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Data Article

Modelling intercity accessibility surfaces through different transport modes in the Yangtze River Delta mega-region, China



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ABSTRACT

The paper presents the data that is related in the research paper entitled “High-speed rail network development and winner and loser cities in megaregions: The case study of Yangtze River Delta, China” (Wang and Duan, in press) [1]. This data article describes the modelling results of spatially continuous accessibility surfaces through transport modes of the highway, conventional rail and high-speed rail networks in the Yangtze River Delta mega-region, China. By using a door-to-door approach to integrate intra- and inter-city travel, the data is stimulated in the geographic information system environment. It is calculated by the datasets of transport networks, land-use types and transport speeds which are mainly collected from the OpenStreetMap and GlobeLand30 and relevant design specifications on transport infrastructures, respectively. The data is stored in raster format and provides high spatial resolution at 100 m. The data can be used as a baseline in the studies of transport economics and planning.

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Specifications Table

Subject area	<i>Human Geography</i>
More specific subject area	<i>Transport geography</i>
Type of data	<i>Raster (Geotiff)</i>
How data was acquired	<i>Using different public datasets such as OpenStreetMap and Globe-Land30 and relevant design specifications on transport speeds to simulate the surface of intercity travel time to Shanghai in the Yangtze River Delta mega-region.</i>
Data format	<i>Analysed</i>
Experimental factors	<i>Dividing the study area into 34.81 million 100 m * 100 m grids; using ArcMap tools of cost distance analysis and network analysis; modelling door-to-door travel time to Shanghai in a geographic information system environment</i>
Experimental features	<i>High-resolution data of accessibility surface for travelling by high-speed rail, conventional rail, and highways</i>
Data source location	<i>The Yangtze River Delta mega-region including Shanghai, Jiangsu, Zhejiang and Anhui provinces, China</i>
Data accessibility	<i>Data is available within this article in the link provided</i>
Related research article	<i>Wang L., Duan X.J., in press. High-speed rail network development and winner and loser cities in megaregions: The case study of Yangtze River Delta, China [1]</i>

Value of the data

- Demand for high-resolution, spatially continuous accessibility surface data is growing in transport planning.
- This data can be used for examining the spatial disparity of intercity accessibility at the regional scale.
- The data can be used as the baseline for transport upgrading by researchers in spatial econometric models to estimate the effects of high-speed rail development on the restructuring of economic activities.
- The accessibility change resulting from the highway, conventional rail to high-speed rail can be calculated and used to estimate the expanded influence area of the regional economic center.

1. Data

1.1. Transport network and land-use types

The transport network data presented in this article is included in Fig. 1. The data mainly comes from OpenStreetMap and was further corrected with reference to the 2016 electronic atlas of Shanghai, Jiangsu, Zhejiang and Anhui in the Yangtze River Delta mega-region (YRD). The data includes types of the road like national and provincial highways, urban roads and streets, conventional rail (CR) and high-speed rail (HSR), railway stations and highway entrances. The lengths of HSR, CR and highway networks are 3788, 5235, and 13,607 km respectively. There total 192 stations among which 86 for HSR services only, 70 for CR services only and 36 for both services.

Land-use data in the YRD is extracted from the Global Land Cover Datasets (GlobeLand30). The original spatial resolution is 30 m, and land is classified with ten cover types. The data can be downloaded from the link: <http://www.globallandcover.com/GLC30Download/index.aspx>. According

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