

## Longitudinal Structure of Oxygen Torus in the Inner Magnetosphere: Simultaneous Observations by Arase and Van Allen Probe A

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Simultaneous observations of the magnetic field and plasma waves made by the Arase and Van Allen Probe A satellites at different MLT enable us to deduce the longitudinal structure of an oxygen torus for the first time. During 04:00-07:10 UT on 24 April 2017, Arase flew from L=6.2 to 2.0 in the morning sector and detected an enhancement of the average plasma mass up to ~3.5 amu around L=4.9-5.2 and MLT=5.0 hr, implying that the plasma consists of approximately 15% O<sup>+</sup> ions. Probe A moved outbound from L=2.0 to 6.2 in the afternoon sector during 04:10-07:30 UT and observed no clear enhancements in the average plasma mass. For this event, the O<sup>+</sup> density enhancement in the inner magnetosphere (i.e., oxygen torus) does not extend over all MLT but is skewed toward the dawn, being described more precisely as a crescent-shaped torus or a pinched torus.