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Chesapeake Bay Streamflow Base and Critical Period Diagnostics

Robin Glas

Hydrologist

U.S. Geological Survey

New York Water Science Center
Troy, NY

River Input Monitoring (RIM) station 10-year rolling window approach

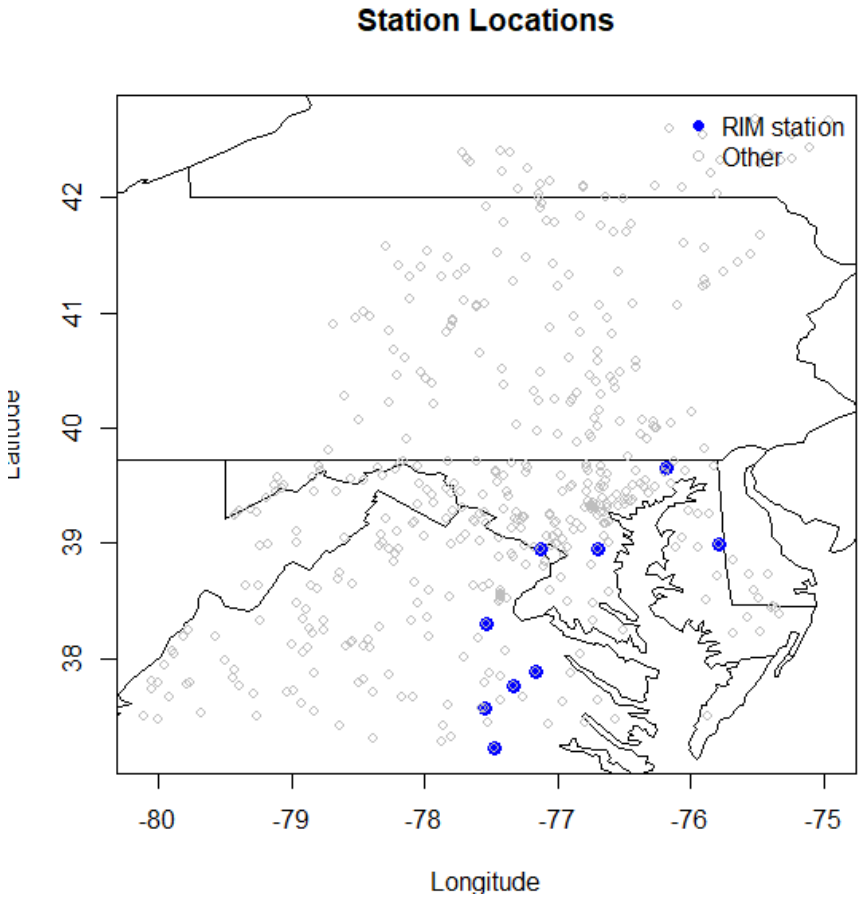
- Daily USGS streamflow records were compiled for all stations and padded to a continuous daily sequence.
- Analyses were restricted to **Water Years 1970–2024** to reflect the modern hydroclimatic period.
- Annual metrics were computed only for water years with:
  - **≥ 90% daily data completeness**, and
  - **≥ 330 observed daily values** per water year.
- Rolling windows were evaluated only when **all years within the window met annual completeness criteria**.
- This screening minimizes influence of partial records, start/end-of-record artifacts, and padded years.

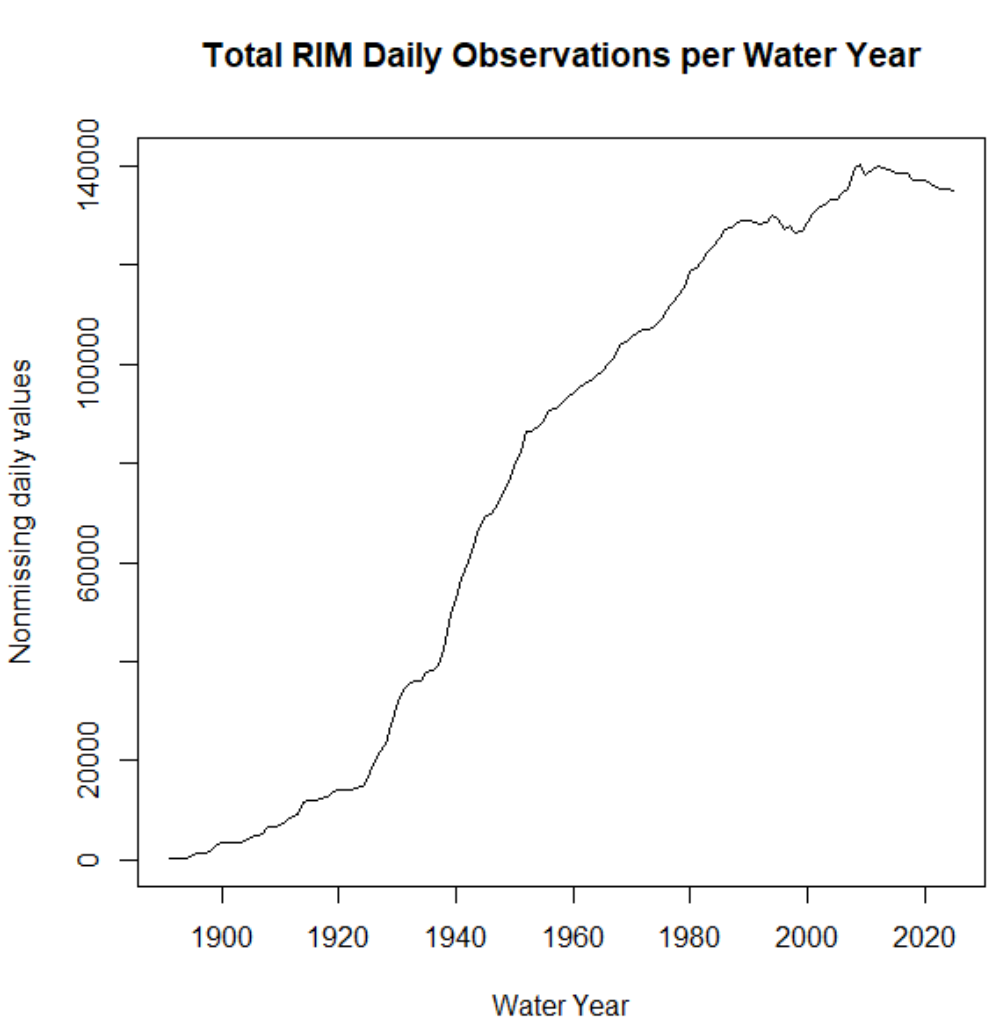
Stations included in base/critical period analysis

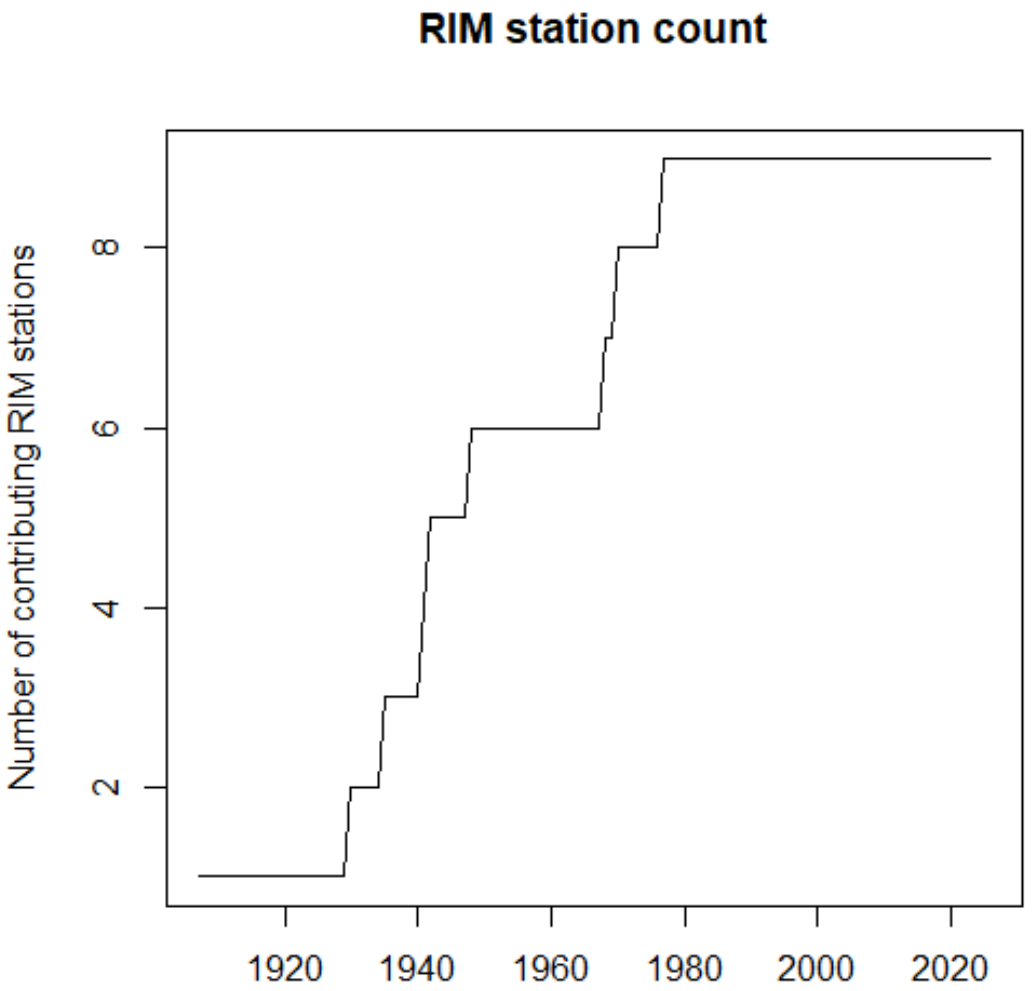
•RIM stations define basin-scale freshwater inputs used for model calibration.

•Secondary tributary stations will supplement this analysis to refine characterization of critical and high-stress hydrologic periods

•Basin-scale summaries will incorporate relative flow contribution weighting, following the framework illustrated in Appendix G.







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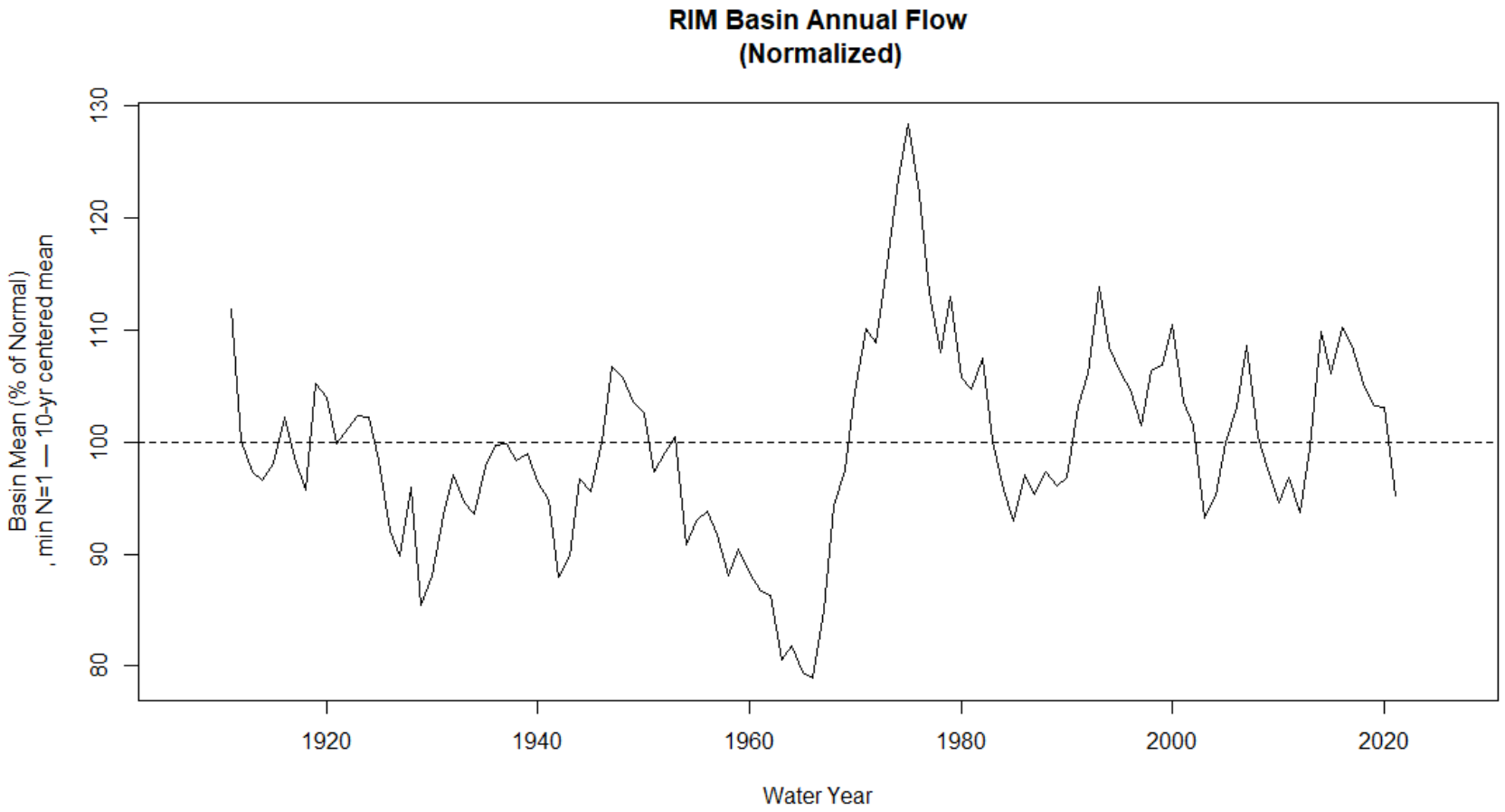
Entire record- (all RIM stations, equal weighting)



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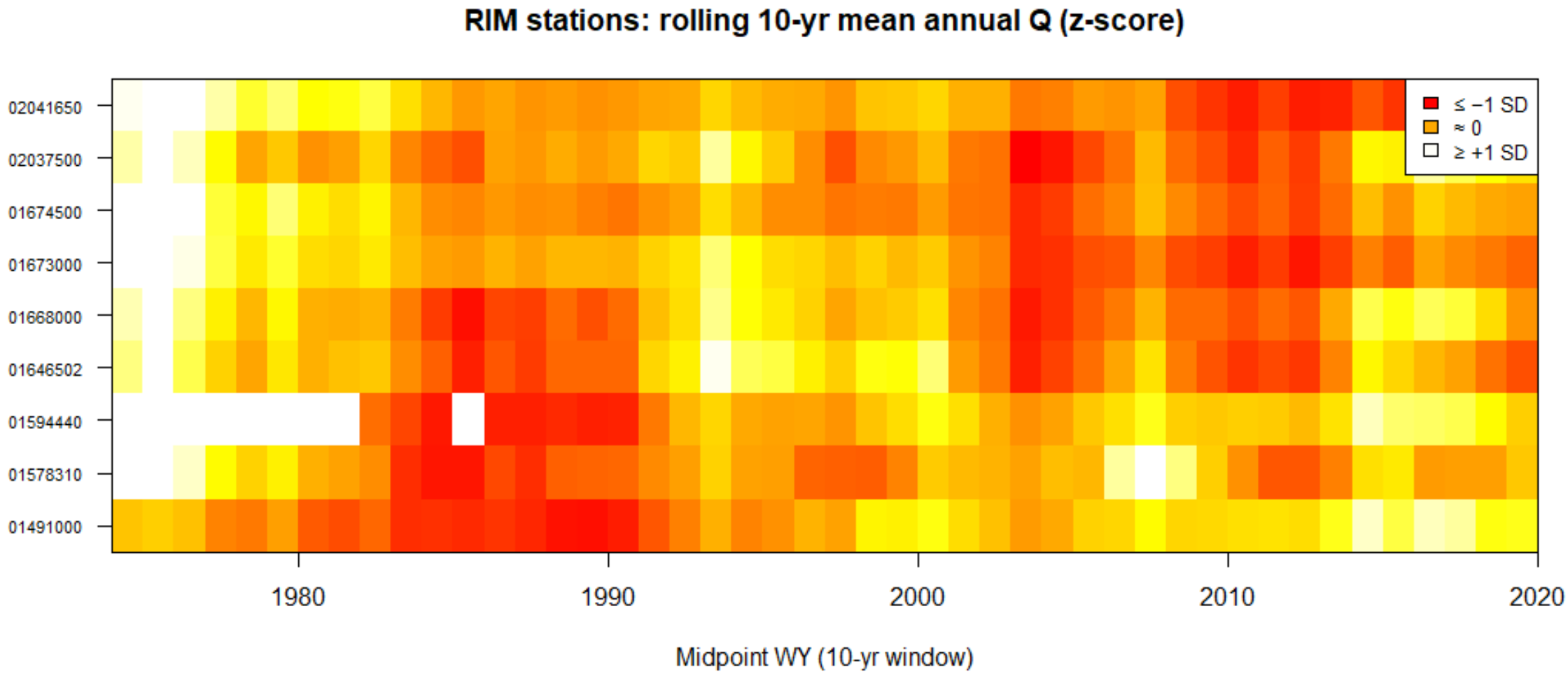
Annual metrics

- Daily streamflow are summarized to **annual metrics** for each station:
  - Mean and median daily flow
  - Lower tail quantiles (Q05, Q10)
  - Upper tail quantiles (Q90, Q95)
  - Variability metrics (e.g., coefficient of variation)



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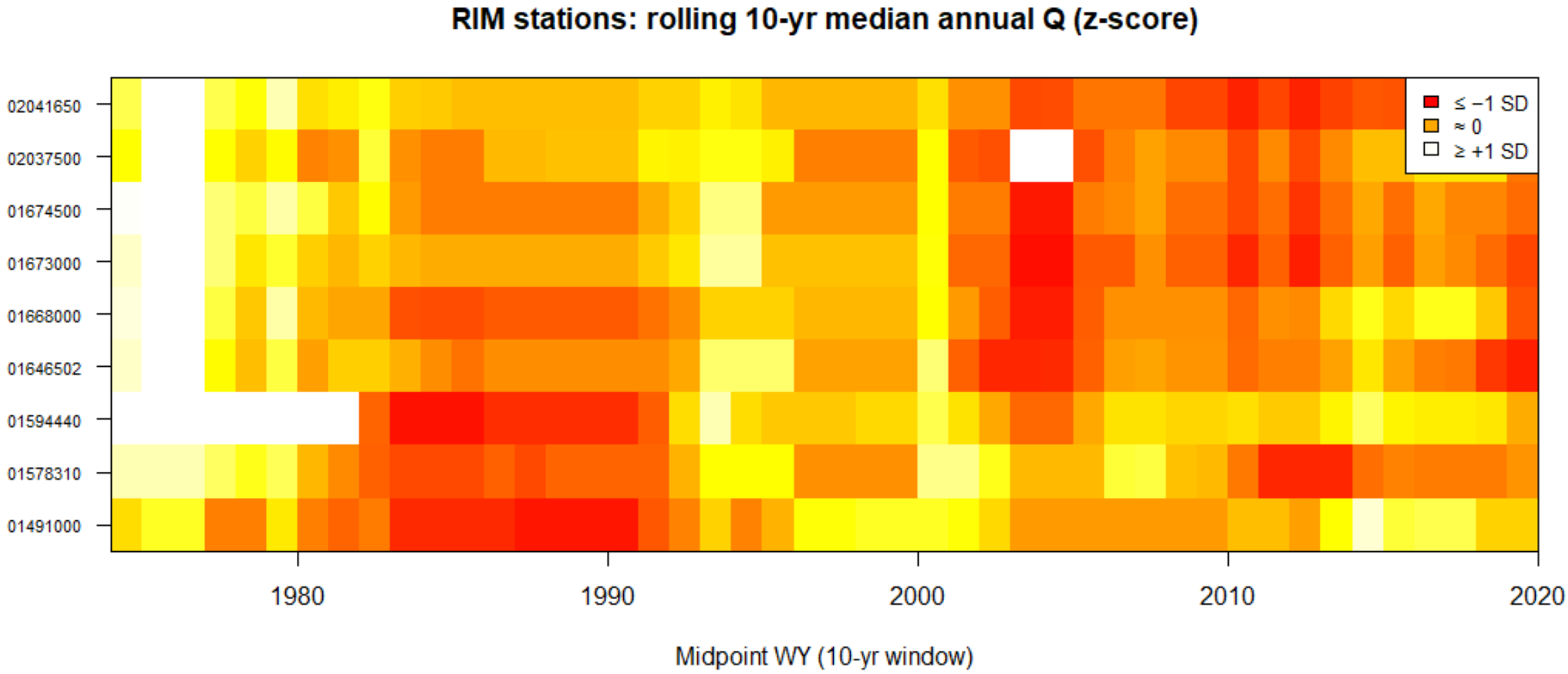

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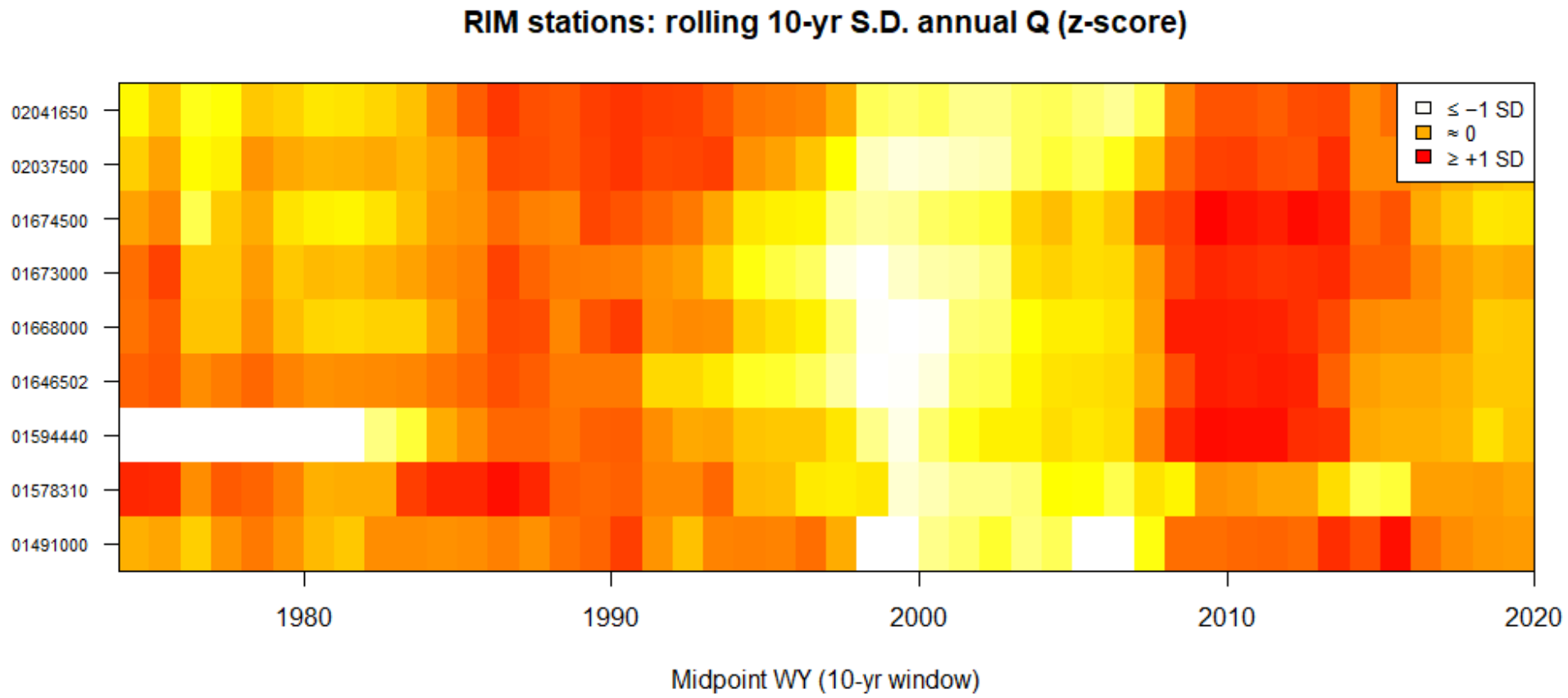
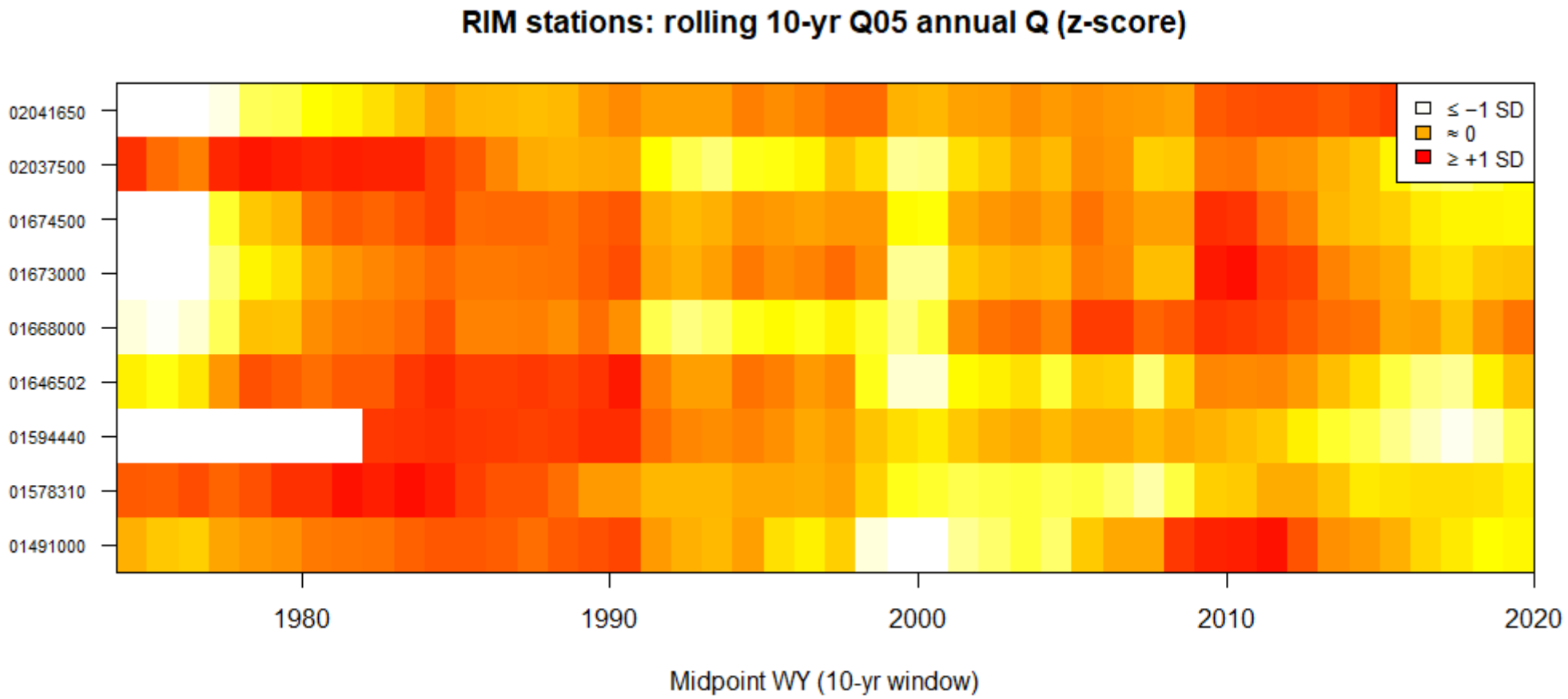
Annual flow variability (standard deviation)



Low flow magnitudes (Q05)



High flow magnitudes (Q95)