



SECCHI, Best of

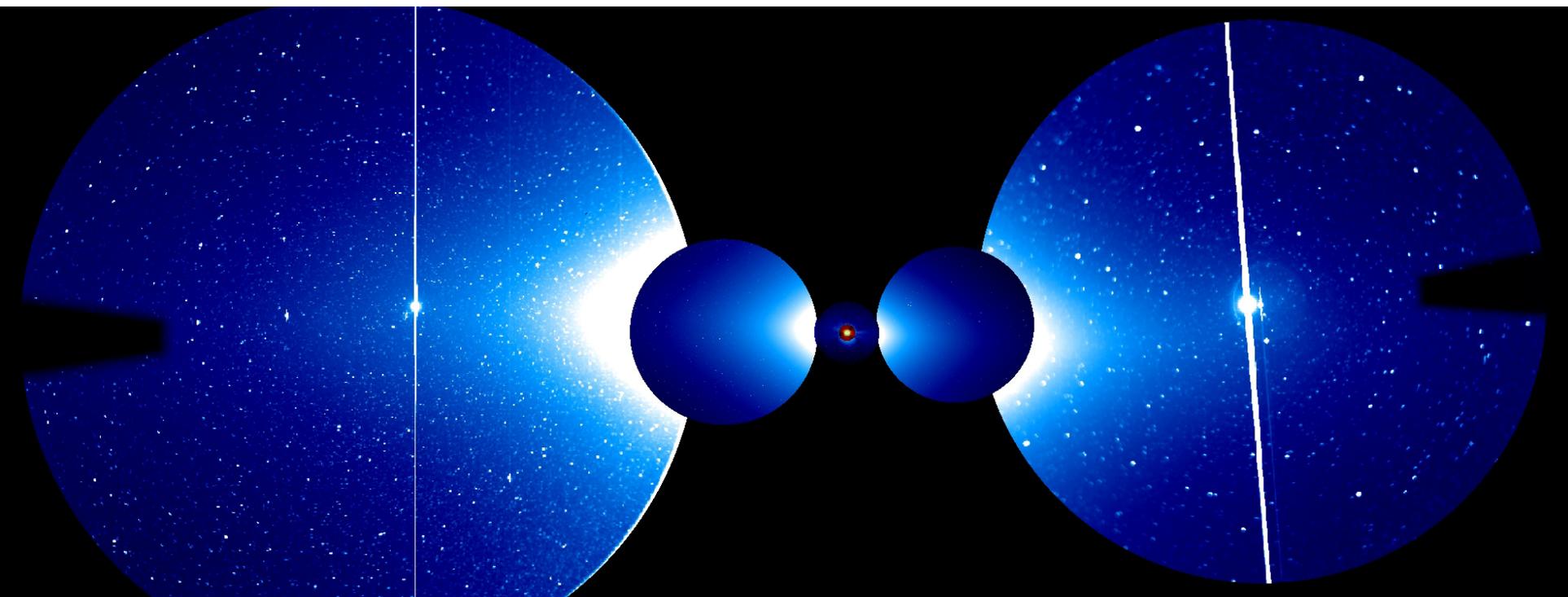
Russell A. Howard

13 Nov 2007

STEREO SWG

Putting All 10 Telescopes Together

Images from 3 June 2007

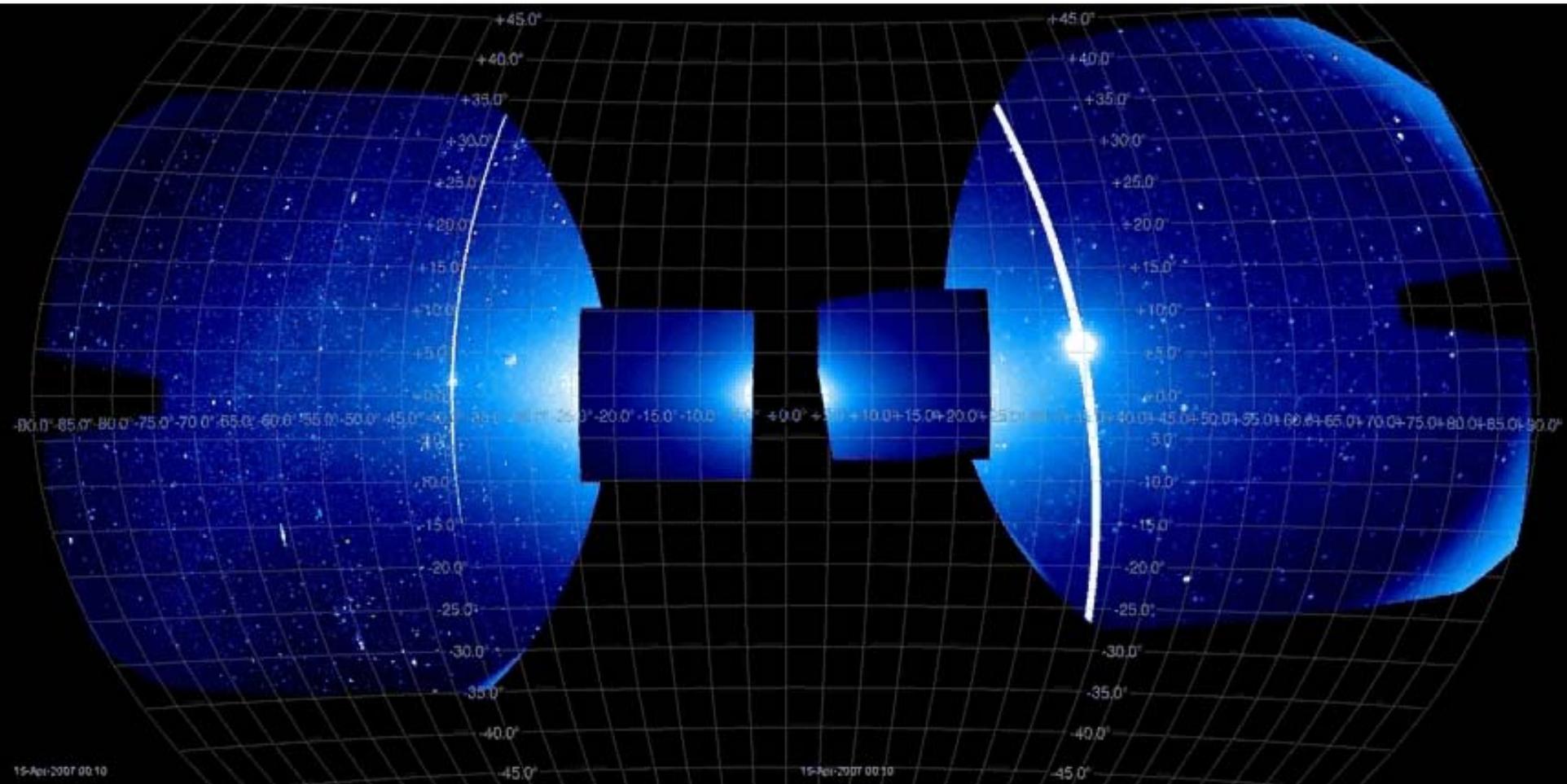


Venus

Earth and Moon

“Global View” - The movie

14 April-24 June 2007



Comet Encke Tail Disruption

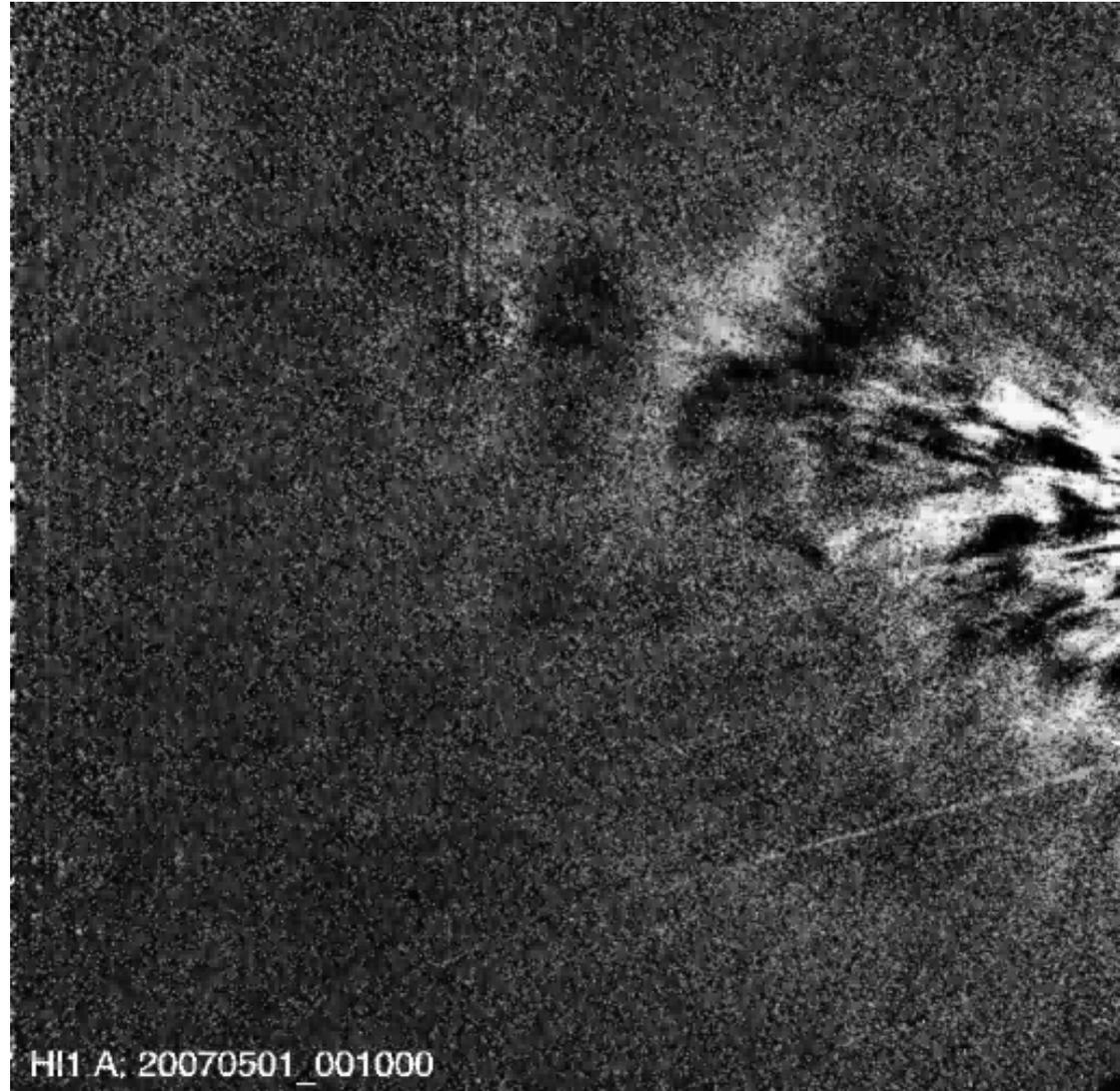
16-24 April 2007

- Vourlidas et al Ap J, 2007
- Note that the disconnection occurs after the brightness enhancement of the leading edge of the CME
- =>Disruptions due to reconnection of the magnetic field in the CME with the field draped around the comet, and not due to density effects
- Note also the disturbed nature at high southern latitudes, when the comet is crossing the boundary between slow and high speed



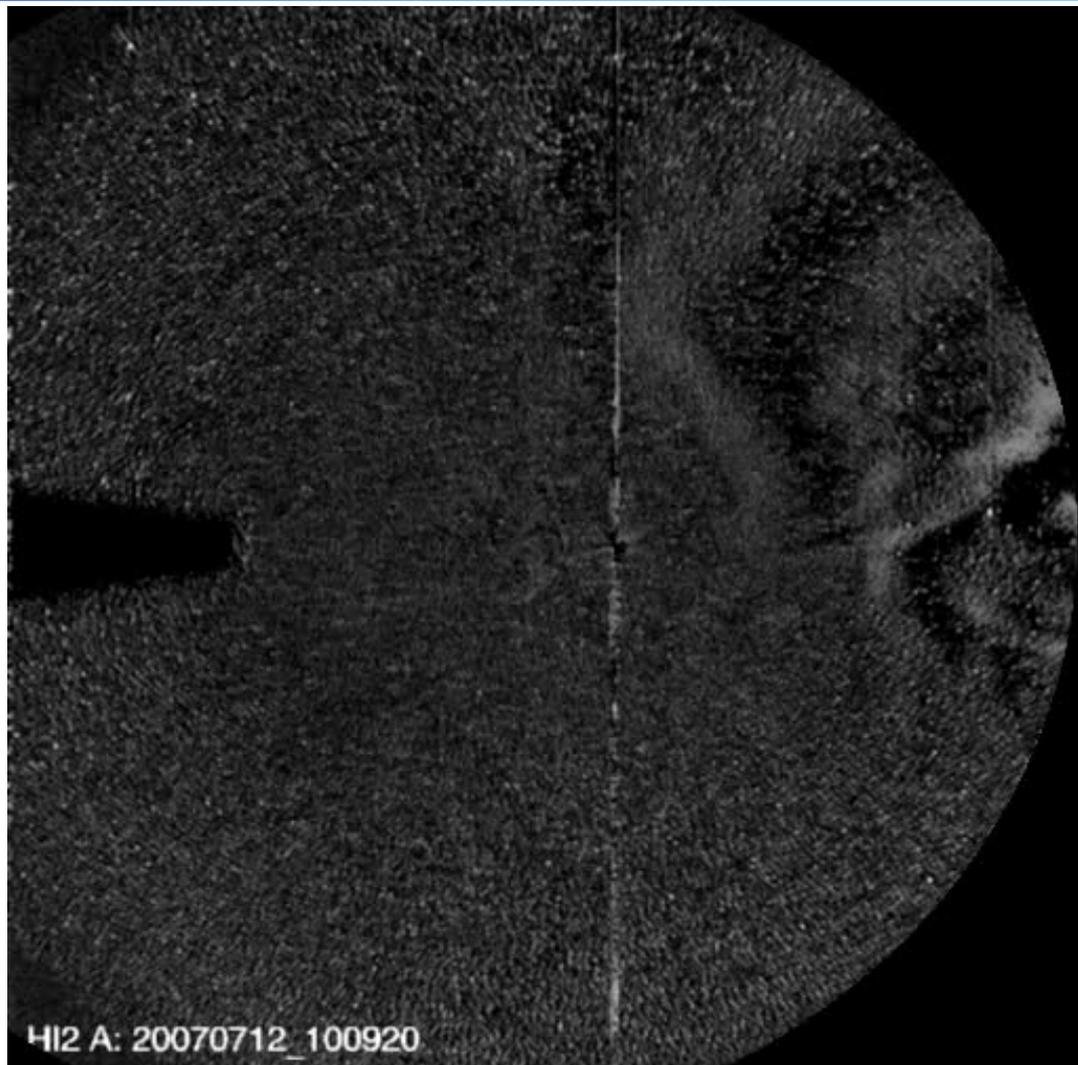
May 2007 – HI-1A

- Example of a clean stellar and background removal
- Outflows & CMEs clearly visible but generally confined to the low latitude slow solar wind



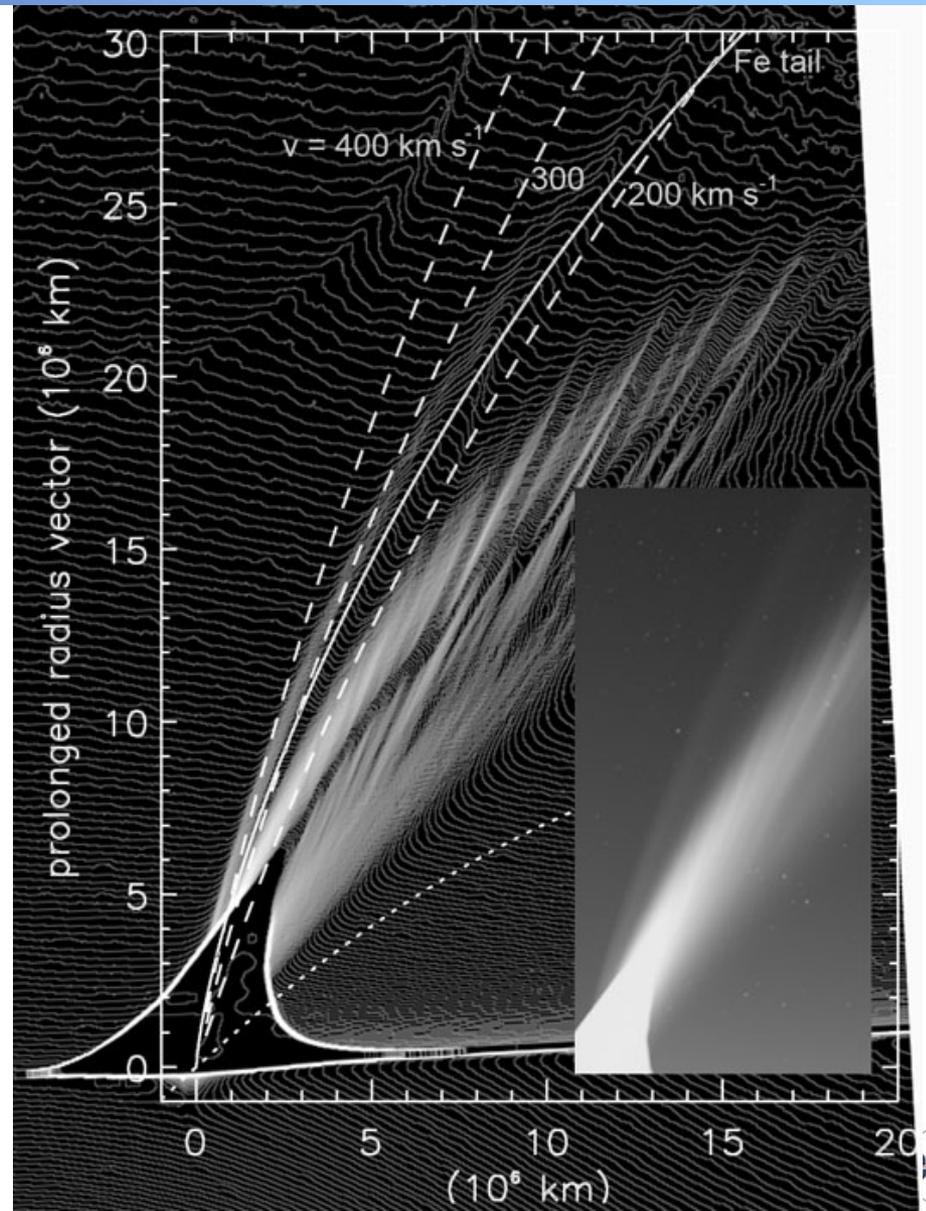
HI-2A July 12-Aug 9, 2007

- Example of HI-2 star & background removal
- Running differences
- Continuation of the flows seen in HI-1, some fade out and others get brighter – Thomson scattering effect

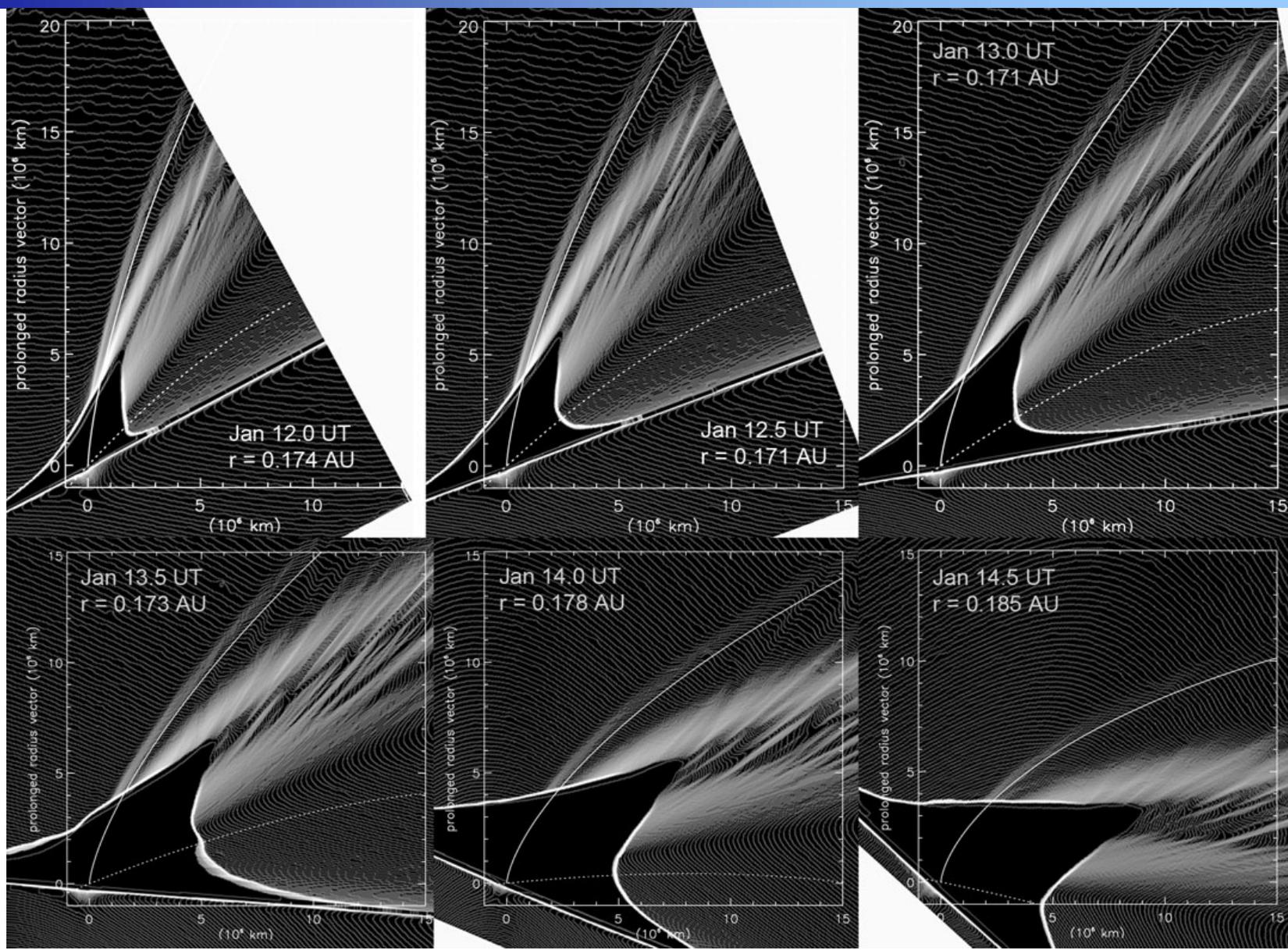


Neutral Fe Detection

- Fulle, et al Nature 2007
- Faint, arch-like tail, identified with neutral iron
- Brightness decay along the tail agrees with a theoretical prediction of the photoionization rate
- Dotted line: comet's orbit
- Dashed lines: model ion tails moving at the given solar wind velocity
 - Best fits imply that wind speed increased from 200 to 400 km/s
- Continuous line: theoretical Fe tail
- Model: Neutral Fe atoms pushed away by radiation pressure



Fits of Neutral Fe Tail



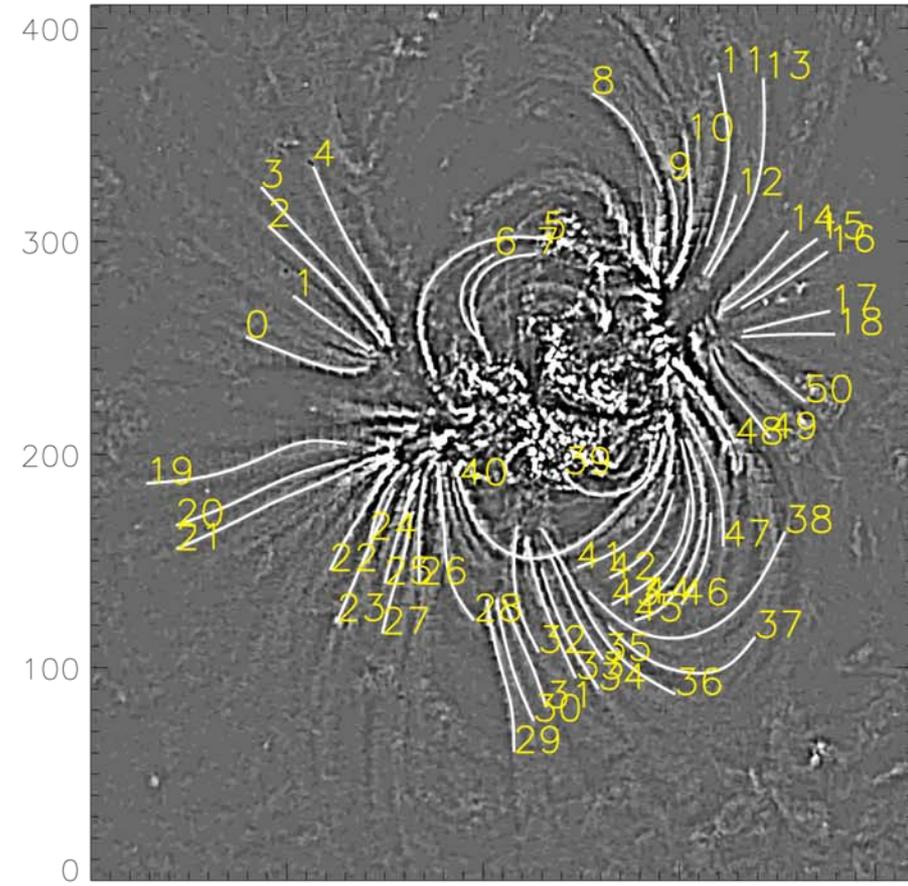
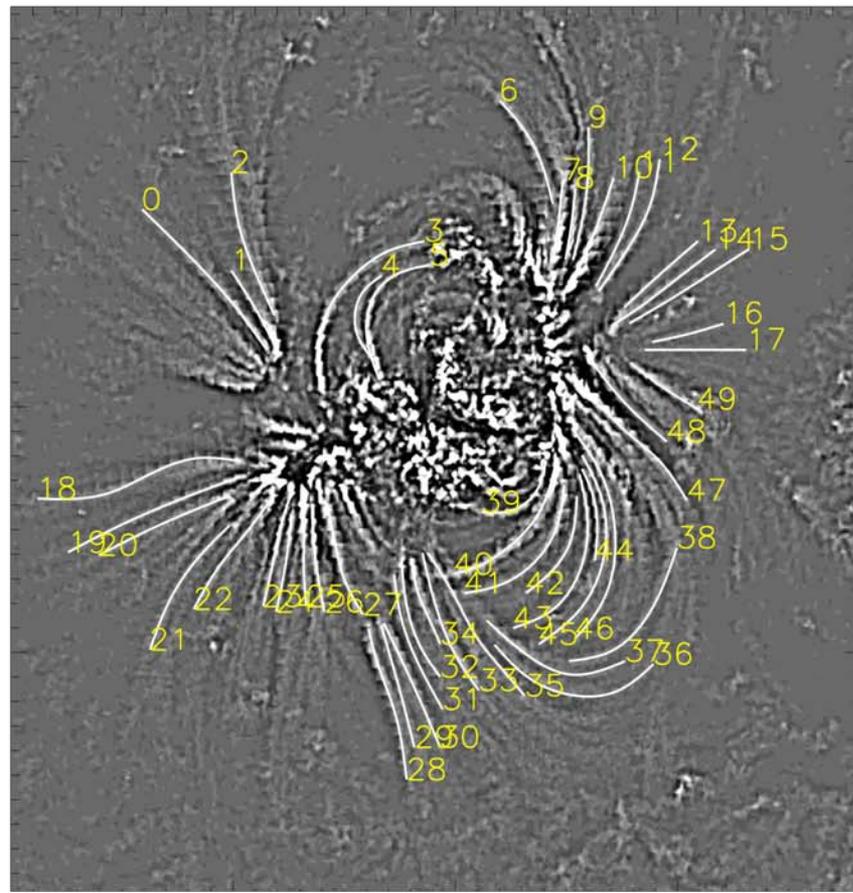
Stereo Loop Reconstruction (1)

- Feng, Inhester, Solanki, Wiegmann, Podlipnik et al, Ap J Letters, accepted 2007
- Compare the reconstructed loops with field lines derived from linear force free magnetic field models with variable alpha, the ratio of field-aligned current density to field strength

STEREO-B

6 June 2007

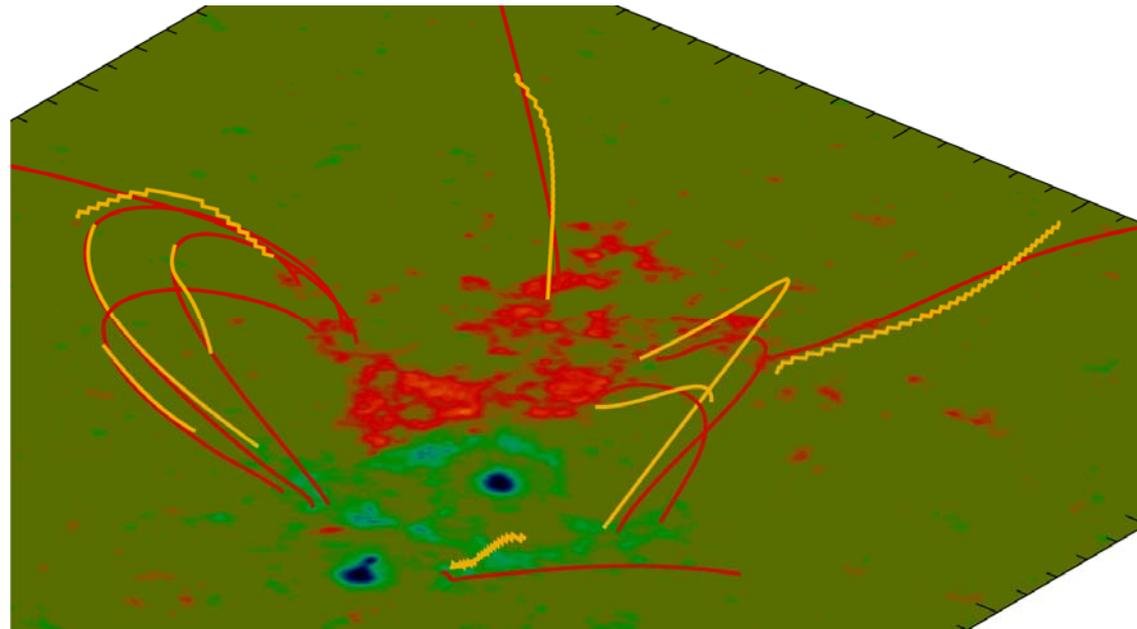
STEREO-A



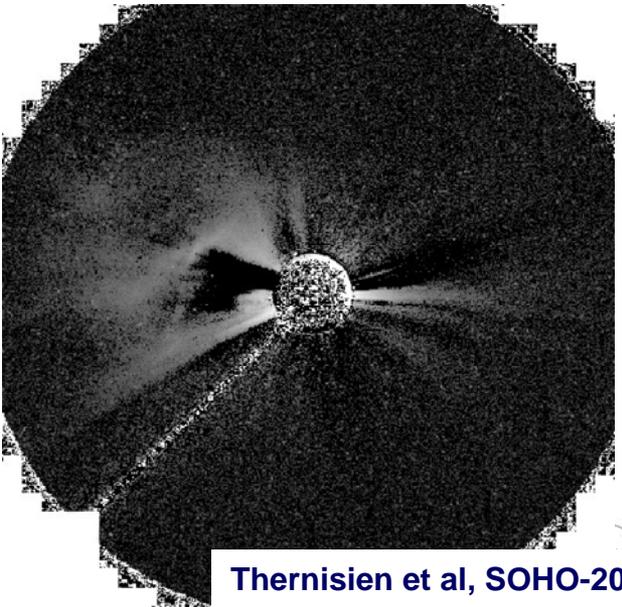
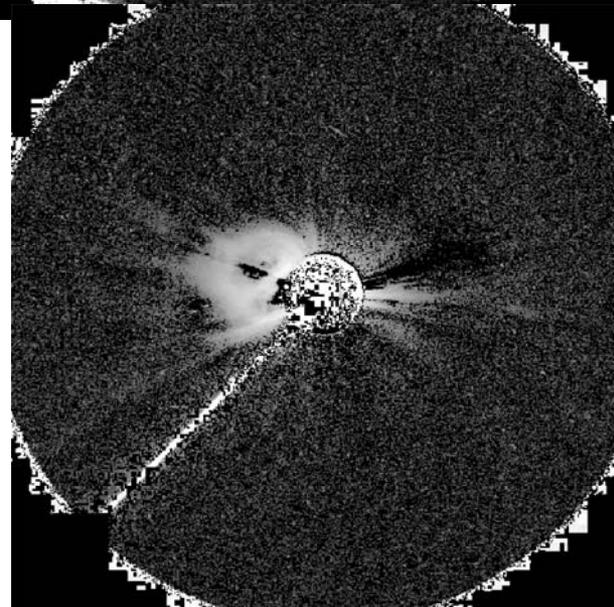
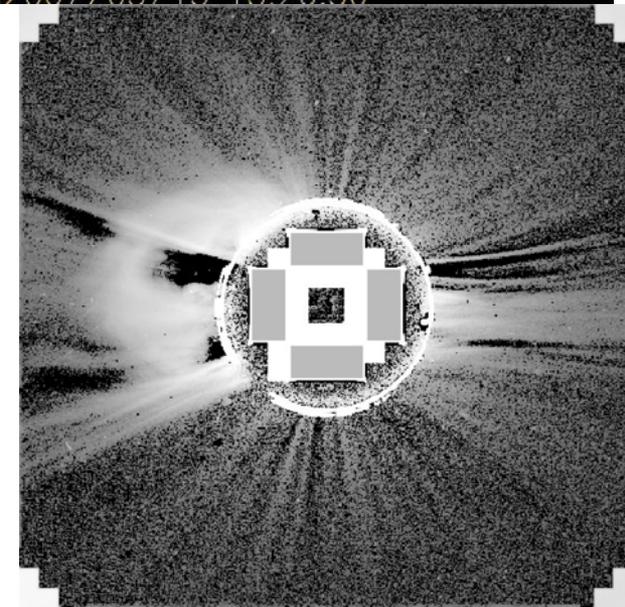
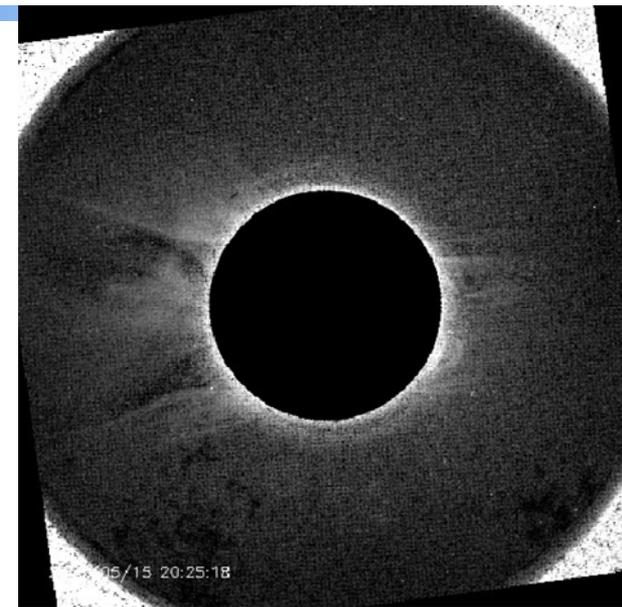
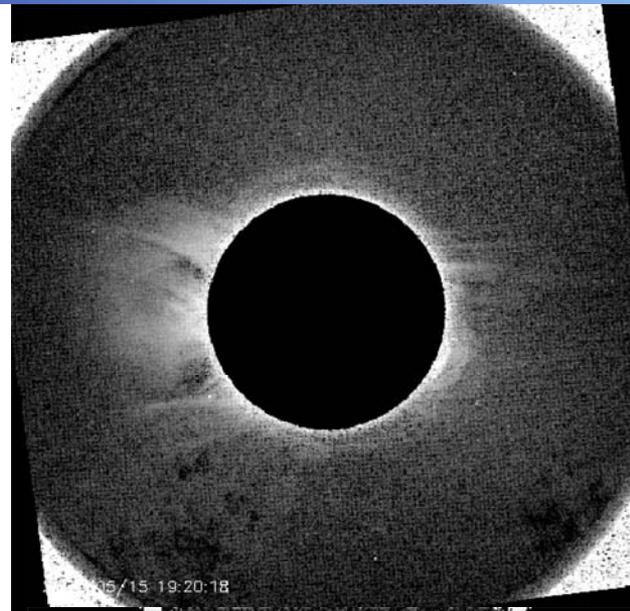
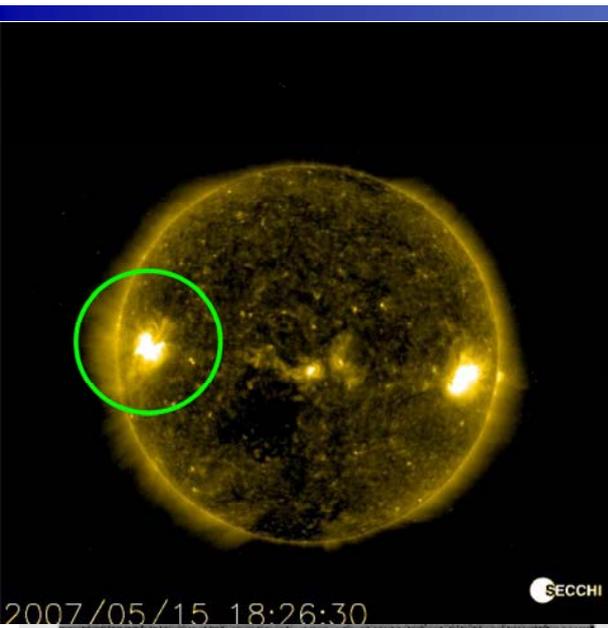
Stereo Loop Reconstruction (2)

- Yellow – Observations
- Red – Closest fit MHD field lines
- Left View – STEREO A S/C
- Right View – From NE of AR

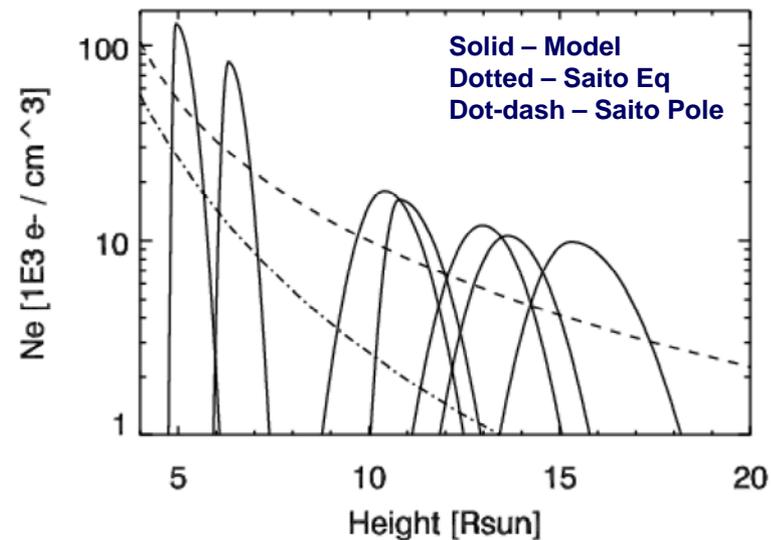
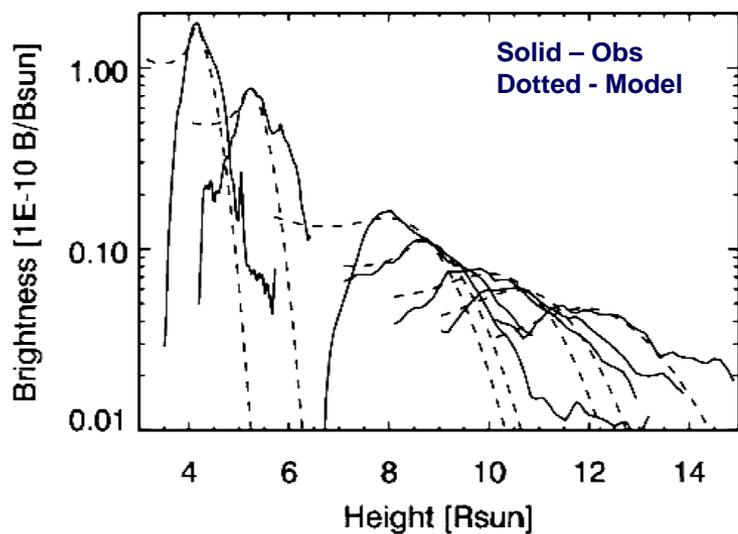
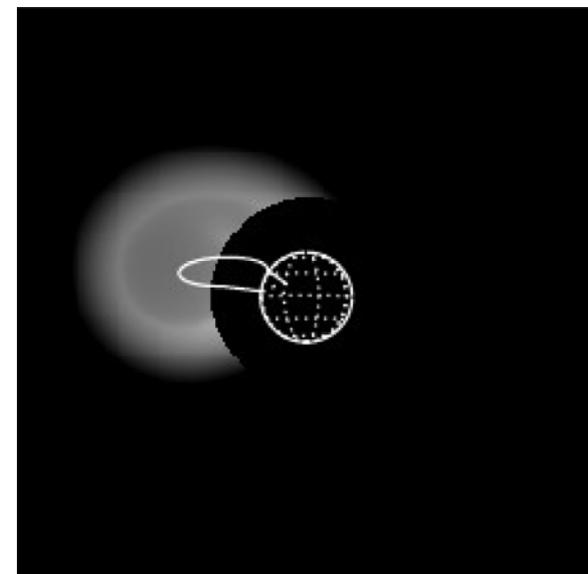
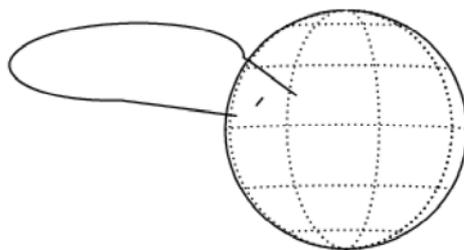
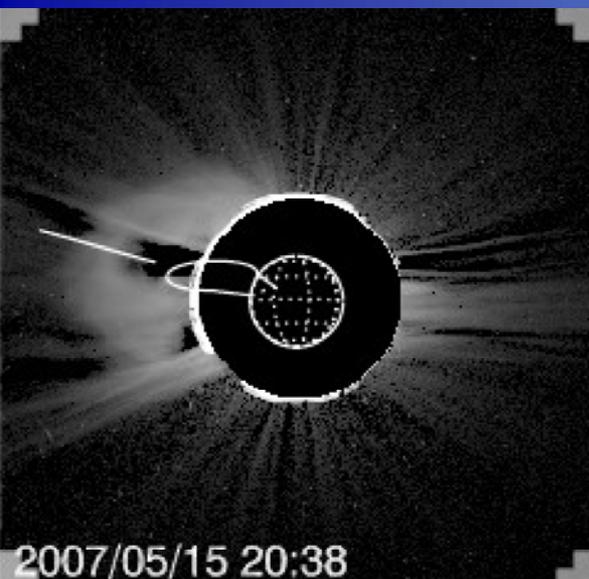
- Most of the loops cannot be approximated by planar curve segments, which was the usual simplification for reconstructions in the past
- Loops on open field lines appear more strongly curved than the corresponding MHD field lines=> deficiency in linear force-free field extrapolation
- Alpha was different for open & closed field lines



Modeling of CME on 15 May 2007 (1)



Modeling of CME on 15 May 2007 (2)



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- **CME extrapolated to HI-1 and HI-2 (see SWG_Thernisien_Model.pdf)**

More “Best of”

- **Angelos Vourlidas – More on Comet Encke and Loneas**
- **Spiros Patsourakis – EUV Waves**
- **Angelos Vourlidas – Observations of compression region at CIRs**