

Mid/Low-Latitude Auroras Observed in Japan During the Solar Maximum Period of 1999-2002

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http://stdb2.stelab.nagoya-u.ac.jp/member/shiokawa/aurora_head.html

We review observations of low-latitude auroras in Japan during the solar maximum period of 1999-2002. Eleven such events during geomagnetic storms were identified. All of them were characterized by enhanced red (630 nm) emissions in the northern sky of Japan. Some of them showed weak enhancements (a few Rayleighs) of N₂⁺(1NG) (427.8 nm) as well, suggesting precipitation of high-energy electrons or energetic heavy ions/neutral atoms. Enhancements in optical emissions for most of these auroras were closely associated with storm-time substorms. We discuss the cause of these red auroras in relation to the stable auroral red (SAR) arcs.