Interaction between solar convection and magnetic fields

-SOLARNET Summer School-
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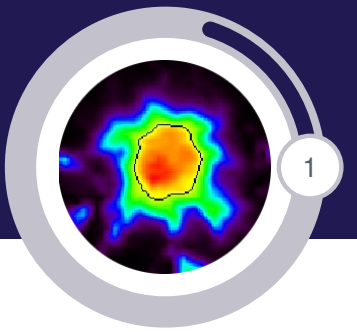
Marta García Rivas

Supervisor:
Jan Jurčák

Astronomický ústav AV ČR

What?
Vertical magnetic field



Spectropolarimeter observations

⇓

Vector magnetic field

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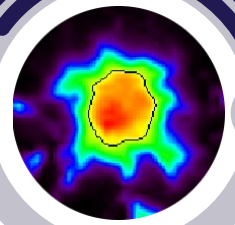
Field strength + Azimuth + Inclination

Vertical magnetic field

How?
Instruments used so far



- Study the vector magnetic field
  $\rightarrow$ *Spectropolarimeter*
- Statistically analyze an homogeneus database
  $\rightarrow$ *Satellite*
- Investigate boundary plasma properties
  $\Rightarrow$ **Hinode/SOT-SP**
- Register temporal evolutions
  $\Rightarrow$ **SDO/HMI**

Why
Jurčák criterion

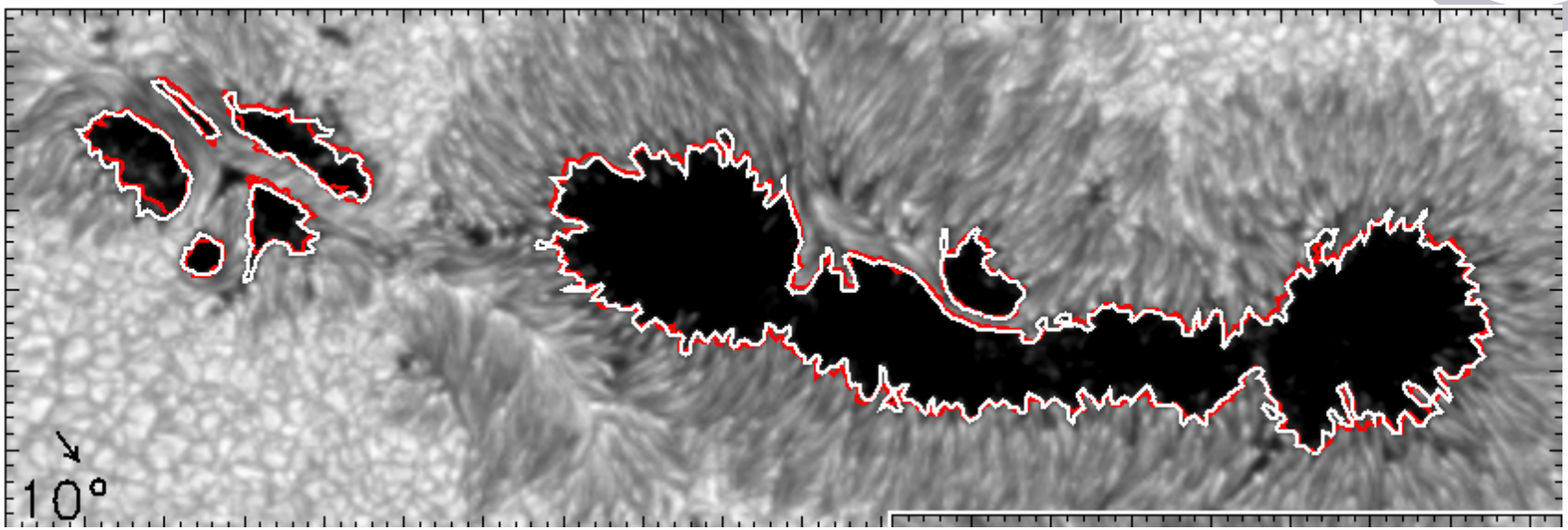
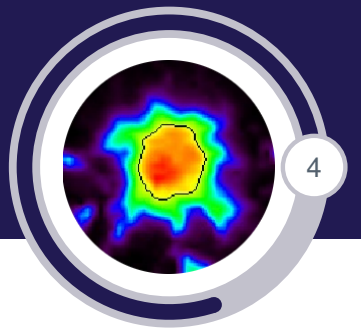


Figura 1: Hinode/SOT-SP intensity map. White line: $I = 0{,}5\ I_{QS}$. Red line: $B_{ver} = 1867\ G$. (Jurčák et al. 2018, A&A)

- $|B_{ver}| \geq B_{ver}^{stable}$: umbral mode of convection.
- $|B_{ver}| \leq B_{ver}^{stable}$: umbrae prone to vanish.



Evolving pore on 18-19 March 2011

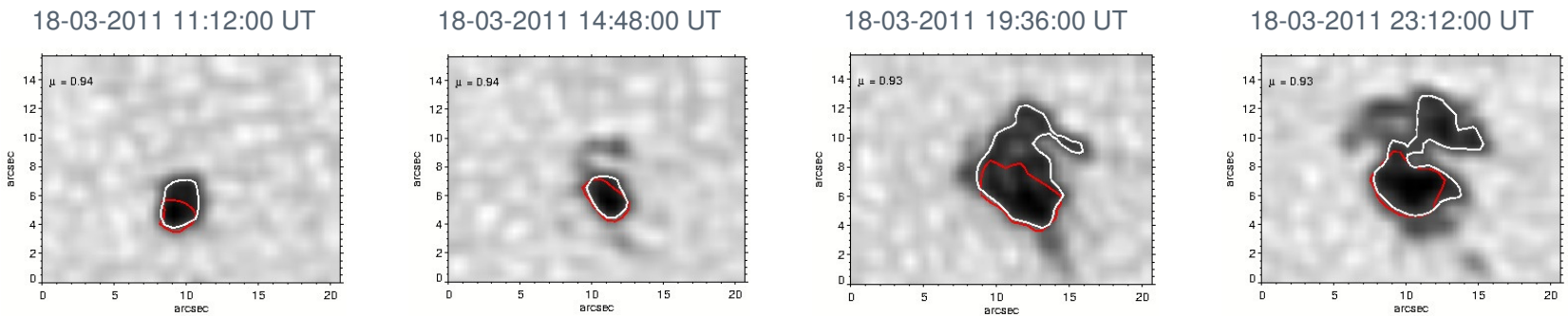


Figura 2: Intensity maps of an evolving pore from SDO/HMI. In white, $I = 0{,}5\, I_{QS}$. In red, $B_{ver} = 1700G$.

Where?
Evolving pores

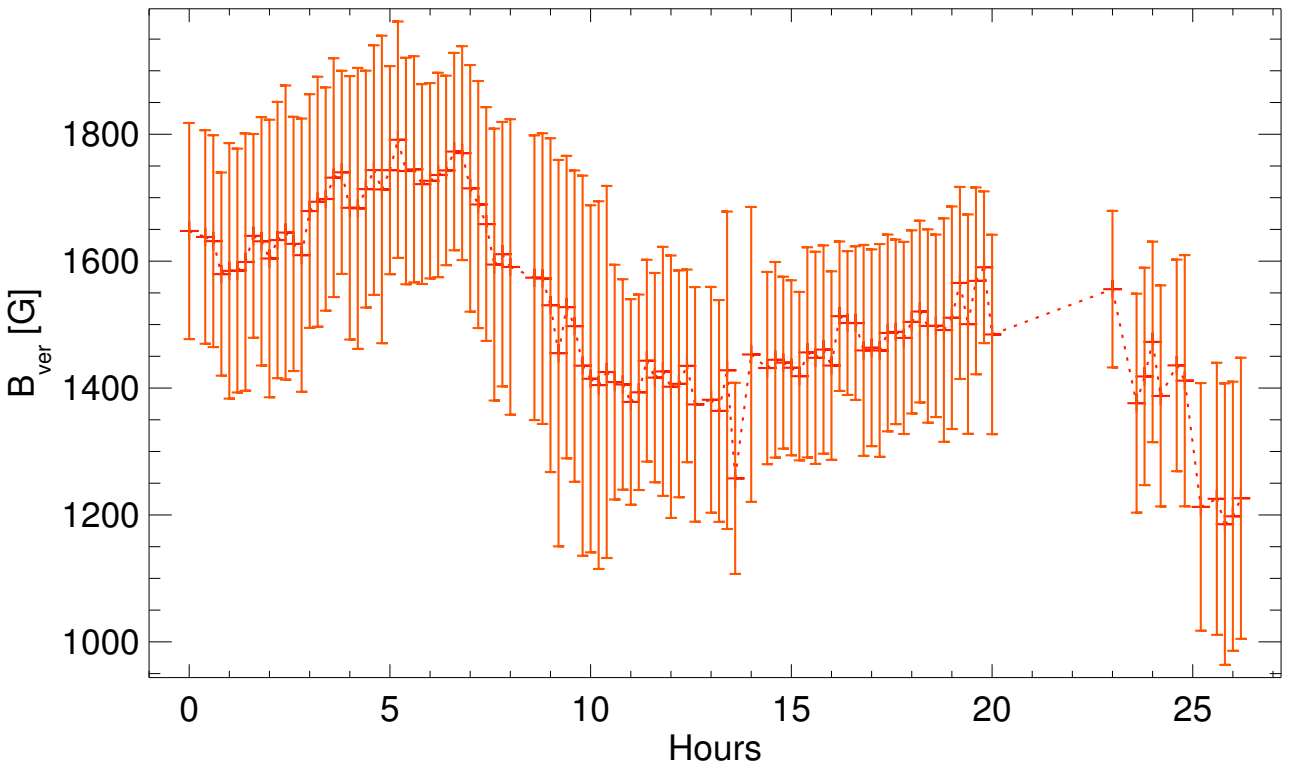


Figura 3: Temporal evolution of B_{ver} on the boundary of a pore, defined by $I_c = 0{,}5\, I_{QS}$.

Thanks for your atention!