

# On the Signature of Waves and Oscillations in IRIS Observations

B. Fleck<sup>1</sup>, T. Straus<sup>2</sup>, B. De Pontieu<sup>3</sup>

<sup>1</sup>ESA, <sup>2</sup>INAF/OAC, <sup>3</sup>LMSAL

Objectives

- Explore signatures of acoustic waves in IRIS data
- How prominent are the 3- and 5-min oscillations in IRIS spectral data?
- Can we detect high frequency waves?

Data

- Sit-and-stare time series of spectra in C II 1335 & 1336, C I 1352, O I 1356, Si IV 1394 & 1403, Mg II h & k.
- Date: 2013-09-10T23:09:38.000
- Cadence: 8 s
- Duration: 52 min (390 frames)
- Pixel size: 0.166"
- Position: x=673", y=153" ( $\mu=0.7$ )
- Slit-jaw images in Mg h, C 1330 (C II), and 1440 (Si IV) filter with cadence of 24 s
- Doppler shift:
  - FUV lines: center of gravity
  - Mg h: polynomial fit to  $h_{2v}$ ,  $h_3$ ,  $h_{2r}$
- Intensity:
  - FUV lines: total line intensity
  - Mg h: intensity of max/min of fit

Results

- Mg h line shows strong oscillatory signal, both in intensity and Doppler shift
- The far UV lines, on the other hand, show remarkably weak oscillatory signals, in particular the lines formed higher in the atmosphere (C II, Si IV)
- High frequencies dominated by noise (even after binning)
- All three slit-jaw channels show strong oscillatory signal (cf. Ca K2 grains in "clapotosphere"); these bright points are rarely, if at all, present in intensity x-t diagrams from spectral lines. Why are these 3-min bright points not more apparent in the spectral data? Canopy effect?
- compare observations to forward models from 3D MHD simulations
- observations in disk center
- observations in plage region, to have higher count rates

