

DTM truths and lies

Max Joseph

June 22, 2016

Question

How do ground truthed elevations compare to L3 DEMs?

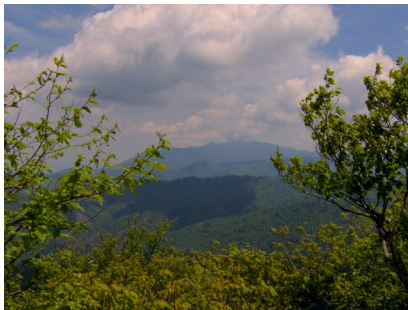


Figure 1:

Approach

1. Find out which of the ≈ 500 DTMs contain ground truth points
2. Extract nominal DTM elevations to ground truthed values

<https://github.com/mbjoseph/elevation-validation>

Finding extents of each DTM

R/check_ground_measurements.R

```
dtm_dir <- get_dtm_dir()
dtm_files <- find_dtm_files(dtm_dir)
full_dtm_paths <- file.path(dtm_dir, dtm_files)
extents <- lapply(full_dtm_paths, get_extent)
```

Getting the ground truth data

```
truth <- read.csv('data/GRSM_LiDAR_Val_ITRF00_Geoid12A_UTM')
coords <- cbind(truth$Easting, truth$Northing)
sp <- SpatialPoints(coords,
                    proj4string = raster(full_dtm_paths[1])$proj4string)
spdf <- SpatialPointsDataFrame(sp, truth)
```

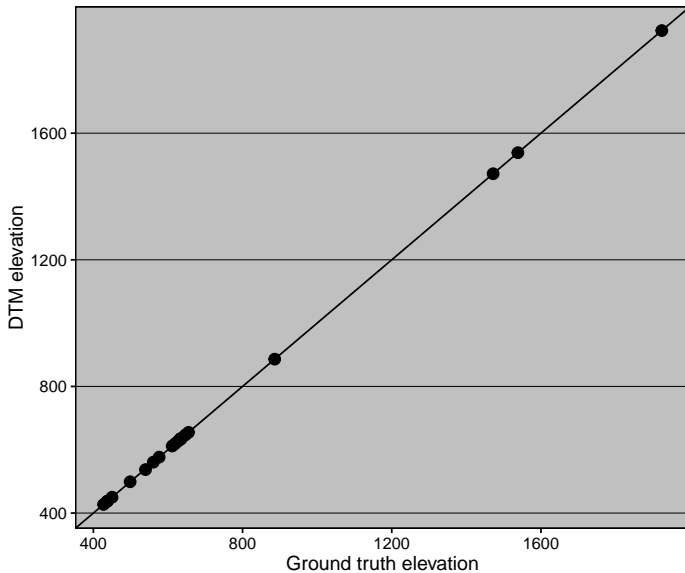
Finding which DTMs contain ground truth data

```
relevant <- lapply(extents,  
                  FUN = points_in_extent,  
                  x = truth$Easting,  
                  y = truth$Northing) %>%  
  unlist()  
  
relevant_dtms <- full_dtm_paths[relevant]
```

Extracting values from relevant DTMs

```
spdf$dtm_val <- get_dtm_values(relevant_dtms, spdf)
```

Visualize congruence



Distribution of errors

