

## Data assimilation to resolve the ring current structure

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We developed a method to assimilate a series of the data from the HENA (high-energy neutral atom) imager on board of IMAGE into a kinetic ring current model by using the particle filter. We assumed magnetospheric electric field distribution to be unknown, and it was estimated the electric field distribution in the course of the data assimilation process. In order to test this scheme, we performed a twin experiment; that is, we tested this scheme by using test data generated by another simulation model with different electric field model. We confirmed that the data assimilation produced a result consistent with the simulation model which generates the test data.