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Ulysses returns to the south polar cap at solar minimum

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Ulysses has been in its high inclination solar orbit since 1992. By a combination of good luck and careful planning, it has investigated the 3D heliosphere from the Sun's equator to the polar caps at both solar minimum (1994-1995) and solar maximum (2001- 2002). The results have had a major impact on our understanding of the solar wind and its origin, the solar-heliospheric magnetic field, galactic cosmic rays, solar energetic particles, interstellar pickup ions and the interstellar medium and cosmic dust. In November 2006, Ulysses reached 70 degrees south latitude for the third time and has continued making observations during the current solar minimum. The present observations are an opportunity to see if, and by how much, conditions have changed compared to the previous solar minimum. An important difference is the reversal in the polarity of the solar-heliospheric magnetic field that occurred in 2000 -2002 such that the field is now outward in the south polar cap. Another important change is a decrease in the polar cap field strength by about a factor of two. How will these changes affect the solar wind, open magnetic flux, galactic cosmic rays, etc? An overview of the recent results and comparisons with the earlier findings will be presented.