Supplement of Nat. Hazards Earth Syst. Sci., 21, 2285–2297, 2021
https://doi.org/10.5194/nhess-21-2285-2021-supplement

Natural Hazards and Earth System Sciences
Open Access
EGU

Supplement of

Spatial and temporal subsidence characteristics in Wuhan (China), during 2015–2019, inferred from Sentinel-1 synthetic aperture radar (SAR) interferometry

Xuguo Shi et al.

Correspondence to: Xuguo Shi (shixg@cug.edu.com)

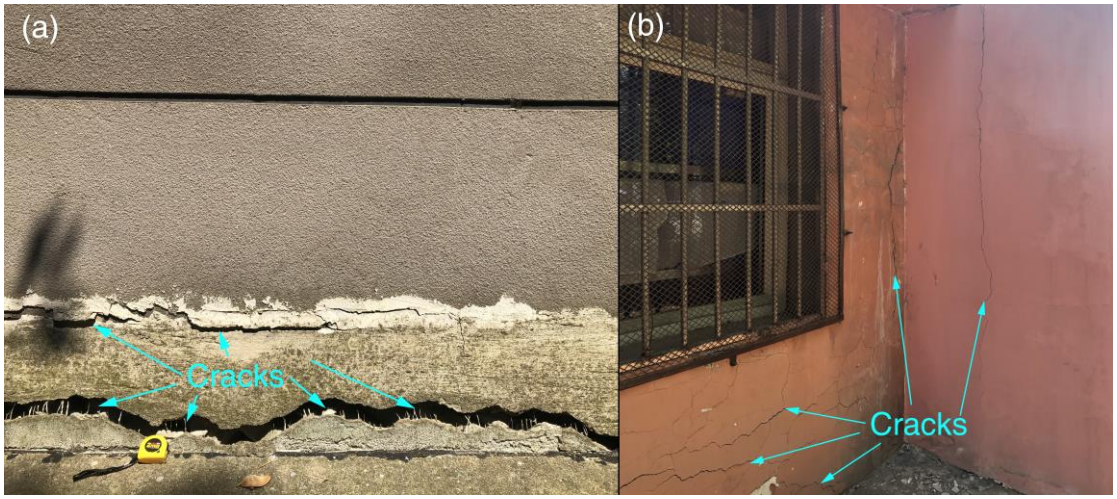

Fig. S1 Typical filed survey pictures in (a) Houhu area and (b) Qingshan area.

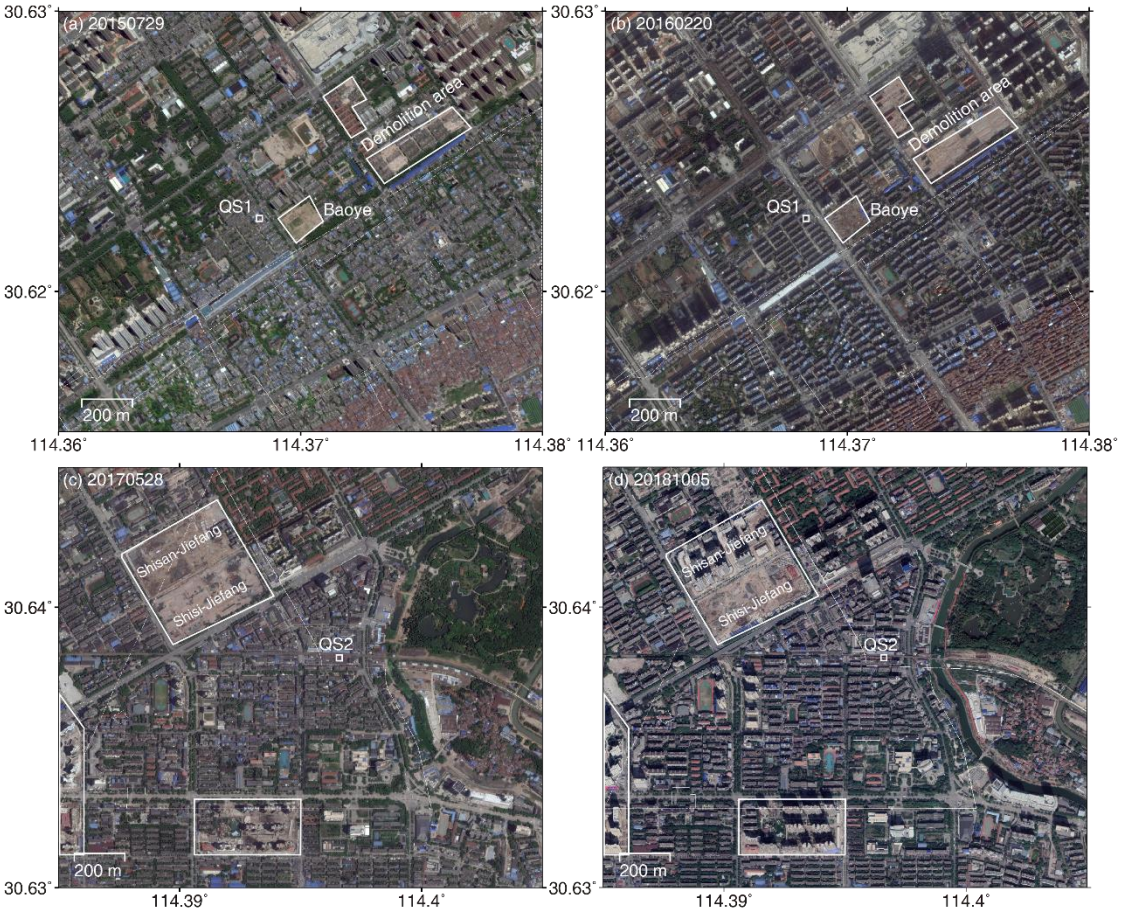

Fig. S2 (a) and (b) are ©Google Earth™ images of point QS1 acquired at July 2015 and February 2016. (c) and (d) are ©Google Earth™ images of point QS2 acquired May 2012 and October 2018. The white polygons show the changes.

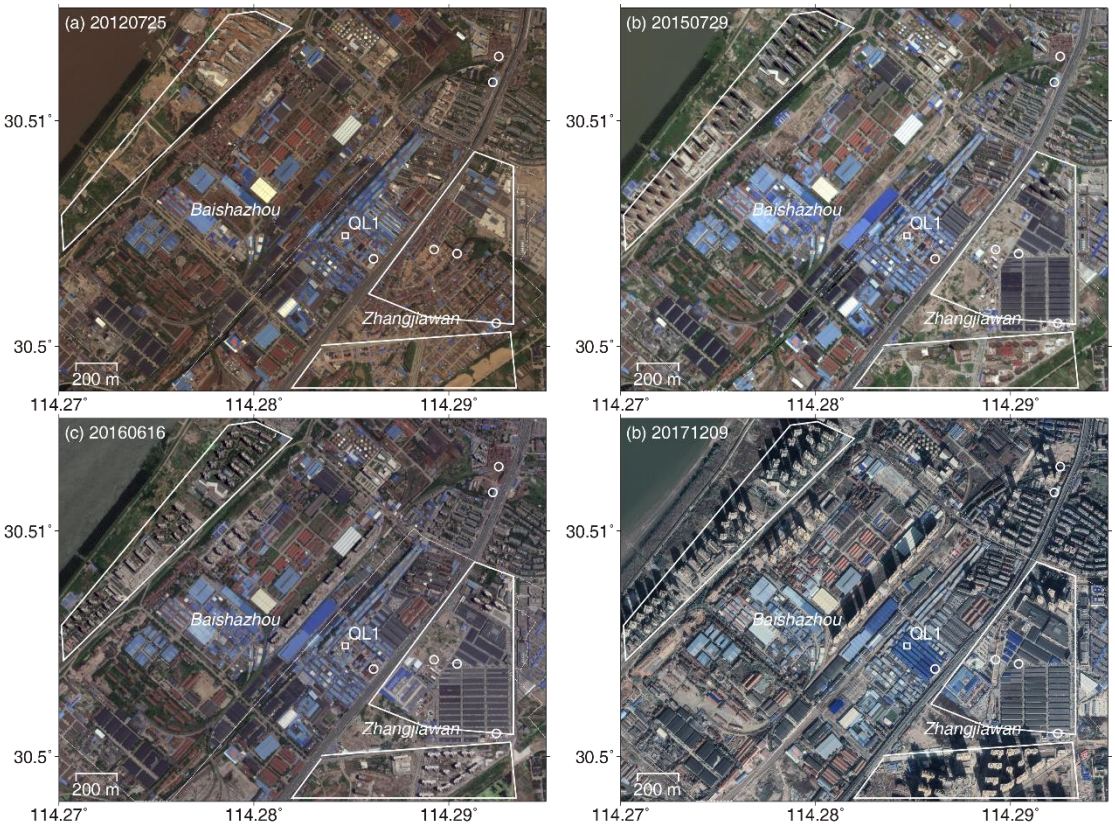

Fig. S3 (a), (b), (c) and (d) are ©Google Earth™ images of point QL1 acquired at July 2012, July 2015, June 2016 and December 2017. The white polygons show the land conversions whereas the white circles represent locations of historical karst collapses.

Fig. S4 (a) and (b) are ©Google Earth™ images of point HH1 acquired at February 2016 and December 2017. The white polygons show the land conversions.

Table S1. Engineering geological zones and subregions, Modified from Guan et al., (2016) and Li et al., (2019)

Engineering geological zone (EGZ)	Engineering geological Sub-regions (EGS)	Basic Description
First terrace EGZ	Marshland EGS	Flat terrain with elevations of 18 ~ 20 m. Partial of the surface is covered by thin loose fill soil followed by unconsolidated hydraulic fill, plastic and soft-plastic clay (mainly silt and sand). There are generally slightly dense or dense sand mixed with gravel between the clay and underneath rock surface. Pore confined water exists in sand and gravel layers.
	First terrace lacustrine EGS	Flat terrain with elevations of 19 ~ 21 m. The soft clay generally with thickness of 5~15m are originally lakes and filled. The surface is covered by thin loose fill soil or plastic clay followed by soft/flow-plastic muck or plastic and soft-plastic muck soil or clay. There are generally slightly dense or dense sand mixed with gravel between the lay and underneath rock surface. Pore confined water exists in sand and gravel layers.
	First terrace alluvial EGS	Flat terrain with elevations ranging from 19 ~ 21 m. The surface is generally covered by thin loose fill soil followed by soft and plastic clay or interbedded soil, dense sandy soil and sandy gravel. Underneath is bedrock. Pore confined water exists in interbedded soil, sandy soil and sandy gravel layers.
	First terrace underlying carbonatite EGS	The elevations ranges from 19 ~ 21 m and the surface is generally covered by thin loose fill soil followed by plastic clay with thickness of 5-10 m and slightly dense or dense sandy soil till the limestone bedrock. Unfilled sandy soil-covered carbonate rock karst caves are well developed in the first terrace.
Second terrace EGZ	Second terrace lacustrine EGS	Relatively flat terrain with elevations ranging from 22 ~ 24 m. The surface is covered by fill soil and soft-plastic clay. The underneath layer is lacustrine soft mucky soil with typical thickness > 5 m and characteristics of soft/flow plasticity and high compressibility. Uneven distributed gravel layer exists in the deeper part with a little pore confined water in it.
	Second terrace alluvial EGS	Relatively flat terrain with elevations ranging from 22 ~ 24 m. The surface is covered by fill soil and plastic clay. The middle layer is plastic or hard-plastic clay. Uneven distributed gravel layer exists in the deeper part with a little pore confined water in it.
	Second terrace underlying carbonatite EGS	Relatively flat terrain with elevations ranging from 18 ~ 20 m. The surface is generally thin loose fill soil and the second layer is 5 ~ 20 m thick clay. Plastic or hard-plastic old clay exits between the second layer and carbonatite bedrock. Fully or partly clay filled karst caves are well developed in carbonatite bedrock.
	Aeolian sand dune EGS	The terrain undulates with elevations ranging from 35 ~ 45 m. The surface is generally covered by aeolian sandy deposits while the underneath layer is plastic or hard-plastic old clay.

Wavy hillocky EGZ	Lacustrine EGS	The shape of this subregion is generally narrow with elevations ranging from 20 ~ 25m. The surface is covered by thin loose fill soil. The second layer is soft/flow-plastic muck and thin plastic or soft-plastic clay with thickness > 5 m. The third layer is plastic or hard-plastic old clay or residual soil.
	Alluvial and pluvial EGS	The terrain undulates with ridges and valleys and the elevations range from 25 ~ 50 m. The surface is covered by thin loose fill soil with thickness of about 0.5 m, and the second layer is composed of old clay or gravel filled clay with residual soil underneath.
	Underlying carbonatite EGS	The terrain is same with alluvial and pluvial EGS. The surface is covered by thin loose fill soil with thickness of about 0.5 m, and the second layer is composed of old clay or gravel filled clay. The third layer on the top of the bedrock is residual soil. The underlying layer is carbonatite bedrock where fully or partly clay filled karst caves are developed in it
Denuded hilly EGZ	Middle and lower detrital EGS	The terrain is dominated by low hills and undulates with elevations ranging from 50 ~150m. The surface is covered by thin residual slope wash. The second layer is mainly composed of quartz sandstone of Upper Devonian Yuntaiguan Formation, siliceous rock of Middle Permian Gufeng Formation and sandstone mudstone of Lower Silurian Fentou Formation
	Middle and lower hilly carbonatite EGS	The terrain is dominated by low hills and undulates with elevations ranging from 50 ~150m. The surface layer is covered by thin residual slope wash, and The second layer is mainly composed of limestone, dolomite, dolomite limestone, etc.

Reference

Guan, S., Zhu, R., Pang, S., and Jiang, D.: The Study for Engineering Geological Zonation of Metropolitan Development Area in Wuhan, Urban Geotechnical Investigation and Surveying, 000, 172-176, 2016.

Li, C.., Zhang, Y., Pang, S., and Guan, S.: Study on engineeering geological zonging: base on geomorphic units - case study of the Wuhan metropolitan development development area, Geological Review, 065, 645-652, 2019.