TJDE-2025-0124 - View Abstract

> Land subsidence in urban lake-infilled areas detected by Radarsat-2 InSAR time-series: The case of Shahu and Nanhu Lake in Wuhan, China

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The paper focuses on land subsidence in urban lake-filled areas, an important issue in sustainable urban planning and development. The study uses data from Radarsat-2 with SBAS-InSAR, combined with Landsat images, to monitor lake changes from 1987 to 2015. This helps provide a comprehensive picture of the impact of lake filling on the level of subsidence over time, thereby supporting more effective urban planning policies. However, the paper has the following limitations. • SBAS-InSAR and MNDWI were performed by (e.g., Zhang et al., 2019; Li et al., 2022). The novelty lies in the specific application to each case (Wuhan lake filling) rather than methodological advancement. Further analysis of the accuracy of this study is needed. • The abstract effectively summarizes the methodology and main results, but it could be improved by including: - A mention of InSAR accuracy validation to reinforce reliability. - More details on challenges in data processing to provide a balanced view. • The paper uses Landsat images (1987, 1995, 2005, 2015) to create the MNDWI index to determine the area of lake filling. However, with the types of images included, the authors do not mention the quality of these images, the percentage of cloud cover because factors such as clouds and vegetation cover or shadows of high-rise objects can affect the results of determining objects as water surfaces. In addition, when determining the lake, the authors did not have any accuracy assessment for these water surface extractions. • In addition to using MNDWI, the authors should choose another method to extract objects such as machine learning classification. •

Radarsat-2 image data (2015–2019) used in the SBAS method is not the same time as Landsat images, so there will be no synchronization of the two types of objects: land subsidence and lake filling changes. The authors need to analyze this issue more carefully or need to add more lake change data from 2015 to 2019. Currently, Landsat images are available at all times, so it is completely possible to supplement. • You have not evaluated the results of land subsidence determination by SBAS InSAR with field measurements. This makes the demonstration of land subsidence values in the lake filling area unreasonable. To evaluate this accuracy, you need to have enough field measurement points and draw a correlation chart between the settlement measurement points by leveling survey and measurement by SBAS-InSAR. • Additionally, the paper does not specify the tools, software, or custom code used to process SAR data. Given the potential errors in SAR image processing, a clear description of the methodology is necessary to assess the accuracy and reproducibility of the results. • The manuscript is understandable, but could be refined for better fluency and flow. • The conclusions need to be supplemented with more recent field surveys or photogrammetric data to strengthen the conclusions. • Stronger correlation analysis between filling and subsidence periods would improve the reliability. • Recommendation: Future studies should integrate ground-based monitoring and AI-based subsidence prediction to strengthen these findings. • Double-check spelling. Here are some example: • Line 40 has an error: double word: areas areas, • line 36: "Since, the impact of the different periods of lake infilling, land use types and engineering construction activities on land subsidence in the lake-infilled areas were analyzed" Check the sentence again. • Figure 7 caption should be located below the figure. • Conclusion: The manuscript is technically sound but requires refinements in methodology, validation, and data synchronization. Clarity in writing, improved correlation analysis, and field validation would greatly enhance the study’s scientific contribution.