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Seasonal, Yearly Variation and Partitioning of Elements into fluid and solid phase in the rivers of the Himalayas

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Indus and Ganga rivers are the two major rivers in the Himalayas draining different lithologies with varied monsoonal patterns and vegetation cover. Understanding river geochemical processes in two distinctly different types of river basin is essential in terms of weathering patterns by river and vegetation. We will present the elemental concentration data- major and trace metals -from the two largest river basins of the Himalayas for two years and two seasons i.e. namely pre-monsoon 2023, pre-monsoon 2024 and post-monsoon 2024 of Upper Ganges and Upper Indus. The overall chemical behaviour of river water, groundwater, springs water and hot springs shall be presented. In addition, the elemental partitioning between solid phase and liquid phase through riverbed load and suspended matter from pre-monsoon 2023 and pre-monsoon 2024 will be presented.

In the dissolved phase: the concentration of the major elements such as Ca, Mg, K is higher on the post-monsoon for Upper Ganga, however Na demonstrates no alternation. Besides, [Mg] all the major ins in the Indus basin is recorded lower in the post-monsoonal season. [Li] in the Ganga for the dissolved load: the post-monsoon has average of 2µg/L, on the other hand [Li] in the Indus basin is increased in the post-monsoon. Furthermore, the bulk composition of bed load is enriched in trace metals. The sulphur concentrations in the suspended matter are in both basin ranges from 0.2- 6.2 mg/L. Also, silicates in the Indus basin in dissolved load is more compared to the Ganga basin. The total amount of CO_2 consumptions in each basin and sub-basins will be generated.

To trace back the source and calculate the CO_2 consumption of in the different basin C, O and H isotopic data will reinforce the findings.