

Seeing the Invisible:

Educating the Public on Planetary Magnetic Fields and How they Affect Atmospheres (Poster OT49)

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Motivation:

- Magnetic fields and charged particles are difficult to visualize – invisible
- But planetary magnetic field and charged particle environments (*magnetospheres and ionospheres*) are important to understanding planetary and atmospheric evolution

Target Learning Objectives:

1. Earth's magnetic field is generated in the deep interior; Mars' is "trapped" in surface rocks
2. Magnetic fields influence climate evolution by shielding an atmosphere from the solar wind
3. The configuration of the magnetic field helps to determine the structure of the ionosphere

How do we communicate these objectives?

- A combination of hands-on models and "globe" presentations

[Well, we just started this work, so we don't have any results yet, but this is the kind of thing we're going to do. Come see us next year!]

What does it look like?

Earth

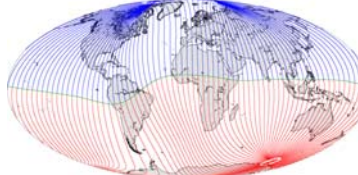


image from geomag.org

Mars

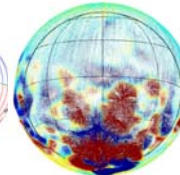


image from D. Brain

Surface field strength and direction

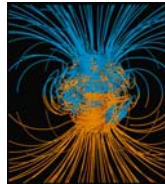


image from psc.edu

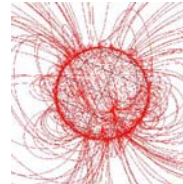


image from D. Brain

Field lines extend out into space ...

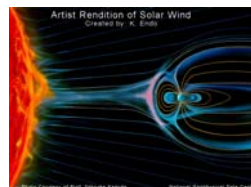


image from ngdc.noaa.gov

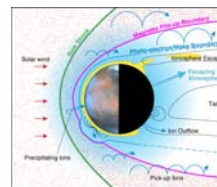
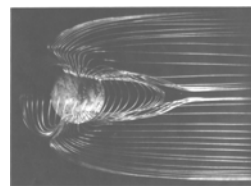


image from D. Brain

...where they interact with the solar wind



from Podgorny [1976]

Simplified wire models of the field

?

Create a simplified wire model for Mars

Two "Globe" Displays

1. Permanent presentation on the Science on a Sphere[®] at the Lawrence Hall of Science In Berkeley, CA, ...



image from LHS



image from NOAA

...in conjunction with the opening of the Facing Mars exhibits in October 2009



• **Facing Mars** was designed and built by the **Ontario Science Centre**, Ontario, Canada

• [Family Guides](#), [Education Guides](#), and [US & Canadian Curriculum Links](#) for the **Facing Mars** exhibits can be downloaded from <http://www.facingmars.com>

2. Traveling presentations using the Magic Planet[®] digital video globe from Global Imagination[®]



all images from Global Imagination[®]