




JGR Space Physics

Research Article

First Report of an Eclipse From Chilean Ionosonde Observations: Comparison With Total Electron Content Estimations and the Modeled Maximum Electron Concentration and Its Height

M. Bravo , M. Martínez-Ledesma, A. Foppiano, B. Urrea, E. Ovalle, C. Villalobos, J. Souza, E. Carrasco, P. R. Muñoz, L. Tamblay, P. Vega-Jorquera, J. Marín, R. Pacheco, E. Rojo, R. Leiva, M. Stepanova

First published: 06 August 2020 | <https://doi.org/10.1029/2020JA027923> | Citations: 1

[Read the full text >](#)



PDF



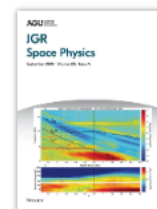
TOOLS



SHARE

Abstract

The ionospheric responses to the total solar eclipse on 2 July 2019 over low latitudes in southern South America are presented. Ionosonde observations were used within the totality path at La Serena (LS: 29.9°S, 71.3°W) and at Tucumán (TU: 26.9°S, 65.4°W) and Jicamarca (JI: 12.0°S, 76.8°W), with 85% and 52% obscuration, respectively. Total electron content (TEC) estimations over the South American continent were analyzed. The ionospheric impact of the eclipse was simulated using the Sheffield University Plasmasphere-Ionosphere Model (SUPIM) at the Instituto Nacional de Pesquisas Espaciais (INPE). The significant variability of the diurnal variations of the various ionospheric characteristics over equatorial and low latitudes on geomagnetically quiet days makes it difficult to unambiguously determine the ionospheric responses to the eclipse. Nonetheless, some specific issues can be derived, mainly using simulation results. The *E* and *F1* layer critical frequencies and densities below 200 km are found to consistently



Volume 125, Issue 9
September 2020
e2020JA027923



Related



Information

Metrics

Citations: 1



score

4

Details

©2020. American Geophysical Union. All Rights Reserved.



Check for updates

Research Funding

DOD | USAF | AFMC | Air Force Office of Scientific Research (AFOSR). Grant Number: FA9550-19-1-0384, FA9550-1-0139

Fondo Nacional de Desarrollo Científico y