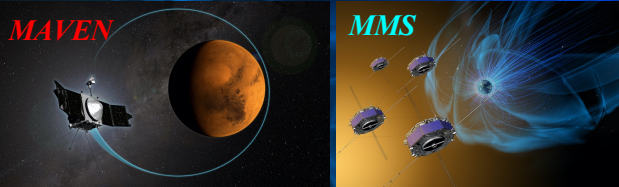
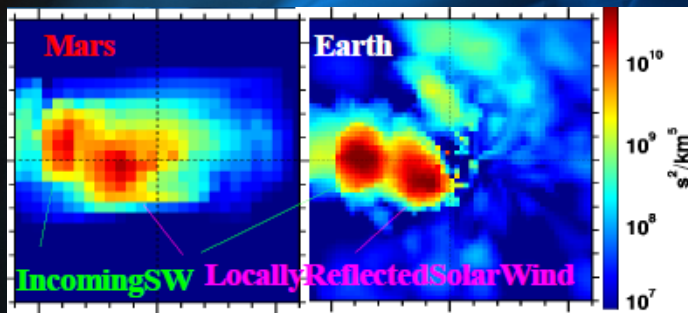


Mini-storms brewing in the front yard of Mars?

Intense magnetic field and density pulses generated just outside of the bow shock at Mars and Earth present storm-strength IMF disturbances to the magnetospheres



What are the cause and impact of the pulses?

Comparing MAVEN observations with MMS 4-spacecraft high cadence measurements and fully kinetic simulations, we find:

- Pulses grow from electromagnetic ion cyclotron waves that feed on the solar wind energy.
- Pulse magnetic fields have the strength of the IMF that drive geomagnetic storms and they modulate the solar wind energy input at Earth.
- Pulses have the potential to drive mini-storms at the small induced magnetosphere of Mars, opening dayside gateways for planetary ion escape.

Chen, Halekas, DiBraccio, Romanelli, et al. (2022) e2021GL097600