Space Science Seminar
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Structure and Dynamics of Quiescent Prominences

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Solar prominences are spectacular features. They are highly dynamic, and consist of relatively cool and dense material compared to the surrounding corona. On the solar limb, they appear as huge sheets of plasma, extending up to heights of several hundreds of Mm above the chromosphere. They are referred to as filaments on the solar disk. Prominence plasma is embedded in the dips of helical magnetic fields. High resolution observations are needed for a better understanding of prominence structure and for verifying theoretical models. In this talk, I will present the results of 3D observations (SDO and STEREO views) of three different types of prominences:

1. We investigate flows in a polar crown prominence observed by SDO on the limb, and find upflows originating from on-disk brightenings seen in STEREO images.
2. We investigate the triggering mechanism of a giant solar tornado, and suggest that the tornado is the dynamical response of the helical prominence field to expansion of the overlying coronal field (cavity).
3. We diagnose the dynamics of a prominence/filament cavity system during a series of eight homologous flares. The repeated homologous flares gradually destabilized the prominence/filament system, removed the coronal field above the active region, leading to the CME via the 'lid removal' mechanism.

http://solarscience.msfc.nasa.gov/colloquia/