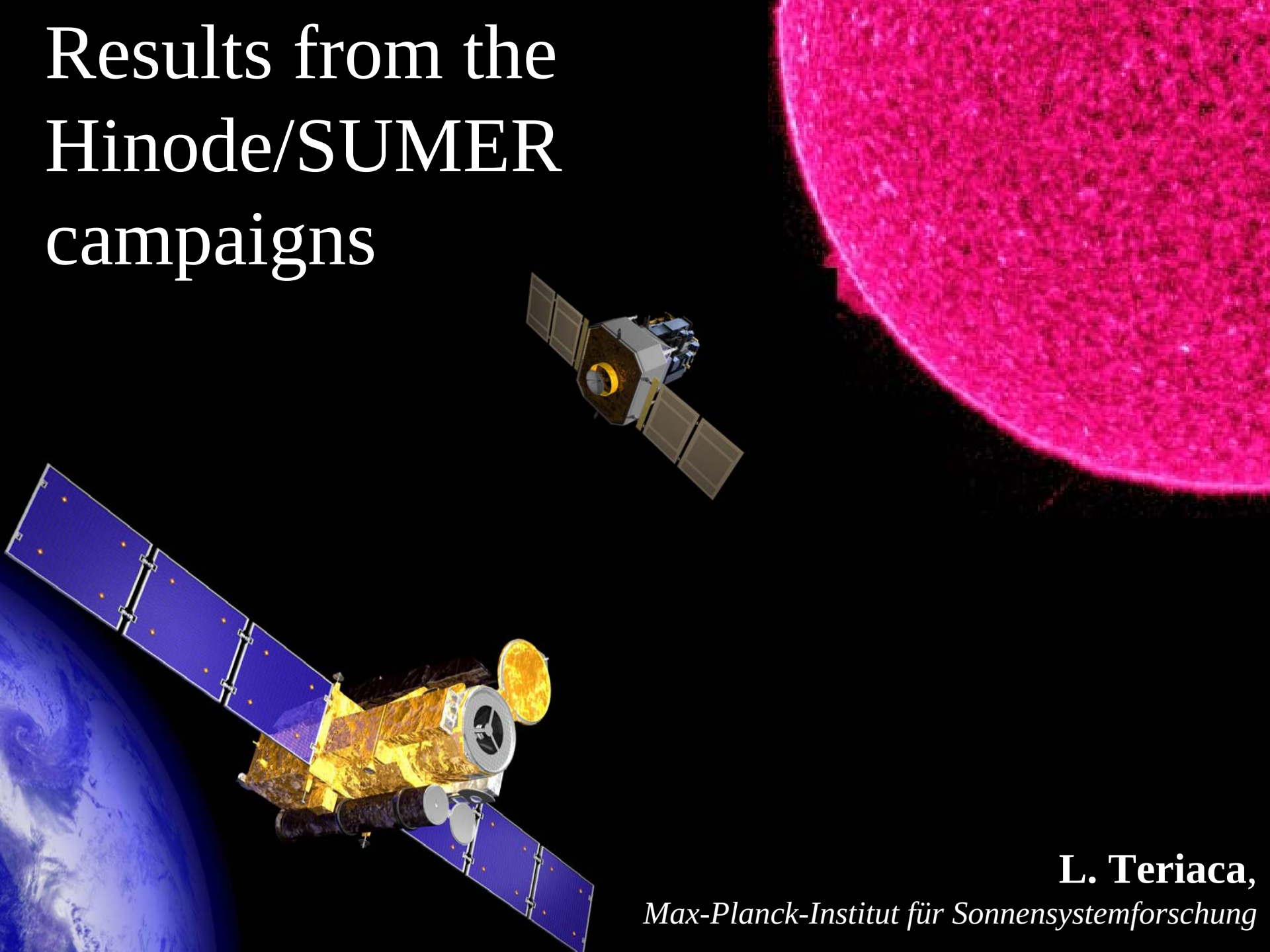
Results from the Hinode/SUMER campaigns



L. Teriaca,
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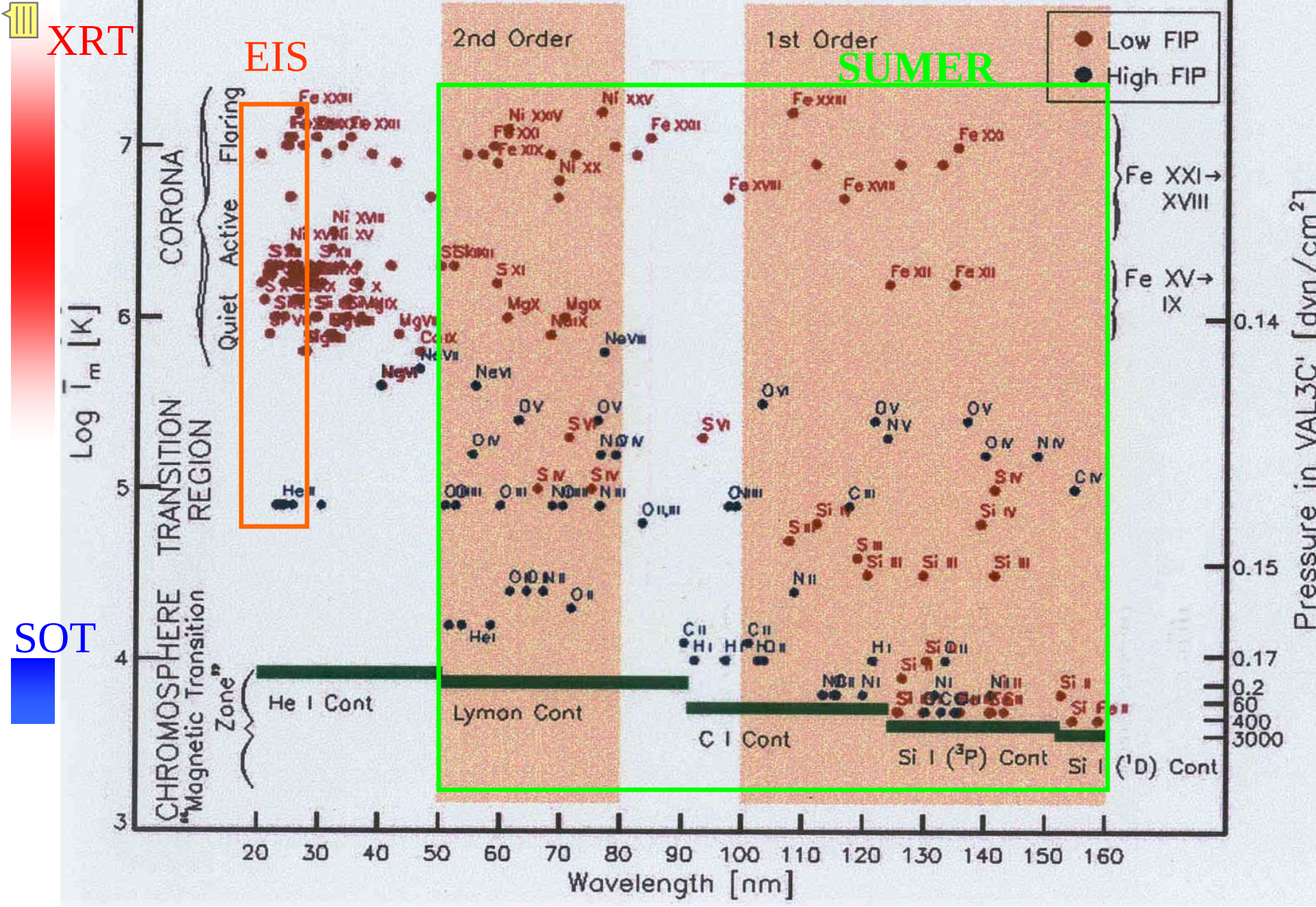
XRT
EIS
SUMER
SOT
2nd Order
1st Order
Low FIP
High FIP
CORONA
Flaring
Active
Quiet
TRANSITION REGION
CHROMOSPHERE
"Magnetic Transition Zone"
Log T_m [K]
Pressure in VAL3C' [dyn/cm^2]
Fe XXI→ XVIII
Fe XV→ IX
He I Cont
Lymon Cont
C I Cont
Si I (^{3}P) Cont
Si I (^{1}D) Cont
Wavelength [nm]

SUMER/Hinode past joint observations and campaigns

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SUMER following Hinode targets during commissioning

- October and November 2006

Spring 2007 campaign

- Campaign from April 2 to 29
- Run 22 observing proposals + TOO observations

Fall 2007 campaign

- Campaign from November 2 to 16
- Run 14 observing proposals

April 2008

- Observations in the WHI program from 10 to 16 April

June 2008

- Joint observations

Spring 2007 campaign

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Teriaca: Spatial and temporal evolution of the temperature response during VUV explosive events
Gomory: Energy transport and dynamics in/above the network and coronal heating mechanisms
Landi: The thermal structure of off-disk quiet Sun and active region plasmas
Teriaca: The average Doppler shift of coronal lines on quiet and active regions
Madjarska: Small-scale transient flows in the quiet Sun and active regions
Madjarska: Coronal Bright Point plasma characteristics and evolution
Solanki: Centre-to-limb variation of active region and quiet Sun brightness
Doyle: Further insight into the spicules/blinker connection: a search for blinkers using EIS
Doyle: Oscillations in chromospheric and coronal bright points
Doyle: Armagh explosive event study
Wilhelm: N_e and T_e diagnostic in polar plumes (W. Curdt et al., 2008, A&A 481, L61; L. Feng et al. 2008, in preparation)
Fontenla: Quiet-Sun radiance distribution and UV variability
Marsh: MHD wave propagation
Teriaca: Detection of waves in the solar atmosphere
Bewsher: Dynamic events in the network
Doschek: Transition region T_e diagnostics
Curdt: Super disk atlas: (Tian et al. 2008, ApJ 681, L121) - Poster 1-11
Doschek: DEM of active structures above the limb
Innes: Chromospheric heating in quiet Sun -Talk 1-9
Landi: Diagnostics of quiescent active region loops
Schmieder: Prominence / JOP 178 (Heinzel et al., 2008, ApJ, In Press)
Kamio: Velocity field in a coronal hole (paper in preparation) – Talk 7-6

TOO Observations of AR 10953 tuwards the end of the campaign (D.E. Innes, 2008, A&A 481, L41)

black	Nothing done/No infos
Blue:	Work in progress
Red:	paper in preparation
Red:	Paper accepted/published

Fall 2007 campaign

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G. Del Zanna,	Multi-wavelength observations of coronal hole plumes at solar minimum Talk 5-2
K. Reardon,	Spectral Observations of Spicule Dynamics
D. Innes,	Temperature, density and 3-D structure of active region loops
D. Innes,	Doppler shifts in X-ray jets - Talk 1-9
D. Innes,	3-D structure and evolution of filaments/prominences
M. Madjarska,	Coronal holes boundaries evolution
S. Imada,	Waves in front of/back side of (north/south) polar jets
M.P. Miralles,	Characterization of Fast and Slow Solar Wind Source Regions
S. Kamio,	SUMER campaign - coronal hole
J.G. Doyle,	Magnetic structure of macrospicules
K. Matsuzaki,	DEM analysis in lower corona
L. Teriaca,	Detection of waves in the solar atmosphere
D. Rabin,	Coordinated observations with EUNIS
S. Patsourakos,	Moss Observations

black	Nothing done/No infos
Blue:	Work in progress
Red:	paper in preparation
Red:	Paper accepted/published

April 2008 observations during the WHI

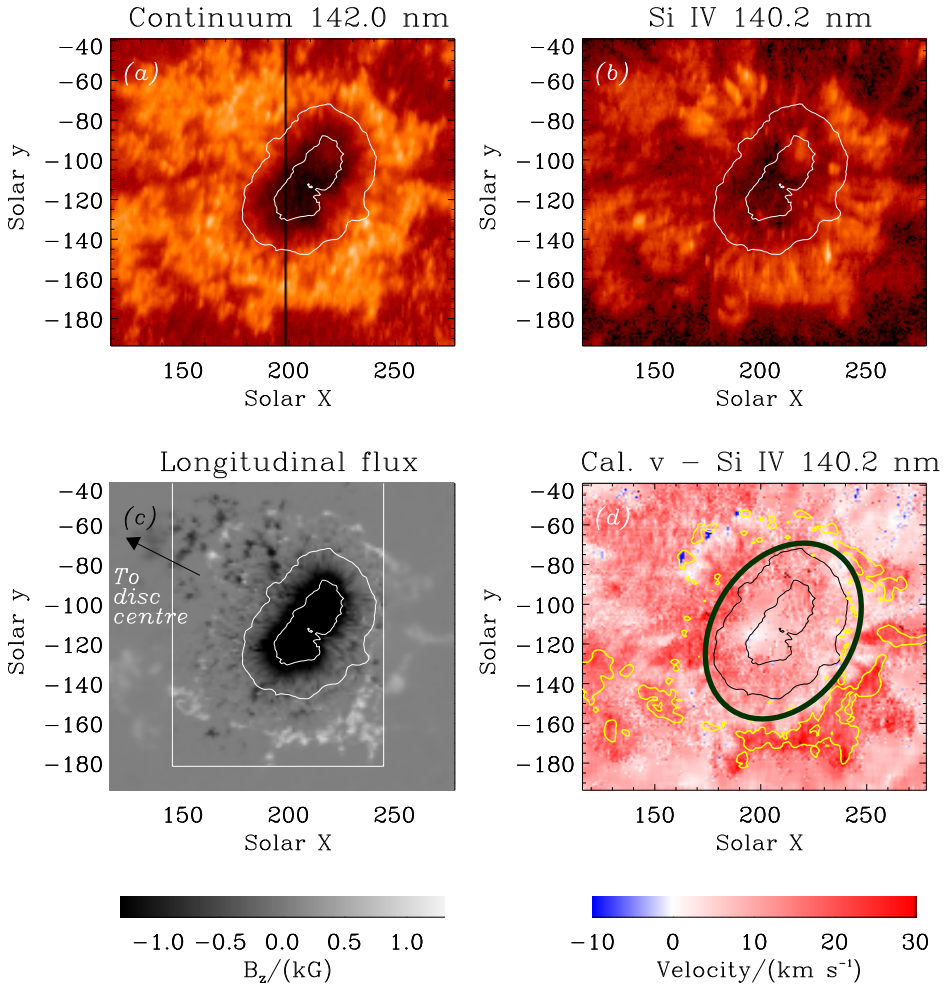
S. McIntosh,	Characterizing the energetics and dynamics of the quit Sun -Talk 1.2, Poster 1.5

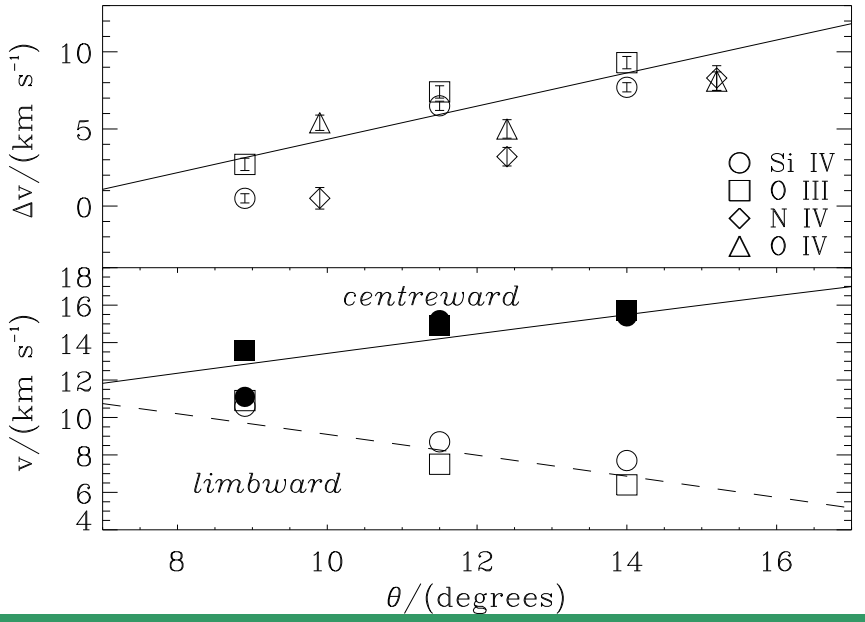
June 2008 observations

A Pietarila,	Chromospheric network structure and dynamics
G. Poletto	Plume study

SUMER observations of a sunspot in November 2006

Teriaca et al. 2008, A&A Letter, accepted

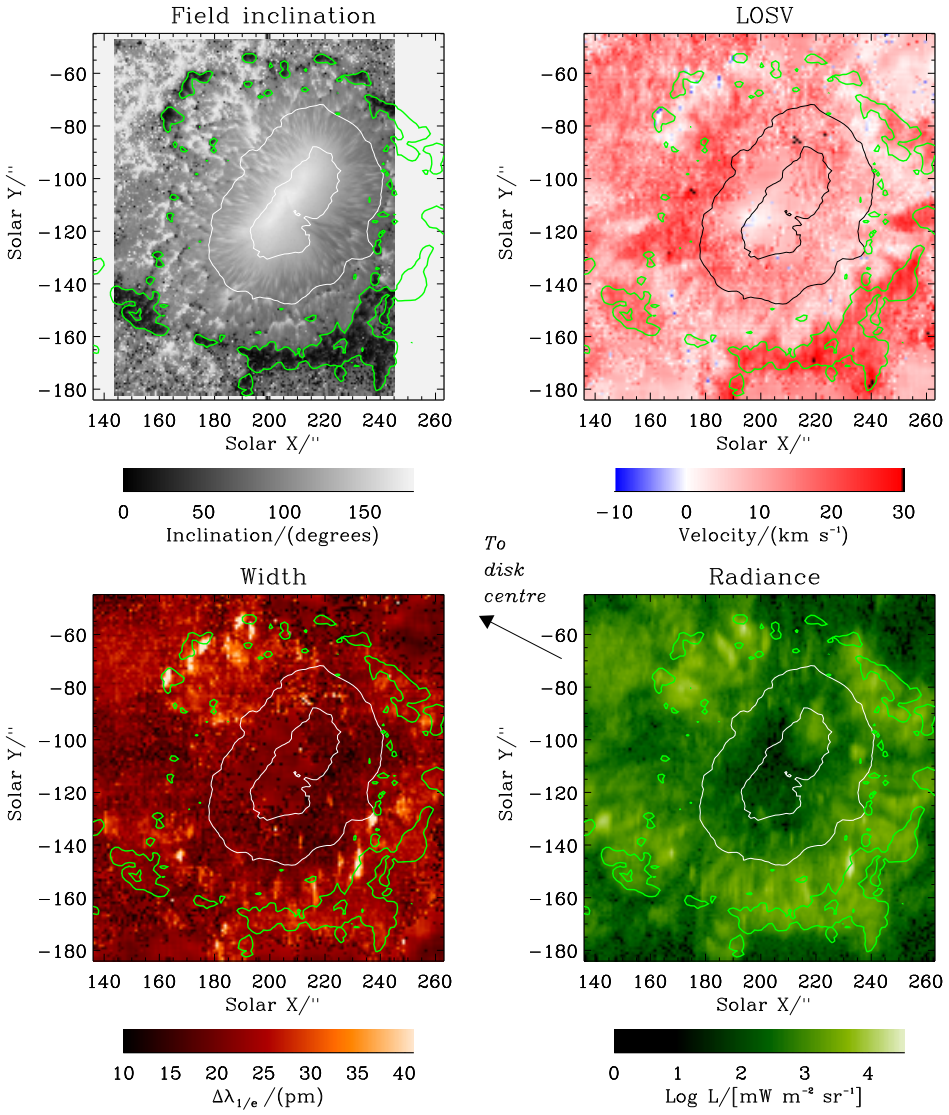




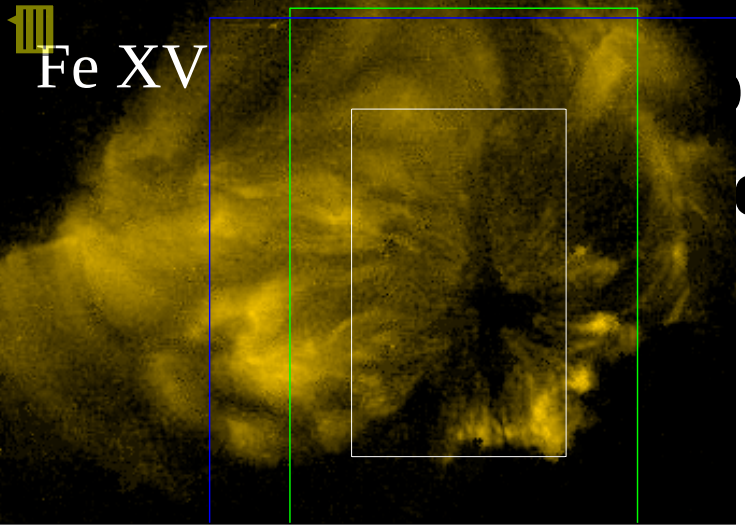
- We observe a downflow pattern compatible with the presence of an Inverse Eveshed flow.
- The flow is visible in lines from 0.08 to 0.18 MK.
- It occours in a collar of radially directed filamentary structures with widths < 1 Mm and inclined between 10 ° and 25° relative to the solar surface.

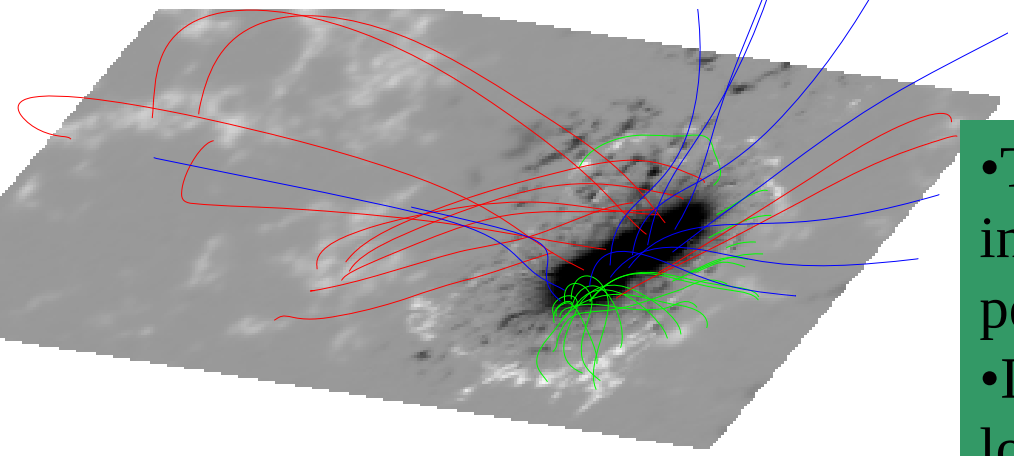
SUMER observations of a sunspot in November 2006

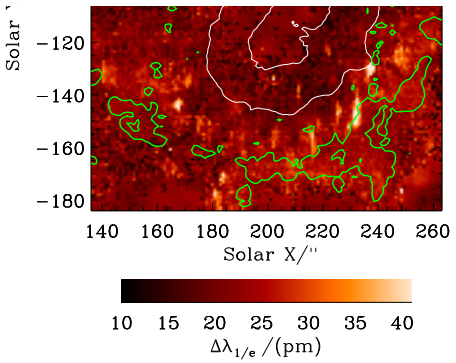
Teriaca et al. 2008, in preparation

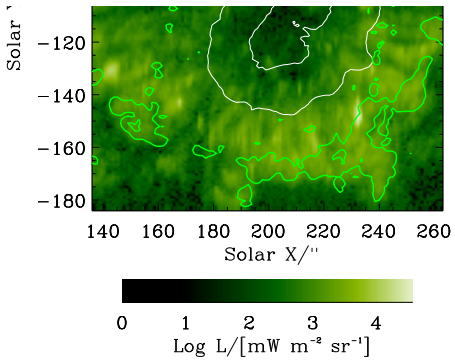


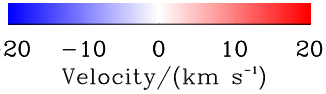
Fe XV ns of a er 2006

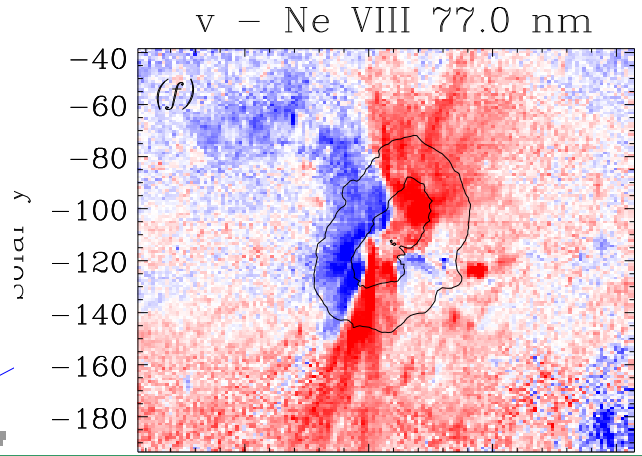












- The inverse Evershed flow is visible in a region roughly twice the penumbra.
- It seems occurring in far-reaching loops that only above the umbra and (extended) penumbra are cold enough to be seen in Si IV.
- Further out, emission is dominated by strong downflows at the footpoints of hot (> 2 MK) loops.

Spatial and temporal response of the solar atmosphere during VUV explosive events

Cauzzi, Reardon, Teriaca, Pitterle, Curdt

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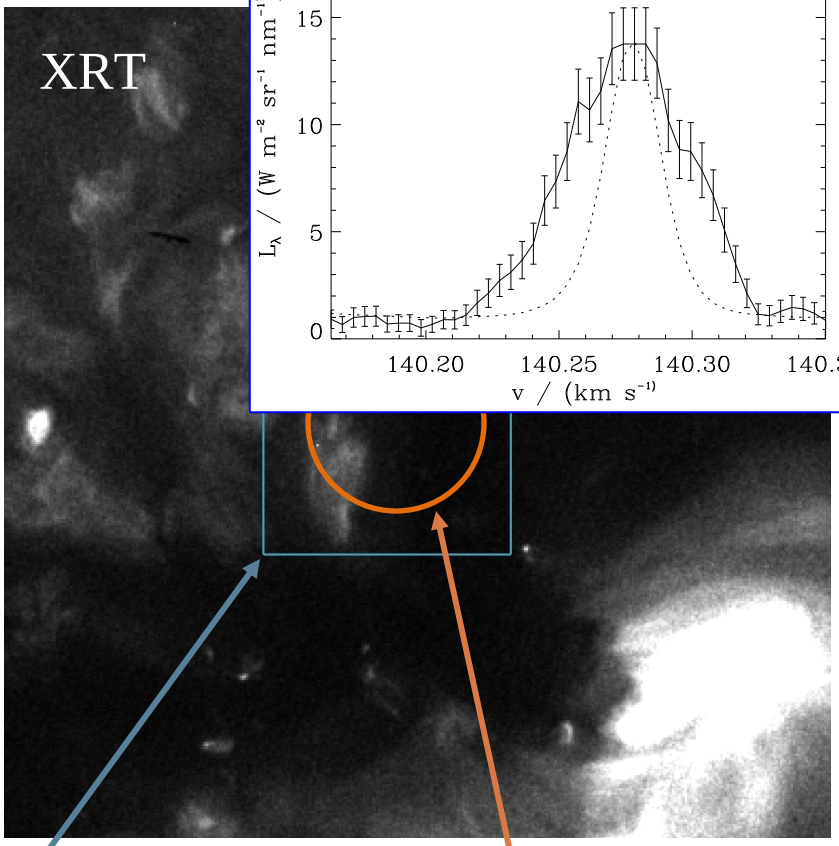
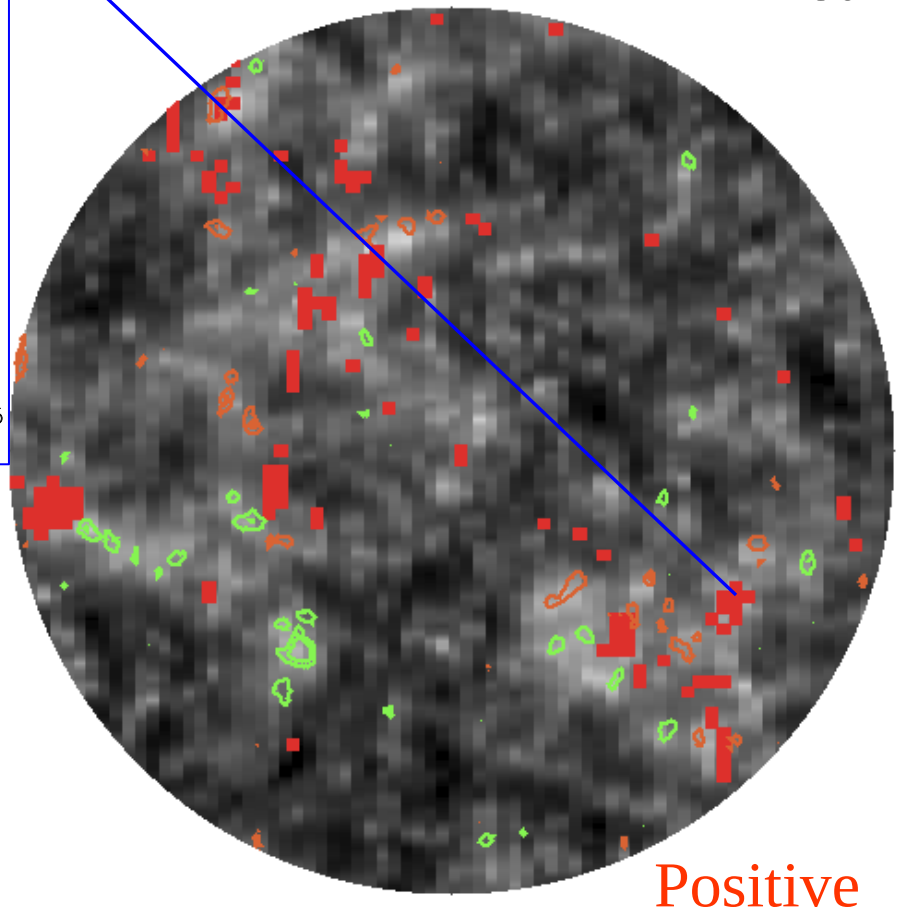


Explosive events

80”



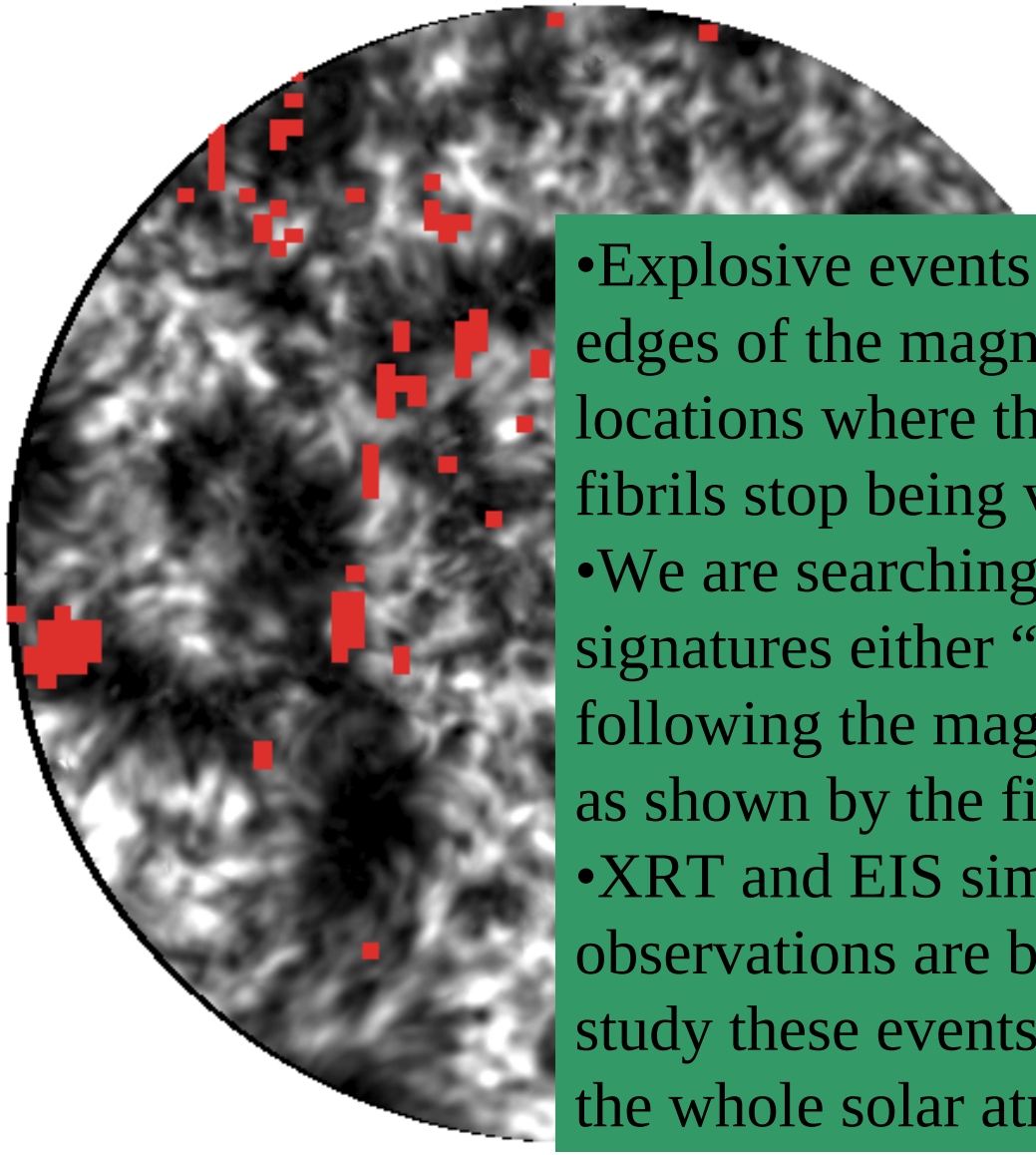
Positive

Negative

SUMER Si IV 140.2 nm

IBIS Ca II 854.2 nm

Chromospheric velocity: 3 min power map



- Explosive events are located at the edges of the magnetic regions, at locations where the chromospheric fibrils stop being visible.
- We are searching for chromospheric signatures either “vertically” either following the magnetic connectivity as shown by the fibrils.
- XRT and EIS simultaneous observations are being investigated to study these events in the context of the whole solar atmosphere.

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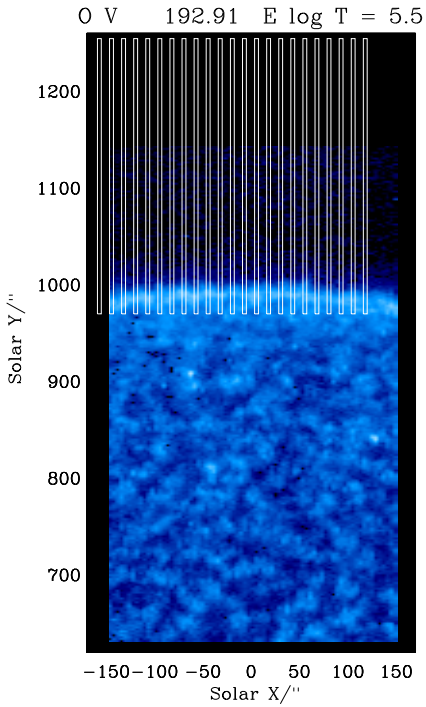
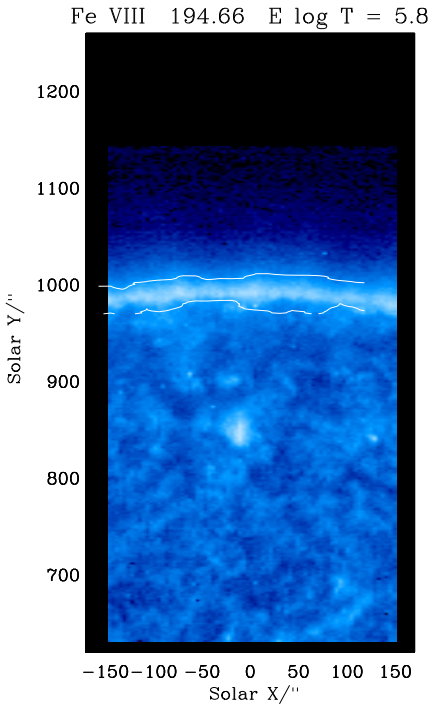
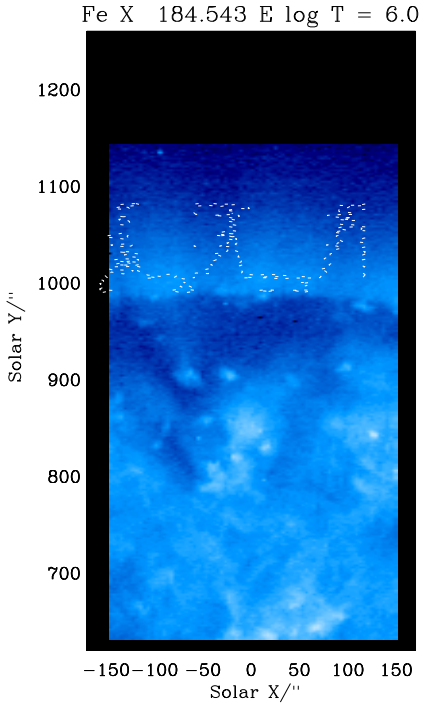
Plume campaign Nov 2007

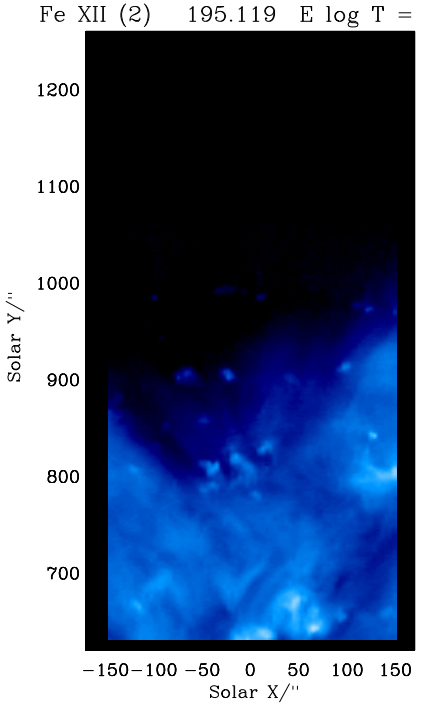
Del Zanna, Teriaca, Wilhelm, Andretta

34 h SUMER raster scan acquiring at each slit position several 4 nm wide spectra providing diagnostics of density, temperature and abundance to be combined with / compared to EIS data.









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The present

A SUMER/Hinode campaign devoted to the study of the polar coronal holes is currently under way with about 8 observing programs being run

The future

With SUMER still performing very well, we look forward for more opportunities of join forces with Hinode and other space and ground facilities to serve the scientific community.