

25 Years of Teaching Least Squares Adjustment

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SUMMARY

In geodesy the network adjustment is one of the basic tasks in data processing. The results of least squares adjustment, coordinates and heights of the points, are the main products that the geodetic surveyors provide to the society. It may be hard to use the commercial software or understand the results if the knowledge of the adjustment calculus is missing. The software packages are often like black boxes which have some input and after pushing the button some output.

The author has been happy to give lectures and exercises in adjustment calculus over 25 years in Technical University of Helsinki and Aalto University. During the teaching period from the end of the 1980s until now the computers and software used in exercises have been improved. The working environment in classrooms has changed. Paper, pen and pocket calculators have been replaced with efficient computers with mathematical software like MATLAB, GNU Octave, Maple and Mathematica.

An overview of the experiences and developments in teaching will be presented in this paper. The learning of adjustment calculus is presented with Bloom's taxonomy.

The importance of teaching least squares technique has not come to its end. With the other estimation techniques it is still the basic tool in geodetic computation. The new course, "Least Squares Methods in Geoscience", in the teaching program of Aalto University will start in 2017.