

EGU21-4040, updated on 16 Oct 2021

<https://doi.org/10.5194/egusphere-egu21-4040>

EGU General Assembly 2021

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



Extracting the cumulative distribution location of highly intermittent river from Sentinel-1 time series in an alpine catchment on the Tibetan Plateau

Junyuan Fei^{1,2} and Jintao Liu^{1,2}

¹State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering, Hohai University, Nanjing, People's Republic of China

²College of Hydrology and Water Resources, Hohai University, Nanjing, People's Republic of China

Highly intermittent rivers are widespread on the Tibetan Plateau and deeply impact the ecological stability and social development downstream. Due to the highly intermittent rivers are small, seasonal varied and heavy cloud covered on the Tibetan Plateau, their distribution location is still unknown at catchment scale currently. To address these challenges, a new method is proposed for extracting the cumulative distribution location of highly intermittent river from Sentinel-1 time series in an alpine catchment on the Tibetan Plateau. The proposed method first determines the proper time scale of extracting highly intermittent river, based on which the statistical features are calculated to amplify the difference between land covers. Subsequently, the synoptic cumulative distribution location is extracted through Random Forest model using the statistical features above as explanatory variables. And the precise result is generated by combining the synoptic result with critical flow accumulation area. The highly intermittent river segments are derived and assessed in an alpine catchment of Lhasa River Basin. The results show that the the intra-annual time scale is sufficient for highly intermittent river extraction. And the proposed method can extract highly intermittent river cumulative distribution locations with total precision of 0.62, distance error median of 64.03 m, outperforming other existing river extraction method.