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PLENARY: Recent progress in understanding very low frequency waves, high energy particles, and the coupled inner magnetospheric environment.

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Abstract content
 (Max 300 words)

In the 50 years since the discovery of the Earth's high-energy radiation belts, much progress has been made in understanding the characteristics and dynamics of this highly variable population of particles. The need to understand and particularly forecast relativistic electron fluxes, is made more urgent by the large (and ever increasing) number of satellites that are embedded in this hazardous region of space, representing various functions such as global positioning, weather monitoring, communications, military surveillance, and many others. In this talk, I will briefly survey the history of radiation belt research to the present time, discuss some of the natural (very low frequency) plasma waves that appear to play key roles in controlling the dynamics of the radiation belts, and illustrate how these waves fit into the broader picture of the coupled inner magnetospheric environment. Particular attention will be paid to results from the recently launched Van Allen Probes, that are recording in unprecedented detail the radiation environment as the sun awakens from its long and deep solar minimum.

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