Geophysical Research Abstracts, Vol. 8, 03611, 2006
SRef-ID: 1607-7962/gra/EGU06-A-03611

The characteristics of groundwater salinization in the western coastal area of Korea

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The purpose of this study is to identify and describe the effect of the reclamation on the groundwater quality. From the physico-chemical compositions of groundwater, it is known that groundwater in the study area is classified into four groups (A, B, C and D) by means of the cluster analysis. Because the area contains groups B, C and D is close to the Yellow Sea, seawater intrusion by the present seawater mainly influences on the groundwater quality. However, the groundwater properties such as high I^-/Cl^- and Fe^{2+}concentration, low DO, Eh and $\delta^{13}C$ can not be explained by the present seawater intrusion. Owing to including the reclaimed area, these are caused by the paleomarine water and reduction process associated with reclamation of the tide land. On the other hand, Group A, has been used for agriculture for a long time, the groundwater quality in this group has been largely affected by chemical fertilizers. Factor analysis also shows the same results. It indicates that groundwater composition, 81.9 % of the total variance of 17 variables, is mainly affected by three factors; seawater intrusion by the present seawater and paleomarine water, microbial activity and chemical fertilizers.