

Supplementary Material

# An Improved Source Model of the 2021 $M_w$ 6.1 Yangbi Earthquake (Southwest China) Based on InSAR and BOI Datasets

Hao Lu <sup>1</sup>, Guangcai Feng <sup>1,\*</sup>, Lijia He <sup>1</sup>, Jihong Liu <sup>1</sup>, Hua Gao <sup>2</sup>, Yuedong Wang <sup>1</sup>, Xiong Xiao Wu <sup>3</sup>, Yuexin Wang <sup>1</sup>, Qi An <sup>1</sup> and Yinggang Zhao <sup>1</sup>

<sup>1</sup> School of Geosciences and Info-Physics, Central South University, Changsha 410083, China

<sup>2</sup> School of Geography and Environment, Jiangxi Normal University, Nanchang 330022, China

<sup>3</sup> Guangdong Land Resources Survey and Mapping Institute, Guangzhou 510599, China

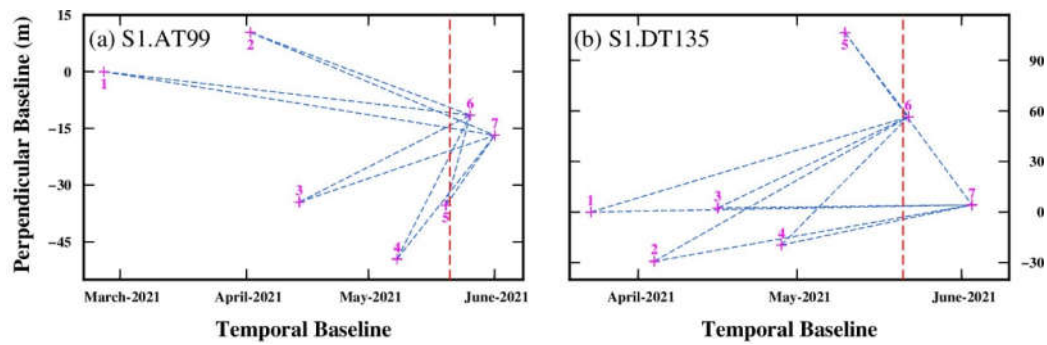
\* Correspondence: fredgps@csu.edu.cn

## Contents of this file

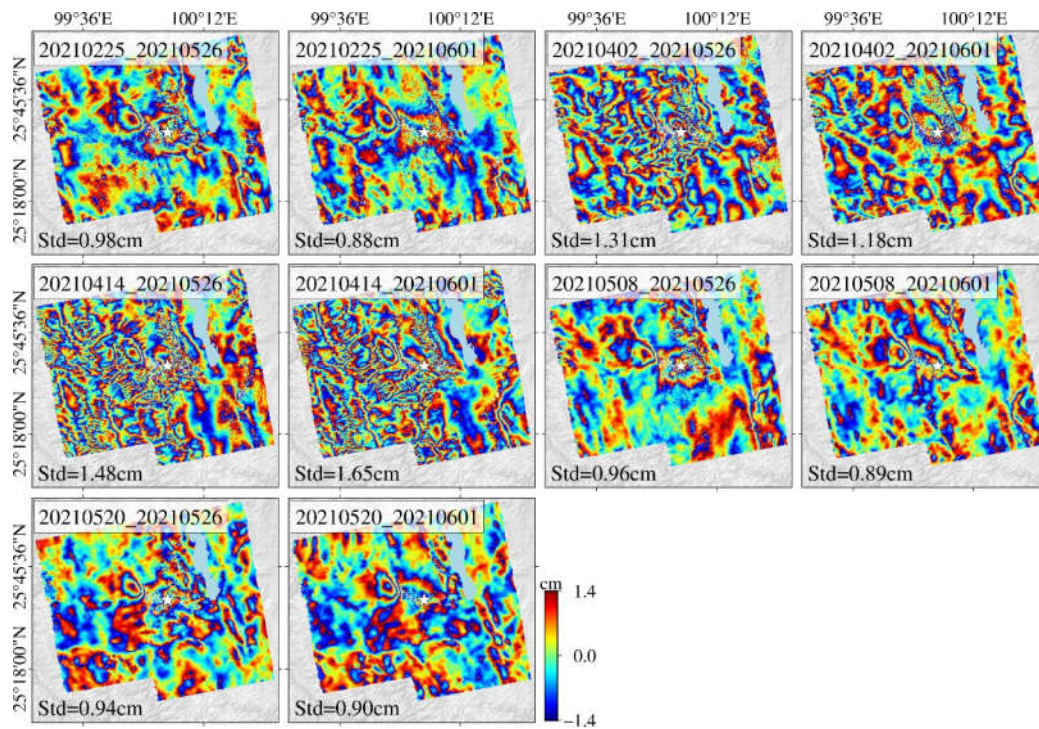
Figures S1 to S6

## Introduction

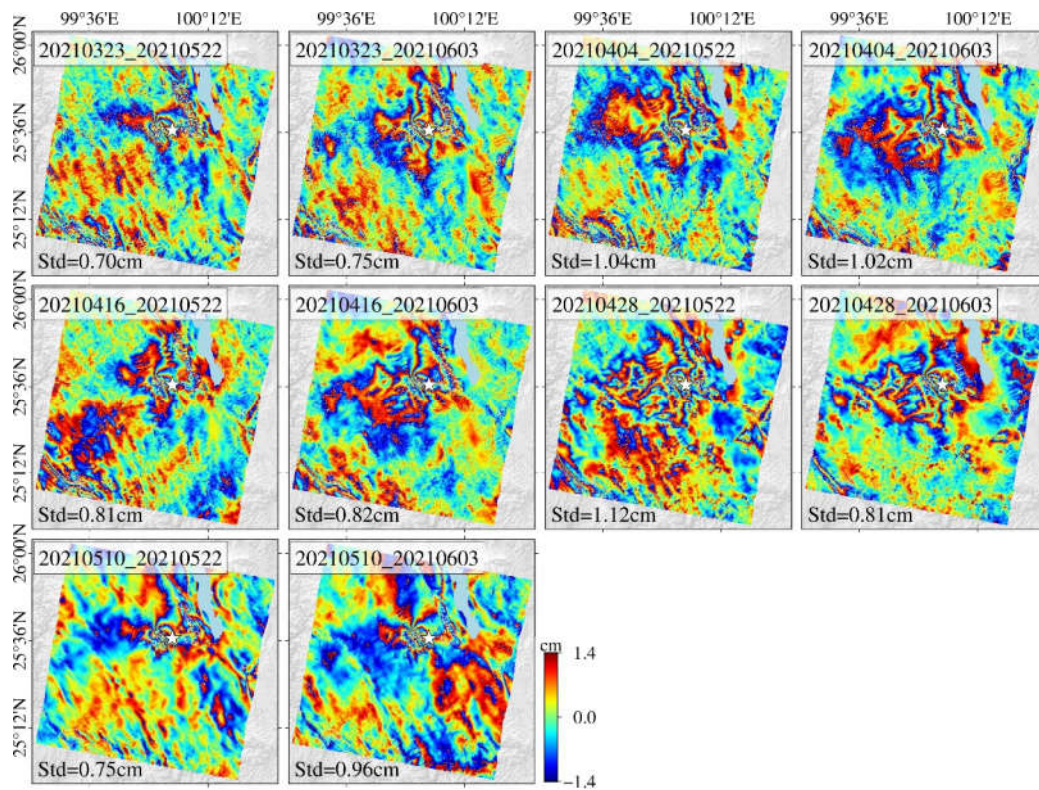
The supporting figures illustrate spatiotemporal network of the SAR data in the D-InSAR process and all coseismic interferograms of the 2021 Yangbi  $M_w$  6.1 earthquake generated based on the spatiotemporal network information of the ascending and descending tracks. In addition, the supporting figures contain trade-off curve between the normalized misfit and model roughness, fault slip distribution estimated by different smoothing factors and ascending coseismic interferograms of the 2017 Yangbi  $M_w$  5.1 earthquake.



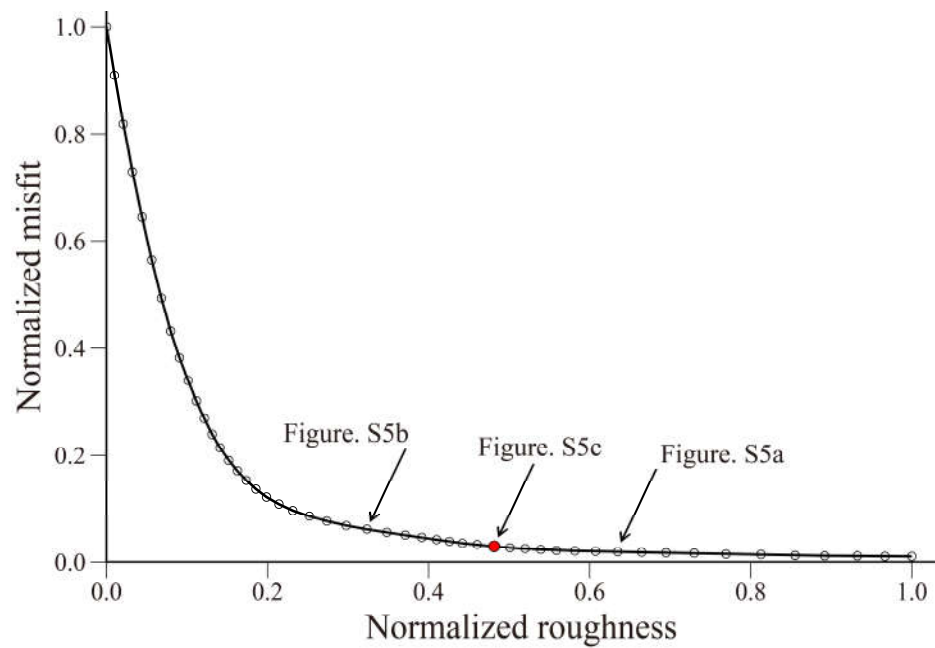
**Figure S1.** Interferogram network of the (a) ascending T99 and (b) descending T135. The red line shows the occurrence time of the 2021 Yangbi earthquake. Numbers indicate SAR images by acquisition time.



**Figure S2.** The 10 interferogram pairs of the ascending T99. The white star is the hypocenter location of the mainshock given by the Global Centroid Moment Tensor (GCMT).

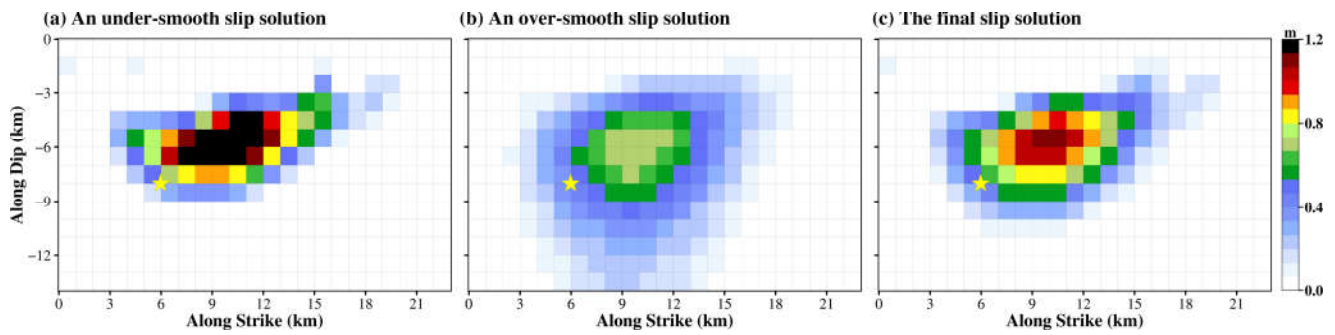


**Figure S3.** The 10 interferogram pairs of the descending T135. The white star is the hypocenter location of the mainshock given by the Global Centroid Moment Tensor (GCMT).

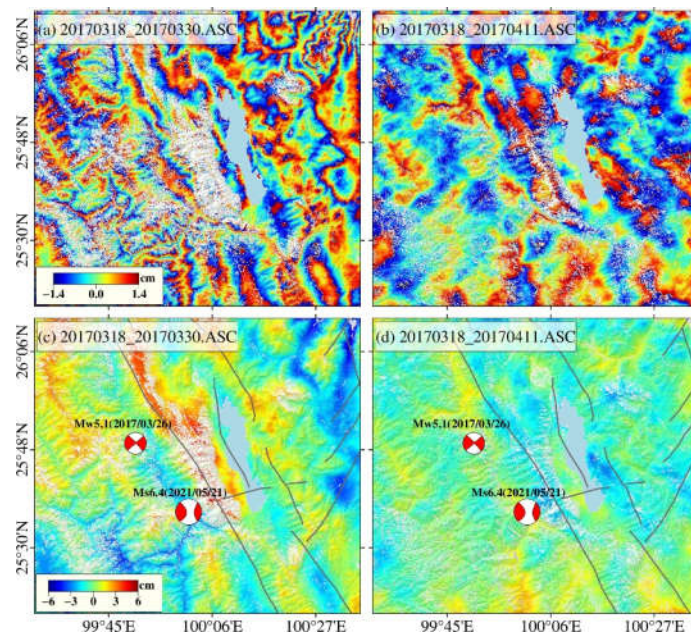


**Figure S4.** Trade-off curve between the normalized misfit and model roughness. The red dot indicates the preferred smoothing factor of 0.05.





**Figure S5.** Fault slip distribution of the earthquake source model estimated by different smoothing factors of (a) 0.01, (b) 0.35 and (c) 0.05. The yellow star represents the position of the main earthquake.



**Figure S6.** Ascending coseismic interferograms of the 2017 Yangbi  $M_w$  5.1 earthquake. (a) and (b) are the wrapped coseismic deformation (wrapped by 1.4 cm per cycle). (c) and (d) are the unwrapped deformation in LOS. Red beach balls show the focal mechanisms of the Yangbi 2017  $M_w$  5.1 and 2021  $M_s$  6.4 earthquakes supplied by GCMT.