

SHINE 2017

The Space Physics of Star-Planet Interactions

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Motivation

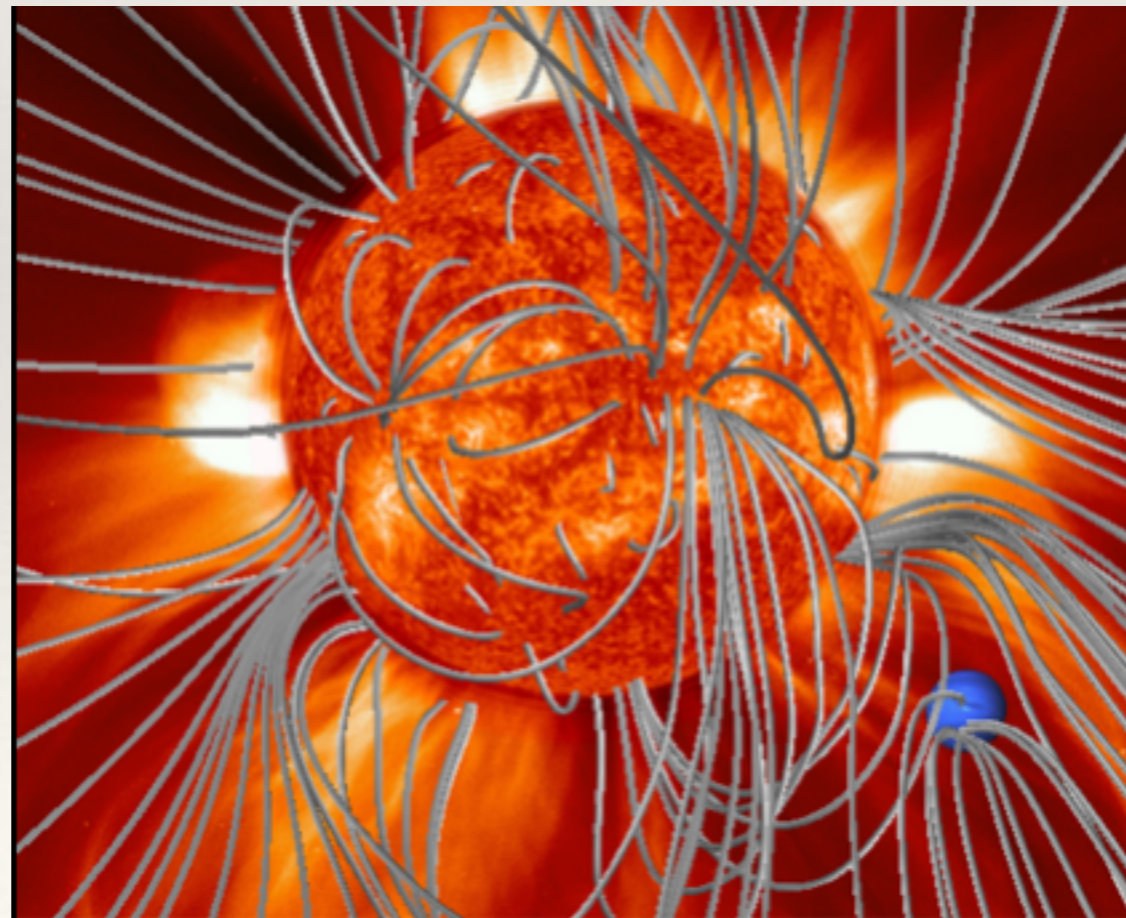
- ❖ Exoplanets moving from discovery-phase to science-phase
- ❖ Many of the key questions can be addressed or aided by solar-terrestrial (SHINE) related research (modeling and observation)
- ❖ New environments (*more active stars, closer-in planets*) place constraints on space physics modeling and understanding
- ❖ NSF (INSPIRE) and NASA (NExSS) have recently emphasized multi-disciplinary focus to encompass broader range of star-planet interactions, particular with respect to habitability of earth-like planets.

Key Questions to be Addressed

1. Assuming increased stellar activity is associated with larger and / or more frequent active region and starspot emergence, how does this affect the astrospheric current sheet and the open / closed field distribution? What observables might we look for?
2. What is the relationship between stellar activity and the magnetic / kinetic energy density in the stellar wind? How does this relationship scale for highly active stars?
3. What would increased flux emergence (beyond solar norms) mean for large-flare, CME and SEP production?
4. What is the impact of space weather on the rate of atmospheric escape from magnetically shielded and unshielded (exo)planets?
5. What is the impact of space weather (XUV, particle radiation and interplanetary magnetic fields) on planetary atmospheric chemistry?

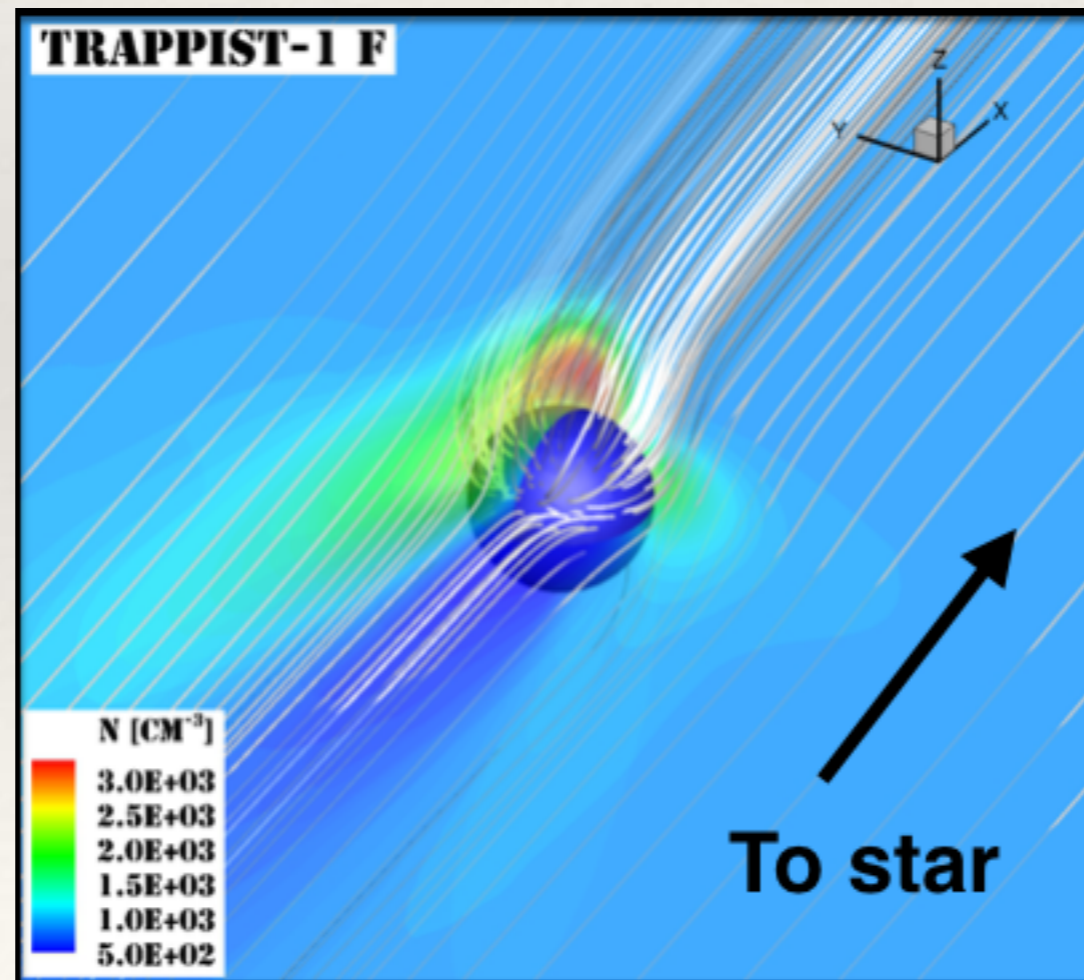
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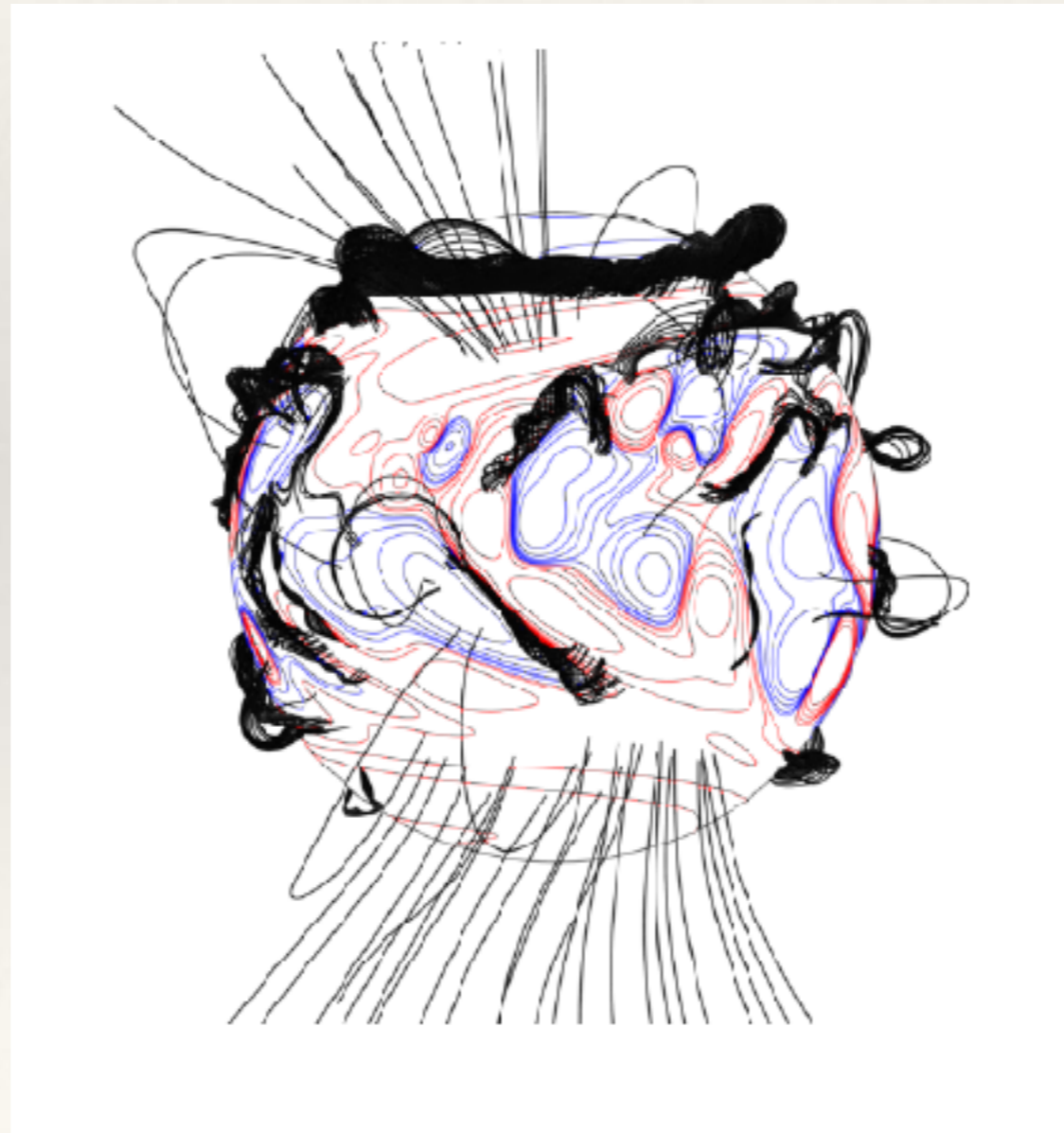
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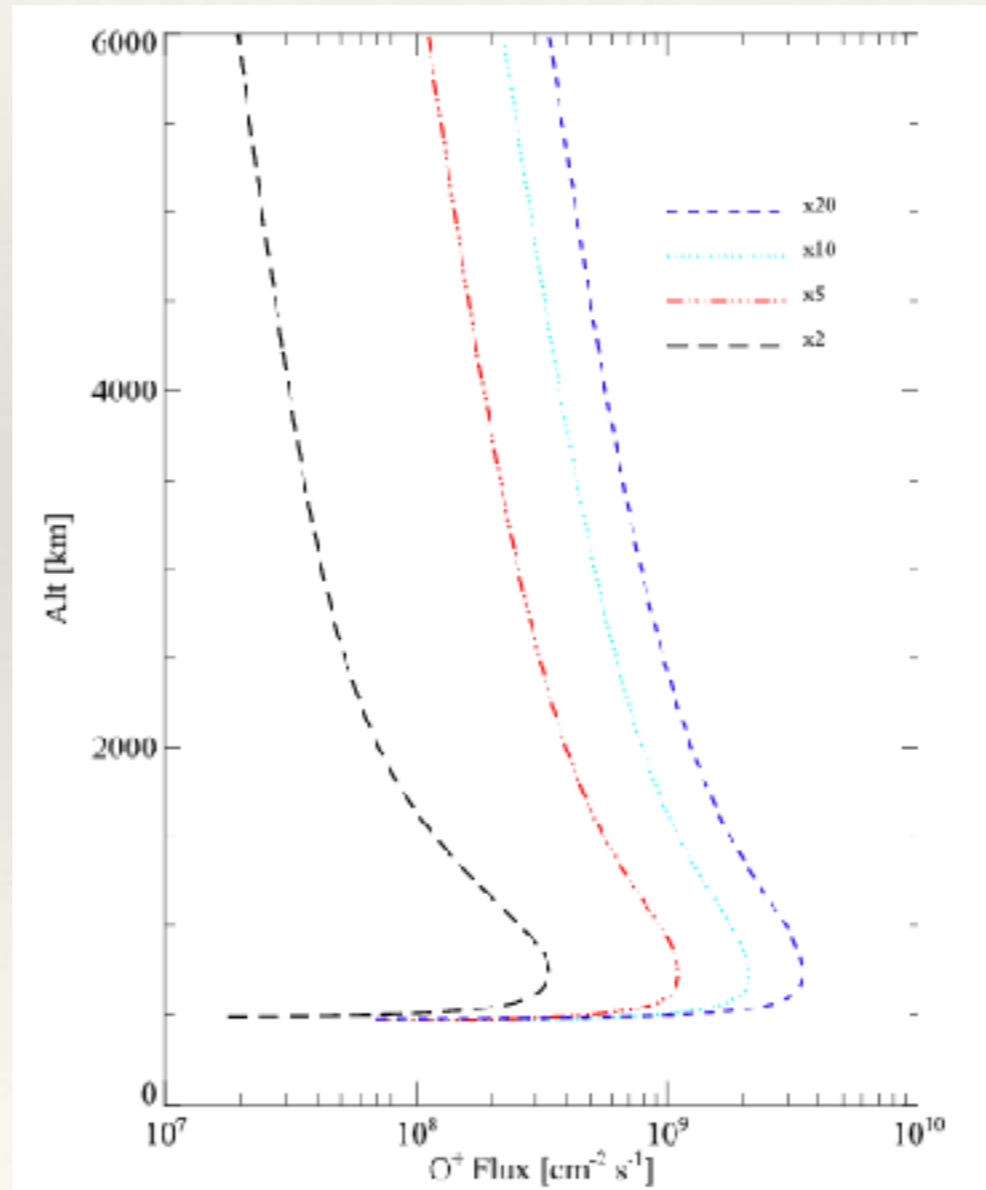
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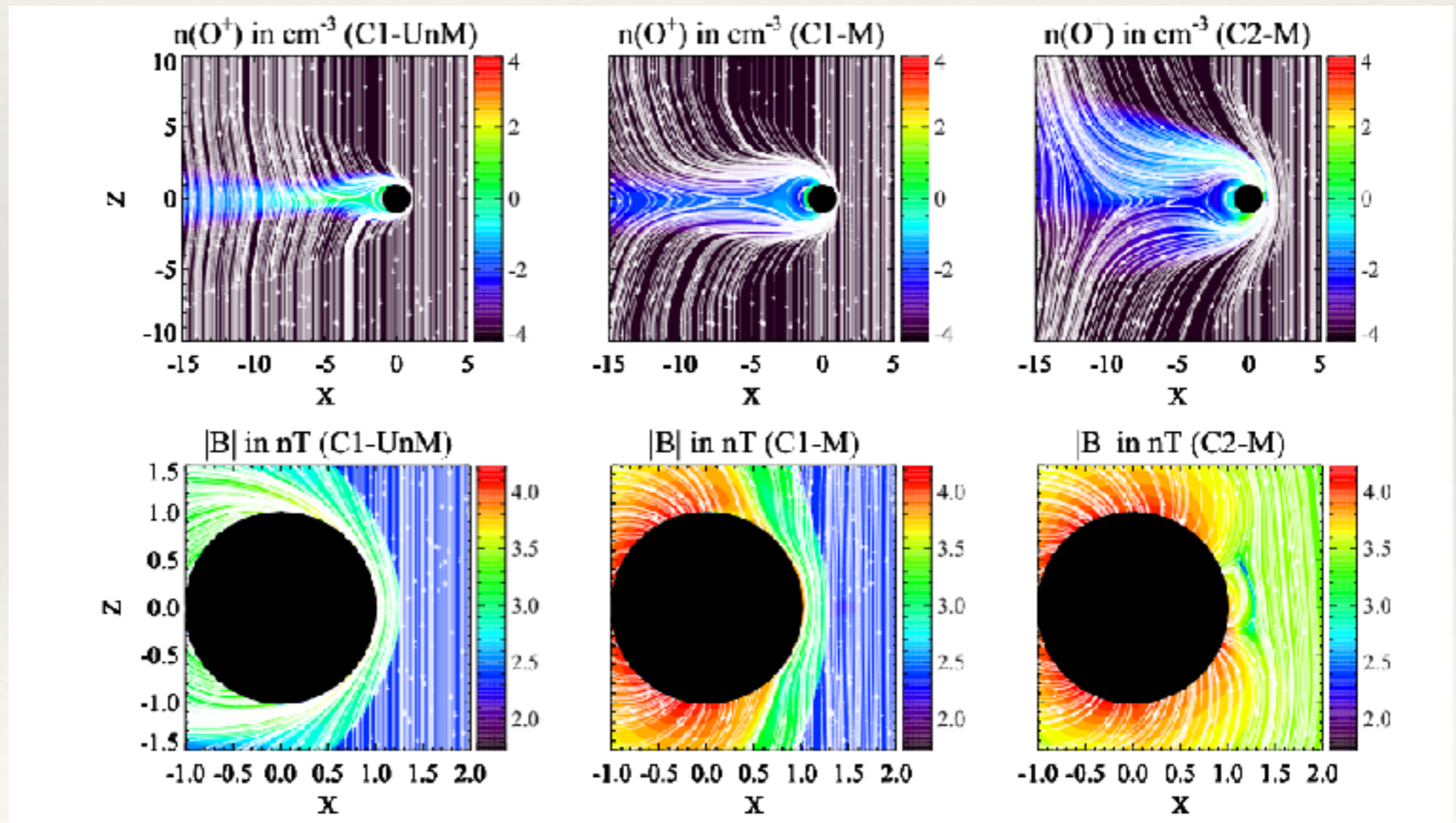
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Logistics

- ❖ **WHEN:** Wednesday morning 10:15 - 13:10
- ❖ **WHERE:** TBD
- ❖ **CHAIR:** Marc DeRosa
- ❖ **SCENE-SETTERS:** David Alexander / Vladimir Airapetian
- ❖ **Presentations in session:** We welcome small number of **ONE SLIDE** contributions - must be pertinent to discussion at hand