

## Discriminating satellite IR anomalies associated with the Ms 7.1 Yushu earthquake in China

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In the process of exploring pre-earthquake thermal anomalies using satellite data, Blackett et al. (2011) found that the reported anomalies before the 2001 Mw 7.7 Gujarat earthquake, in India, were related to positive biases caused by data gaps. They supposed that such effects could also be responsible for other cases. We noted a strip-shaped TIR anomaly on 17 March 2010, 28 days before the Ms 7.1 Yushu earthquake (below figure). Here we again investigate multi-year infrared satellite data in different bands to discriminate whether the anomaly is associated with the earthquake, or is only normal bias caused by the data gaps. From the water vapor images, we find lots of clouds that have TIR anomalies. However, on the cloudiness background, there is an obvious strip-shaped gap matching the tectonic faults almost perfectly. In particular, the animation loops of hourly water vapor images show that the cloud kept moving from west to east, while they never covered the strip-shaped gap. We consider that the cloud with this special spatial pattern should have implied the abnormal signals associated with the seismogenic process. Based on current physical models, the satellite IR anomalies both on TIR and water vapor bands can be explained using synthetic mechanisms.

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