Global mapping of ionospheric plasma velocity distributions using spherical elementary current systems based on SuperDARN data

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We have developed a method for estimating the global distribution of ionospheric plasma velocity from the SuperDARN data. The SuperDARN observations have a wide spatial coverage. However, it is difficult to obtain a global ionospheric convection map from the SuperDARN data because individual radars give only line-of-sight components of plasma drift velocity and the data are frequently missing. In our technique, the plasma velocity distribution is represented by a sum of divergence-free spherical elementary current systems, which provides a constraint ensuring the divergence free condition. In this paper, we will demonstrate a preliminary results obtained by our newly developed method.

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