## [구SO-05] Hinode SP vector magnetogram of AR 10930 and its cross-comparison with MDI

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We present one Hinode Spectropolarimeter (SP) magnetogram of AR 10930 that produced several major flares. The inversion from Stokes profiles to magnetic field vectors was made using the standard Milne-Eddington code. We have successfully applied the Uniform Shear Method for resolving the 180 degree ambiguity to the magnetogram. The inversion gives very strong magnetic field strengths (near 4500 Gauss) for a small portion of area in the umbra. Considering that the observed V-profile of 6301.5 Å is well fitted as well as the direct estimation of the Zeeman splitting results in 4300-4600 Gauss, we think that the field strengths should not be far from the actual value. A cross-comparison of the Hinode SP and SOHO MDI high resolution flux densities shows that the MDI flux density could be significantly underestimated by about a factor of two. In addition, it has a serious negative correlation (the so-called Zeeman saturation effect) with the Hinode SP flux density for umbral regions. Finally, we can successfully obtain a recalibrated MDI magnetogram that has been corrected for the Zeeman saturation effect using not only a pair of MDI intensity and magnetogram data simultaneously observed but also the relationship from the cross-comparison between the Hinode SP and MDI flux densities.

## [포SO-06] The Relationship between Sawtooth Oscillations and Geomagnetic Storms

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We have investigated the relationship between sawtooth oscillations and geomagnetic storms during 2000-2004. First of all we selected geomagnetic storms and sawtooth oscillations and distinguished between different drivers such as Coronal Mass Ejection(CME) and Co-rotating Interaction Region(CIR). We find that out of 154 storms identified, 47 storms indicate the presence of sawtooth oscillations. But we also find a sawtooth oscillation event when there is no storm. The sawtooth oscillation events occur morefrequently for storms driven by CME than for storms driven by CIR. In addition, sawtooth oscillations occur mainly in the main phase of storms for CME-driven storms while they occur mostly during the storm recovery phase for CIR-driven storms. It has beenknown that geomagnetic activity is mainly driven by solar wind speed and southward component of the IMF. So we have examined the relationship between sawtooth oscillations occurrence, Bz component of IMF, and solar wind speed. We find that neither Bz component of IMF nor solar wind speed are directly responsible for the sawtooth oscillation occurrence. But we find that the number of teeth is proportion to Bz component of IMF and solar wind speed.