

VOYAGERS 1 AND 2 OBSERVE A GMIR AND ASSOCIATED COSMIC RAY DECREASES AT 61 AND 78 AU

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Voyager 2 (V2) observed a Global Merged Interaction Region (GMIR) over the period DOY 110 - 180 when V2 was located near 61 AU and 25.3 degrees south heliographic latitude. The maximum magnetic field strength in the GMIR was near 0.25 nT, but the field strength fluctuated considerably indicating that the GMIR was highly structured. The radial dimension of the GMIR was of the order of 15 AU. The solar wind density was relatively high in the GMIR. The magnetic field enhancement in this GMIR is smaller than in the GMIRs observed by V2 closer to the sun during the previous solar cycle, possibly due to the relatively high thermal pressure of pickup protons in the high-density regions. A shock seen by V2 on day 111 preceded the GMIR. The strength of the shock was moderate, the jump in density and magnetic field strength being approximately 2. The shock and GMIR produced a large step-decrease in the >70 MeV/n cosmic rays at V2, the first major modulation event observed in the distant heliosphere in the current solar cycle No. 23. Voyager 1 (V1) observed a similar step decrease in the cosmic ray intensity near 78 AU and 34.5 degrees North, approximately two months after the event seen at V2. Preliminary analysis of the V1 magnetic field data shows that the step decrease at V1 was produced by the same GMIR that was observed by V2.