

IMAGE-CLUSTER SCIENCE SYNERGY

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A fortuitous aspect of the delay of the ESA Cluster Mission is that IMAGE and Cluster are now flying together, complementing each other as magnetospheric macroscope and microscope, respectively. IMAGE provides global to mesoscale context observations, while Cluster provides a high resolution *in situ* probe of conditions within the imaging space of IMAGE. In this paper, we describe some of the IMAGE observations that provide context for *in situ* observations from Cluster. These include ENA and RPI observations of the dayside solar wind interaction with the magnetosphere; ENA imaging of ionospheric heating and outflow, of plasma sheet injection into the ring current, and of ring current development and decay; FUV imaging of auroral development in substorms and storms; EUV observations of dynamic inner magnetospheric plasma flows; and RPI observations of magnetospheric plasma boundaries and their dynamics. Conversely, we describe some of the Cluster observations that help to diagnose processes that influence the global distribution of magnetospheric plasmas and their precipitation patterns. These include CIS, Peace, and RAPID observations of solar and ionospheric plasma populations at high altitudes near the magnetopause and in the magnetotail, FGM, EFW, and EDI observations of electric and magnetic fields during substorm and storm events, and WHISPER, WBD, DWP, and STAFF observations of waves and field fluctuations in association with events and boundary regions.