

**Geog 595 Ecological Modeling**  
**Spring, 2007**

**Lab 3: Statistical Analysis**

1. If you are rolling two dice (each die has 6 sides with a number 1 to 6 on the sides), what are the probability mass for getting a number 10? If you are doing this in a casino, which number you would bet? Why?
2. Hurricanes are a major threat to the homeowners in the state of Florida. To protect their property, every homeowner buys an insurance for the Hurricanes. The insurance company found that if there are three or more hurricanes occur in a year, they will lose money. Based on previous record, the average Hurricane passing through the state is 1.8. What are the risks the insurance company is facing in the state?
3. There is a file called rnet.dat in the data/ directory of our course work space. The file contains two columns of data. The first column is the modeled canopy net radiation, and the second column is the observed canopy radiation in a loblolly pine stand in Duke Forest. Assuming the first column is  $x$ , and the second column is  $y$ , figure out the following with Excel:
  - (1) Figure out the regression between  $x$  and  $y$ :  $y=ax +b$ .
  - (2) What is the  $R^2$  of the regression?
  - (3) What is the significance level of the relationship?
  - (4) If a modeled net radiation is  $500 \text{ W/m}^2$ , what is the expected observed net radiation would be?
  - (5) Calculate SST, SSR and SSE and validate  $SST=SSR+SSE$ .