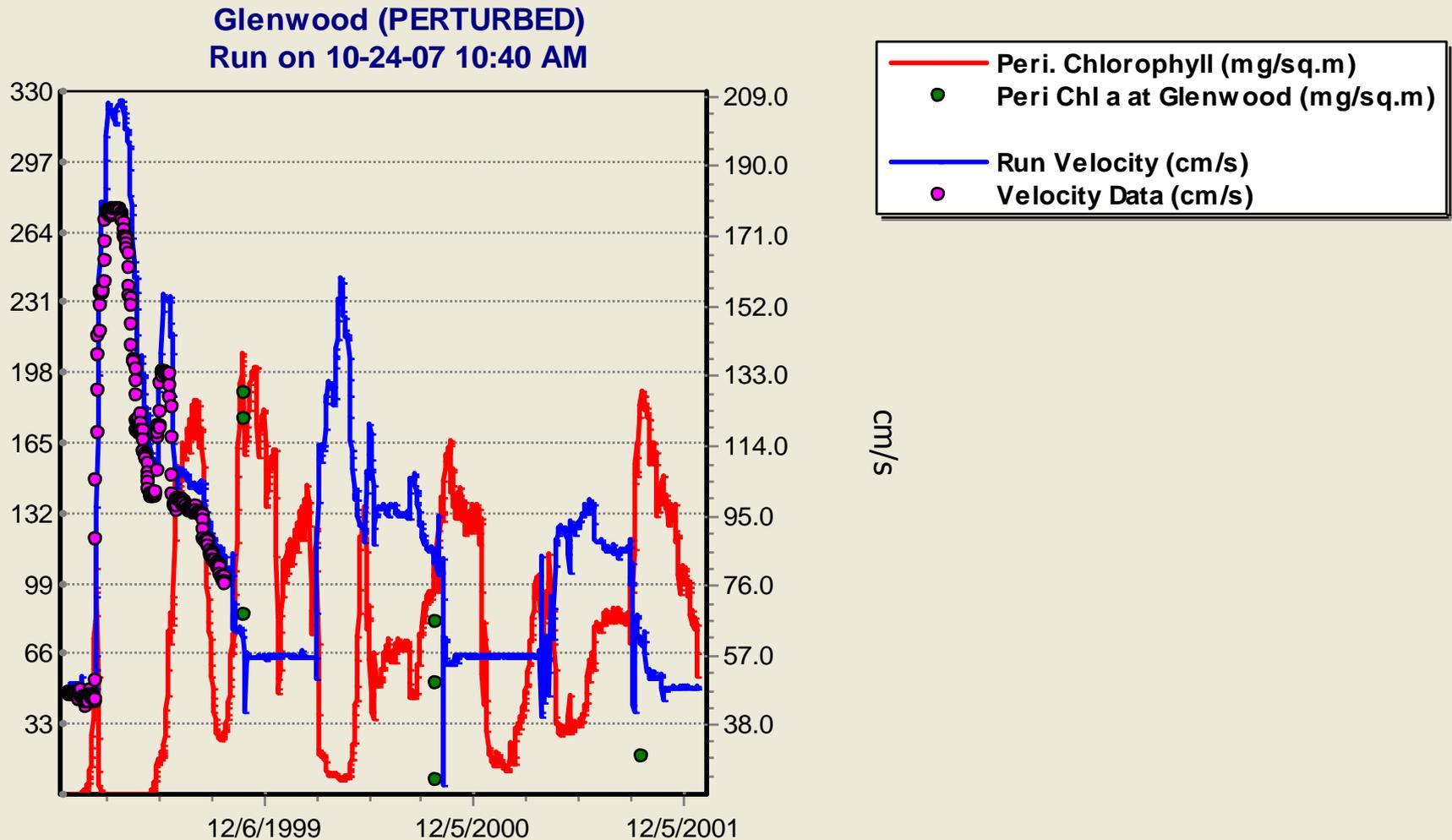
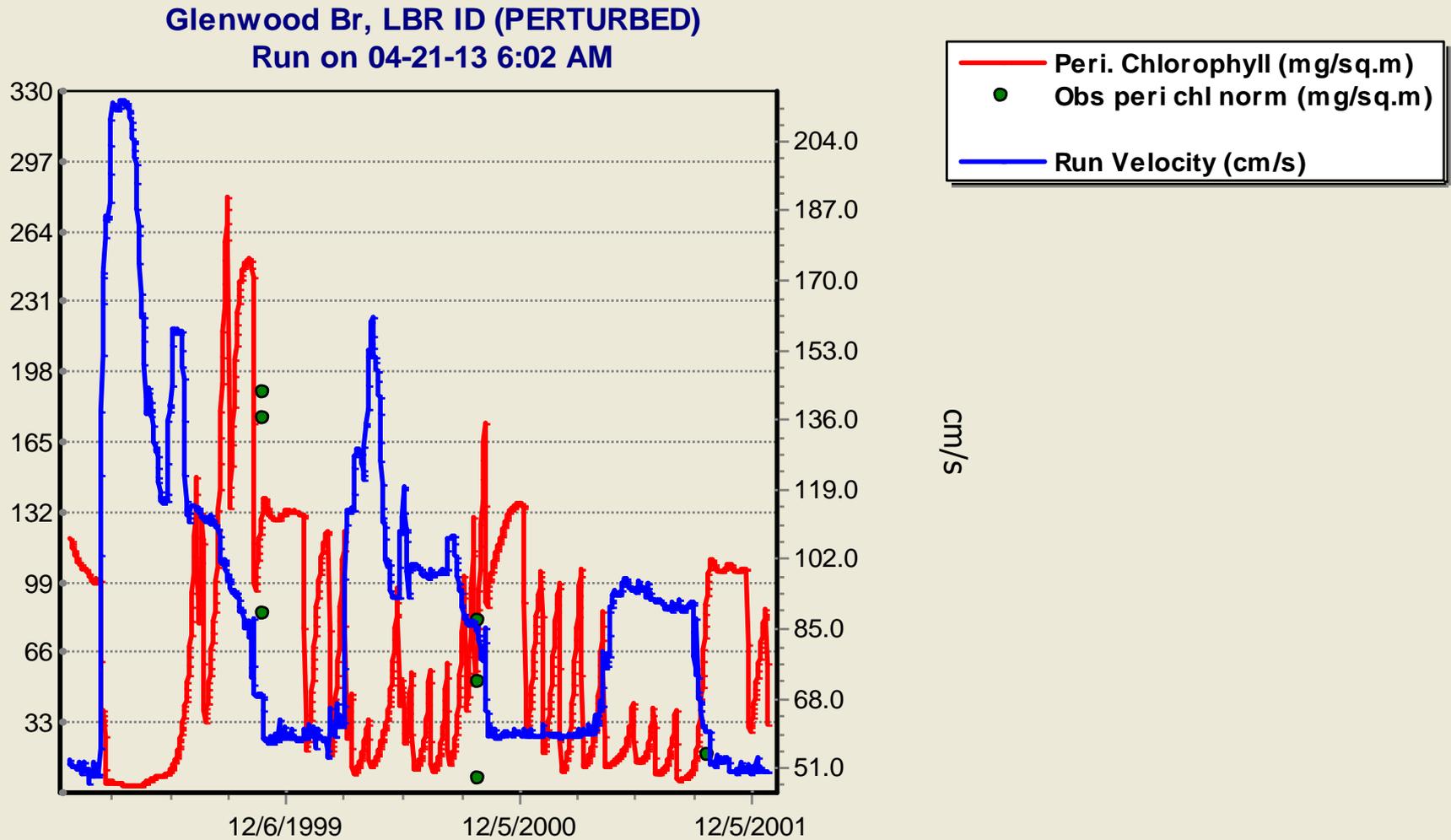


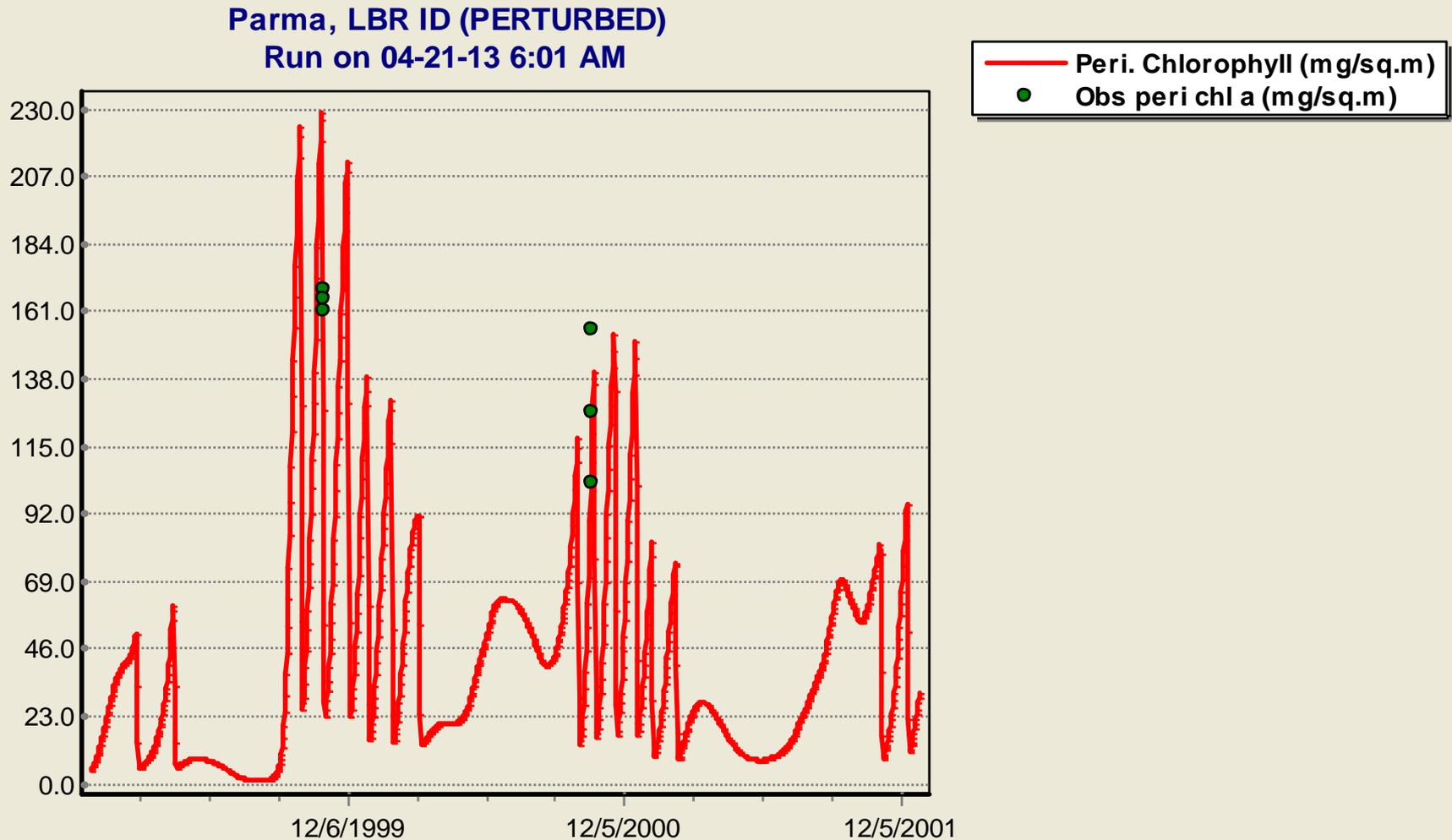
LBR is heavily managed with essentially the reverse of a normal seasonal hydrograph (13-segment run)



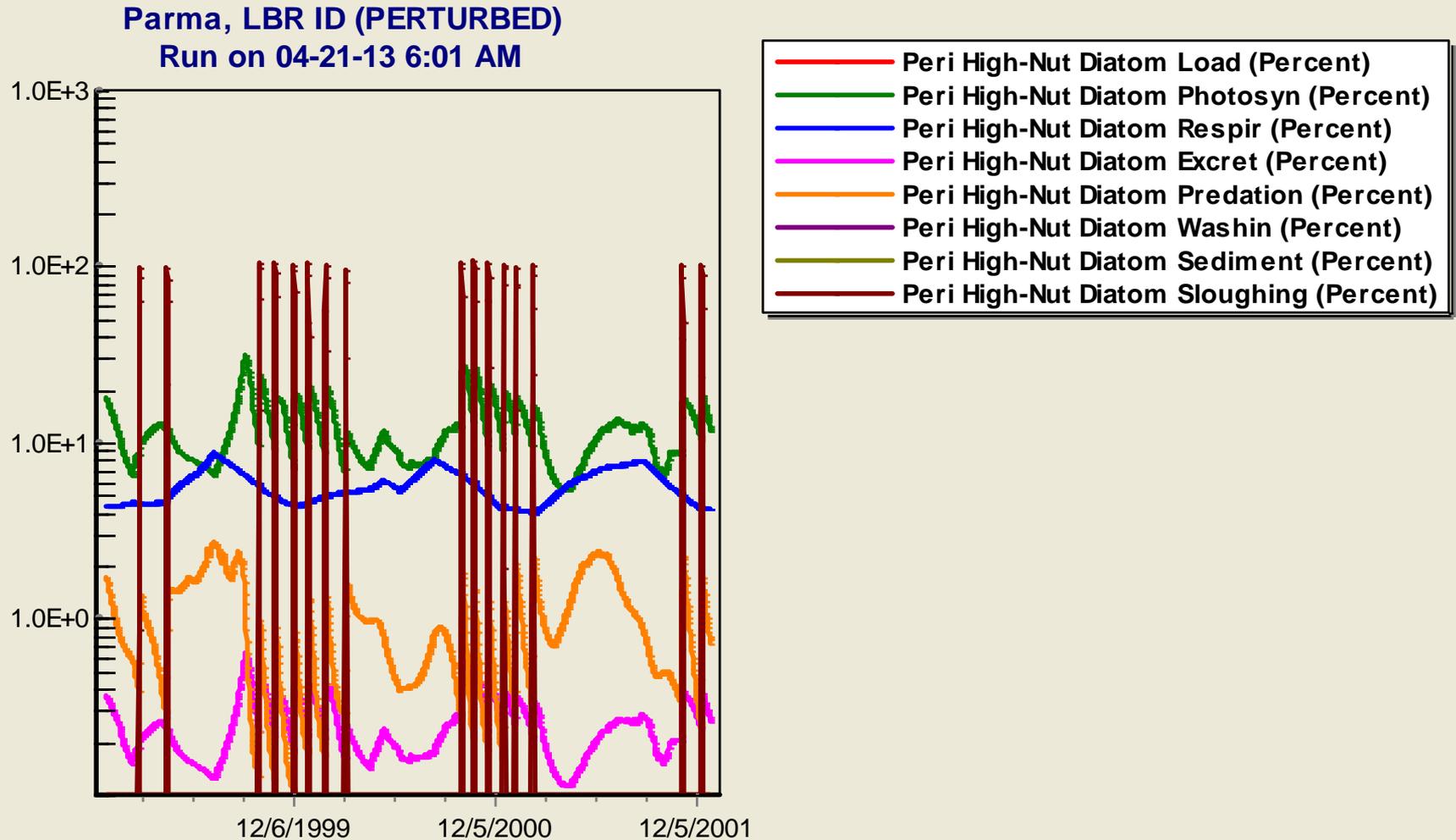
Should model multiple years because of effect that differing discharge has on ecosystem (4-segment run)



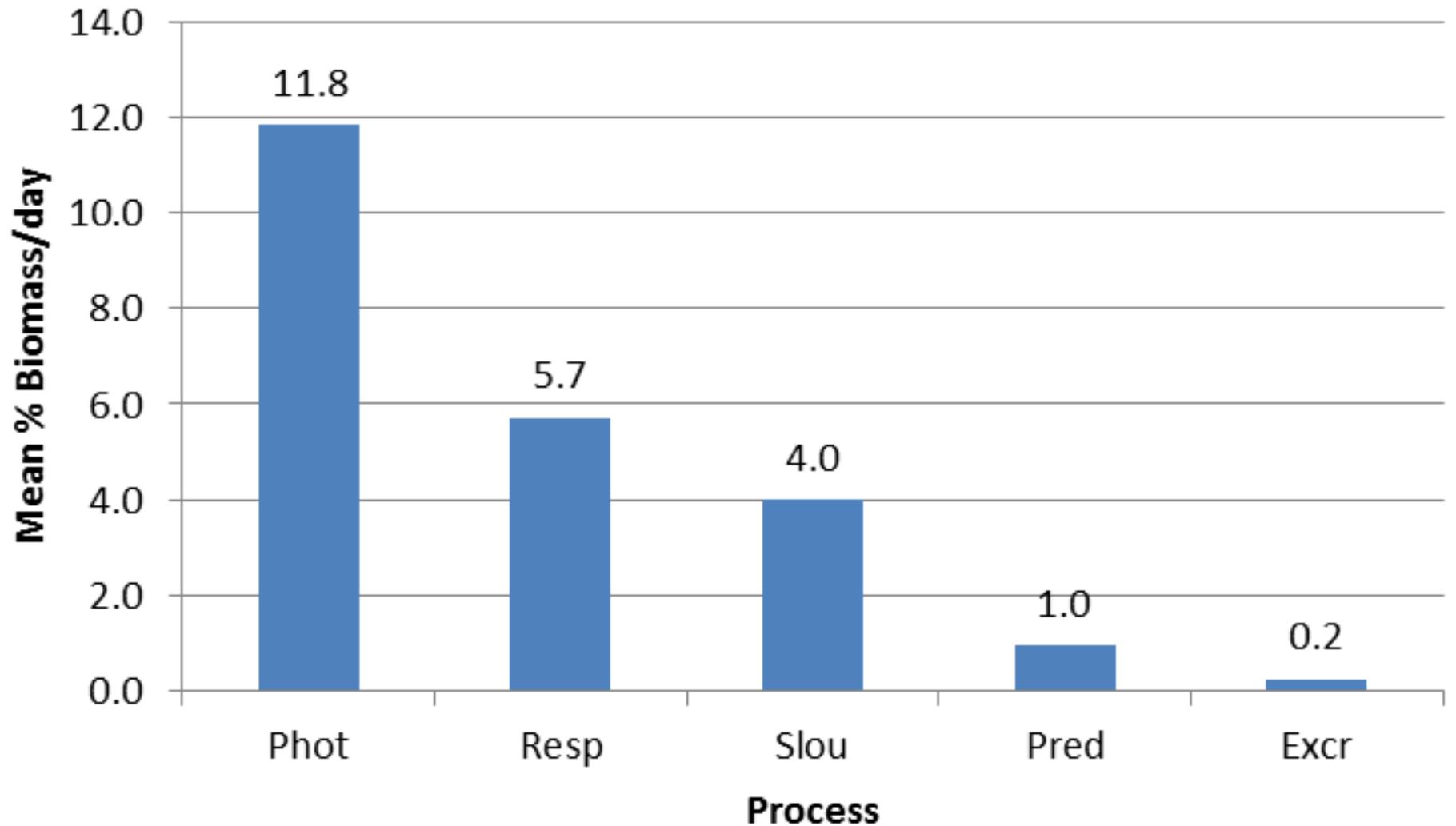
In 4-segment simulation Parma periphyton can be represented by high-nutrient diatoms



Therefore we can explore rates (as % of biomass)

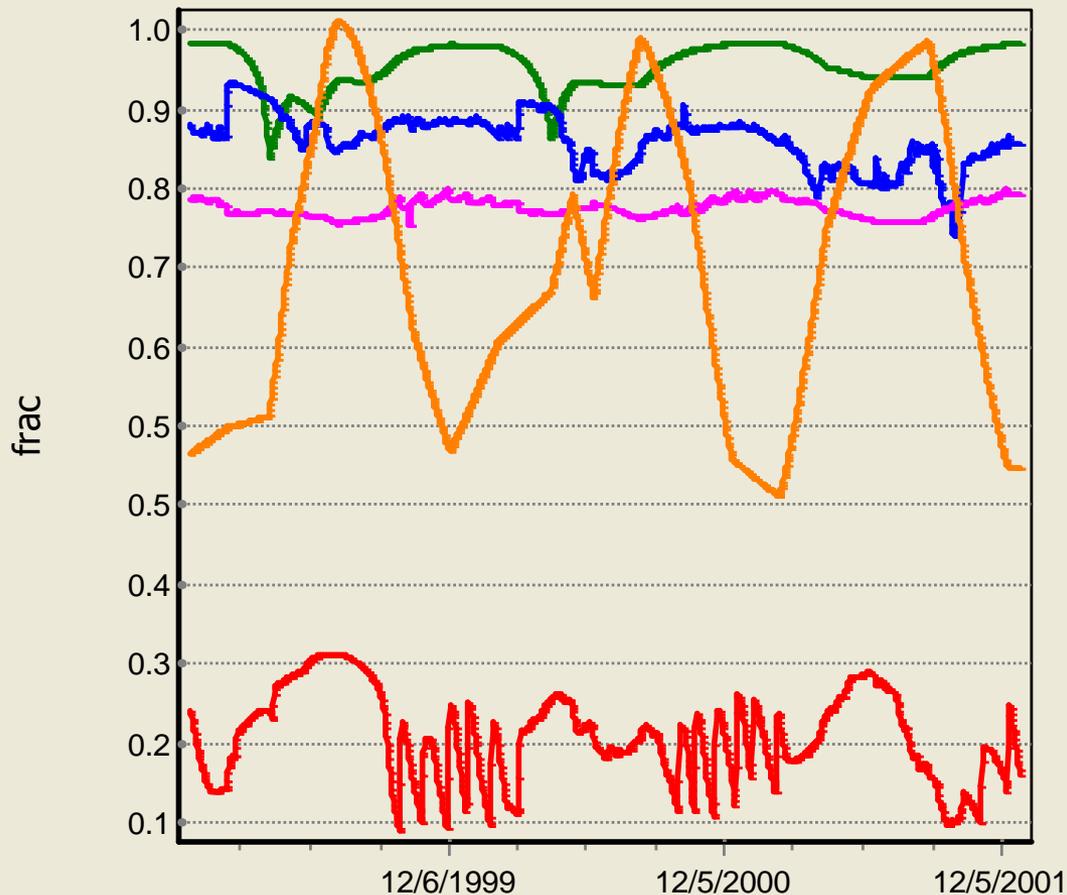


Processes affecting periphyton at Parma averaged over 3 years



Limitations to photosynthesis of periphyton at Parma model predicts light to be most limiting, then C

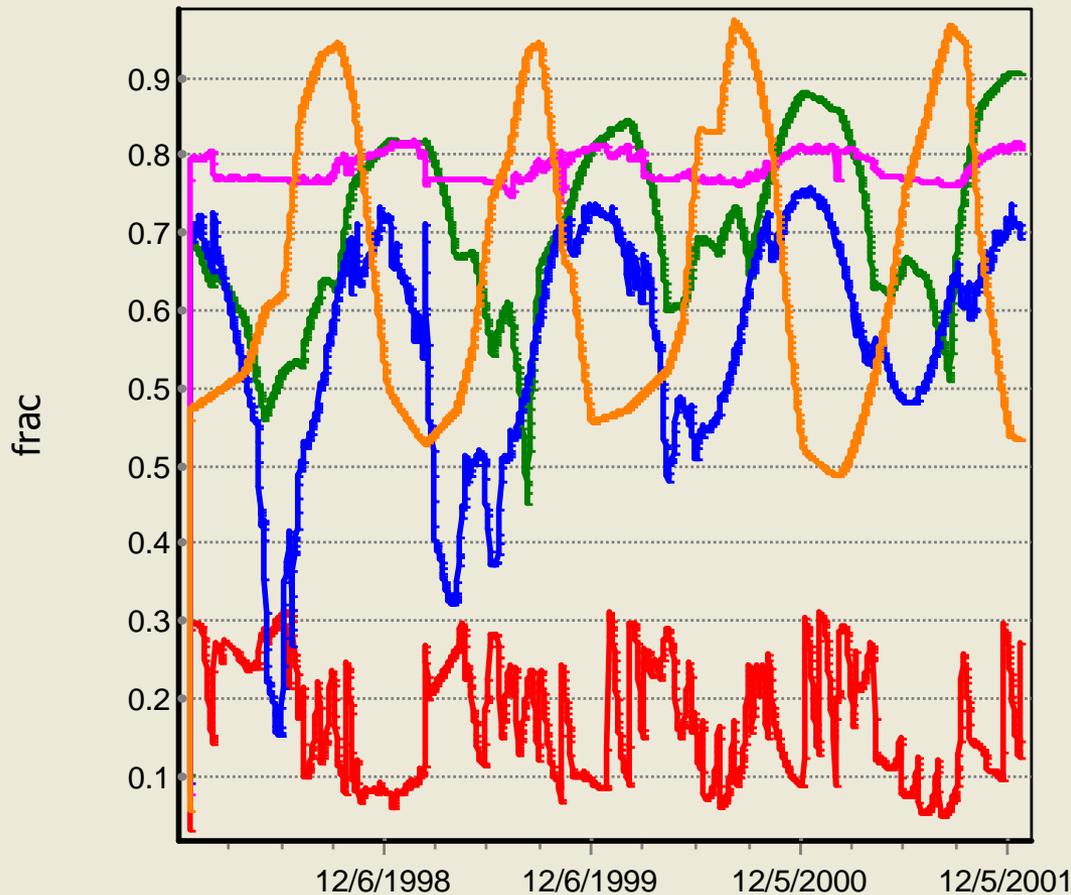
Parma, LBR ID (PERTURBED)
Run on 04-21-13 6:01 AM



- Peri High-Nut Diatom Lt_LIM (frac)
- Peri High-Nut Diatom N_LIM (frac)
- Peri High-Nut Diatom PO4_LIM (frac)
- Peri High-Nut Diatom CO2_LIM (frac)
- Peri High-Nut Diatom Temp_LIM (frac)

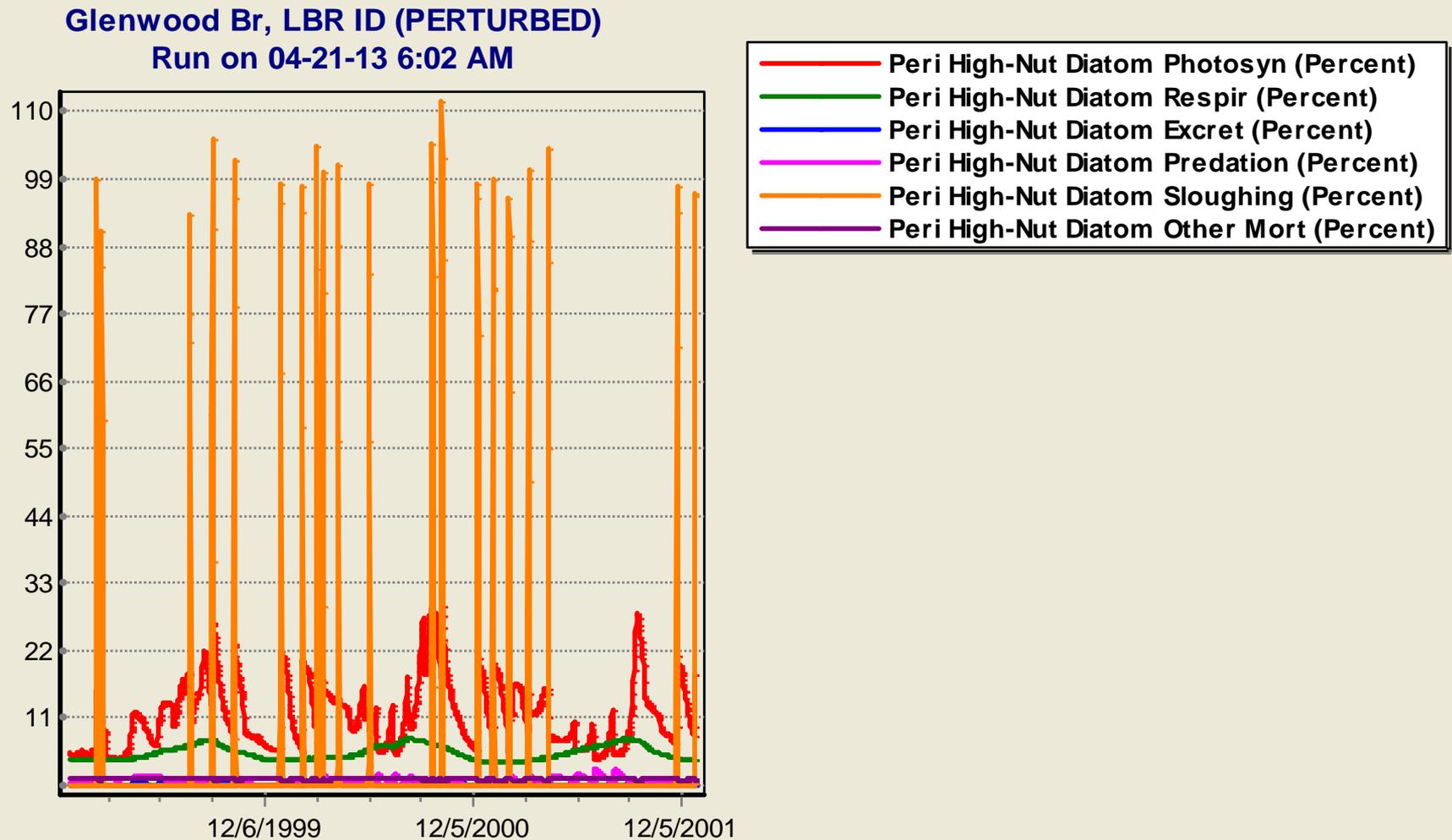
Limitations to photosynthesis of high-nutrient peri. diatom at Glenwood, model predicts light to be most limiting, and then P

Glenwood Br, LBR ID (PERTURBED)
Run on 04-21-13 6:02 AM



- Peri High-Nut Diatom Lt_LIM (frac)
- Peri High-Nut Diatom N_LIM (frac)
- Peri High-Nut Diatom PO4_LIM (frac)
- Peri High-Nut Diatom CO2_LIM (frac)
- Peri High-Nut Diatom Temp_LIM (frac)

High-nutrient periphytic diatoms at Glenwood are also predicted to be subject to sloughing



Sloughing in AQUATOX

I often calibrate using the sloughing parameters because

- the substrate can vary between sites (for example bedrock vs. large cobbles vs. sand)—although F_{crit} is kept constant across segments in a linked simulation
- we may want express heterogeneity within a reach by having numerous small sloughing events or synchronicity by setting Pct lost to sloughing to a large %

Using the MN parameter set in the 4-segment run,

- $F_{crit} = 0.008$ for high-nutrient diatoms and 0.007 for low-nutrient diatoms and
- Pct lost to sloughing = 90%

In the re-calibrated 13-segment run

- $F_{crit} = 0.002$ for high-nut diatoms
- Pct lost to sloughing = 25%

Peer Review of Periphyton Constructs & Application

AQUATOX has undergone three peer reviews

The periphyton constructs and application have been reviewed and approved by two experts:

- Jan Stevenson
- Marty Matlock