Headwaters Hydrology Project API

An API to deliver streamflow predictions from the Headwaters Hydrology Project ML model for ungaged basins across the contiguous USA.

License

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Base URL

https://data.climate.umt.edu/streamflow-api

Endpoints

1. Get Predictions

Endpoint: `/predictions`
Description: Get streamflow predictions for a given location and date range. Data is aggregated across all 10 k-fold models using median as the default aggregation function. Other aggregation functions can be specified using the `aggregations` query parameter.

Query Parameters

- `aggregations` *(optional)*: Aggregation function(s) (e.g., `min`, `max`, `mean`, `median`, `stddev`, `iqr`).

- `locations` *(optional)*: HUC10 ID(s) for data retrieval.

- `latitude` *(optional)*: Latitude(s) of the region of interest.
- `longitude` *(optional)*: Longitude(s) of the region of interest.
- `date_start` *(optional, default: `1980-01-01`)*: Start date for predictions.
- `date_end` *(optional, default: `2100-01-01`)*: End date for predictions.
- `units` *(optional, default: `cfs`)*: Streamflow units (`cfs` or `mm`).
- `version` *(optional, default: `vPUB2025`)*: Model version.
- `as_csv` *(optional, default: `false`)*: Return data as CSV (`true` or `false`).

Responses

- **200:** Successful response with JSON data.
- **422:** Validation error.

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2. Get Raw Predictions

Endpoint: `/predictions/raw`
Description: Get streamflow predictions for a given location and date range. This endpoint returns the raw predictions from the 10 k-fold models without any aggregation.

Query Parameters

(Same as `/predictions`, excluding `aggregations`.)

Responses

- **200:** Successful response with raw JSON data.
- **422:** Validation error.

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3. Get Latest Predictions

Endpoint: `/predictions/latest`
Description: Get the latest streamflow predictions for all locations. Data is aggregated across all 10 k-fold models using median as the default aggregation function. Other aggregation functions can be specified using the `aggregations` query parameter.

Query Parameters

- `aggregations` *(optional)*: Aggregation function(s) (e.g., `min`, `max`, `mean`, `median`, `stddev`, `iqr`).
- `as_csv` *(optional, default: `false`)*: Return data as CSV (`true` or `false`).

Responses

- **200:** Successful response with JSON data.
- **422:** Validation error.

Data Models

ReturnPredictions

- `location` *(array of strings)*: Locations of predictions.
- `date` *(array of dates)*: Dates of predictions.
- `version` *(array of strings)*: Model version used.
- `metric` *(array of strings)*: Aggregation metric applied.
- `value` *(array of numbers)*: Predicted streamflow values.

RawReturnPredictions

- `location` *(array of strings)*: Locations of predictions.
- `date` *(array of dates)*: Dates of predictions.

- `version` *(array of strings)*: Model version used.
- `model_no` *(array of integers)*: Model number identifier.
- `value` *(array of numbers)*: Predicted streamflow values.

Streamflow Units

- `mm` *(millimeters)*
- `cfs` *(cubic feet per second)*

Versions

- `v1.0`
- `vPUB2025`