Sincerely thanks for your suggestions and questions.
I do have learned a lot from your comments.

Firstly, I am sorry that I have expressed my object of this paper unclearly. I am not going to evaluate whether RST is valid for earthquake prediction, or if the MODIS LST data is suitable for the extraction of TIR anomalies. I just want to study and evaluate prediction ability of a certain method (RST) applied in a certain area (SIchuan) with use of a certain data (MODIS). If the PPV and TPR are high, it indicates that the prediction ability of this method applied in this area with this data is very well. But if the PPV and TPR is low, they indicate that the prediction ability is limited. The limited prediction ability may be caused by cloud, lack of data, method effectiveness or precision of the data, and, what is the key cause, that has not been studied in this paper. I will check my article carefully and modify the inappropriate, confusing sentences and words. .

Main comments 1,2: Whole paper needs to be rewritten in a better English. In particular some sections, like the paragraph 3.2 (RST methodology) or paragraph 5 (Discussion), are not clear and only after various readings the paper can be understood. The major part of citations should be revised, both in the form (sometime given name is used instead of surname like at line 6 of page 2) and in content (some wrong citations have been used or some important citations miss, as for RETIRA index).
R: The major part of citations should be revised, both in the form (sometime given name is used instead of surname like at line 6 of page 2) and in content (some wrong citations have been used or some important citations miss, as for RETIRA index).
I will rewrite my paper in English and invite a native speaker to help me polish it. And I will check my paper and revise the citations.

Main comments 3: To identify thermal anomalies possibly related to impending earthquakes, you used LST (Land Surface Temperature) products retrieved by the radiance collected by MODIS sensor on board of the polar satellites EOS/AQUA and EOS/TERRA.
Taking in mind that Authors who proposed the RST approach shown the advantages offered by the use of sensors onboard of geostationary platforms instead of sensor onboard of polar satellite packages (see the paper Filizzola, C., N. Pergola, C. Pietrapertosa, and V. Tramutoli (2004), Robust satellite techniques for seismically active areas monitoring: a sensitivity analysis on September 7, 1999 Athens's earthquake, Phys. Chem. Earth, 29(4–9), 517–527, doi:10.1016/j.pce.2003.11.019), since 2004 the major part of RST applications to thermal monitoring of seismogenic areas have been carried out using TIR satellite records acquired by sensors onboard of geostationary satellites (as also you have reported in the your paper). Now, my question is why you prefer to use EOS/MODIS data instead that TIR records collected by sensor on geostationary platforms (e.g. the Japanese MTSAT satellite)?
Moreover, LST (Land Surface Temperature) products have been take in account. LST products are very useful to reduce variability of atmospheric water vapor, but in the computation of LST several approximations are necessary (e.g. emissivity, total water vapour content, ecc.), which should produce errors (also of 4-5 K degree) in the satellite LST estimations. Taking in mind, that thermal anomalies possibly related to seismic activity are of low intensity, wrong LST estimation could mask and/or generate false anomalies. Have you an idea of the impact of this errors on the your

analysis?

R: Firstly, we can compare the MODIS with other kinds of thermal infrared satellite receiving instruments (GMS-5 and AVHRR), in the following table some characteristics have been shown.

Table 1 The characteristics of three kinds of satellite thermal infrared data receiving instruments.

Parameter	GMS-5	AVHRR	MODIS
Spatial resolution/km	5	1	1
Bit	8	10	12
Bands	4	5	36
Thermal Infrared Bands	2	3	6
Band Width		100	20
Scan method	Line-scanning	Line-scanning	CCD-scanning
SNR		9~20	>=500

From the table, it can be concluded that MODIS outperforms other sensors in terms of spatial resolution, data accuracy and Thermal infrared bands. Moreover, it can provide global daily nighttime data which is also suitable for TIR anomalies extraction.

Secondly, some researchers have published papers about the TIR anomalies before earthquakes with use of MODIS LST data or other LST data. D. Ouzounov found evidence for a thermal anomaly LST pattern that is apparently related to pre-seismic activity with use of MODIS LST data(Ouzounov and Freund 2004). And that is a strong evidence to prove that the MODIS LST is also can be used for TIR anomalies study. Moreover, other researchers have also conducted the studies with t MODIS LST data(Choudhury 2005, Panda, Choudhury et al. 2007, Pergola, Aliano et al. 2010). So, I think that MODIS LST data is also suitable for this study.

In this paper, the structure is intact, and to compare different data extraction TIR anomalies is not the purpose, which can be conducted in the coming research.

Main comments 4: Earthquake catalogue (China Seismic Information; http://www.csi.ac.cn/) used to verify possible correlation with TIR anomalies is inaccessible. Please provide a correct URL. Anyway, consulting a different seismic catalogue, i.e. UGSG catalogue (https://earthquake.usgs.gov/earthquakes/search/), using a similar criteria (M≥3.5; Depth >0; region from 25 ℕ to 40 ℕ and from 95 𝔼 to 110 𝔼; time since August 1, 2002 up to April 15, 2018) I found 2369 earthquakes, respect to 3615 seismic events reported in the your paper. A comparable numbers of seismic events, i.e. 3828, is obtained when the USGS catalogue is consulted starting by 1965. Have you use seismic data from 2002 or from 1965? In the first case (i.e. 2002) how you explain this difference (2369 vs 3615)? In the second case (i.e. 1965), because MODIS data are available since 2002, how is possible found some relations among TIR anomalies and earthquakes (before 2002)? In this last case, please provide a correct analysis.

R: http://www.csi.ac.cn is the Chinese Official website to publish the Earthquake information. And I am sorry for that I cannot get on this website either and I do not know why. But I have saved the data downloaded from that website, and I will send it to you in the attachment. I will also search the data on USGS to confirm if they are different. I will answer you this question later.

Main comments 5: About the performed correlation analysis among the appearances of TIR anomalies and earthquake occurrences, you should be in mind that working in the optical band, a wide presence of meteorological clouds, as well as the lack of satellite data, do not allow to give continuity to the observations, which is necessary to identify possible TIR anomalies or to fully appreciate a possible space–time persistence of previously occurred TIR anomalies, producing in this way a possible overestimation of missed events. Please, consider this suggestion and provide a more convincing analysis. As consequence also your conclusions should be reconsidered.
R: A wide presence of meteorological clouds, lack of satellite data surely will influence the TPR or FNR. However, I think we should not to remove the earthquakes influenced by clouds or lack of data. I think this analysis is a simulated forecast, the prediction ability is to evaluate how many earthquakes can or cannot be predicted with this method and data. Surely, earthquakes are unable to be predicted when there is large wide of clouds, but in other words, this is also a great limitation and defect of the RST method or Thermal Infrared data, and how to solve these problems is the key to enhance the ability of earthquake prediction. Some earthquakes cannot be predicted by this method is the truth, we should not to avoid or remove them, on the contrary, the earthquakes correspond to no TIR anomalies should be counted in missed rate. But the high missing rate does not mean that the RST or MODIS data are not valid for earthquake prediction study, it reflects some limitations of this method and data in other aspects.

Specific comments
Page 1 - Lines 18-19; In the abstract, you announced that a refined RST data analysis and Robust Estimator of TIR Anomalies (RETIRA) index were used, but in the text I have not read any new improvements to the RST methodology, if not those reported in Eleftheriou et al. (2016). Otherwise please explain better the refinements made to the RST technique. Moreover, add the reference of RETIRA index.
R: sorry for that, there is no refinement for the RST, but the statistical method, I add PPV, FDR and FNR to evaluate the earthquakes prediction ability. And I will add reference.

P1 - L25; Please provide the complete name of PPV, FDR, TPR and FNR.
R: I will add the full name of PPV, FDR, TPR and FNR.

P1 - L26; The sentence "the prediction ability of RST in Sichuan area is limited" is too strong!
R: I will change the sentence. “The prediction ability of RST with use of MODIS in Sichuan area is limited.”

P4 - L34-36; I not understand the sense of this sentence "Moreover, Tronin indicated that the anomaly was sensitive to crustal 1000kmearthquakes with a magnitude more than 4.7 and for distance of up to 1000km" in this position.
R: That is the reason why I choose earthquakes with M>=3.5, because those earthquakes have covered the earthquakes with M>=4.7.

P5 - L14-24; Cloudy pixel, as well as pixels declared as edge clouds, should be exclude before the computation of $\Delta V(r,t)$ otherwise effects due to cloudiness are not removed and false TIR anomalies

could be generate.
R: yes, I have eliminated the cloudy pixels and the edge clouds.

P5 - L25-31; How you identify the extreme weather events (e.g. blizzard)?
R: two ways. 1. The kσ-clipping processing can eliminate some influence of extreme weather. 2. By using satellite cloud map, wind direction map and meteorological knowledge, the meteorological data in this area are analyzed. For example, there is wide blizzard in this area from Jan. 2008 to Mar. 2008.

P6 - L9-13; The reference Saraf et al. (2009) is correct? I not found no mention about effects of cloudy pixels on ΔV in this publication.
R: Accepted, I have given the wrong reference, I will correct it.

P6 - L13-20; *Cold spatial average effect as reported in* Aliano et al. (2009), Genzano et al. (2010) and Eleftheriou et al. (2016) could affect the whole TIR scene. Rightly you have take in account this effect, but in opposite way of Genzano at al. (2015) or Eleftheriou et al. (2016) you work at pixel level instead of whole scene level. In this way, the above mentioned effect could be not removed in the computation of reference fields.
R: Maybe I have expressed it right, in this paper, when the cloudy fraction of the land portion of the scene is >80%, all the pixels in this scene will be removed from the calculation of background field. Maybe the formula 10) is confusing.

P6 - L32-35; The sentence "This process should be paid more attention, because in the past papers, this process is always ignored." is wrong. In all applications of RST approach, kσ-clipping method (always applied) guarantee to remove outlier (i.e. extreme events) from the computation of reference fields. Please, consider to rewrite better the sentence.
R: I will delete this sentence.

P6-P7 (Change detection step); Although you have announced the computation of ALICE index, the index reported in the equation 13 should be the RETIRA index (correct equation can be found in Filizzola et al. 2004; Tramutoli et al. 2005). Please, correct it.
R: I will check my paper and correct the confusing use of ALICE and RETIRA.

P7 L9-23; The criteria used to identify TIR anomalies are the same introduced for the first time in Genzano et al. (2015) and in Eleftheriou et al. (2016) in order to indentify Significant Sequences of TIR Anomalies (SSTAs). Please consider to call it in similar way, mentioning these two publications. Moreover, starting from a mathematical point of view you have consider to set a threshold K equal 2, if you have a normal distribution (Gaussian) a 2 times the standard deviation could be sufficient to identify anomalies. In addition, RETIRA index (as well as ALICE index) give the possibility to evaluate in term of SIgnal-Noise ratio (S/N) the intensity of anomalies (see Tramutoli at al. 2001 or Tramutoli et al. 2005 for more details). Please, take in mind this suggestions when choose threshold k.
R: I will rewrite the criteria, and many thanks for your advice to choose the threshold K.

P9 L3; Period B is the same of period A (i.e. from2002.09 and 2007.12)?
R: Period B is from 2008.01 to 2018.03, I will correct it.

P10 Fig.4; Figure shown are not a good example of TIR anomalies possibly associated to earthquakes. In the example on the right part (TIR map of 2010/10/22) earthquakes seems not satisfy the rules announced in chapter 3.3. Moreover, to show the whole sequence of TIR anomalies, not only one day with TIR anomalies, could help the reader to better understand the concept of Significant Sequence of TIR Anomalies.
R: I will make changes according to your opinion.

P11 Fig.5; As reported in the caption "The cells in the blue rectangle mean that this day is affected by a large area of clouds, ...", now, some days with TIR anomalies belonging to several sequences of TIR anomalies (i.e. 2, 10, 27, 32, 35, 36, 37, 45, 50, 58, 59) are affected by a wide cloudy coverage, all this lets thinks that TIR anomalies due to meteorological effects are not removed from the analysis (as suggested in Eleftheriou et al., 2016).
R: Yes, after the carefully examining, I find that I haven't eliminated the so-called TIR anomalies caused by large clouds cover. I will correct the statistical analysis in the paper, also the related contents in other parts of the paper.

P12 L21-33. Rightly, you are reported that cloudy coverage could prevent to observe with continuity the presence of TIR anomalies, this is a intrinsically limitation of satellite technologies which work in the optical band, and not of RST methodology. Please revise your sentences.
R: As what I have mentioned at the beginning of the reply, I will revise the sentence.

P13-16 Paragraph 4.3 (The evaluation of earthquake prediction ability for RST); The performed analysis not have any sense if carried out in this way. Mainly, the analysis on the rate of earthquakes which correspond ("TPR") or not ("FNR") to TIR anomalies it is very complicated to perform, because gaps in observations, due to the lack of satellite data or to a wide presence of meteorological clouds make impossible to give a continuity to the observations, which is necessary to identify possible TIR anomalies or to fully appreciate a possible space–time persistence of previously occurred TIR anomalies, as consequences the relation one to one (earthquake-TIR anomalies) that you are looking is corrupted by this limitation. Anyway, before to comment the results of a some kind of sensitivity analysis this circumstance should be announced.
R: As what I have explained at the beginning of the reply, this is simulated earthquake prediction, the limited prediction ability may be caused by lack of data, clouds cover, method itself, the characteristics of the data, the limitation of RST or other things. No matter what is reason that makes some certain earthquakes cannot be predicted, some of earthquakes haven't been correlated with TIR anomalies is the truth, so they have to be counted in the missing rate. Our paper is not to study why these earthquakes are not corresponding to TIR anomalies, but just evaluate the prediction ability.
Another thing I want to explain that, in this study, earthquakes and TIR anomalies are not one-to-one but many-to-many.

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the Algerian earthquakes of May 2003." **26**(13): 2705-2713.
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Panda, S. K., S. Choudhury, A. K. Saraf and J. D. J. I. J. o. R. S. Das (2007). "MODIS land surface temperature data detects thermal anomaly preceding 8 October 2005 Kashmir earthquake." **28**(20): 4587-4596.
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