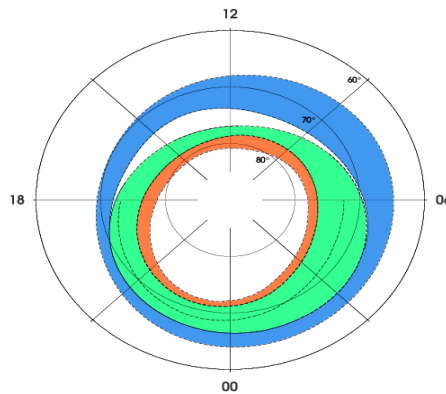


## Advanced separation and classification of ionospheric troughs in midnight conditions

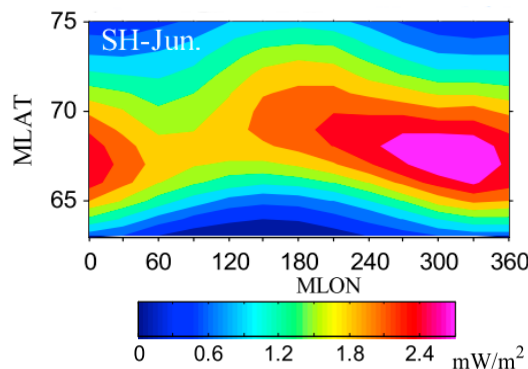
Karpachev A.T.

### The model of the auroral oval of precipitation

The model of auroral particle precipitation is based on data from a large set of DMSP satellites in the Northern and Southern hemispheres [17]. The model is uploaded on the website of the Polar Geophysical Institute: <http://apm.pgia.ru>. Figure S1 shows this model for quiet conditions  $AL = -10$  nT,  $Dst = -5$  nT ( $Kp \sim 2$ ). As can be seen from Fig.S1, the model describes three main zones of auroral particle precipitation.



**Figure S1.** Model of auroral particle precipitation: diffuse auroral zone I equatorward of aurora (blue), structured auroral oval precipitation (auroral lights region or aurora, green), and soft diffuse precipitation zone II (orange) poleward of aurora.



**Figure S2.** Longitudinal variations in the averaged auroral precipitation energy flux at 21 – 03 MLT under  $Kp = 2$  for the June solstice (Jun.) in southern hemisphere [18]. Note, that plot is presented in geomagnetic longitude MLON.

### References

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