

Models unable to catch the dynamics of the observed flow

Non-donor and non-receptor basins

Visual assessment of time series and metric values

Gauged basins

Ungauged basins

Big basins

Small basins

Donor basins

Receptor basins

Compute dissimilarity indices

Extract streamflow value at stream gauge grid cell

Compute runoff aggregate  $R_{agg}$  within basin

Correct for routing

Select the three most similar donors to the receptor basin

Utilize  $R_{agg}$  calculated at the selected donor basins

Implement the weighting approach

Transfer the weights and bias ratios to receptor basins

Observed streamflow at the selected donor basins

Observed streamflow

Implement the weighting approach

Weighted runoff dataset at gauged basins

Weighted runoff dataset at ungauged basins and aggregated regions

Constraint

Constraint