This README file contains the description of those 32 IHA parameters utilized in the current study of Abraham et al. (2023).

The 32 IHA parameters are adopted from Richter et al. (1996). They describe the whole range of ecologically significant aspects of the flow regime, such as magnitude, frequency, timing, duration, and rate of change.

The 32 IHA parameters are grouped into five such as:

* Group 1- monthly flow indices,
* Group 2 - extreme flow indices,
* Group 3 - timing indices,
* Group 4 - high-flow and low-flow indices and
* Group 5 - rising and falling indices.

Description of each 32 IHA parameters is shown below, and more extended description can be found in Abraham et al. (2023).

|  |  |
| --- | --- |
| IHA statistics group | Hydrologic parameter (Short form) |
| Group 1: Magnitude of monthly water condition | Jan, Feb...Dec |
| Group 2: Magnitude and duration of annual extreme water condition | 1d\_min  1d\_max  3d\_min  3d\_max  7d\_min  7d\_max  30d\_min  30d\_max  90d\_min  90d\_max |
| Group 3: Timing of annual extreme water condition | Julian date of max Q  Julian date of min Q |
| Group 4: Frequency and duration of high and low pulses | high pulses count  low pulses count  high pulses duration  low pulses duration |
| Group 5: Rate and frequency of water condition changes | mean of all +ve diff  mean of all –ve diff  number of rise  number of fall |

We provided a code to calculate all the above 32 IHA parameters in the MATLAB code. There are five MATLAB codes to calculate the five groups of IHA as Group1.mat, Group2.mat, Group3.mat, Group4.mat, Group5.mat.

In these codes we calculated the IHA parameters for one gauged catchment (#01 @Bilate) using streamflow time series data in the historical period (1995-2007).

**Reference**

Abraham, T., Liu, Y., Tekleab, S., Hartmann, A., 2023. Climate change potentially induces ecological change in the Ethiopian Rift Valley Lake Basin. Journal of hydrol; regional studies.

Richter, B.D., Baumgartner, J. V., Powell, J., Braun, D.P., 1996. A Method for Assessing Hydrologic Alteration within Ecosystems. Conserv. Biol. 10, 1163–1174. https://doi.org/10.1046/j.1523-1739.1996.10041163.x