In Yao et al's paper "Background noise estimation of geomagnetic signal", they develop a method to estimate geomagnetic background noise through a fast Fourier transform with polynomial degree of 160. Autocorrelation function of estimated background noise and the spectrum analysis further confirm that this method is correct and effective. This analysis gives evidence that background noise removing is necessary and the estimated background noise value is important in geomagnetic anomaly research. I think it deserves publication in GI, after some minor changes/points to be answered.

1. In this paper, the method of background noise calculation is based on the quietest days, how about the normal days and disturbed days?
2. Authors put forward a discussion that FFT-filtered data with polynomial degree more than 160 could represent the original geomagnetic signal with period less than 540s. Avoiding over-processioning, they choose Z component in the quietest days as analysis object. I think this dispose is effective but not strict. Some short-period variation such as pulsations also occur in quietest days and be recorded in Z component, although that may have no impact on the estimation result. I suggest they could calculate SNR of geomagnetic signal based on part of data that does not contain any short period variations in actual estimation.
3. The "spectrum" was appearance many times, but in some parts it is not proper. Such as in P4 Line 87, P3 Line 90, P4 Line 95 and P4 Line 98, authors used data through inverse Fourier transform based on spectrum not spectrum. Please check that through whole text.
4. P1 Line 32 "methods" should be corrected to "method".
5. P3 Line 75 "Normal daily variation of the geomagnetic field mainly comprises the first through sixth harmonic components" should be corrected to "Normal daily variation of the geomagnetic field mainly comprises the first six harmonic components ". Same as Figure 1
6. P4 Line 101 "through the original curve is smoother" should be corrected to "through the fitted curve is smoother ".