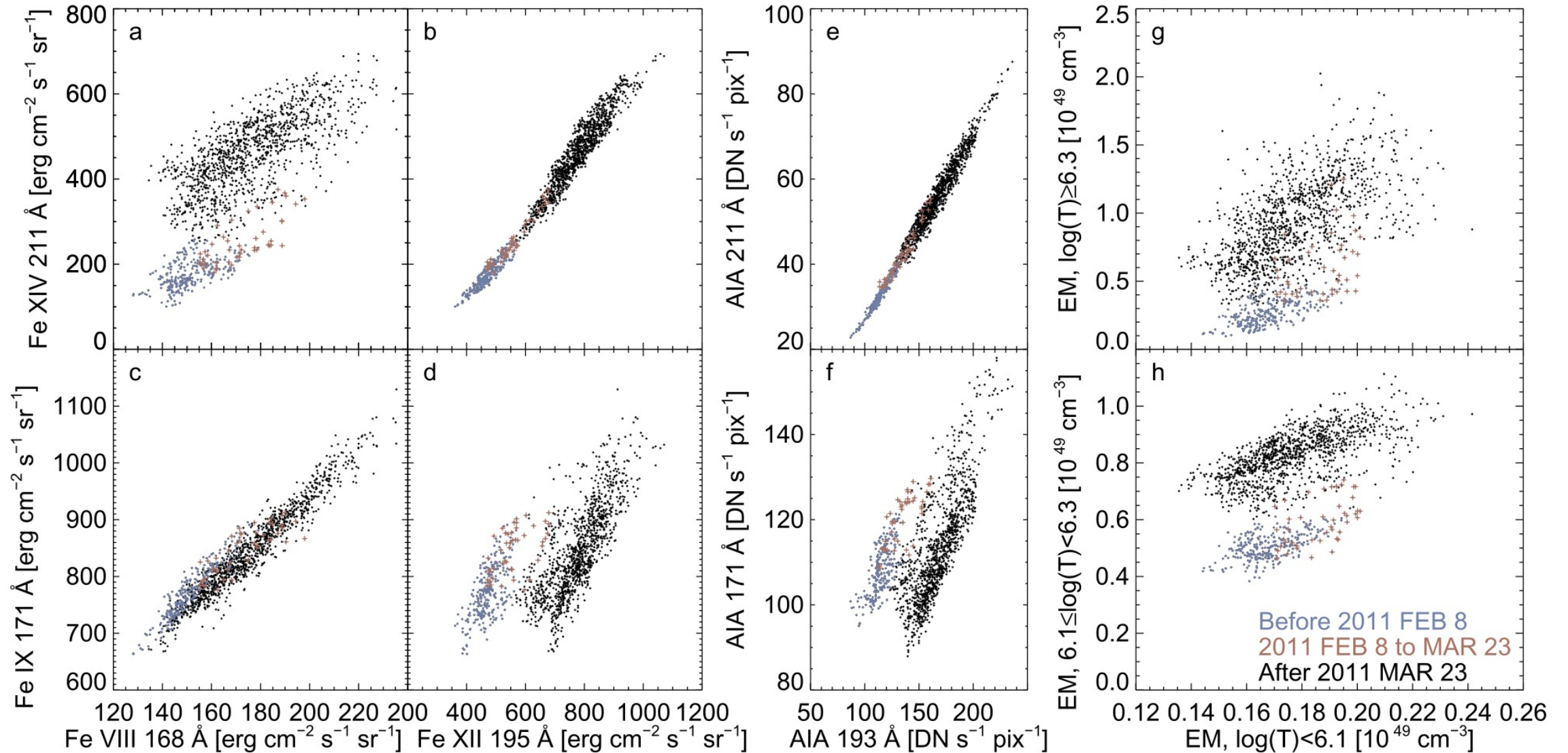




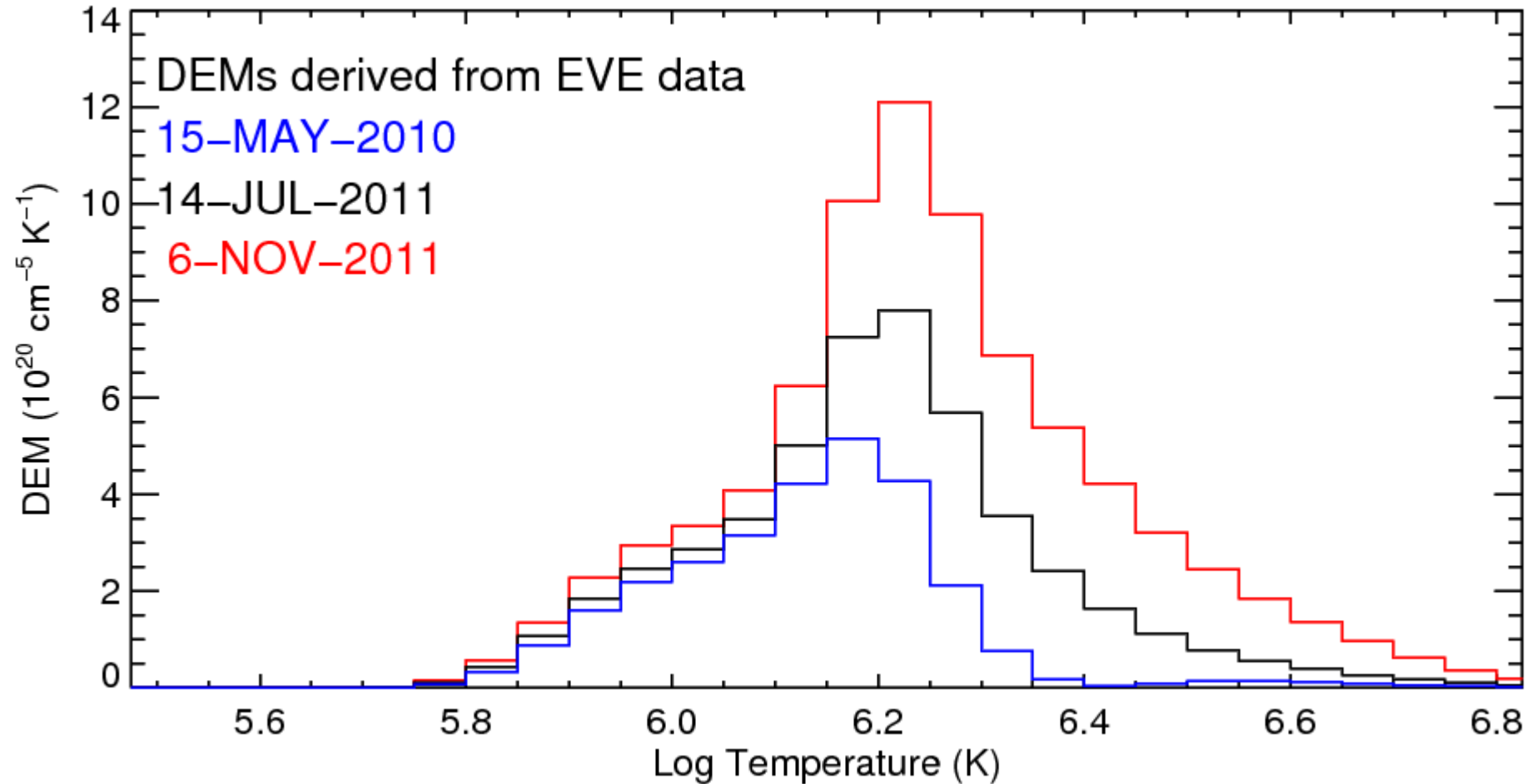
The Bimodal Corona Revisited

Stephen White & Sam Schonfeld

The Bimodal corona: Cycle 24 (Schonfeld et al 2017: MEGS-A)

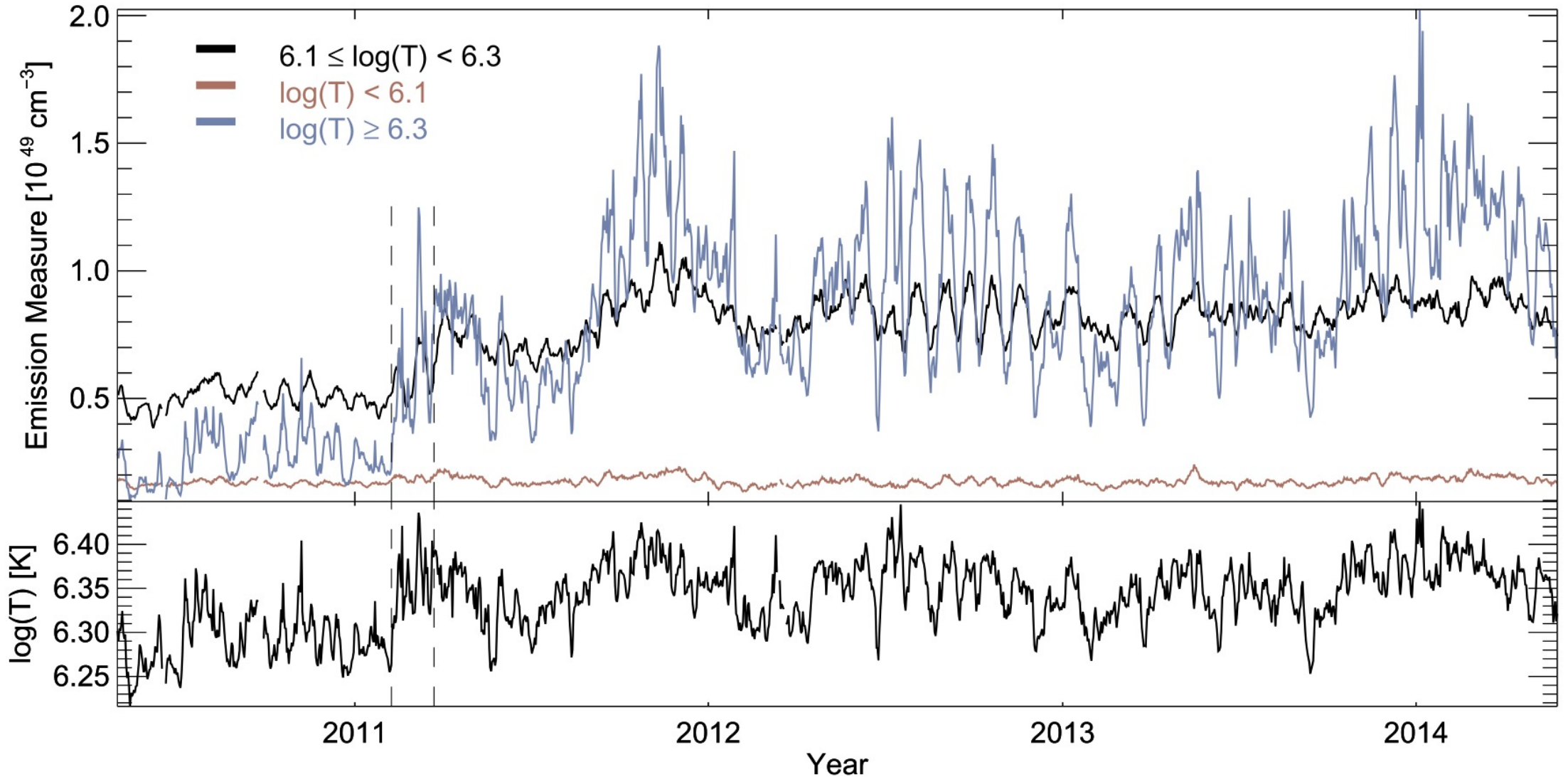


EVE DEMs from 3 stages of the solar cycle



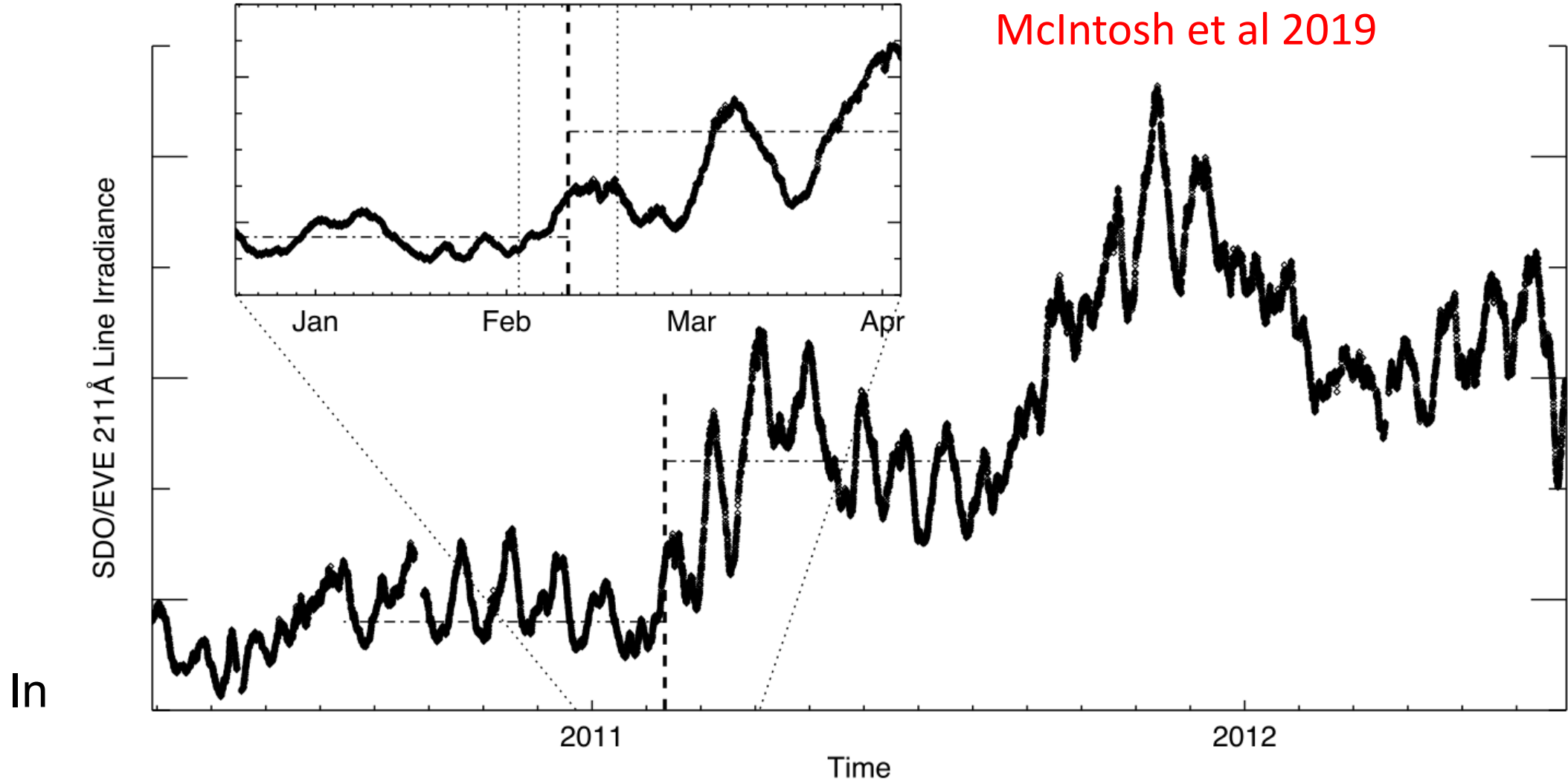
All the change over the solar cycle is in the hot side of the DEM

The solar corona below $\log T=6.1$ does not see the solar cycle



Coronal onset associated with cycle prediction

McIntosh et al 2019

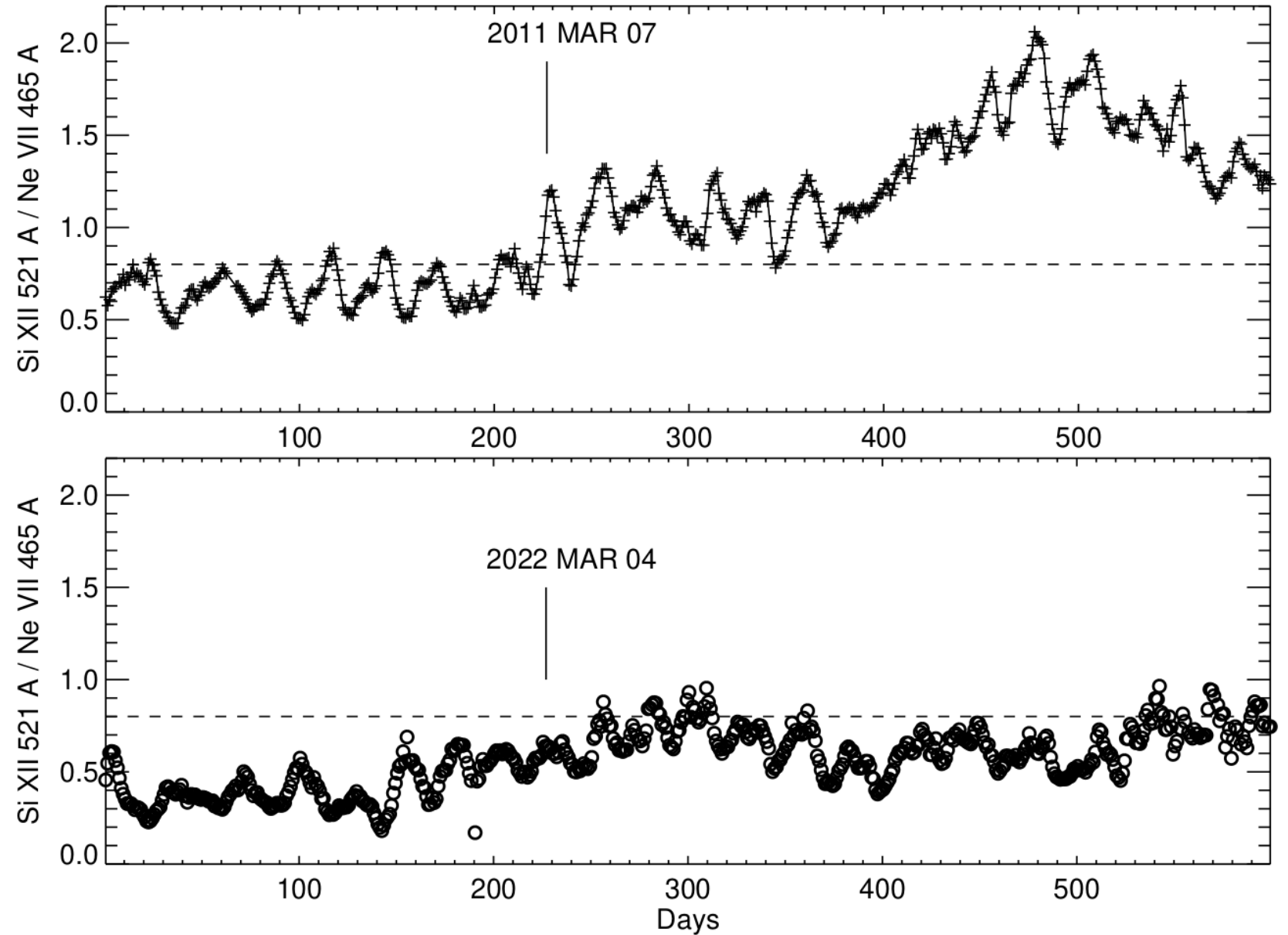


MEGS-B: Cycle 24 vs 25

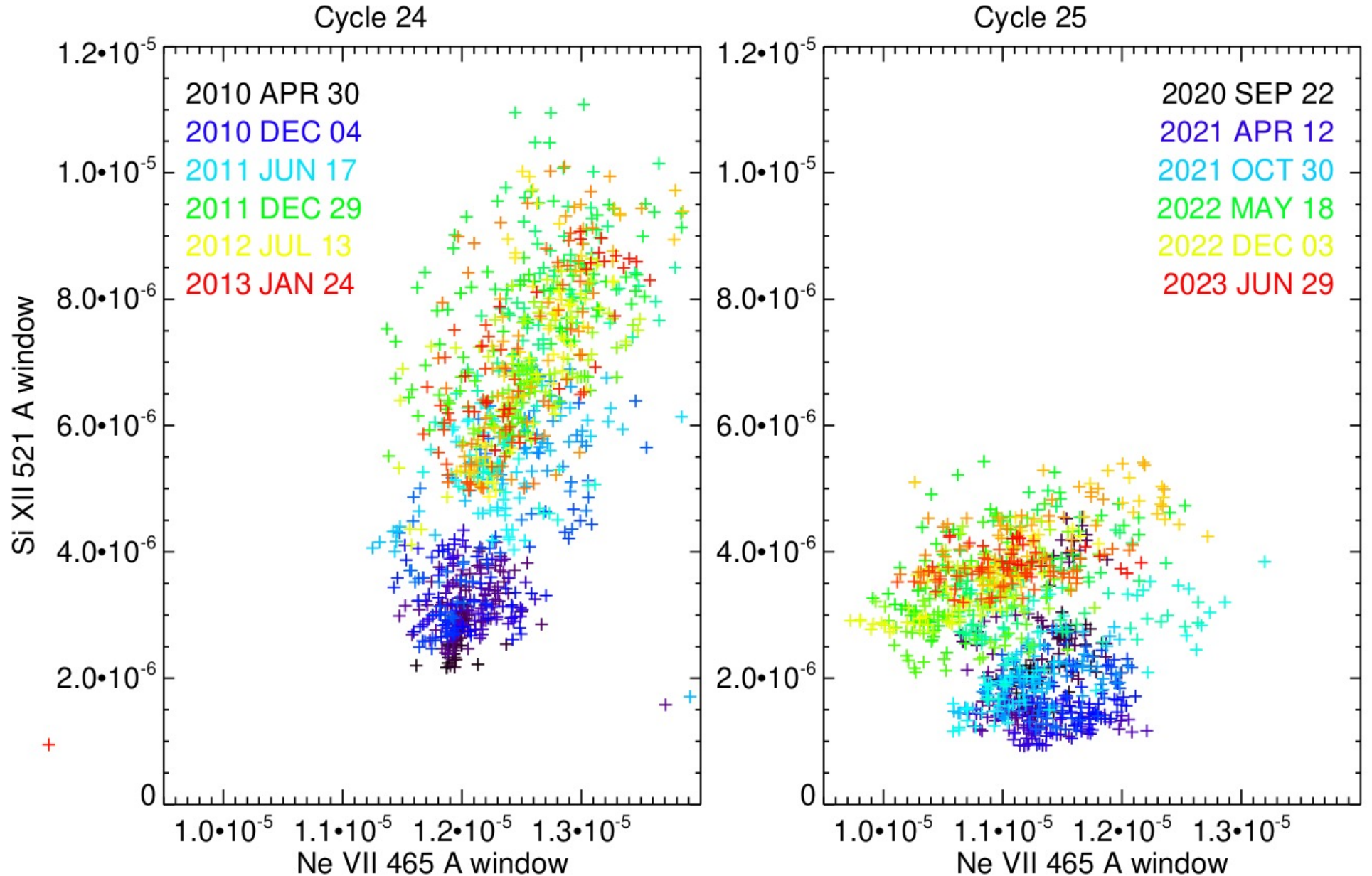
Can't use same
MEGS-A lines as in
Cycle 24

But MEGS-B has
lines covering
suitable range, e.g.,

Si XII (6.30) vs
Ne VII (5.75)

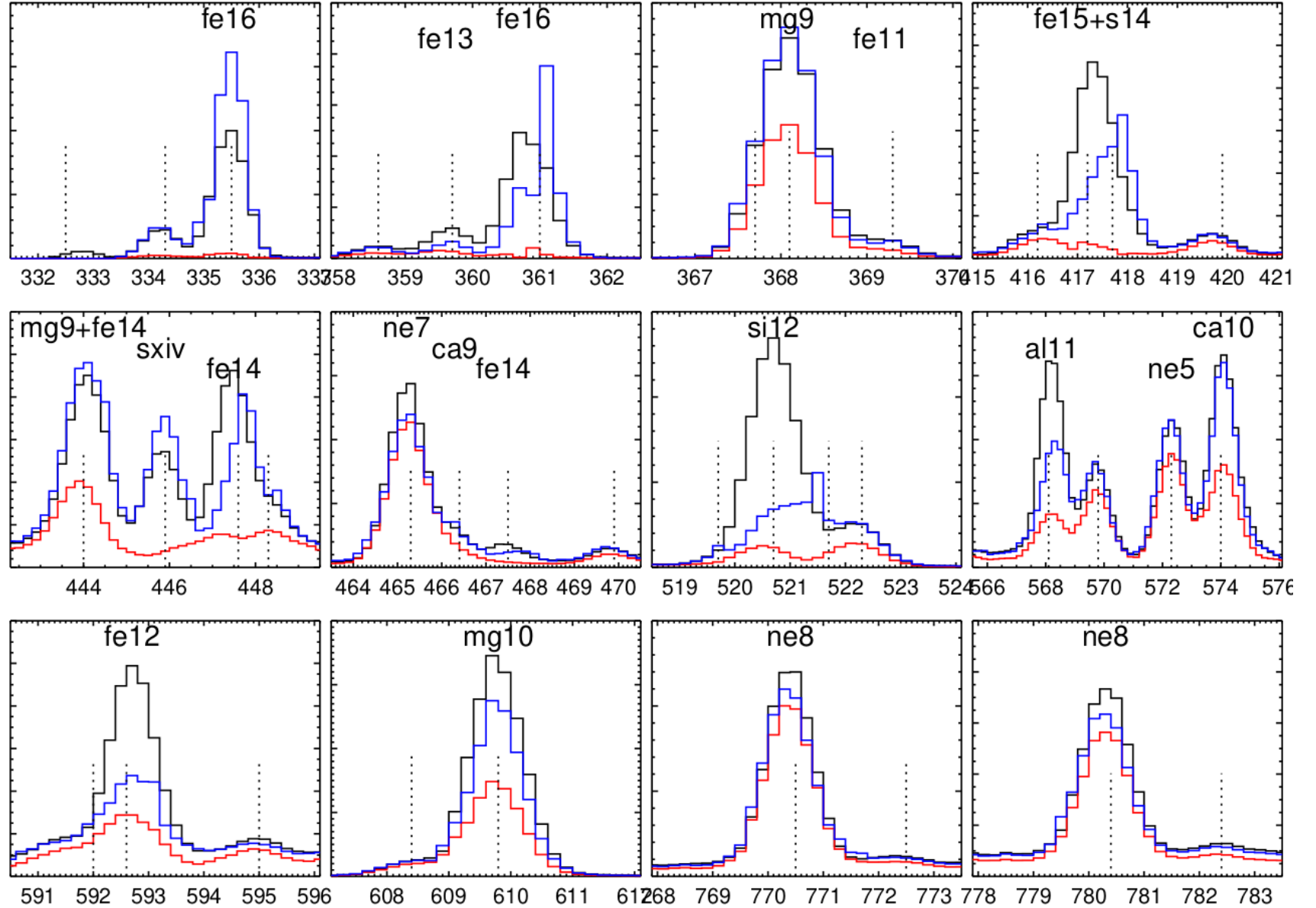


EVE line windows for 1000 days in Cycles 24 and 25: Si12 vs Ne7

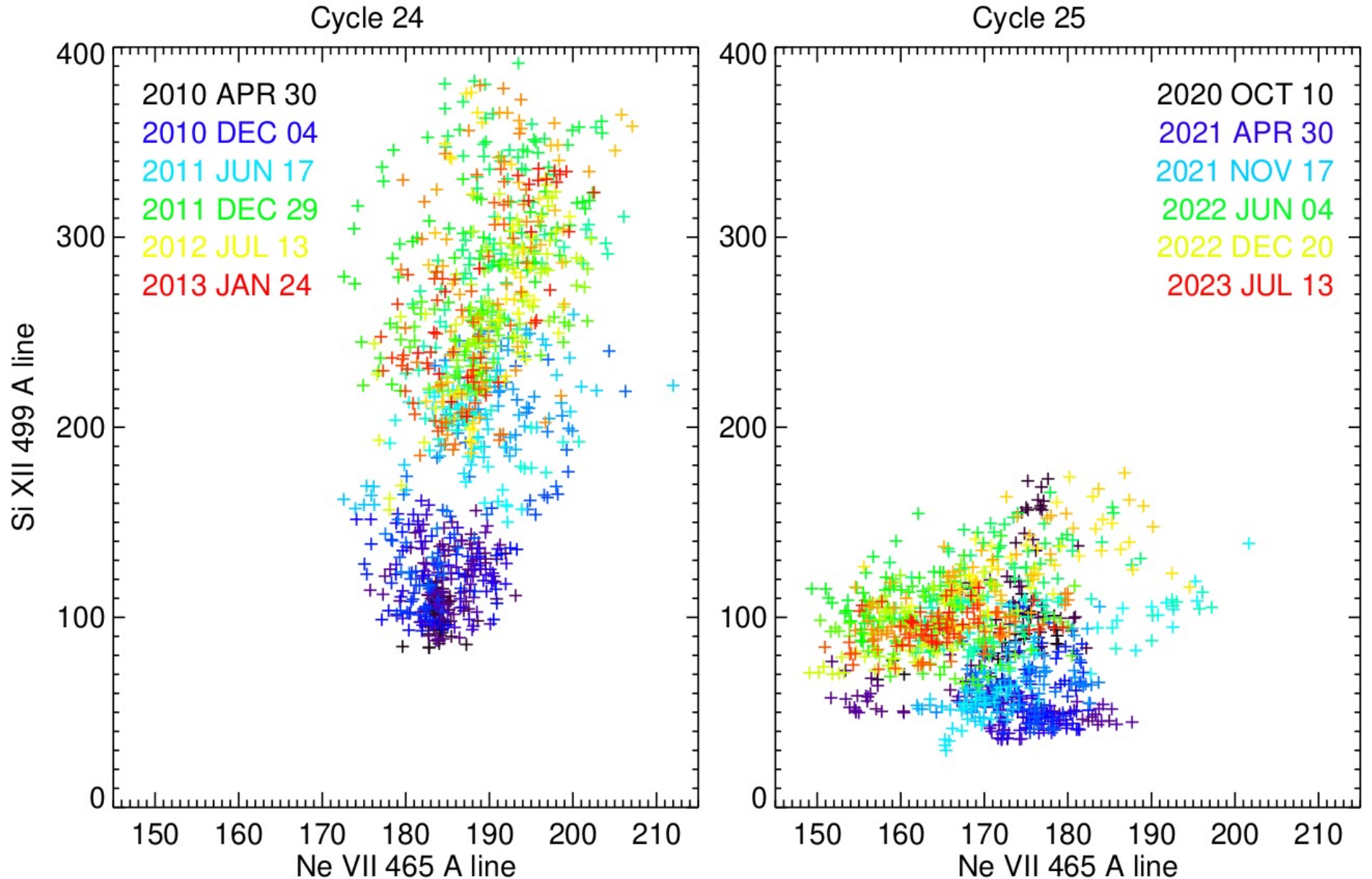


Line fitting

Cycle 24
Solar min
 Cycle 25

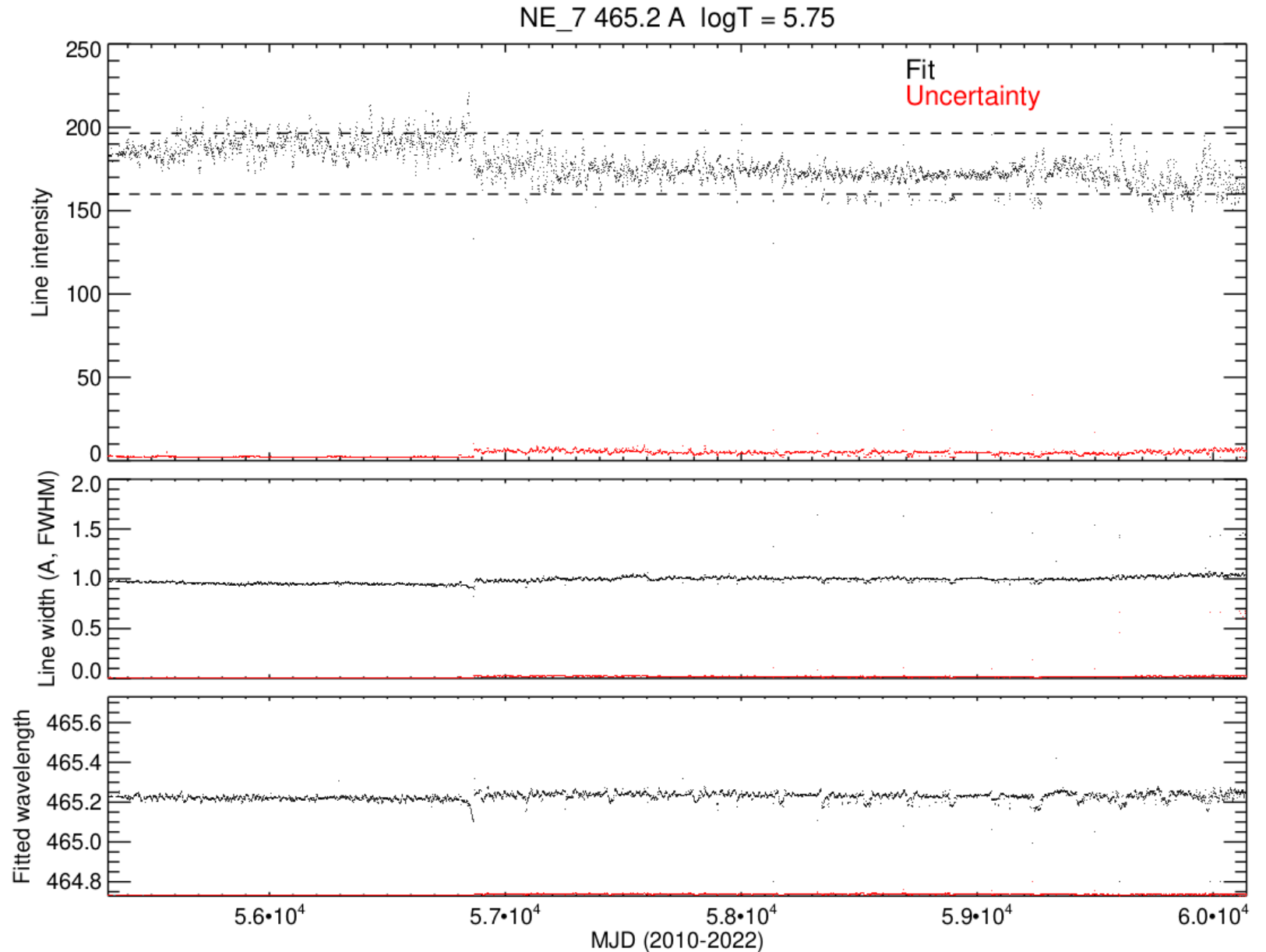


Line fits
for 1000
days in
Cycles
24 and
25: Si12
vs Ne7



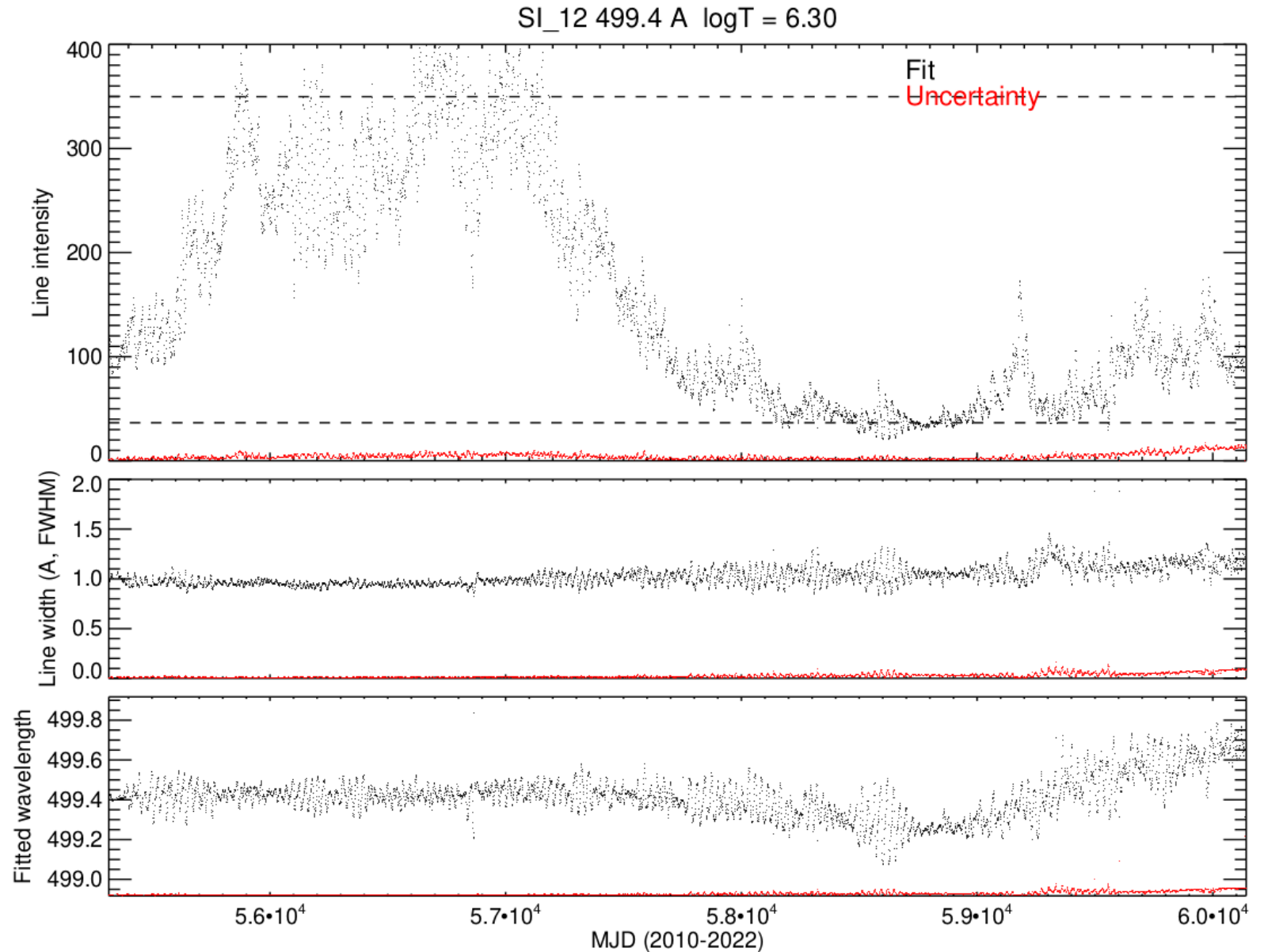
2010-2023:
cool lines are
remarkably
constant:

Where is the
solar cycle?

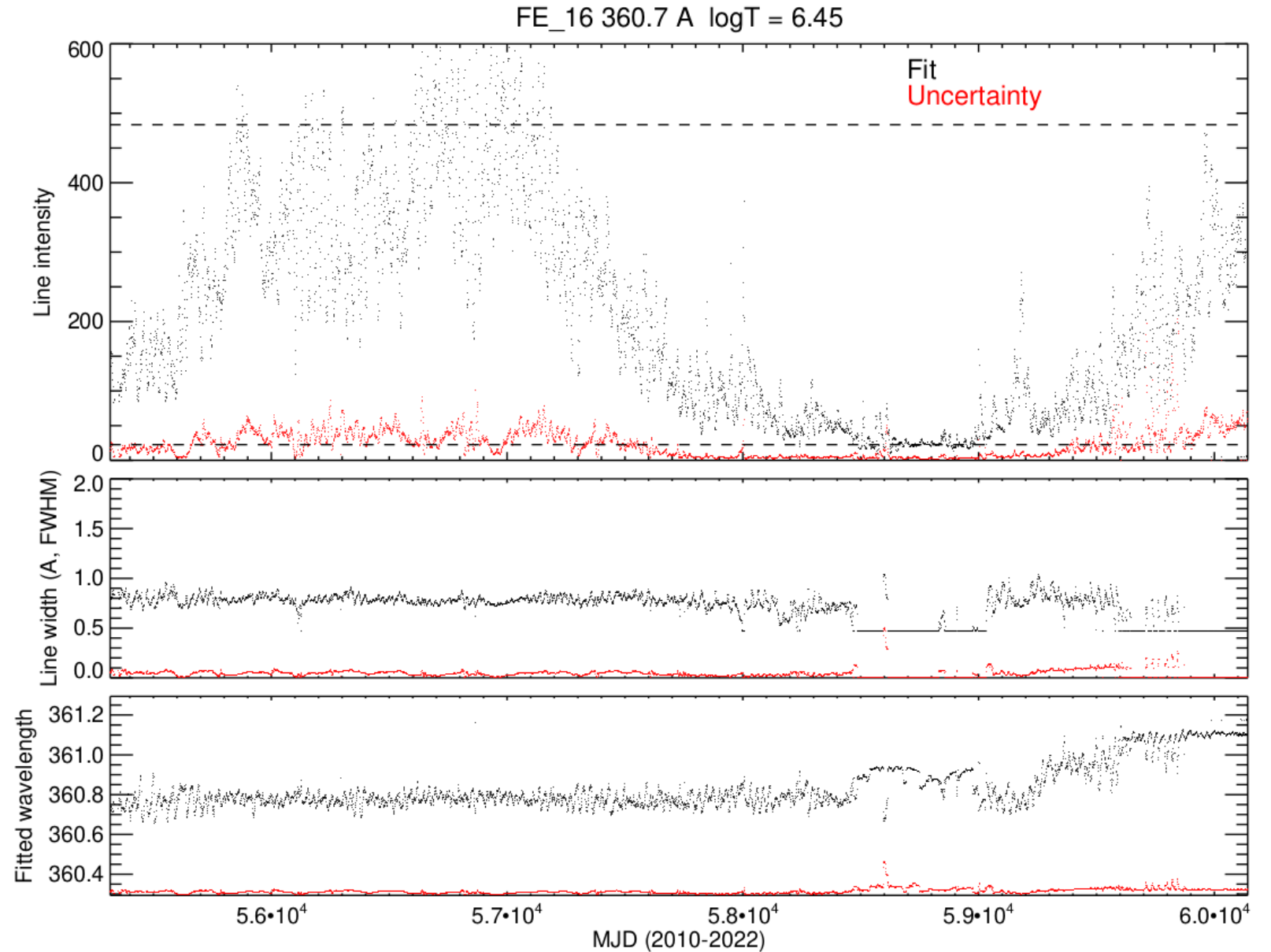


2010-2023: hot lines have full cycle.

But have not returned to previous levels: why?

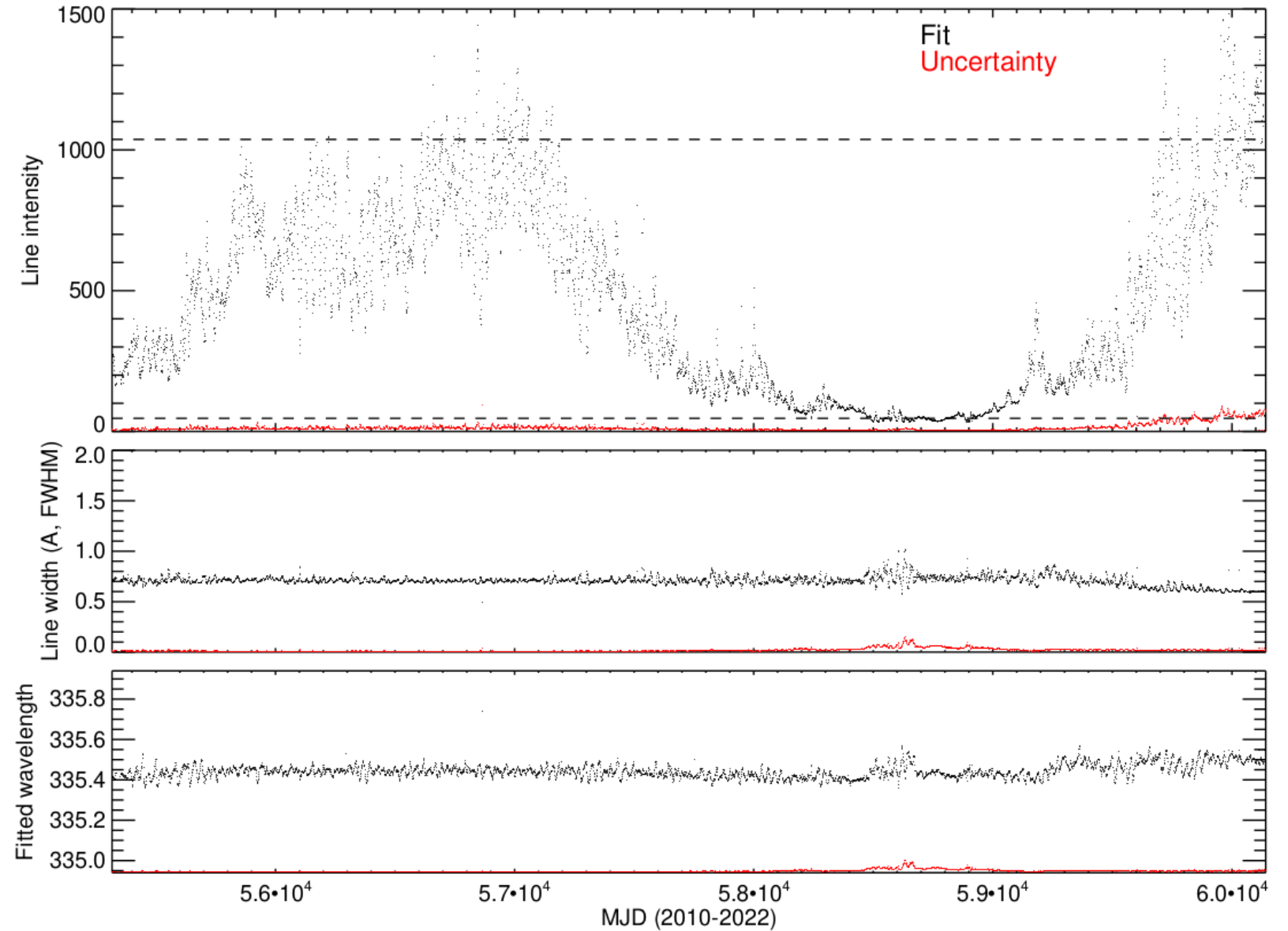


Fe 16 at 360.7 A: close to previous levels



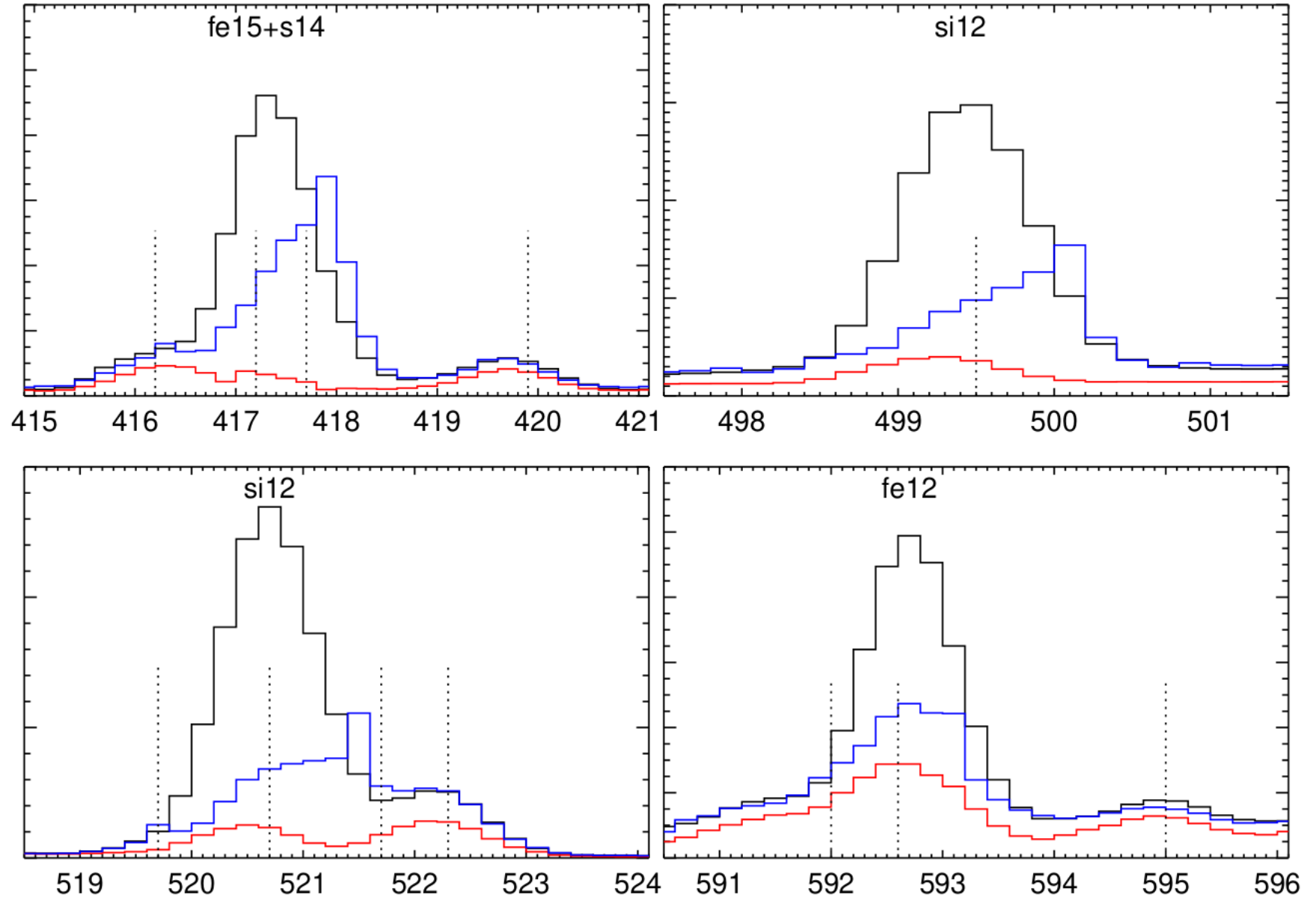
FE_16 335.4 A logT = 6.45

Fe 16 at 335 A is
back to previous
levels



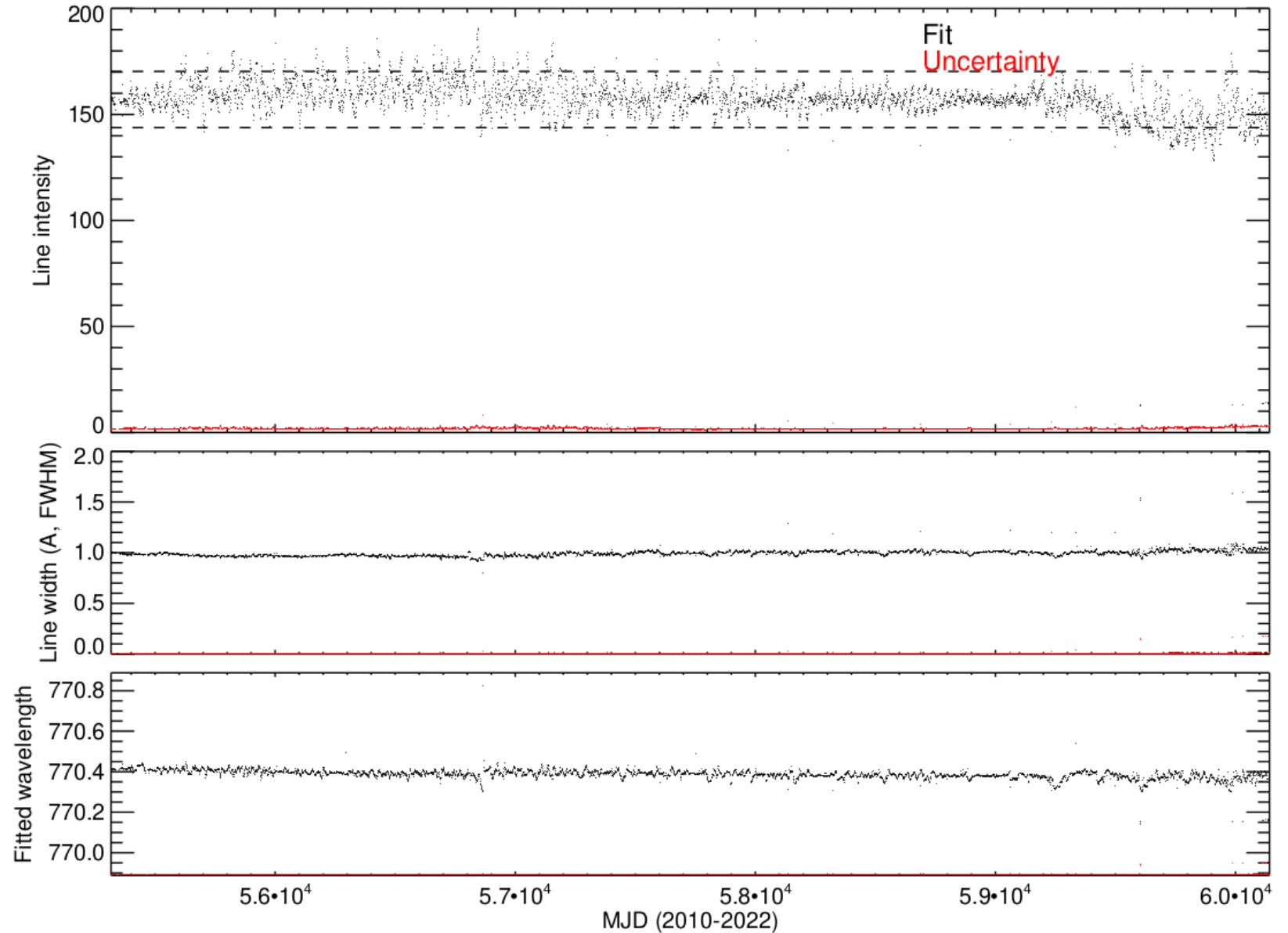
Dubious
MEGS-B
windows

Cycle 24
Solar min
Cycle 25



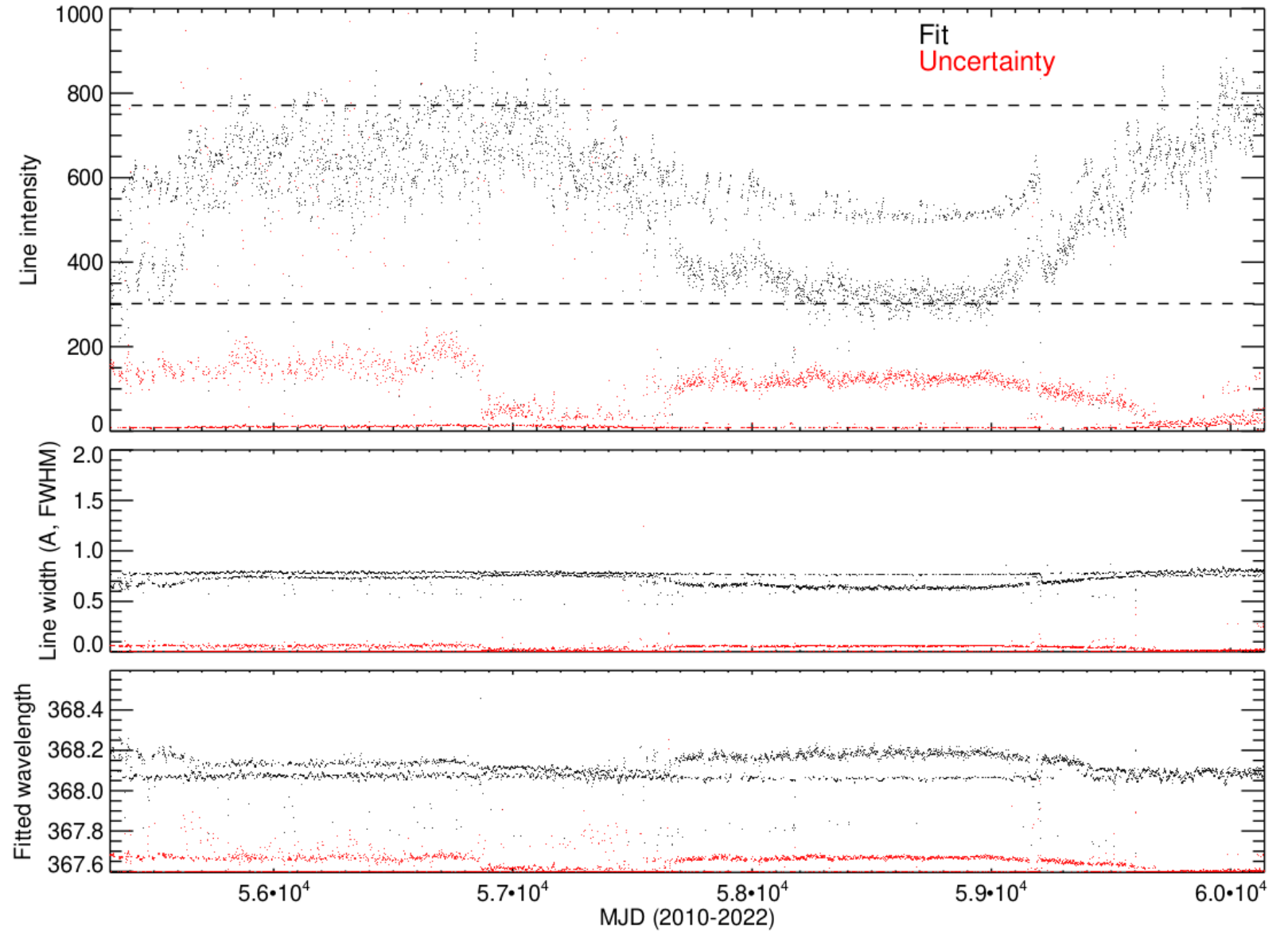
NE_8 770.4 A logT = 5.90

Ne 8 at longer wavelengths:
looks OK

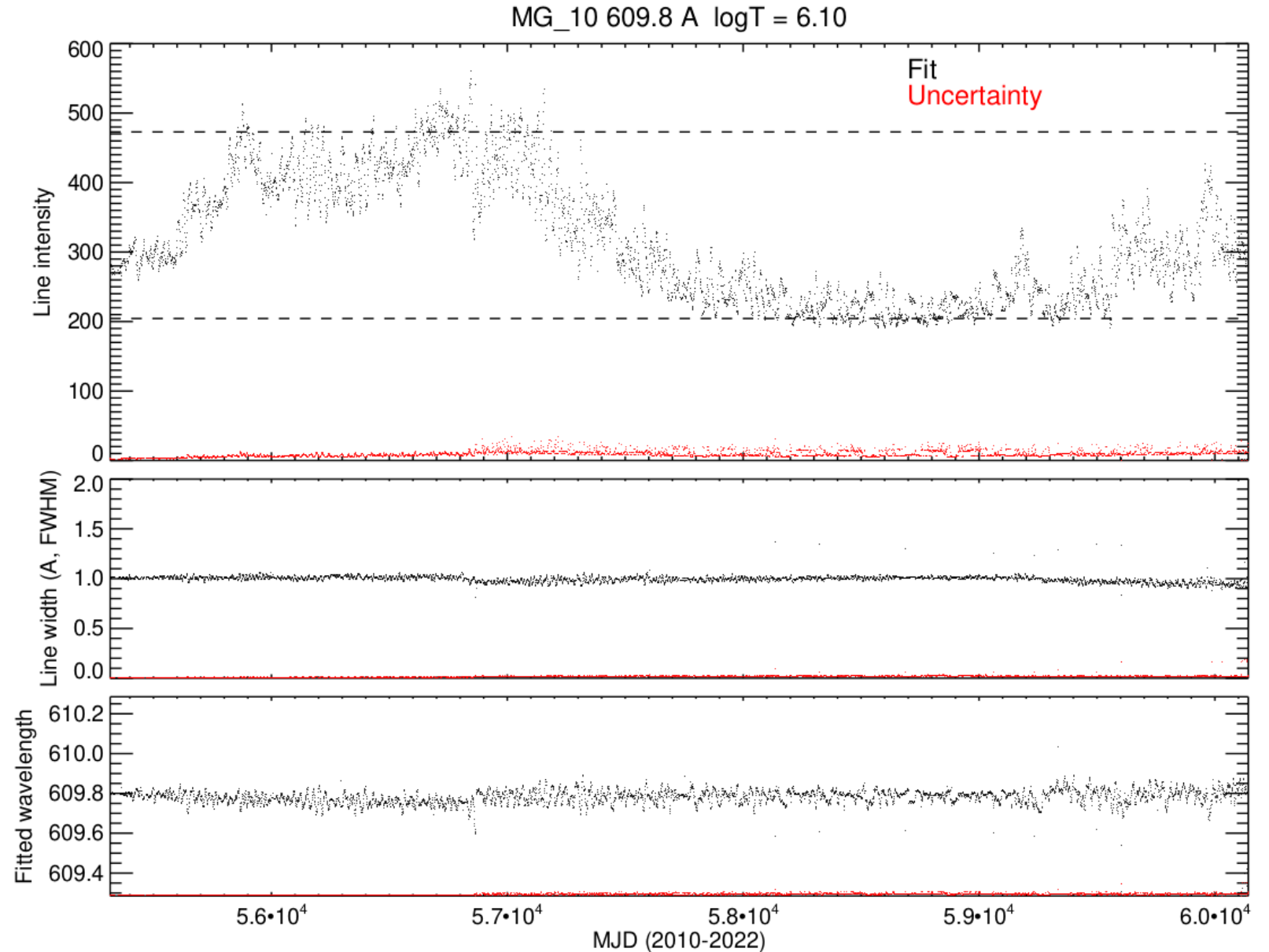


MG_9 368.2 A logT = 6.05

Mg 9 is one of the stronger lines with no real confusion, but fitting is poor

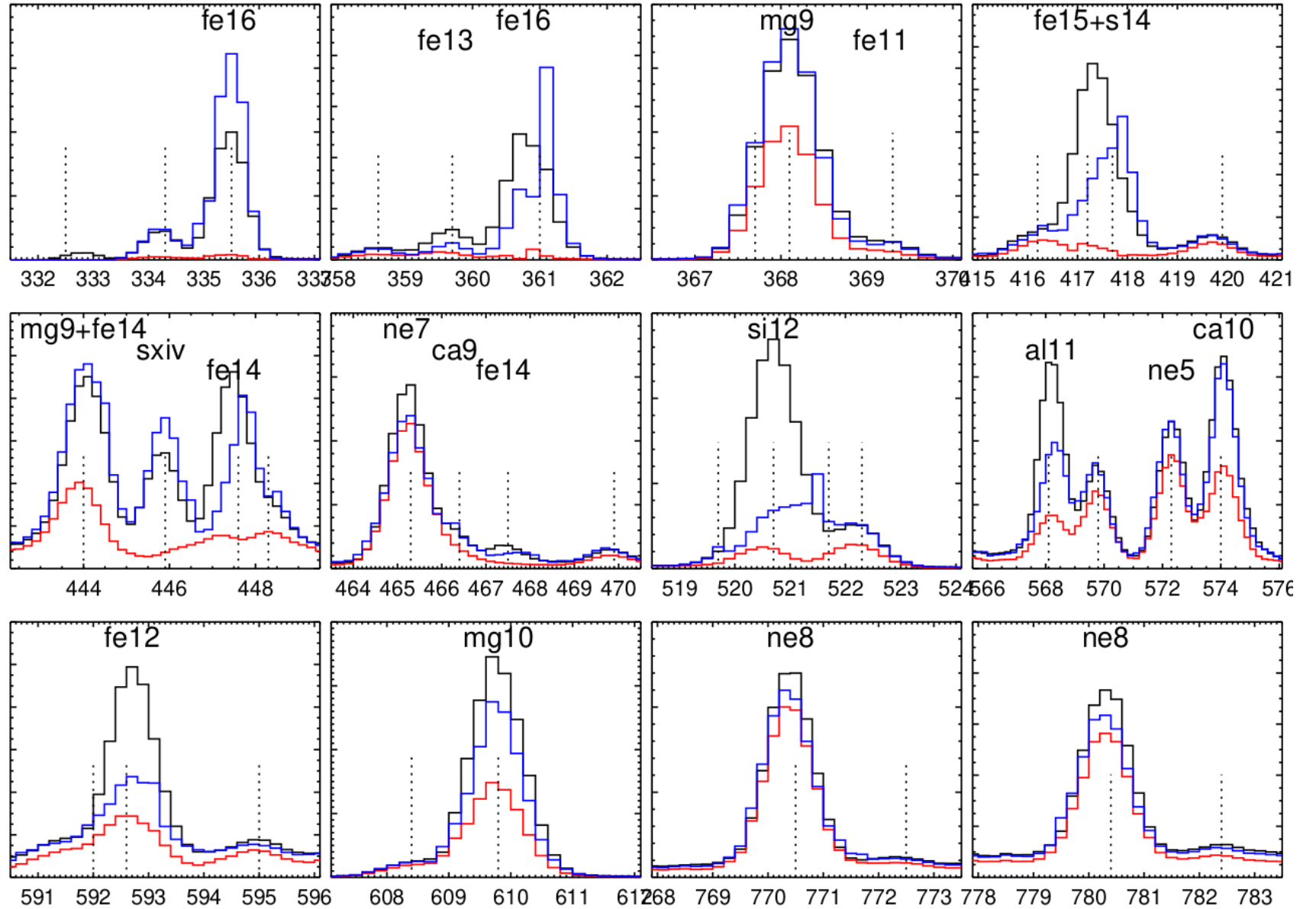


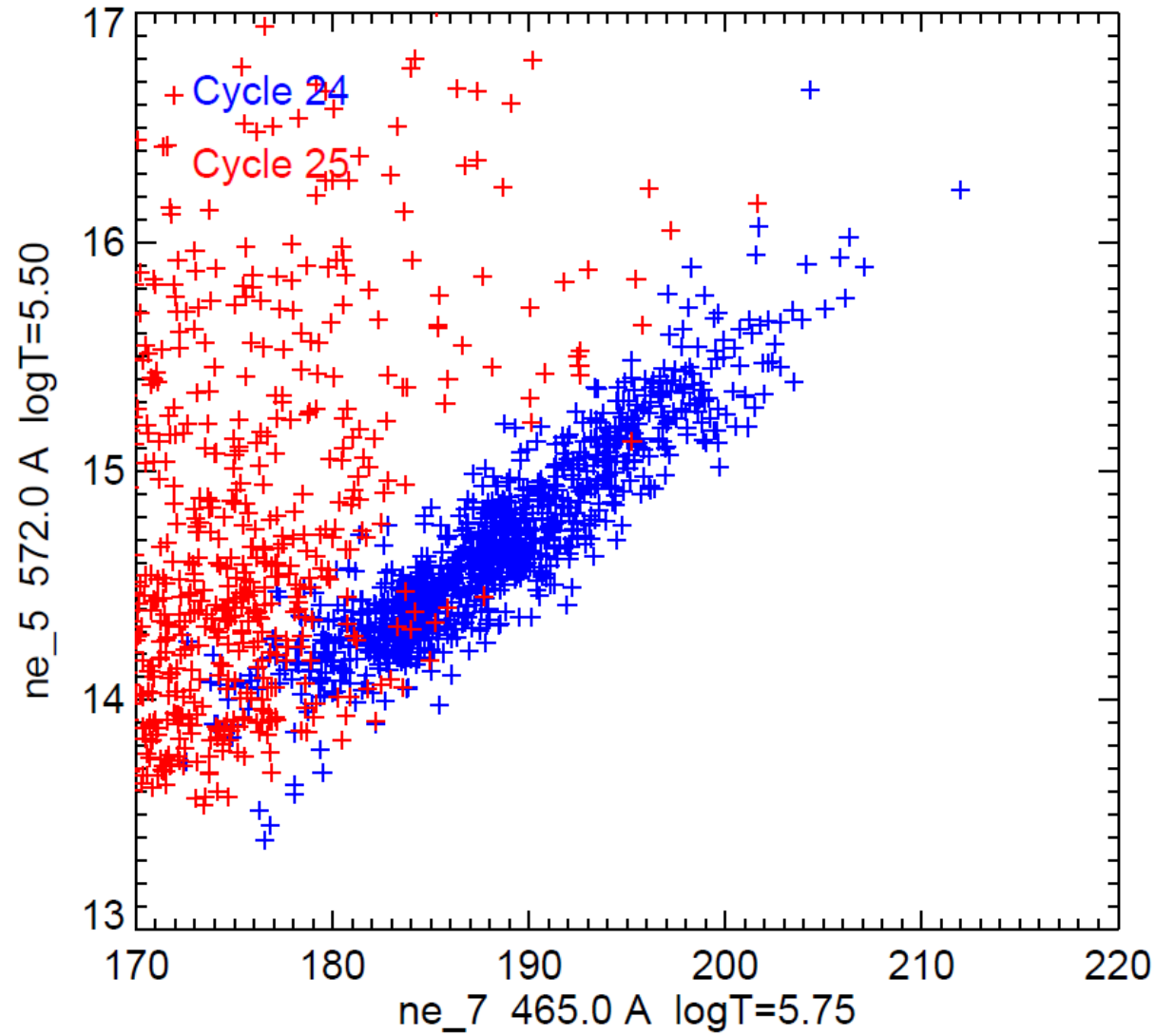
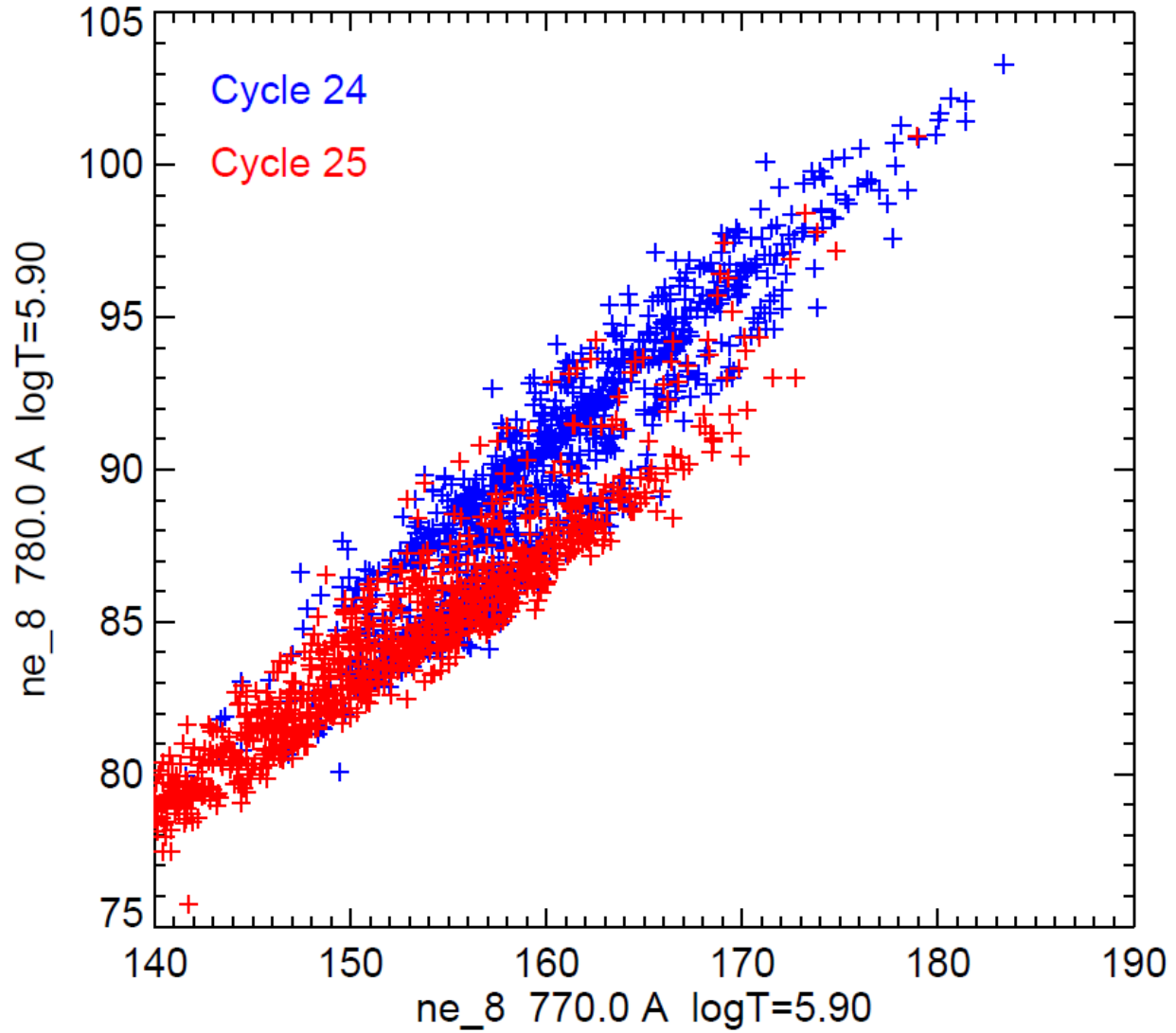
Mg 10 is another strong line, relatively isolated, no issues with fitting but not quite back to same level

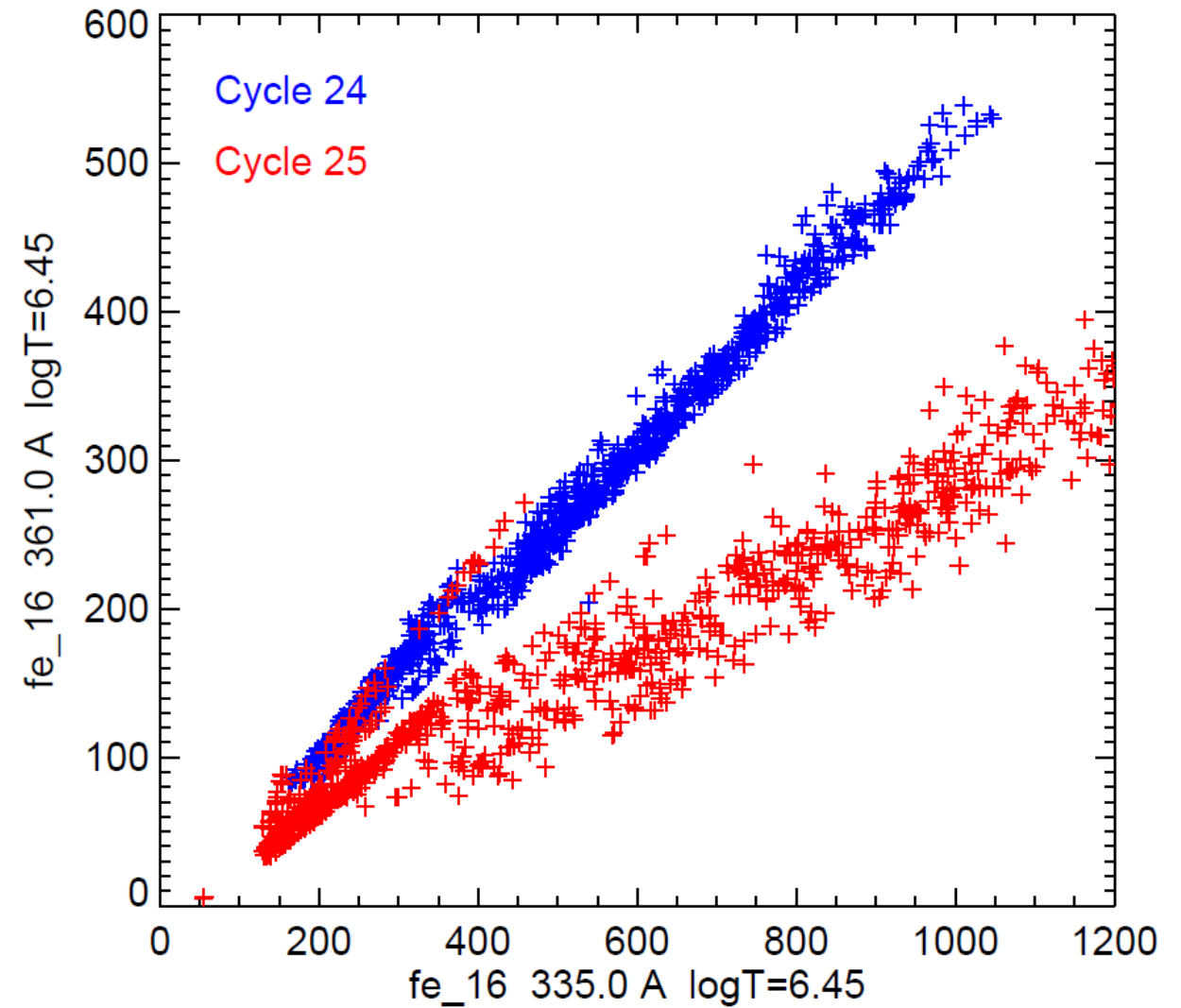
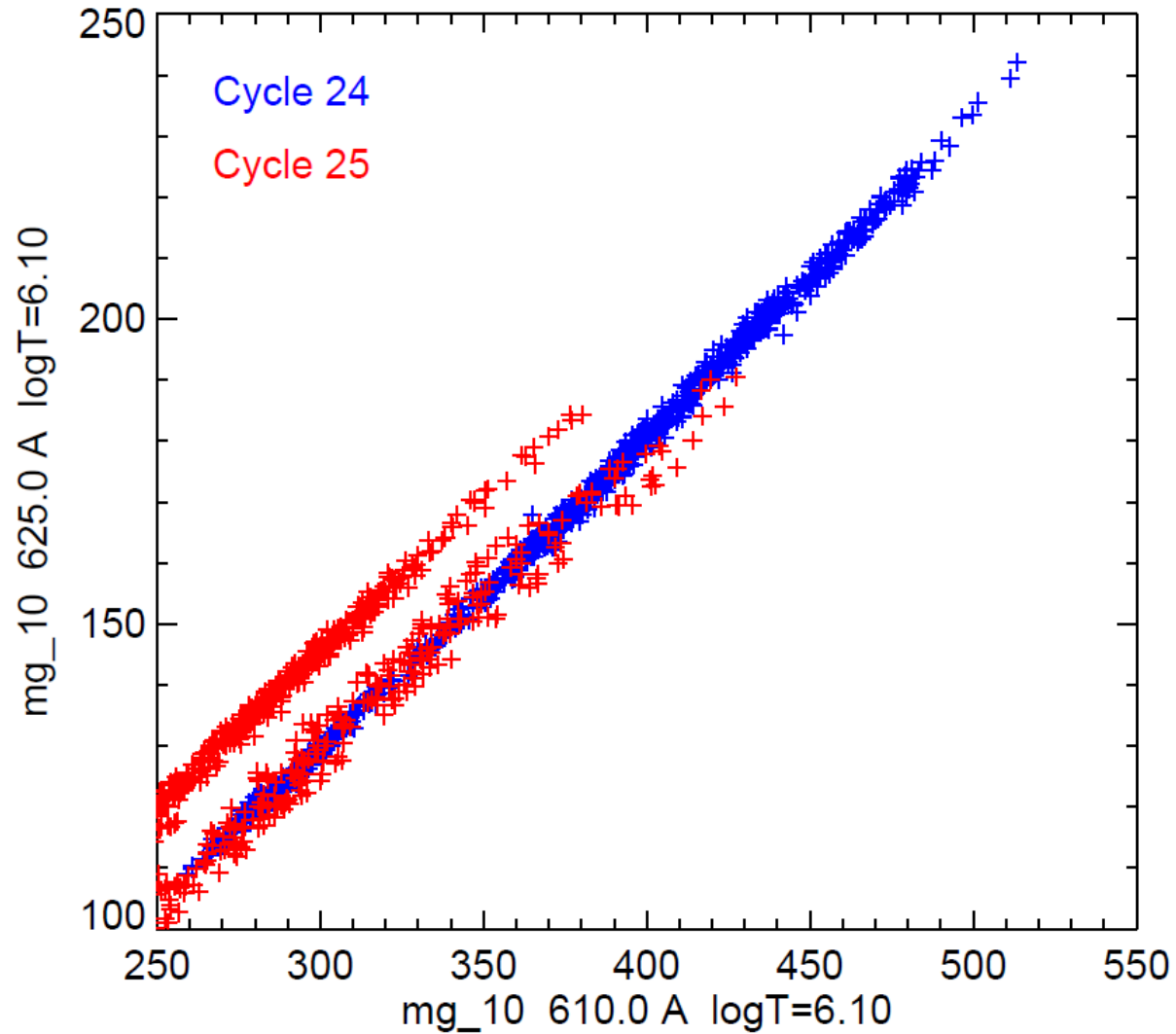


Line fitting

Cycle 24
 Solar min
 Cycle 25





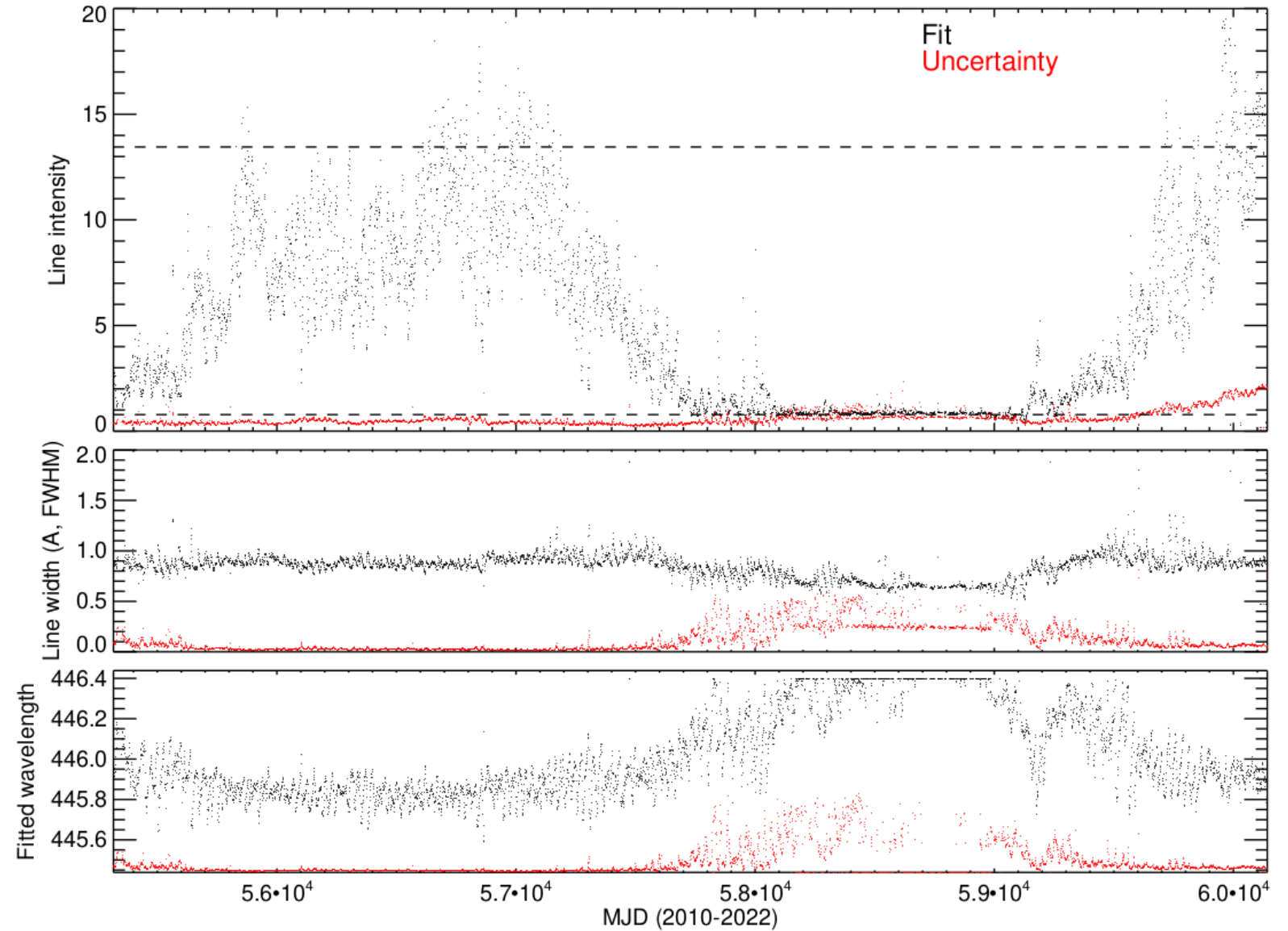


Double-valued behavior in Mg 10, change in relationship in Fe 16

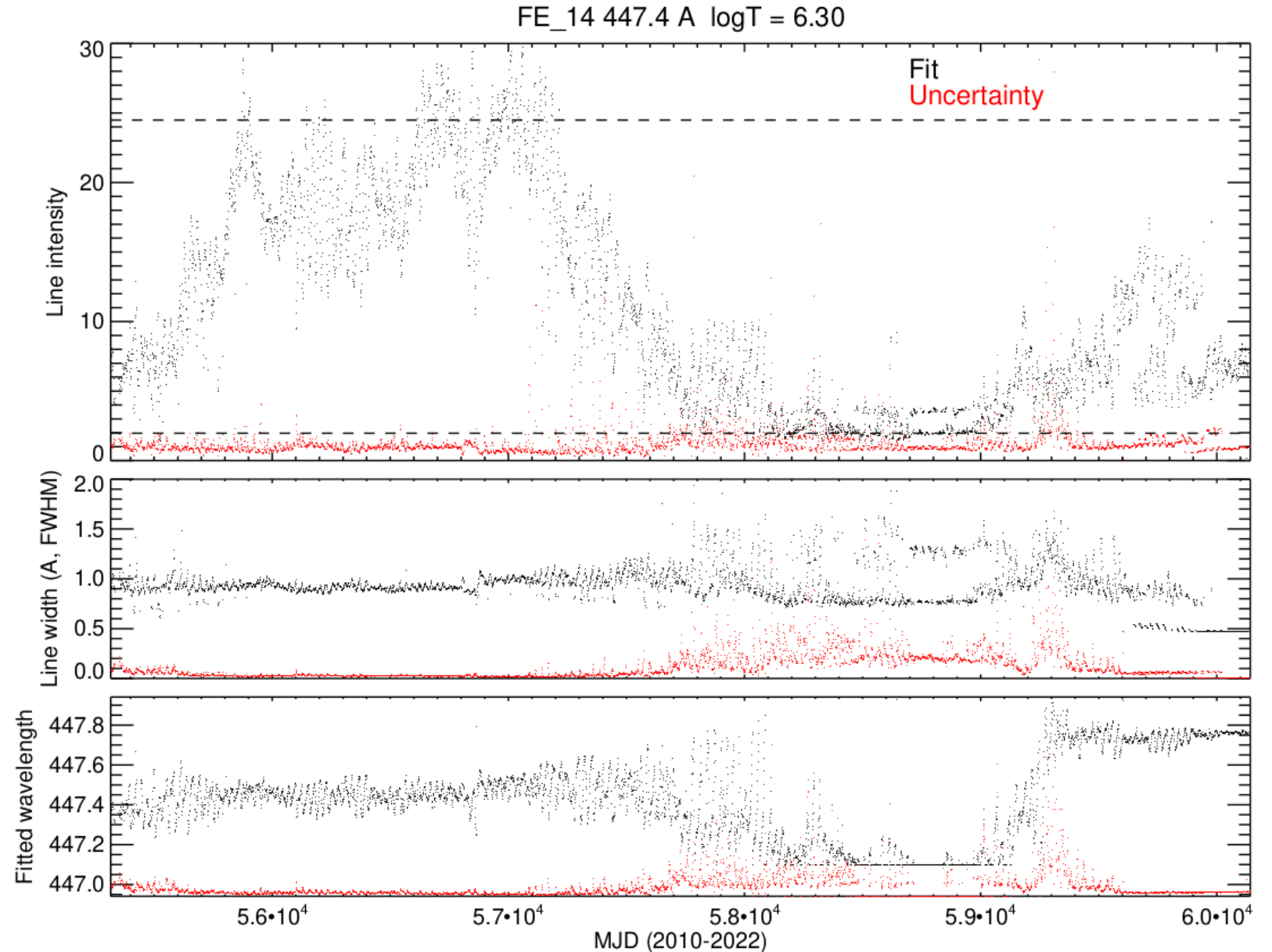
- No evidence for bimodal solar corona or a sharp transition in Cycle 25 so far
- But same pattern of no solar cycle in cold lines ($\log T < 6.0$) is seen
- How should I address issues with degradation of MEGS-B?

S_XIV 446.0 A $\log T = 6.50$

S14 is the hottest line, not so strong, but has returned to prior-cycle level



Fe14 line has not returned to prior-cycle level, and there is a small shift in the wavelength



Ca10 line: not very strong but width and wavelength stable, level almost back to prior cycle

