

EGU2020-1060

<https://doi.org/10.5194/egusphere-egu2020-1060>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Assessment of groundwater and surface water quality for irrigation suitability in Rupnagar District, Punjab, India

Navjot Kaur and Susanta Paikaray

Groundwater and Sutlej river water are major sources of irrigation in Rupnagar district of Punjab. Water quality was examined for their agricultural suitability using a total of 54 surface water (16 from Sutlej and 6 from Sirsa River) and groundwater (total 32 of ~160 m depth) samples from Pre- (June 2019) and post-monsoon (Dec 2018) seasons. On-site parameters (electrical conductivity, pH, total dissolved solids) indicate permissible pH (pH 6.6-8.2) and conductivity (147-1953 $\mu\text{S}/\text{cm}$), while 18.5% of samples are brackish salt to salt category type on salinity index. The results of these parameters were further interpreted and measured with different irrigation indexes like sodium percent (SP), sodium adsorption ratio (SAR), residual sodium carbonate (RSC), chloride concentrations and Wilcox diagram. Similarly, most of the samples (except Sutlej river water samples) were found to be above permissible limits with respect to SP (5.36-81.01) and RSC (0-6.23), but SAR is indicative of suitability for irrigation purposes (0.11-8.3). The suitability for irrigation as per SAR is because of low sodium content in all the samples relative to calcium and magnesium. The Wilcox diagram of pre-monsoon samples indicate high, medium and low saline to low sodium hazard except 1 sample with high saline to medium sodium hazard and salinity-sodium hazard in post-monsoon is comparatively lower than that of pre-monsoon. However careful observation of the complete data analysis suggests that all the parameters in Sutlej river water samples were found to be suitable for irrigation while most of the groundwater samples and 3 samples from Sirsa river were unfit for irrigation purposes as inferred from SP, RSC and Wilcox diagram.