

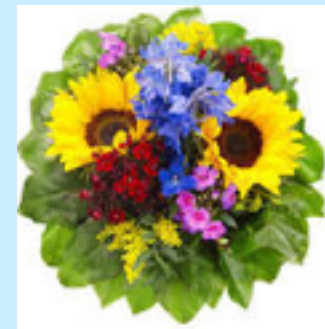
EUV modeling within SOLID / First European Comprehensive SOLar Irradiance Data Exploitation

Margit Haberreiter

V. Delouille, G. Del Zanna, B. Mampaey, C. Verbeeck, S. Wieman



Thanks to the SOLID Team



**Kick-off Meeting at PMOD/WRC
February 12-14, 2013**

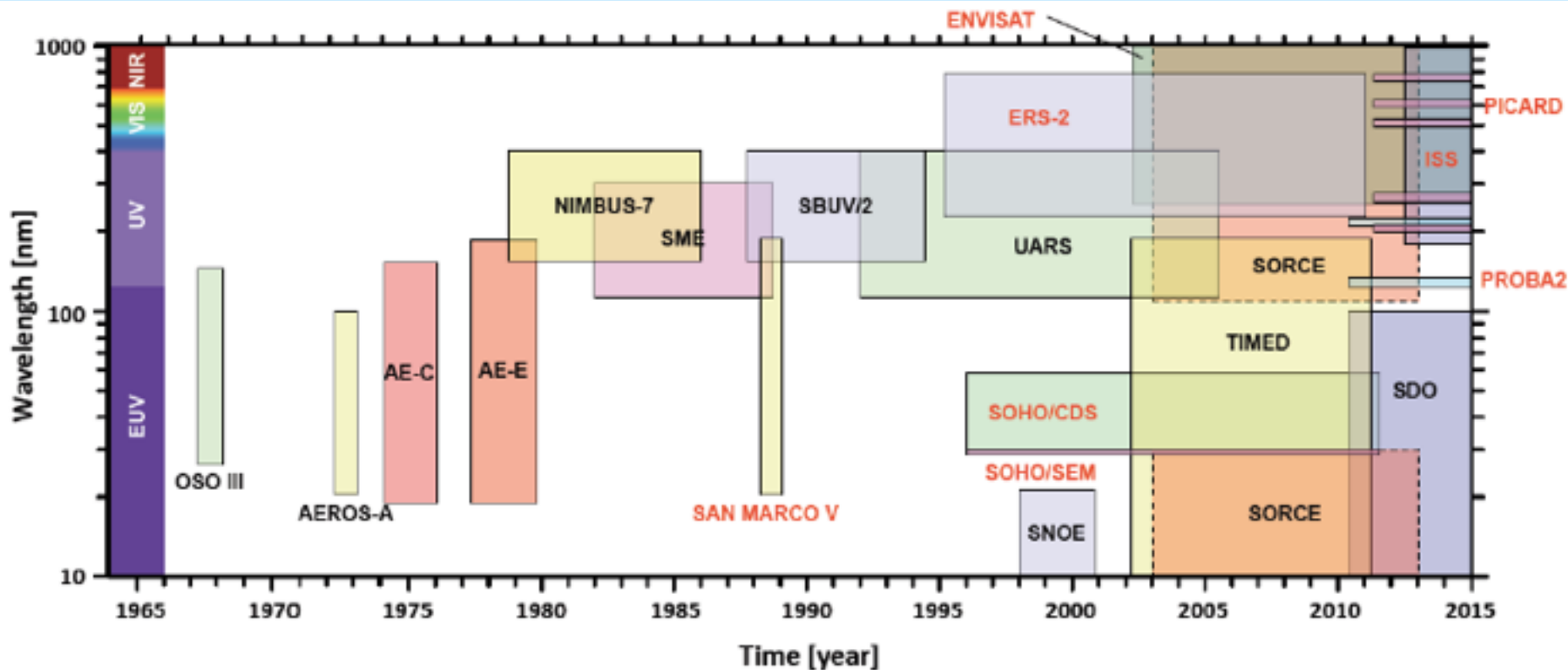
Annual Meeting in Orleans, France

<http://projects.pmodwrc.ch/solid/>

EUV Intercalibration Workshop
ROB, Juni 10-13, 2014

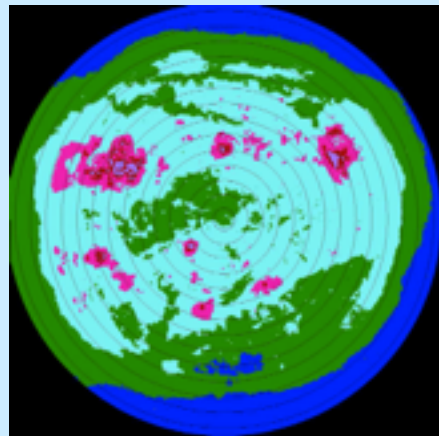
Margit Haberreiter

SOLID Motivation II – Scattered SSI Data



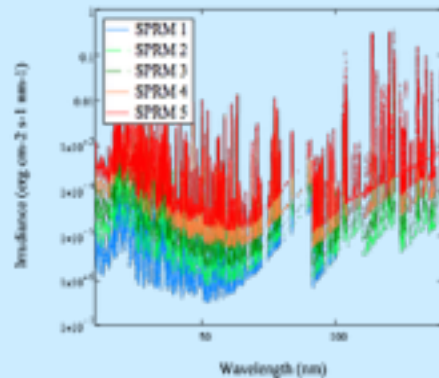
Courtesy, T. Dudok de Wit

Reconstruction of EUV variations



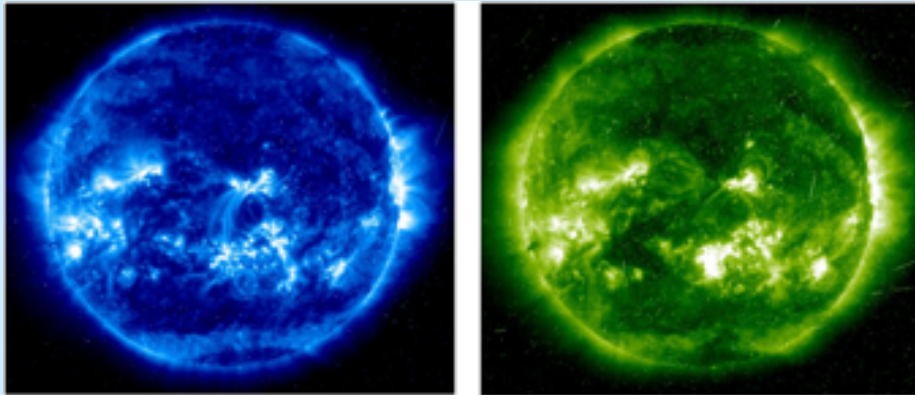
$$S(\lambda, t) = \frac{1}{N(t)} \frac{\pi R_{\odot}^2}{D^2} \sum_{i,j} N_j(r_i, t) \cdot I_j(r_i, \lambda)$$

i : index concentric rings r_i
 j : index class (feature)



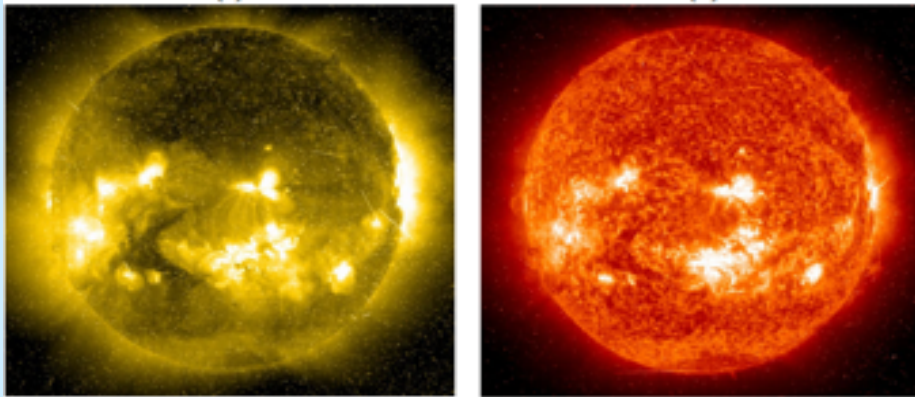
$I_j(r_i, \lambda)$: Intensity for each feature and position on the solar disk

Image Segmentation within SOLID



(a)

(b)

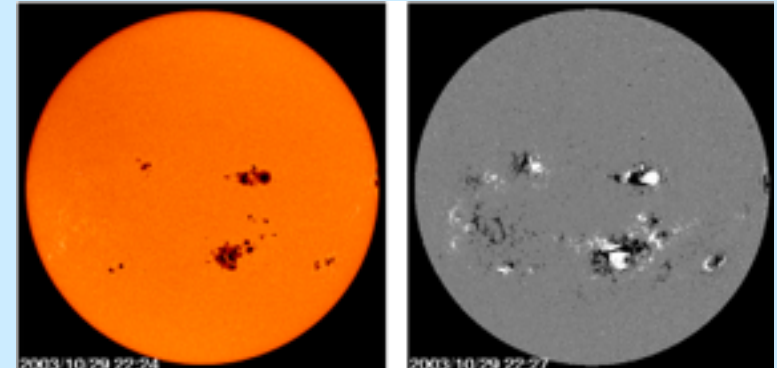


(c)

(d)

SOHO/EIT solar images were taken on 29/10/2003 (a) EIT 171 at 15:23UT (b) EIT 195 at 22:12UT (c) EIT 284 at 15:29UT (d) EIT 304 at 15:42UT.

SOHO/EIT



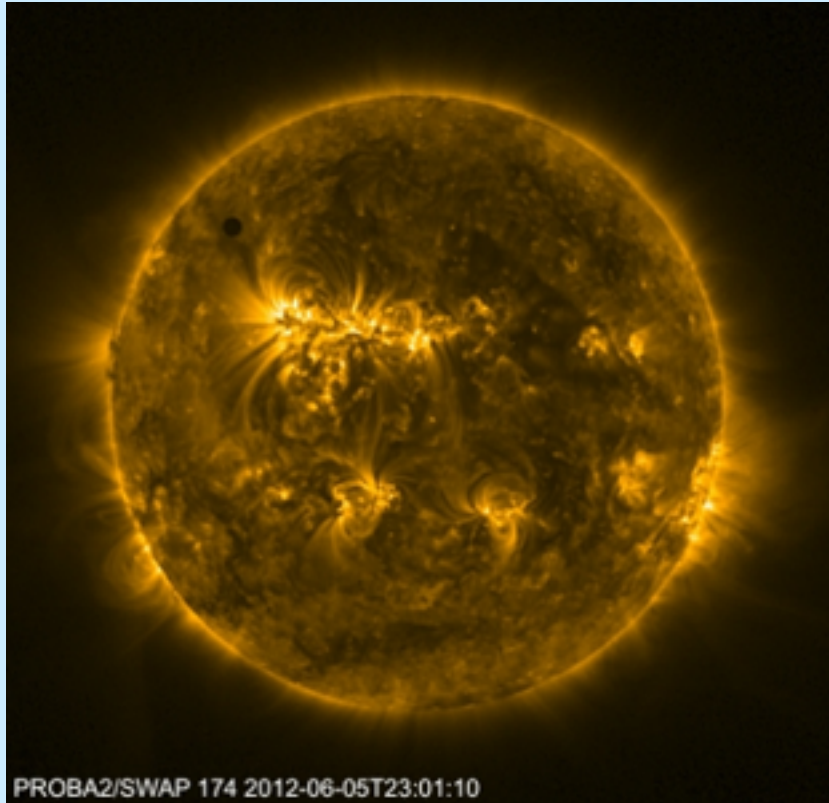
(a)

(b)

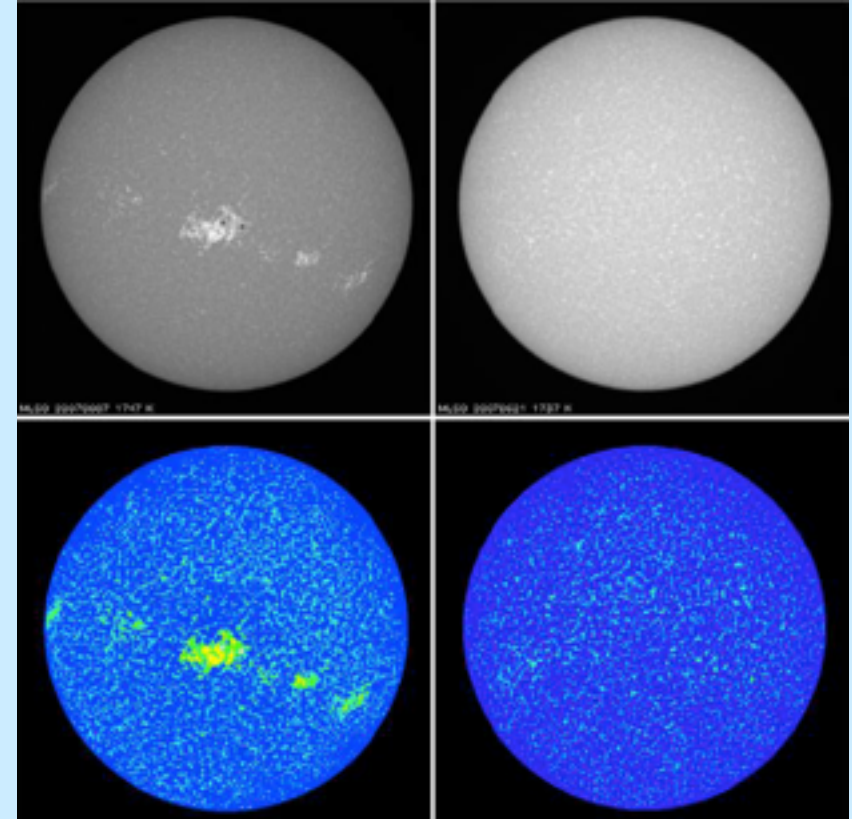
SOHO/MDI solar images were taken on 29/10/2003 (a) MDI Continuum at 22:24UT and (b) MDI Magnetogram at 22:27UT.

SOHO/MDI

Image Segmentation within SOLiD

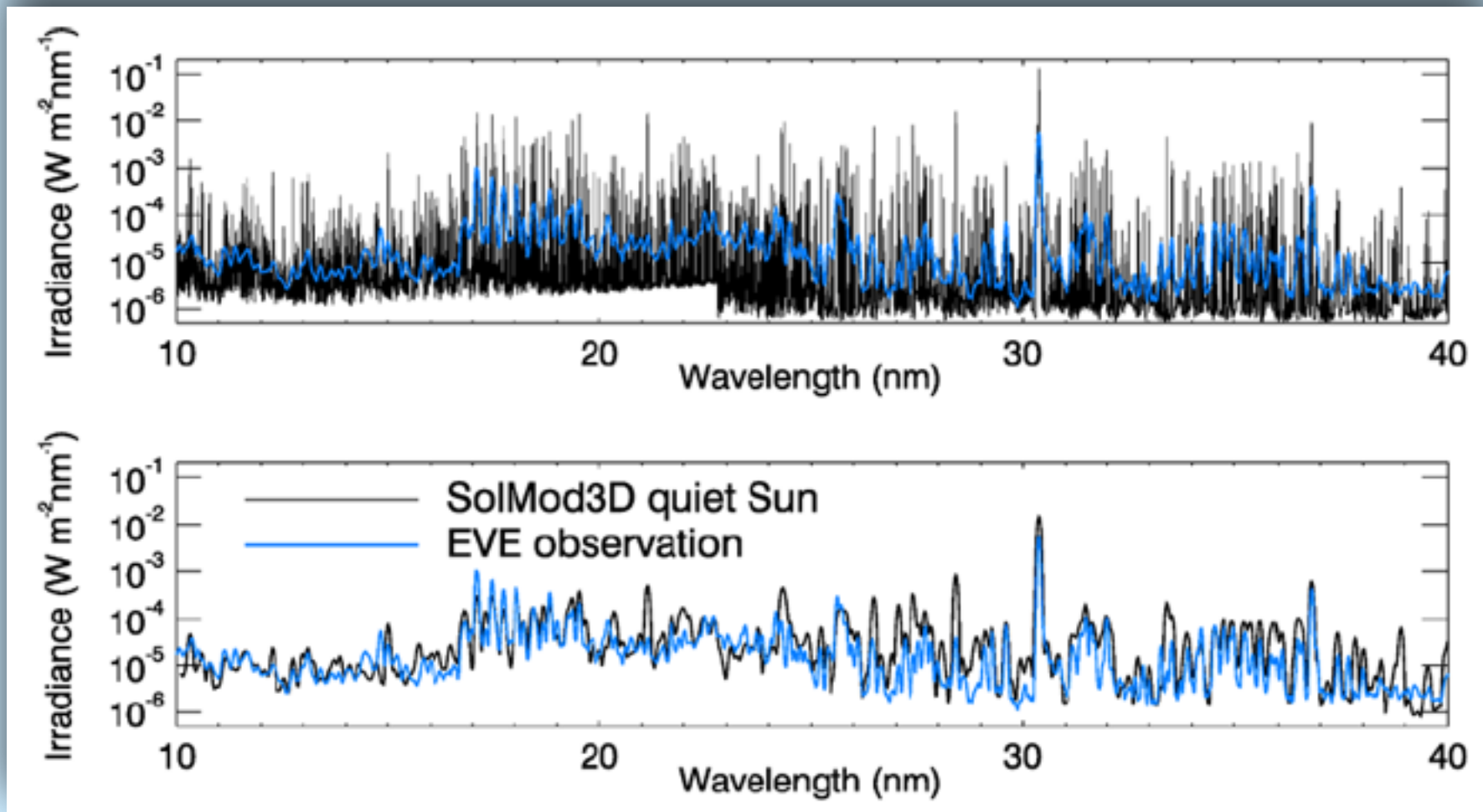


PROBA2/SWAP



Rome / PSPT

SOLMOD spectrum compared with EVE spectrum



Haberreiter, 2011, Solar Physics

Additional atomic data: N I, C I, S I

Top: SOHO/SUMER
QS spectrum

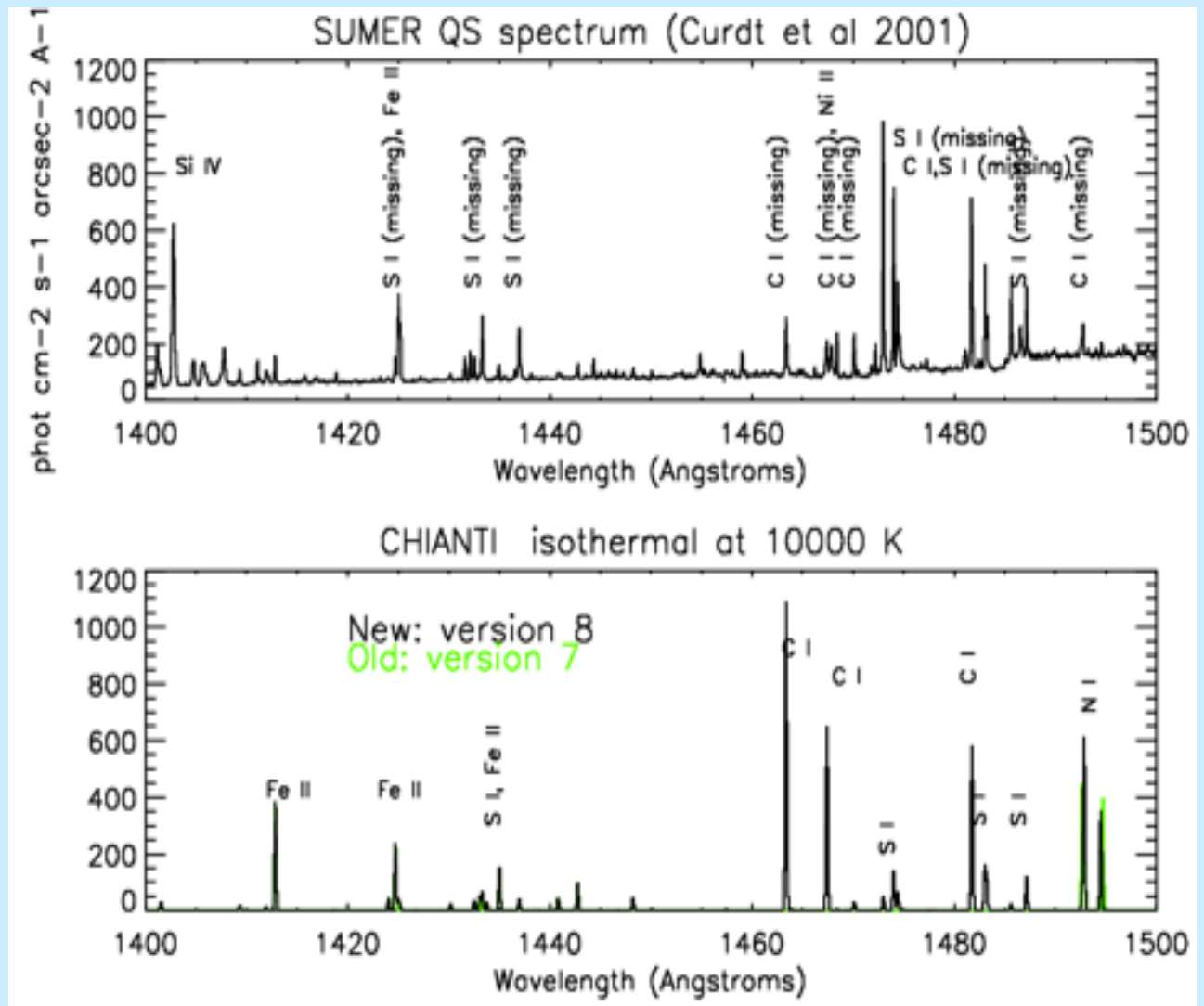
Bottom: CHIANTI
spectrum

Green: CHIANTI 7

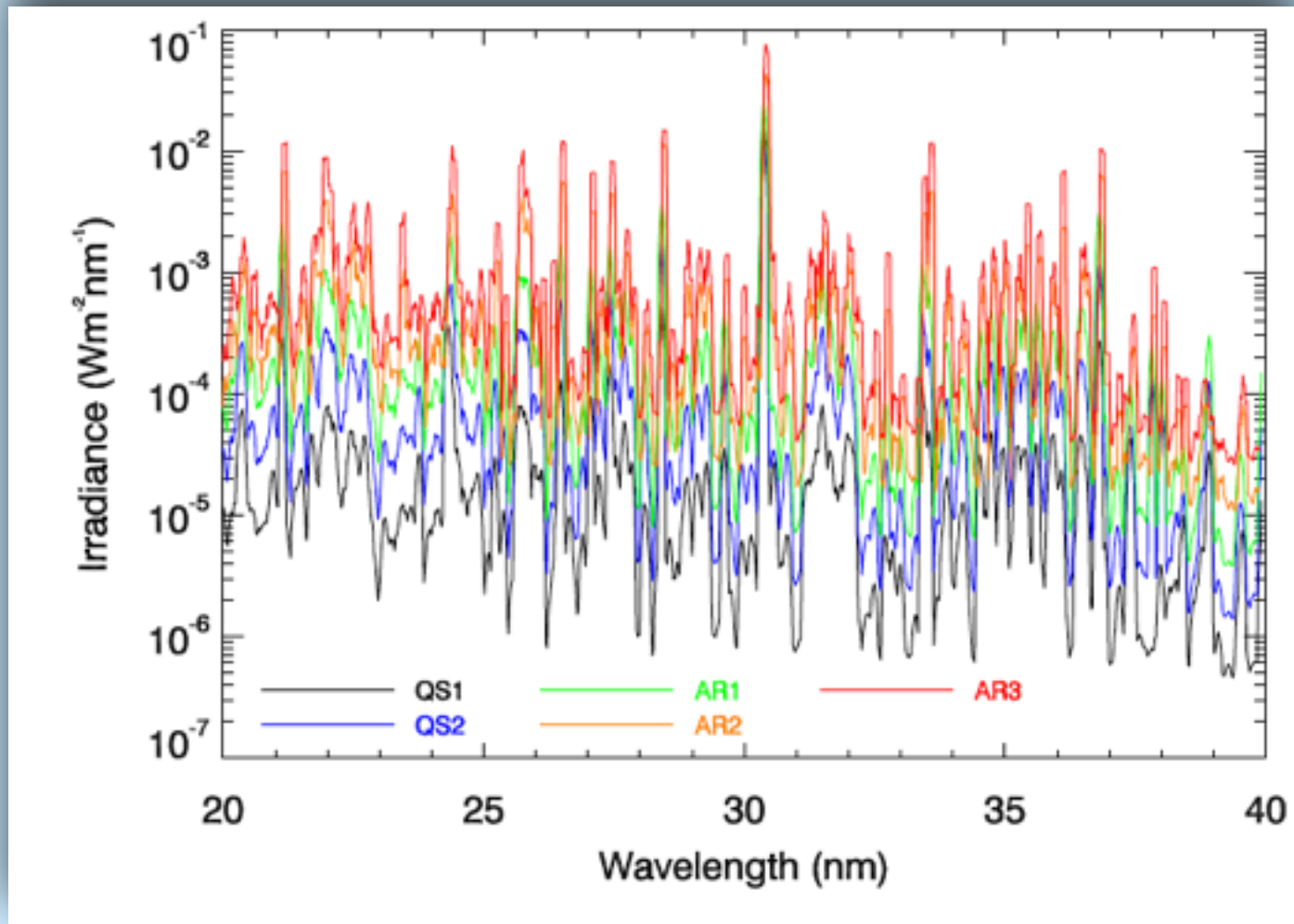
Black: CHIANTI 8
including
C I and S I, and the
changes in N I

highly ionized Fe

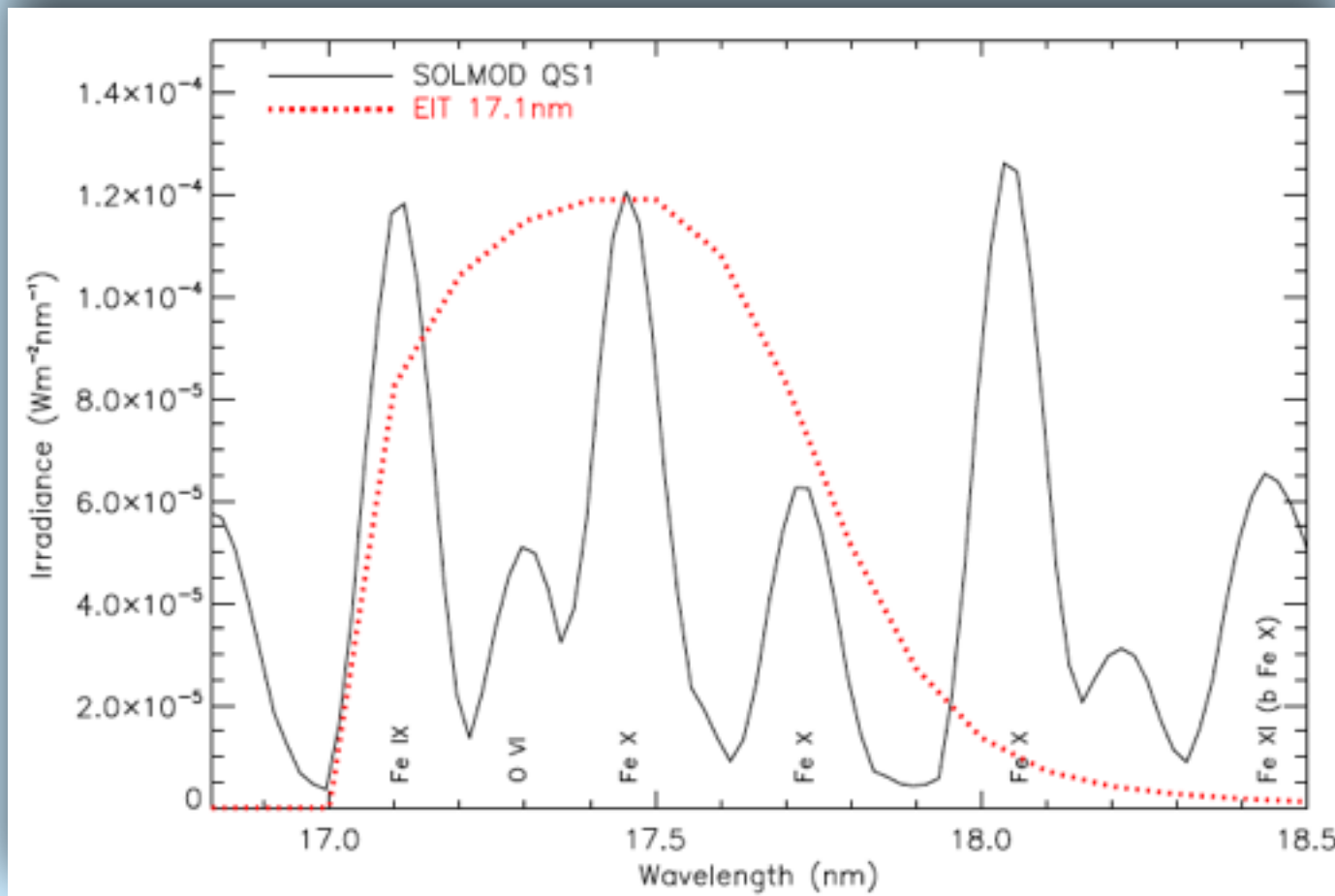
Del Zanna et al., 2014



SOLMOD Synthetic Spectrum

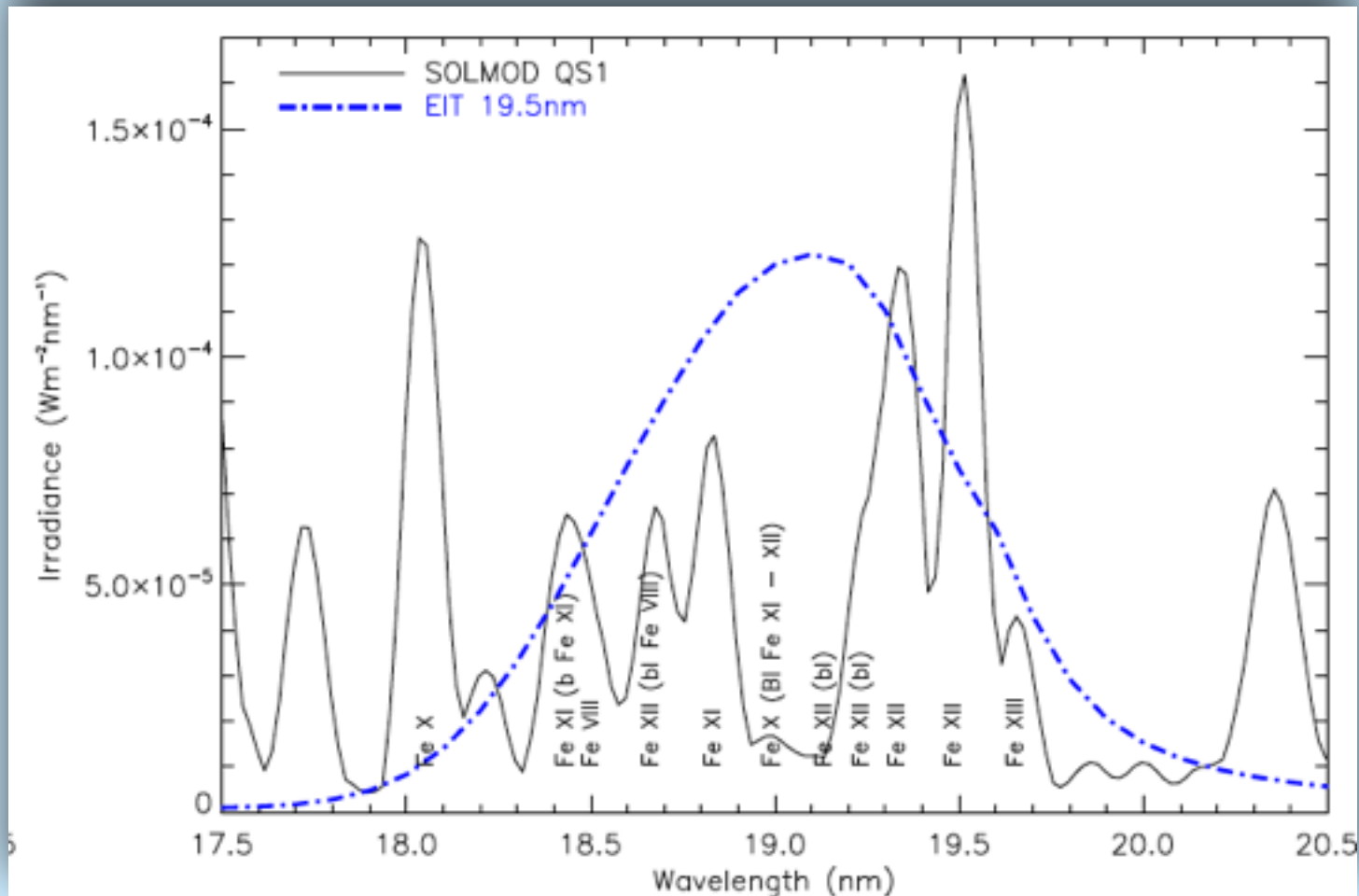


EIT Passband 171

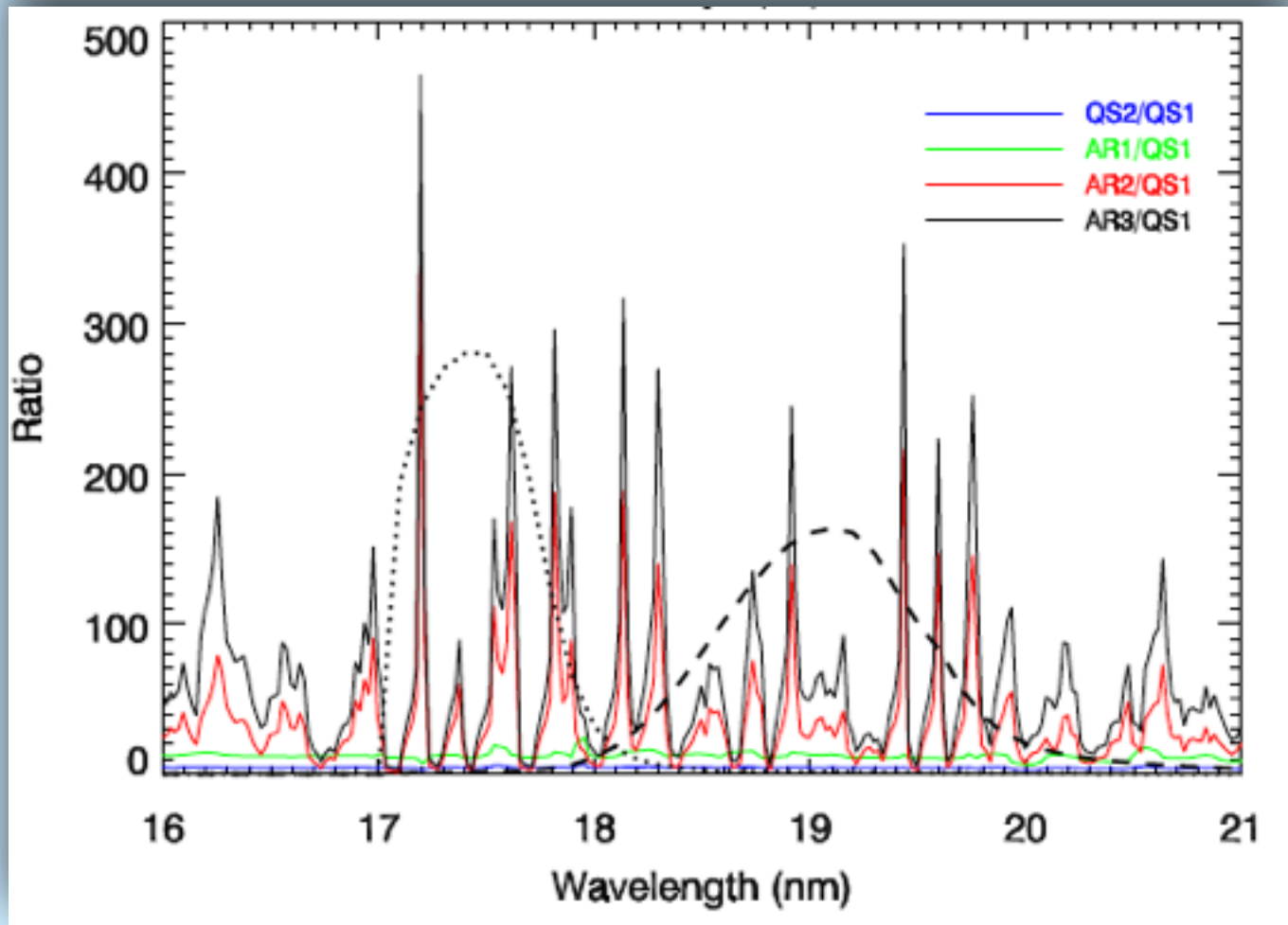


Courtesy Veronique Delouille, Benjamin Mampeay, ROB, BE

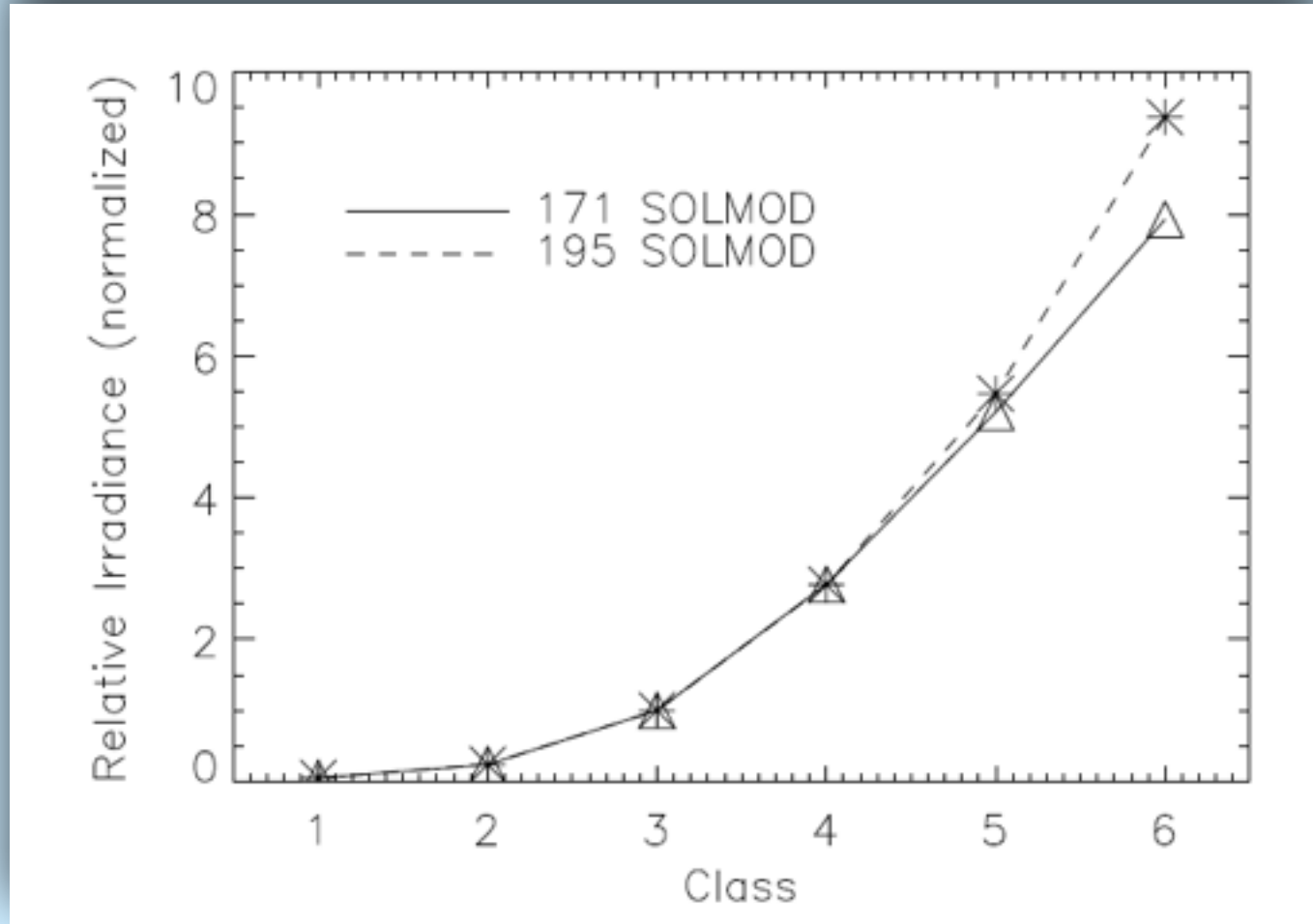
EIT Passband 193



Ratio of SOLMOD Synthetic Spectra

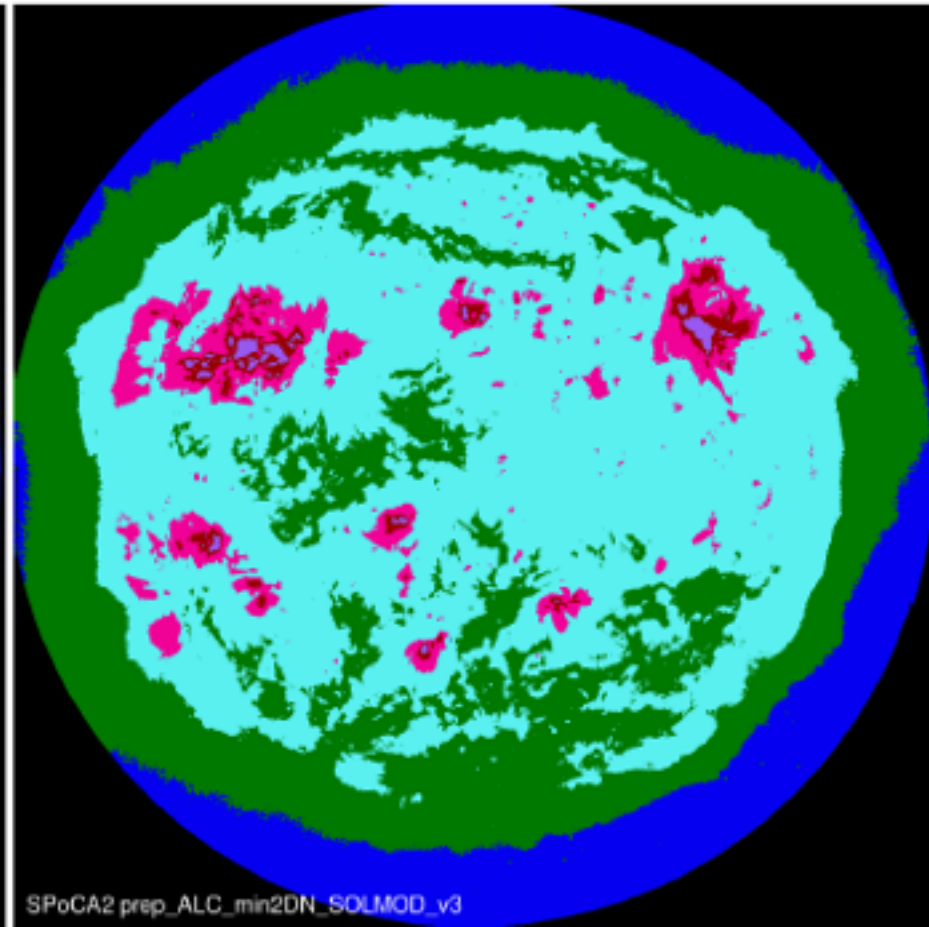
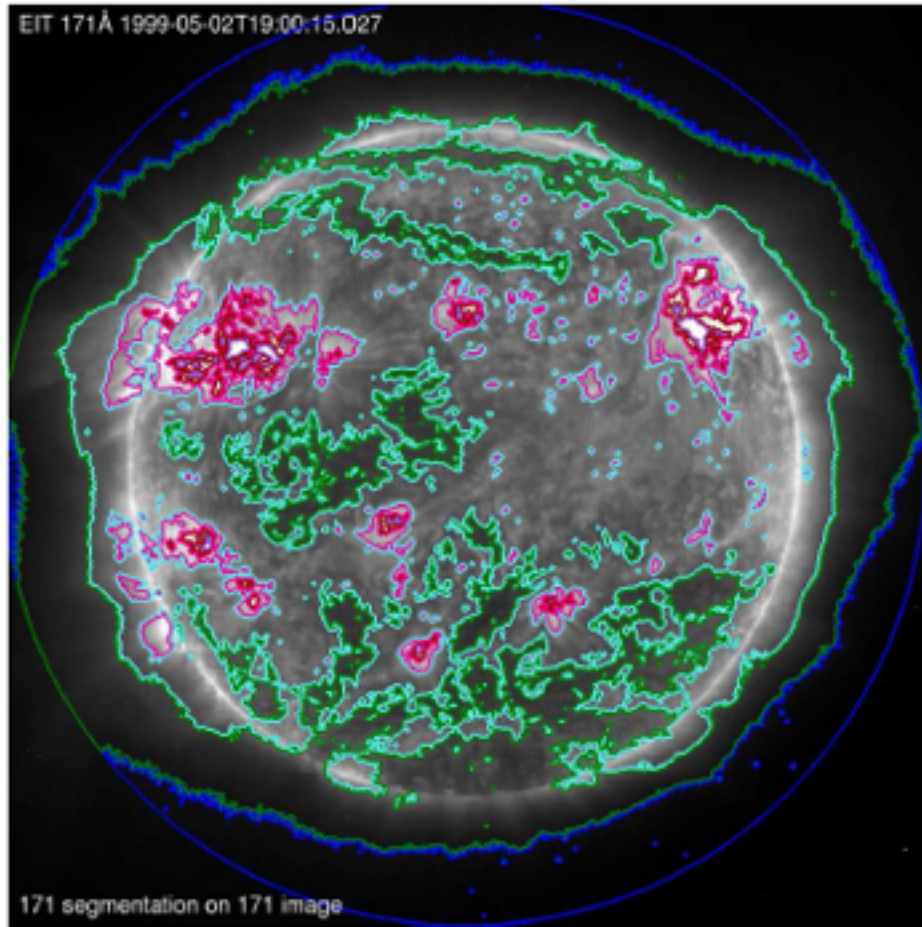


SOLMOD Contrast at EIT passbands



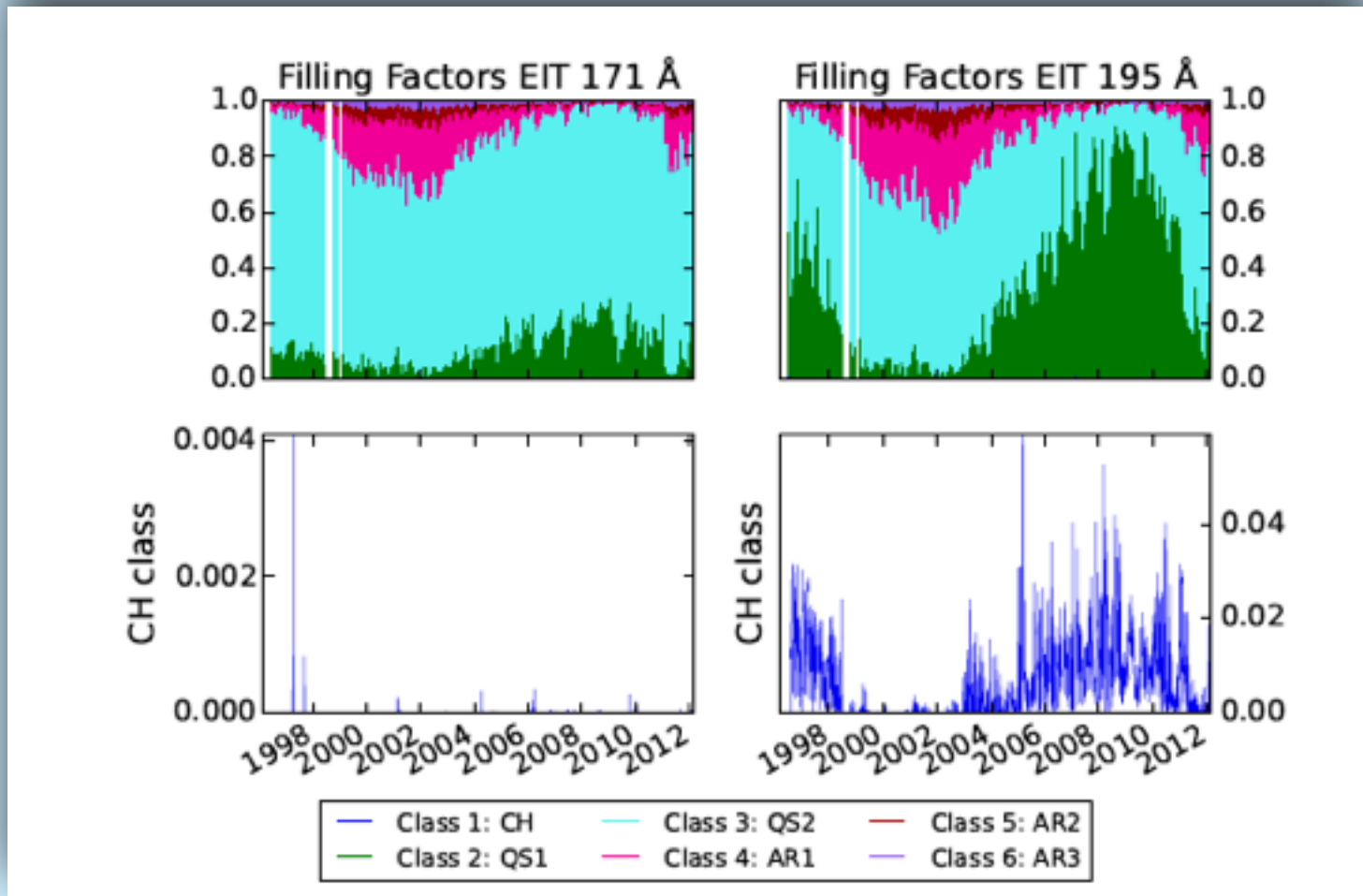
Contrast of SOLMOD spectra for the EIT 171 and 195 passbands

EIT Image segmentation with SPOCA tool



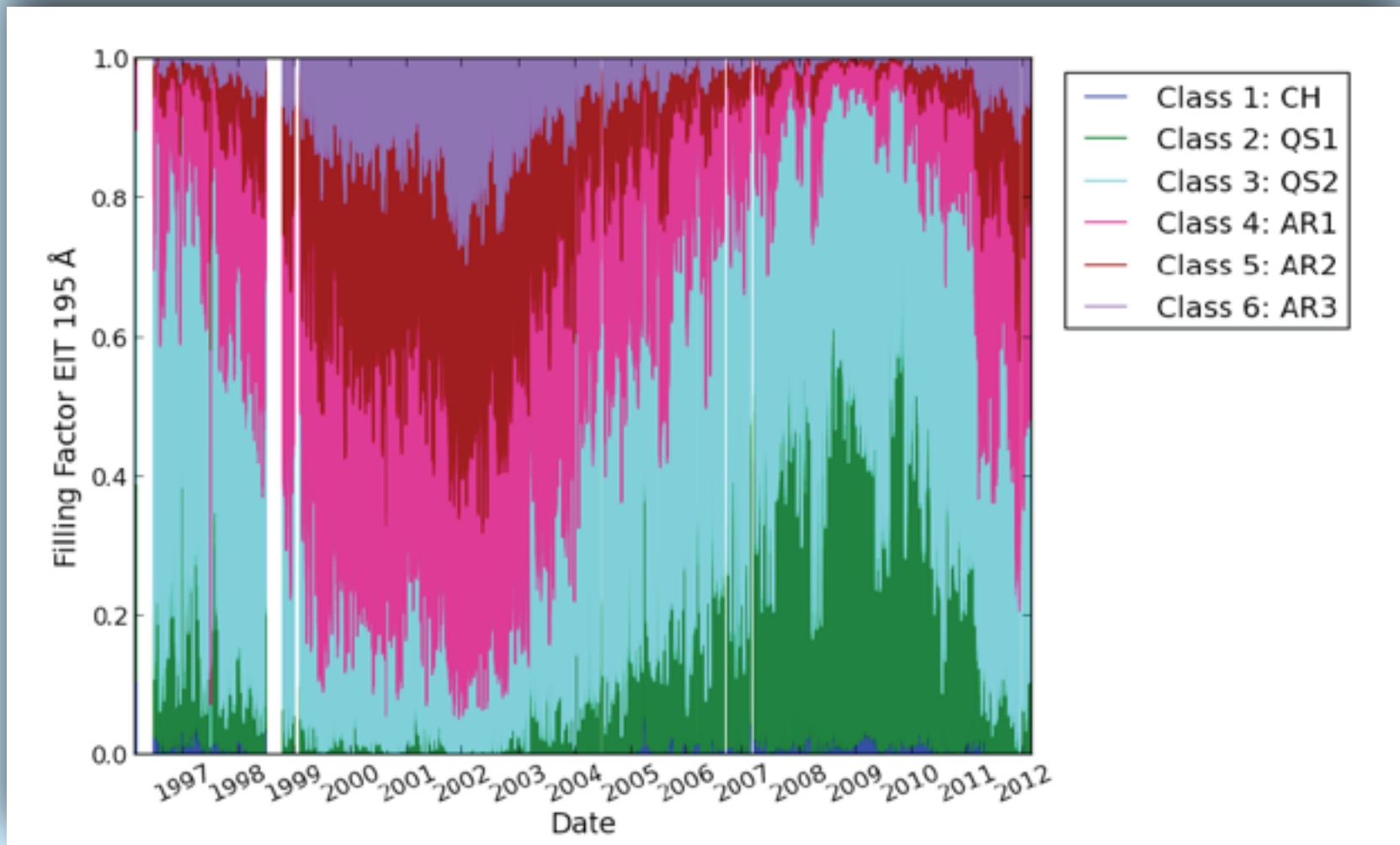
Courtesy Veronique Delouille, Benjamin Mampeay

EIT area coverage



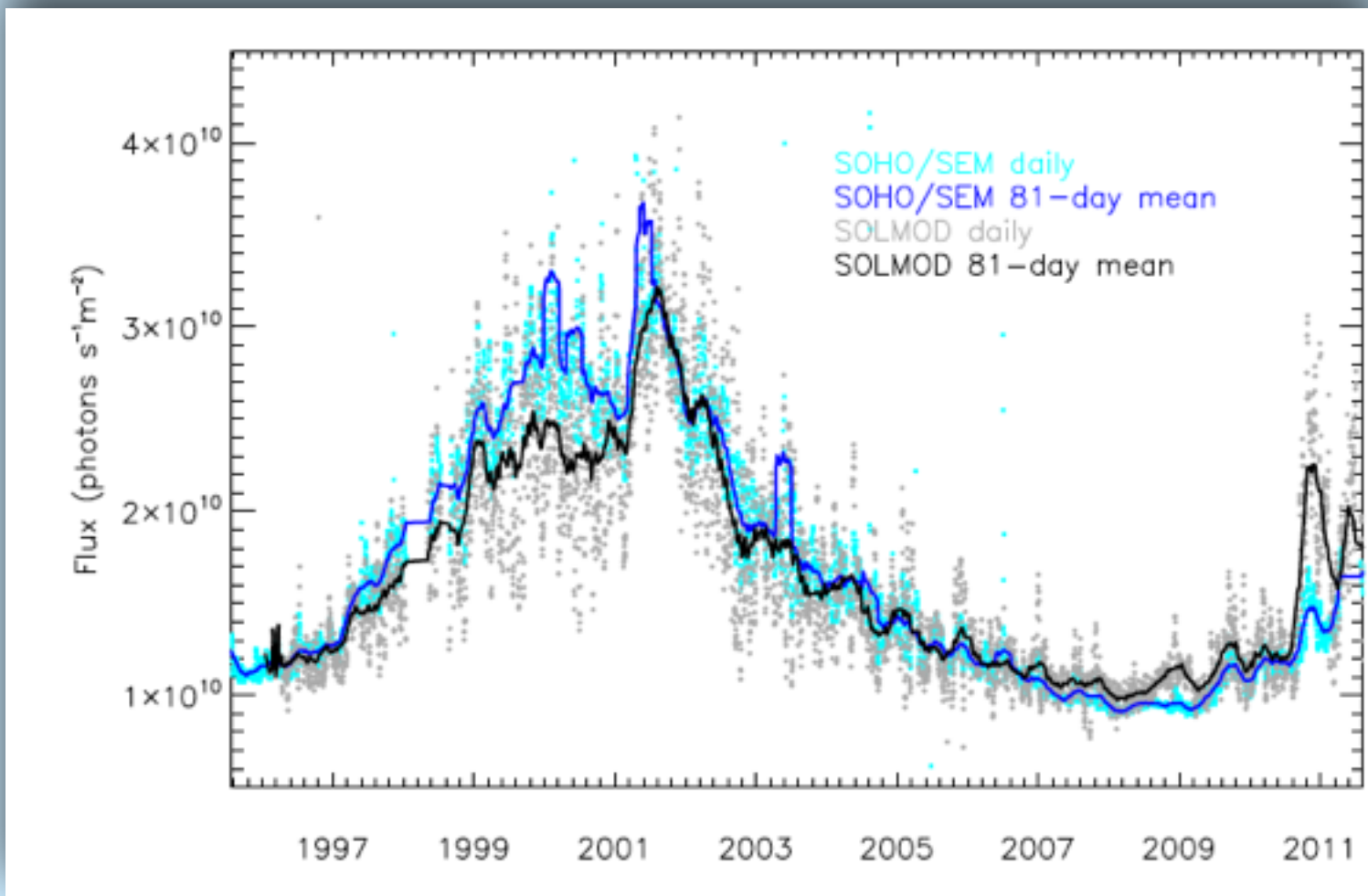
Haberreiter et al., 2014, SWSC, under review

Area coverage of EIT features

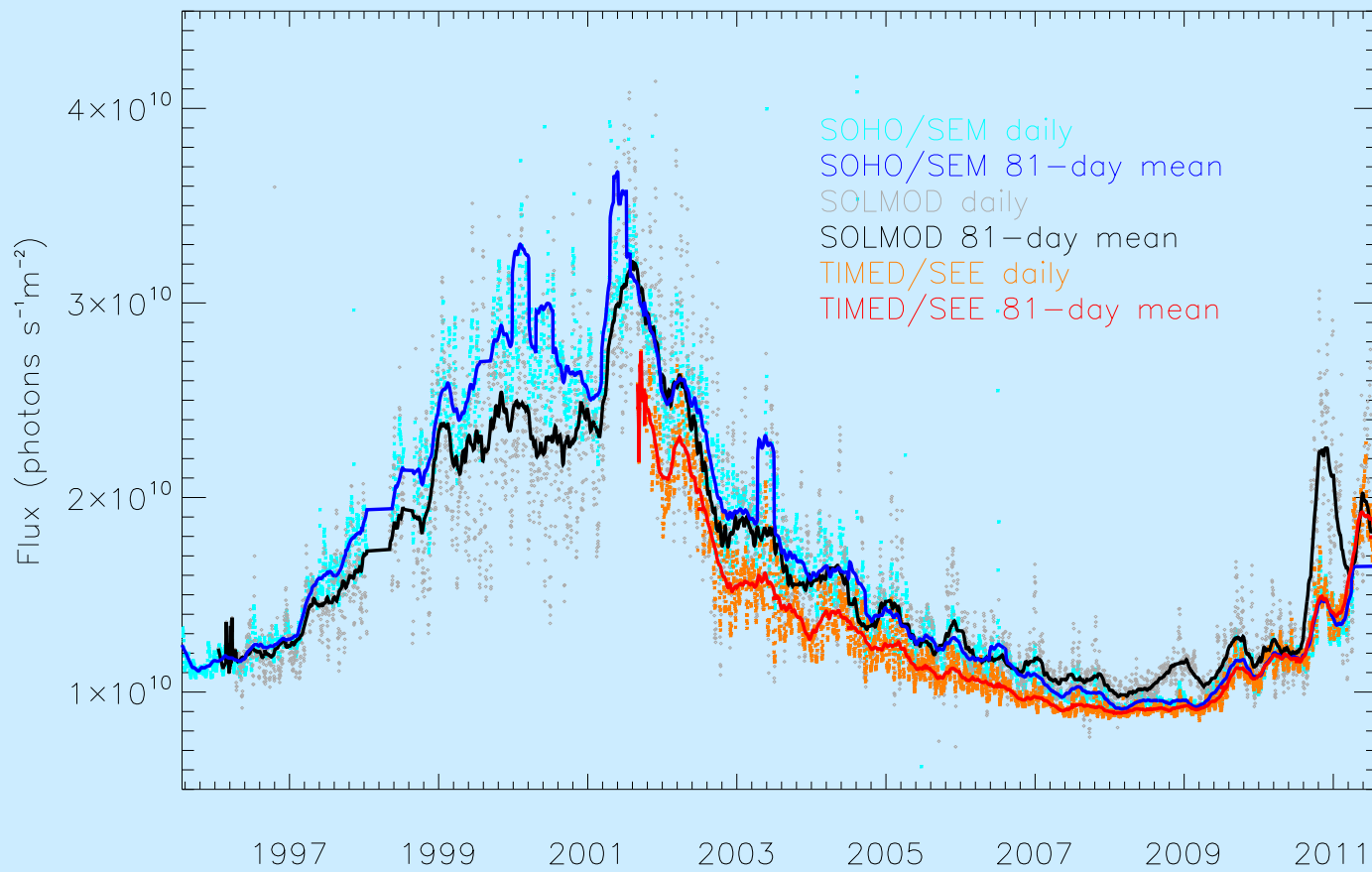


Haberreiter et al., 2014, SWSC, under review

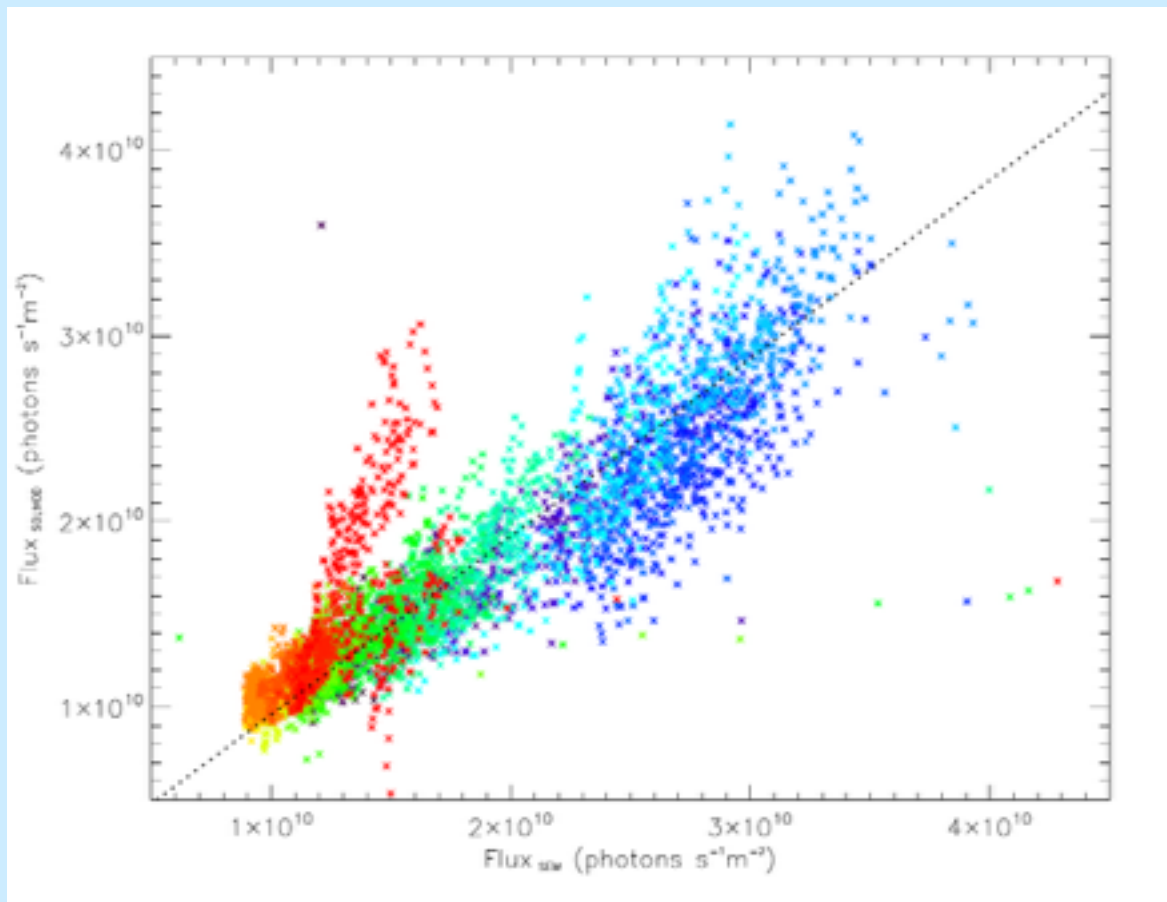
Reconstruction of SOHO/SEM Passband



Reconstruction of SOHO/SEM Passband



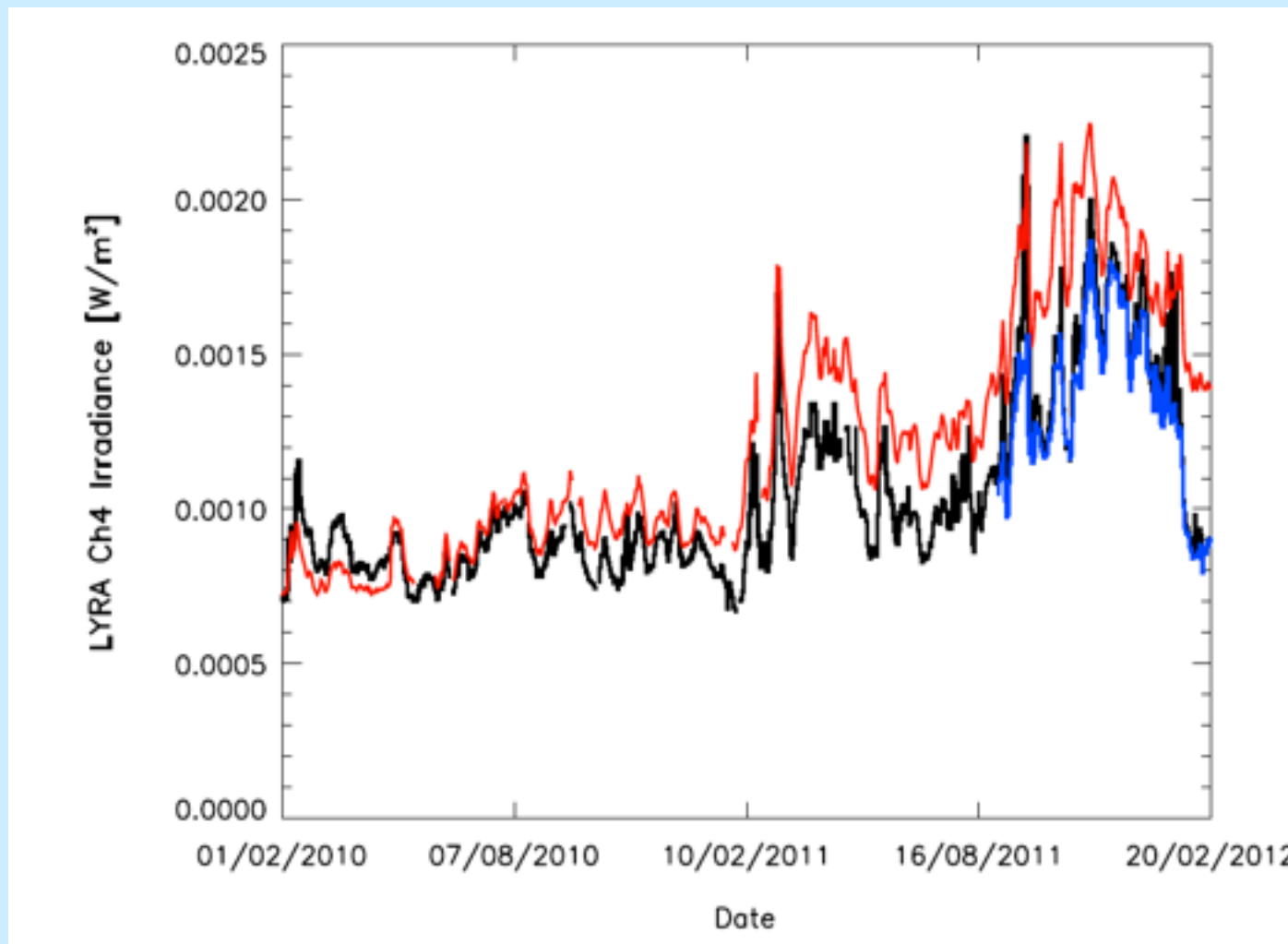
SOLMOD Reconstruction versus SOHO/SEM



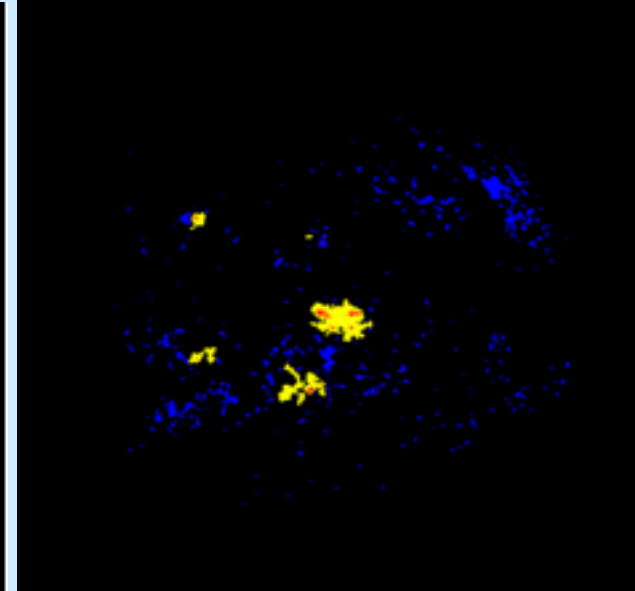
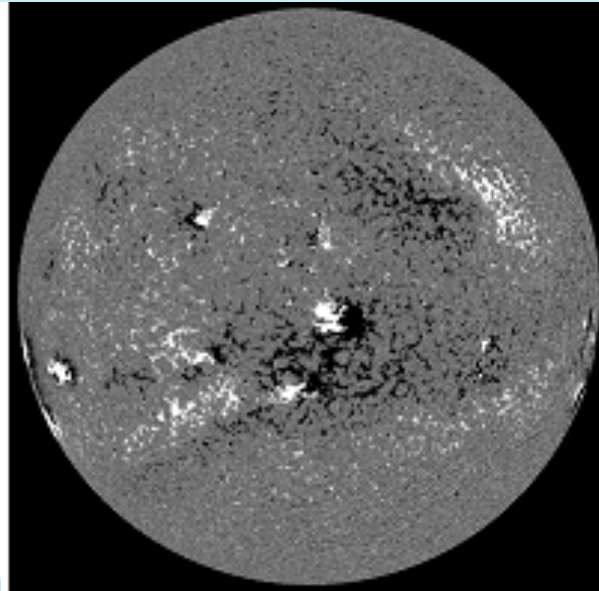
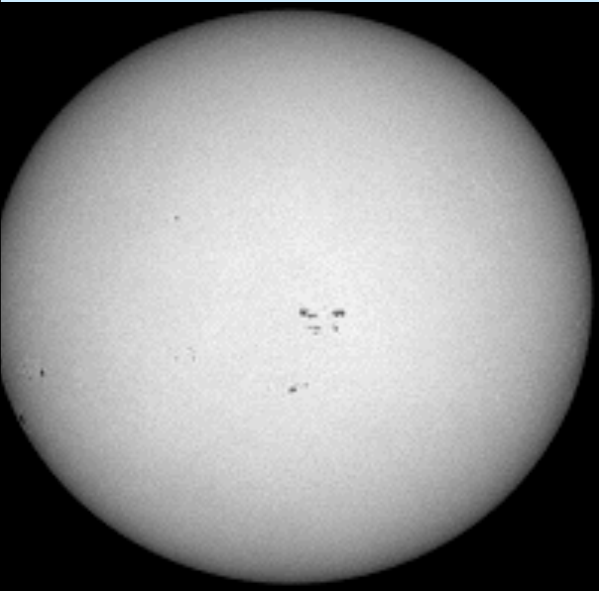
blue - light blue, - green - orange - red

Late in the mission: issue with increase of discrepancy

Comparison to PROBA2/LYRA data



MDI Segmentation with the ASAP tool

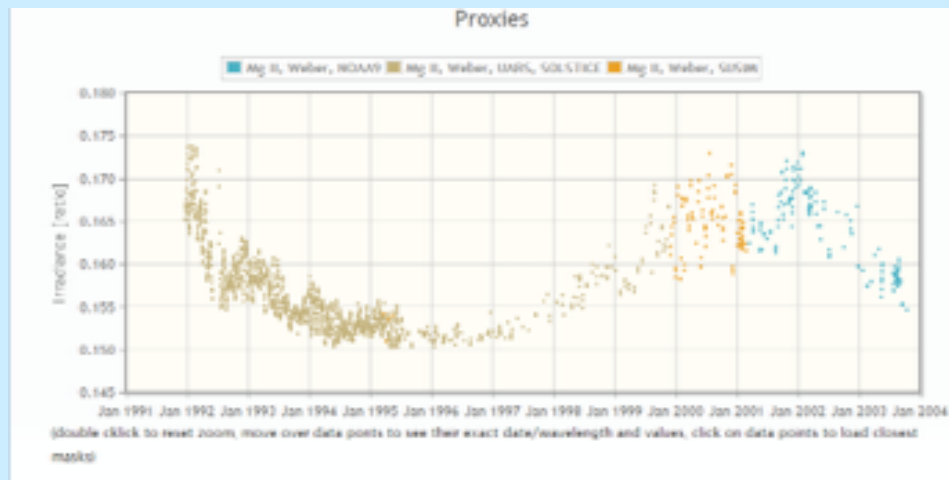


Qawahij, R., Ipson, S.,
Nibouche, O., and
Haberreiter, M. (2014)
SWSC, under review

Segmentation Map for Jan 7, 2003 MDI
umbra (red), penumbra (cyan)
faculae (yellow) active network (blue)

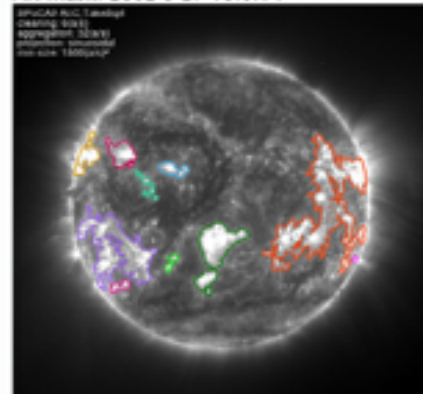
SOLID – Webpage and Database

<http://projects.pmodwrc.ch/solid-visualization/makeover/>

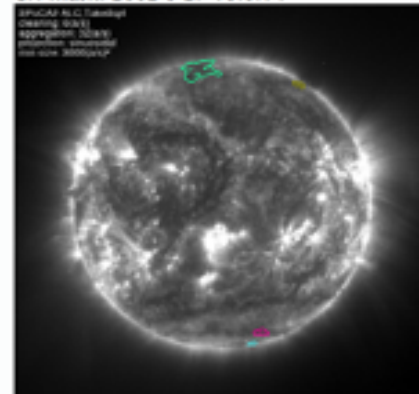


▾ Masks

AR mask: 2002-5-27 13:0:14



CH mask: 2002-5-27 13:0:14



Questions