INVITED TALKS:

(note more abstracts will be posted soon – see agenda for full list of invited talks)

Tuesday November 10

Name: Mark Miesch
Institution: HAO/NCAR
Abstract Title: WHI and the Solar Dynamo

Abstract:
The magnetism that permeates the heliosphere and powers solar variability originates in the solar envelope. It is here where the energy released by nuclear fusion in the solar core is converted to magnetic energy through the combined action of turbulent convection, rotational shear, and meridional flow. In this talk I will review the delicate interplay of order and chaos in the solar dynamo and its implications with regard to quasi-cyclic magnetic activity.

Name: Leif Svalgaard
Institution: Stanford University

Abstract Title: WHI/current minimum in historical context

Abstract:
We place the current minimum in the larger context of the historical record, extending much further back than just the previous minimum. Cycle 23 was very much like cycle 13, 108 years ago; the Sun reverting to conditions of a century ago. The transition 23->24 and cycle 24 look so far very similar to 13-14 and cycle 14. We discuss the problems associated with such long-term records. How to maintain constant calibration over time and how to cross-calibrate with other proxies. We touch upon the question of physical interpretation of possibly changing response of some of the proxies over time. One clear conclusion is that our knowledge of past activity is on shakier ground that commonly thought. We discuss what can be done to ameliorate that unfortunate situation.

Wednesday November 11

Name: Luca Bertello
Institution: UCLA

Abstract Title: Magnetogram boundary conditions on models

Abstract:
A primary objective of current and future solar magnetic field observations is to provide magnetic maps of the full 360-degree solar surface to be used as inner boundary conditions in coronal and heliospheric models. Because the quality of these maps will ultimately determine the accuracy and predictive capabilities of these models, it is very important that they are well calibrated. With the continue increase in the sophistication level of numerical models the question arise whether the limitations on their solutions is due to the physical assumptions contained in the model or in the quality of the input maps used to drive them. Today there is a large consensus that some of the constraints used in building these maps are inadequate, and need to be improved. For example, the determination of the correct magnetic field strength is still an issue that has not been addressed properly. I will discuss some of the areas in the construction of magnetic maps that need to be improved in order to provide the best possible estimate of the topology of the solar surface magnetic field and its variability. I will also present some of the latest results we have obtained at UCLA towards this objective.

Name: Brian Welsch
Institution: Space Sciences Lab, UC - Berkeley

Abstract Title: Photospheric Magnetic Tracking of ARs 10987-9

Abstract:
I have applied three independent tracking techniques to MDI magnetogram sequences of NOAA ARs 10987-89, and will present comparisons of photospheric magnetic evolution in these ARs. Relevant SOLIS vector magnetogram data will also be analyzed.

Thursday November 12

Names: Mike Wiltberger and Pete Riley

Abstract Title: End-to-end model of WHI

Abstract:
Whole Heliosphere Interval (WHI), which runs from March 20 through April 16, 2008, and coincides with Carrington Rotation (CR) 2068 is providing a unique opportunity for both observers and modelers to collaborate in an effort to understand the three-dimensional structure and evolution of the solar corona, inner heliosphere, and Earth's magnetosphere. It builds on several previous “Whole Sun Month” intervals, which proved to be exceptionally successful. In support of WHI, we have developed global solar,heliospheric, and magnetospheric MHD model solutions for CR 2068. The solar model, which includes energy transport processes, such as coronal heating, conduction of heat parallel to the magnetic field, radiative losses, and the effects of Alfven waves, is capable of producing significantly better estimates of the plasma temperature and density in the corona than have been possible in the past. With such a model, we can compute emission in extreme ultraviolet (EUV) and X-ray wavelengths, as well as scattering in polarized white light. Additionally, from our heliospheric solutions, we can deduce magnetic field and plasma parameters along specific spacecraft trajectories. The magnetospheric model uses ideal MHD to simulate the interaction of the solar wind with the coupled magnetosphere-ionosphere system. We can drive this model using either the observed solar wind conditions or the results of heliospheric modeling. In this presentation, we make detailed comparisons of both remote solar, in situ, and ground-based observations with the model results. Such comparisons allow us to: (1) Connect these disparate sets of observations; (2) Infer the global structure of the corona, inner heliosphere, and magnetosphere; and (3) Provide support for (or against) assumptions in the MHD model, such as which physical processes are (or are not) important.