

Interactive comment on “Exploratory data analysis and clustering of multivariate spatial hydrogeological data by means of GEO3DSOM, a variant of Kohonen’s Self-Organizing Map” by L. Peeters et al.

Anonymous Referee #2

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General Remarks:

The paper is an interesting contribution to the task of visualizing and grouping data of large monitoring programs. However, there are two major lines of criticism:

1. What is the question that can better be answered with the GEO3DSOM compared to a standard SOM? From a statistical point of view, the GEO3DSOM gives greater weights to some selected variables (= geographical coordinates). Corre-

spondingly, the results are biased towards these variables. Although that approach yields “spatially more coherent groups” that fit better to the expectations, in fact the interpretation of the results is complicated, because the information given by the graphs is a mixture of chemical data and arbitrarily weighting of spatial grouping. In contrast, Fig. 7 can easily be interpreted with respect to chemical variance between and within the different groups. Please comment on that.

2. What were the technical details of the SOM or GEO3DSOM?

- a. The outcome of a cluster analysis using a SOM highly depends on the resolution of the grid. How has the number of grid nodes been determined? What were the criteria to use this size of a map?
- b. How many iteration steps were used, and to what degree did the results depend on the number of steps?
- c. To what degree did the outcome of the GEO3DSOM depend on the k values?

Details (page numbering of the printer-friendly version):

- P. 3: Please distinguish between “pre-defined groups” (Tab. 1) and “clusters” that are determined by the SOM.
- P. 5, Tab. 3: Are the differences between the two approaches significant?
- Fig. 3, 4, 7 and 8: Please give headings for the colour scales.
- P. 7-8, Fig. 7 and Fig. 8: Please give a scale for panels 7 b) and 8 b).
- P. 9, last paragraph: Please correct “(Fig. 7d and ?? d)”