

EGU22-901

<https://doi.org/10.5194/egusphere-egu22-901>

EGU General Assembly 2022

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## **Ion dynamics in the inner magnetosphere during Van Allen Probe Era**

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Ion dynamics are controlled by the energy-dependent source, transport, energization, and loss processes. Systematic changes in the ion dynamics are essential to understand the ring current variations in the inner magnetosphere. The Van Allen Probes mission, which orbits near the equatorial plane inside the geosynchronous orbit, has a wide energy coverage with high energy resolution and state-of-the-art ion composition instrumentation. It provides a great opportunity to investigate plasma dynamics. In this talk, I will present some of our recent studies on the ion dynamics of different populations and species as well as the related plasma wave activity during geomagnetic quiet and active times.