

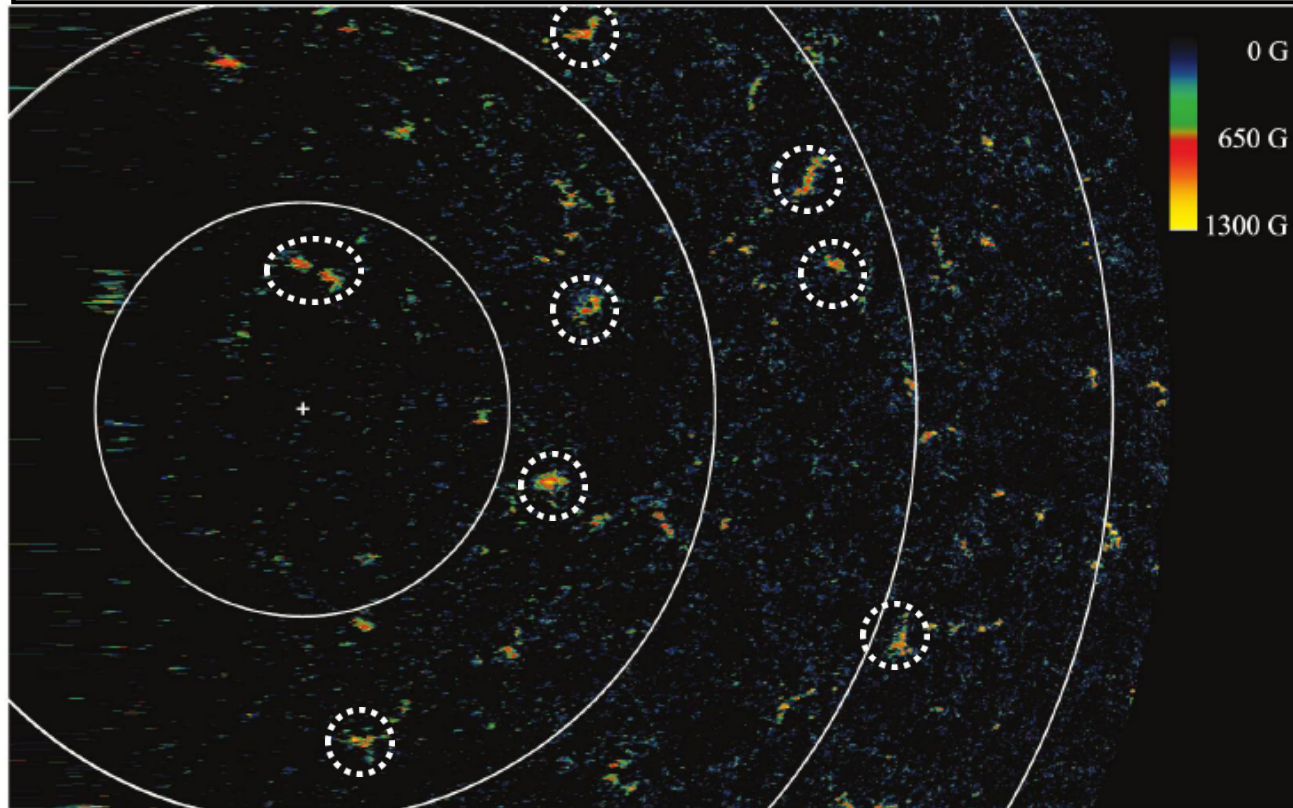
ALMAによる極域観測 (コメント)

国立天文台 下条圭美

The landscape of polar field obtained with SOT-SP/Hinode

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Magnetic field strength map of the South polar region observed with SOT/SP and converted to the polar view



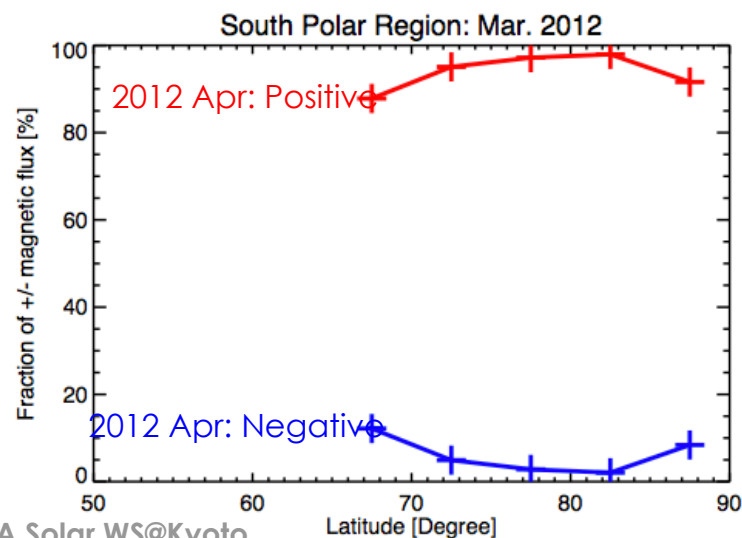
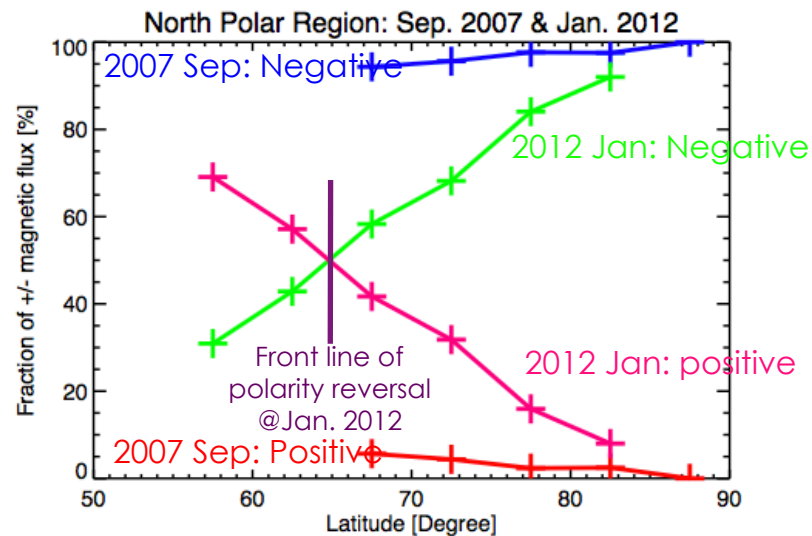
Milne-Eddington inversion of Polarized Spectra (MILOS) code (Orozco Suarez & Del Taro Iniesta 2007)

White lines:
5 degree latitude lines

(Tsuneta et al. 2008)

- Hinode reveal the fine magnetic structures in the polar region.
- Tsuneta et al. (2008) found that there are many magnetic field concentrations that maximum field strength is up to 1 kG.

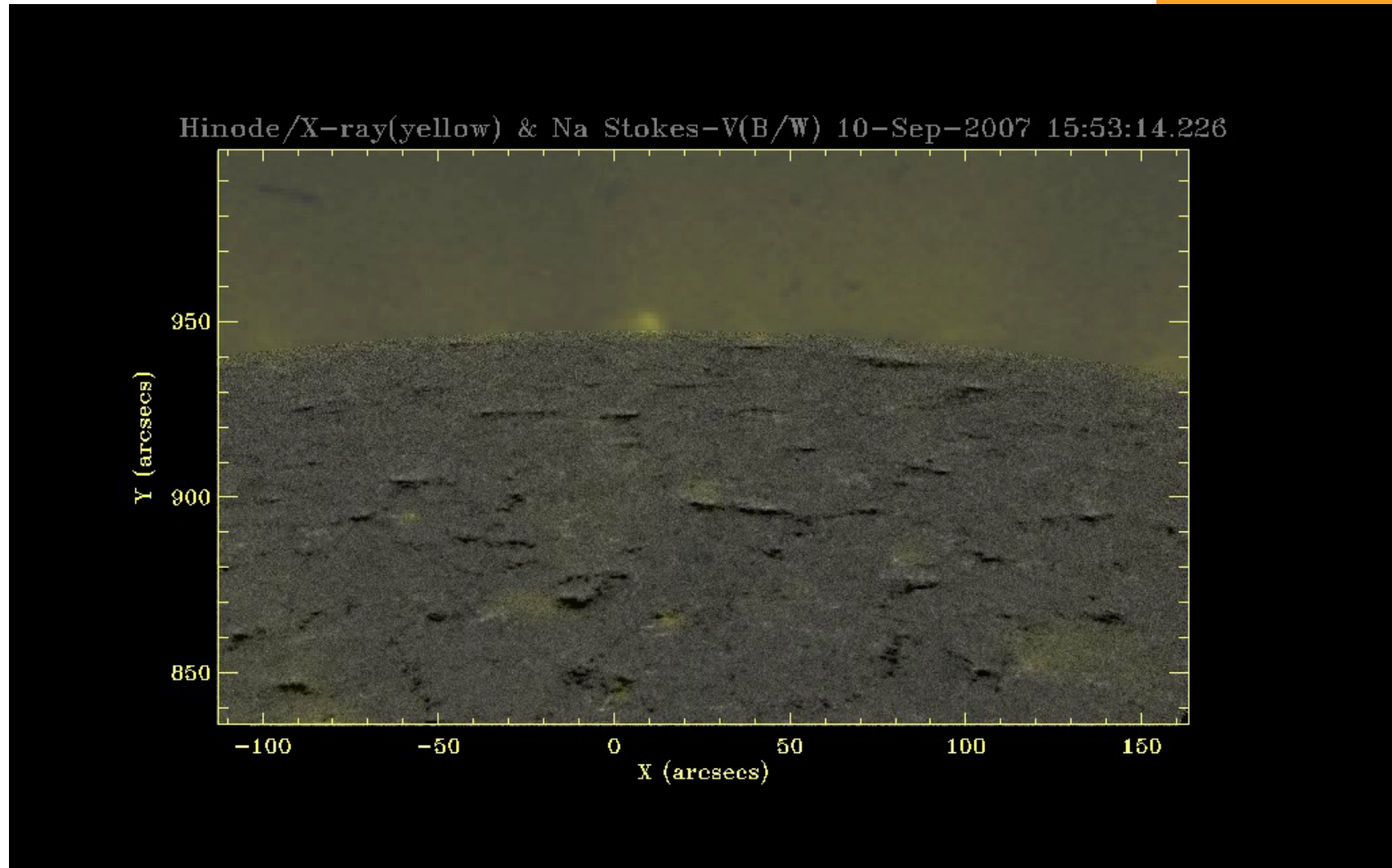
Latitudinal Dependence of Polarity Reversal from Polar Panorama Map



- In North Polar Region
 - The polarity reversal is progressing.
 - There is the front line of the polarity reversal at $\approx 65^\circ$ in Jan. 2012.

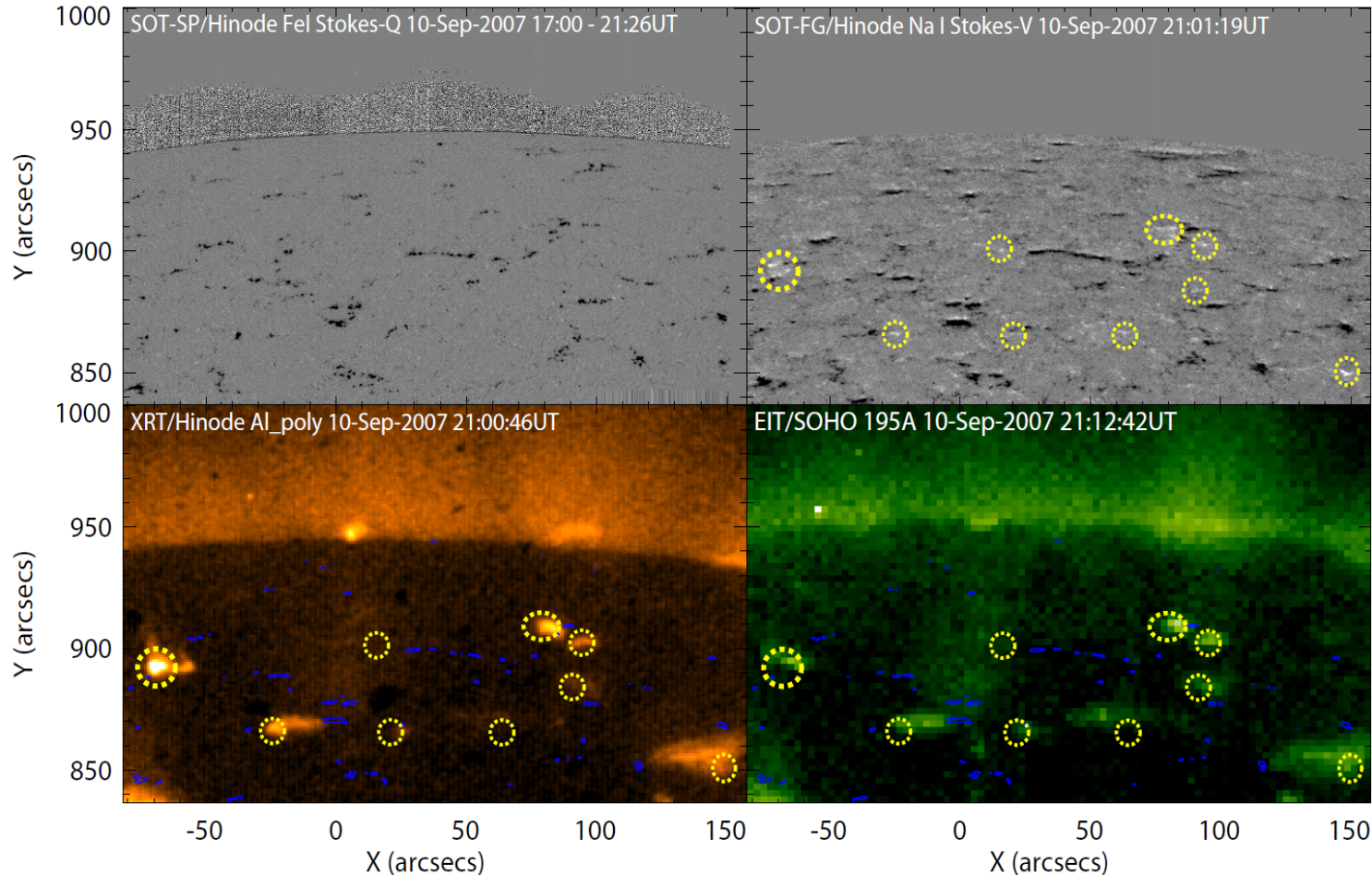
- In South Polar Region
 - Except higher than 70° , there is no sign of the polarity reversal.
 - At the area that is lower than 65° , the process of the polarity reversal might have started.

Polar Magnetic Fields and Coronal Structures/Activities



B/W Stoke-V maps of Na I line, Yellow: X-Ray images

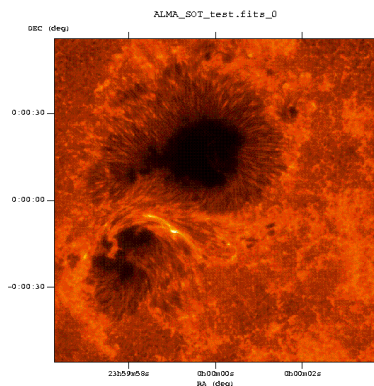
Polar Magnetic Fields and Coronal Structures/Activities



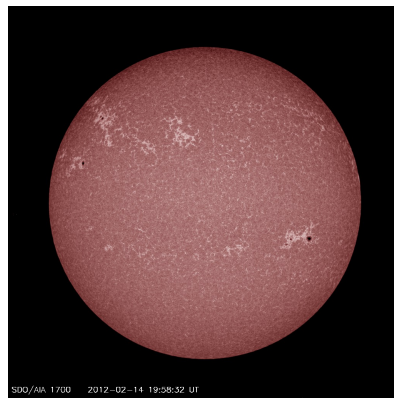
The coronal activities and structures in the polar coronal hole appear on **the relatively larger minority poles** that are identified in the Stokes-V maps of the **chromospheric line.**

Where is the mm/sub-mm emission layer except flares ?

- The mm/sub-mm emission from non-flare sun is **thermal continuum from around $\tau = 1$ layer** = lower chromosphere.

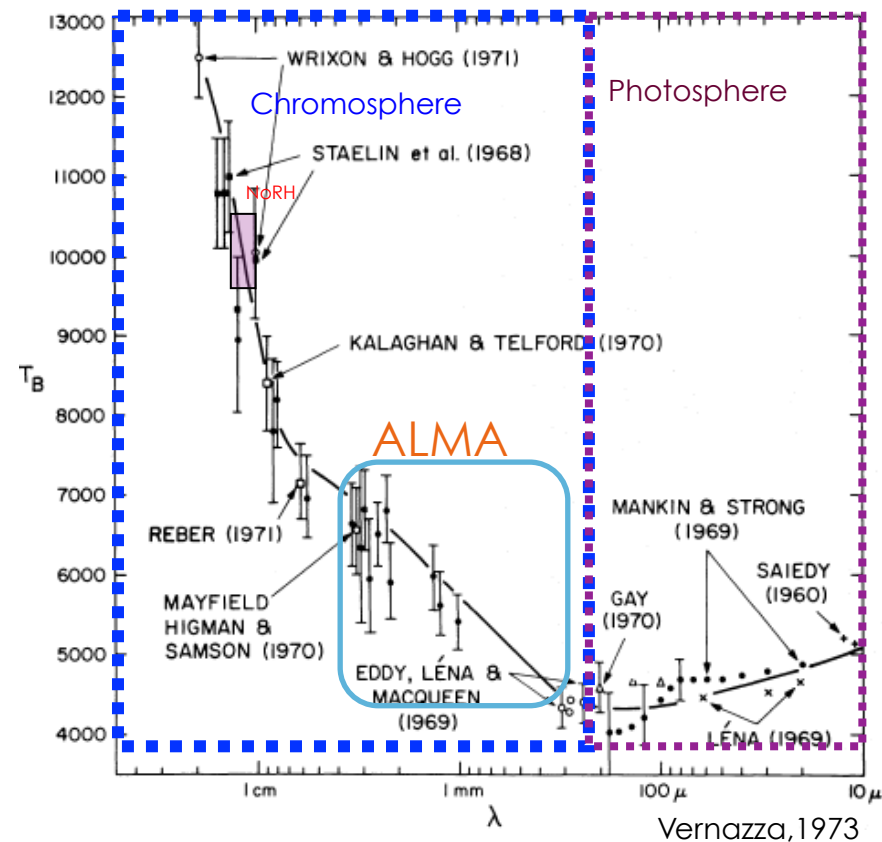


Ca II (SOT)



UV (AIA 1700)

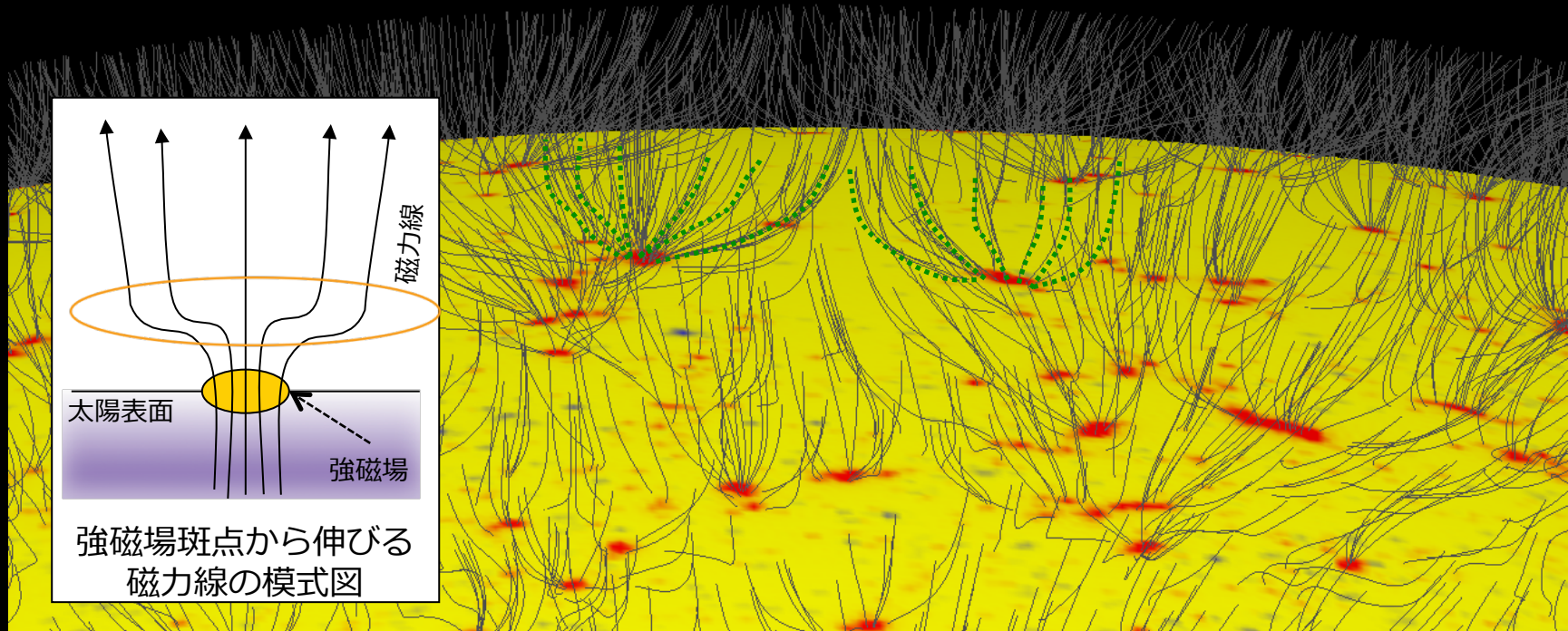
ALMA Solar WS@Kyoto



12.10.3

強磁場斑点から伸びる ラッパ状の磁力線

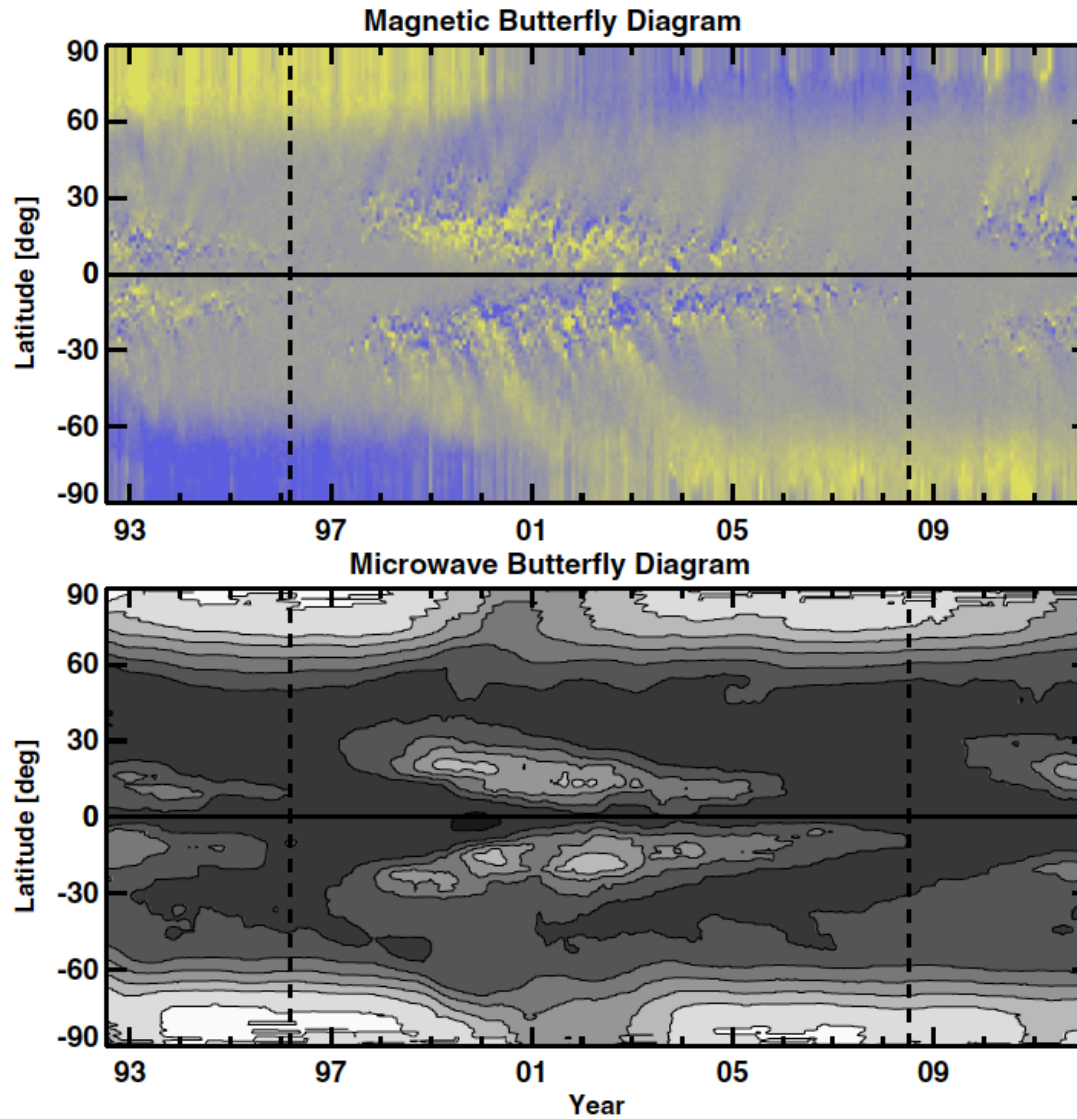
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Shiota et al.

色は、太陽表面の磁場強度と極性（赤：S極/青N極）を示し、
灰色の線は磁力線を示している。

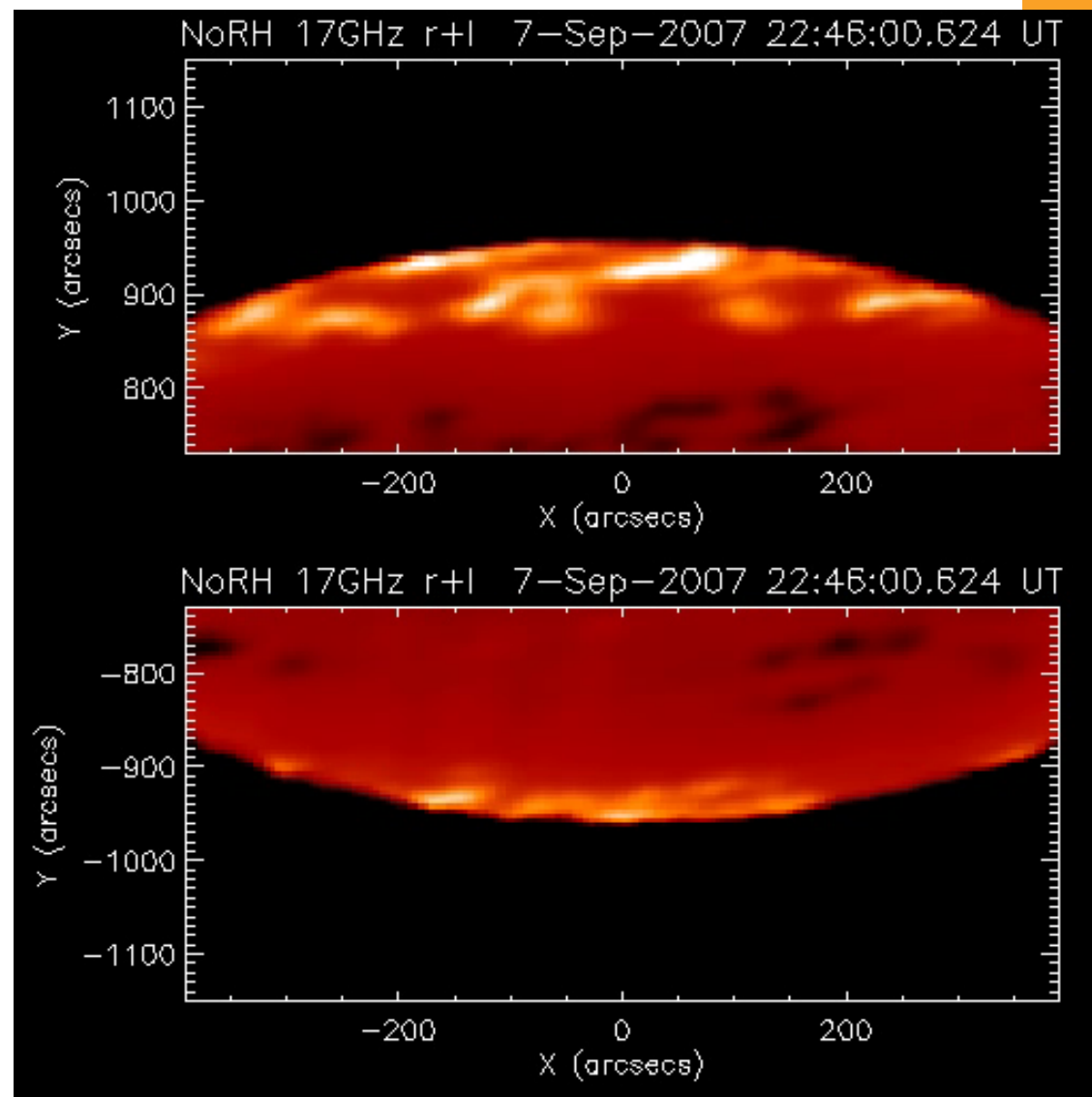
極域のマイクロ波増光



(Gopalswarmy et al. 2012)

極域増光に構造があるか？
答え：NoRHじゃわからない。

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ALMAでの極域観測

- 磁場や白斑のカウンターパートが電波で見えるのか？
- 見えるのであれば、その大きさは波長毎（=高さ毎）にどれだけ異なるのか？
 - fluxの広がり方を調べる、良い指標となるか？
- その中の波動は？ →太陽風加速へのエネルギー供給は？