

This file contain an overview of the research data and information needed to understand the different files. More information can be found in the corresponding research article Humberstet et. al. (2018).

FluctuatingAurora_5577counts_ASICartesianGrid_1March2012_1500UT-1520UT.tif

FluctuatingAurora_5577counts_ASICartesianGrid_1March2012_1520UT-1540UT.tif

All-sky imager (ASI) movie of fluctuating aurora projected onto a Cartesian grid with uniform spatial resolution, as first described in Humberstet et al. (2016). The Geographic orientation of the Cartesian grid is shown in the supporting information of the article. Information on the all-sky imager used, all-sky imager distortions and the image processing can be found in the article and Humberstet (2017, p. 48-55). Please contact Robert Michell (robert.g.michell@nasa.gov) or Marilia Samara (marilia.samara@nasa.gov) for access to the raw data ASI movies.

Resolution: 512 by 512 pixels, where 1 pixel is 1.0 km wide assuming 110 km altitude.

Frame rate: 3.31 Hz, where the exposure time and image cadence is 0.30176 s.

Start times: 1 March 2012 15:00:00.00000 UT and 15.0000:20:00.403921 UT.

Auroral unit: Counts (conversion to Rayleigh is described in the research article).

CartesianGrid_GeographicLongitude.csv and CartesianGrid_GeographicLatitude.csv

The geographic coordinates in degrees of the 512 by 512 pixels Cartesian grid with uniform spatial resolution of 1.0 by 1.0 km (assuming 110 km altitude).

PatchX_Contours.csv

For each of the patches (1-4): The contours used in the analyses, given as the 1D subscripts of the 512 by 512 pixels Cartesian grid. The contours are of different lengths, -999999 is therefore used for "not a value". The top row is the contour's mage index (beginning at 0) relative to the above movie.

PatchX_Fluctuations.csv

For each of the patches (1-4): The start and end times of the fluctuations given in image index (beginning at 0) of the above movie.

Patches_ApparentVelocities.csv

For each of the patches (1-4): The apparent velocity of the patch in the image movie (geographically oriented Cartesian grid) not corrected for the rotation of the Earth below the aurora. The apparent velocity is assumed constant for as long as we follow the patch.

SuperDARN_ExBvelocities.csv

The SuperDARN **ExB** velocities behind the median vector shown in Figure 11.

References

Humberset, B. K. (2017). Scale size-dependent characteristics of the magnetosphere-ionosphere system using auroral imaging (Doctoral dissertation). Retrieved from <http://hdl.handle.net/1956/16800>.

Humberset, B. K., J. W. Gjerloev, M. Samara, R. G. Michell, and I. R. Mann (2016), Temporal characteristics and energy deposition of pulsating auroral patches, *J. Geophys. Res. Space Physics*, 121, 7087–7107, doi:[10.1002/2016JA022921](https://doi.org/10.1002/2016JA022921).

Humberset, B. K., J. W. Gjerloev, M. Samara, R. G. Michell, and I. R. Mann (2018), On the persistent shape and coherence of pulsating auroral patches, submitted to *J. Geophys. Res. Space Physics*