

## Distribution and Characterization of Thermal Springs in Northern Oman

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**Abstract :** This study was conducted in Northern Oman to assess the physical and chemical characteristics of 40 thermal springs distributed in Al Hajar Mountains in northern Oman. Physical measurements of water samples were carried out in two main seasons in Oman (winter and summer 2019). Studied springs were classified into three groups based on water temperature, four groups based on water pH values and two groups based on conductivity. Ten thermal alkaline springs that originated in Ophiolite (Samail Napp) were dominated by high pH ( $> 11$ ), elevated concentration of  $\text{Cl}^-$  and  $\text{Na}^+$  ions, relatively low temperature and discharge ratio. Other springs in the Hajar Super Group massif recorded high concentrations of  $\text{Ca}^{2+}$  and  $\text{SO}_4^{2-}$  ions controlled by rock dominance, geochemistry processes, and mineralization. There was only one spring which has brackish water with very high conductivity ( $5500 \mu\text{s/cm}$ ) and Total Dissolved Solids and it is not suitable for irrigation purposes because of the high abundance of  $\text{Na}^+$ ,  $\text{Cl}^-$ , and  $\text{Ca}^{2+}$  ions.

**Keywords :** alkaline springs, geothermal, HSG, ophiolite

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