Height Potential

As you read this editorial you have probably finished your skiing holidays! Standing there, up high in the mountains, one notices that the earth is undoubtedly three-dimensional. When looking at these impressive steep hillsides, one realises that we, as professionals, have largely neglected height, when mapping the earth's surface. This is because of the limitations of measurement and representation. Enabled by recent remote-sensing techniques, in particular laser-altimetry, digital photogrammetry and InSAR, and driven by advanced GIS systems, this deficit of the past is rapidly being redeemed. DEMs are increasingly recorded by many geo-scientists and managers for a multitude of tasks. An example is location-allocation computations for planning purposes to determine the accessibility and visibility of possible locations for facilities, such as telecommunication antennas and distribution centres.

Unawareness

Hydrologists, soil experts, landscape scientists, urban planners and many others, often rely on DEMs derived from digitised contour lines from topographic maps. On January 5th I attended the RGS-IBG conference held at Sussex University. There, geographers came together to discuss changing geography in an interdisciplinary perspective. One of the complaints heard was the many non-realistic terrain features being present in contour-line based DEMs. During lunch one of the participants, a landscape scientist, confided in me that this was a really disappointing discovery for him. He used DEM data from the Ordnance Survey. Because of the esteemed authority of this national mapping agency he assumed, gratuitously, that its products are (nearly) perfect. Obviously, amongst the explosive growth in the number of users of DEMs, in particular within geo-data applications, awareness is often lacking about the actual quality of the data one is using. That means, when we do not make the average user conscious of the true data quality, we will increasingly face unsatisfied customers.

Terrestrial Methods

The volume of high-resolution height information gathered by remote-sensing techniques is so overwhelming that one sometimes may forget that there are still terrestrial techniques. The present issue is mainly devoted to determining heights with both feet firmly on the ground. Heights from GPS are one of the possible applications which the GPS revolution has brought us. Does this mean that GPS has outstripped all other terrestrial height determination methods? Not at all! Although suited for a multitude of tasks, such as machine monitoring and guidance, and deformation monitoring, GPS suffers from a number of problems including phase ambiguity, multipath, ionospheric and tropospheric effects, and imperfections in the geoid model, as Matthew Higgins points out in his article. Therefore, levels and staffs remain important. They enable accurate and simple surveying at a low cost. Takao Seto, and Minoru Chiba show that the incorporation of advanced digital technology in well-established levelling instruments improve both the measurement accuracy and operation conditions. Of course, standards too should keep in pace with the new developments. Prof. Jean-Marie Becker, chairman of FIG Commission 5 Positioning & Measurement, points out the importance of harmonising and updating existing ISO standards.

Ultimate Surveyor's View

The introductory part of the article of Peter Jackson may be read as a delayed response to the Invited Reply of the January issue. To my opinion he expresses very clearly the ultimate surveyor's view on the Beyond 2000 quest by stating: 'As surveyors begin to take it for granted that GPS works, their interest shifts from receivers and processing to applications and ease of use […] new products have to be based on a sound knowledge of market needs and combine the latest technology with user-friendly man-machine interfaces and application-oriented software'.

Challenge

Dan Norin demonstrates the high demand for height information in urban areas. There the needs include monitoring vertical deformation of buildings, and the creation of detailed 3D city models for city planning purposes. This perception brings me to confront you with a challenge in the form of a proposition: Urban areas increasingly need accurate and detailed 3D geo-information for a multitude of tasks. I am eager to know your opinion about this clause and I invite you to reply. If you agree, please indicate the tasks you need 3D geo-information for as well as the level of detail and accuracy required. Also indicate which measuring techniques you presently use, and which techniques you intend to use in the future. If you disagree, please provide me with your arguments. Limit yourself to a maximum of 400 words. Your comments will be published as Invited Reply in one of the forthcoming issues of GIM International.

Vivid Technology

New developments are often considered threatening by professionals. The articles in this issue demonstrate that the more traditional techniques of surveying are still very much alive and subject to ongoing technological improvement and consideration. New and old techniques can live side-by-side because they are only partly competitive and are mainly complementary. Nevertheless, the strong obligation of any professional is to adopt continuously new technologies in the methodology of everyday practice. Enjoy reading.

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