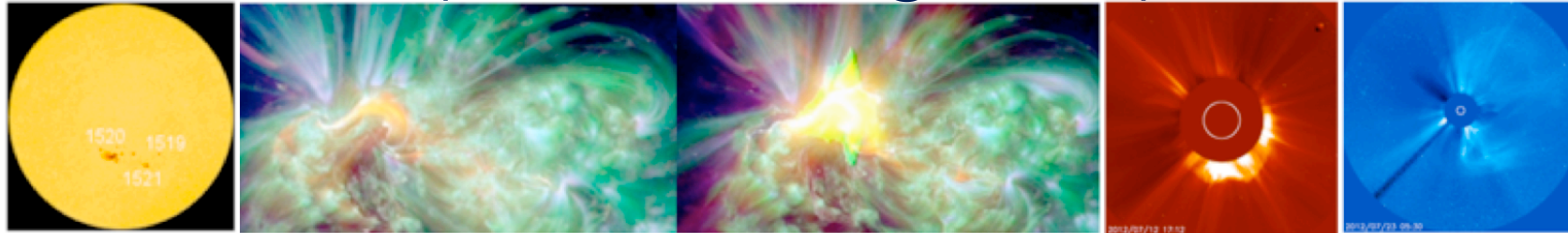


SWWT Topical Group: Drivers of Space Weather - Solar Magnetic Topology

(H.Lundstedt - henrik@lund.irf.se)



July 12, 2012
SDO/HMI

Sigmoid, July 12, 16.14 UT
SDO/HMI

X1.4 solar flare, July 12, 16.43 UT
SDO/HMI

CME, July 12, 17.12 UT
SOHO/LASCO C2

CME, July 23, 05.30 UT
SOHO/LASCO C3

Moderate solar storm

Extreme solar storm
on far side

Goal of the research

- to improve warnings and forecasts of severe to extreme solar storms

Questions we address

- How to topologically define a solar storm?
- How to topologically model a solar storm?
- How to understand an extreme solar storm based on historical and recent SDO observations and topologically model it?

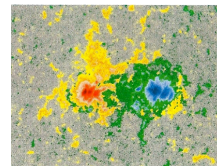
Recent visits: **Stanford SDO solar group and annual RWC/ISES meeting in Boulder.**

Upcoming presentation: **Three Extreme Solar Storms and a Model** (submitted to *ESWW*, 2013).

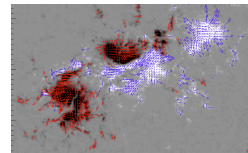
Upcoming workshop: **Extreme Solar Storms: Observations, Models and Warnings**, May/June 2014 in Lund

Collaborations: Solar SDO group at Stanford University, CA and Center for Mathematical Sciences, Lund University.

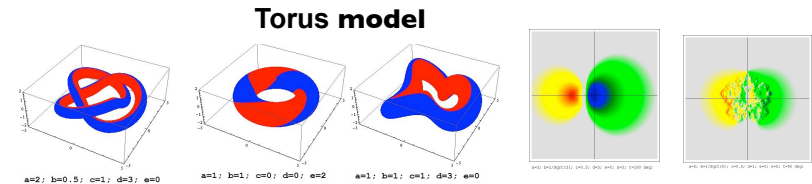
Funded by: Swedish Institute of Space Physics (**IRF**), Swedish Civil Contingencies Agency (**MSB**) (research project: "Solar storms and space weather") and two new research proposals have been submitted; one to **Swedish National Space Board** and one to the **Swedish Foundation of Strategic Research (Applied Mathematics)**



SDO LOS magnetogram



SDO vector magnetogram

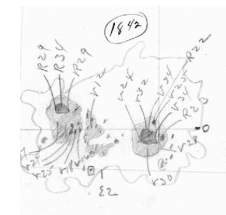


3 - Linked

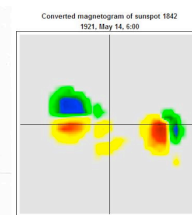
Twisted Torus

Writhe Torus

Simulated magnetograms based on cross-sections of a torus



Mount Wilson magnetogram
14 May 1921



Converted to SDO type magnetogram
14 May 1921