On the Correspondence of the Magnetic Measurements by the Made by the EMBRACE Magnetic with Respect to the Absolute Measurements made by the Intermagnet at the Same Observatory

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The Embrace Magnetometer Network (Embrace MagNet) is a network of three-axis fluxgate magnetometers using single bars with high level of magnetic saturation, covered with two copper coils, one for the excitation and the second for sensing the external field. It is planned to cover most of the Easter Southern American longitudinal sector in order to fulfill the gap for magnetic measurement available on-line. The availability of fast internet, reliable energy supply and easy access were the key point for deciding the location of the magnetometer stations of the network. Up to now, the main characteristic of this network is the severe sensibility matching process among all the magnetometers composing it. Now, in order to validate the magnetic data collected by the elements of the Embrace MagNet in comparison to absolute measurements, we performed a study about the correlation between the data collected by the fluxgate magnetometer provided by Embrace MagNet and an absolute magnetometer installed by INTERMAGNET in the same observatory. For this study, we have used data collected in Vassouras-RJ, in Brazil, covering the period from June 2015 to May 2016. The analysis consist of: (a) selecting the 5 quietest days and the 5 most disturbed days of each month based on the Kp index; (b) deducing the local midnight value from the data collected by both instruments; (c) correlating the data collected by the variometer with the absolute measurement day-by-day; (d) grouping the results as Winter (May, June, July, and August), Summer (November, December, January and February) and Equinox (March, April, September and October); (e) obtaining the linear correlations factor for each group. The averaged correlation factors and the daily variations of the magnetic measurements are presented and discussed in terms of the magnetic activity and the season variation.