# Relation between liquefaction potential and soil subsidence

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Geo-disaster Mitigation Engineering

## Study focused on soil subsidence resulted after severe liquefaction

Liquefaction induced ground subsidence is one of the most serious geotechnical problem in recent alluvial deposit and in a reclaimed land. The attempt in this study is to find the relation of liquefaction potential with soil subsidence.

LiDAR (Light Detection And Ranging) images before (2006) and after (2011) off the Pacific Coast of Tohoku Earthquake were collected and used to analyze the spatial distribution of soil subsidence in Urayasu city ( Fig.1)
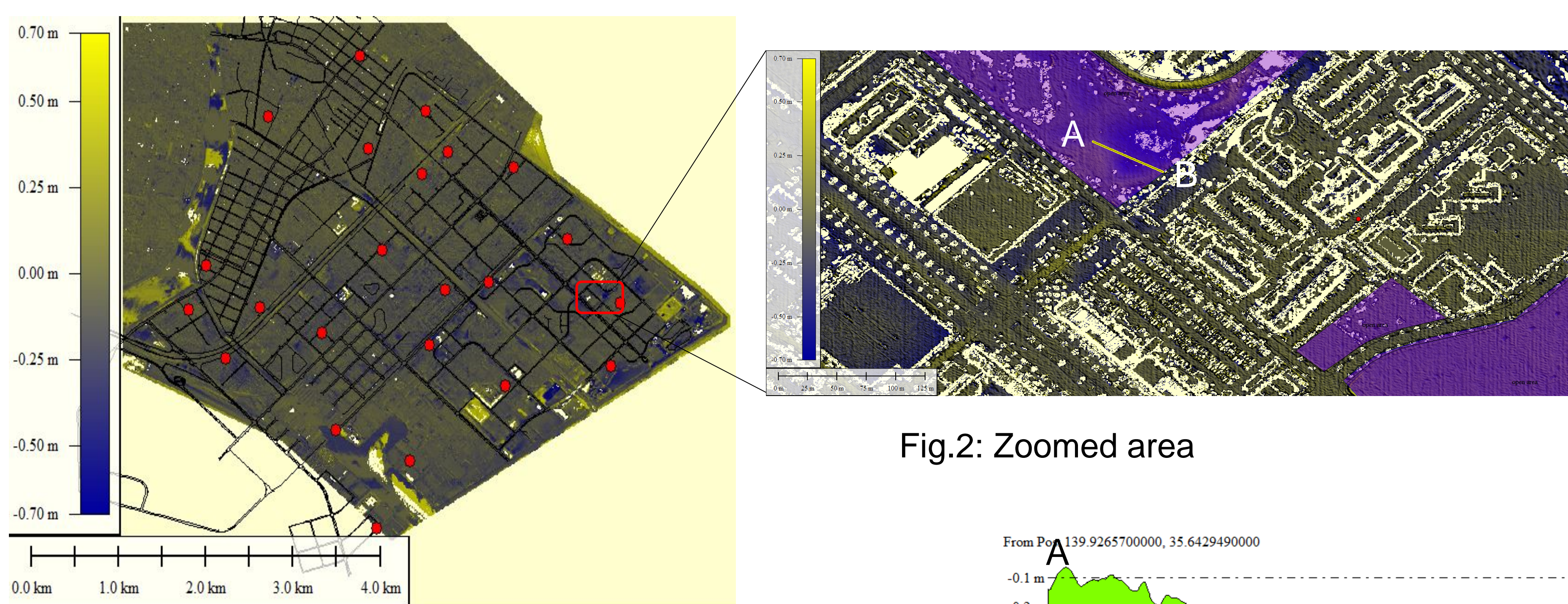


Fig.1: Ground subsidence map of Urayasu area (Konagai et al. 2013)



Fig.2: Zoomed area

The subsidence along line A-B was measured and a profile is plotted in Fig.3.
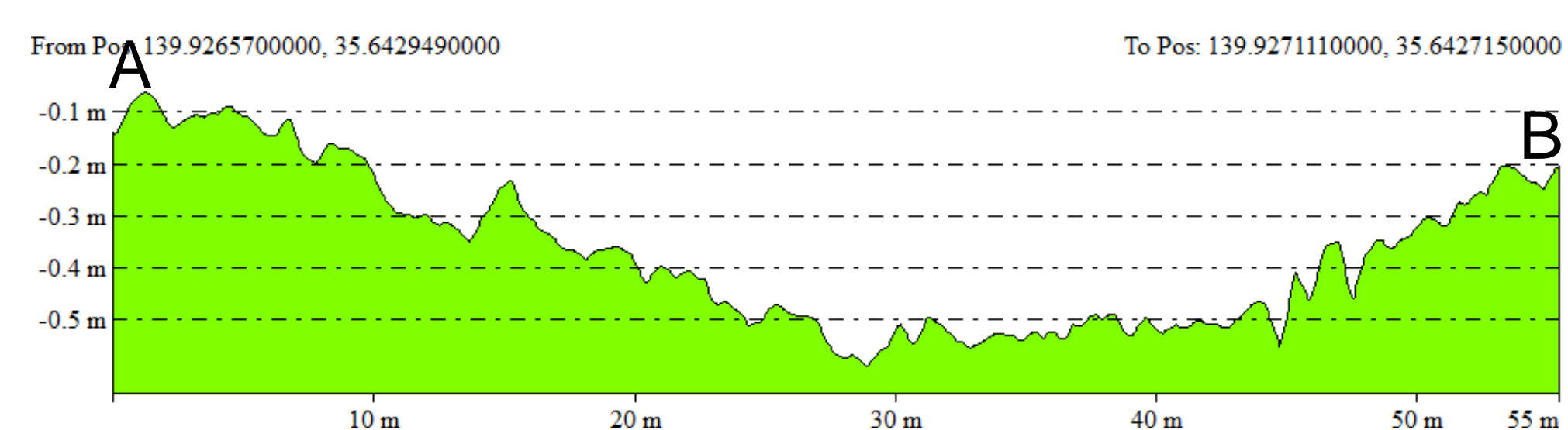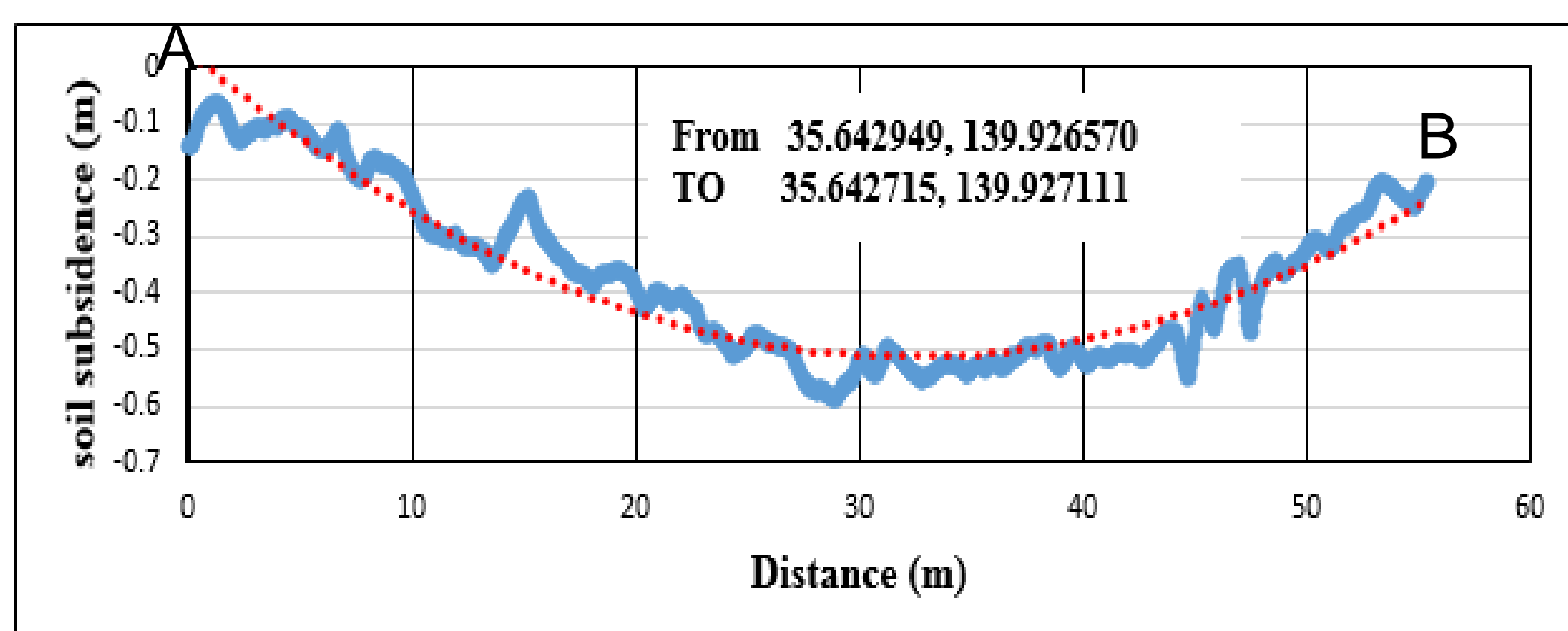


Fig.3: Profile along A-B in the above map



Fig.4: Profile and trend curve along A-B.

A trend curve in Fig.4 on this profile shows the variation of subsidence along line A-B. The maximum subsidence value from this curve is taken as a subsidence value of that particular point.

Randomly distributed boreholes are used to estimate the liquefaction potential at the borehole point and an interpolation technique is applied to estimate the spatial distribution of liquefaction potential in Urayasu city Fig.5.
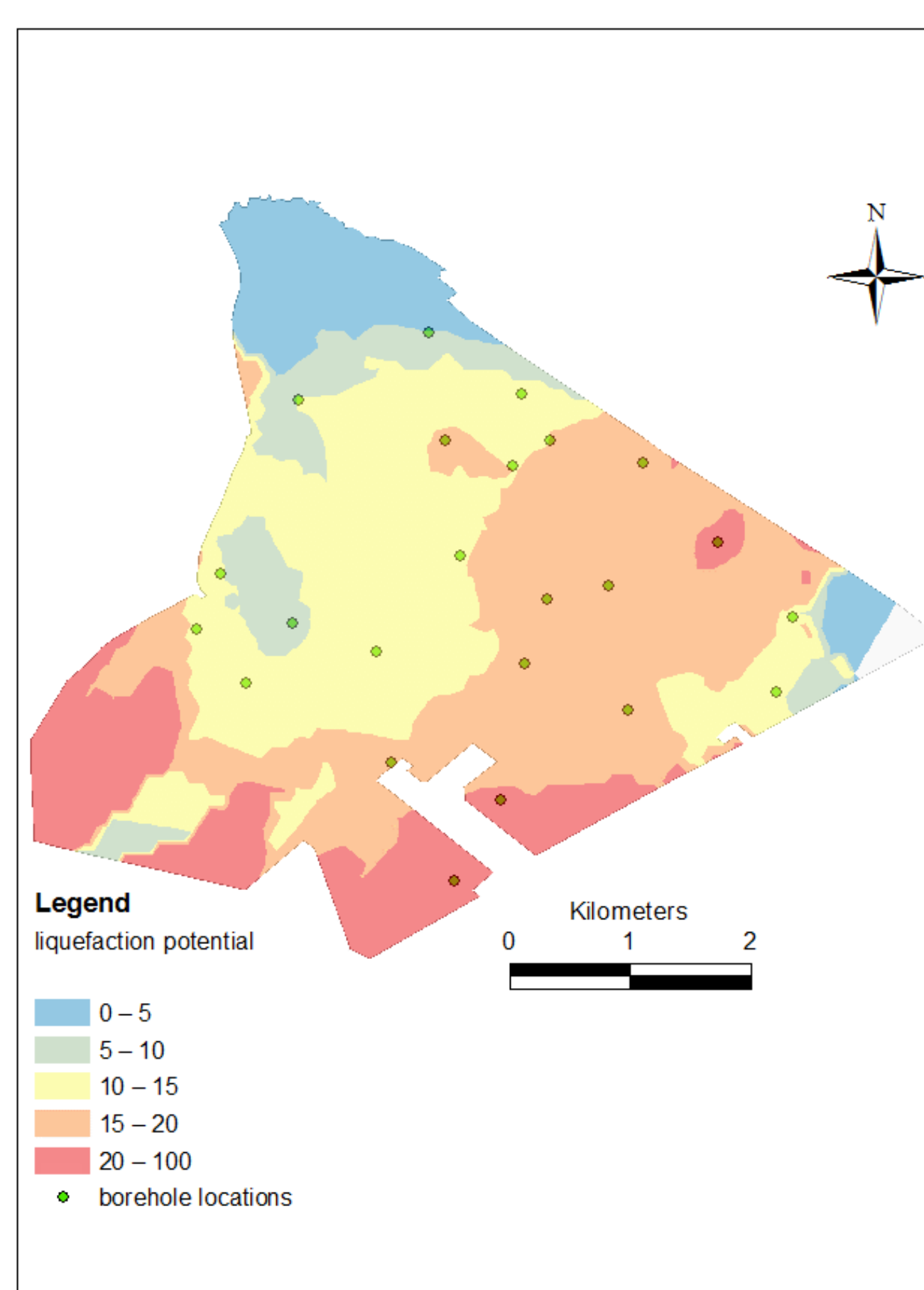


Fig.5: Liquefaction potential map of the Urayasu area

Typical relationship between subsidence data of the particular point and the liquefaction potential value of the same point is shown in Fig.6. The relationship shows the subsidence increases with increase in liquefaction potential value.
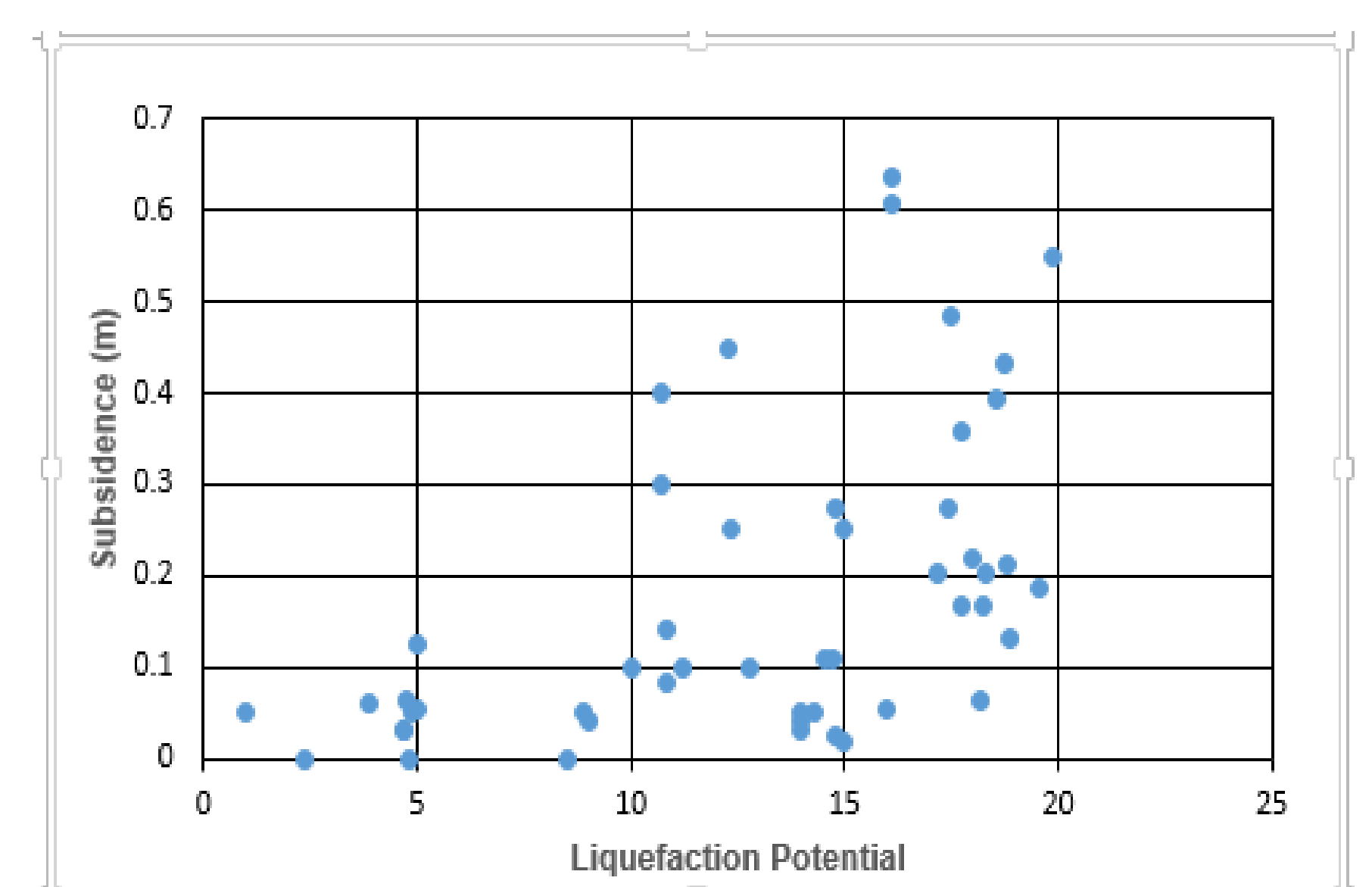


Fig.6: Relation between liquefaction potential and ground subsidence

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