Supplementary Materials: Sensitivity of L-Band SAR Backscatter to Aboveground Biomass of Global Forests. *Remote Sens.* 2016, *8*, 522

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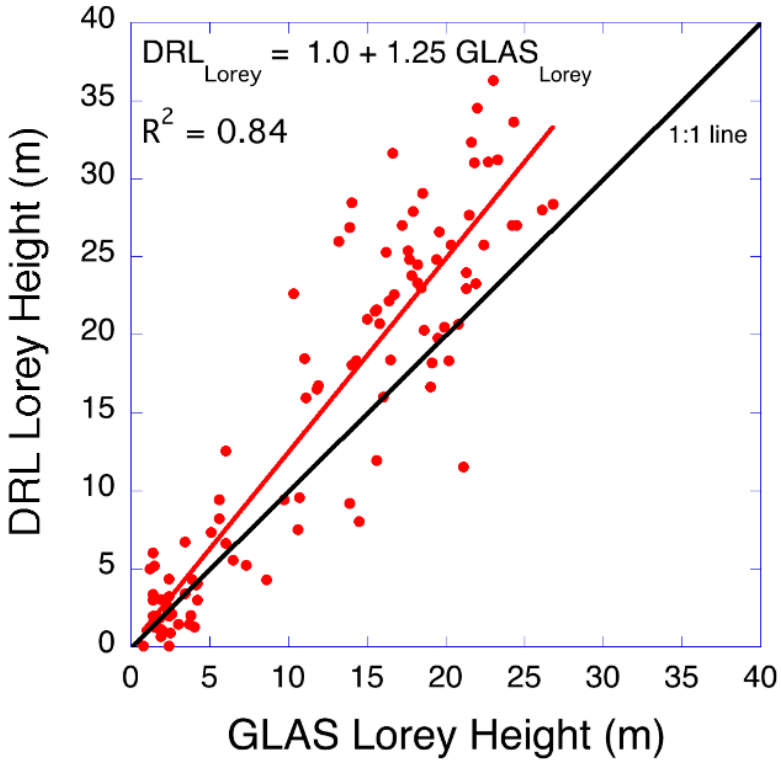

Figure S1. Comparison of Lorey's height derived from small-footprint DRL and derived from co-located GLAS shots over tropical forests. Data are from a study site (Mouila, Gabon) in southern Gabon where airborne small footprint LiDAR was collected in 2011 and compared with all existing GLAS shots in the study area. The region is a combination of forest and savanna over flat terrain. The scatter plot shows an under-estimation by GLAS of Lorey's height in this forest type, mainly due to the large footprint size of GLAS.

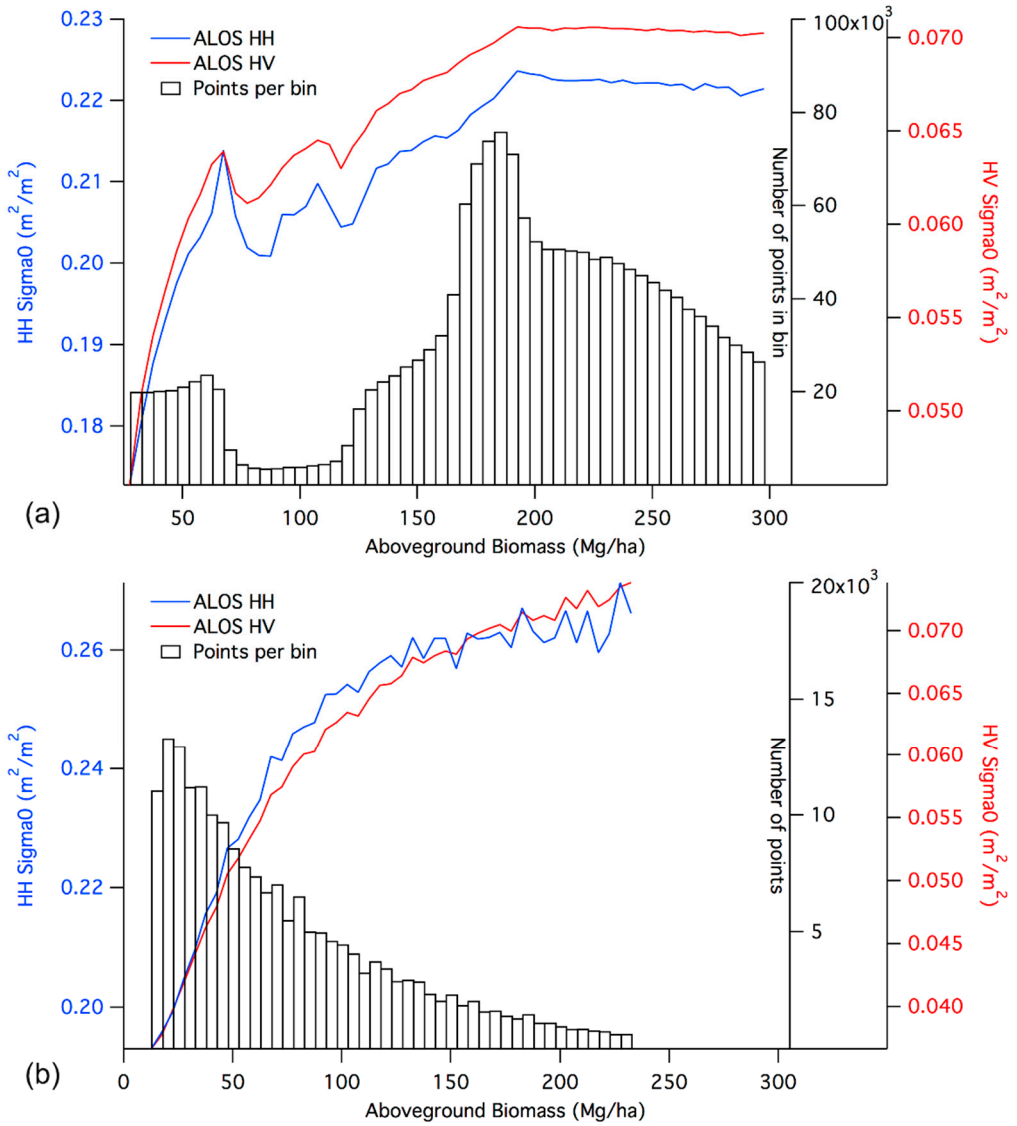

Figure S2. Comparing ALOS HH and HV polarization sensitivity to AGB for (**a**) tropical moist forests of South America; and (**b**) boreal forest of North America. Mean sigma-0 values from AGB bins are calculated and plotted against the middle AGB value of the bin. Blue lines are for HH polarization and red lines are for HV polarization. Black bars show the total number of points in each AGB bin.

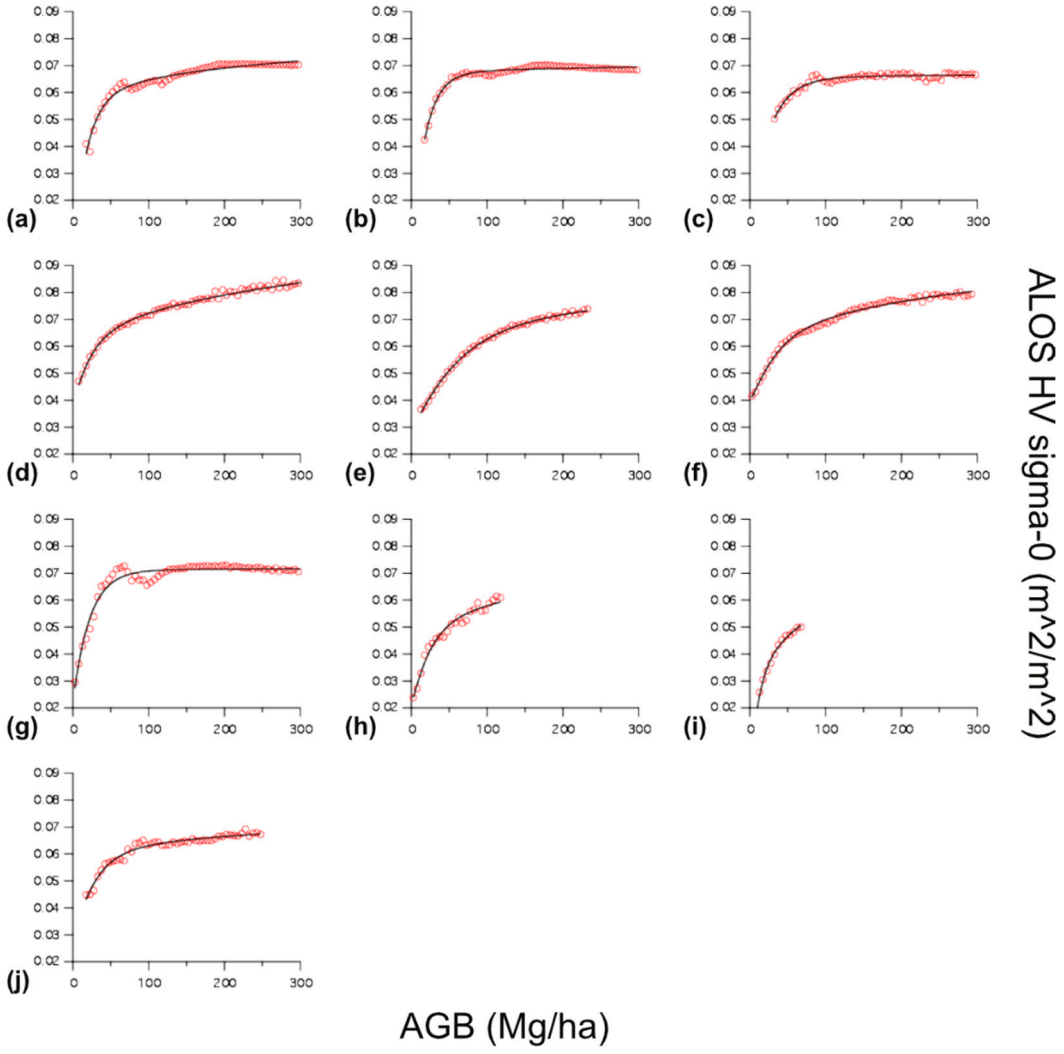

Figure S3. Empirical fit between AGB and ALOS HV sigma-0 backscatter values for all forest categories. The categories are: (**a**) Latin America Tropical Moist; (**b**) Africa Tropical Moist; (**c**) Asia Tropical Moist; (**d**) Temperate Conifer; (**e**) North America Boreal; (**f**) Eurasia Boreal; (**g**) Fresh Water Flooded; (**h**) Saline Water Flooded; (**i**) Tropical Shrubland; (**j**) Tropical Dry Broadleaf.

Table S1. GlobCover Classes used and their corresponding landcover type name.

GlobCover Class	Name
40	Closed to open broadleaf evergreen
50	Closed broadleaf deciduous
60	Open broadleaf deciduous
70	Closed needleleaf
90	Open needleleaf
110	Forest/shrubland (50%–70%) + grassland
120	Grassland (50%–70%) + forest/shrubland
130	Shrubland (<5 m)

Table S2. List of allometric equations used to convert GLAS LiDAR-derived Lorey's height to AGB. Equation is of the form AGB = αH^{β}, where H is Lorey's height.

	North America	**South America**	**Africa**	**Eurasia**	**Southeast Asia**	**Australia**
Tropical/Subtropical moist broadleaf	α = 0.6011 β = 1.894	α = 0.6011 β = 1.894	α=0.2788 β = 2.12	-	α = 0.2788 β = 2.12	α = 0.06328 β = 2.4814
Tropical/Subtropical dry broadleaf	α = 0.73696 β = 2.0062 *	α = 0.73696 β =2.0062	α = 0.73696 β = 2.0062	-	α = 0.73696 β = 2.0062	α = 0.73696 β = 2.0062
Tropical/subtropical conifer	α = 6.4389 β = 1.0556 *	-	-	-	α = 6.4389 β = 1.0556	-
Temperate broadleaf/mixed	α = 1.1799 β = 1.536 α = 0.689 mix β = 1.6932	-	-	(west) α = 1.1799 β = 1.536 (east) α = 0.061015 β = 2.6032	α = 0.061015 β = 2.6032	α = 1.1799 β = 1.536
Temperate conifer	(east) α = 0.68255 β = 1.6939 (mixed east) α = 0.18321 β = 2.1059 (west) α = 0.71774 β = 1.6892	α = 0.71774 B = 1.6892	α = 0.68255 β = 1.6939	α = 0.68255 β = 1.6939	α = 0.68255 β = 1.6939	-
Boreal/taiga	α = 0.023409 β = 2.8782	-	-	α = 4.5925 β = 1.1627 *	-	-
Tropical/Subtropical savanna, shrubland	α = 1.1633 β = 1.504	α = 1.1633 β = 1.504	α = 1.1633 β=1.504	α = 1.1633 β=1.504	α = 1.1633 β = 1.504	α = 1.1633 β = 1.504
Temperate savanna, shrubland	α = 1.3403 β = 1.4694	α = 1.3403 β = 1.4694	α = 1.3403 β = 1.4694	α = 1.3403 β = 1.4694	-	α = 1.3403 β = 1.4694
Mediterranean forest, woodlands	α = 2.3053 B = 1.3171	α=2.3053 β = 1.3171	α = 1.4243 β = 1.595	α = 1.4243 β = 1.5953	-	α = 2.3053 β = 1.3171

* Only mean heights were available, coefficients are for mean canopy height with Lorey's height converted to mean canopy height before applying allometric equation.