M35a **Photospheric Flow Field Related to the Appearance and Disappearance of Polar Magnetic Patches observed with Hinode SOT**

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The Sun's polar caps are dominated by unipolar magnetic patches which possess magnetic fields in kilogauss range. The origin of these unipolar patches is believed to be, according to current understanding, the surplus magnetic flux from decayed active regions transported to the polar cap through turbulent diffusion and meridional circulation. How the diffused magnetic flux is organized into discrete unipolar magnetic patches, which are scattered all over the polar region, is still an open question. It is well known from disc center observations that the vertical magnetic flux can be concentrated by horizontal plasma flows in the mesogranular and supergranular scale. There are no previous studies, as far as we know, which investigate the interaction of polar magnetic patches with the surrounding flow field. We used SP observations, of 16 min cadence and an observation period of 6 hrs, of both the north and the south polar regions to investigate the influence of flow field on the polar magnetic patches. To derive the flow field and its variation with height, the bisector analysis of the Fe I 630.15 nm line profile is used. We chose four wavelength points at 0.1, 0.4, 0.6 and 0.8 Ic on either side of the spectral line profile. We found that the velocity profile obtained at all the four bisector levels exhibit converging flow around magnetic patches during their formation. We also found that the strength of the converging flow increases with depth. We found that a weak converging flow field exist at the time of apparent death of the magnetic patches.