

Interface Region Imaging Spectrograph First Results



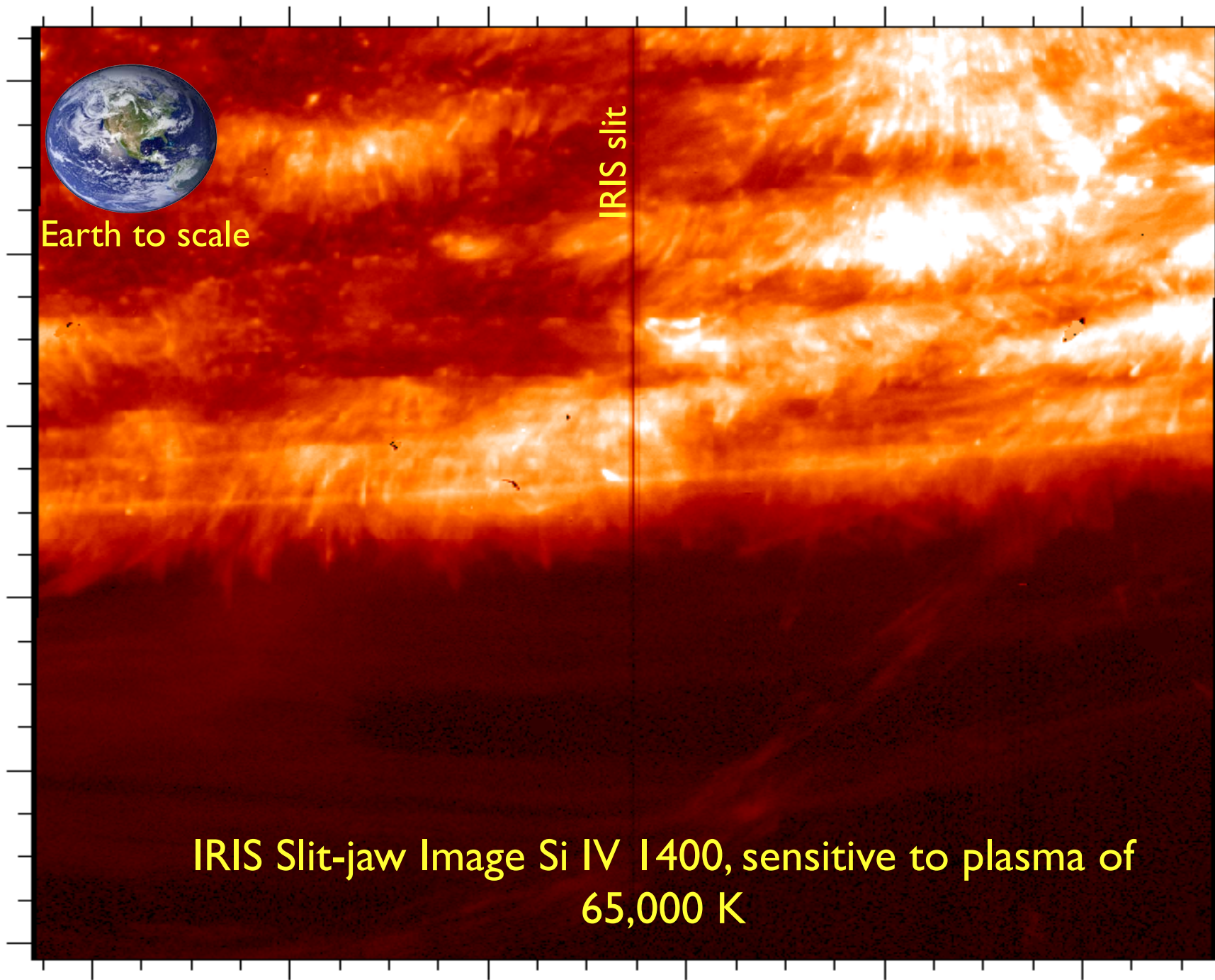
Alan Title, LMSAL, *IRIS Principal Investigator*

Bart De Pontieu, LMSAL, *IRIS Science Lead*

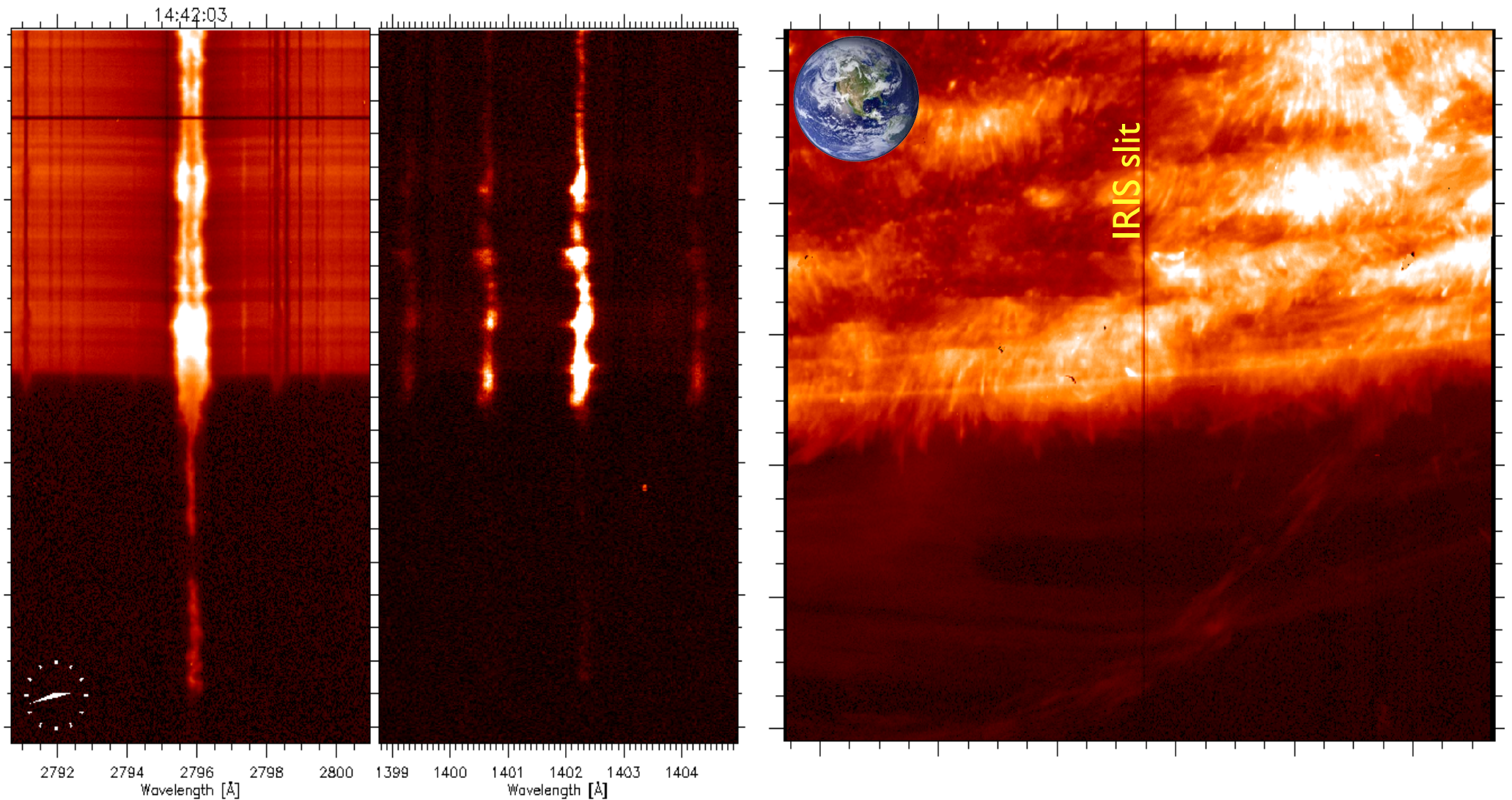
Mats Carlsson, University of Oslo, Norway, *IRIS numerical modeling*

Scott McIntosh, High Altitude Observatory

IRIS provides novel views of the mass cycle at the interface between the cool surface and hot atmosphere



Strong Dopplershifts from IRIS spectra reveal multitude of violent events

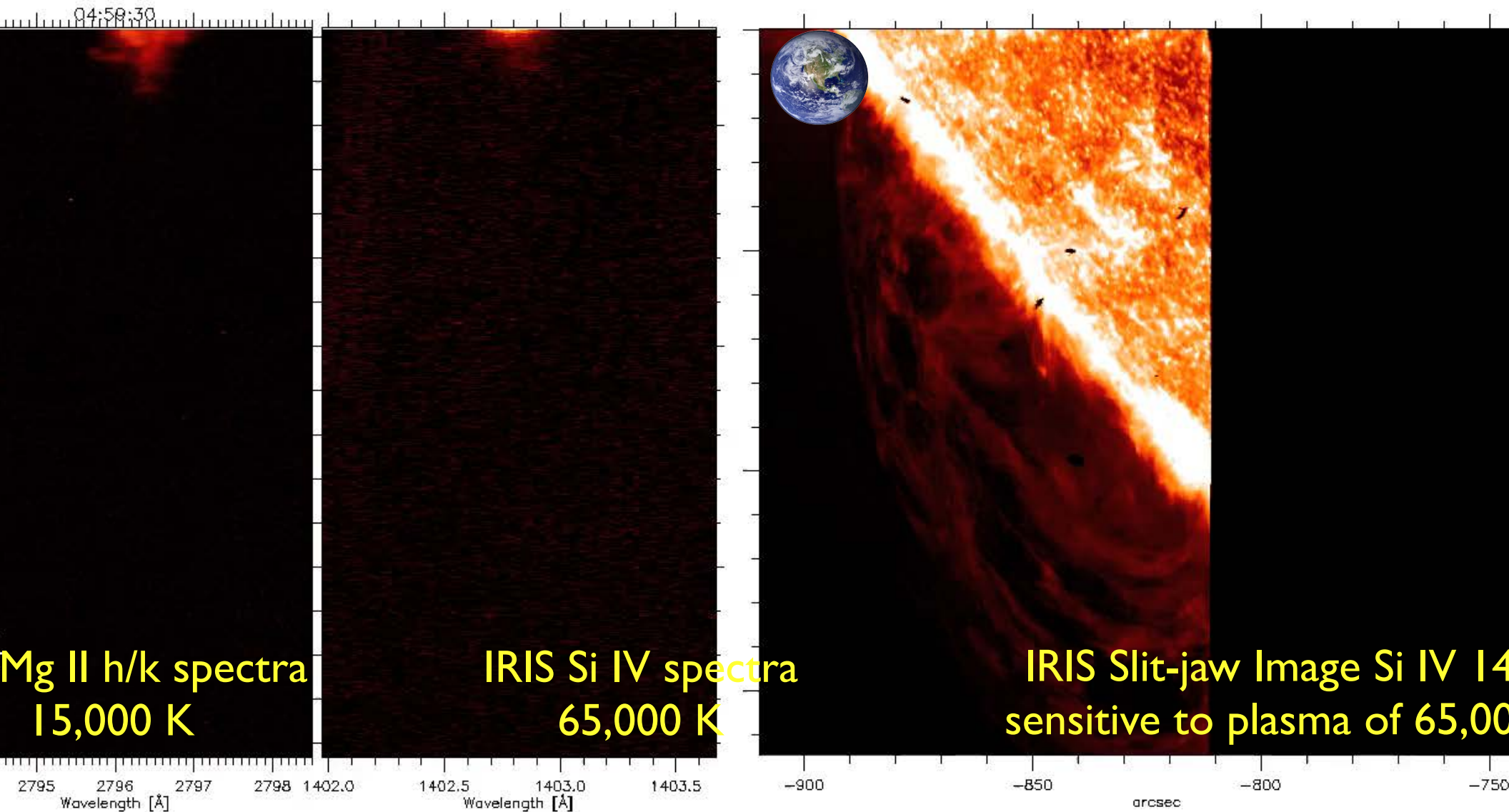


S Mg II h/k spectra
15,000 K

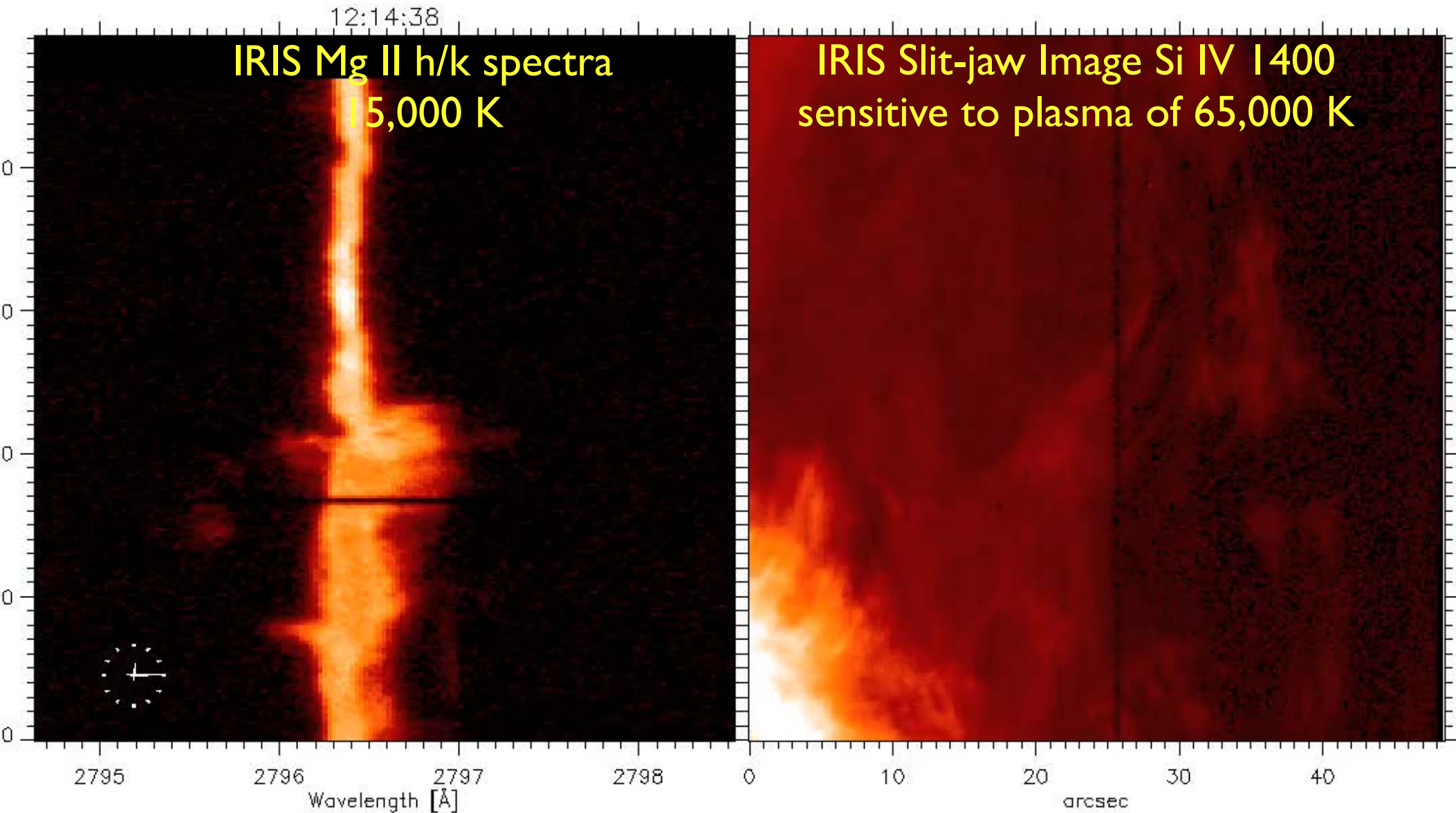
IRIS Si IV spectra
65,000 K

IRIS Slit-jaw Image Si IV
sensitive to plasma of 65,000 K

IRIS images and spectra reveal a bewildering complexity of turbulent motions in solar prominences



The complex motions and cooling/heating patterns provide a significant challenge to theoretical models



Coordinated observations with other spacecraft (Hinode and SDO) help reveal the thermal evolution of spicules

SOT Ca II H

4 Mm

IRIS Mg II k

2013-09-29T08:00:03

Hinode spacecraft Ca II 3968 images
sensitive to plasma of 10,000 K

IRIS Slit-jaw Image Mg II k 2796
sensitive to plasma of 15,000 K

AIA He II 30.4

IRIS Si IV

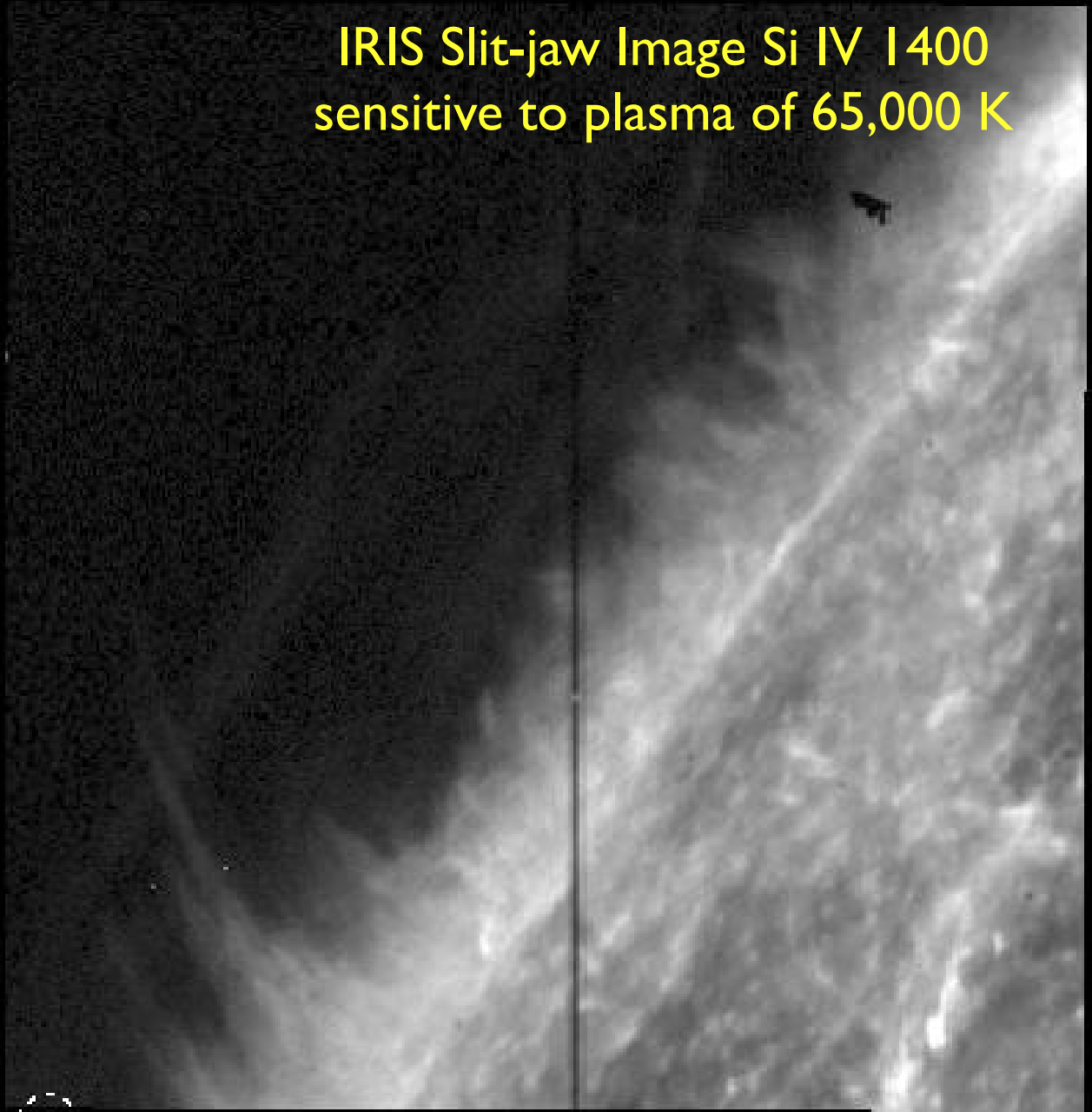
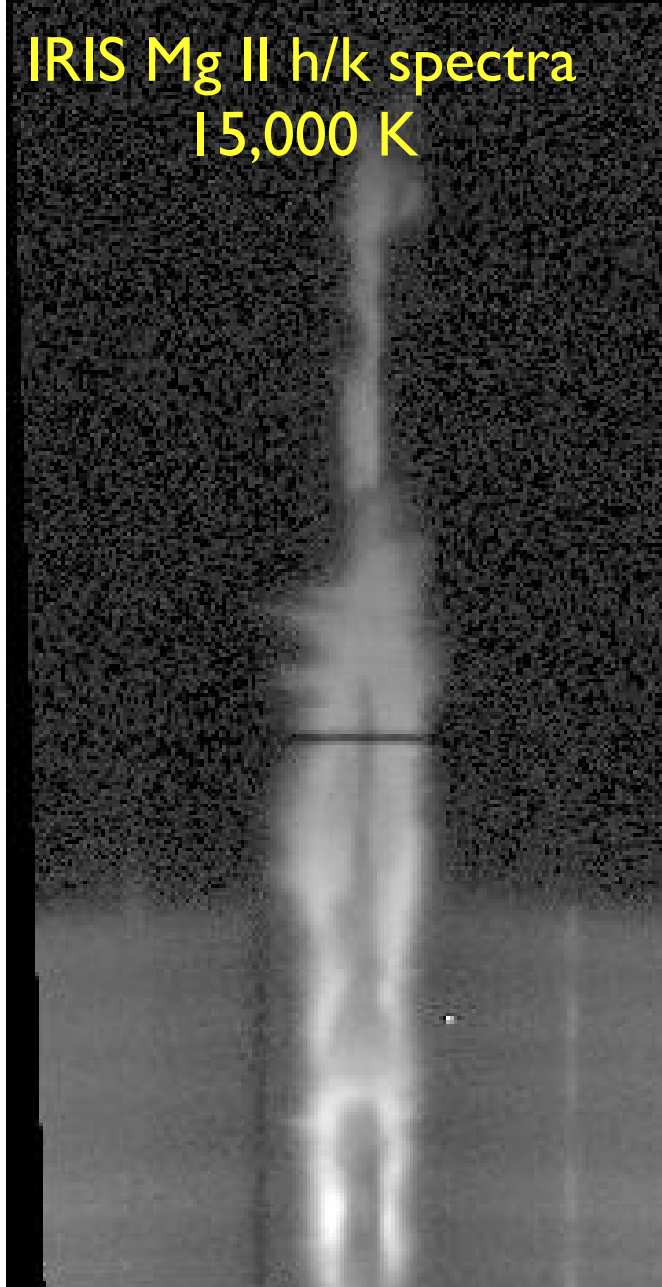
Solar Dynamics Observatory He II 304

IRIS Slit-jaw Image Si IV 1400

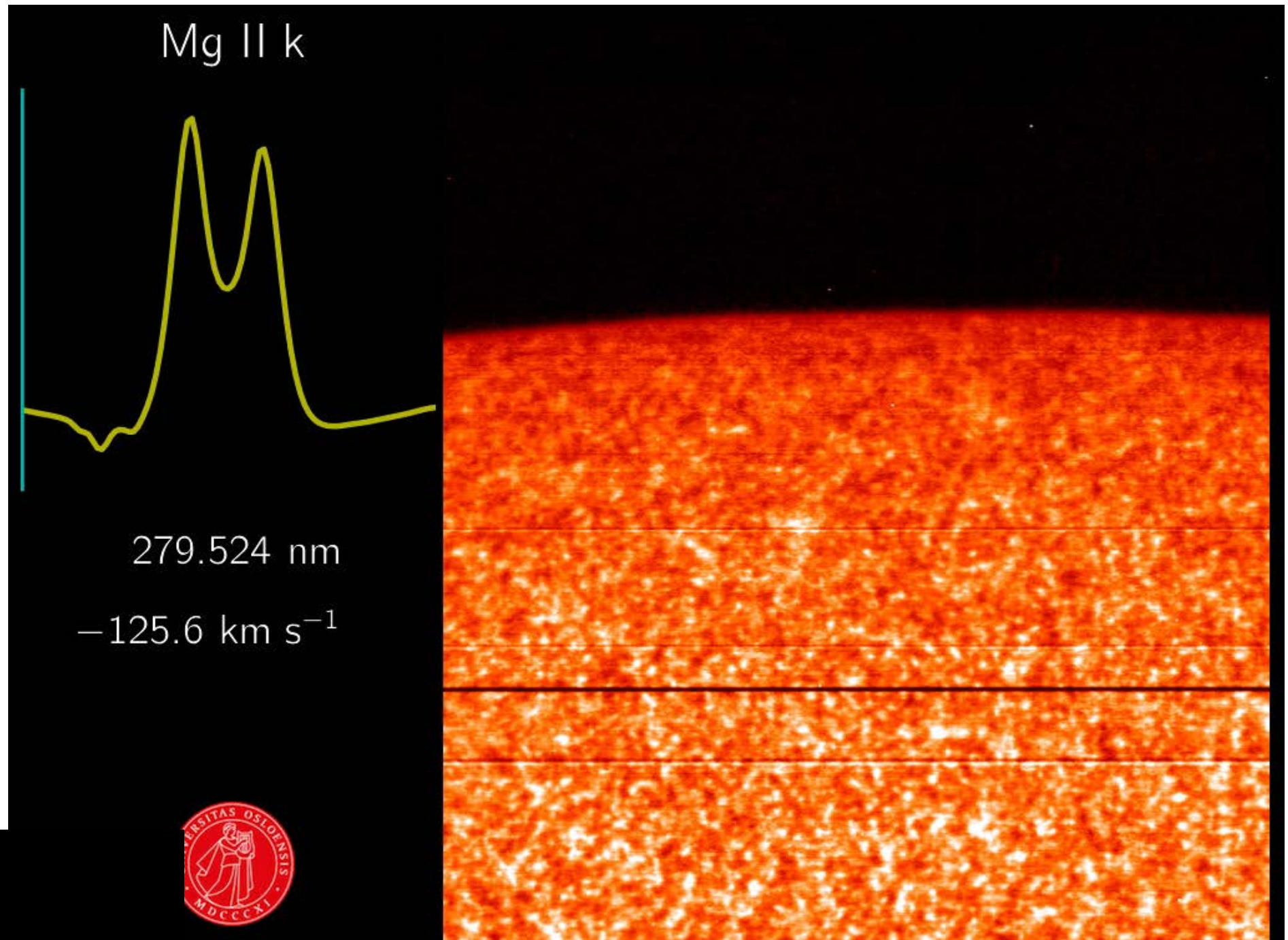
IRIS spectra and images reveal high velocities and rapid heating

IRIS Mg II h/k spectra
15,000 K

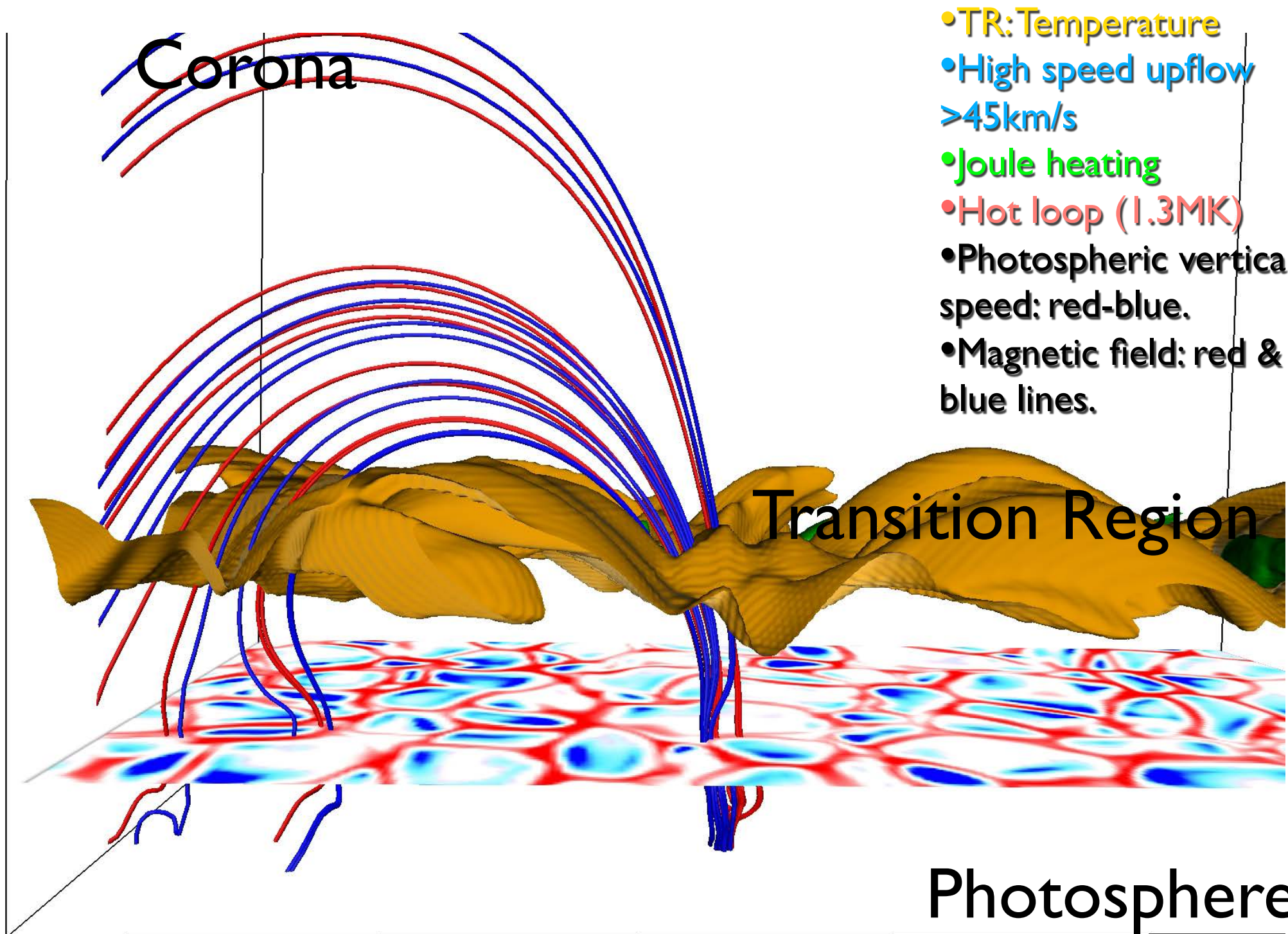
IRIS Slit-jaw Image Si IV 1400
sensitive to plasma of 65,000 K



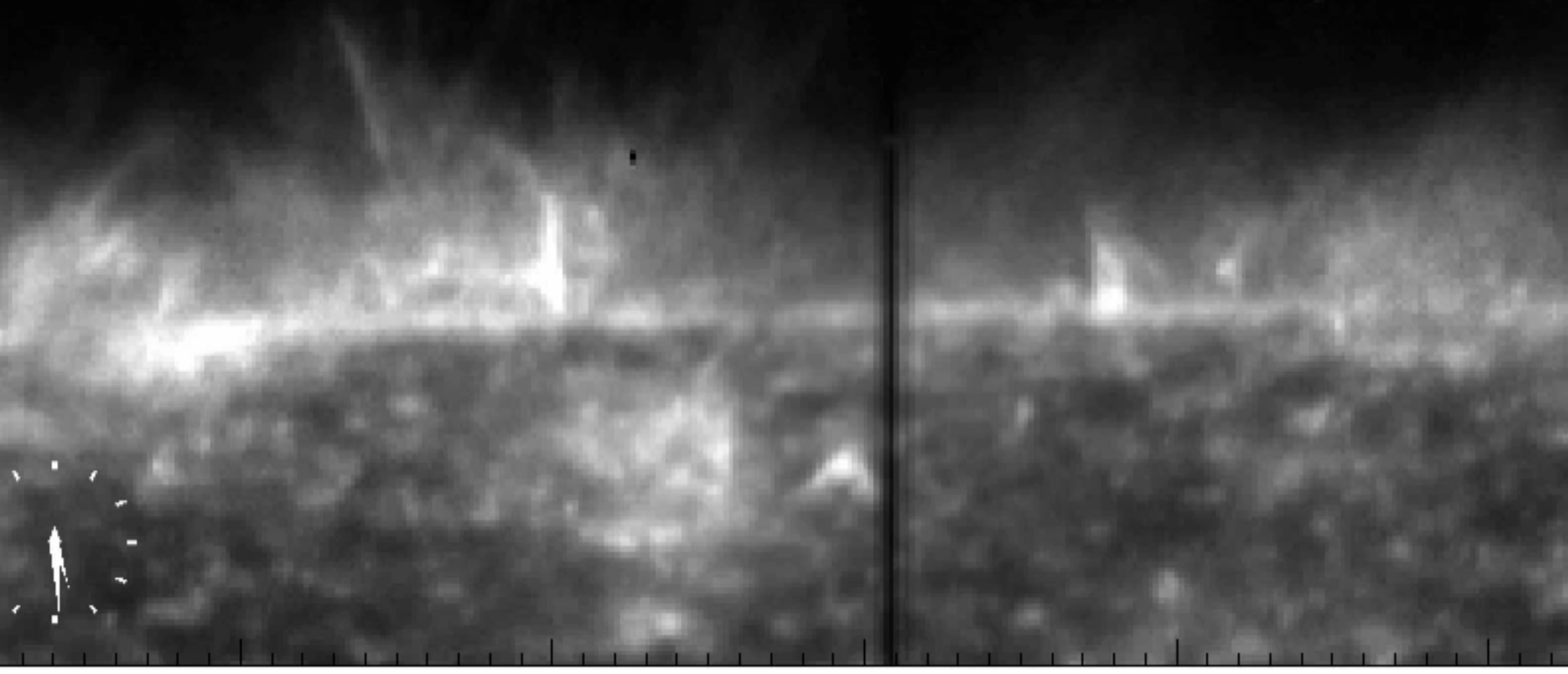
Strong transverse motions are common in spicules



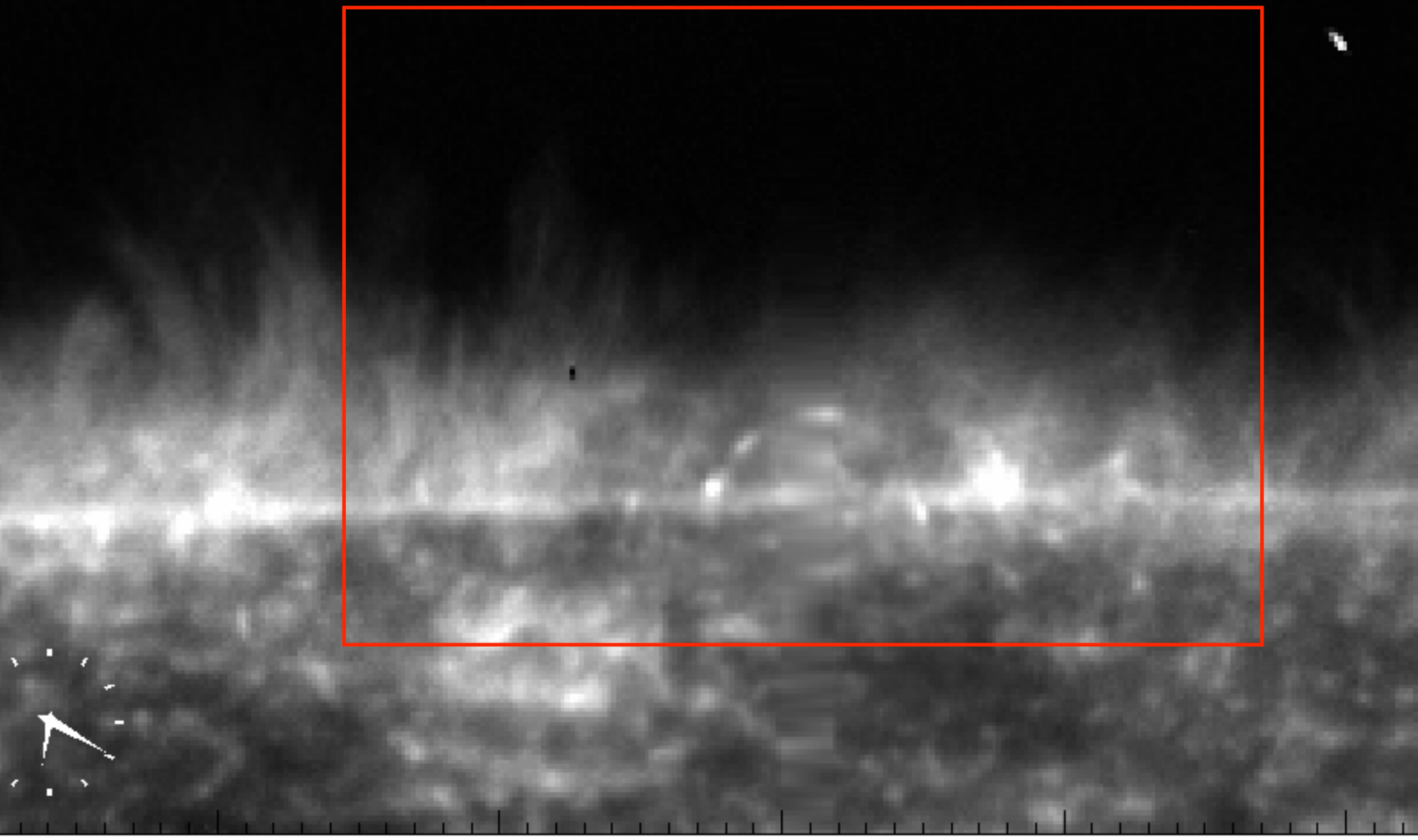
These observations provide significant challenge for numerical models



Si

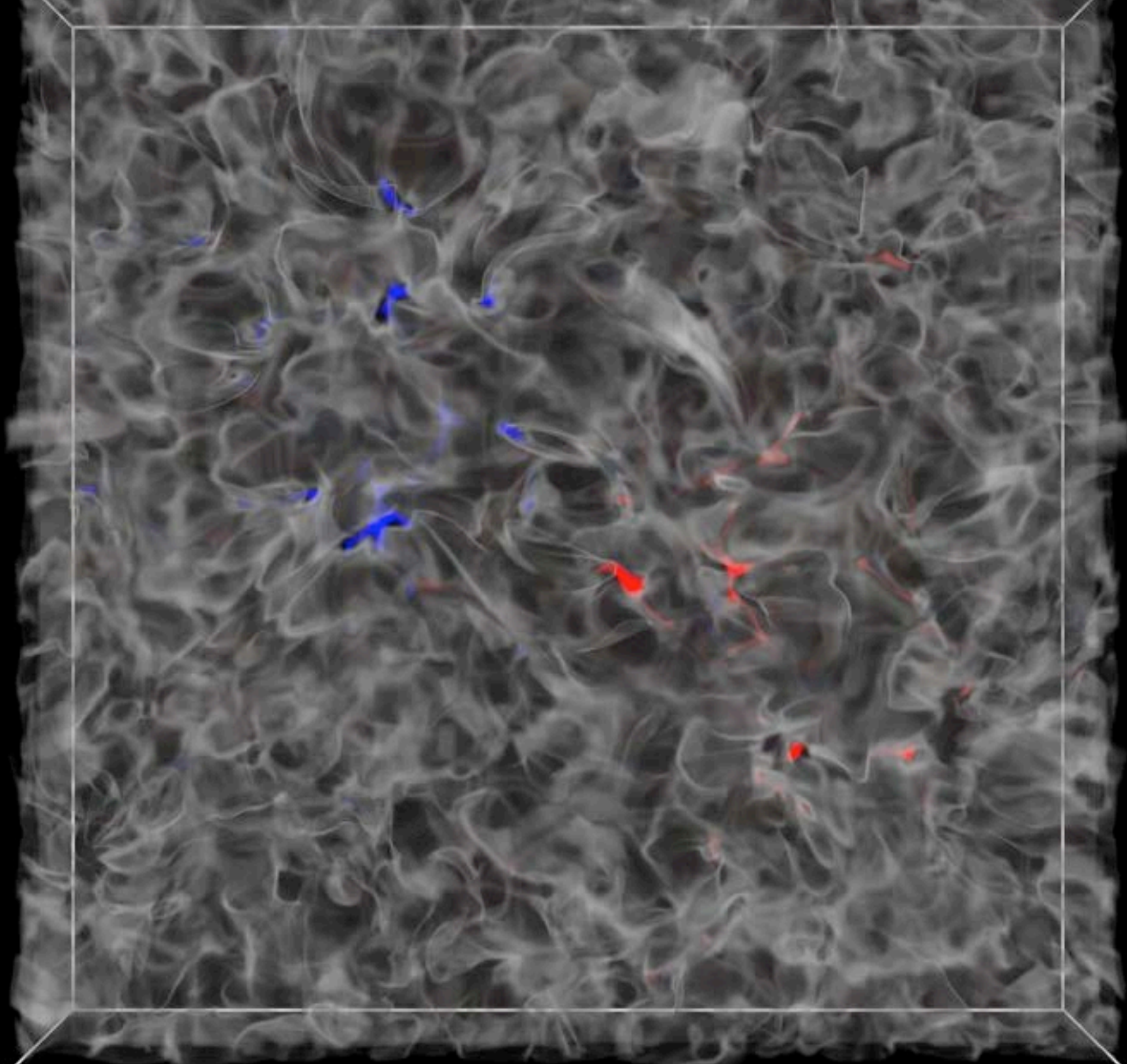


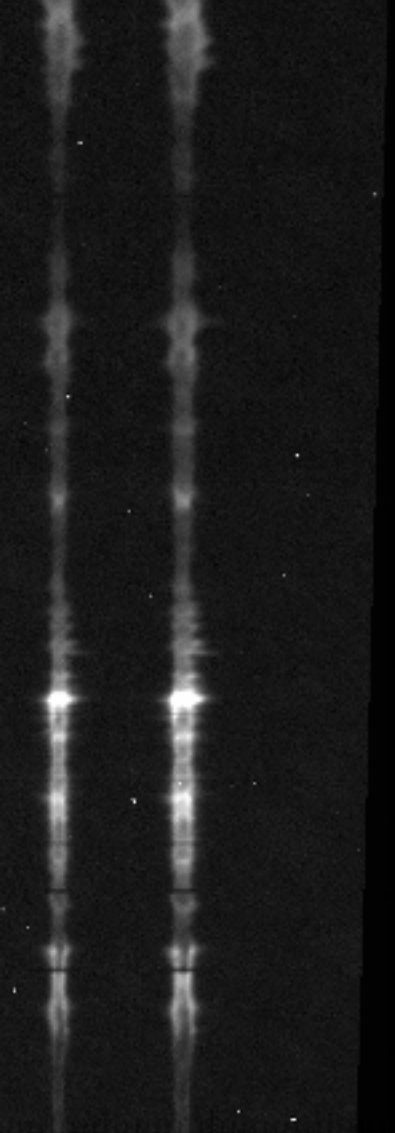
Si



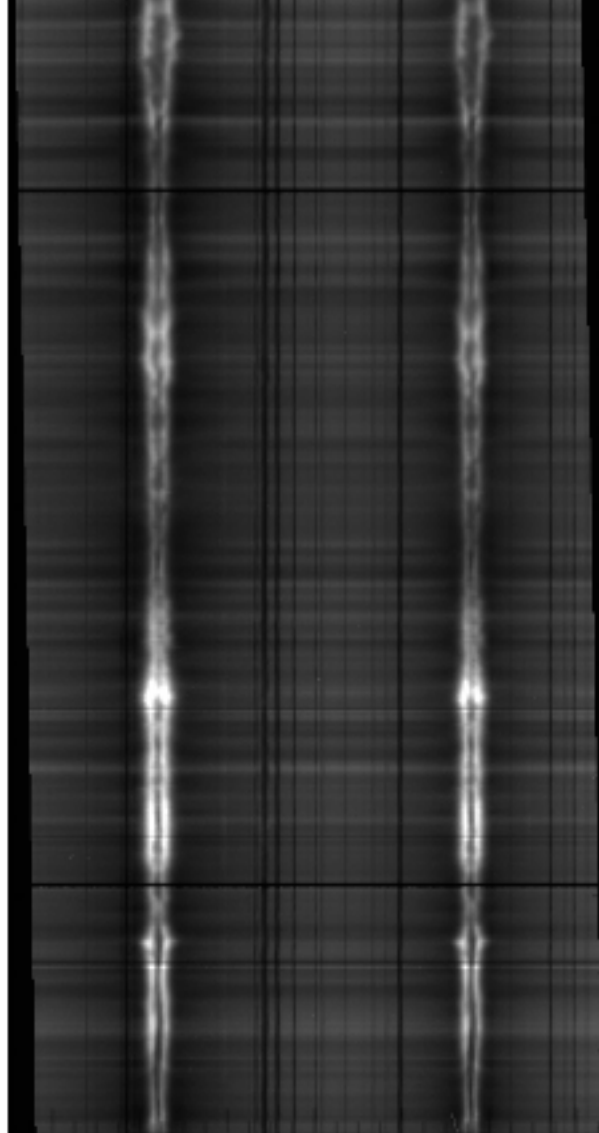




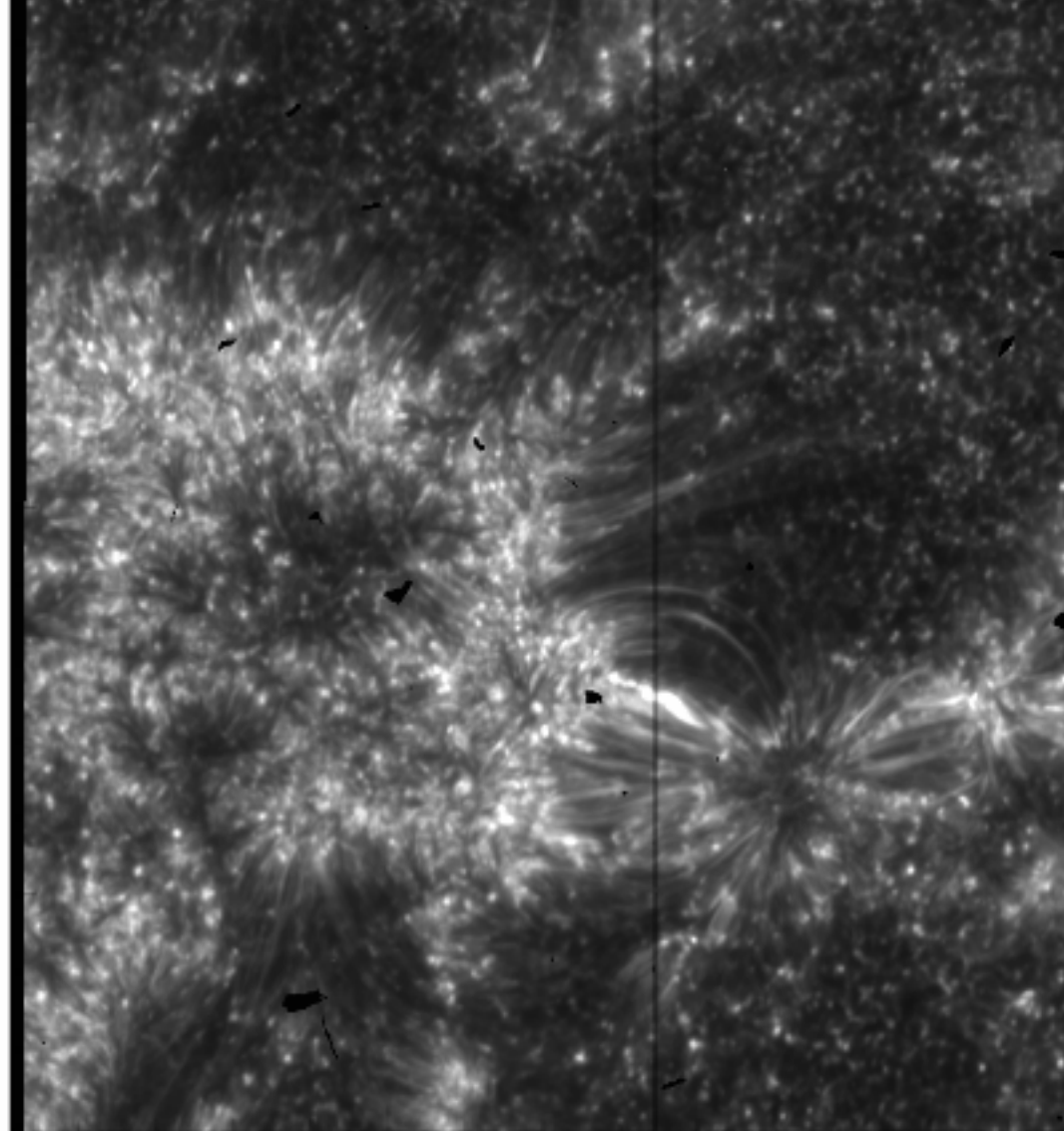




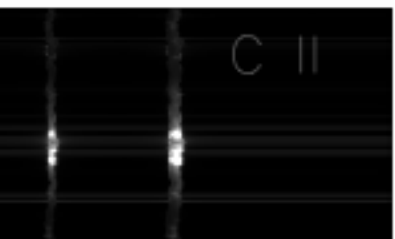
1334 1335 1336 1337
Wavelength [Å]



2794 2796 2798 2800 2802 2804 2806
Wavelength [Å]



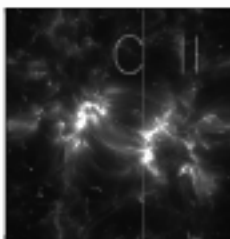
-200 -150
Solar x ["]



C II



Mg II



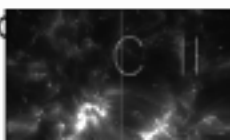
C II



C II



Mg II



C II

