

Supplementary Information

Table ST1. Comparison of AGB estimates and mean errors by forest types in different areas across the world

Author (s)	Study Area	Datasets/ Sensors	Data Year	Forest Types	Estimated AGB	Mean AGB (t/ha)	R2	RMSE
Thumaty et al. 2015	Madhya Pradesh	ALOS PLASAR L-band	2010	Deciduous Forests acrosss MP	367.4 Mt	58	0.51	19.32 t/ha
				Sal and teak forests	range of 100–150 t/ha			
				dry deciduous forests	range of 50–100 t/ha			
Shufan and Chun 2022	Shanghai, China	ICESat -2, Landsat -8	2019-2020, 2018-2019	Tree height	Na	Na	0.63	1.0967 m
Rodda et. al. 2023	Indian Tropical dry forest (Part of Madhya Pradesh)	ICESat -2, GEDI	2022	Canopy height	Na	Na	0.68	2.8–3.8 m
Mora et. al. 2013	Canada	QuickBird -2, WorldView -1, airborne Lidar	2010	Boreal forest	112 t ha ⁻¹	32	0.92	22.2 t ha ⁻¹
Huang et. al. 2023	Yunnan–Guizhou Plateau, China	Landsat 8 OLI and Sentinel 2A	2021	Coniferous forests	593.49 Mg ha ⁻¹	122.01	0.63	43.23 Mg ha ⁻¹
				Evergreen broadleaved forests	1082.16 Mg ha ⁻¹	118.8	0.53	68.16 Mg ha ⁻¹
				Deciduous broadleaved forests	536.81 Mg ha ⁻¹	69.26	0.43	45.09 Mg ha ⁻¹
				Mixed forests	359.39 Mg ha ⁻¹	11.76	0.56	47.79 Mg ha ⁻¹
Fararoda et al. 2021	Entire India	MODIS and L-band ALOS-PALSAR	2007-08, 2010	All forest types	7952.3 million tonnes	140.57	0.89	43.98 Mg ha ⁻¹
Li et al. 2022	China	Landsat 8-OLI		Evergreen broadleaf and deciduous broadleaf forest	150.6–227.8 t/ha	189.2	0.85	11.76 t ha ⁻¹
Urbazaev et al. 2018	Yucatan peninsula, Mexico	Airborne LiDAR, SAR and optical satellite data	2004-11, 2010, 2012, 2013	Deciduous, coniferous, mangroves, tropical dry, and rain forests	1374 PgC , range of 0-160 t/ha	80.5	0.89	13.71 t ha ⁻¹
Nanady et. al. 2021	Doon Velley, Uttarakhand	ICESat -2, Sentinel -1 and Sentinel -2	2018-19	moist deciduous	ranged from 234.91 to 547.56 Mg ha ⁻¹	470.03	0.83	19.98 Mg ha ⁻¹
Lu and Jiang 2024	Review Paper - Lidar and AGB			Na	Na		Na	Na
Present Study	Madhya Pradesh	ICESat -1, ALOS, AWifs	2009-10	Teak	315.77 metric tons, with a RMSE of ± 19.22 tons per hectare At per hectare level, it ranged between 8.56 - 252.04 tons.	42.73	0.65	24.46 t ha ⁻¹
				dry deciduous forests		35.17	0.62	19.73 t ha ⁻¹
				Sal and teak forests		57.1	0.71	14.65 t ha ⁻¹
				moist deciduous		41.56	0.68	18.06 t ha ⁻¹

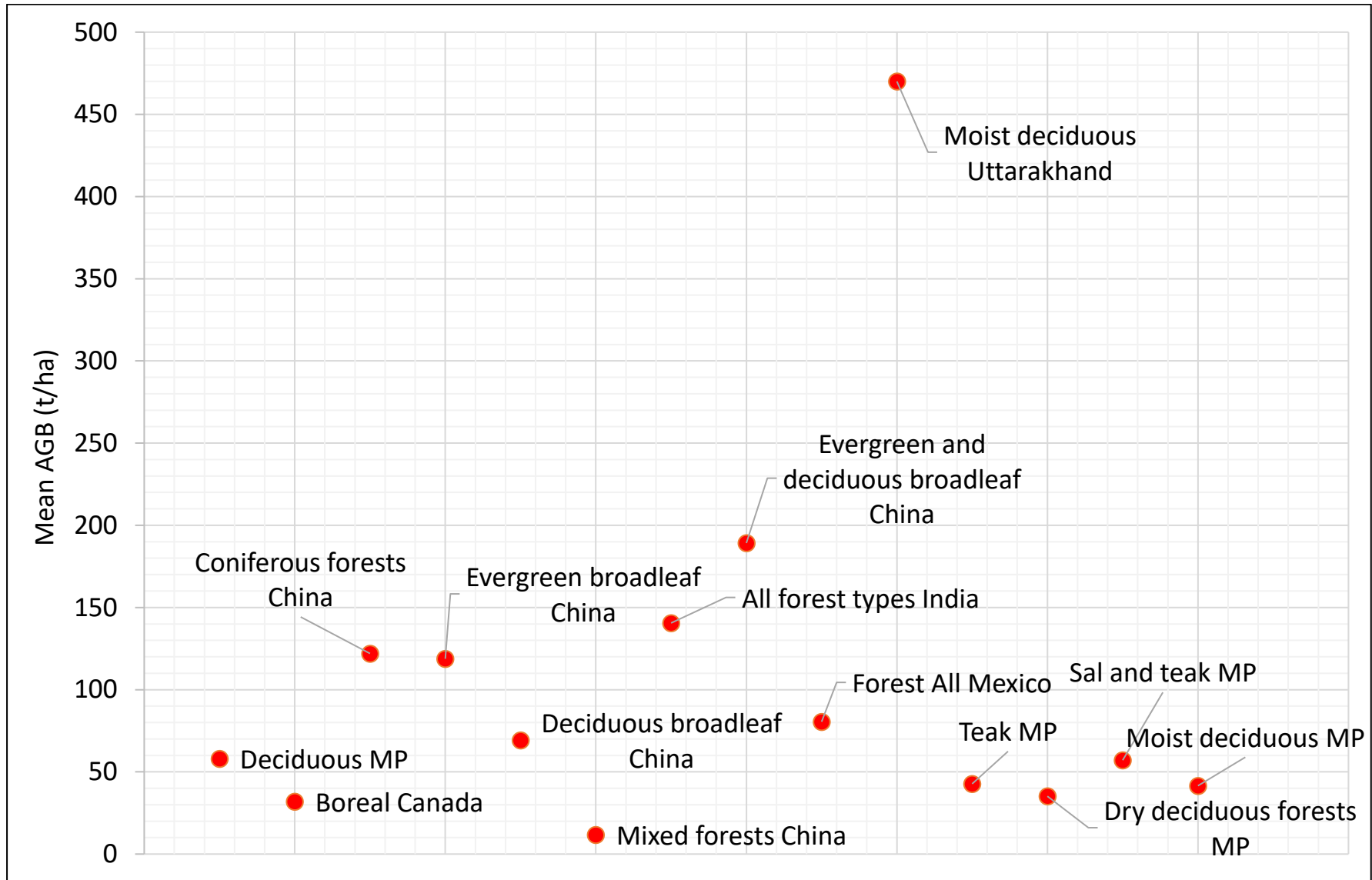


Fig. SF1. Validation of AGB estimates across the studies