

Heavy ion outflow from earth's polar regions.

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P299.1

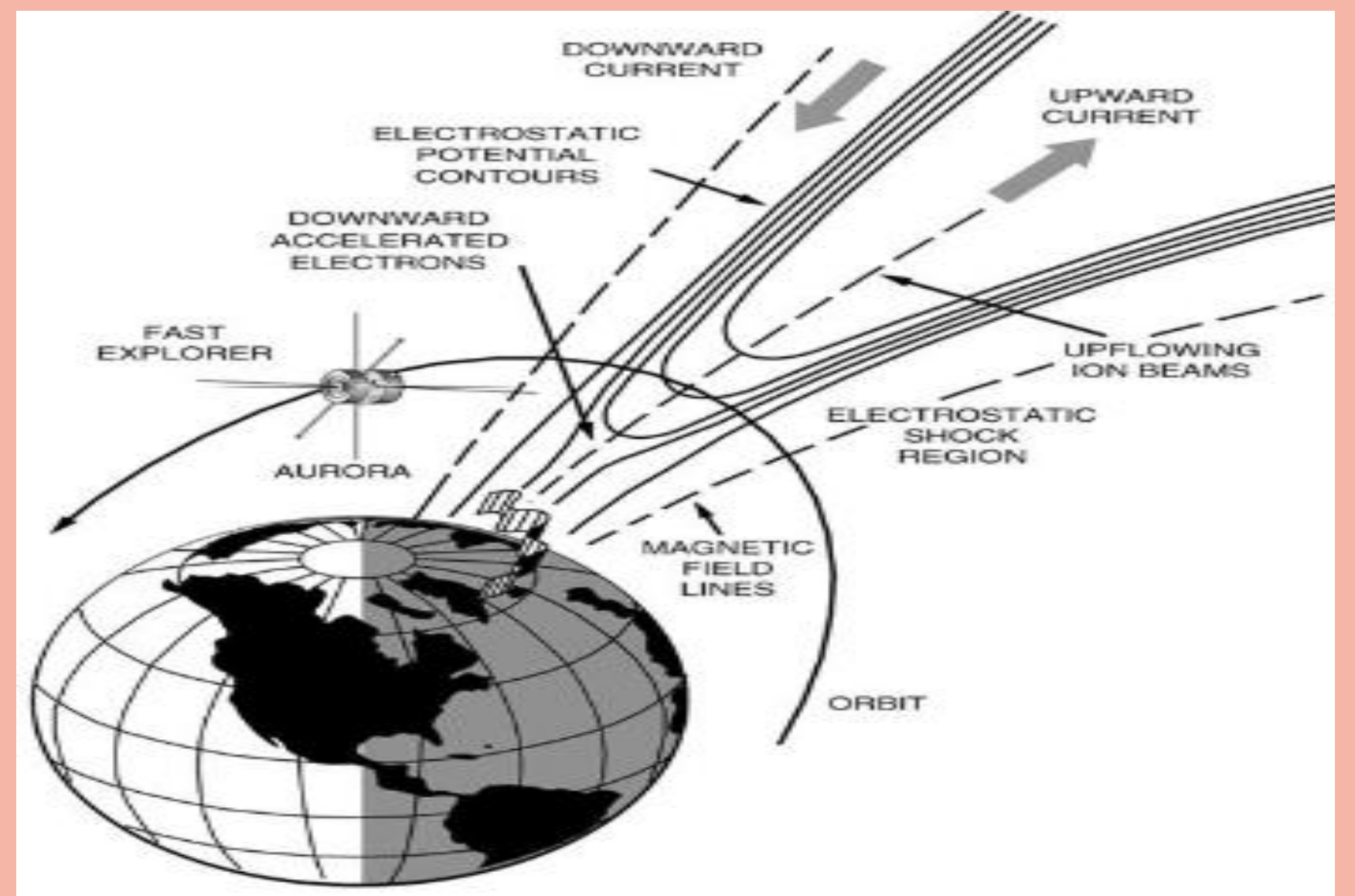


Figure 1 : A sketch of the FAST explorer, its orbit and a series of physical phenomena. This sketch was constructed around FAST's launch and since, has FAST's findings led to the model's heavy revision. Taken from Pfaff et al (2001).

1. Introduction:

This project studied the different variables connected to heavy ion outflow and their influence on said outflow, such as but not limited to solar lighting and energy flux.

Data was gathered from the Fast Auroral Snapshot (FAST) Satellite. It produced significant scientific data from 1996 to 2009 when it ceased operational function.

2. Method:

The database from FAST was used through python to look at various connections with particle flux, when looking through the database a random sample of 10000 datapoints was selected.

3. Result (figure 2) :

From figure 2 there is a clear connection between sunlight and the influx of number flux, we see a relative increase during sunlight (B) versus during dark conditions (C)

4. Result (figure 3) :

From Figure 3 (A) we can see the same results as presented earlier. Figure 3 (a) shows ion outflow values are primarily present in local time 7 to 15 and latitude 75. The same pattern is visible during sunlight (B), however during dark conditions our findings show outflow values skewed outward to sides and pushed slightly lower.

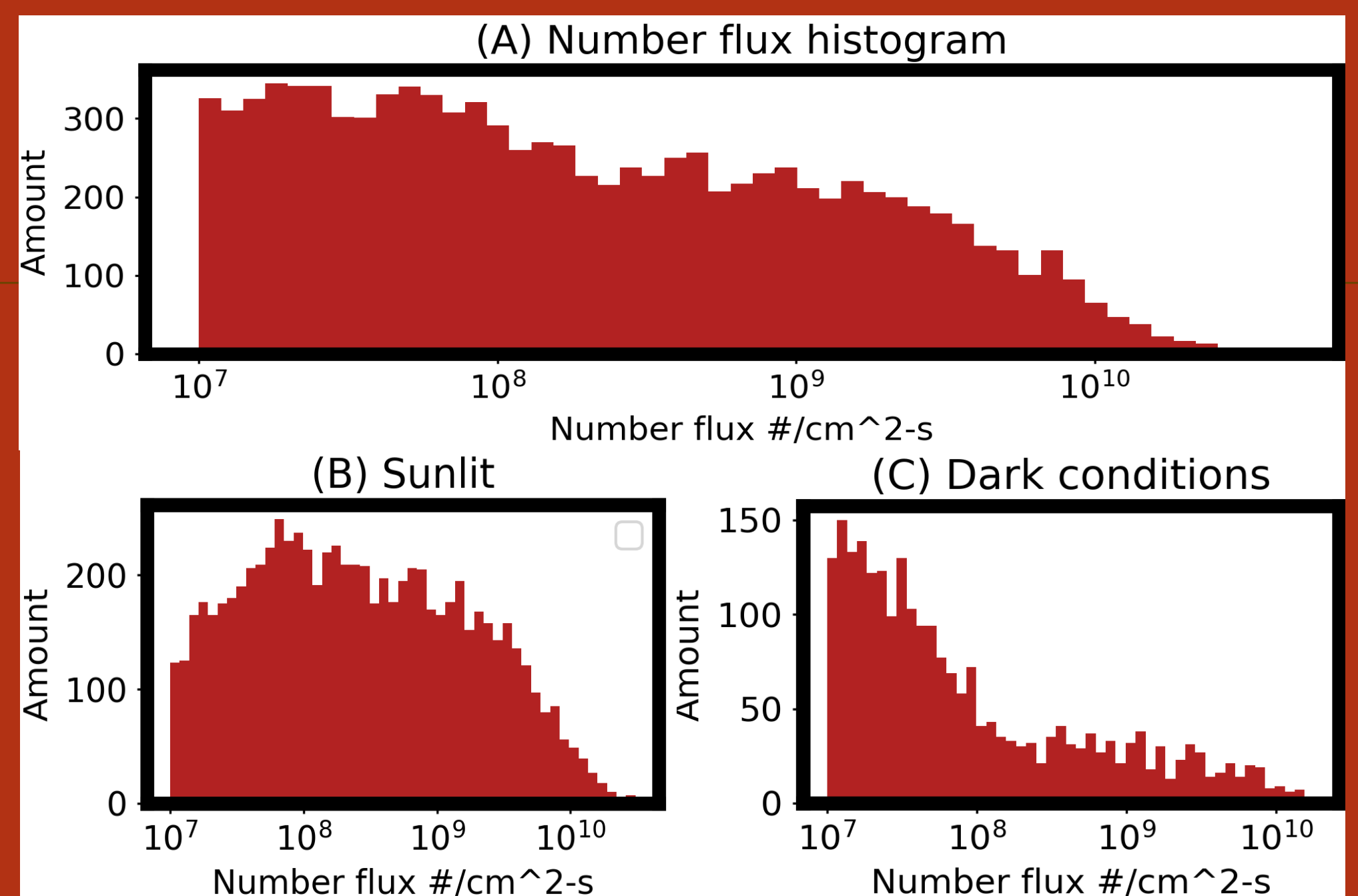


Figure 2: 3 histograms of number flux, the upper (A) shows the whole sample of number flux while, the lower (B) and (C) shows number flux under sunlight and dark conditions

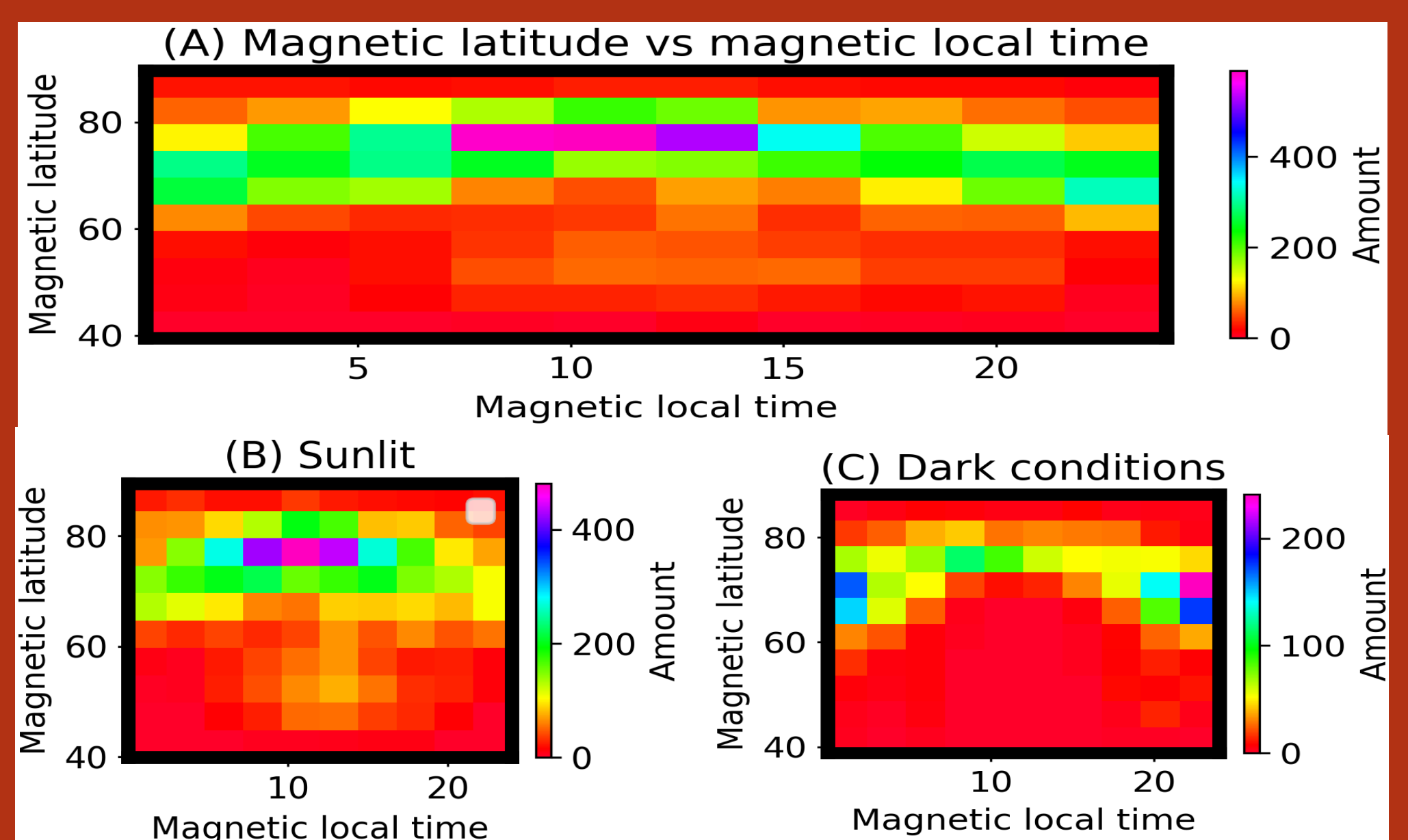
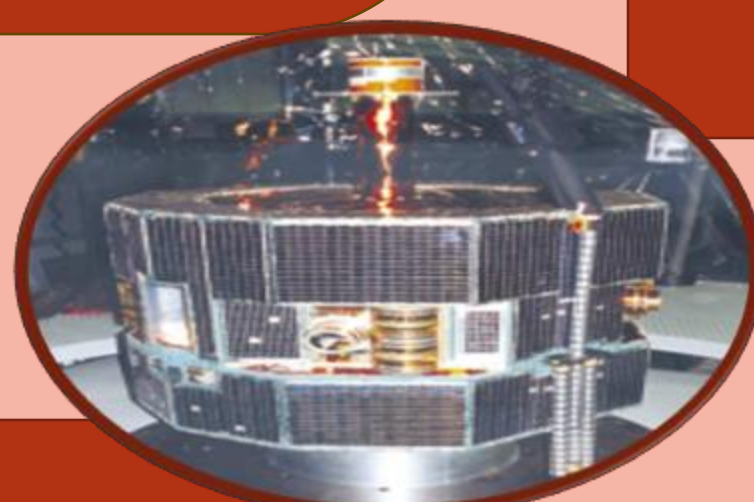


Figure 3: Statistics of ion outflow observations. The top panel (A) shows outflow versus magnetic latitude and magnetic local time. Panels at lower left (B) and lower right (C) respectively show outflow observations sorted into sunlight and dark conditions.



References:

R. Pfaff, C. Carlson, J. Watzin, D. Everett, T. Gruner. 2001. An Overview of the Fast Auroral Snapshot (FAST) Satellite. [1]

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