

# Spectroscopic Observation of a Transition Region Network Jet

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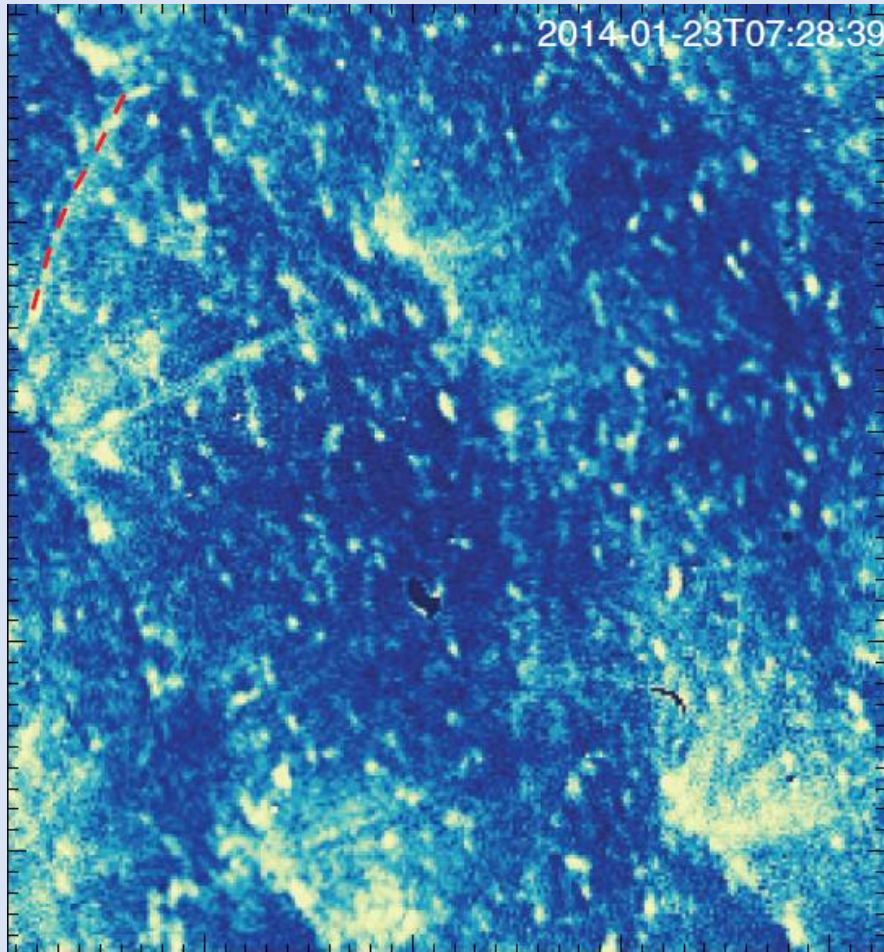
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# Background



Adapted from Fig. 1a from [Tian, H., et al., 2014, \*Science\*, 346, 1255711](#)

## Transition Region (TR) Network Jets

- Fast-moving intensity fronts at  $T \sim 10^5$  K rooted to network cell boundaries

## Previous Work

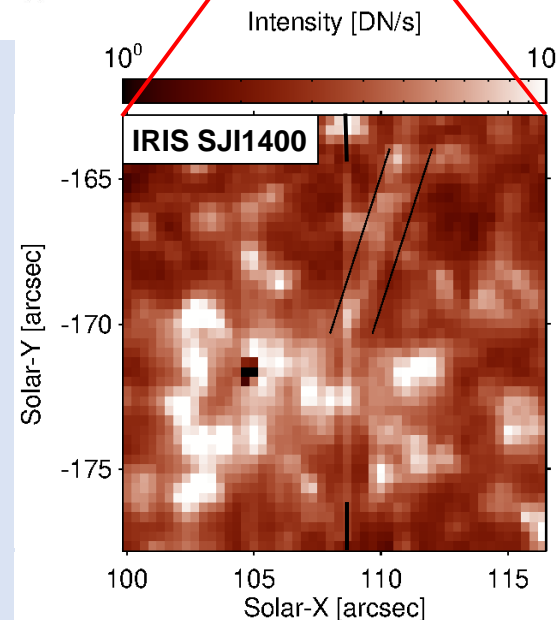
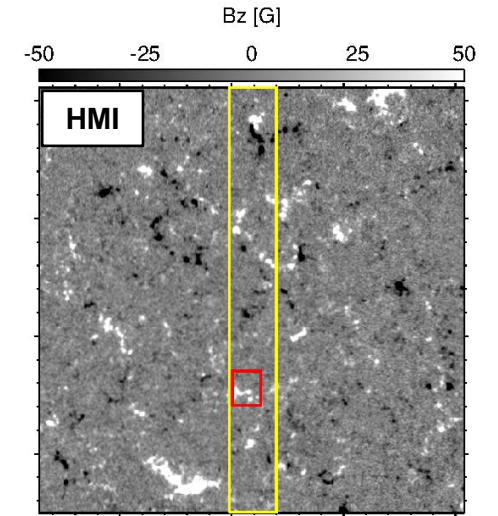
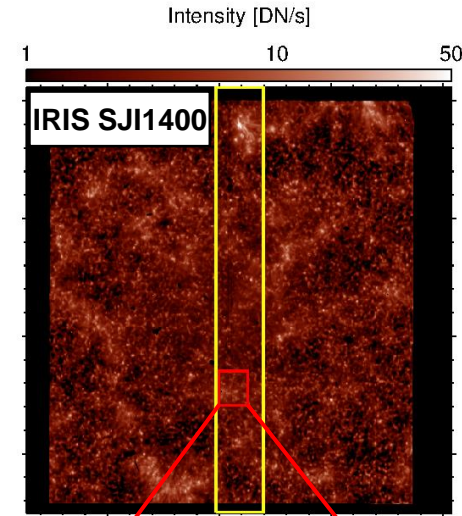
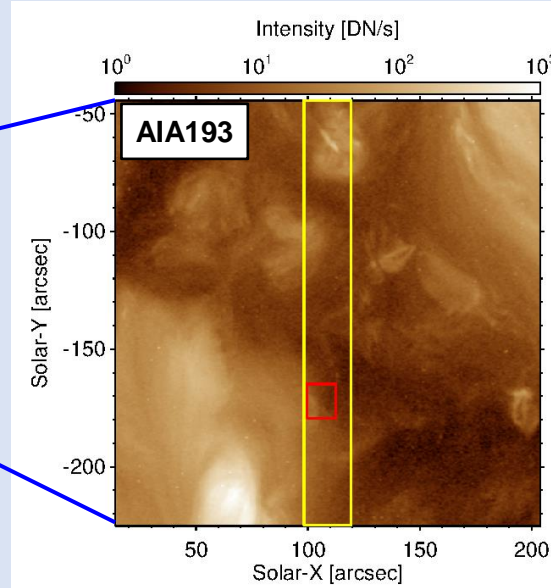
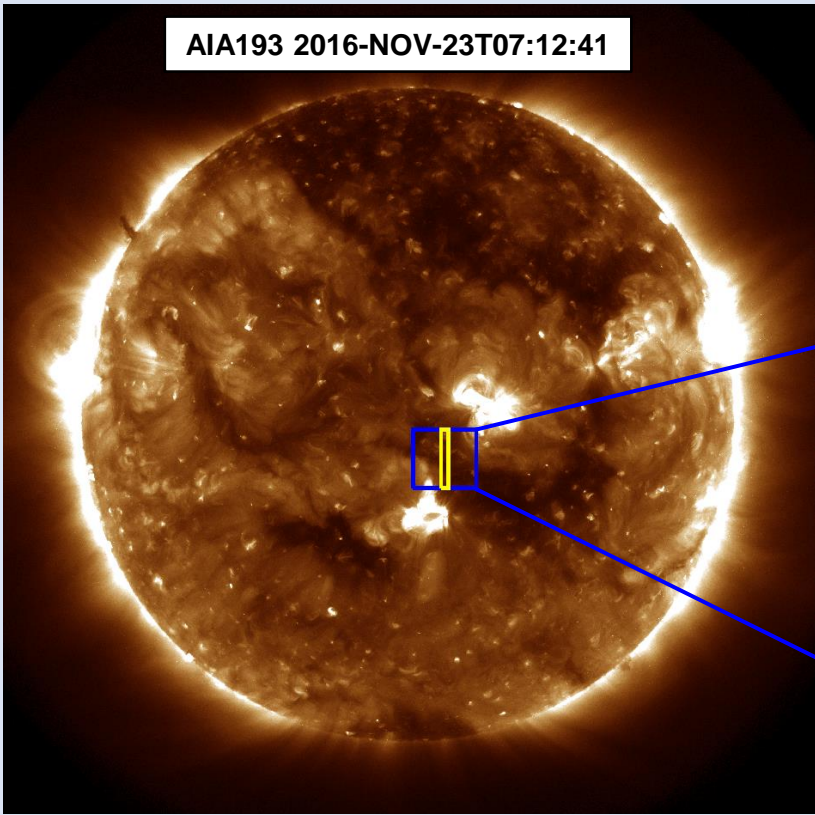
- Slit-Jaw Imagery (SJI) & sit-and-stare rasters

## Questions

- What is the behavior of mass flows along a jet?
- How are these jets launched?

# Observation Overview

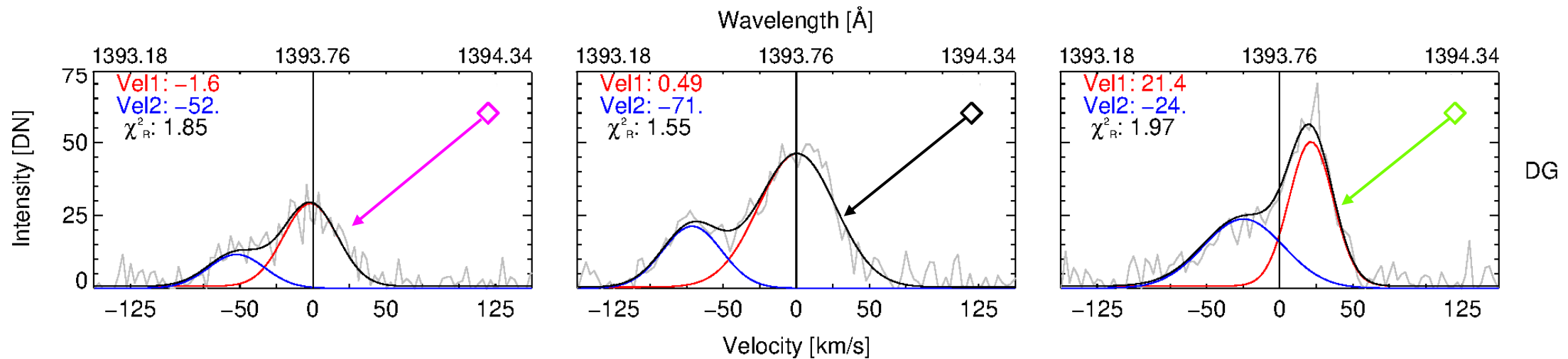
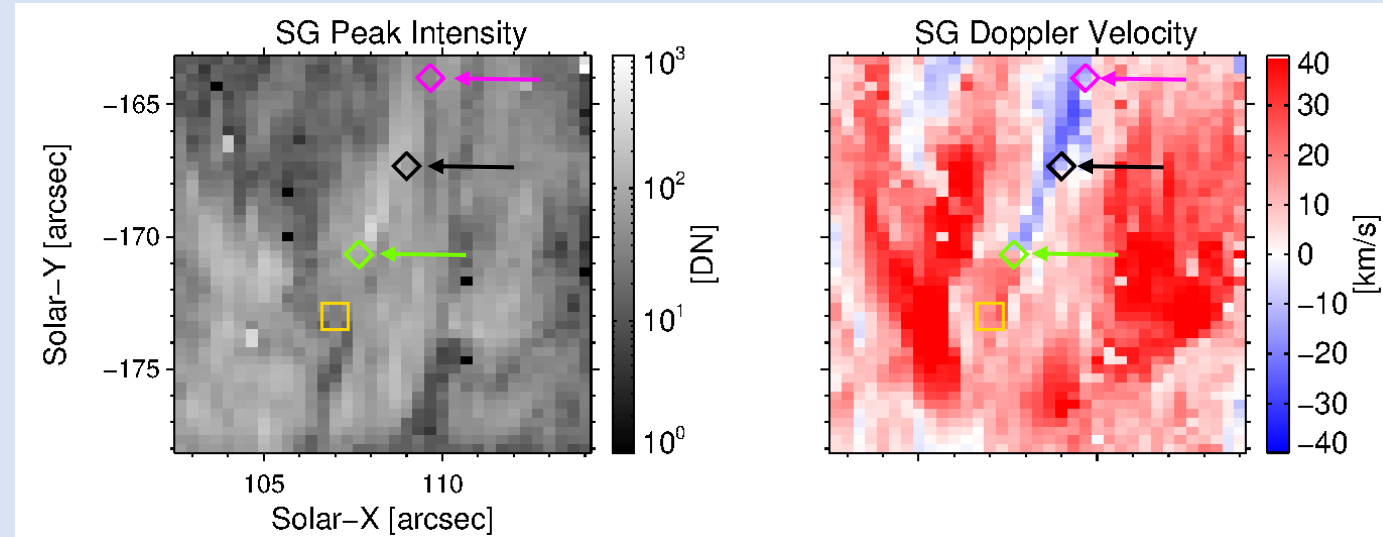
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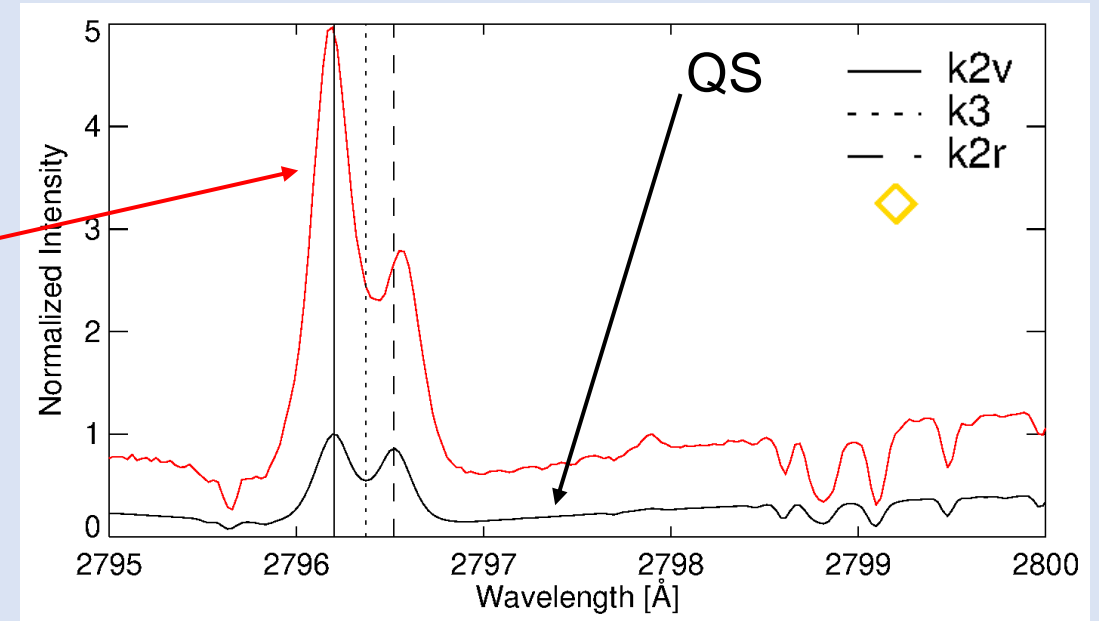
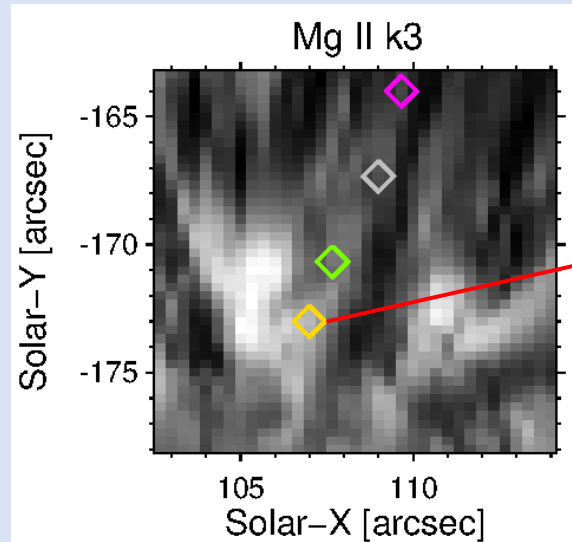
- Jet seen in SJI1400
- Jet originates from cluster of enhanced chromospheric activity

# Jet Spire as Seen in Transition Region

- Multiple flow components within jet
- Blue-shifted component also exists below jet

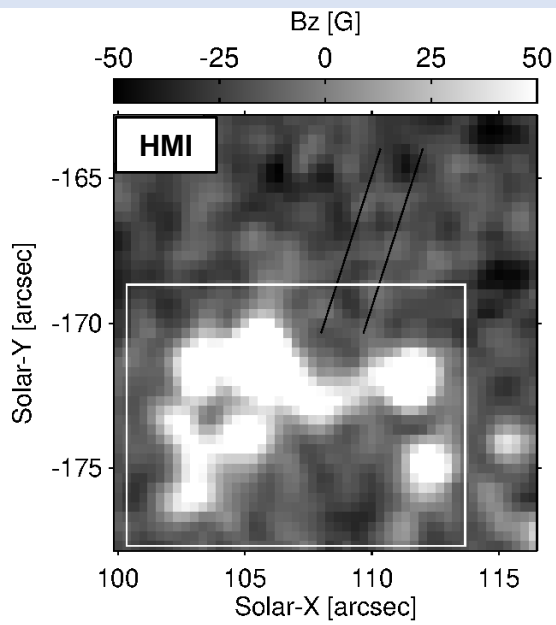


# Chromospheric Footpoint of Jet

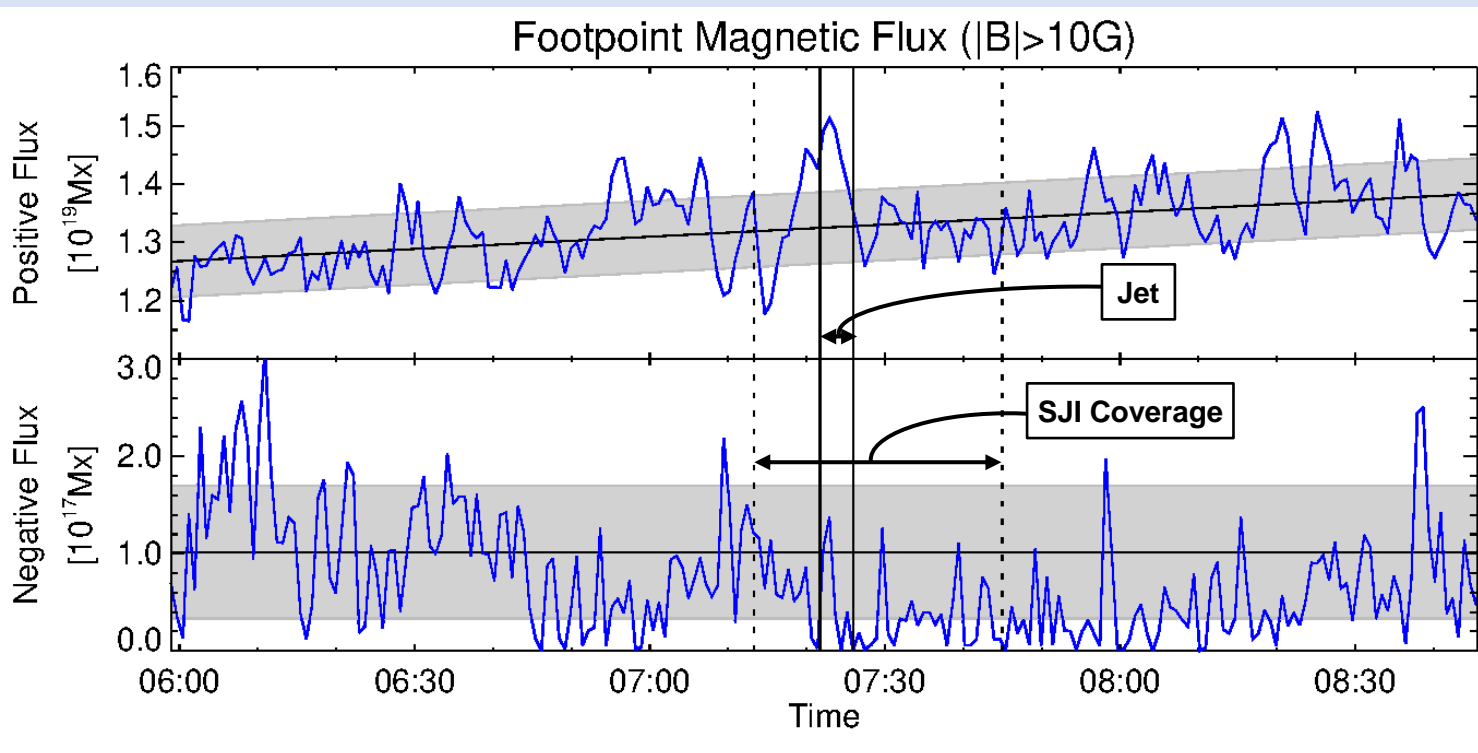


- Mg II k core enhanced at footpoint
- Strong asymmetry between k2v & k2r peaks
- Redshift of k3
- Consistent with downflows of  $\sim 10$  km/s [based on [Pereira, et al., 2013, ApJ, 778, 143](#)]

# Magnetic Field Evolution



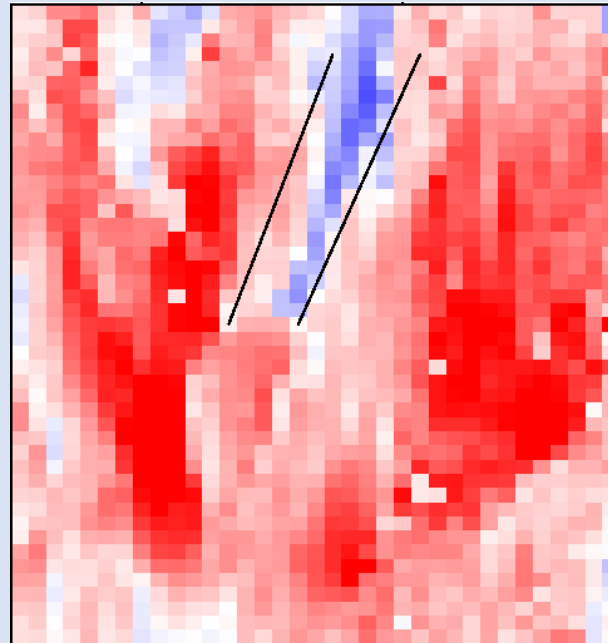
- Spatial reconfiguration of magnetic elements at jet footpoint



- Positive Flux:
  - Moderate increase
  - Sharp fluctuations at time of jet
- Driver:
  - Flux emergence?
  - Reconnection?
  - Alfvénic waves?

# Summary

- Presented spectral analysis of jet along its length
- Feature traced down through chromosphere to photospheric footpoint



# Insights

- Magnetic driver remains unclear
- Chromosphere pushed downwards below jet
- Jet has persistent, blue-shifted secondary component of TR emission