OSCM monthly meeting

November 27th, 2018

Agenda:

- AGU: Presentations, OSCM get-together?
- Simple ELM updates
- Ongoing work on sELM and surrogate model development
- OED discussion summary
  - Work on 2000 ensemble members: GPP and LAI monthly output
- Updates from SNL
- Next steps for single column model

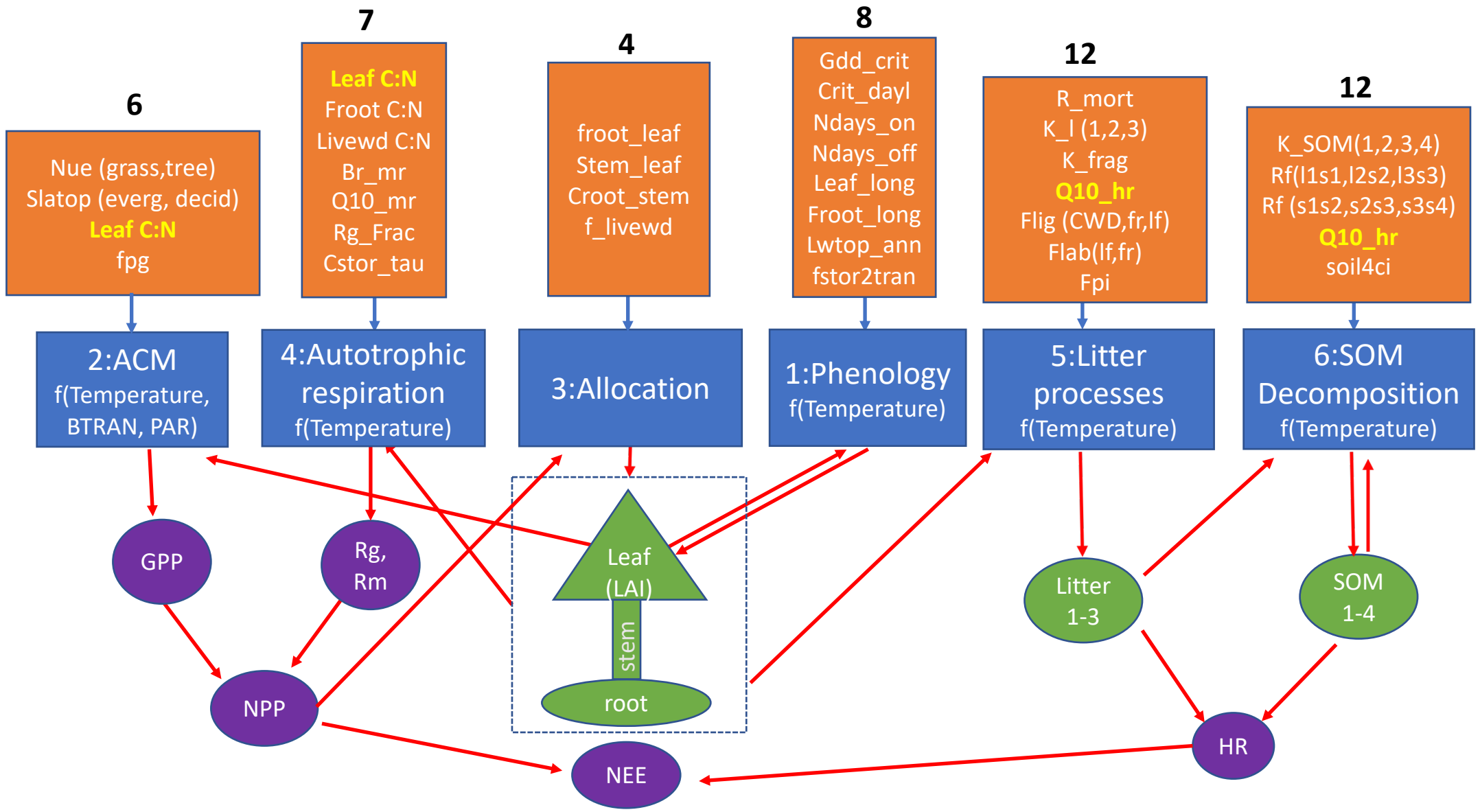


Figure x: Schematic of processes, shown with blue boxes with dependencies on environmental data, in simple ELM. Associated parameter inputs used in this study are listed in orange rectangles. Parameters are input to one or more processes as indicated by the blue arrows. Model state variables (green shapes) and fluxes (purple ovals), may be outputs for some processes and inputs for other processes. These interactions are shown by the red arrows.

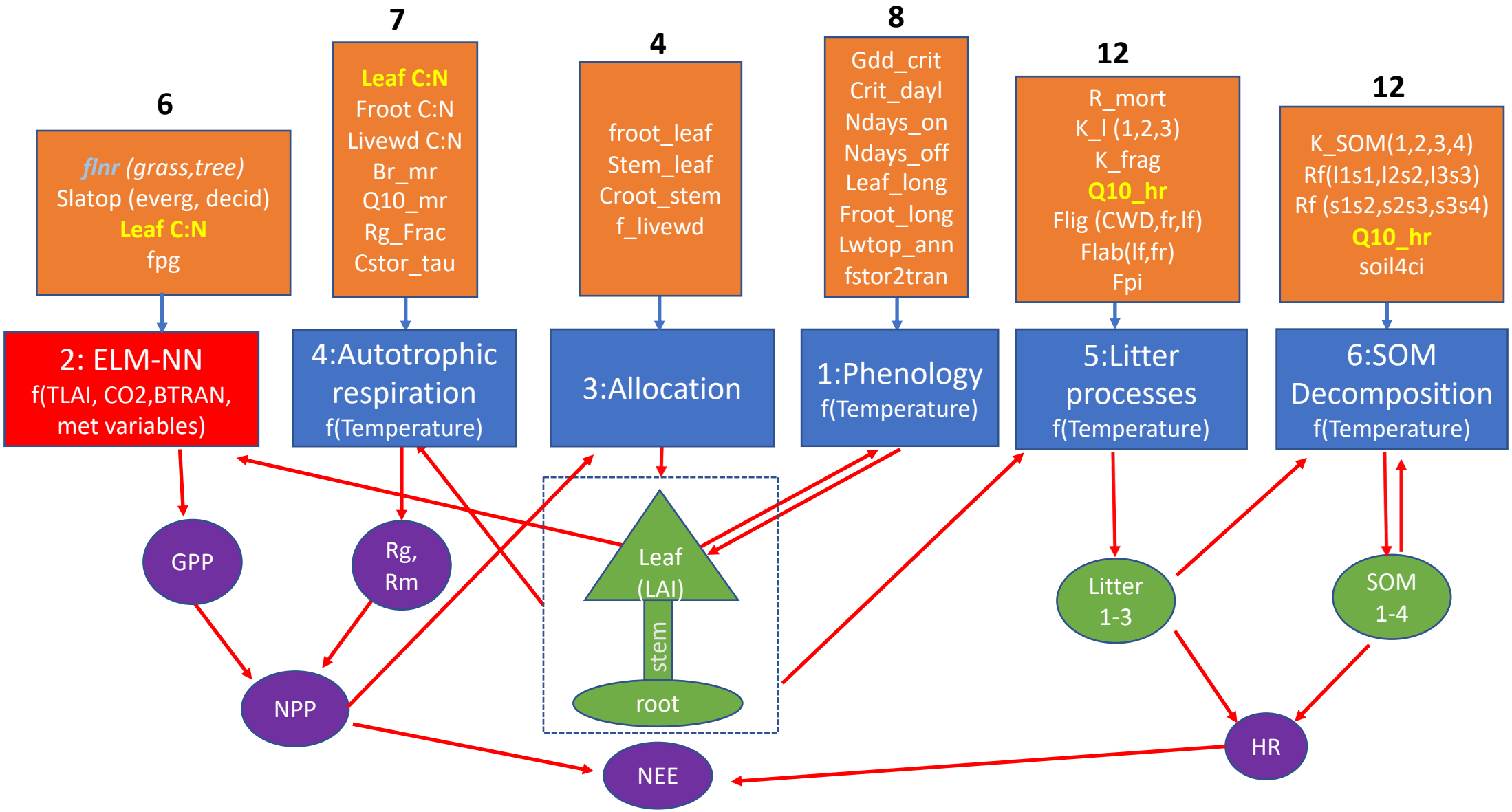
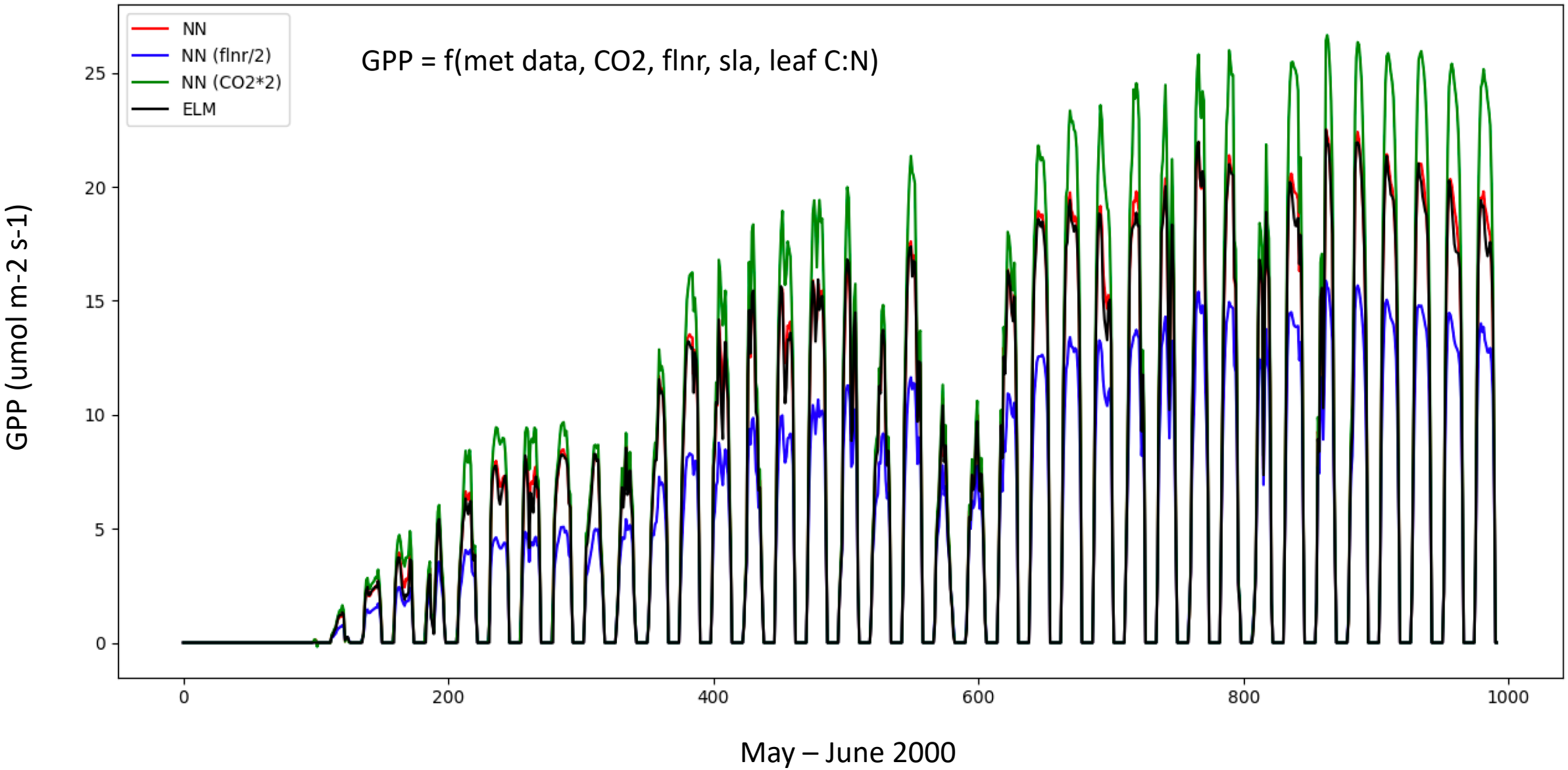


Figure x: Schematic of processes, shown with blue boxes with dependencies on environmental data, in simple ELM. Associated parameter inputs used in this study are listed in orange rectangles. Parameters are input to one or more processes as indicated by the blue arrows. Model state variables (green shapes) and fluxes (purple ovals), may be outputs for some processes and inputs for other processes. These interactions are shown by the red arrows.

Unit performance at US-UMB flux site



- Hourly model: GPP = f(BTRAN, TLAI, CO2, met data, slatop, flnr, leafcn)
  - R^2 = 0.999, RMSE = 0.37
- 3x slower in simple ELM (without considering I/O limitations)
- 24x larger data requirement – sELM becomes I/O limited
- Daily model
  - R^2 = 0.97, RMSE = 0.85
- Loss of fidelity but generally accurate

- Expanding to higher dimensionality
  - 10-20 uncertain parameters
- More complex NNs required, additional training data

Daily GPP model