



Science Nugget

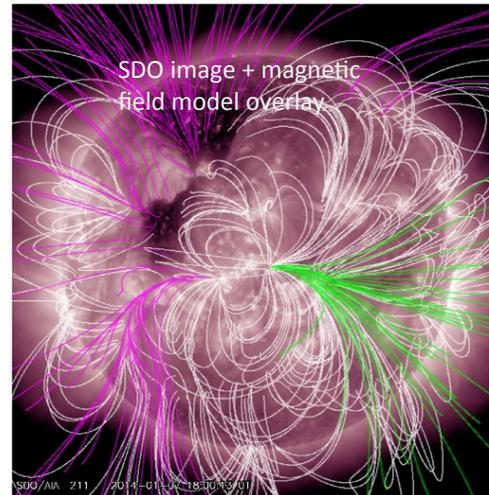
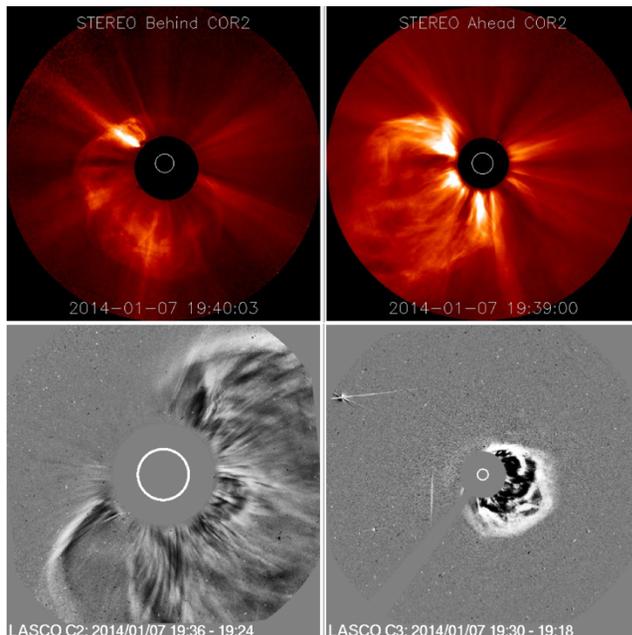
Challenges in Space Weather Forecasting

M. Leila Mays (674) et al.

The Great "Non-Event" of 7 January 2014

CME with speed ~ 2400 km/s from a flaring region near disk center (**This is VERY fast.**)

Early CME arrivals & strong geomagnetic impacts were predicted. However, the geomagnetic storm index never reached even minor storm levels!



What happened?

CMEs can be channeled or guided by magnetic fields open into space (green lines.)

Low down in the solar atmosphere CMEs can travel non-radially

CME shape, orientation & direction with respect to Earth is important!

Implications for future forecasts

- The coronal magnetic field overlying an active region greatly influences CME production, speed, direction.
- For "glancing blow" CMEs, it is important to model asymmetric structure and tilt.
- Multiple viewpoint imaging is necessary for 3D CME reconstructions – **more coronagraphs are needed!**
- More accurate CME forecasts will lead to more accurate geomagnetic storm and solar energetic particle forecasts.