# **Problem Set**

**Instructions**

* After completing the LiDAR tutorial on GitHub open the CHM.R file.
* Run the code and answer these questions using the results from class and the CHM.R script.

1. Using the metrics\_all\_m.csv file see how closely the plot heights and lidar heights agree. Report your results of a linear model (function *lm()* in R) relating field plot height (*height.max)* to lidar height (*zmax*). (2pt)
2. What plot has the tallest trees (use plot data and note the plot ID)? What area of the study has the tallest trees (use lidar data)? A simple mention of the relative direction will suffice (N, NW, etc.). (2pt)
3. Plot the histogram of forest height in the study area. What is the 99.99th percentile of forest height in the study area? (use the *quantile* function). (2pt)
4. Calculate the total amount of biomass in this forest using the final AGB map. Knowing approx half of biomass is carbon, how much carbon is in the forest? (hint use the *sum* function). (2pt)
5. Can you find the tallest tree in the area? Using the CHM map you created and the tallest height measurement, find the location of the tallest tree. (hint: use the *rasterToPoints* function to find xy locations of the tallest pixels).