

New Solar Cycle Activity Detected at 56 & 72 AU by Voyagers 1 & 2

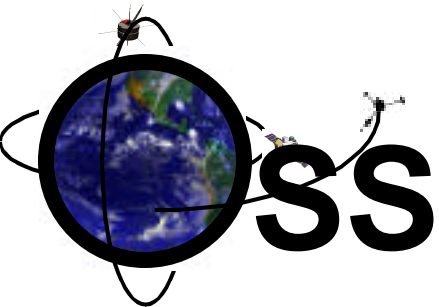
In November 1997, new activity beginning solar cycle 23 was detected at 1 AU by the IMP-8, in Earth orbit, and ACE, in halo orbit. The activity manifests itself as classical cosmic ray modulation effects with enhanced magnetic fields associated with decreased energetic charged particles.

These solar originating disturbances propagate outwards in the heliosphere and have been observed by the twin Voyagers at 56 and 72 AU. The specific events of April/May 1998 observed at 1 AU were not detected by V1 and V2 until Sept./Oct. 1998.

Figure 1 (page 2) presents Voyager 2 observations of an increase/decrease of cosmic rays, interval B, with simultaneous observations of the enhanced interplanetary magnetic field, indicated by the vertical dashed lines. The solar wind velocity is also shown but displays no characteristic shock-like structure, possibly due to the heliospheric latitude of 24 deg S.

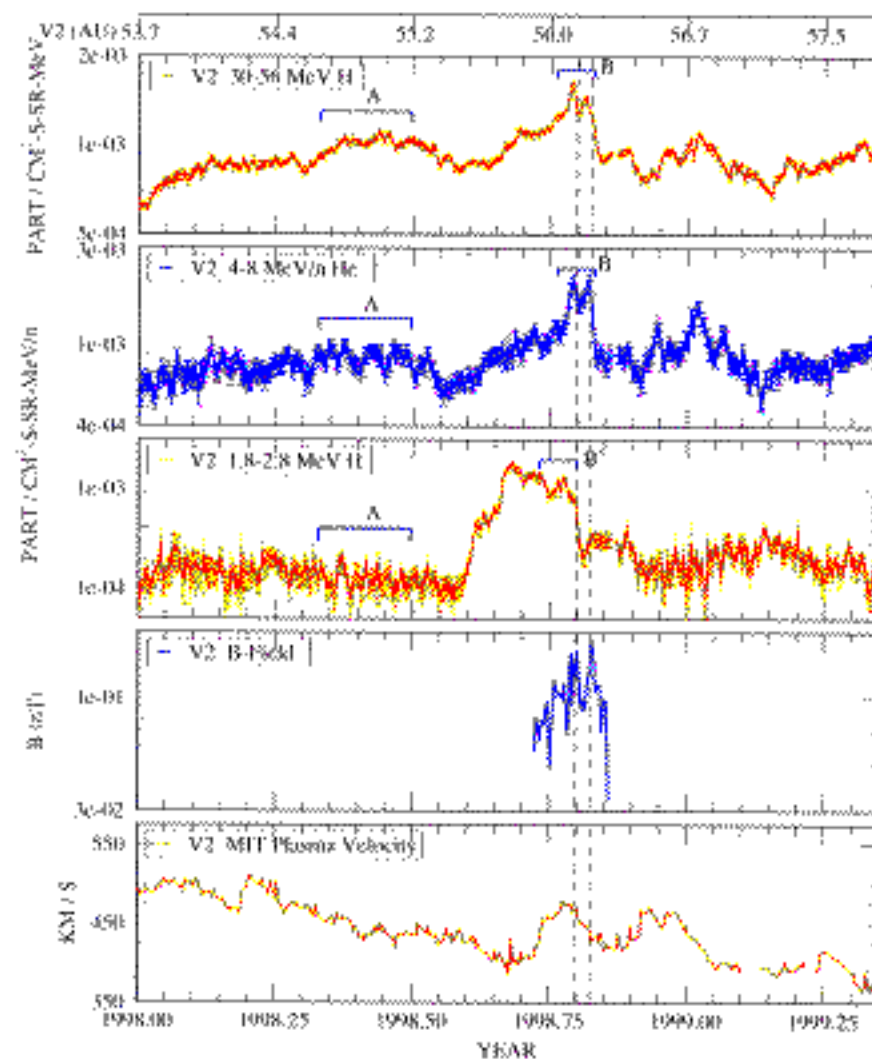
Figure 2 (page 3) shows Voyager 1 observations with similar cosmic ray and magnetic field changes.

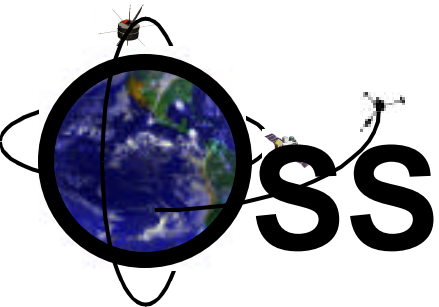
As solar activity increases and more disturbances are observed by V1 and V2, we will be able to identify asymmetries in the structure of the disturbances as they propagate out into the heliosphere or infer asymmetries of the heliosphere itself as it interacts with the local interstellar medium.



New Solar Cycle Activity Detected at 56 AU by Voyager 2

- **New activity beginning solar cycle 23 detected 11/97 at 1 AU.**
 - Manifests as classical cosmic ray modulation.
- **Events of April/May 98 observed 5 months later by V1 & V2 at 56 and 72 AU.**
- **No characteristic shock-like structure at V1 & V2.**
- **V1 & V2 observations reveal spatial asymmetries in the disturbances and/or the heliosphere.**





New Solar Cycle Activity Detected at 72 AU by Voyager 1

- **New activity beginning solar cycle 23 detected 11/97 at 1 AU.**
 - Manifests as classical cosmic ray modulation.
- **Events of April/May 98 observed 5 months later by V1 & V2 at 56 and 72 AU.**
- **No characteristic shock-like structure at V1 & V2.**
- **V1 & V2 observations reveal spatial asymmetries in the disturbances and/or the heliosphere.**

