

Studying Land Subsidence in Semarang (Indonesia) Using Geodetic Methods

[¹]Hasanuddin Z. Abidin, [¹]H. Andreas, [¹]I. Gumilar, [¹]T.P. Sidiq,
[¹]M. Gamal, [²]D. Murdohardono, [³]Supriyadi, [⁴]Y. Fukuda

- [¹] Geodesy Research Division, Institute of Technology Bandung,
Jl. Ganesha 10, Bandung, Indonesia, E-mail : hzabidin@gd.itb.ac.id
[²] Center of Environmental Geology, Geology Agency, Jl. Diponegoro 57, Bandung
[³] Universitas Negeri Semarang, Semarang, Indonesia
[⁴] Graduate School of Science, Kyoto University, Japan



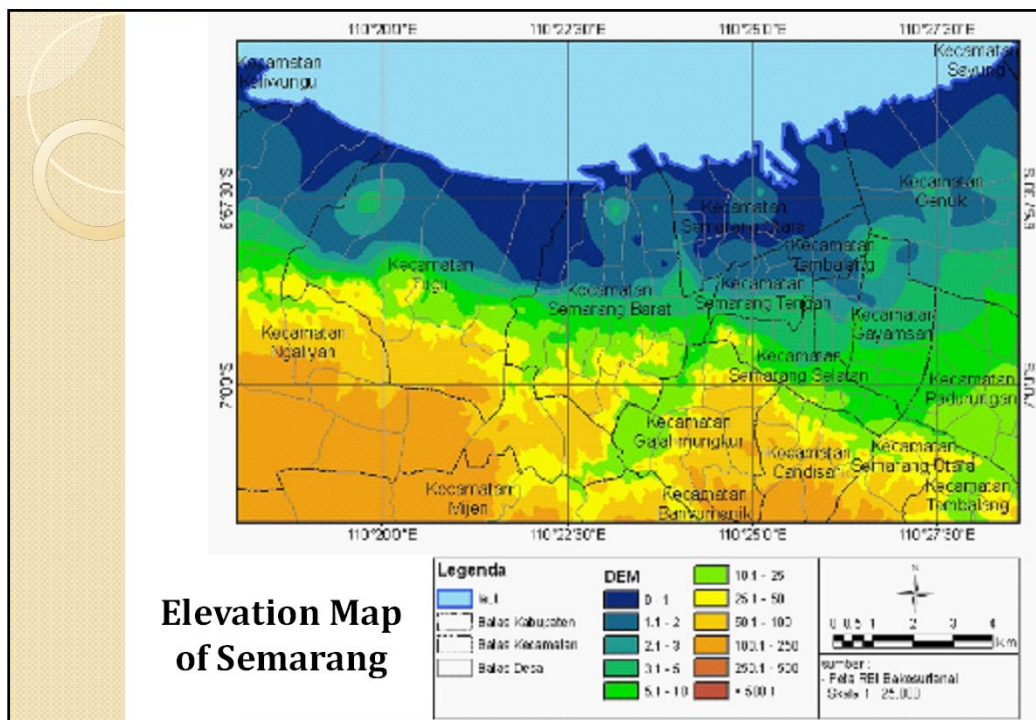
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Semarang

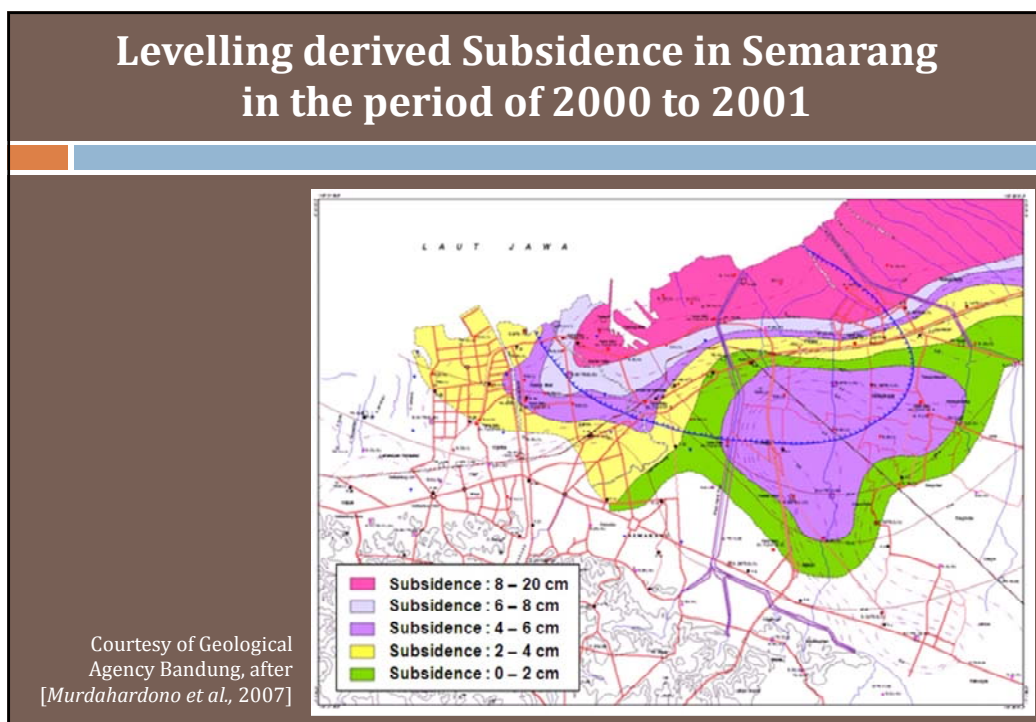


- Capital of Central Java province
- Population : about 1.4 million (2008)
- Location : North coast of Central Java region
- Coordinates : 6° 30' S and 110° 35' E.
- Area : 373,7 Km².

Hasanuddin Z. Abidin (2008)



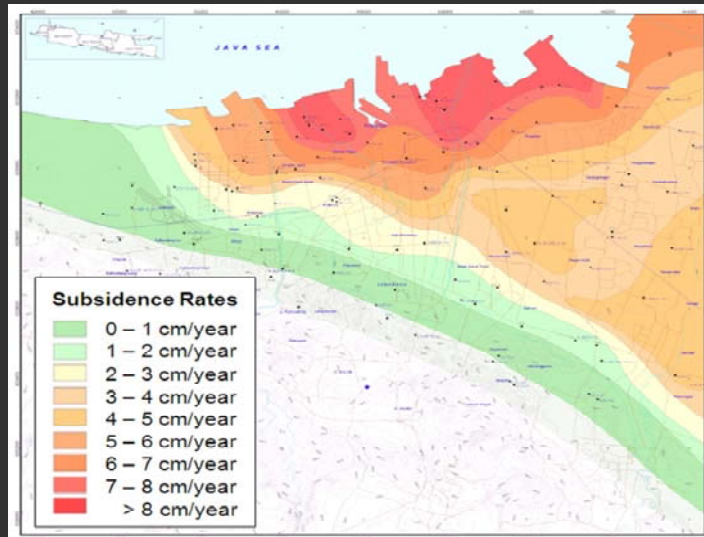
Levelling derived Subsidence in Semarang in the period of 2000 to 2001



PS InSAR derived Subsidence Rates in Semarang

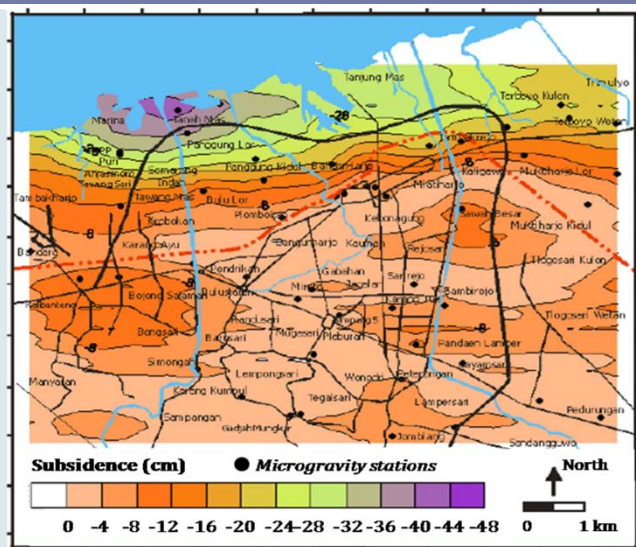
The contour lines in this Figure are based on the PS InSAR based velocity data derived from 28 ERS-2 and ENVISAT-ASAR radar scenes recorded between 27 November 2002 and 23 August 2006.

Courtesy of Geological Agency Bandung, after [Murdahardono et al., 2009]

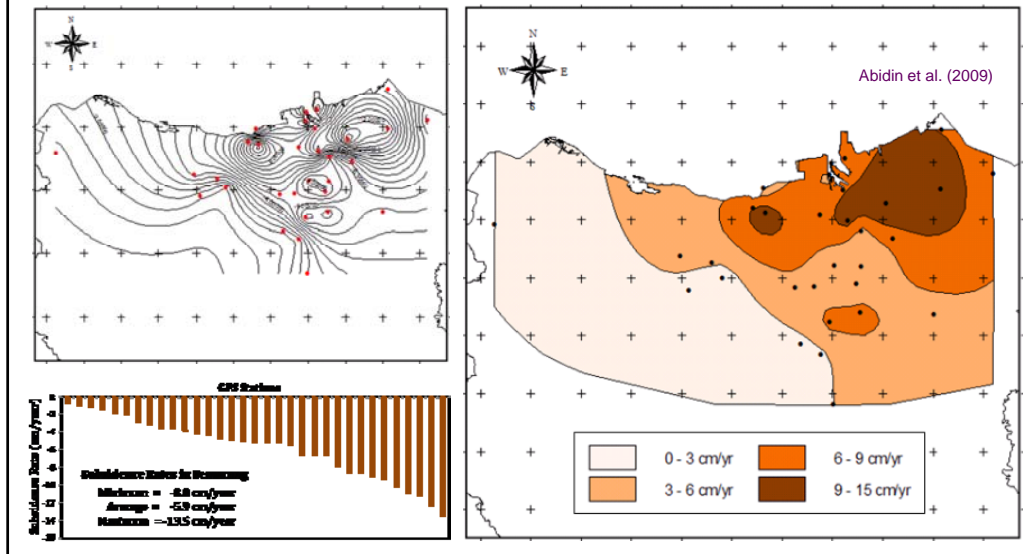


Microgravity derived Subsidence in Semarang from Sept. 2002 to Nov. 2005

after [Supriyadi, 2008].



GPS derived Subsidence in Semarang from July 2008 to July 2009



Examples of Subsidence Impacts in Semarang



Hasanuddin Z. Abidin (2008)

Coastal Flooding in Semarang (mid April 2009)

courtesy of Kompas photo, 2 July 2009

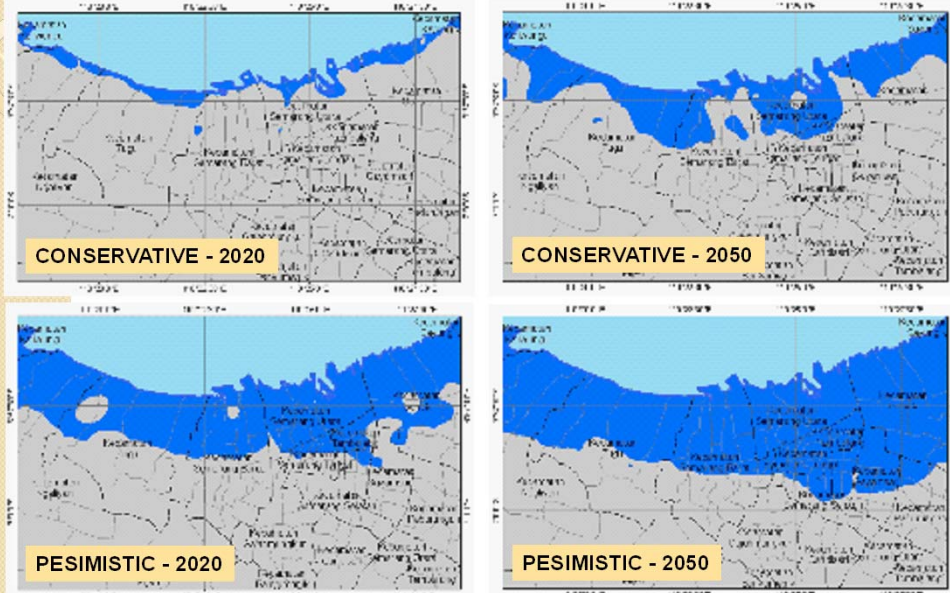


Possible Inundation Areas in Coastal Areas of Semarang

	CONSERVATIVE SCENARIO	PESIMISTIC SCENARIO
Land subsidence rate	2.5 cm/year	10 cm/year
Sea level rise rate	0.2 cm/year	1 cm/year

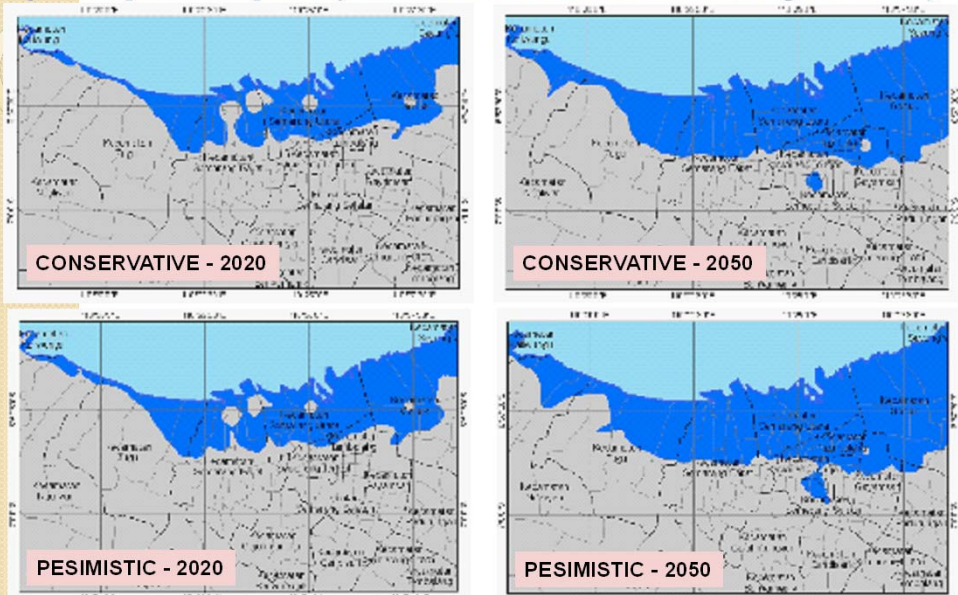
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POSSIBLE INUNDATION AREAS IN COASTAL AREAS OF SEMARANG
 (Assumption of homogeneous subsidence rates along the coast)

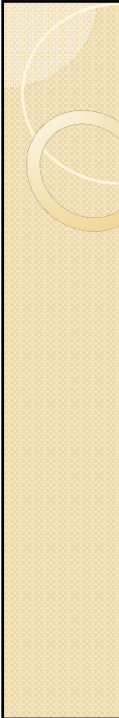


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POSSIBLE INUNDATION AREAS IN COASTAL AREAS OF SEMARANG
 (Assumption of spatially different subsidence rates along the coast)



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Thank you very much
for your attention