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Detection of Land Use Changes in Tsukuba City Area Using Satellite Data and GIS Data

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Land use has changed around new stations in Tsukuba city, Ibaraki, Japan, because new rail road system called “Tsukuba Express” was opened in August 2005. We extracted land use change using satellite image and existed land use map. Existed digital land use map was created in 1997 and spatial resolution is 10m. ALOS satellite was launched in January 2006 and spatial resolution of AVNIR-2 sensor is 10m. Spatial resolution of Landsat/ETM+ is 30m. We used ALOS/AVNIR-2 image acquired on 21st May 2006 and Landsat/ETM+ image acquired on 4th June 2001. It is easy to classify paddy fields and others in this season because paddy fields are flooded condition. As the results, land use/land cover change is detected around new stations and rural area. Surrounds of new stations in rural area are developed near the station (0-1000m). Surrounds of new stations in urban area are developed more far area (400m far). New residence area, big shops construction and abandoned paddy field area were extracted. Especially, abandoned paddy is distributed in small valley and muddy paddy field. Classified image from Landsat/ETM+ have some errors in river bank, because of error of position. If difference of 0.5 pixels occurs, it means 15m differences. It is bigger than one pixel size of land use map (10m). This error was not occurred in classified image from ALOS/AVNIR-2(10m resolution). As a result, ALOS/AVNIR-2 image has advantage than Landsat/ETM+ image. On the one hand, Landsat/ETM+ image have advantage to classify urban area or paddy field because it has short wave infrared bands (band5 and band7). Each sensor image has different characteristics.