

Figure S1: Map of distribution of ICESat GLAS footprints after filtering, represented as number of footprints per 1° grid square. Areas in grey have no footprints.



Figure S2: An ecoregion demonstrating the union generated with the 1° grid. Black dots represent ICESat GLAS footprints for the entire ecoregion. Areas in white use the underlying ecoregion q value which is calculated from all the ICESat GLAS footprints shown. Areas in grey are where the ecoregion has been subdivided by grid square, here the q value has been calculated using only the footprints within that grid square and ecoregion.

Table S1: Global mean canopy height and canopy density for each laser period of ICESat GLAS

Laser period (dates)	Mean Canopy Density	Mean Canopy Height
Ph1 (02.2003-03.2003)	0.50	15.01
Ph2a (09.2003-05.2004)	0.53	14.56
Ph2b (03.2009-09.2009)	0.38	7.26
Ph3 (10.2004-10.2008)	0.52	14.76

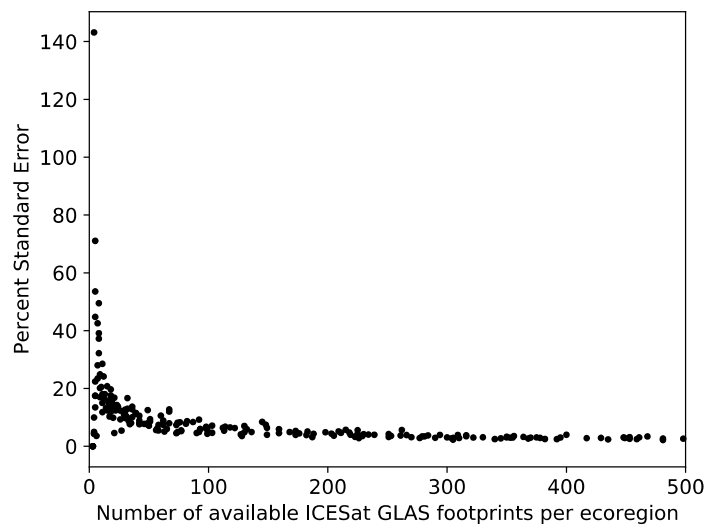


Figure S3: The influence of the number of footprints per polygon on the Standard error obtained. X axis is limited to 500 footprints for clarity.

Table S2: Descriptive statistics of the allometric parameter (q) and Mean Squared Error (MSE) for each biome.

Biome	Mean (q)	Max (q)	Min (q)	Variance (q)	Mean (MSE)	Variance (MSE)
TST ⁽¹⁾ Moist Broadleaf	0.083	0.153	0.036	2.79×10^{-4}	0.020	1.32×10^{-4}
TST ⁽¹⁾ Dry Broadleaf	0.076	0.130	0.033	2.91×10^{-4}	0.027	6.05×10^{-5}
TST ⁽¹⁾ Conifer	0.071	0.112	0.042	3.51×10^{-4}	0.031	1.44×10^{-4}
Temperate Broadleaf	0.055	0.107	0.023	1.81×10^{-4}	0.042	1.33×10^{-4}
Temperate Conifer	0.051	0.103	0.020	1.88×10^{-4}	0.040	9.55×10^{-5}
Boreal/Taiga	0.048	0.094	0.021	1.41×10^{-4}	0.034	9.05×10^{-5}
TST ⁽¹⁾ Savanna	0.062	0.122	0.021	2.63×10^{-4}	0.023	7.01×10^{-5}
Temperate Savanna	0.054	0.127	0.021	3.0×10^{-4}	0.037	1.54×10^{-4}
Flooded Savanna	0.060	0.116	0.032	2.49×10^{-4}	0.027	1.66×10^{-4}
Montane Shrublands	0.065	0.097	0.028	1.11×10^{-4}	0.027	3.53×10^{-5}
Tundra	0.063	0.095	0.029	1.28×10^{-4}	0.339	4.10×10^{-5}
Mediterranean	0.063	0.108	0.024	3.46×10^{-4}	0.022	1.24×10^{-4}
Desert	0.071	0.118	0.035	1.79×10^{-4}	0.022	7.06×10^{-5}
Mangrove	0.079	0.130	0.041	2.36×10^{-4}	0.027	7.14×10^{-5}

⁽¹⁾ TST: Tropical & Sub-tropical

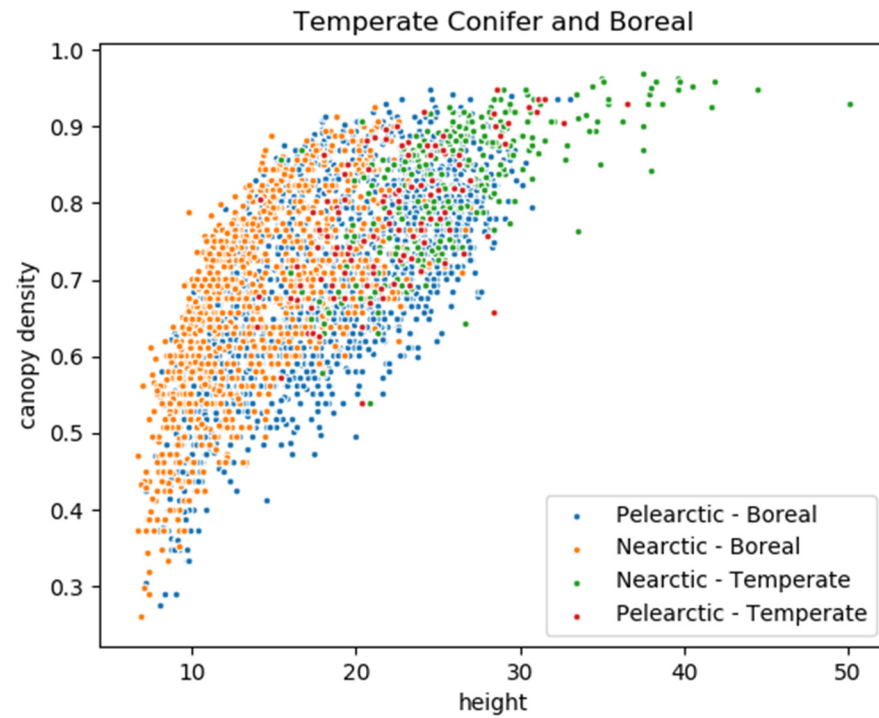
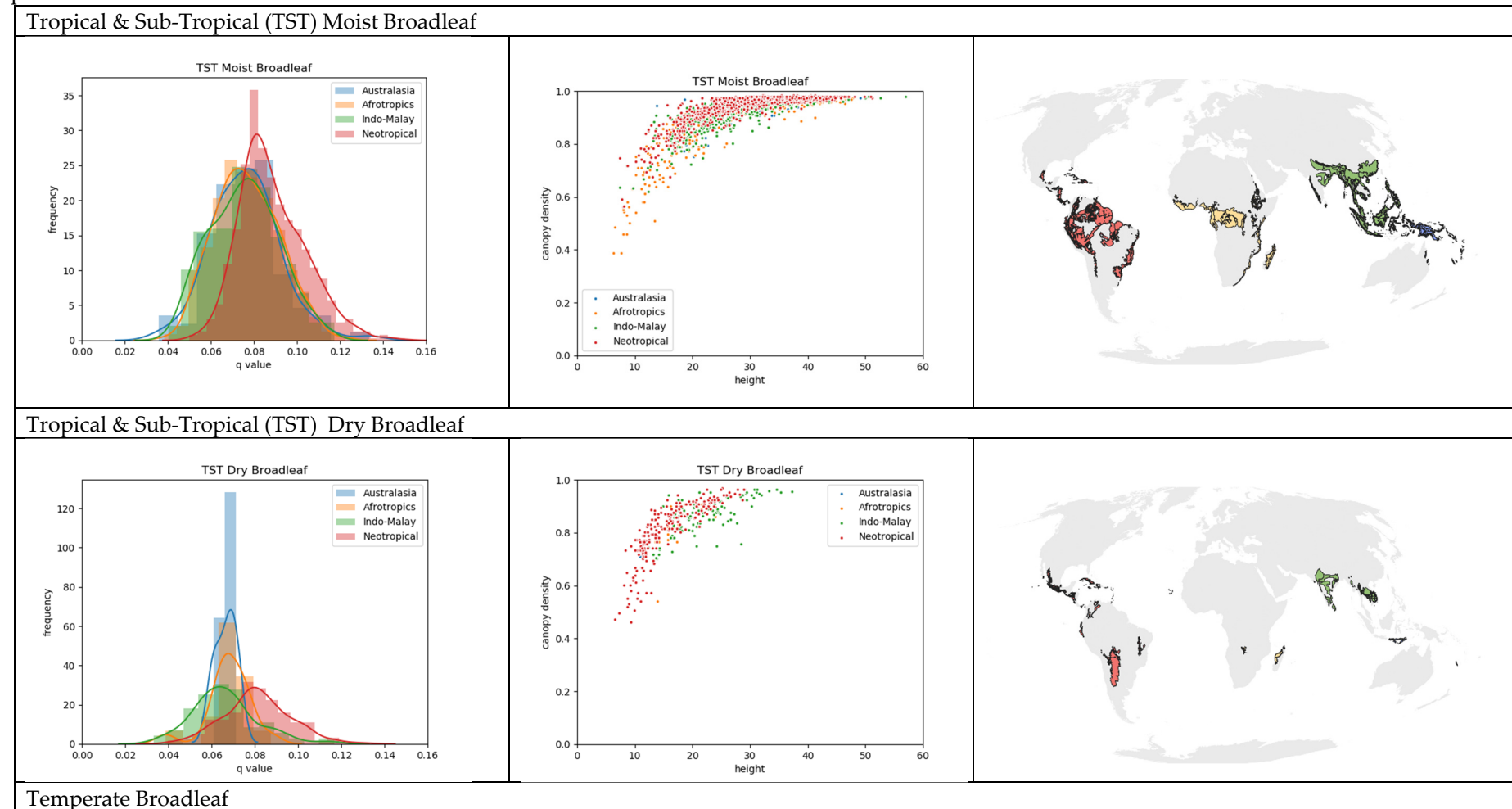
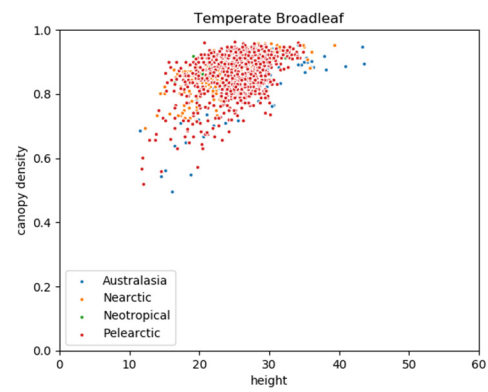
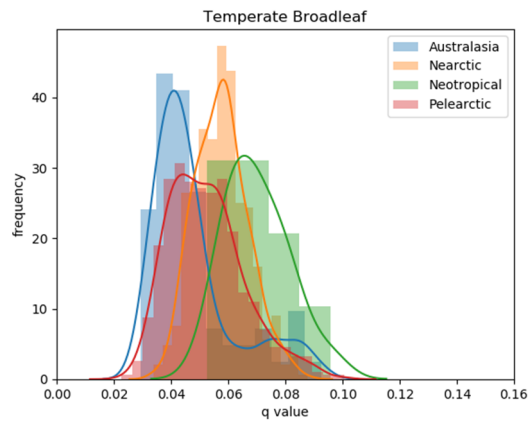


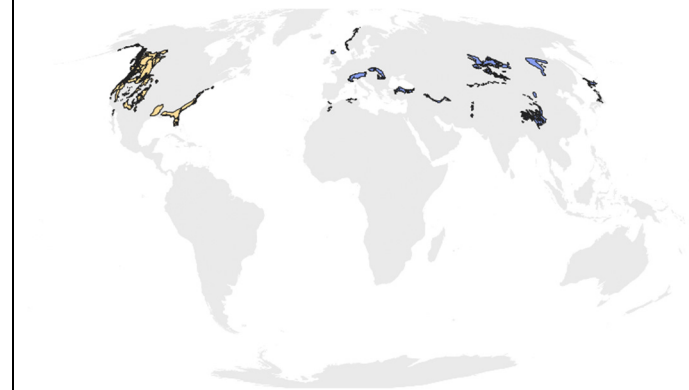
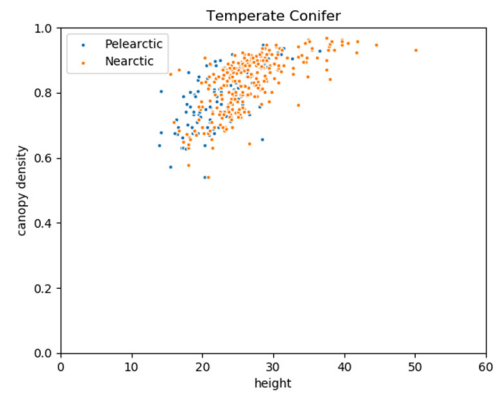
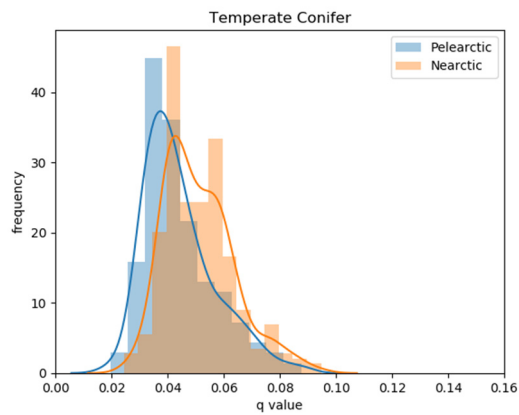
Figure S4: Maximum canopy density and maximum height values per realm for the Temperate Conifer and Boreal/Taiga biomes

Table S3: Table with, for each biome: histogram of q values per realm, scatterplot of maximum CD and maximum height per realm and map of distribution per realm. The realm colours are maintained across each row.

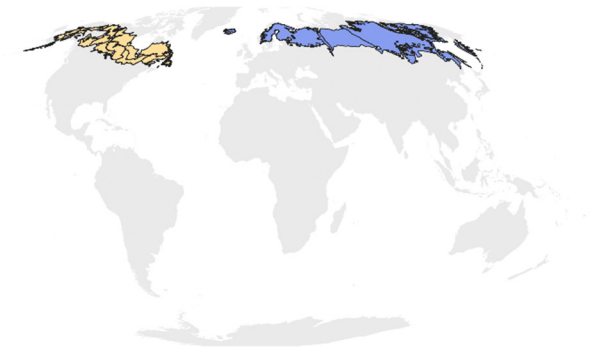
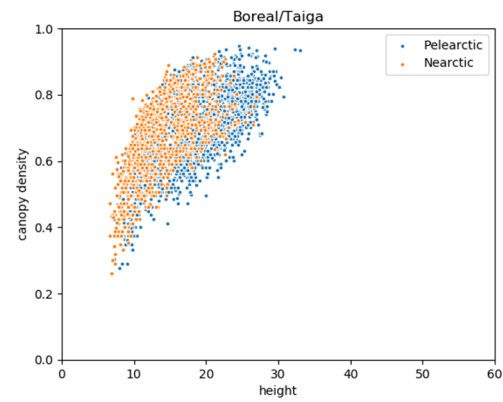
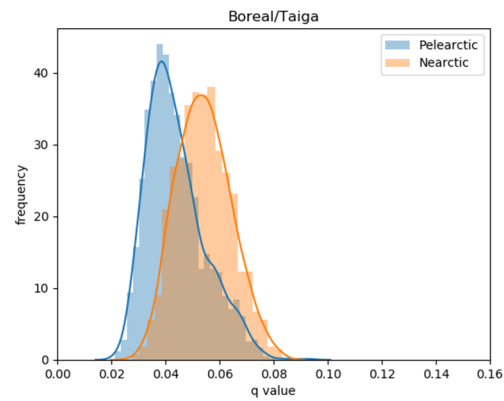




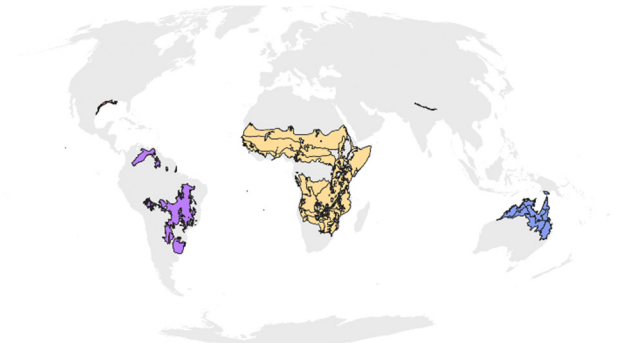
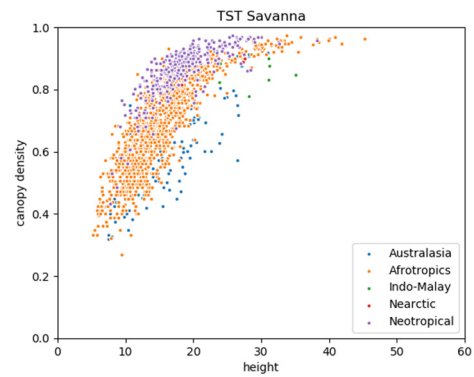
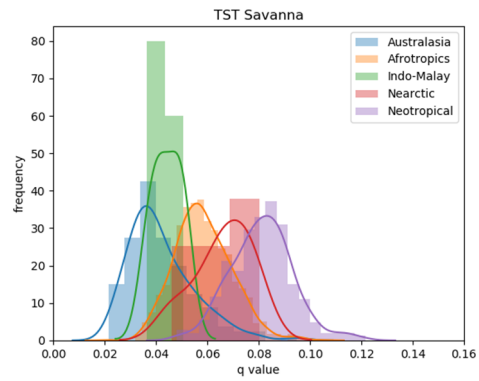
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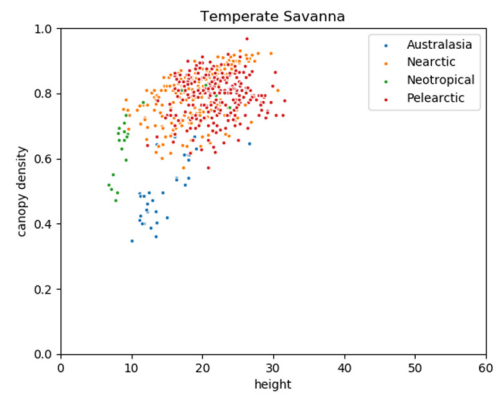
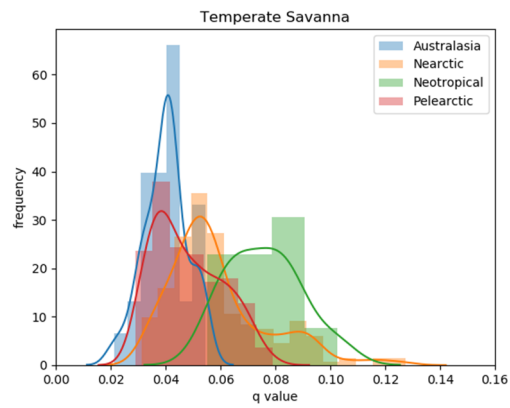
Boreal/ Taiga



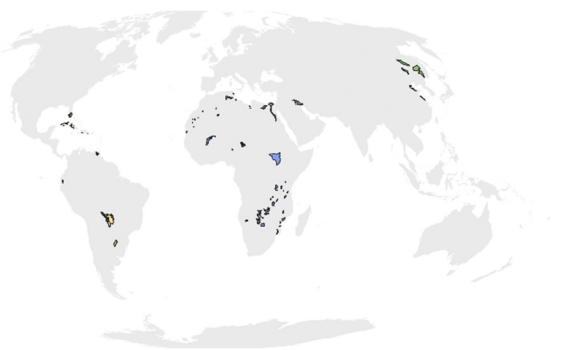
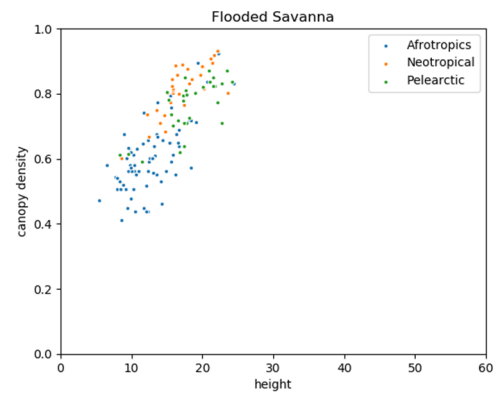
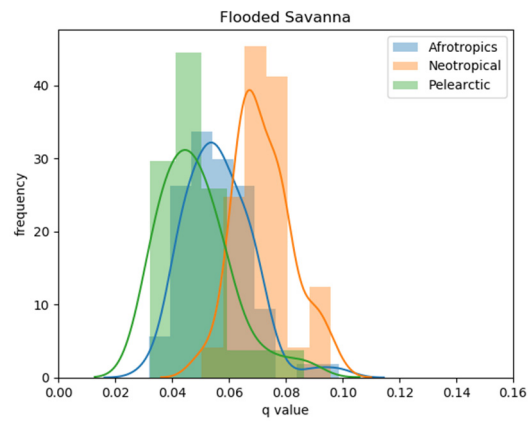
Tropical & Sub-Tropical (TST) Savanna



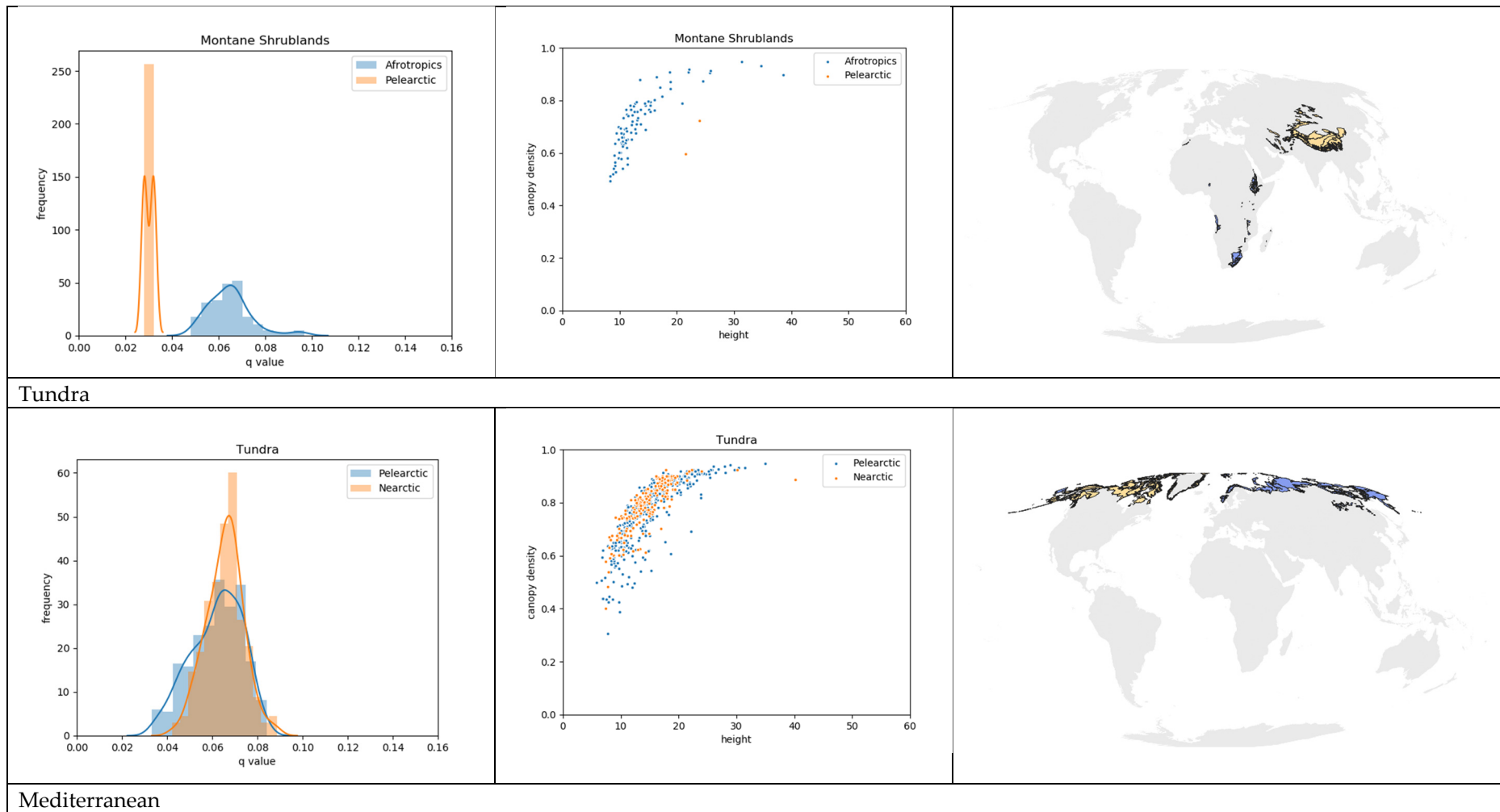
Temperate Savanna

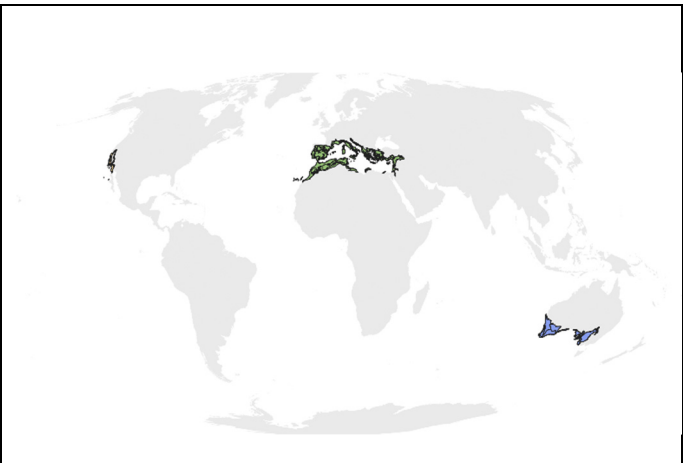
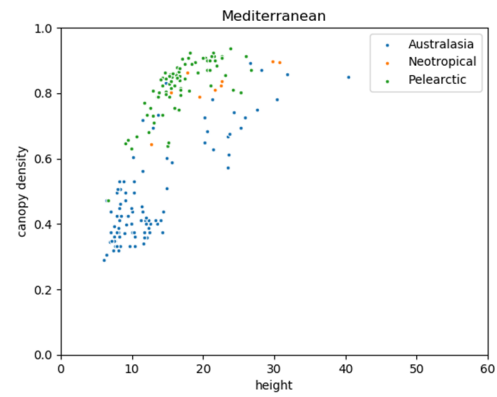
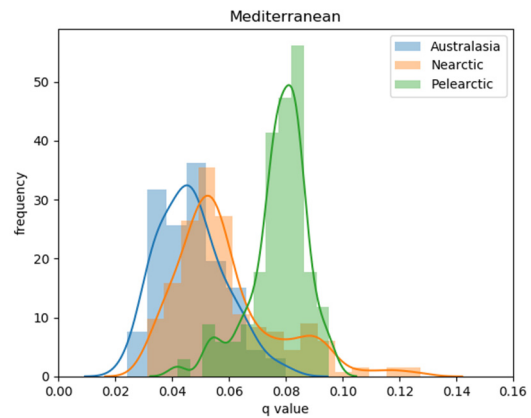


Flooded Savanna

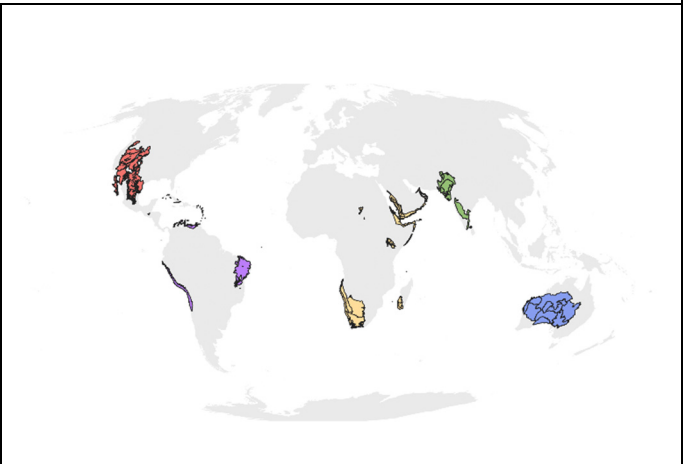
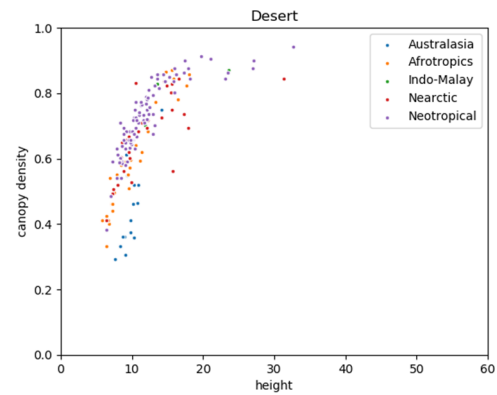
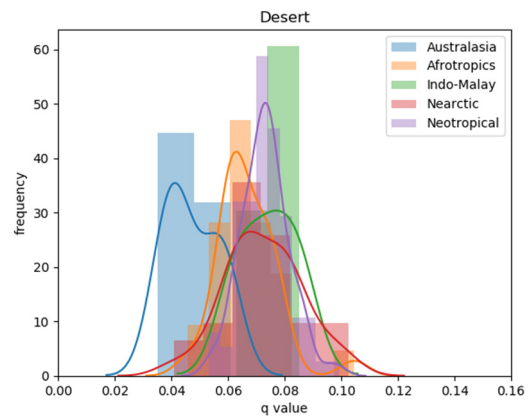


Montane Shrublands





Deserts



Mangroves

