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Hydrogeochemical Study of the Gorgan Bay and Factors Controlling the Water Chemistry

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Abstract

In the present study, the hydrochemical characteristics of the Gorgan Bay, North East of Iran were studied in order to assess the contribution of environmental factors controlling the water quality of the bay. To approach this aim, 11 water and 10 sediment samples were collected from the Gorgan Bay, and 10 water samples from drainage basin of the bay including five rivers. Major dissolved ions of the water samples were measured through titration and Atomic Absorption Spectrometry analysis. Sediment mineralogy was determined by X-Ray Diffraction technique. Hydrochemical data was used to characterize the hydrogeological type of the water samples, Ionic ratios, source of dissolved ions and Saturation Index. Chemical type of the Bay's water was determined due to Piper Diagram as well as Ionic ratios and Gibbs diagram which illustrates marine source as the main source of the water chemistry. SI data showd that all the collected samples were under-saturated for evaporates, but saturated for aragonite, calcite, dolomite, and huntite. Our data shows the Caspian Sea as the main controlling factor on the bay's water chemistry. Regarding to the constructions developing around the bay, notice should be taken on the chemical and environmental factors controlling water quality and ecological conditions in order to prevent harmful influences on different properties of the Gorgan Bay.

Keywords: *Gorgan Bay, Hydrochemistry, Piper Diagram, Ionic Ratio, Saturation Index.*