IRIS observations of a light wall rooted in a light bridge

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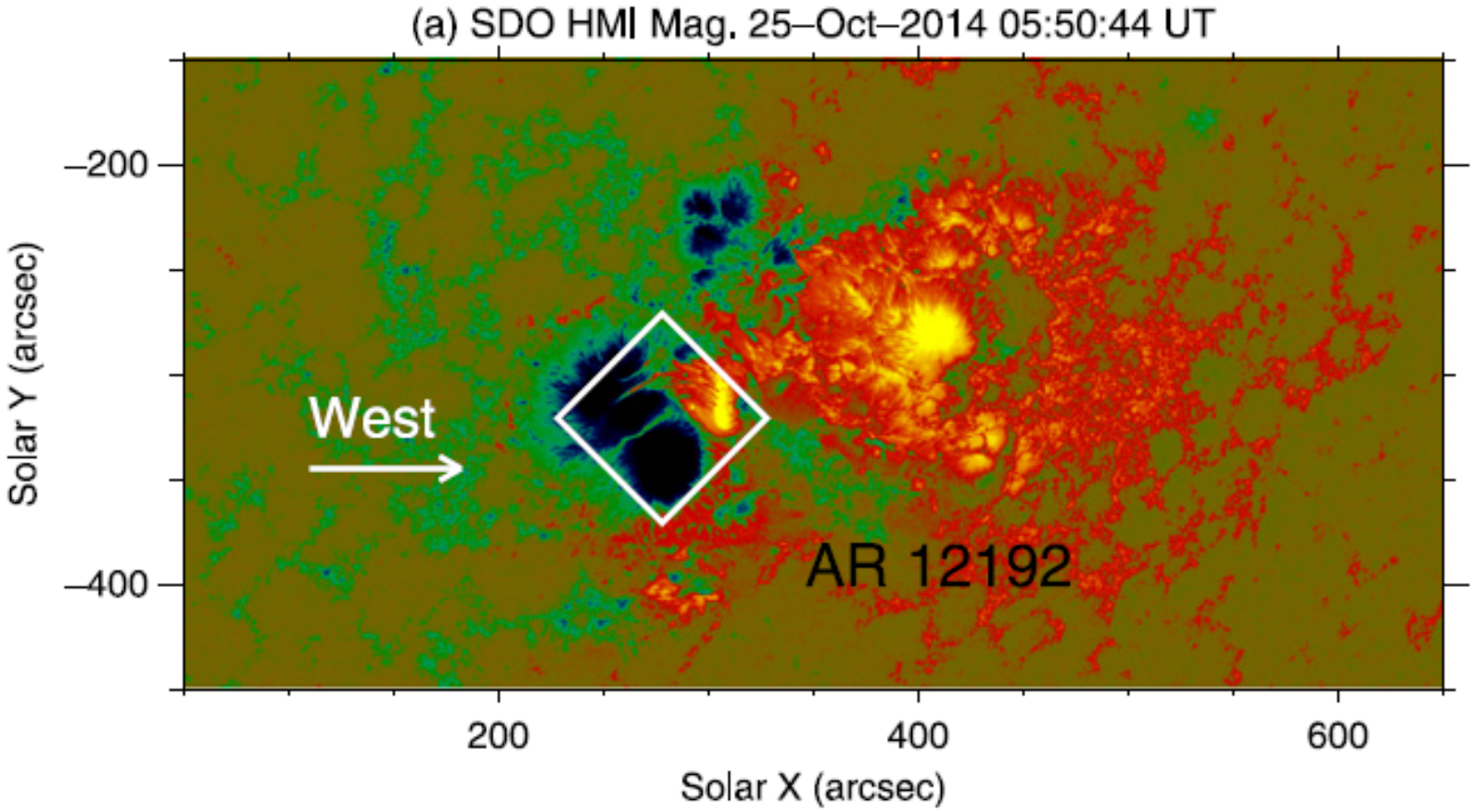
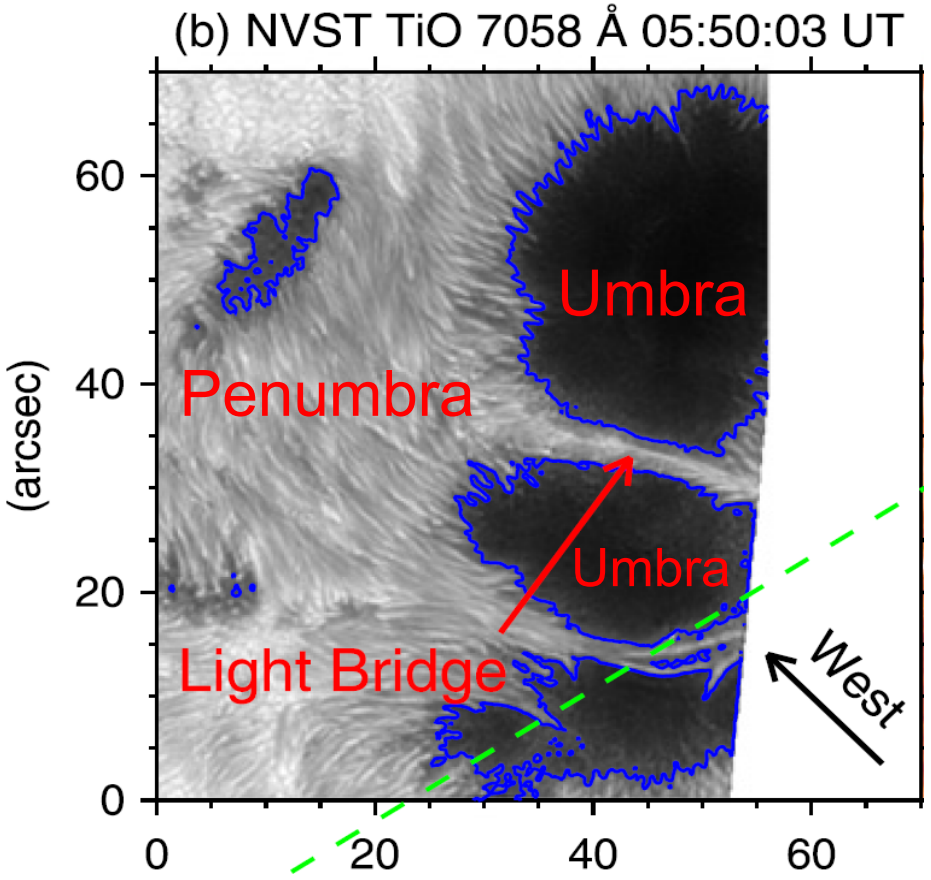
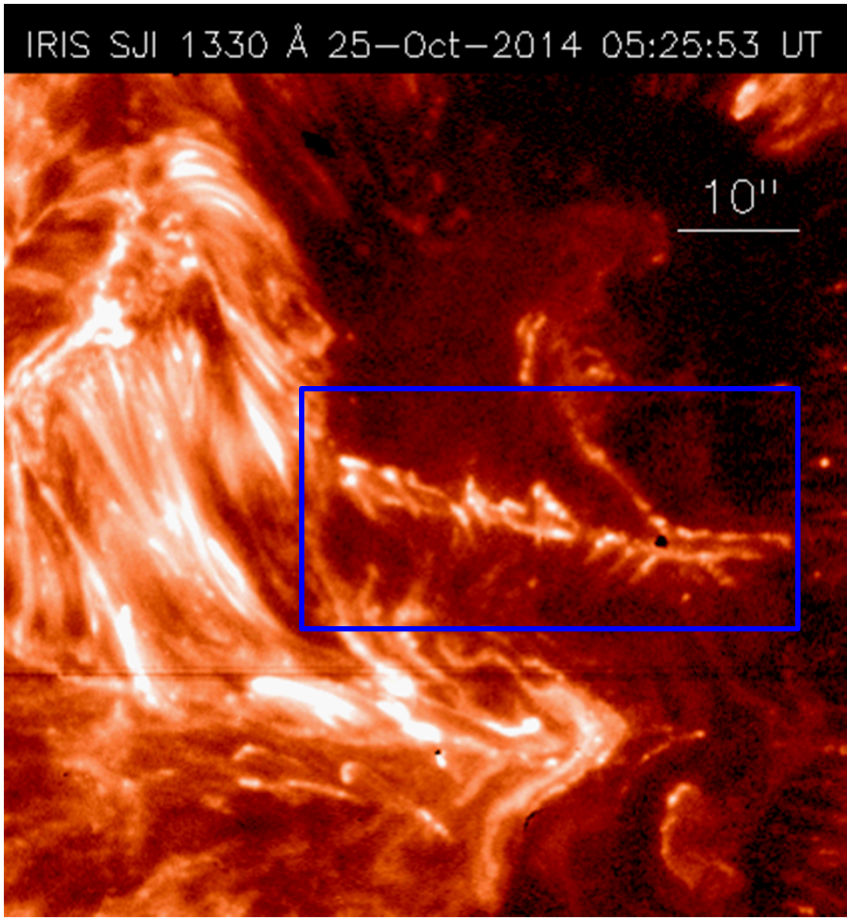
Observations and Results



SDO/HMI magnetogram of AR 2192 on 25-Oct-2014
(the largest AR since 1990 November)

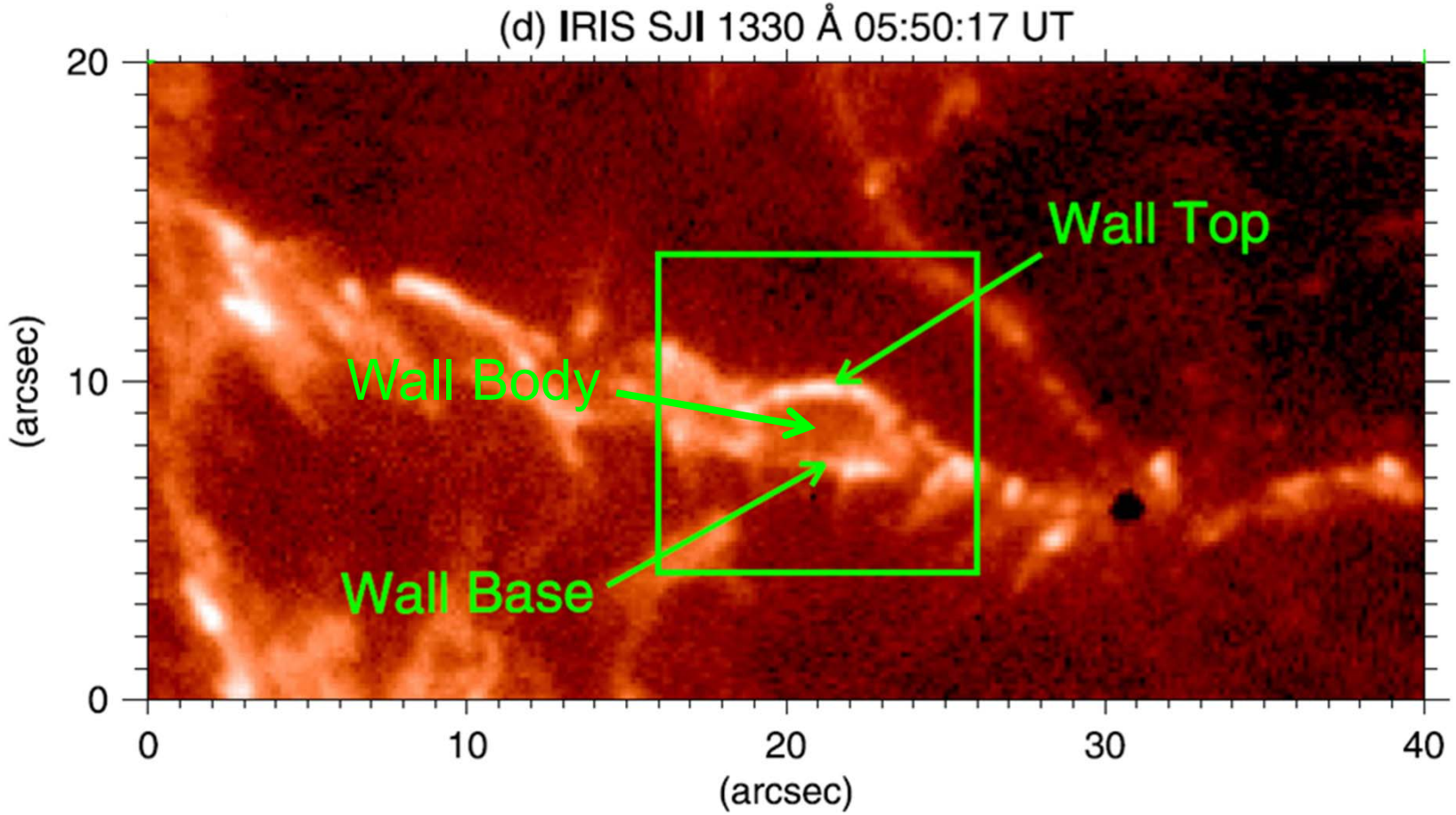


New Vacuum Solar Telescope (*NVST*) TiO observation of the trailing sunspot of AR 2192



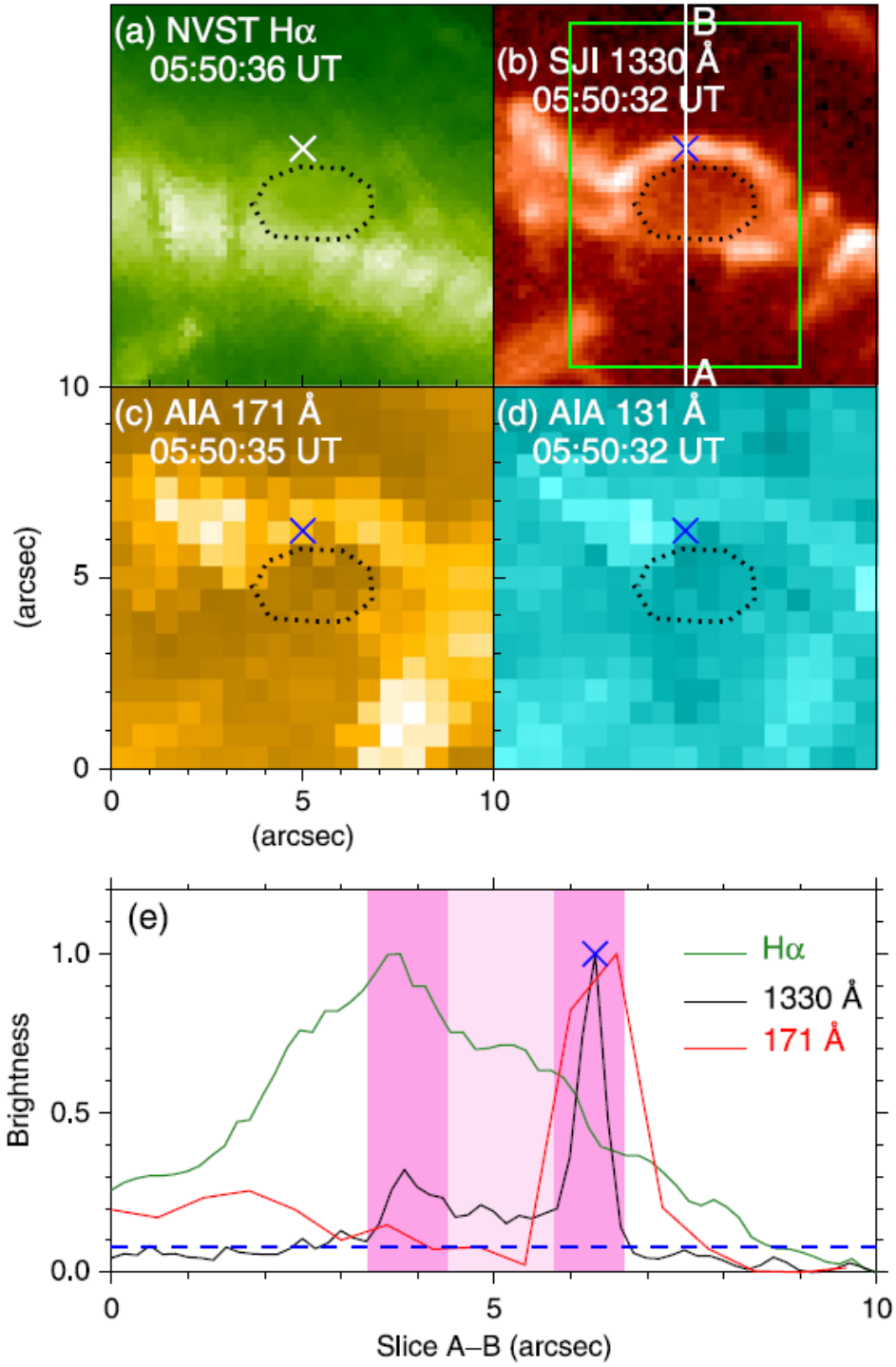
Light Wall

IRIS/SJI 1330 Å movie on 25-Oct-2014

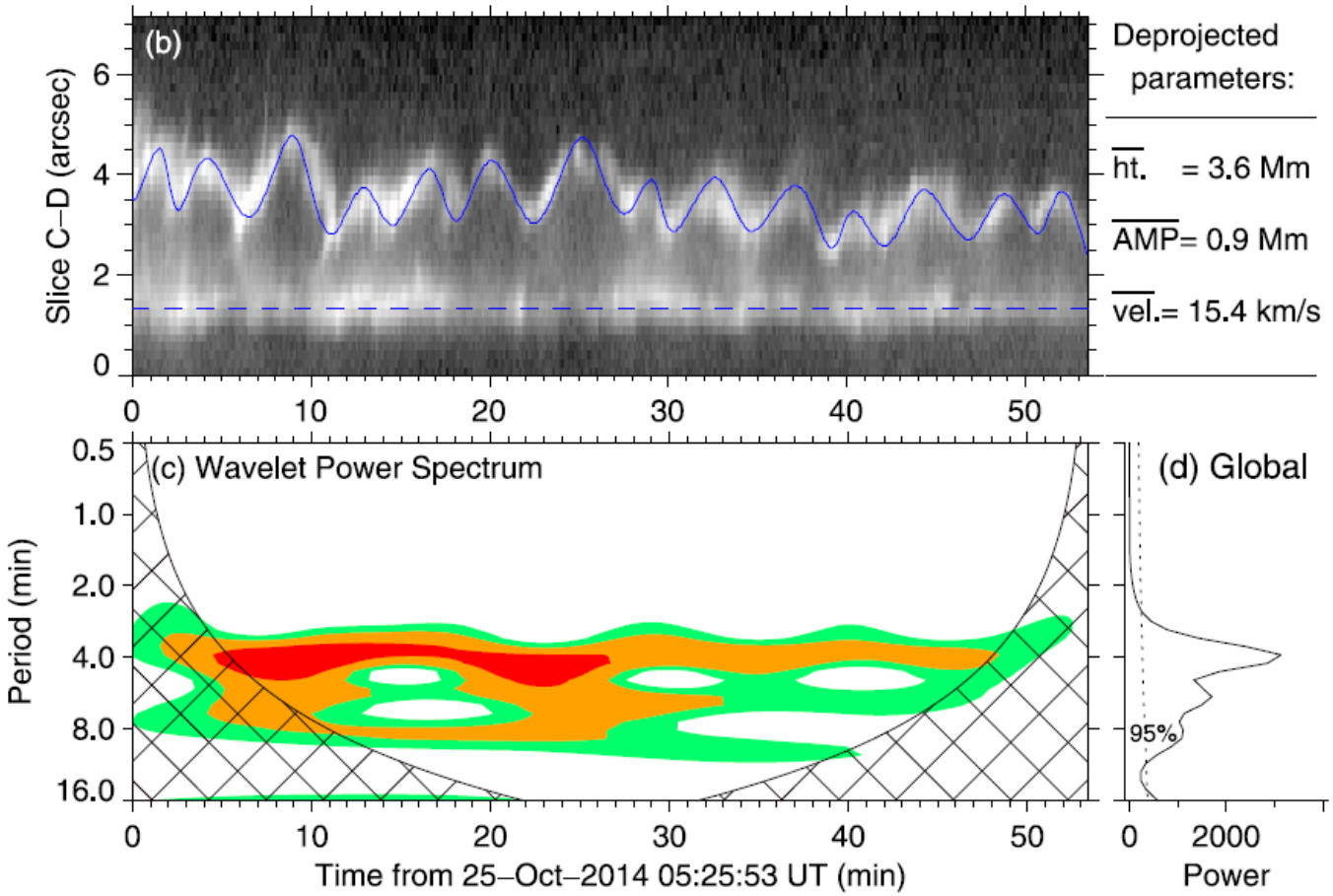


Light Wall

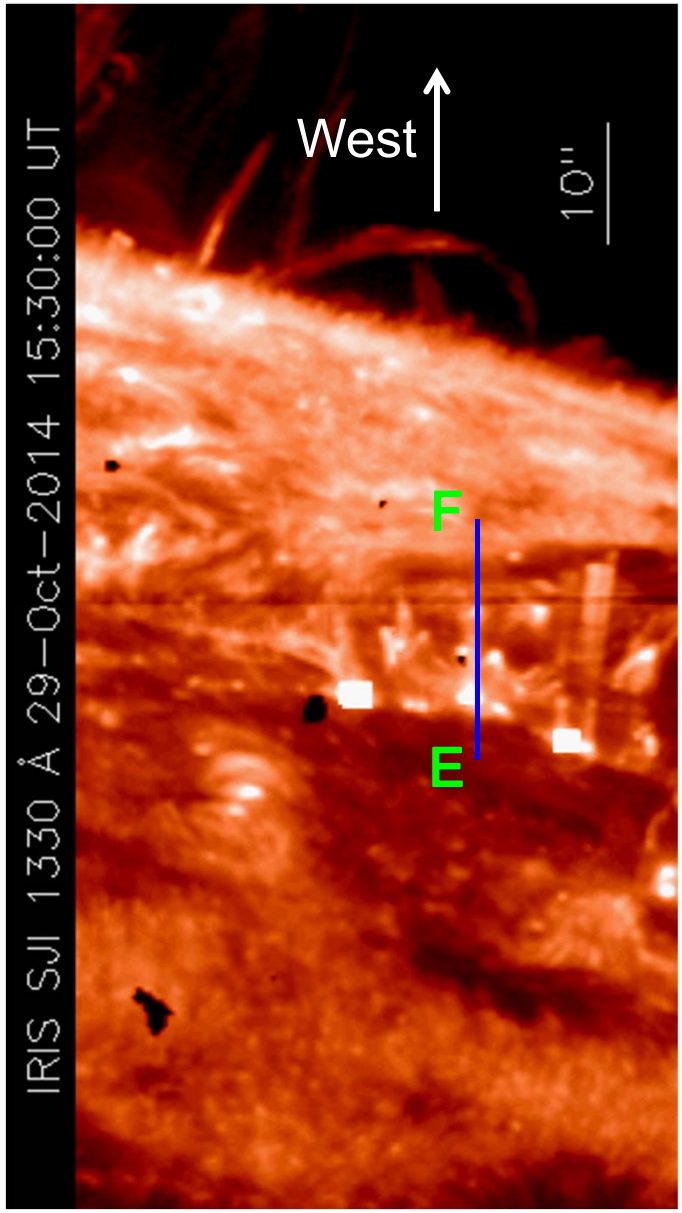
(Yang, S. H., et al. 2015, ApJL, 804, L27)



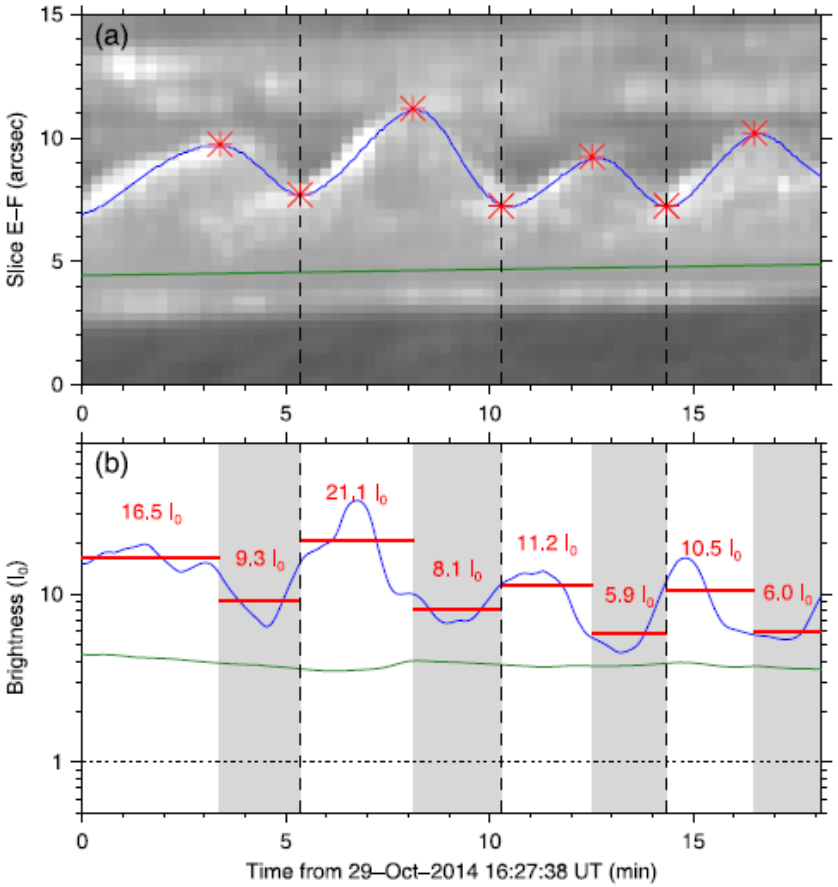
- **Wall body**: dark in the Hα and EUV lines.
- **Wall top**: bright in the EUV lines, and could not be identified in the Hα image.
- **Wall base**: bright in the Hα image, and cannot be found in the EUV lines.



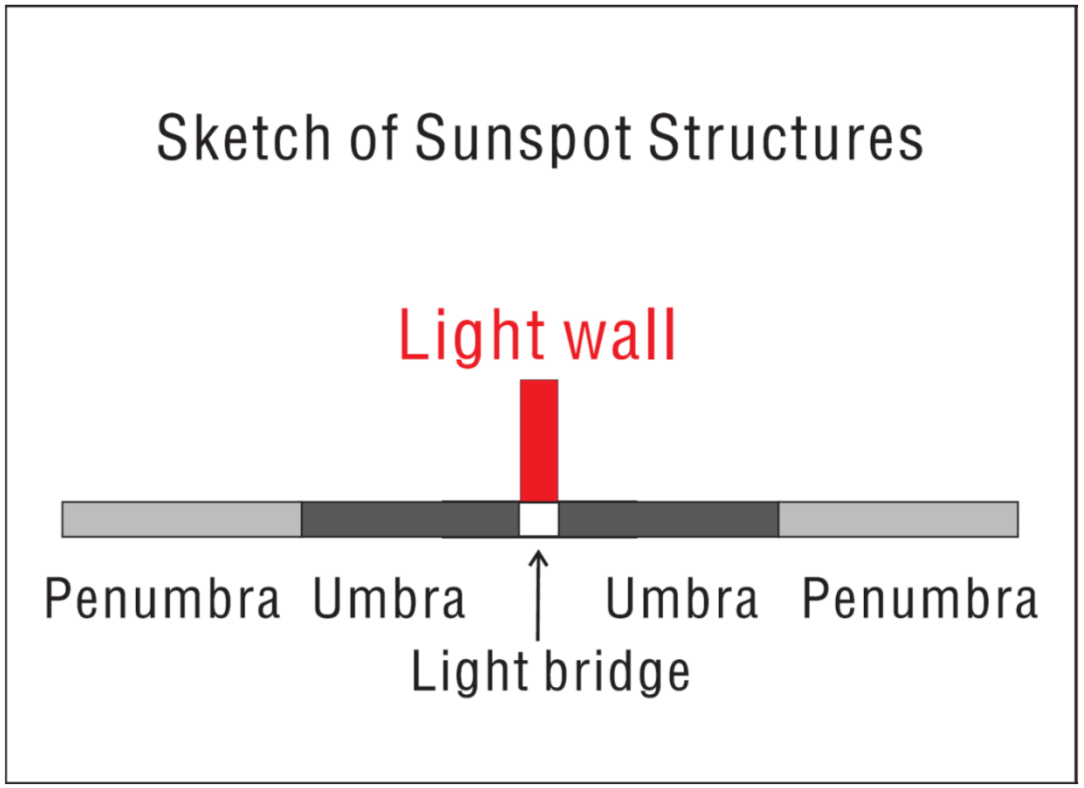
Oscillations of the light wall (main period = 3.9 min)



IRIS/SJI 1300 Å movie
on 29-Oct-2014



Some parts of the wall top in the upward motion phase is significantly brighter than in the downward phase.



Sketch of sunspot structures based on the new observations
(Yang, S. H., & Zhang, J. 2016, IAUS, 320)

Conclusions and Discussion

- Based on IRIS observations, we find an ensemble of oscillating bright features in the chromosphere and transition region above an LB, and we give this ensemble a new name, *light wall*.
- The light wall is brighter than the surrounding regions, and the top and base of the light wall are much brighter than the wall body.
- The wall top moved upward and downward successively, performing continuous oscillations. The main oscillation period is 3.9 minutes.
- We interpret the oscillations of the light wall as the leakage of p-modes from below the photosphere.
- The constant brightness enhancement of the wall top implies the existence of some kind of atmospheric heating, e.g., via the persistent small-scale reconnection or the magneto-acoustic waves.
- Some parts of the wall top in the upward motion phase is significantly brighter than in the downward phase. This kind of oscillation may be powered by the energy released due to intermittent impulsive magnetic reconnection.

Thanks!