SphinX Quiet Sun

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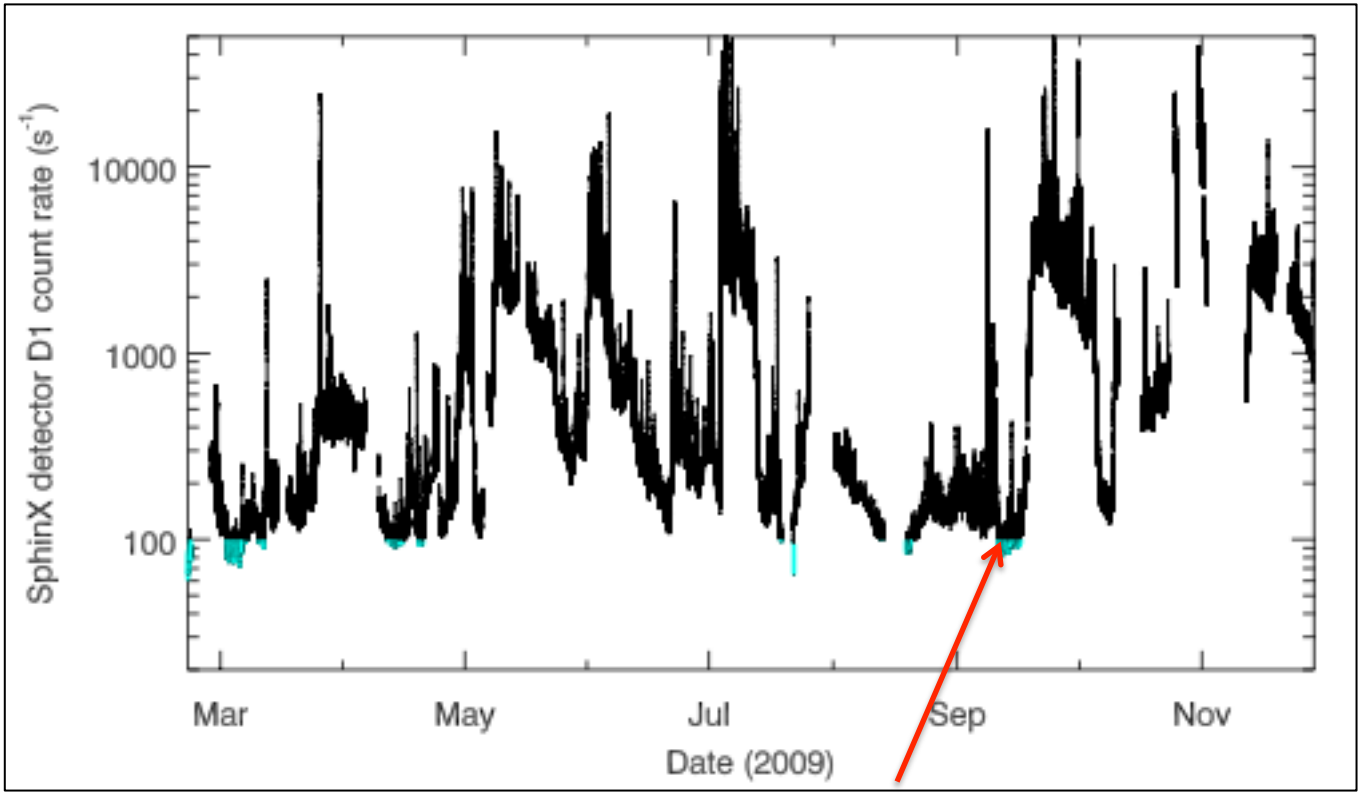
SphinX PHactX

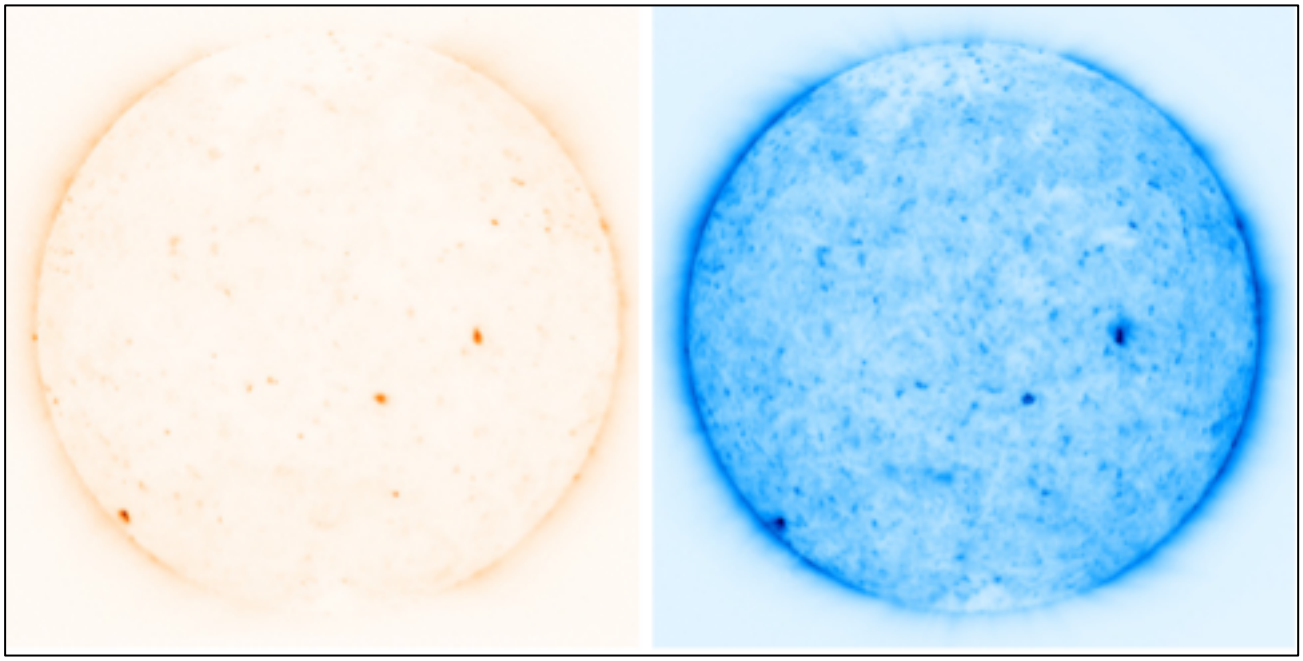
- Small Polish experiment on a Russian spacecraf, aimed at doing GOES right
- Three cooled Si diodes, 500μ thick behind 12.5μ Be windows, with areas 21.5, 0.495, and 0.0101 mm^2
- Sylwester et al. 2012, Miceli et al 2012
- Missed the noteworthy solar minimum of 2008, but got data soon thereafter

Daily average rates



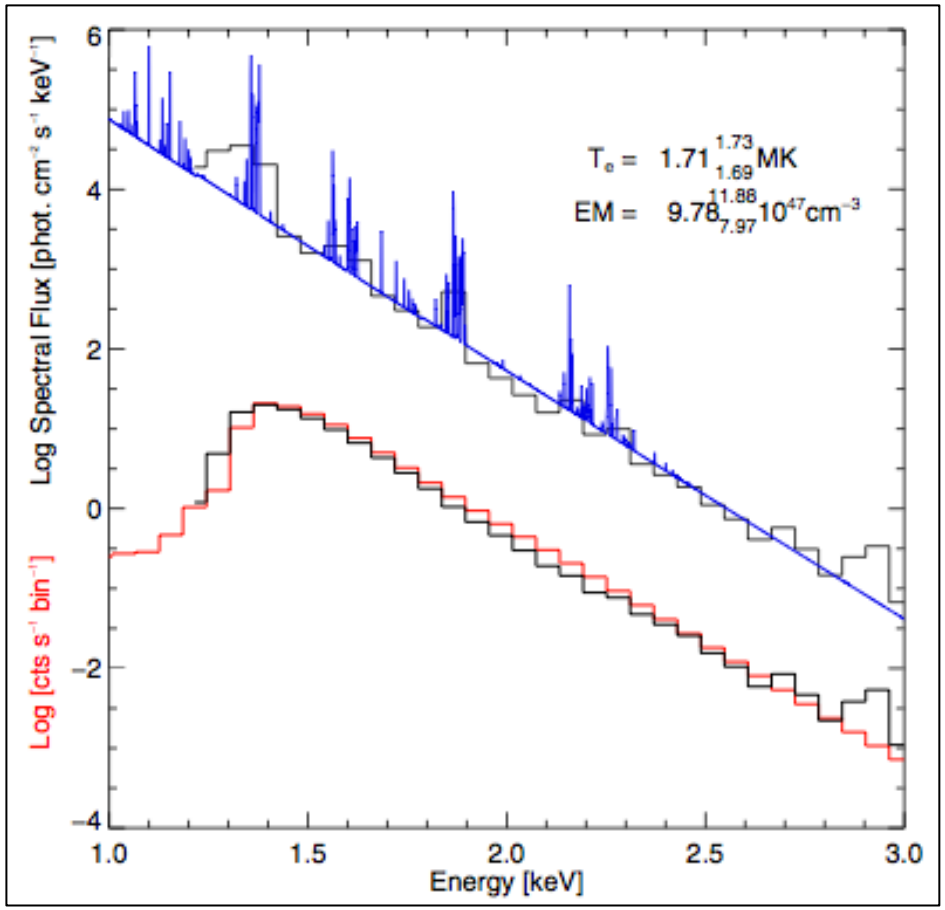
Note the epochs marked in blue. The conjecture is that these intervals show the quiet corona, in between the active-region eruptions

Quiet Sun



2009 September 15, 15:47:31 UT
Hinode/XRT Ti-Poly filter (left)
TESIS 171 A (right)

Quiet Sun spectrum



- Red, a 6-hour accumulation near the time of the images, with total D1 rate below 110 cps (0.22 cm^2)
- Blue, a CHIANTI model
- Note all of the decades: the >5 keV rate is very small

Conclusions

- The SphinX instrument has done what it was designed to do, namely to extend the GOES dynamic range downward.
- The base level in 2009, conjecturally, was the quiet corona away from the active regions. This would be the home of “network flares” or nanoflares that NuSTAR could detect directly.
- To get the large dynamic range in a non-imaging instrument, a tiny area (0.1% of NuSTAR’s) was needed – hence very poor time resolution.
- Spectroscopic results are TBD (need background study)