

THE QUADRUPOLE IONOSPHERE

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The paper discusses the principal features that might exist in the terrestrial ionosphere if the geomagnetic field were to assume a quadrupole form during a magnetic polarity reversal. Two possible configurations are considered, the "axial quadrupole" (Fig. 1) and the "lateral quadrupole" (Fig. 2). Interesting phenomena are anticipated in "magnetic equatorial" regions where the field is horizontal, and fast magnetospherically-driven plasma convection might occur at latitudes where the field is steeply inclined.

The general effect of changes of field strength on conductivity is considered; a weaker field raises the ionospheric conducting layer and enhances the conductivity; a stronger field lowers the height of the conducting layer and decreases the conductivity.

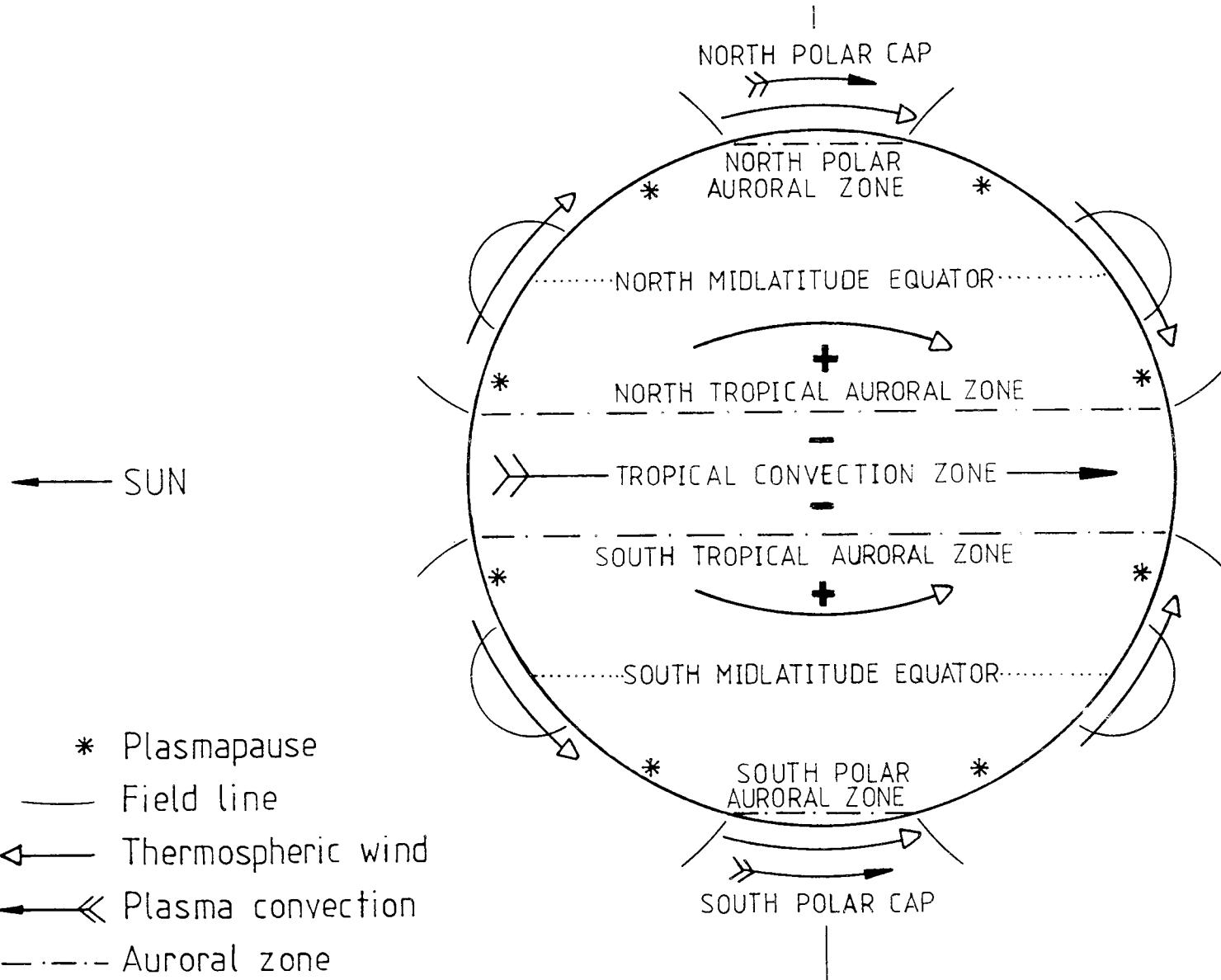


Figure 1.

← SUN

- Neutral axis
- * Plasmapause
- Field line
- ← Thermospheric wind
- ← Plasma convection
- Auroral zone

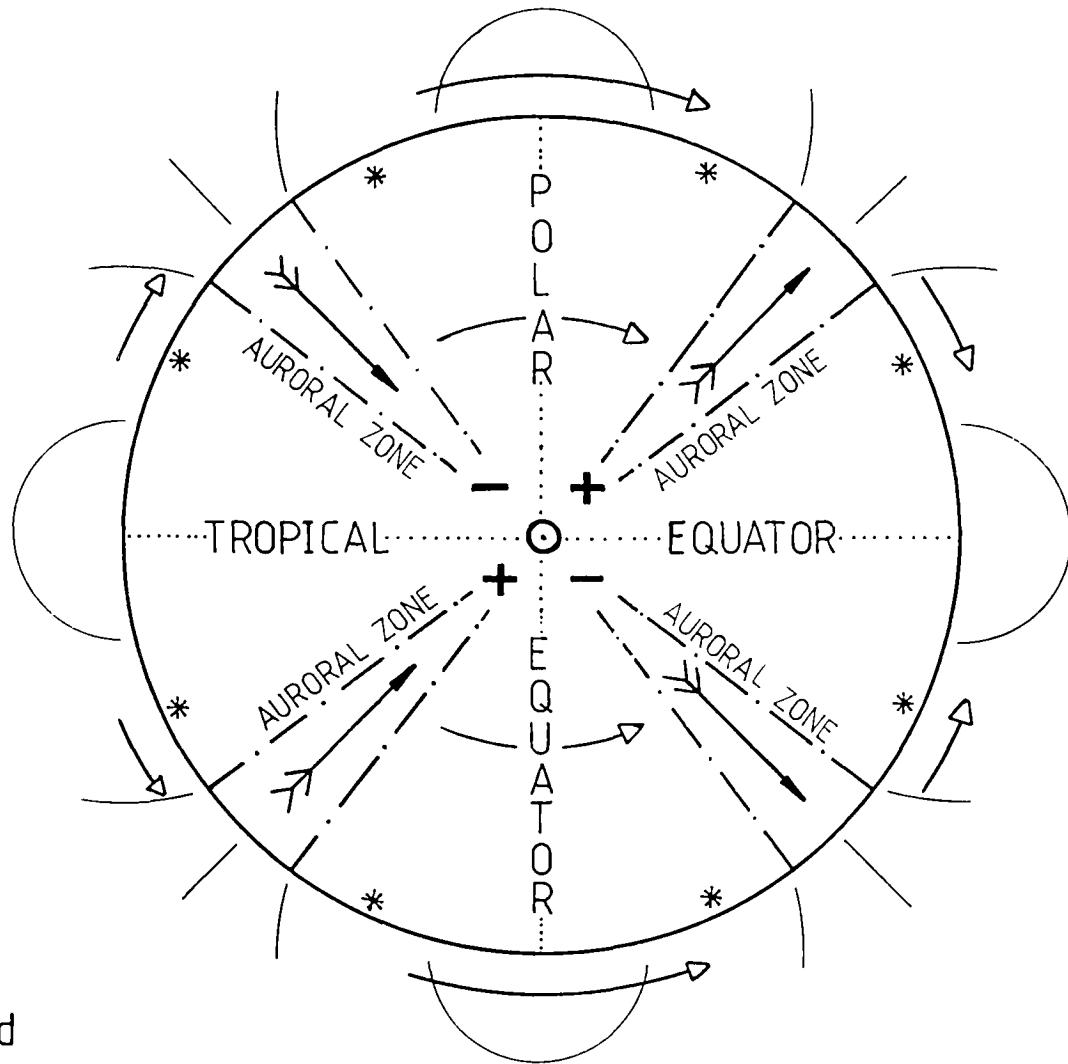


Figure 2.