
SH41C-3663: Synergy of observations and dynamo models to understand and predict solar activity cycles

Thursday, 13 December 2018

08:00 - 12:20

📍 *Walter E Washington Convention Center - Hall A-C (Poster Hall)*

The long-standing problem of understanding the evolution of the global magnetic fields that drive solar activity through different temporal scales is becoming more tractable because, in addition to 400 years of sunspot records, we now have almost 4 solar cycles of magnetic field observations. These observations allow us to discern physical connections between dynamo model variables and observations using data assimilation analysis. In particular, the Ensemble Kalman Filter approach takes into account uncertainties in both observations and modeling and allows us to make reliable forecasts of solar cycle activity cycles by using a relatively simple non-linear dynamical model of the solar dynamo. To expand this approach for more complex 2D and 3D dynamo modeling, it is necessary to decompose the observed synoptic magnetograms into poloidal and toroidal field components. In this presentation I will present initial results on magnetogram decomposition and assimilation of magnetogram data into dynamo modeling.

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