[구SE-09] Physical Properties of Untwisting Chromospheric Surges of AR 10930

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We report untwisting chromospheric surges of AR 10930. Hinode Solar Optical Telescope (SOT) observed AR 10930 on the west limb continuously from 11:21 UT December 18 to 09:58 UT December 19, using the Ca II H broadband filter. During the observation, rise and fall motion accompanying rotation appeared recursively. There occurred a total of 14 surges at AR 10930 over 17 hours. The average duration was 45 minutes, and the average width, and length were 8 Mm, and 39 Mm, respectively. The dynamic properties including number of turns from the rise to the fall, the axial speed and acceleration are also analyzed. We speculate that the surges occurred by recursive reconnections between the twisted prominence and large untwisted flux tube.

[구SE-10] Tiny Pores Observed by New Solar Telescope and Hinode

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Our previous study on tiny pores (R < 2'') observed by HINODE/Solar Optical Telescope (SOT) revealed that the plasma in the pores at the photosphere is always moving down and the pores are surrounded by the strong downward motions (highly red-shifted) of neighboring granulations. From this study, we speculated that the flow motions above the pore should be related with the motions at the photosphere, since the pore is strong magnetic field region. Meanwhile, SNU and KASI installed Fast Imaging Solar Spectrograph (FISS) in the Cude room of the 1.6 m New Solar Telescope (NST) at Big Bear Solar Observatory. FISS is a unique system that can do imaging of H-alpha and Ca II 8542 band simultaneously, which is quite suitable for studying of dynamics of chromosphere. To get some clue on the relationship between the photospheric and low-chromospheric motions at the pore region, we took a coordinate observation with NST/FISS and Hinode/SOT for new emerging active region (AR11117) on October 26, 2010. In the observed region, we could find two tiny pores and two small magnetic islands (SMIs), which have similar magnetic flux with the pores but does not look dark. Magnetic flux density and Doppler velocities at the photosphere are estimated by applying the center-of-gravity (COG) method to the HINODE/spectropolarimeter (SP) data. The line-of-sight motions above the photosphere are determined by adopting the bisector method to the wing spectra of Ha and CaII 8542 lines. As results, we found the followings. (1) There are upflow motion on the pores and downflow motion on the SMIs. (2) Towards the CaII 8542 line center, upflow motion decrease and turn to downward motion in pores, while the speed of down flow motion increases in the SMIs. (3) There is oscillating motion above pores and the SMIs, and this motion keep its pattern along the height. (4) As height increase, there is a general tendency of the speed shift to downward on pores and the SMIs. This is more clearly seen on the other regions of stronger magnetic field. In this talk, we will present preliminary understanding of the coupling of pore dynamics between the photosphere and the low-chromosphere.