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OCCURRENCES OF SPORADIC-E LAYER OF AURORAL TYPE (ESA) IN THE SOUTH AMERICAN MAGNETIC ANOMALY DURING GEOMAGNETICALLY QUIET CONDITIONS

Juliano Moro, juliano.moro@inpe.br
State Key Laboratory of Space Weather, National space science center, Chinese Academy of Science, Santa Maria, Brazil
Jiyao Xu, xujy@nssc.ac.cn
State Key Laboratory of Space Weather, Center for Space Science and Applied Research, Chinese Academy of Sciences , Beijing, China: Chinese Academy of Sciences (CAS)
Clezio Marcos Denardini, clezio.denardin@inpe.br
National Institute for Space Research (INPE), Sao Jose Dos Campos, Brazil
Laysa Resende, laysa.resende@gmail.com
State Key Laboratory of Space Weather, National space science center, Chinese Academy of Science, São José Dos Campos, Brazil
Ligia Alves Silva, ligia.alves01@gmail.com
1State Key Laboratory of Space Weather, National Space Science Center, Chinese Academy of Sciences, China. 2National Institute for Space Research – INPE, São José dos Campos, SP, Brazil., São Jose Dos Campos, Brazil
Giovana Stefani, giovana.stefani1@gmail.com
Instituto Nacional de Pesquisas Espaciais, Sao Jose Dos Campos, Brazil
Regia Silva, regiapereira@gmail.com
Instituto Nacional de Pesquisas Espaciais, Sao Jose Dos Campos, Brazil
Sony Su Chen, sony.chen@inpe.br
National Institute for Space Research (INPE), São José Dos Campos, Brazil
Carolina Carmo, carolscarmo25@gmail.com
National Institute for Space Research (INPE), S J Dos Campos, Brazil
Giorgio Picanço, giorgio.picanco@inpe.br
National Institute for Space Research (INPE), São José Dos Campos, Brazil
Zhengkuan Liu, zkliu@spaceweather.ac.cn
National Space Science Center, CAS, Beijing, China: Chinese Academy of Sciences (CAS)
Chi Wang, cwang@spaceweather.ac.cn
State Key Laboratory of Space Weather, China Academy of Science, Beijing, China: Chinese Academy of Sciences (CAS)
Nelson Jorge Schuch, njschuch@gmail.com
Southern Regional Space Research Center – CRS/INPE–MCTI, in collaboration with the Santa

Maria Space Science Laboratory – LACESM/CT–UFSM, Brazil , Santa Maria - RS, Brazil

The precipitation of energetic particles from the outer radiation belt can produce very diffuse (spread) traces in ionograms collected at high latitudes. These traces are generally classified as sporadic (Es) layers of auroral type (Esa). However, previous works have also reported the presence of Esa in the ionograms obtained in the low and middle latitudes regions in Brazil during geomagnetic storms. Such behavior was explained in terms of energetic particle precipitation from the inner radiation belt in the region with the global minimum in the geomagnetic field total intensity that characterizes the South American Magnetic Anomaly (SAMA). In the present work, data from a Digisonde installed in Santa Maria (SMK29; 29.7° S, 53.8° W, dip: -37°), near the SAMA's center, is used to investigate the occurrences and characteristics of Esa under geomagnetically quiet conditions. The results demonstrate that the occurrence of Esa over SMK29 shows a strong dependence on local time and season of the year.