

Three step evolution of a substorm auroral bulge expansion

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We have analyzed an auroral substorm event observed by the UV auroral imager aboard AKEBONO. It was shown that there were following three stages in an auroral bulge evolution during the expansion phase.

Stage 1: Rapid poleward expansion to a certain latitude with asymmetrical rapid azimuthal expansion.

Stage 2: Poleward expansion was extremely slowed, and azimuthal expansion was continuous with almost same speed both in westward and eastward directions.

Stage 3: This stage started about 11 minutes after the onset. Significant poleward expansion was restarted around the initial onset meridian, and azimuthal expansion was accelerated and became more asymmetrical.

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