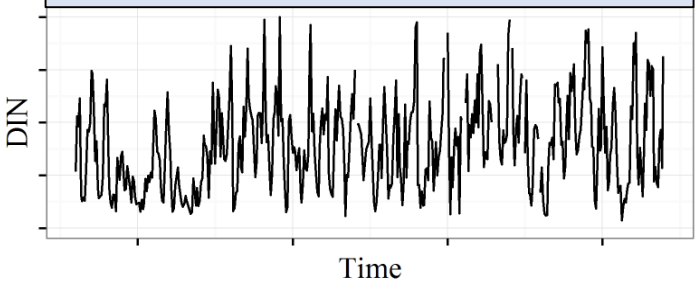
$$\ln(DIN) = \beta_0 + \beta_1 t + \beta_2 \ln(Q) + \beta_3 \sin(2\pi t) + \beta_4 \cos(2\pi t) + \varepsilon$$

Observed



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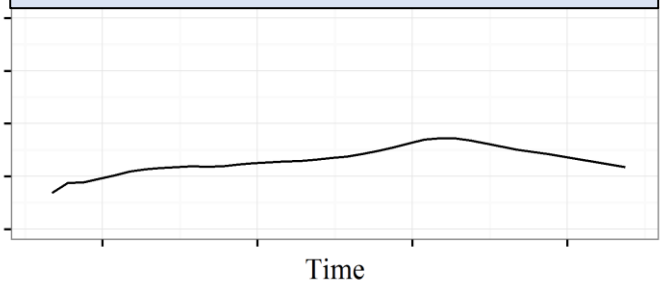
Annual



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Climate

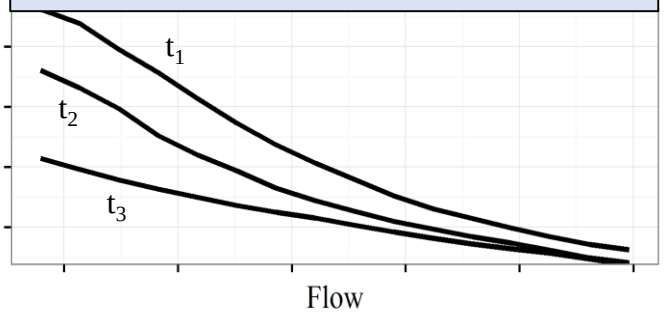
precipitation

temperature

wind events

ENSO effects

Flow effects



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Local

light/turbidity

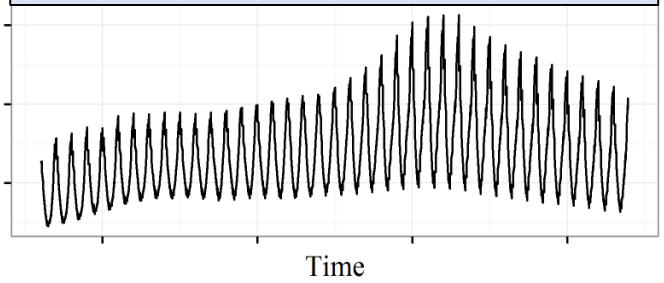
residence time

invasive species

trophic interactions

invasive species

Seasonal



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Regional/Historical

watershed inputs

point sources

management actions

flow changes

downstream effects

Residual