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Construction of solar radiation simulation DB and solar radiation simulation system using GIS

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S Among these research, the amount of solar radiation simulation system using GIS in the field of electric power and energy. Among these research, the amount of solar radiation simulation system using GIS has been constructed. Since this system firstly uses DSM (Digital Surface Model) with the weather conditions as sunny, the influence of shadows such as buildings and trees are included and considered. This simulation can analyze the amount of solar radiation per year, per month, per day, and every 30 minutes. In addition to this research, the amount of solar radiation database (DB) browsing system which was provided by NEDO (New Energy and Industrial Technology Development Organization) and pyranometer have been implemented. A method has constructed to correct the simulation result by NEDO's amount of solar radiation DB) that takes into consideration of past weather conditions or pyranometer value. As a result, the amount of solar radiation simulation DB has been completely constructed by considering the influence of weather conditions and shadows. Therefore, it is possible to support the selection of suitable locations for the installation of photovoltaic systems by considering the influence of weather conditions and shadows using the DB. Furthermore, the simulation of partial shadows of buildings in densely populated areas such as urban areas has been realized.

Biography

Atsushi Shiota is a PhD candidate at the Department of Electrical and Electronic Engineering, Kyushu Institute of Technology and the Assistant Manager of Information Technology Promotion Division at the General Affairs Bureau of Kitakyushu City Hall, Japan. Currently, he is also In Charge of Optimizing Information Systems and Geographic Information Systems. From 2014 to 2015, he introduced the GIS into the disaster-prevention field in the G-space related business of the Japanese government and realized the efficiency and sophistication of municipal disaster response works.

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