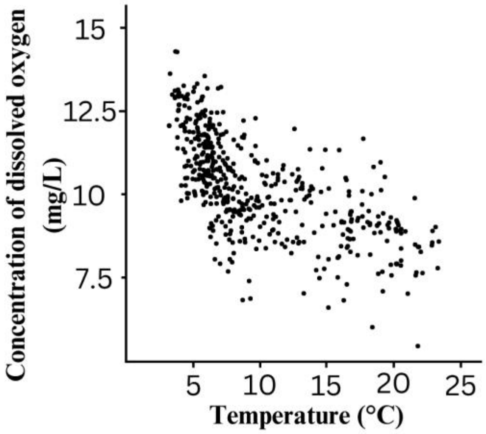
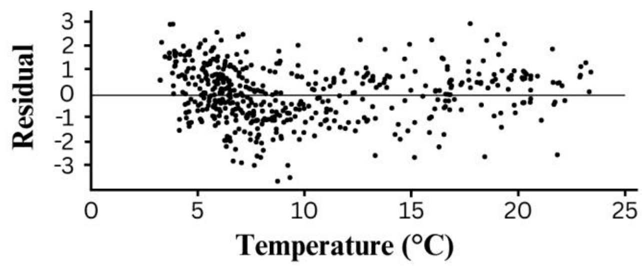
1. Here is a scatterplot of *x* = temperature (°C) and *y* = concentration of dissolved oxygen (mg/L).



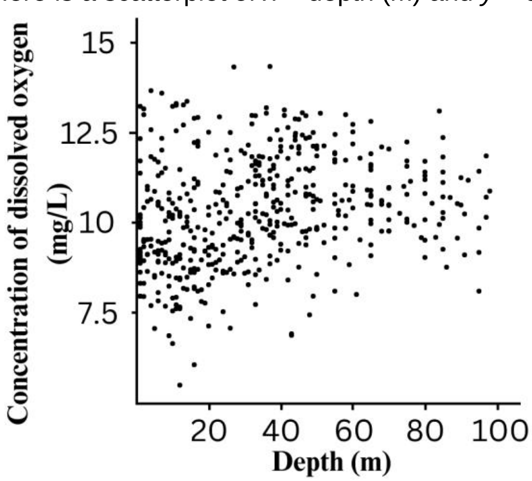
2. $\hat{y} = 12.1652 - 0.1897x$, where *x* = temperature (°C) and *y* = concentration of dissolved oxygen (mg/L).

   The residual plot reveals that the linear model relating *y* = concentration of dissolved oxygen (mg/L) to *x* = temperature (°C) is appropriate because there is no leftover curved pattern in the residual plot.

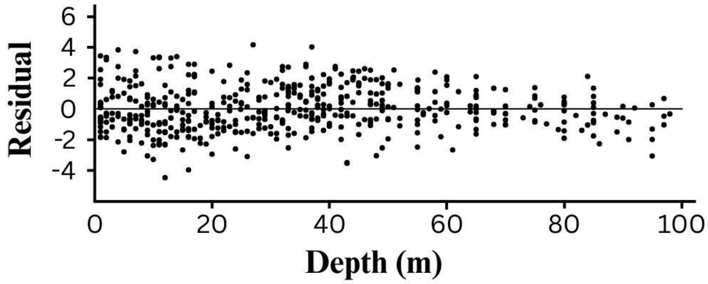


3. *s* = 1.128 mg/L. *Interpretation*: The actual concentration of dissolved oxygen is typically about 1.128 mg/L away from the concentration of dissolved oxygen predicted by the least-squares regression line with *x* = temperature (°C).
   $r^2 = 0.434$. *Interpretation*: About 43.4% of the variation in concentration of dissolved oxygen is accounted for by the least-squares regression line with *x* = temperature (°C).

4. Here is a scatterplot of *x* = depth (m) and *y* = concentration of dissolved oxygen (mg/L).



5. $\hat{y} = 9.7776 + 0.0146x$, where x = depth (m) and y = concentration of dissolved oxygen (mg/L).



The residual plot reveals that the linear model relating y = concentration of dissolved oxygen (mg/L) to x = depth (m) is appropriate because there is no leftover curved pattern in the residual plot.

6. s = 1.455 mg/L. *Interpretation*: The actual concentration of dissolved oxygen is typically about 1.455 mg/L away from the concentration of dissolved oxygen predicted by the least-squares regression line with x = depth (m).
r^2 = 0.058. *Interpretation*: About 5.8% of the variation in concentration of dissolved oxygen is accounted for by the least-squares regression line with x = depth (m).

7. *Direction*: There is a negative relationship between temperature and concentration of dissolved oxygen. When depth is used as the explanatory variable, the scatterplot reveals that the concentration of dissolved oxygen tends to increase slightly as depth increases.
Form: There is a linear relationship between temperature and concentration of dissolved oxygen because the residual plot contains no leftover curved pattern. The same can be said about the relationship between depth and concentration of dissolved oxygen because the residual plot in Question 5 also contains no leftover curved pattern.
Strength: The linear relationship between temperature and concentration of dissolved oxygen is stronger (r = 0.659) than the linear relationship between depth and concentration of dissolved oxygen (r = 0.241).

8. Temperature is a better predictor of concentration of dissolved oxygen than depth. The concentration of dissolved oxygen is about the same regardless of depth, so knowing the depth at which the sample was selected is of nearly no help for predicting the concentration of dissolved oxygen in the sample. However, knowing the temperature does help predict the concentration of dissolved oxygen because water samples selected at warmer temperatures tend to have less dissolved oxygen, and vice versa.

   This conclusion is supported by the values of r^2 and s. About 43.4% of the variation in concentration of dissolved oxygen is accounted for by the least-squares regression line with x = temperature (°C), but only 5.8% of the variation in concentration of dissolved oxygen is accounted for by the least-squares regression line with x = depth (m). Furthermore the typical prediction error is smaller when using x = temperature (1.128) than when using x = depth (1.455).