Analysis Potential damage in Mining Subsidence Area Using LuTan-1 InSAR Interferometry

Liuru Hu[1], Xinming Tang[2], Roberto Tomás[3], Tao Li[4], Pengfei Li[5], Jing Lu[6], Zhen Wen[7]

[1] College of Geomatics, Xi'an University of Science and Technology, Xi'an, China - hulr@qq.com
[2] Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of P.R. China, Beijing, China - tangxinming99@qq.com
[3] Dpto. de Ingeniería Civil, Escuela Politécnica Superior de Alicante, Universidad de Alicante, Alicante, Spain – roberto.tomas@ua.es
[4] Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of P.R. China, Beijing, China – rs_litao@163.com
[5] College of Geomatics, Xi'an University of Science and Technology, Xi'an, China – pengfeili@xust.edu.cn
[6] Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of P.R. China, Beijing, China – 573330453@qq.com
[7] College of Geodesy Geomatics, Shandong University of Science and Technology, Qingdao, Shandong, China – iwzhen@163.com

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1. Abstract

Mining activities have significantly impacted the ecological and geological environment in mined-out (goaf) areas, which can pose risks to local infrastructure and personal safety. The LuTan-1 (LT-1) mission marks a significant milestone as China's inaugural L-band bistatic spaceborne Synthetic Aperture Radar (SAR) mission for civil applications. Its primary purpose is to deliver continuous imagery that facilitates the analysis of ground surface deformations using stacking velocity and gradient results, which were categorized into distinct classes and exposure grades. Lastly, the velocity and gradient maps obtained from the stacking results were superimposed onto the spatial distribution of crucial infrastructures within the study regions. This analysis aimed to assess their vulnerability to mining subsidence, a validation process supported by GF-7 optical images.