Modern GNSS Technology Implementation in Study Courses Targeting Engineering Survey, Field Mobile Worker and Precision Agriculture Areas

Andrey Kupriyanov (Russia)

Key words: Bridge surveying; Deformation measurement; Education; e-Governance; Engineering survey; Geoinformation/GI; GNSS/GPS; Implementation of plans; Land management; Low cost technology; Positioning; Professional practice; Young surveyor

SUMMARY

Land is the nonrenewable resource that supports the existence and

development of the human kind. The current status of land use and the ability to utilize more effective methods of its management and cultivation are the important base of an overall plan of land use and macro decision-making of whole country economy development. The technology application into areas such as smart city, smart electricity, intellectual transportation systems, GIS/big data integration is also crucial to meet the increasing demands of 21 st century.

In recent years, the global positioning systems (GPS, GLONASS, BEIDOU,

GALILEO, QZSS, IRNSS) and satellite based augmentation systems (SBAS) have

widely been applied in the land survey areas, such as engineering, cadaster,

resources management, urban planning, landscape construction, high precision

agriculture, monitoring and so on. Keeping up with the times, the Moscow State University of Geodesy and Cartography focused onto providing the high-class specialists in these areas.

Starting from last decade, GNSS positioning had become one of the main subjects of higher educational study courses thanks to the rapid development of satellite-based positioning and to the appearance of GNSS mass-market receivers and antennas.

This presentation describes the progress on application of new

GNSS-RTK/PPP

technology study courses in Russian Moscow State University of Geodesy and

Cartography, which are focused on cadastral, field mobile worker and precision agriculture areas. During the study, the students get not only additional knowledge in application of single-base Real-Time Kinematic (RTK), Network Real-Time Kinematic (NRTK) and PPP methodologies of GNSS measurements, but also curtain practical skills in cross-disciplinary subjects. Considering that fact, the work demonstrates the feasibility and practicality of the courses applied.