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J Mar Biol Oceanogr 2017, 6:4 (Suppl)
DOI: 10.4172/2324-8661-C1-009

Influence of rock's chemical composition to groundwater quality in Jakarta basin

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The quality of groundwater in the region in general is influenced by the local geological conditions, for example in terms of the type of rock. The study of the quality of groundwater in Jakarta Groundwater Basin has been done to see how far the relationship between chemical characteristic of the rocks and the quality of groundwater. The existence of a wide variety of rock and groundwater quality in the study area prompted the author to determine the correlation or the influence of rock to groundwater, particularly in the chemical aspect. The analysis was conducted based on some field and laboratory data and supported by secondary data such as geological and hydrogeology data. Sampling of rocks and groundwater in the field were taken from some drilled wells then performed the chemical constituents of rocks and groundwater testing. The results showed that the quality of groundwater in the study area is quite influenced by the chemical content of rocks constituent of studied area. The content of the studied groundwater is dominated by the major cations Na^{+} and Ca^{2+}, as well as the major anion HCO_3^{-} and Cl^{-}, while rocks showed the dominant element of Fe^{3+} (4,460-107,000 ppm) and CO_3^{2-} (0.14-2.22%). Difference of dominant composition in rocks and groundwater is highly influenced by the ease of minerals to dissolve in certain geological conditions. The content of cations and anions in the groundwater under study supplied by the result of rock minerals weathering that are interpreted primarily derived from the weathering of silicate minerals. Thus, sedimentary rocks from the studied basin have a role in determining groundwater quality and supported by geological and hydrogeological conditions as well as mineral stability factor.