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Analysis of Environmental Data

Week 9 Reading

1. One trade off between custom models and traditional models is the factor of convention within the scientific community. Custom models require more explicit justification and explanation whereas conventional models are familiar to the scientific community and are not met with the same level of distrust and skepticism. Additionally, it might make sense to use conventional models that follow what previous researchers have used in order to have directly comparable results that build off of research that was done prior in a given field.

   Another trade off is the ease of comparing models with different combinations of predictors. It's much easier to compare the effects of different combinations of predictor variables (and their interactions) with classical models in R than it is to do by hand with custom models.

2. The first assumption is that observations are independent of each other. The second assumption is that the model residuals are normally distributed. The third assumption is that the variance of residual is constant for any value of x. The fourth assumption is that there is no measurement error in the predictor variables.

3. Even if the response variable is non-normally distributed, linear regression can still be applied if the residuals are normally distributed. For any fixed x value, if y is normally distributed then linear regression can adequately explain the data. If the residuals are not normally distributed for every value of x, then the data won't follow a linear trend.