WSO Magnetic Fields are Suddenly Cut in Half [Again?]

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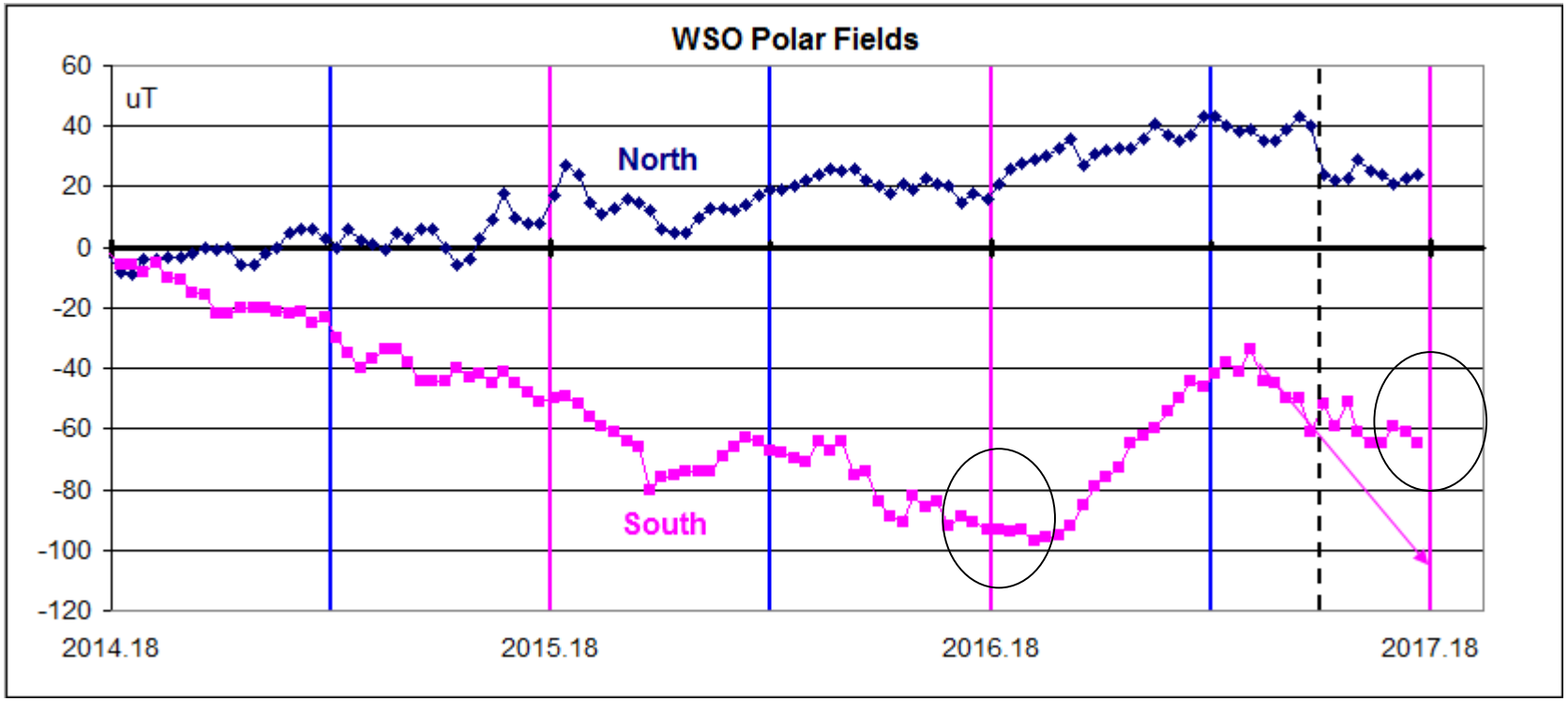
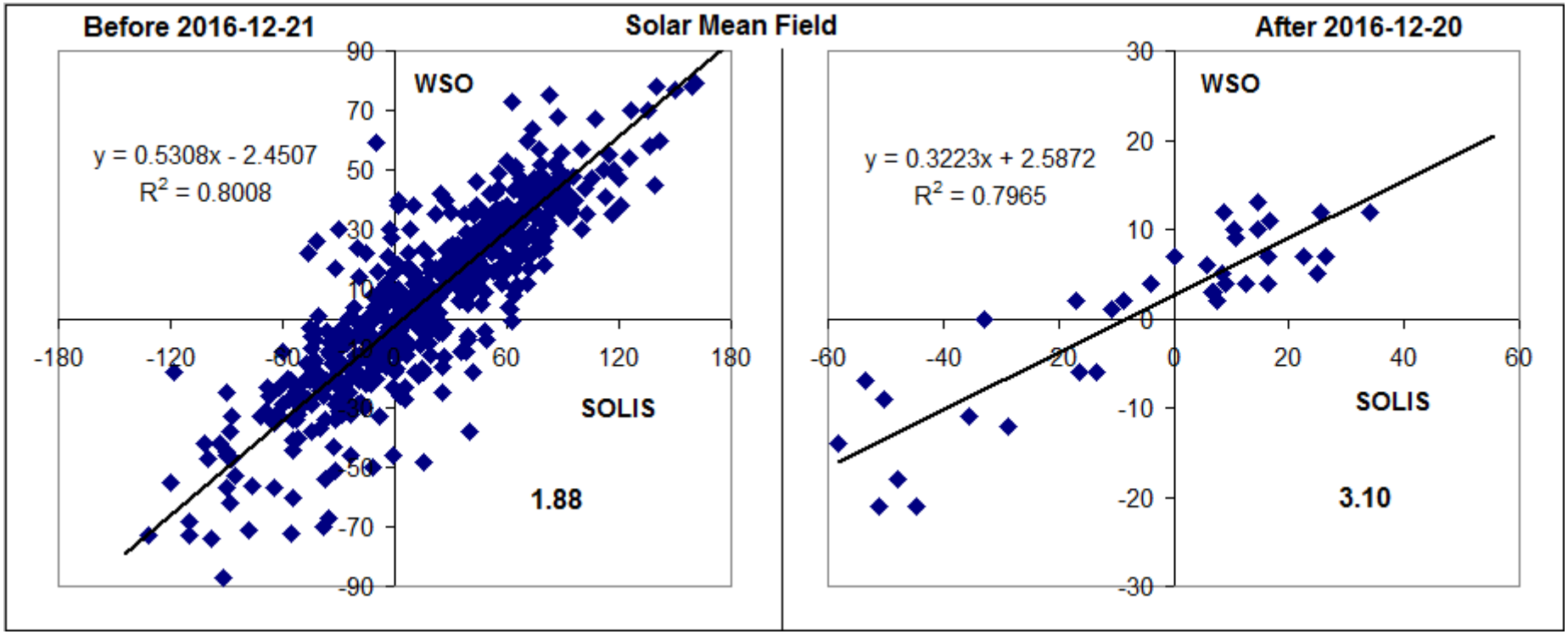
March 21, 2017

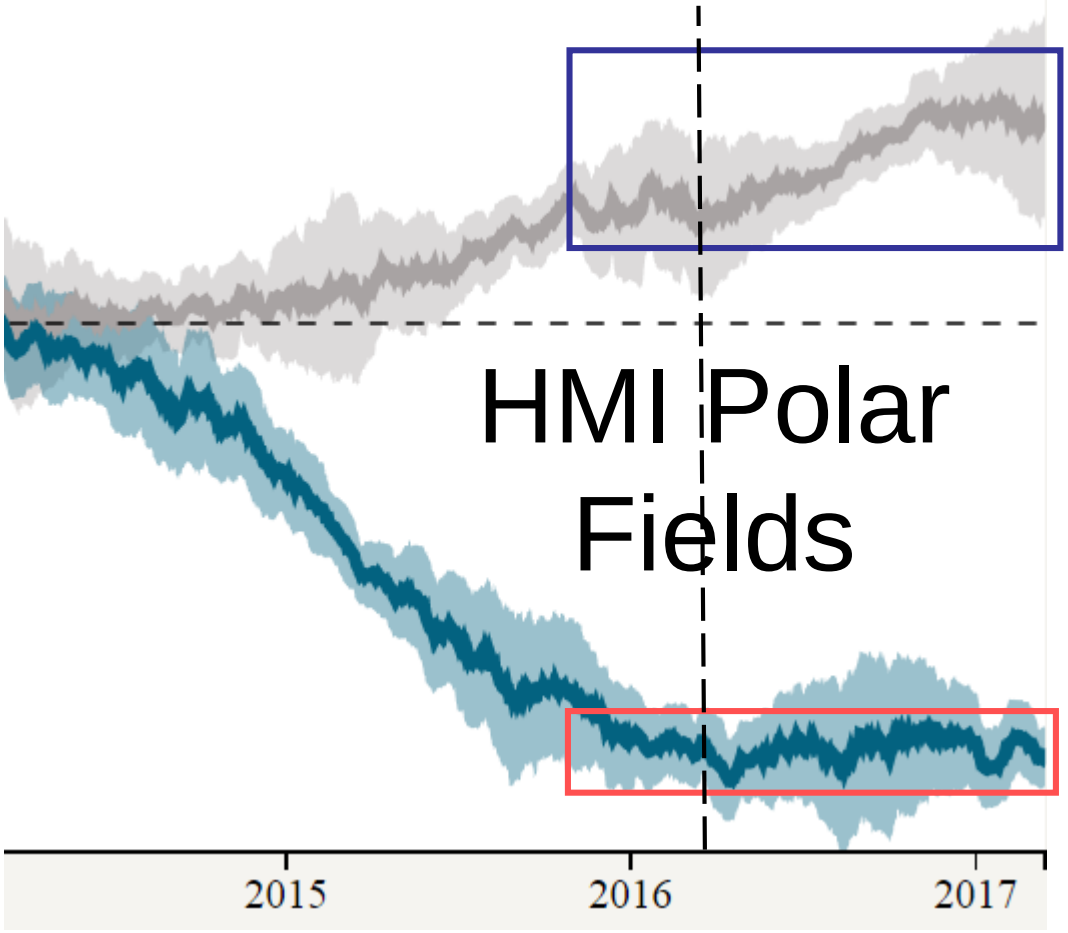
Updated June 19, 2017

Since December 2016 the Southern Polar Field Measured at WSO has not Increased as Expected as We are Getting a Better View of the Pole in March

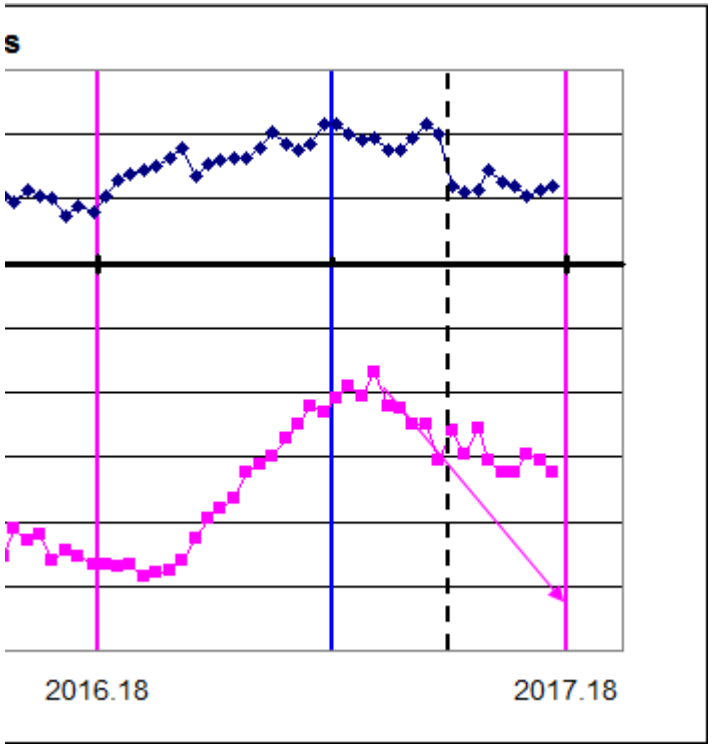


The Mean Field has been cut [roughly] in Half Compared to SOLIS





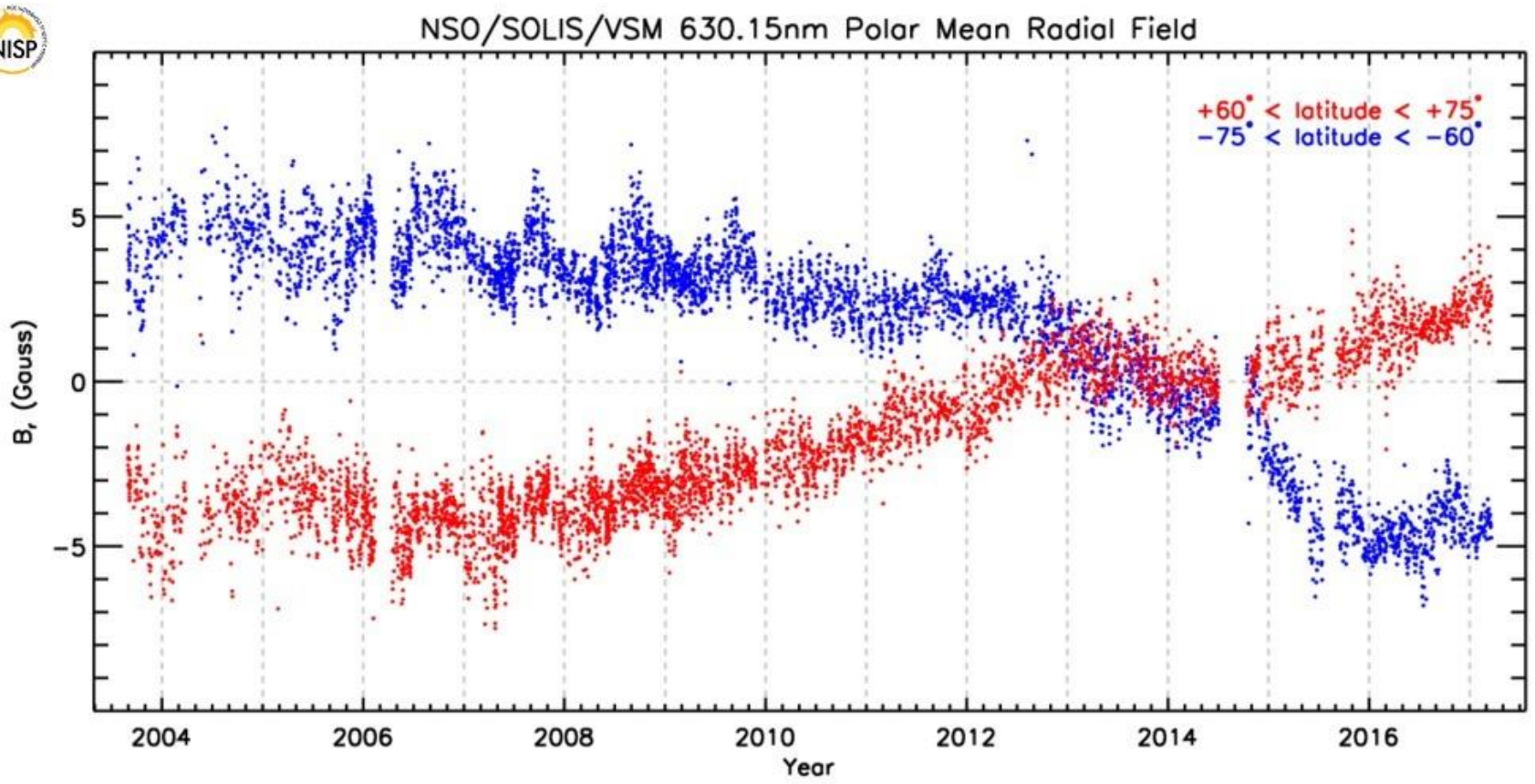
WSO Polar Fields



The HMI polar field at the South Pole has been stable for more than a year so we should now see the same field as we saw a year ago. We don't at WSO. We see only about half.

Similarly, the HMI North Polar fields have increased, while the WSO North Polar field has been cut in half.

SOLIS also show Stable South Polar Fields Since the Start of 2016



And increasing North Polar fields into 2017 unlike WSO.

We have Seen this Before

Failure of the KDP modulator?

No, probably not (added 2017/04/24)

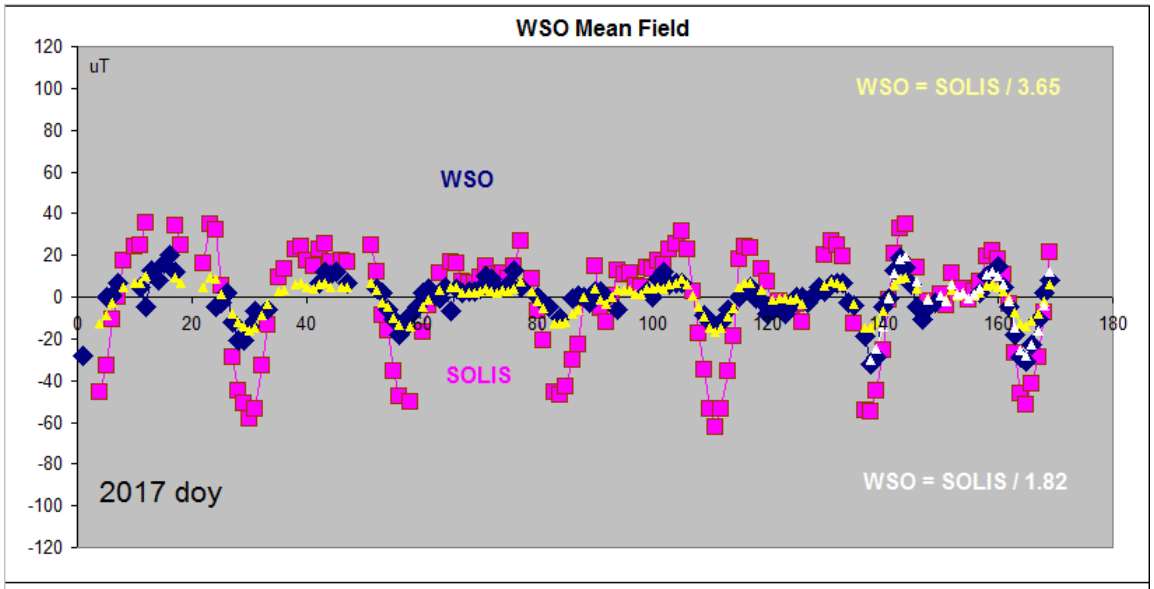
Email from Phil:

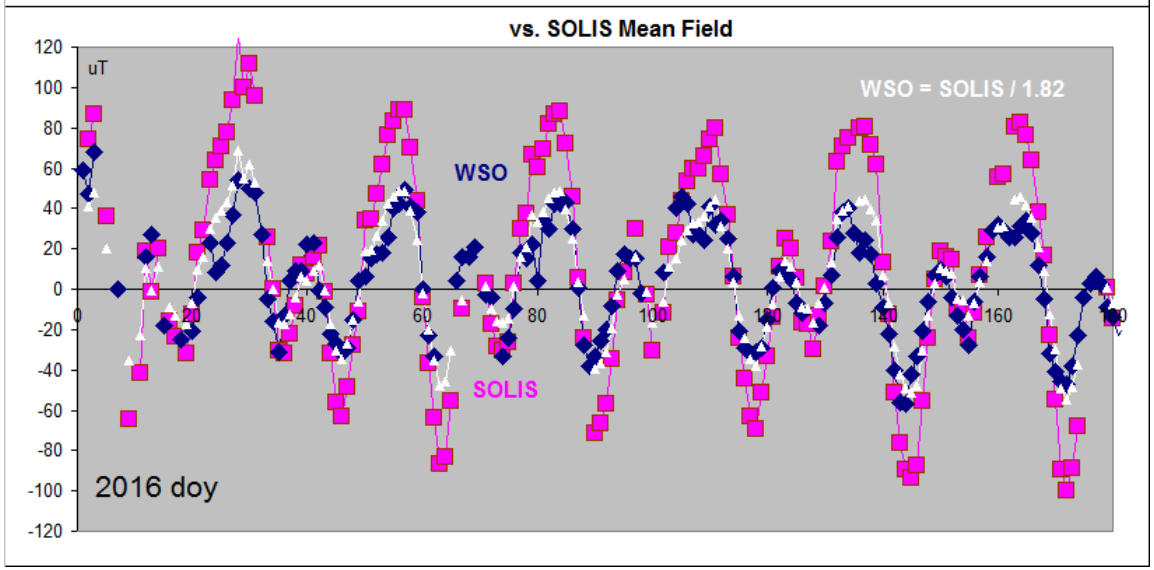
Usually one of the KDP controller supply grid drivers.
Seldom one of the tubes.
Takes High Voltage care to check.

It will be in the LCP side if the pre-observation cal check passed.
That test checks only the RCP phase.

Should be fixed ASAP and data recalibrated and Website updated

More on SOLIS/WSO Mean Fields



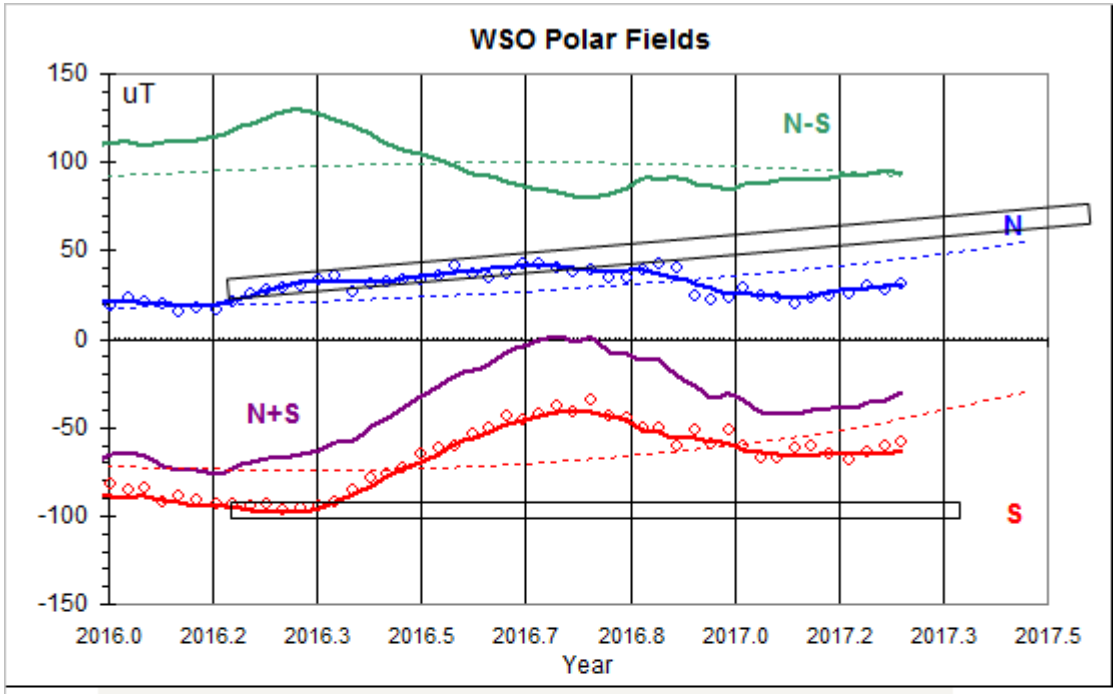


Since 2017/01/01 doy 1

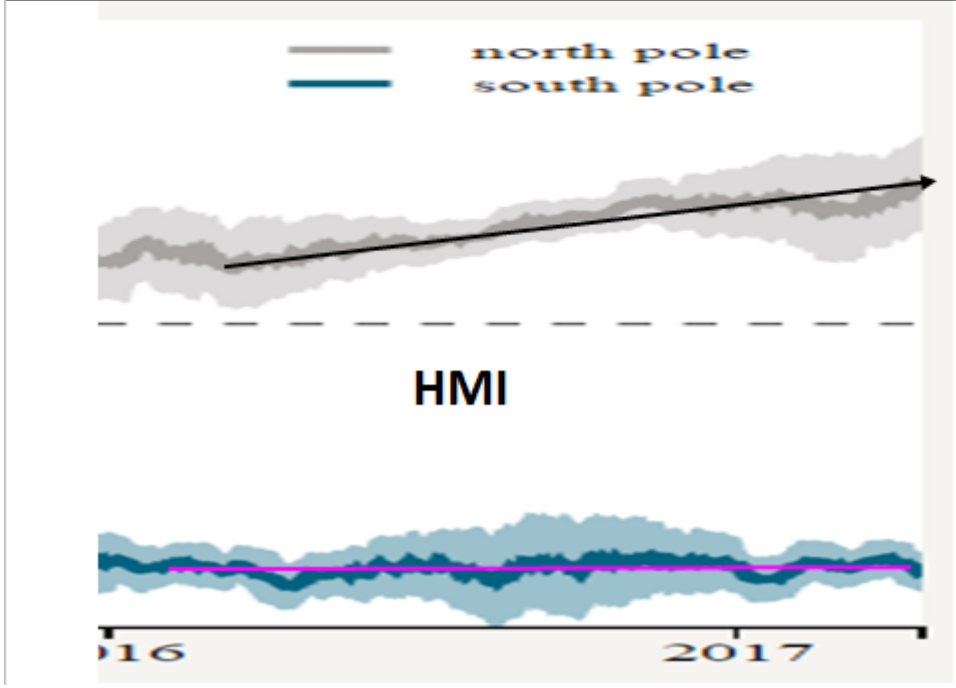
Up to 2017/05/17: WSO saw only ~1/4 of what SOLIS saw

So only sees half of what it did a year ago:

2016: WSO saw 1/2 of what SOLIS saw. This is the normal factor (1/1.82) because of saturation of the 525 nm measurements [used by WSO]



Polar Fields Again

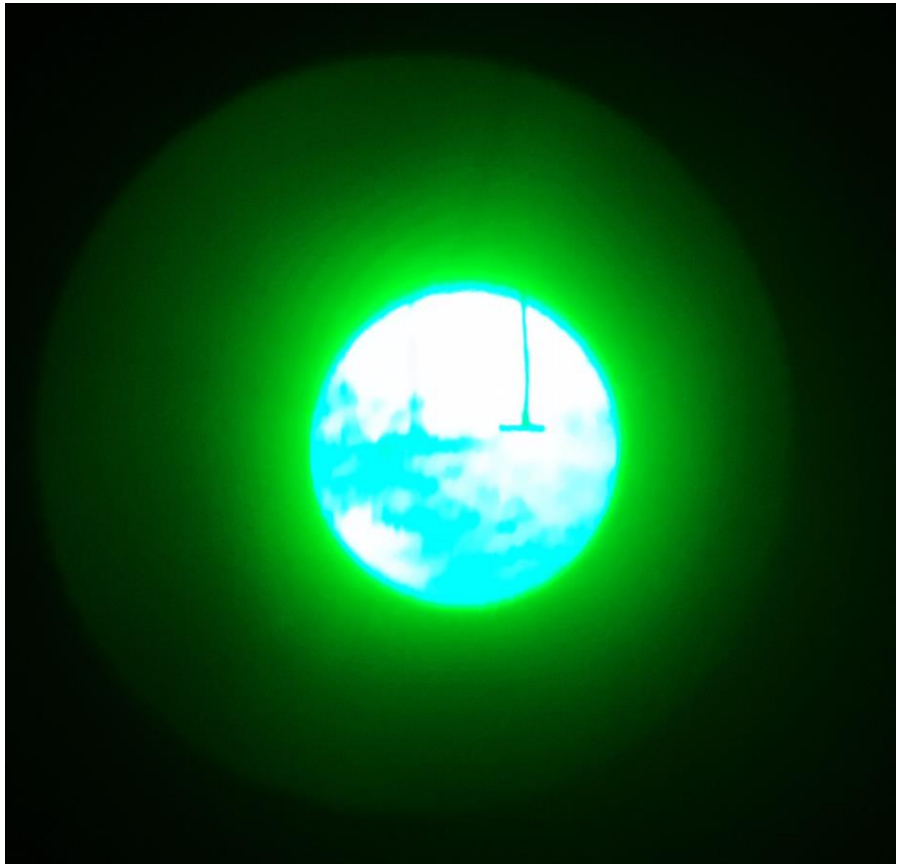


South Polar Fields (HMI) have stabilized, but WSO sees only little more than half of HMI.

North Polar Fields (HMI) are still growing, but near the end of 2016 were cut in half at WSO

The annual variation (B_0) is also only half at WSO (the N+S)

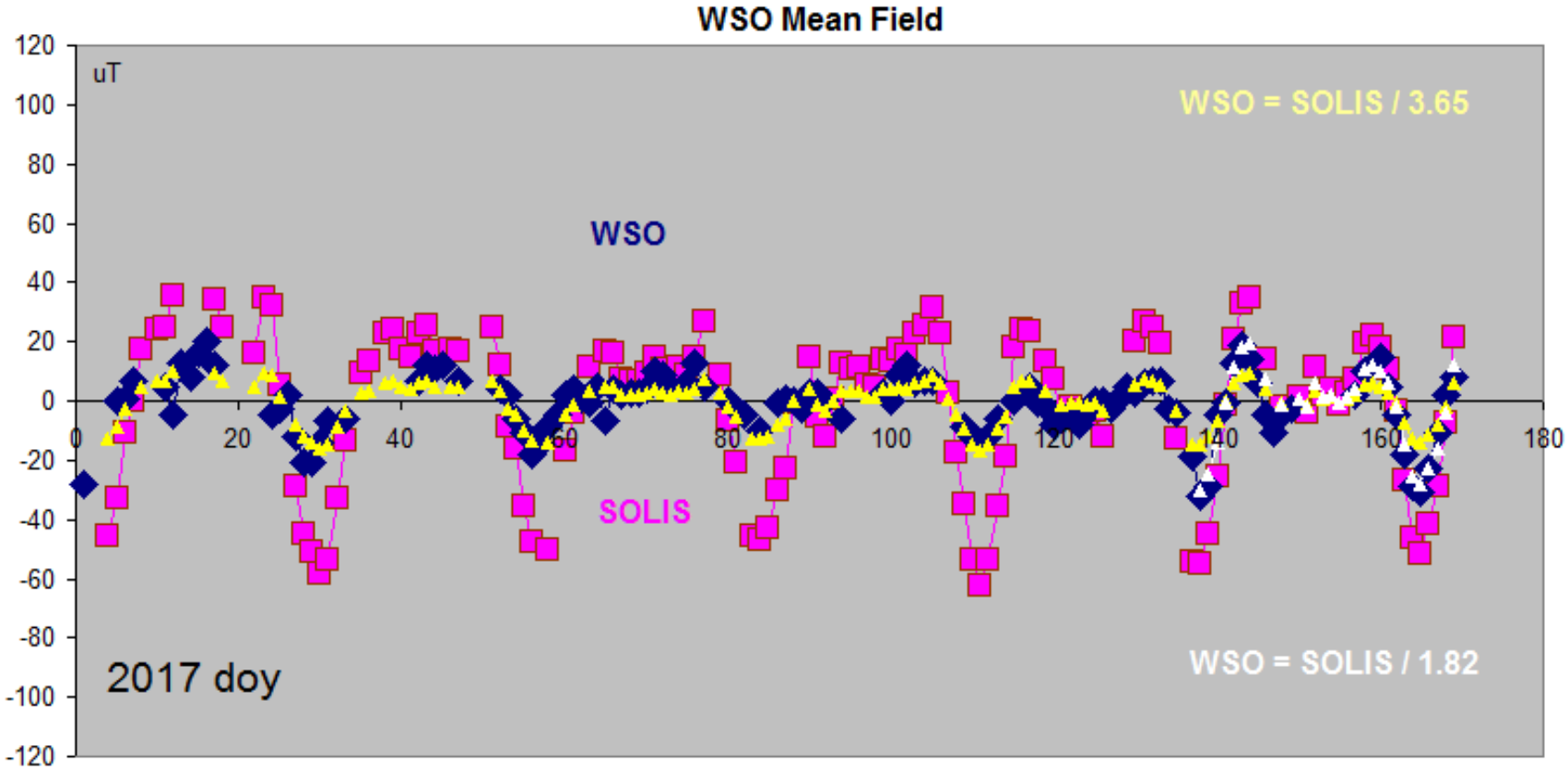
Image of the Littrow Lens



There is a lens in front of the grating in the pit. The lens makes the incoming light rays parallel before they hit the grating and collimates the dispersed light to focus at the sensors in the observing room. Todd Hoeksema pointed his iPhone at the lens and imaged it. The image showed that the lens was very dirty.

Cleaning the Littrow Lens

Cleaning the lens seems to have solved the problem



The Mean Field after the cleaning [marked with white triangles] are now again following the SOLIS measurements with the usual factor of 1.82 instead of the ~4 we had when the lens was dirty.