



XXIII International Society for Photogrammetry and Remote Sensing (ISPRS) Congress
<http://www.isprs.org/>

ABSTRACT OF THE PLENARY SPEAKER

Big Data in Photogrammetry and Remote Sensing

PROF. DEREN LI

Professor of Wuhan University
Chairman of the Academic Committee of Wuhan University
Chairman of the State Key Laboratory of State Key Laboratory of Information Engineering in
Surveying Mapping and Remote Sensing
LIESMARS, Wuhan university, China, 430079

With the rapid construction of smart earth and smart city applications, the era of big data has arrived.

In this talk the author will answer the key questions related to big data in photogrammetry, remote sensing, and geospatial information: how big are big data, how to treat these big data, and how to discover the patterns, rules and knowledge that can be obtained from big geospatial data.

Three application examples are used to illustrate the value of big data in photogrammetry and remote sensing. The first example is in huge block adjustment without GCP for all of China. Using ZY-3 three-line CCD Data (8810 frame , 20TB) , 3,000,000 robust tie points are automatically selected from two billion matched points for adjustment. The accuracy reaches 3-5m , meeting global mapping needs at the 1:50,000 scale, while accurate three meter results can be reached when combined with GRASS data in block adjustment.

The second example is night light remote sensing data analysis for socio-economic applications. The visible and near-infrared brightness of the earth surface obtained by remote sensing satellites (such as DMSP, NPP) can be used to characterize the range of urban settlements, GDP, population distributions, and other socio-economic factors. Economic growth, urbanization, humanitarian disasters are likely to be reflected in changes of brightness in remote sensing images over a period of time. A four years image series shows that the Syrian civil war has led to a significant reduction (more than 80%) in the night light levels in Syria. On March 26, 2015; the United Nations Security Council released a briefing citing this Syrian night time light research.

A third example is automatic Video satellite data compression. Our solution can send video satellite data direct to end-user's Smartphone.