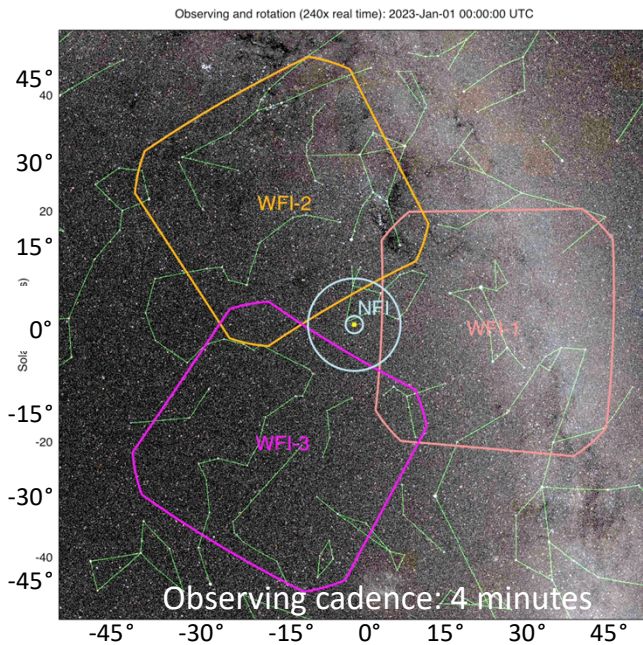


Space Weather Monitoring in 3D with PUNCH and QuickPUNCH

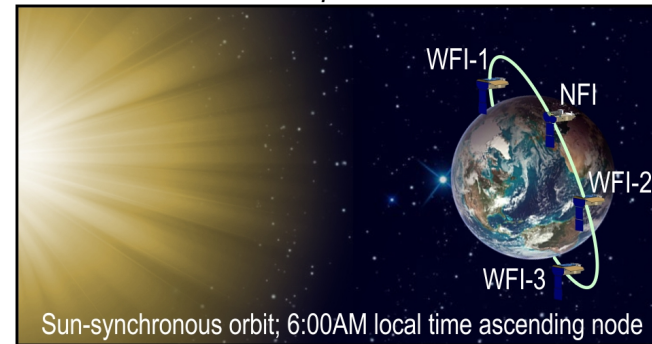
C. DeForest, R. Killough, S. Gibson, T. Case, M. Beasley, G. Laurent, R. Colaninno, J. Redfern, D. Seaton, M. West & PUNCH Team

- As of 2024, four PUNCH spacecraft will work as a single “90° virtual coronagraph”.
 - PUNCH data products support 3D imaging via polarization
 - QuickPUNCH data products are rapid and may be used for forecasting.

PUNCH fields of view are stitched to make a 90° FOV.

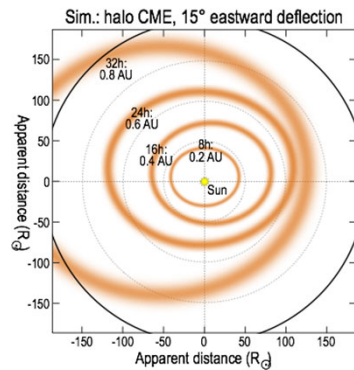


Three WFIs are 120° apart; NFI is unconstrained





Tracking CMEs and their Chirality in 3D



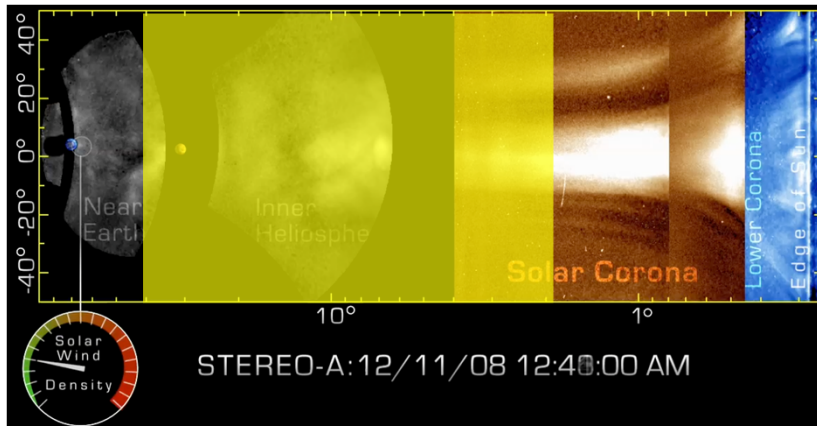
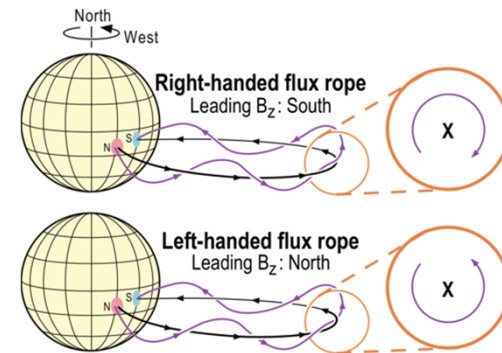
• Polarization yields 3D imaging:

- Track halo CMEs across the solar system

- Resolves fast/slow ambiguity of halos
- Identifies direct vs. flanking hits vs. misses

- Identify chirality (twist) of flux ropes

- Connects magnetograph E/W flux to B_z
- Enables direct forecasting of B_z sign



QuickPUNCH products under development:

QuickNFI:

- LASCO C3-like FOV; 2x LASCO resol'n
- Coronagraph gap-filler

QuickWFI:

- 90° FOV; sees ICMEs & SIRs
- Predict Sp Wx events via direct tracking