Technical development for expanding availability of GNSS precise positioning in urban environment

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Geospatial Information Authority of Japan (GSI) is developing new software-based techniques mitigating multipath effects in order to expand availability of GNSS precise positioning in urban environment.
In FY 2015, we have selected four promising techniques from previous studies related to mitigating multipath effects, and developed validation programs as follows.
1) Selecting line-of-sight satellites with cutoff masks generated by fish-eye lens photos taken at observation stations
2) Selecting line-of-sight satellites with cutoff masks generated from 3D maps
3) Quality check of observation data based on phase differences of Doppler observables
4) Improvement of precision based on velocities from Doppler observables
In FY 2016, we conducted 12 hour observations under severe conditions in Kobe city, Hyogo prefecture for examining the effects of satellite constellations. We also conducted 5 minute observations at various stations for examining the effect of obstruction of the sky. We validated the four selected techniques by applying them to observation data.
In this presentation, we report the result of FY 2016 and future plan.

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