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Energetic Neutral Atom (ENA) Measurements on IMAGE: A Technological Review

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The IMAGE spacecraft was launched in March of 2000. IMAGE was the first US mission dedicated to magnetospheric remote imaging. The scientific payload includes ENA imagers for low (LENA) [1], medium (MENA) [2], and high (HENA) [3] energy neutral atoms. The ENA observations acquired by IMAGE have revealed global dynamic and thermal characteristics of the storm-time and quiet-time ring current, the role of the plasma sheet in supplying ring current plasma, details of the plasma pressure distributions that drive Region 2 field aligned currents, and a fast neutral component in the solar wind flow. The three ENA imagers flown on IMAGE represent three very different technological approaches to the measurement tasks in the three energy ranges. We will provide a review of the salient features of the three instruments, highlighting the challenges and the most important lessons to take forward into future instrument generations.

References

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