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Abstract

The Global Heliophysics Observatory for IPY-IHY 2007 – 2009

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The present legacy of the International Geophysical Year 1957-1958 and the subsequent fifty years to the present International Heliophysical Year 2007-2009 is a great armada of spacecraft, suborbital rockets and balloons, and ground-based instrumentation projects that now constitute the Global Heliophysics Observatory (GHO). The spacecraft missions span the domain of space from the inner heliosphere to the outer heliosphere, the orbital geospace environment of Earth, and the space environments of planets including the Moon, Mars, and Saturn. Even for a primarily planetary science mission like Cassini Orbiter at Saturn there is strong connection through remote auroral and SKR radio observations to externally incident effects of the interplanetary solar wind. Among the epochal mission events for this IHY are the emergence of both Voyager spacecraft from the heliospheric bubble of supersonic solar wind flow, the three polar solar orbits of Ulysses, and the first correlative multiple smallsat and ground-based station network for understanding auroral dynamics and energy sources. In the suborbital domain the ongoing series of high-altitude balloon flights from Antarctica and the global network of ground-based stations contribute vast amounts of data for correlation to in-situ space activity measured in-situ by spacecraft. Discover and access to data and descriptive metadata from GHO is increasingly now being facilitated by the emergent network of virtual observatories. By example the author's Virtual Energetic Observatory (VEPO) is discussed for illustration of virtual observatory capabilities.