

# **Supplementary Materials of**

## **Are There One or More Geophysical Couplings Mechanisms before Earthquakes?**

### **The Case Study of Lushan (China) 2013**

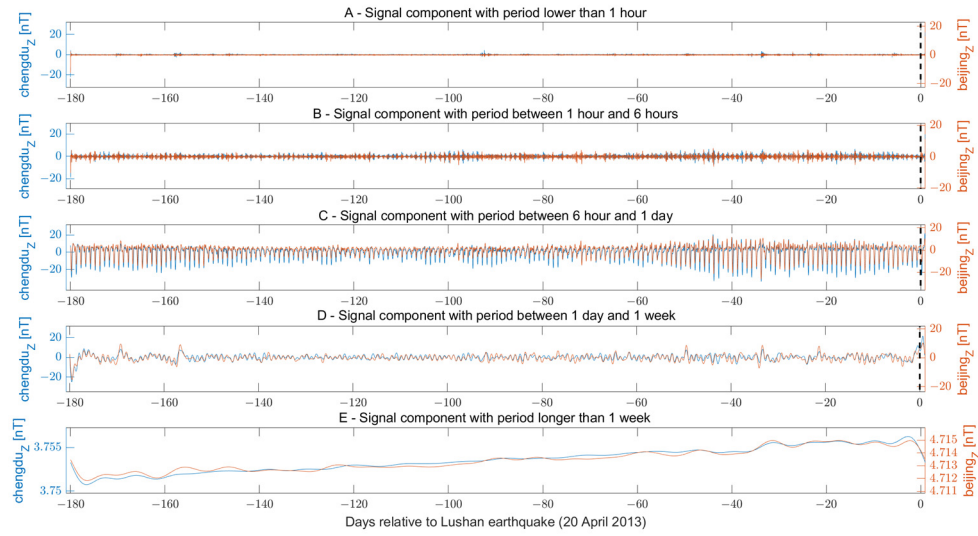
Yiqun Zhang<sup>1</sup>, Ting Wang<sup>1</sup>, Wenqi Chen<sup>1</sup>, Kaiguang Zhu<sup>1</sup>, Dedalo Marchetti<sup>1,\*</sup>, Yuqi Cheng<sup>1</sup>, Mengxuan Fan<sup>1</sup>, Siyu Wang<sup>1</sup>, Jiami Wen<sup>1</sup>, Donghua Zhang<sup>1</sup>, Hanshuo Zhang<sup>1</sup>.

1 College of Instrumentation and Electrical Engineering, Jilin University, Changchun 130061, China

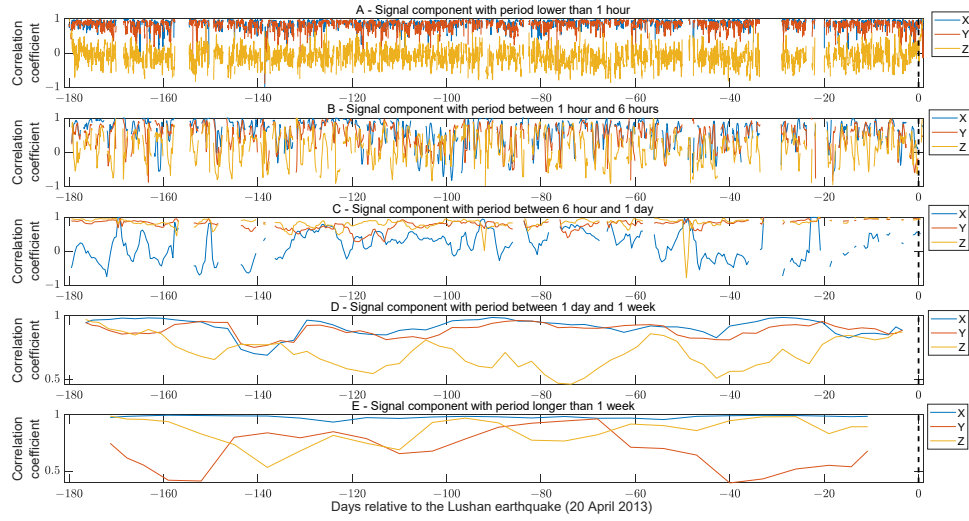
\* Correspondence: dedalomarchetti@jlu.edu.cn; Tel.: +86 18936866083

#### **List of the Supplementary figures:**

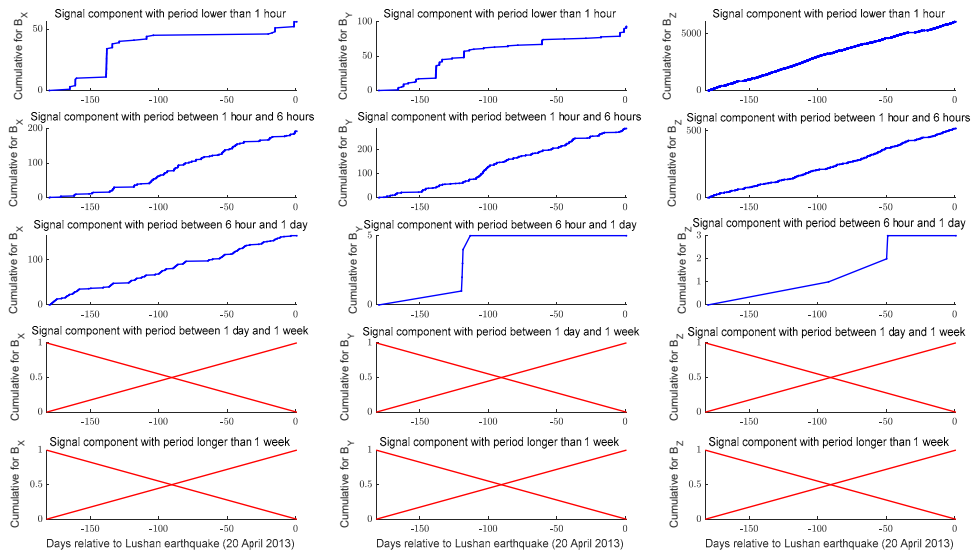
1. Z(vertical) component of geomagnetic data from CDP and BMT ground observatories.
2. Correlation coefficient calculated by a moving window on geomagnetic field measured by CDP and BMT ground observatories.
3. Cumulative graphs of the uncorrelated ( $|r| < 0.3$ ) windows for the three components and the 5 frequency bands.
4. Maps of the total latent energy flux on all the anomalous days, except 4 April 2013.
5. Linear and 2-order polynomial fits of TEC in function of Sunspot



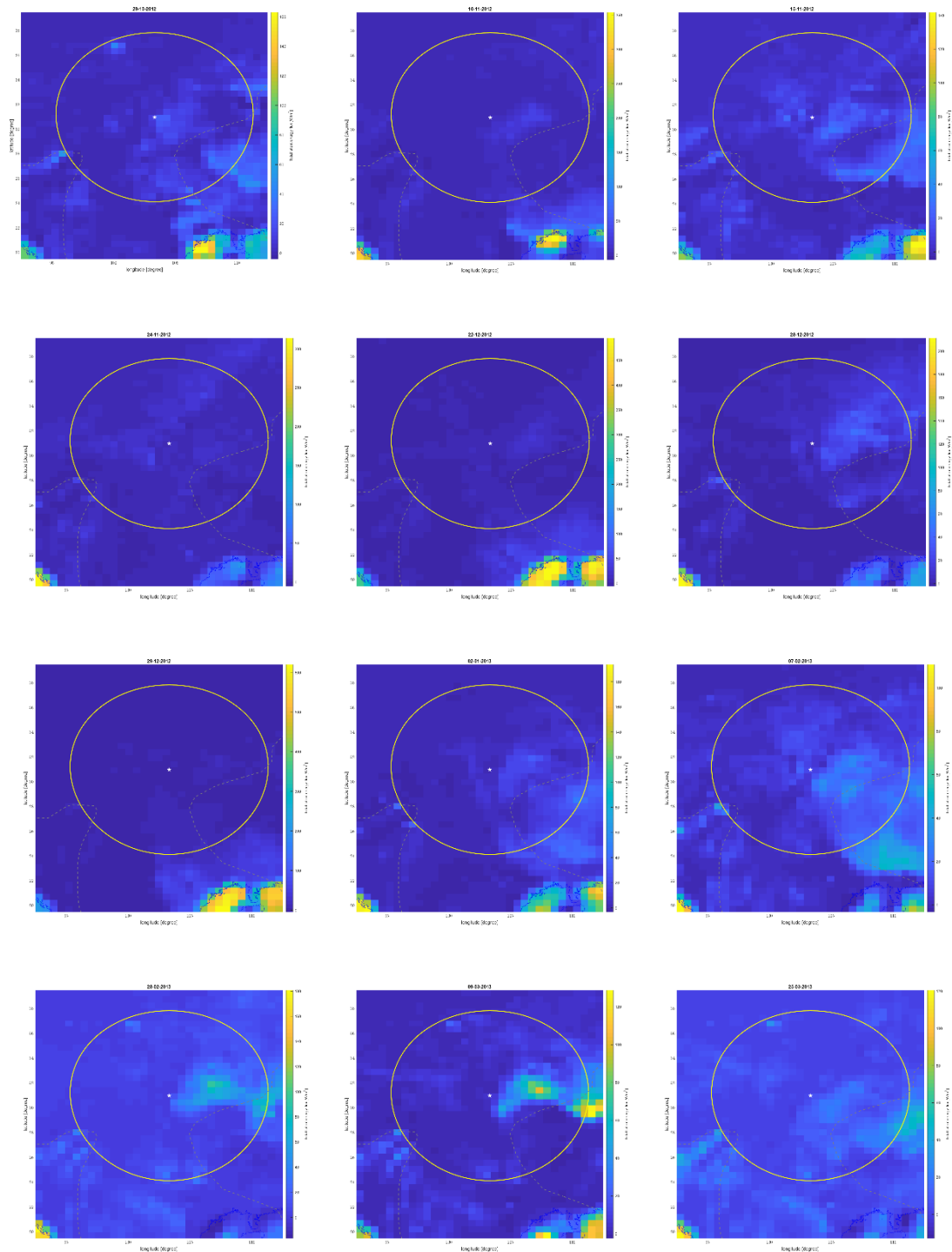
**Figure S1** Z(vertical) component of geomagnetic data from CDP (chengdu, blue lines) and BMT (beijing, orange lines) ground observatories. The data have been filtered into 5 frequency bands, which are defined on A: signal component with a period higher than 1 hour; B: signal component with a period between 1 hour and 6 hours; C: signal component with a period between 6 hours and 1 day; D: signal component with a period between 1 day and 1 week and E: signal component with a period longer than 1 week.



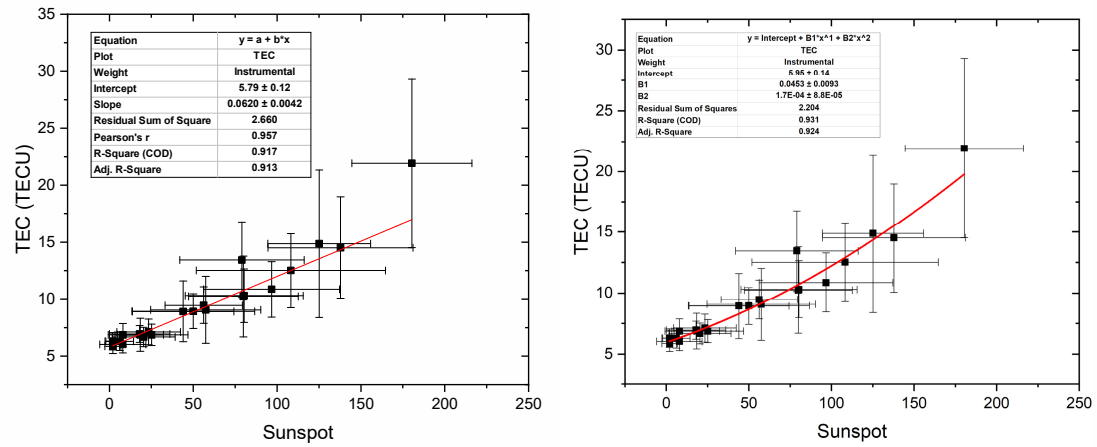
**Figure S2.** Correlation coefficient calculated by a moving window on geomagnetic field measured by CDP and BMT ground observatories.



**Figure S3.** Cumulative graphs of the uncorrelated ( $|r| < 0.3$ ) windows for the three components and the 5 frequency bands. If no uncorrelated windows for a specific component and frequency band are detected, a red cross is represented.



**Figure S4.** Maps of the total latent energy flux on all the anomalous days, except 4 April 2013.



**Figure S5.** Linear and 2-order polynomial fits of TEC in function of Sunspot. The best-fit coefficients and the statistical parameters of the goodness of fits are reported in the embedded table.