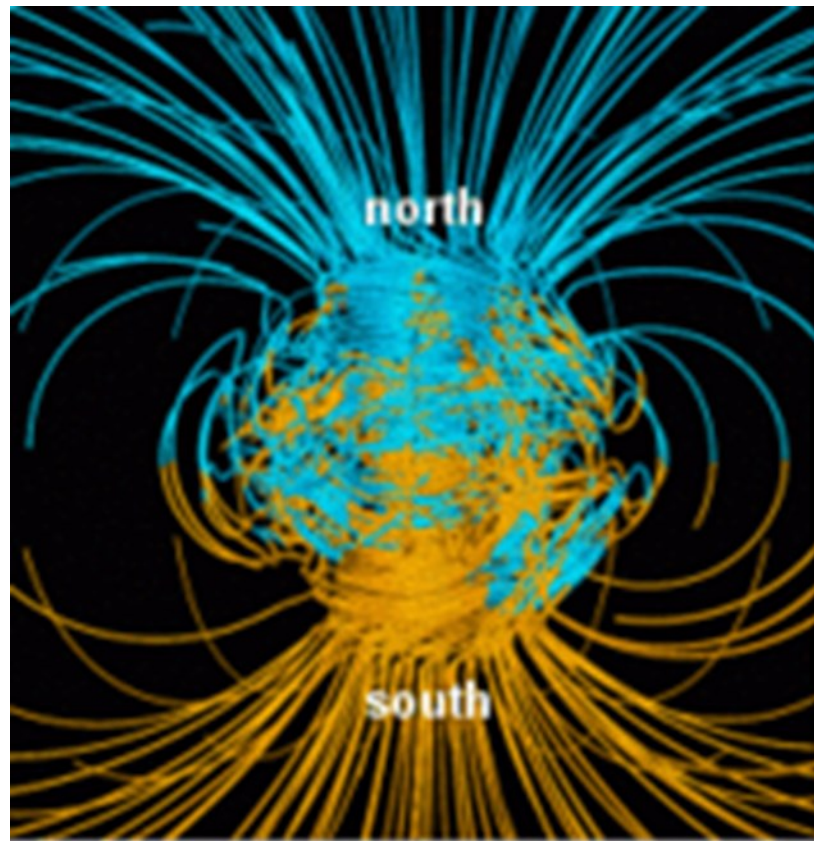
Solar Shield at Lagrange Point 1



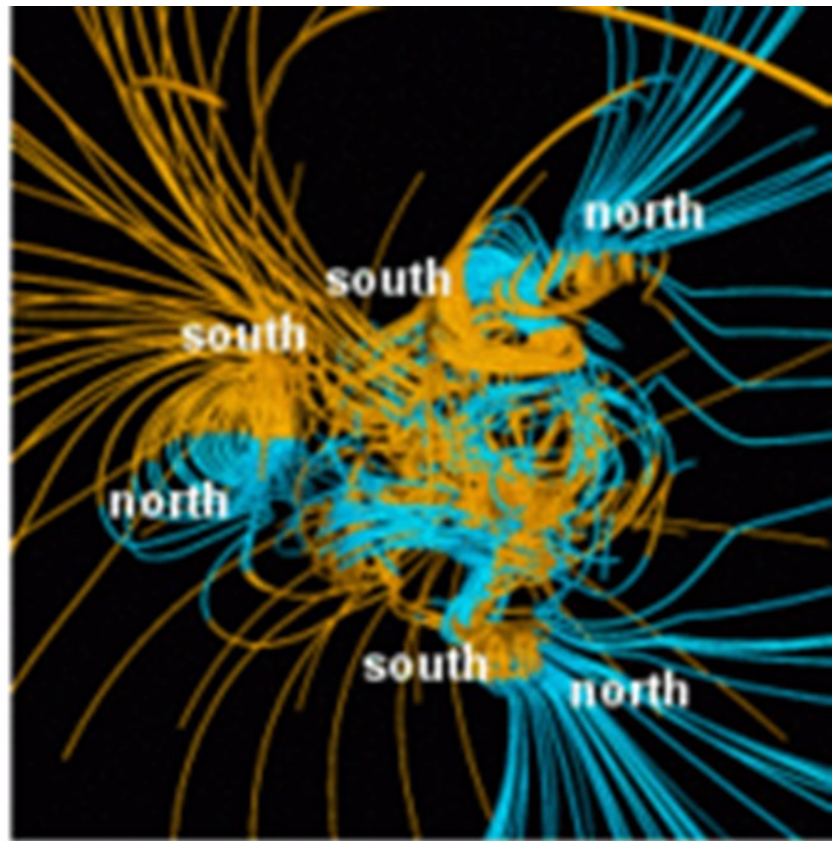
The Geomagnetosphere as mapped by Swarm (ESA) and MSS (NASA)



The Lose of Geomagnetosphere Protection During Polar Reversal

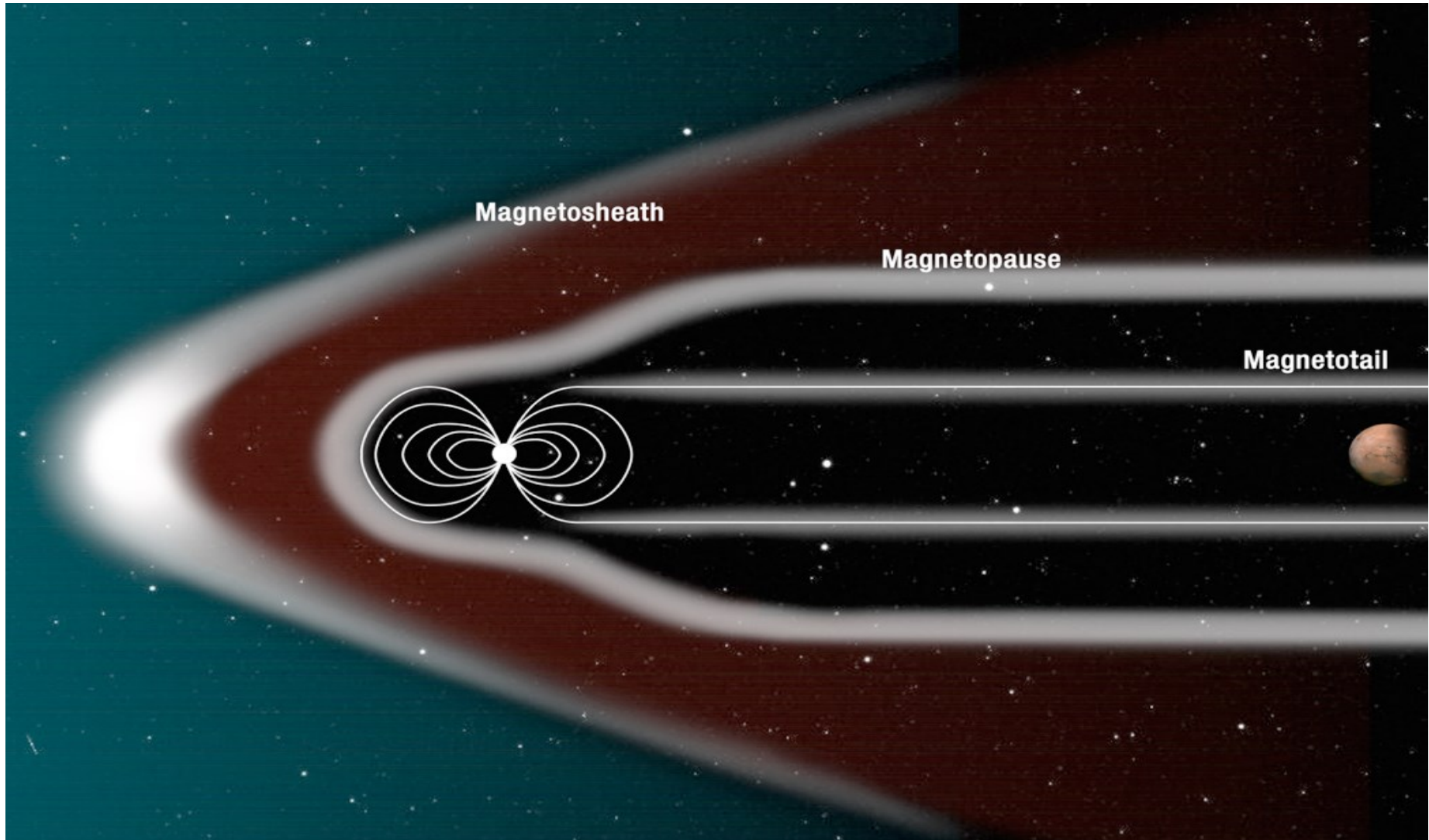


between reversals



during a reversal

“LAPSE” shield for Mars that would allow a natural atmosphere



There's no evidence to date that we are much smarter than the dinosaurs



Perhaps Now Would Be a Good Time To Create a New Way to Divert Asteroids
And Build Some Protection against Solar Storms

The Hope is the SRI Can Create Alliances with Others to Defend Earth

- **Thank you for your attention.**
- I hope you might help us create new space alliances to take on the challenges we now face from orbital space debris, solar storms, asteroids and more.