One century of data from Vassouras Magnetic Observatory (1915-2015)

Artur Benevides, Edwin Camacho*, Vitor Silveira, Israelli Rodrigo, Rodrigo Melhorato e Kátia Pinheiro

Observatório Nacional

Introdução

- Vassouras Magnetic Observatory (VSS) was the first observatory in Brazil, starting its measurements in 1915.
- VSS is part of the INTERMAGNET since 1999 because of its high data quality and transmission in real time.
- This work presents the history of VSS as well as the centennial dataset (1915-2015). We explore the comparison of VSS data and results of IGRF model
- Presentation of Sq and storm data and comparison with CHAOS model
- The main characteristics of the secular variation in VSS
- The possible geomagnetic jerks occurring in this period.

Geomagnetic field (1915-2015)

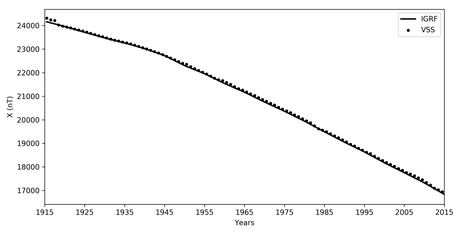

Figura: 1. Root means square (RMS) between VSS data and IGRF model (X component) is 0.25 (%)

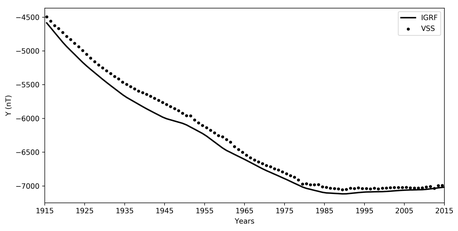

Figura: 2. RMS (Y component) = 1.98 (%)

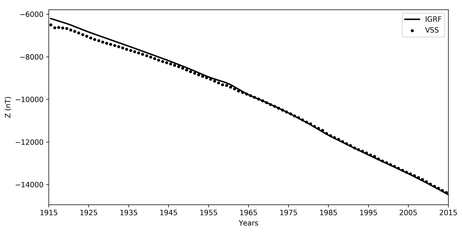

Figura: 3. RMS (Z component) = 1.22 (%)

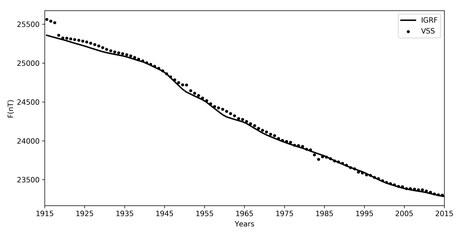

Figura: 4. RMS (Intensity F) = 0.19 (%)

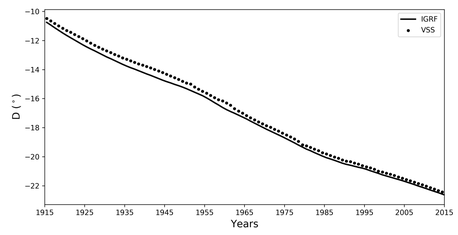

Figura: 5. RMS (Inclination) = 1.1 (%)

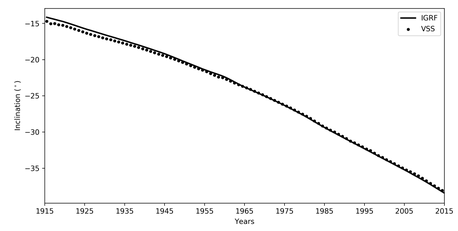

Figura: 6. RMS (Declination) = 1.88 (%)

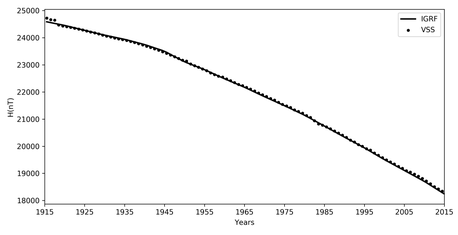

Figura: 7. RMS (H component) = 1.98 (%)

Sq and Storm days

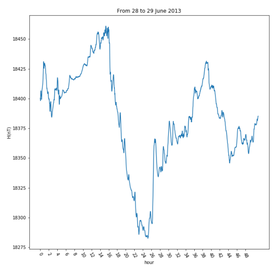

Figura: 8.

Geomagnetics Jerks

Possible ocurrence of geomagnetic jerks.
Analyzing the X, Y and Z components:

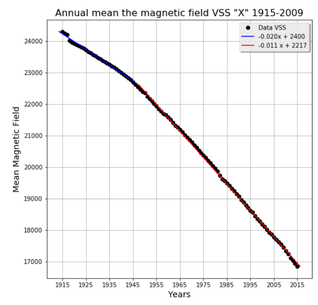

Figura: 9.

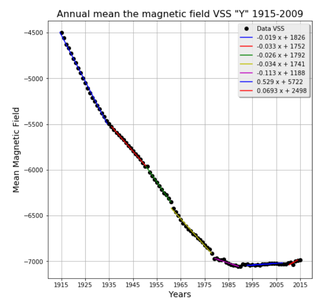

Figura: 10.

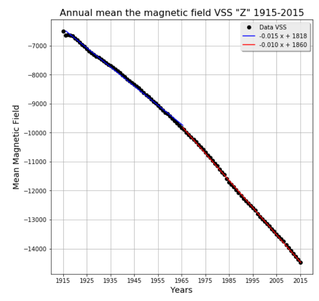

Figura: 11.

Analyzing the secular variations for spline fits:

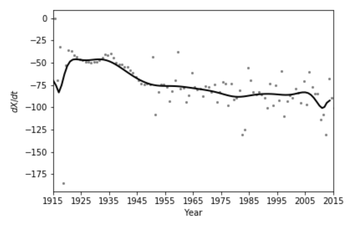

Figura: 12. Secular variation to X component

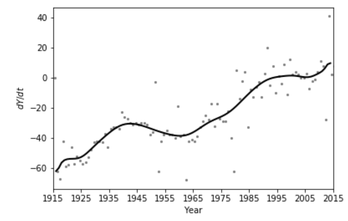

Figura: 13. Secular variation to Y component.

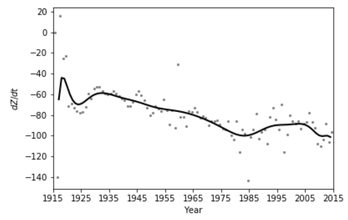

Figura: 14 Secular variation to Z component.

VSS

VSS

Year	Equipament	sampling (accuracy)
1999		

Referencias