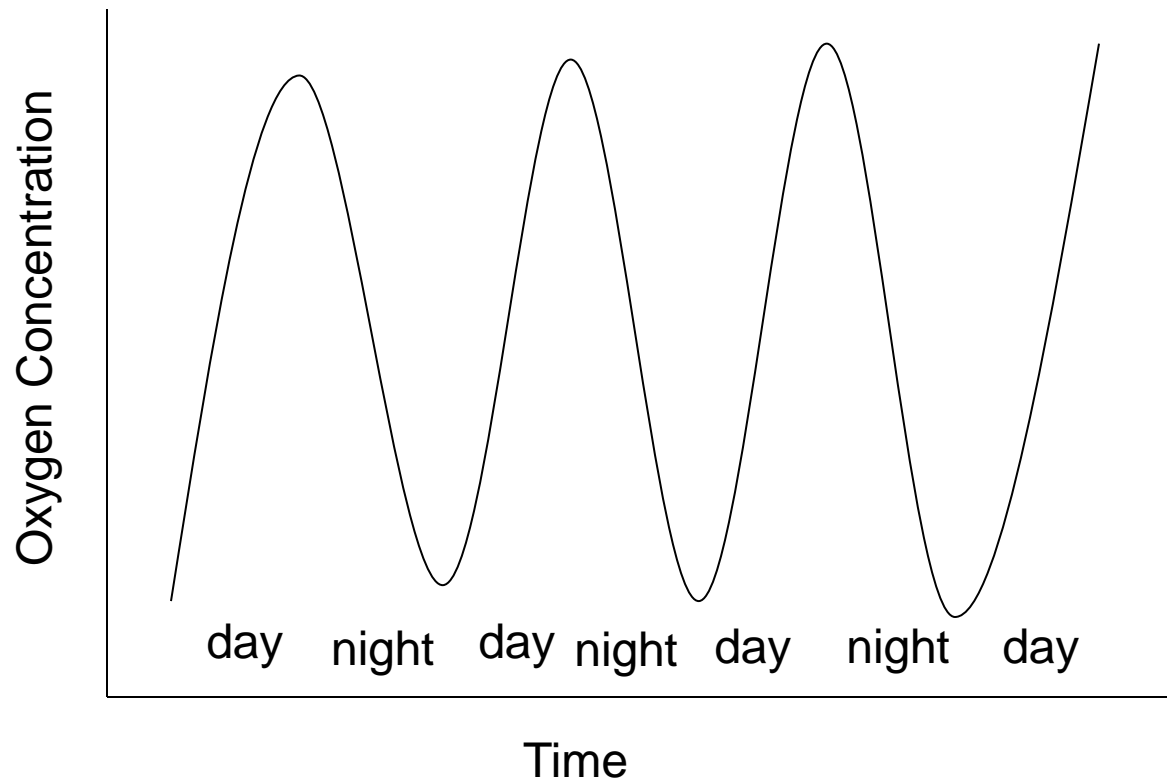
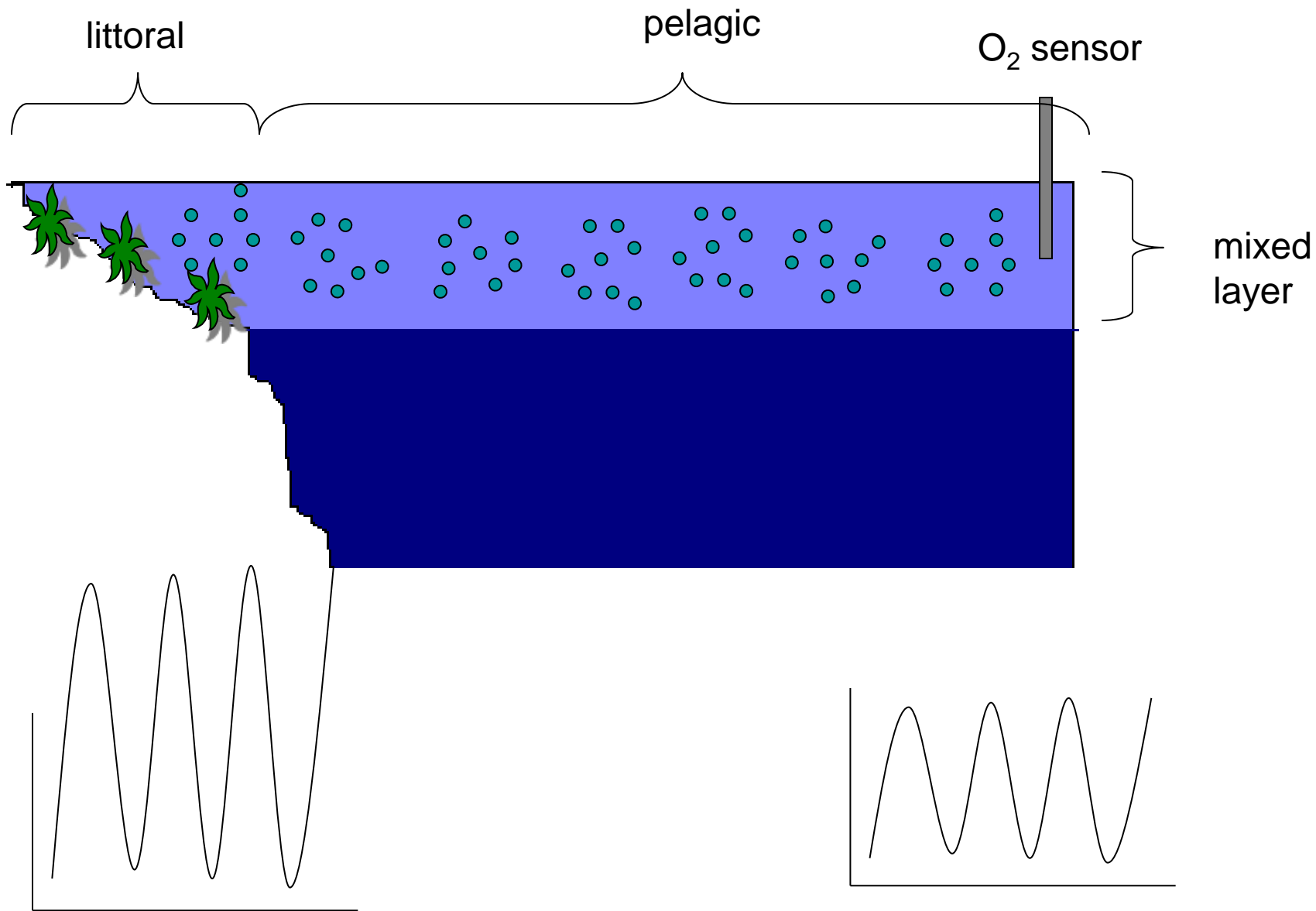
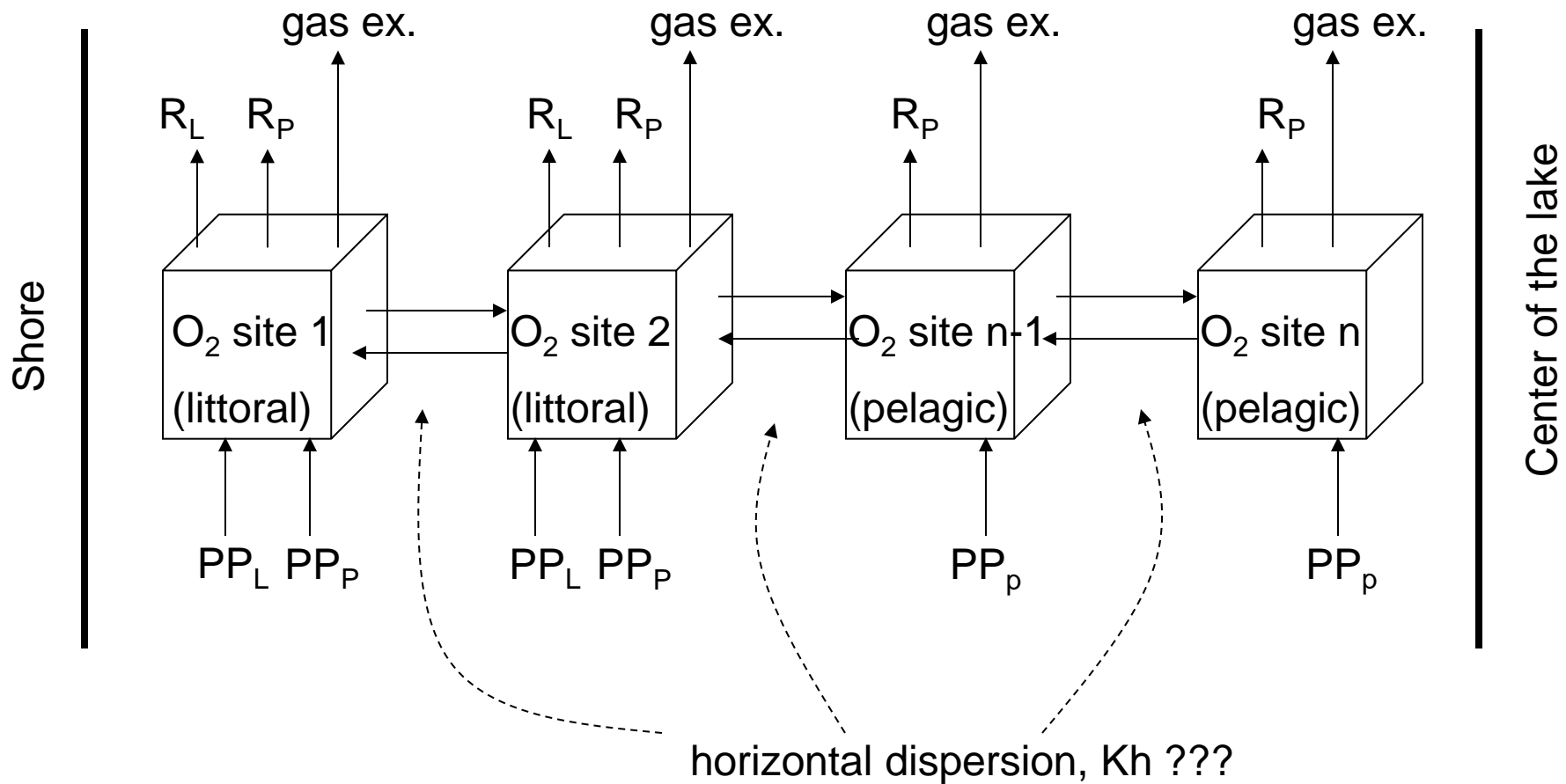


How simplistically can I model  
O2 dynamics and still learn  
something?





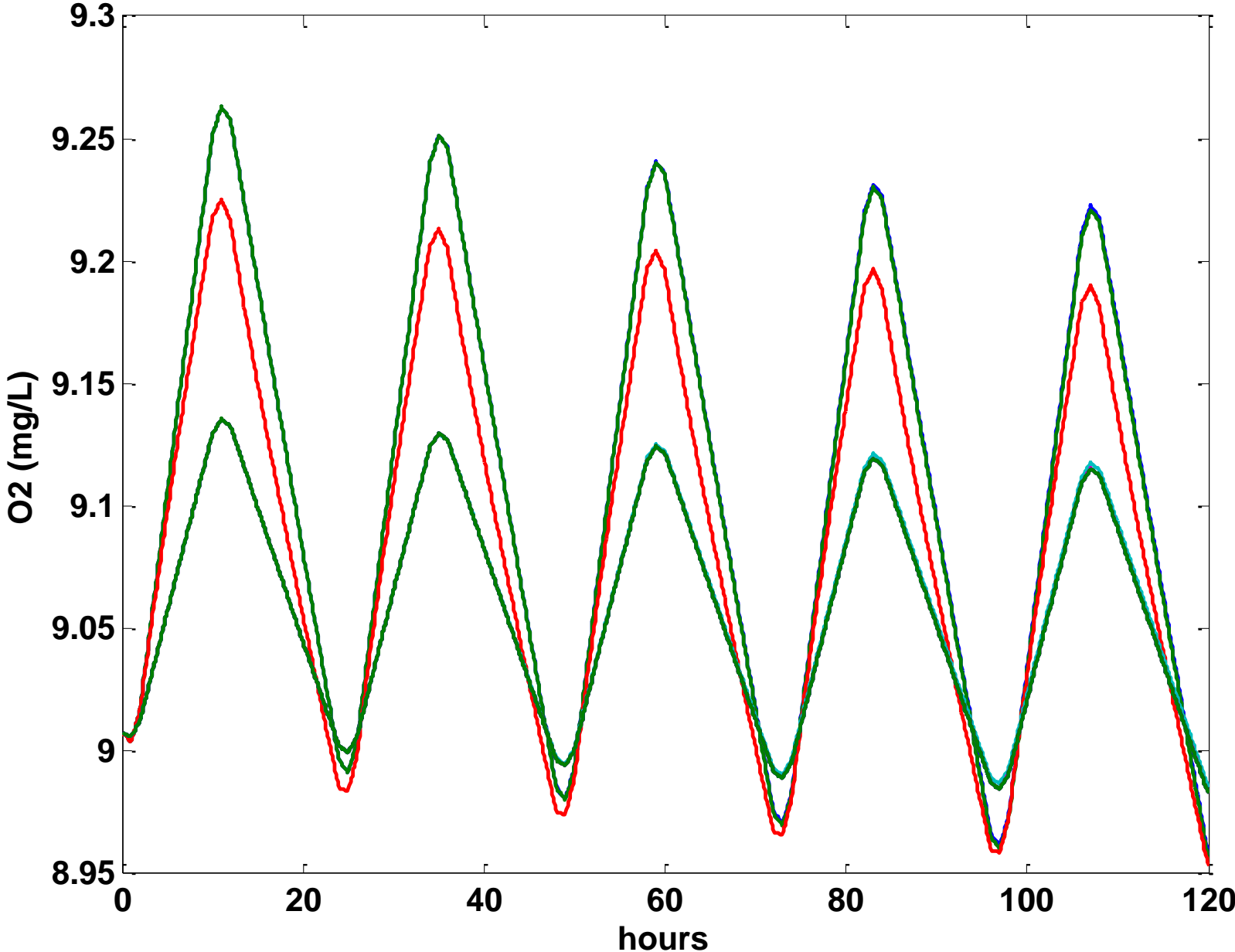


$$\frac{dO_{2(x)}}{dt} = PP_L + PP_P - R_L - R_P + k_h(O_{2(x-1)} - O_{2(x)}) + k_h(O_{2(x+1)} - O_{2(x)}) + k_a \frac{1}{h} (\alpha O_{2(a)} - O_{2(x)})$$

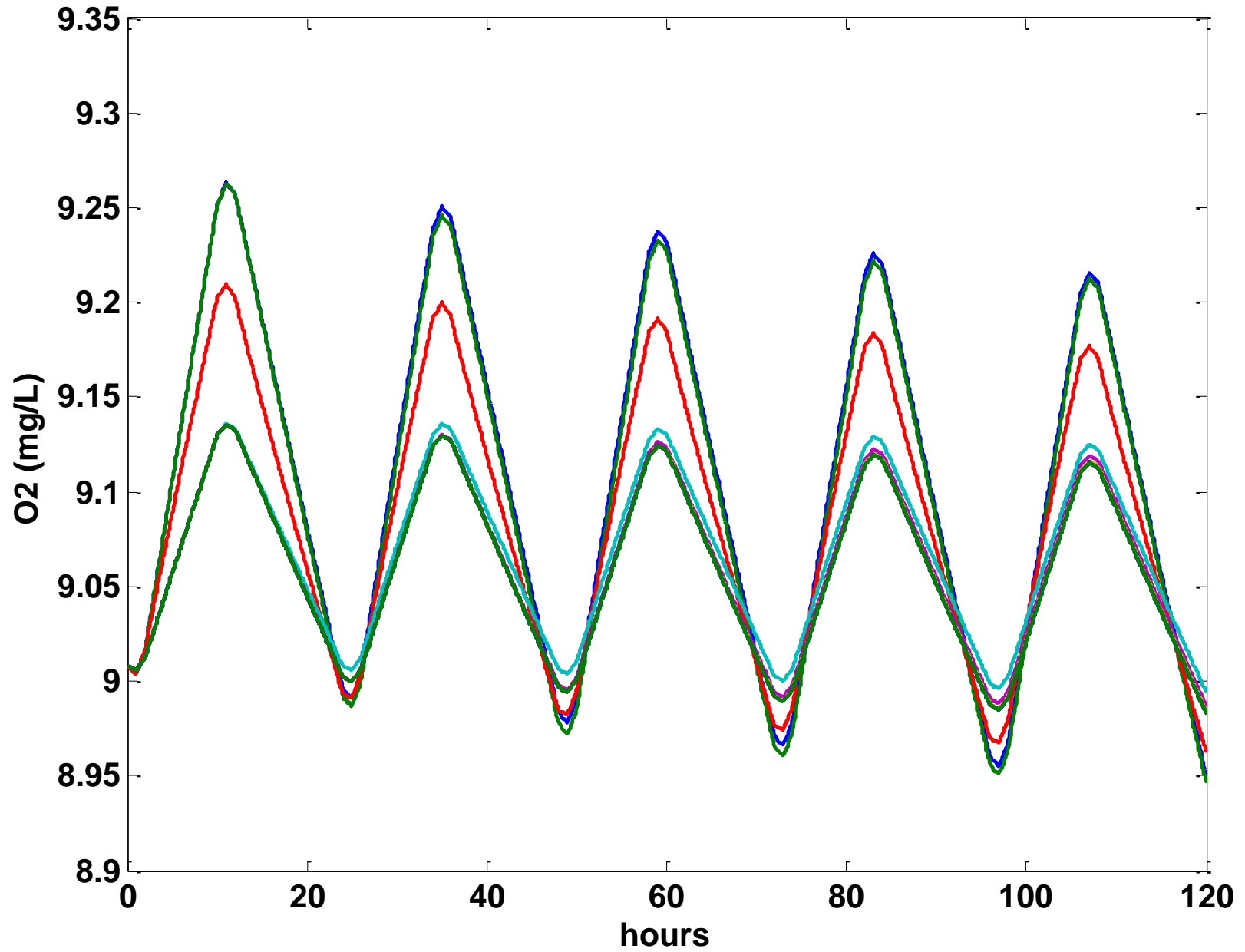
# Model Test and Hypothesis

- Examine how differences in  $K_h$  influence mid-lake estimates of whole-lake metabolism
- Hypothesis:
  - At low  $K_h$  – mid-lake sensor = pelagic metabolism
  - At high  $K_h$  – mid-lake sensor = whole-lake metabolism

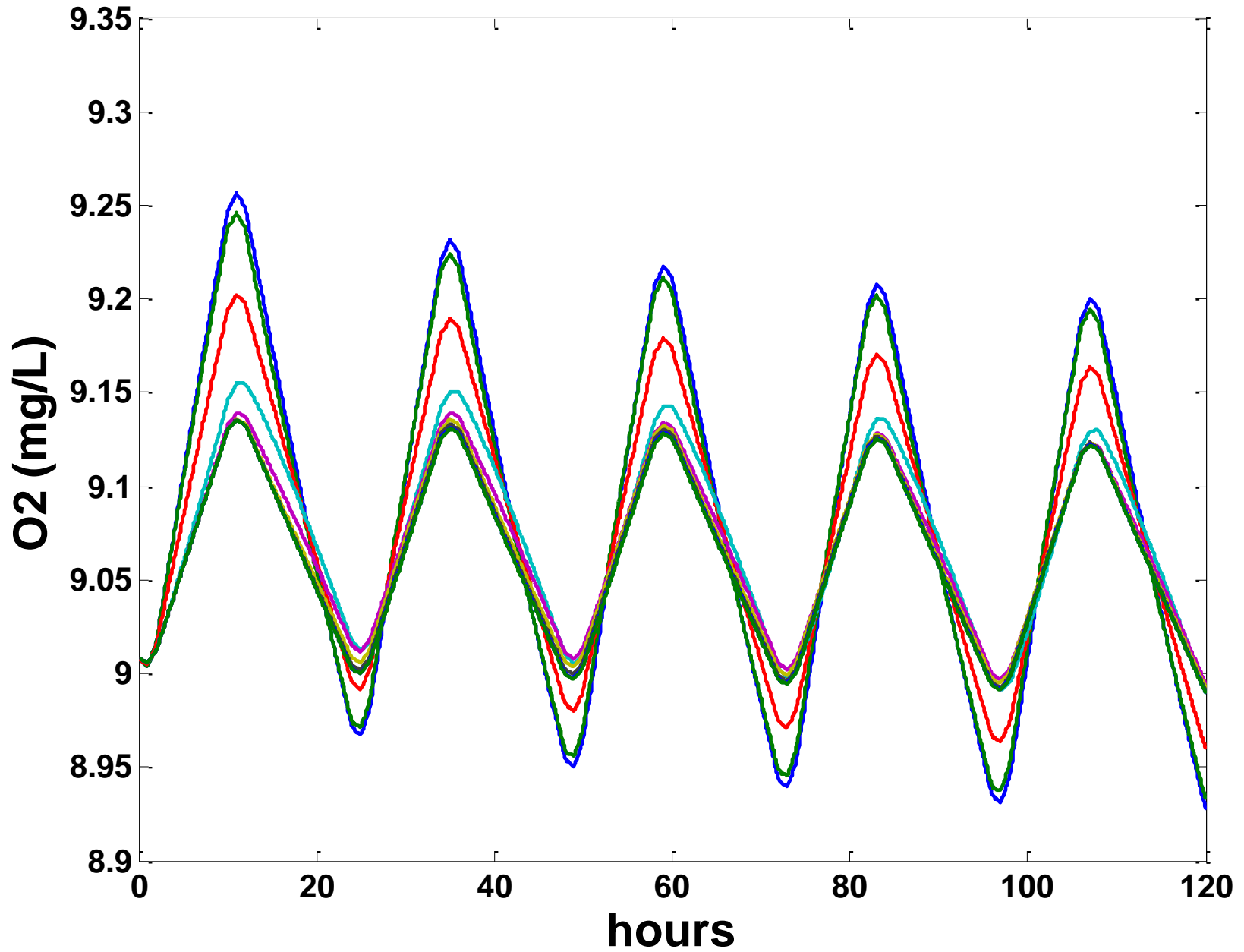
$K_h = .1692 \text{ m}^2/\text{hr}$



$K_h = 1 \text{ m}^2/\text{hr}$

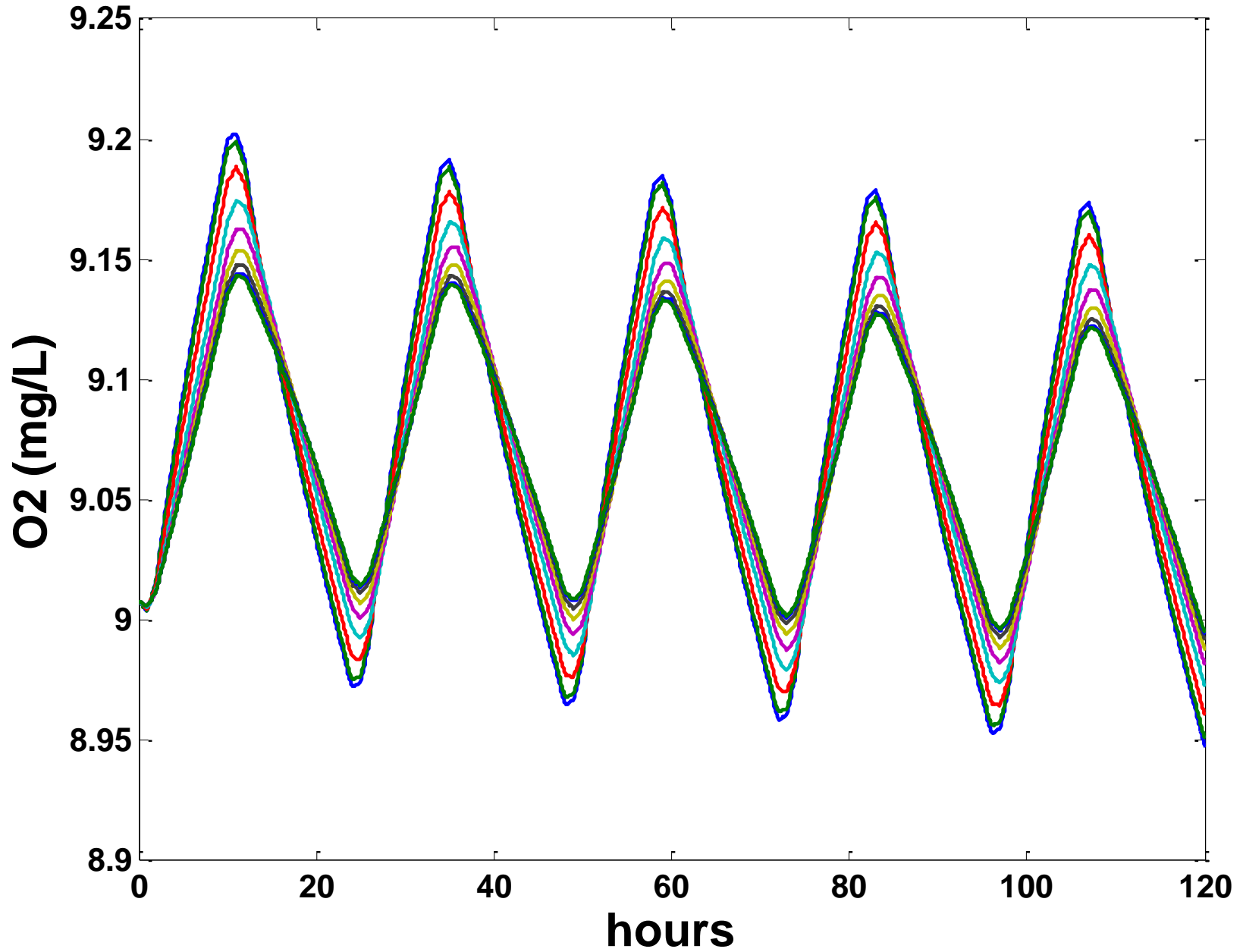


$K_h = 10 \text{ m}^2/\text{hr}$

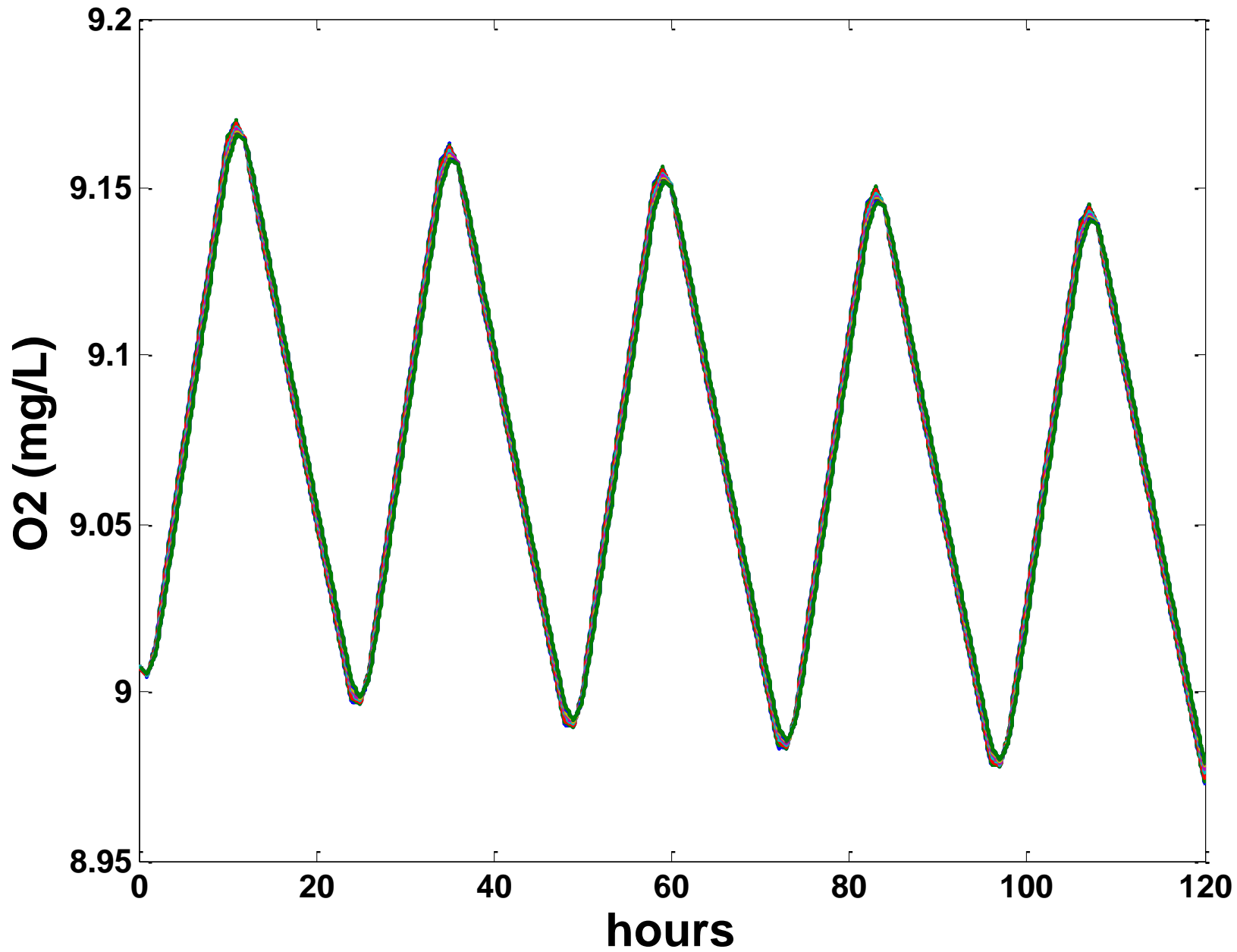




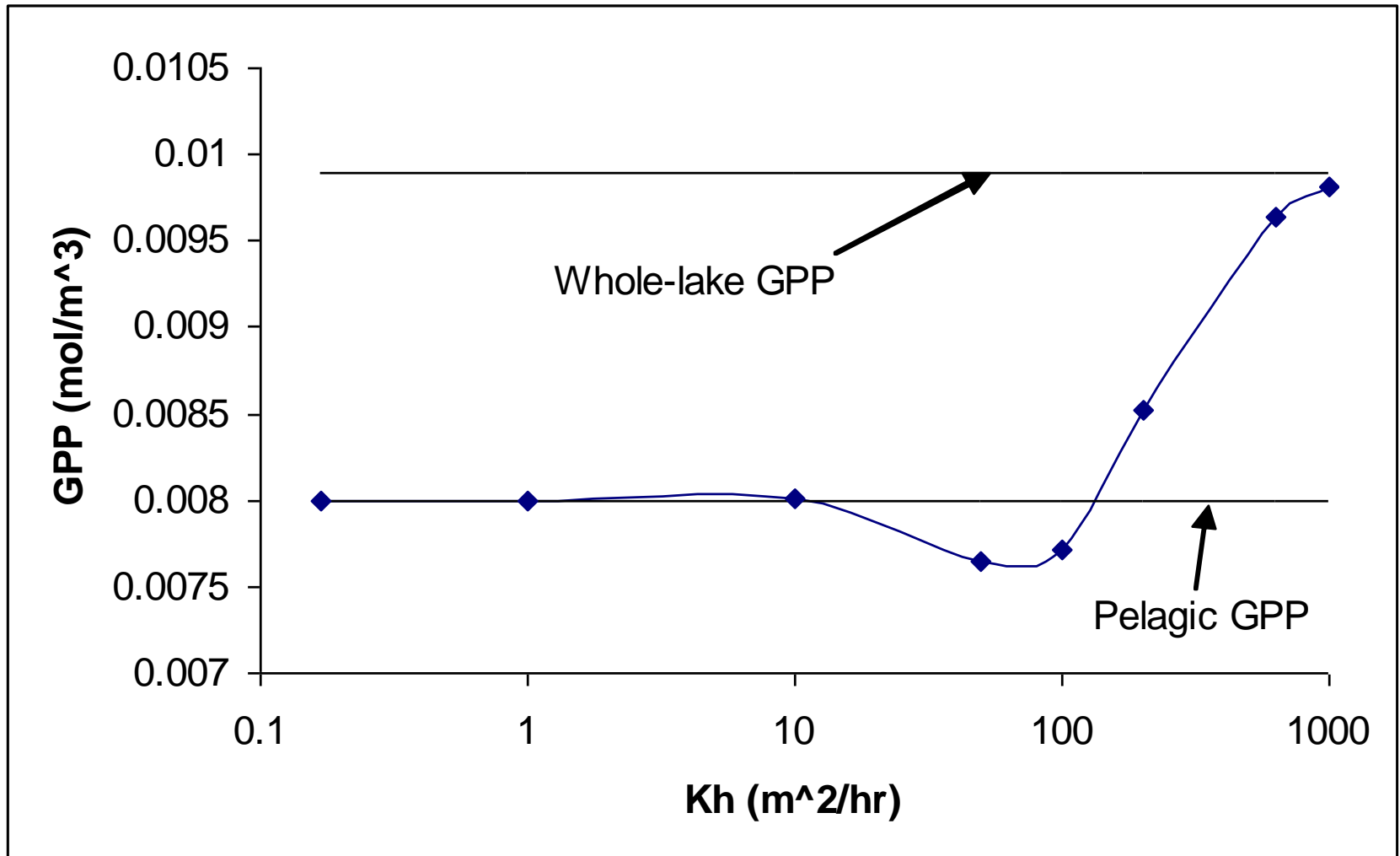
$K_h = 100 \text{ m}^2/\text{hr}$



$K_h = 1000 \text{ m}^2/\text{hr}$



# Mid-lake estimates of GPP



# 80-m transect vs 1000-m transect

