

2 Centennial Earthquake Data

- The data set *CentennialQuakeData.xls* is a global catalog of locations and magnitudes (larger than magnitude 5.5) of instrumentally recorded earthquakes for 1999 to April 2002 (USGS) and can be found at on the web at

<http://earthquake.usgs.gov/research/data/centennial.php>

and the file *centennial_README* gives a detailed description of the data.

- Learning Objective: be able to manipulate and query data, convert date types, graphically summarize spatial data
 - Target Audience: undergraduates, graduate students
 - Techniques: using R's map libraries
- (a) Read the file into R, and store the data as either a matrix or a data frame. There are 3 columns for the Year, Month, and Day. Convert these three columns into a single column for the date of the event.
- (b) Use the various R packages to graphically display these events. Some of the packages are *mapdata*, *maps*, *maptools*, *mapproj*. Write a function which will display the location and magnitude of events for a specified range of dates. To convey magnitude information, use plotting symbols of different sizes. Include a legend on the graph which relates the event magnitudes to the size of their plotting symbols.

