

The paper (gmd-2023-210) titled “Minimal variance-based outlier detection method using forward search model error in a leveling network” proposed a new method for the detection of outliers in geodetic networks. Detection of outliers is an important issue within the field of geodesy. The paper is well-written, clear, and concise. The subject of the problem, the idea, the theoretical background, and the experimental setup are clearly set and explained. However, there is one important issue in the paper I must point out.

- It is obvious that this approach quite easily leads to a large number of combinations depending on how many observations and outliers there are. For example, for a geodetic network with 20 observations, of which 3 observations are contaminated with outliers, the number of combinations is

$$\binom{20}{1} + \binom{20}{2} + \binom{20}{3} = 20 + 190 + 1140 = 1350.$$

Since we often encounter geodetic networks of several hundreds of observations in practice, it is necessary to consider and propose a strategy for reducing the number of combinations. For example, Neitzel (2004) and Ebeling (2014) proposed a few strategies for reducing the number of combinations in the procedure identification of the largest congruent group of points (MSS - maximum subsample method).

Ebeling, A. (2014). Ground-Based Deformation Monitoring. PhD Thesis. Calgary: University of Calgary, Department of Geomatics Engineering.

Neitzel, F. (2004). Identifizierung konsistenter Datengruppen am Beispiel der Kongruenzuntersuchung geodätischer Netze. PhD thesis. München: Deutsche Geodätische Kommission, Reihe C, Nr. 565.