

Monday July 11 14:00-17:00

*WG1: The Evolution of Sub-Surface Magnetic Fields*

At the visible surface of the Sun, active regions appear remarkably well organized --- they are confined to roughly symmetric latitudinal belts across the equator, and obey a number of well-known empirical relations including Hale's polarity Law, and Joys Law. Since active region magnetic fields are widely believed to originate via a dynamo mechanism near the base of the solar convection zone, it is likely that strong, sub-surface magnetic fields evolve in a relatively ordered fashion during their ascent toward the photosphere. However, as active region magnetic fields approach the photosphere, and emerge from the high-beta convecting plasma of the interior into the magnetically dominated solar atmosphere, the dynamics of the magnetized plasma is far more complex, and less well understood. In this session we will discuss current theories, computational models, and helioseismologic observations of sub-surface magnetic fields and flows, and will steer our discussion toward how these models contribute to our understanding of the solar origin of space weather.

Monday Morning:

11:15-12:30 (Plenary Talk):

George Fisher (SSL UC Berkeley), "The Importance of Sub-surface Magnetic Field Structure and Evolution".

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Monday Afternoon:

(times for each talk include ~5 min questions/discussion)

14:00-14:30 (Invited Talk):

Yuhong Fan (HAO/NCAR), "The Sub-surface Evolution of Emerging Magnetic Fields"

14:30-14:45 (Contributed Talk):

Chip Manchester (CSEM/Michigan), "The Source of Magnetic Shear that Drives CMEs"

14:45-15:00 (Contributed Talk):

Junwei Zhao (Hansen Exp. Physics Lab., Stanford),  
"Sub-surface Dynamics and Structures of AR-8210"

15:00-15:15 General Discussion

15:15-15:45 Coffee Break

15:45-16:15 (Invited Talk):

Doug Braun (CoRA), "Local Helioseismic Inferences of Sub-surface Magnetism and Dynamics"

16:15-16:45 (Invited Talk):

Aad van Ballegoijen (Smithsonian Astrophysical Laboratory),  
"The Role of Sub-surface Processes in the Formation of Coronal Magnetic Flux Ropes"

16:45-17:00 (Discussion/Wrap-up)