

# VII Simpósio Brasileiro de Geofísica Espacial e Aeronomia

05 a 09 de Novembro de 2018 - CRS/COCRE/INPE, UFSM - Santa Maria - RS

## THE EMBRACE MAGNET FOR SOUTH AMERICA: READY FOR SPACE WEATHER STUDIES AND APPLICATION

Denardini, C. M.<sup>70\*</sup> [1]; Chen, S. S. [1]; Resende, L. C. A. [1]; Moro, J. [2,3]; Bilibio, A. V. [1]; Fagundes, P. R. [4]; Gende, M. A. [5,6]; Cabrera, M. A. [7,8]; Bolzan, M. J. A. [9]; Padilha, A. L. [1]; Schuch, N. J. [2]; Hormaechea, J. L. [5,10]; Alves, L. R. [1]; Barbosa Neto, P. F. [1,11]; Nogueira, P. A. B. [12]; Picanço, G. A. S. [1]; Bertolotto, T. O. [1,13]

[1] National Institute for Space Research (INPE),  
Av. dos Astronautas, 1.758, Jardim da Granja, São José dos Campos, SP – ZIP Code: 12227-010, Brazil;

[2] Southern Regional Space Research Center (CRS/COCRE/INPE),  
Av. Roraima, 1000, Camobi, Santa Maria, RS – ZIP Code: 97105-900, Brazil;

[3] China-Brazil Joint Laboratory for Space Weather (CBJLSW/NSSC/CAS),  
Av. dos Astronautas, 1.758, Jardim da Granja, São José dos Campos, SP – ZIP Code: 12227-010, Brazil;

[4] Universidade do Vale do Paraíba (UNIVAP),  
Av. Shishima Hifumi, 2911, Urbanova, São José dos Campos, SP – ZIP Code: 12244-000, Brazil;

[5] Universidad Nacional de La Plata (UNLP),  
Paseo del Bosque s/n, FWA, B1900 La Plata, Pcia de Buenos Aires, Argentina;

[6] Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET);

[7] Universidad Nacional de Tucumán (UNT),  
San Miguel de Tucumán, Tucumán, Argentina;

[8] Universidad Tecnológica Nacional (UTN),  
San Miguel de Tucumán, Tucumán, Argentina;

[9] Universidade Federal de Jataí (UFJ),

BR 364, km 195, 3800, Jatobá, Jataí, GO – ZIP Code: 75801-615, Brazil;

[10] Estación Astronómica Rio Grande (EARG), Universidad Nacional de La Plata (UNLP), Rio Grande, Terre del Fuego, Argentina;

[11] Centro Universitário Salesiano de São Paulo (Unisal - Campus São Joaquim),  
R. Dom Bosco, 284, Centro, Lorena, SP – ZIP Code: 12600-100, Brazil.

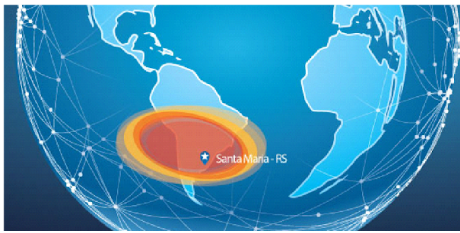
[12] Federal Institute of São Paulo (IFSP),  
R. Antônio Fogaça de Almeida, 200, Jardim Elza Maria, Jacareí, SP – ZIP Code: 12322-030, Brazil;

[13] University of Taubaté (UNITAU),  
R. Quatro de Março, 432, Centro, Taubaté, SP – ZIP Code: 12020-270, Brazil.

### ABSTRACT

In present work, we present the new Embrace Magnetometer Network (Embrace MagNet) in South America, which is originally planned to cover most of the eastern portion of the Southern America longitudinal sector by installing and operating fluxgate magnetometer stations. We discuss the purpose and scientific goals of the network, associated

<sup>70\*</sup> Clezio Marcos De Nardin (clezio.denardin@inpe.br)



## VII Simpósio Brasileiro de Geofísica Espacial e Aeronomia

05 a 09 de Novembro de 2018 - CRS/COCRE/INPE, UFSM - Santa Maria - RS

with the aeronomy and space weather. We provide details on the instrumentation, location of the sensors, sensitivity matching process, gain matching process, and magnetometer installation. In addition, we present and discuss details about the data storage, near-real time display and availability. We provide some of the first scientific findings that we have already achieved with this network. We identified the diurnal and the seasonal natural variations of the  $H$  component. We provided the precise determination of sudden storm commencements and sudden impulse. We showed that the  $\Delta H$  amplitudes derived from the Embrace MagNet during intense magnetic storm are in very good agreement with the Dst index. We showed that it is possible to investigate the effects on the solar quiet ionospheric current system as a response to the X-class solar flares occurring during daytime under magnetically quiet conditions.