

## ***Interactive comment on “Elemental Composition, Leachability Assessment and Spatial Variability Analysis of Surface Soils in the Mugan Plain in the Republic of Azerbaijan” by Junho Han et al.***

### **Anonymous Referee #1**

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This manuscript reports the elemental composition and heavy metal content of 632 surface soils from the Mugan Plain in Azerbaijan. As recognized by the authors at the end of the text, “This study only provides fragmented information on the spatially resolved elemental concentration and leachability of surface soils in Mugan, and several assumptions and estimations were applied due to insufficient analytical resources and expertise...” I appreciate the effort and recognize the value of the data reported in this manuscript. These data are appropriate for a technical national report, but unfortunately I cannot recommend this manuscript for publication in an international scientific journal like SOILS, since it fails to provide any new scientific insight into the soil system.

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Some specific comments:

L. 28. Define the abbreviations XRF and ICP-OES. L. 32. What is the database for world soils? L. 35. Why these two were the most concerning elements? L. 43. How and why can this work help solve agriculture problems? No new insights or remediation strategies are provided. L. 100. This study is focused only on an area of Azerbaijan. L. 100-101. What kind of evaluation? L. 102. How can binding mechanisms in soils be estimated just from leachates? L. 110. Is this the area of Azerbaijan or on the Mugan Plain sampled? Please clarify. L. 116. Which was the sampling plan then? L. 117. 532 or 632? L. 119. I suggest changing to “presence of crops”. L. 120. Were all non-agricultural soils salt-affected soils? L. 126. What reference text? Why is this relevant for this study? L. 145. Which were the criteria to select these samples from the original set? L. 172. The text “All measured data were arranged in CSV format” is not necessary. L. 187. Aren’t salt soils classified based on EC? This information may be redundant. L. 188. Agricultural soils should be cropped soil by definition. In other words, the presence of vegetation is because land use decisions, so what information does the correlation between the presence of vegetation and salt concentration provide? Please clarify this sentence. L. 189-191. These data should be reported only in tables or figures, not in the text. L. 195-196. “Cl and S could be the reason for the presence of vegetation”? The intended meaning here needs to be clarified. L. 200-211. There must be many studies in the literature comparing XDF and ICP. Do the present results differ from previous studies in the literature? L. 212. What “white circles”? L. 225. What is reliability of estimating crystal mineral composition from this correlation matrix versus XRD? L. 226-228. This kind of information is not needed in a journal article. Focus on what you did. L. 296-300, 304-306. . . These data should be reported only in tables or figures, not in the text. L. 329-331. Again focus on what you did. This texts suggests that the manuscript does not contain “the data required to interpret soil properties.” L. 404. Why are these guidelines appropriate and better that others?

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