Extraction of vegetation from outcrop in point clouds

- Pikeville, Kentucky

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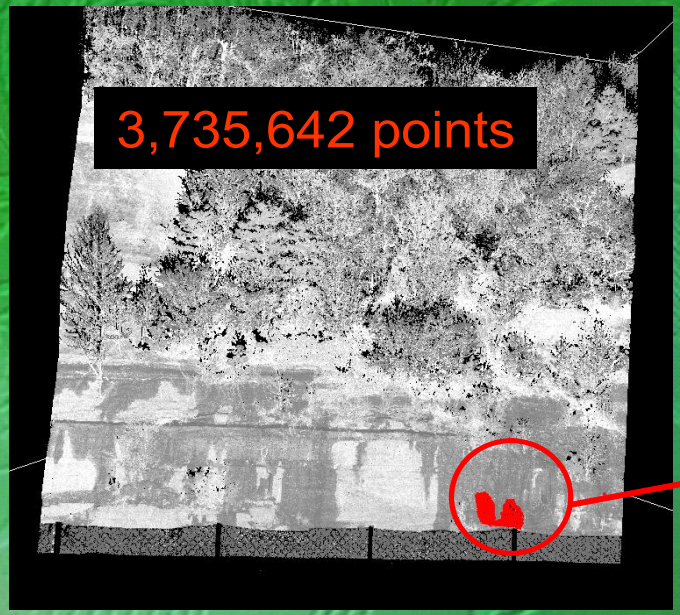
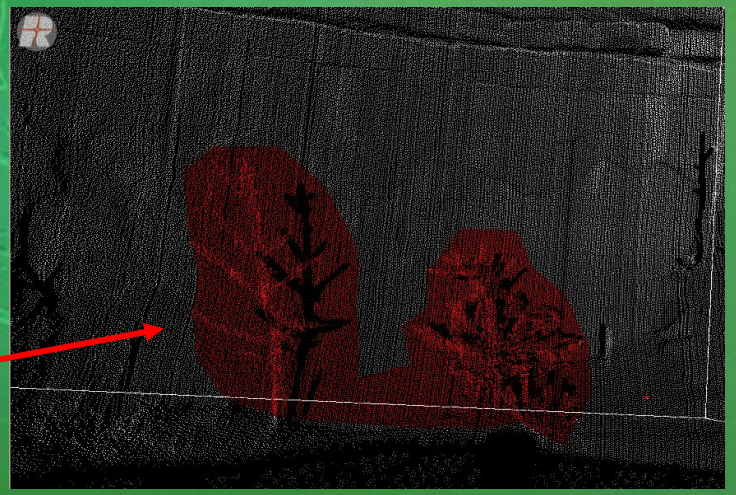
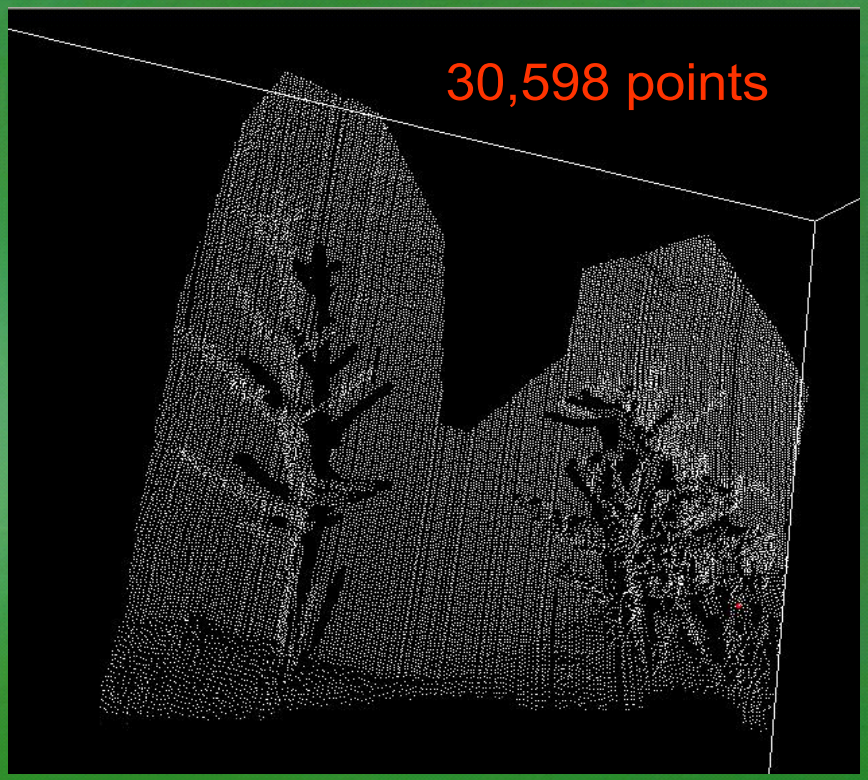




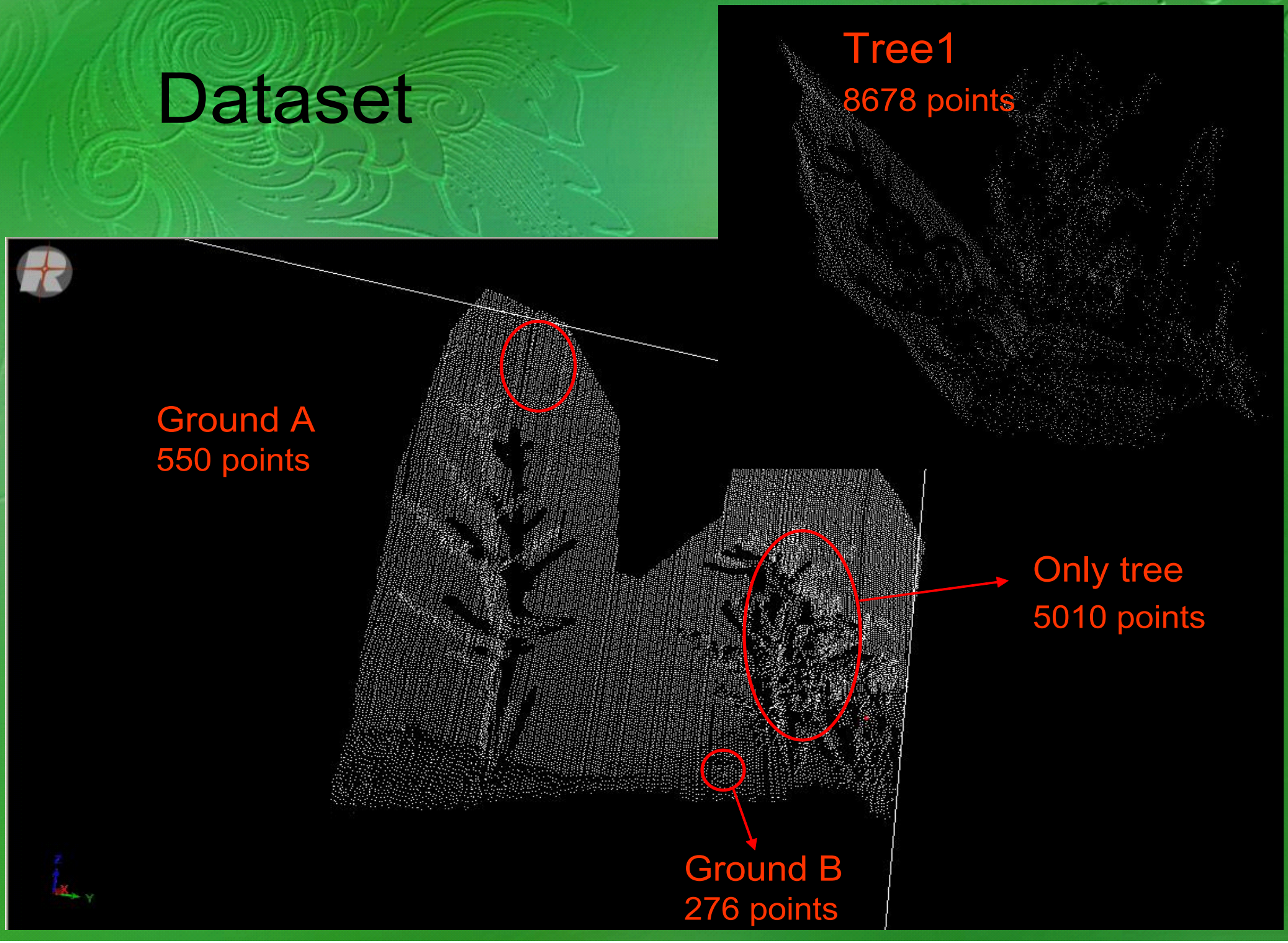


Extract dataset

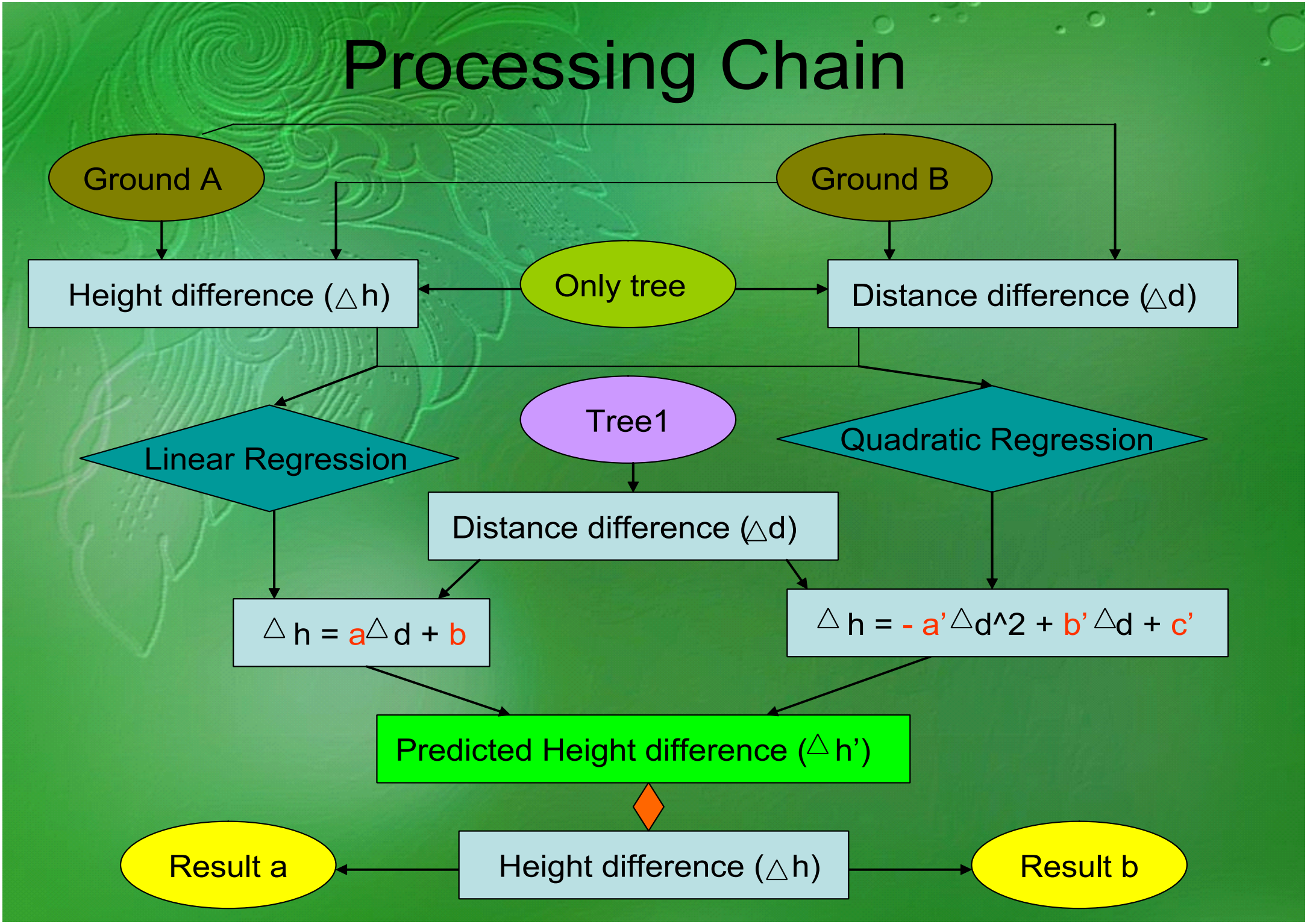
from original raw

point clouds

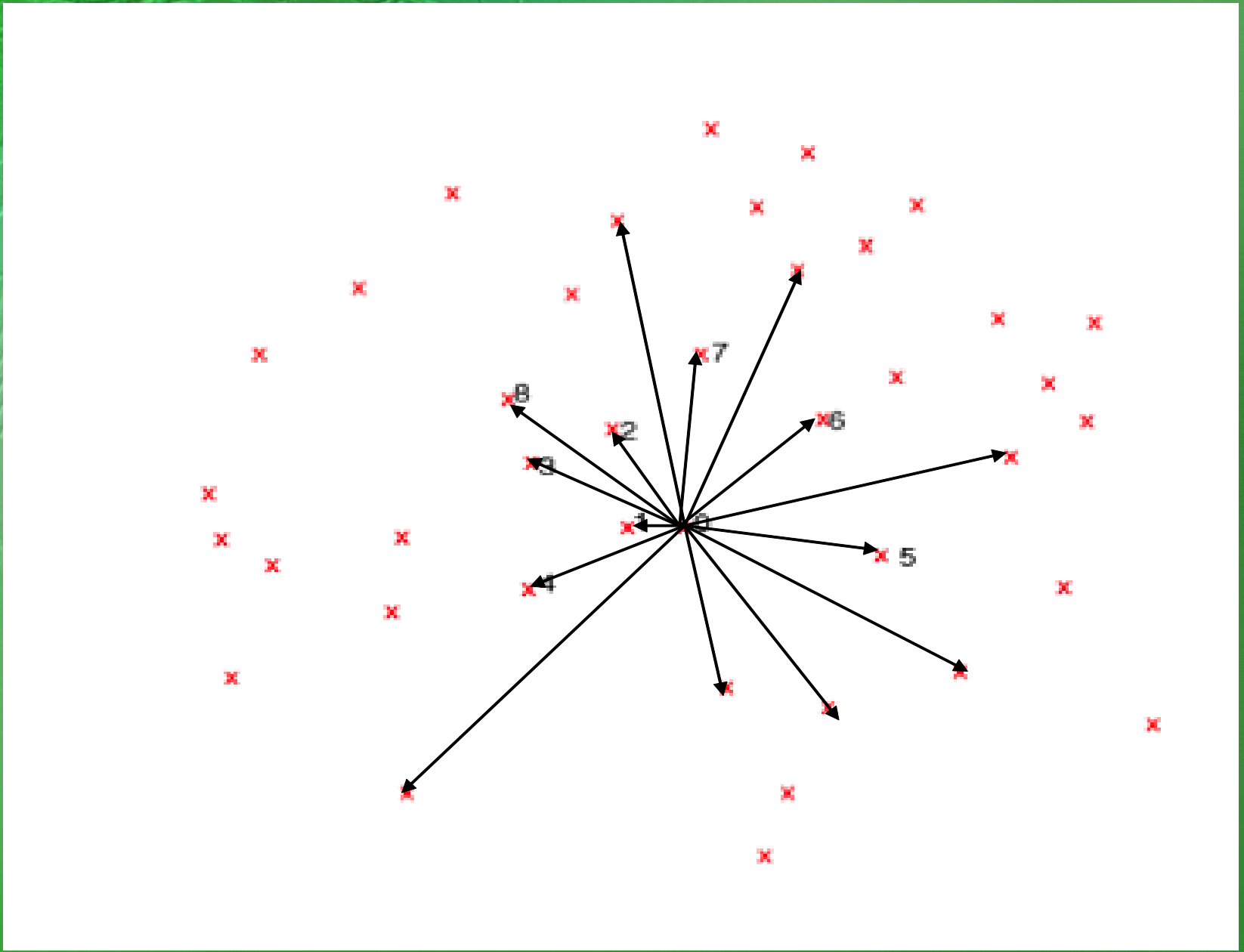
Dataset


Tree1
8678 points
Ground A
550 points
Only tree
5010 points
Ground B
276 points

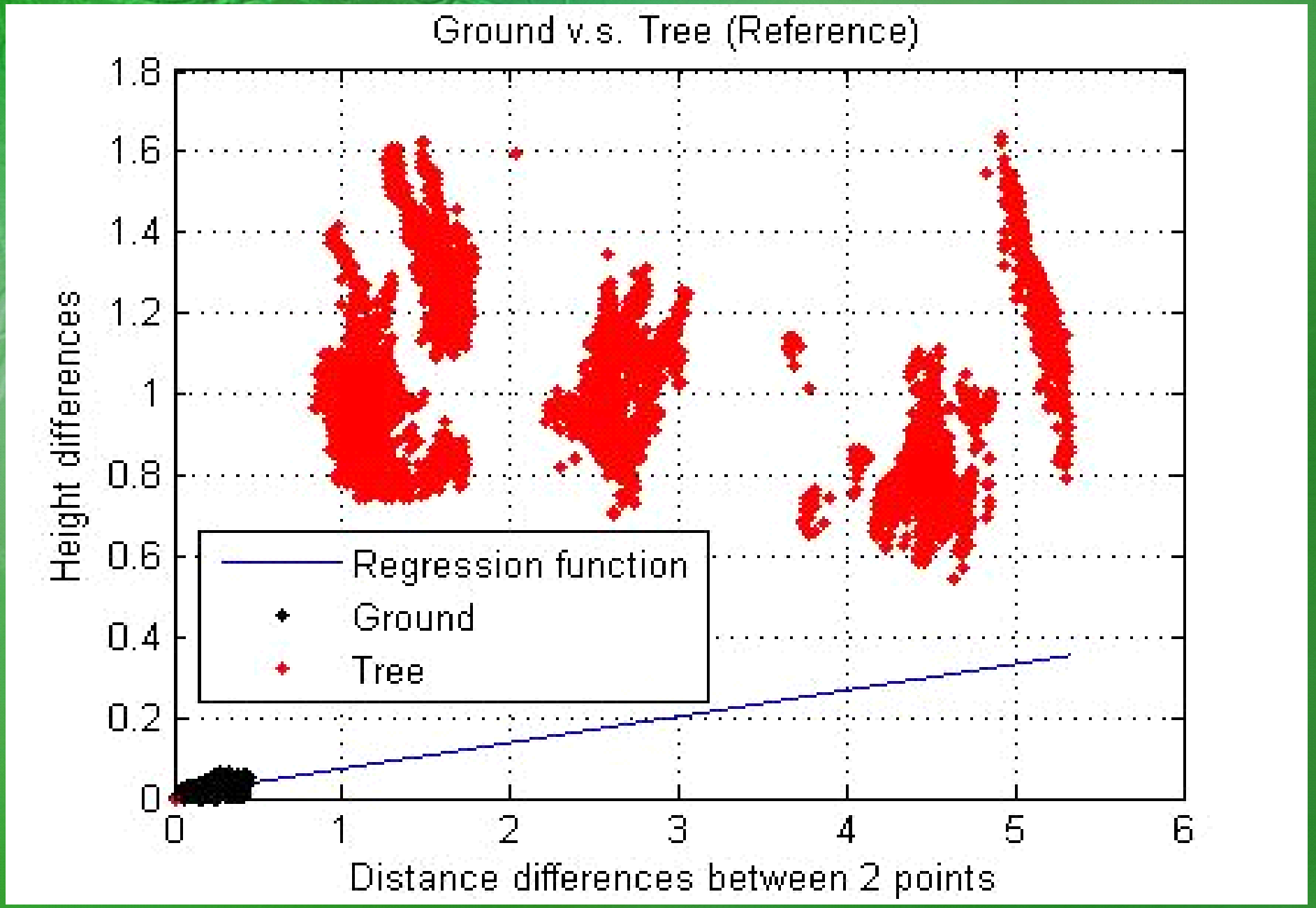
Processing Chain



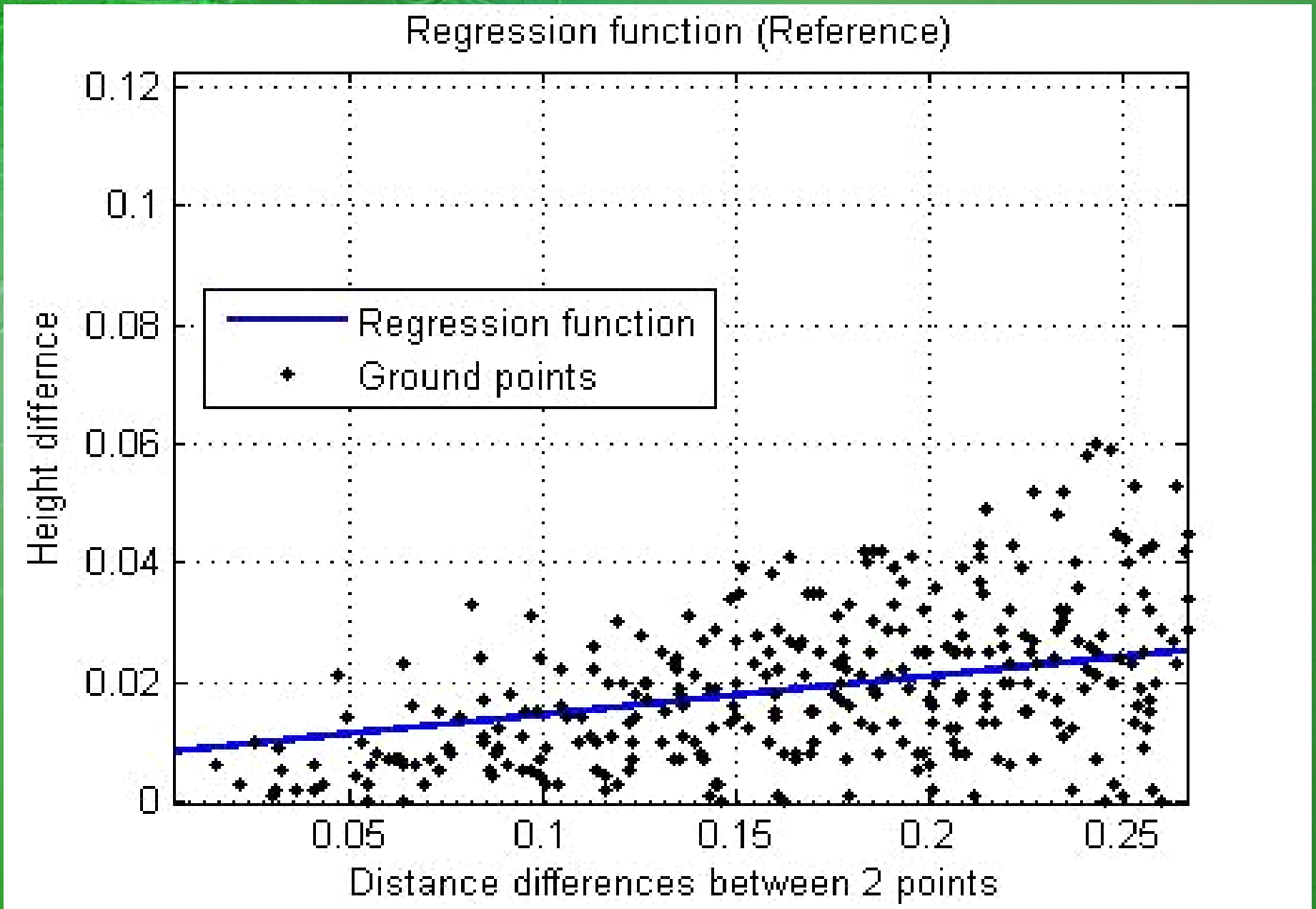
- **Reference point**



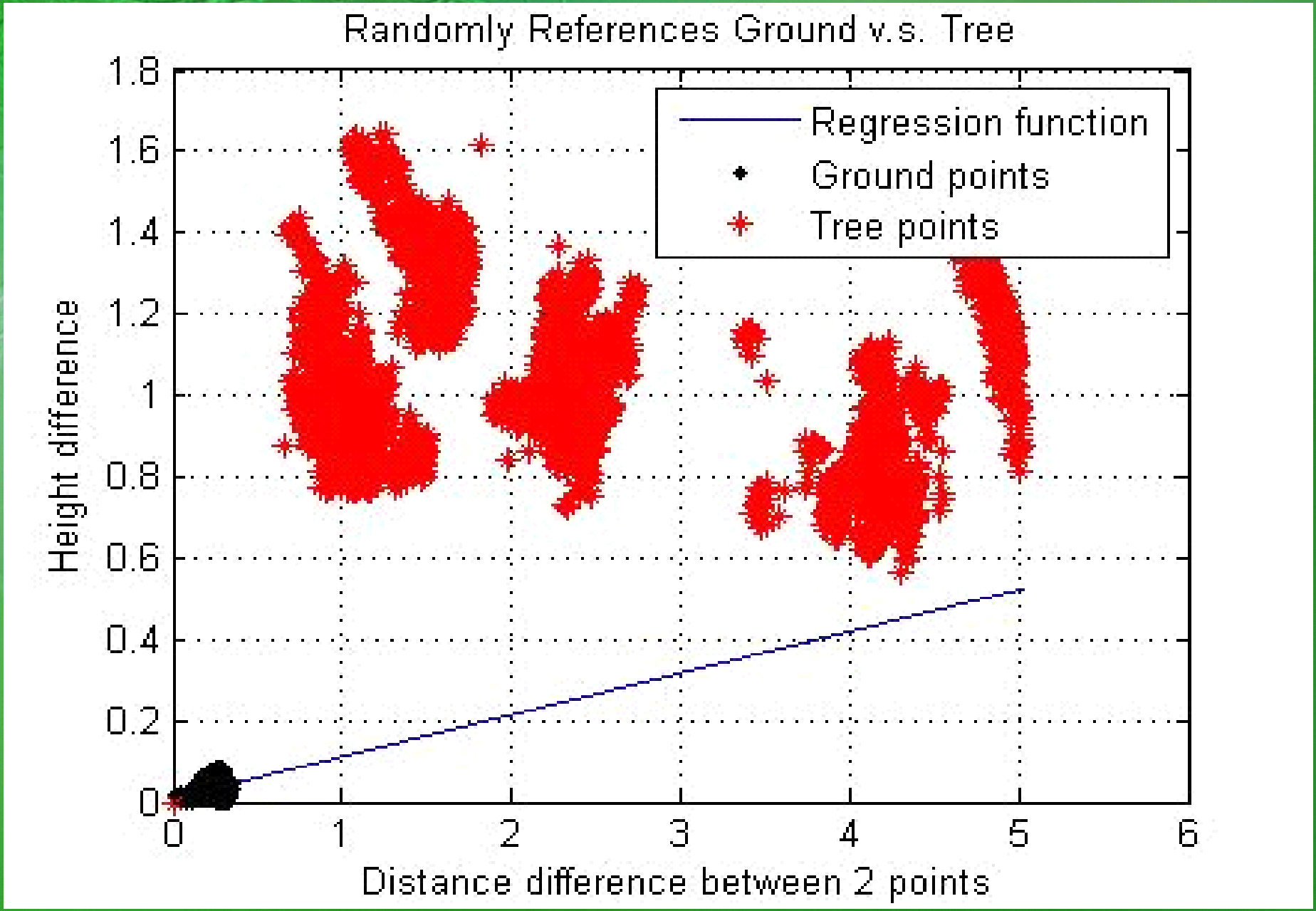
Ground reference point (determined)



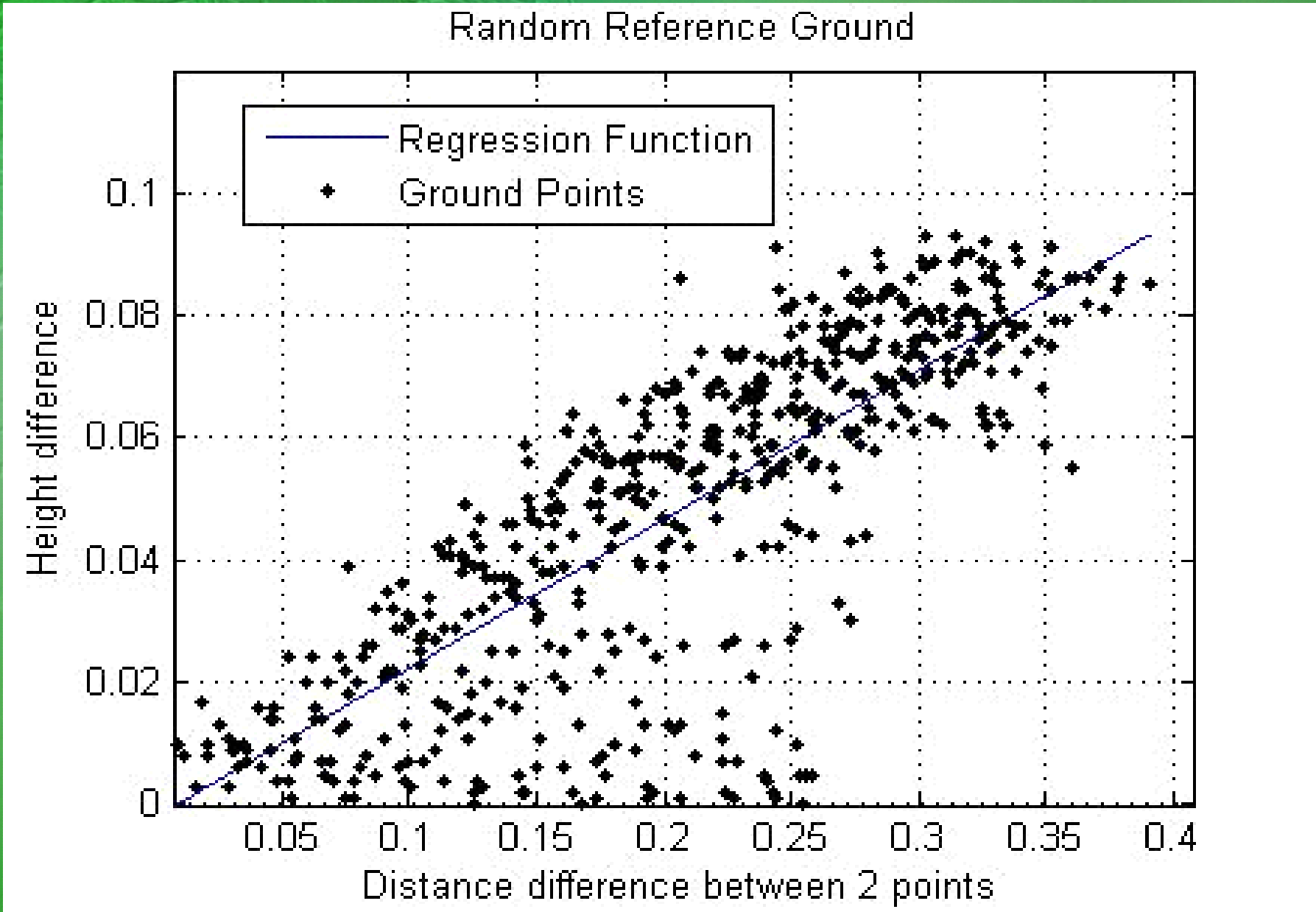
Regression Function



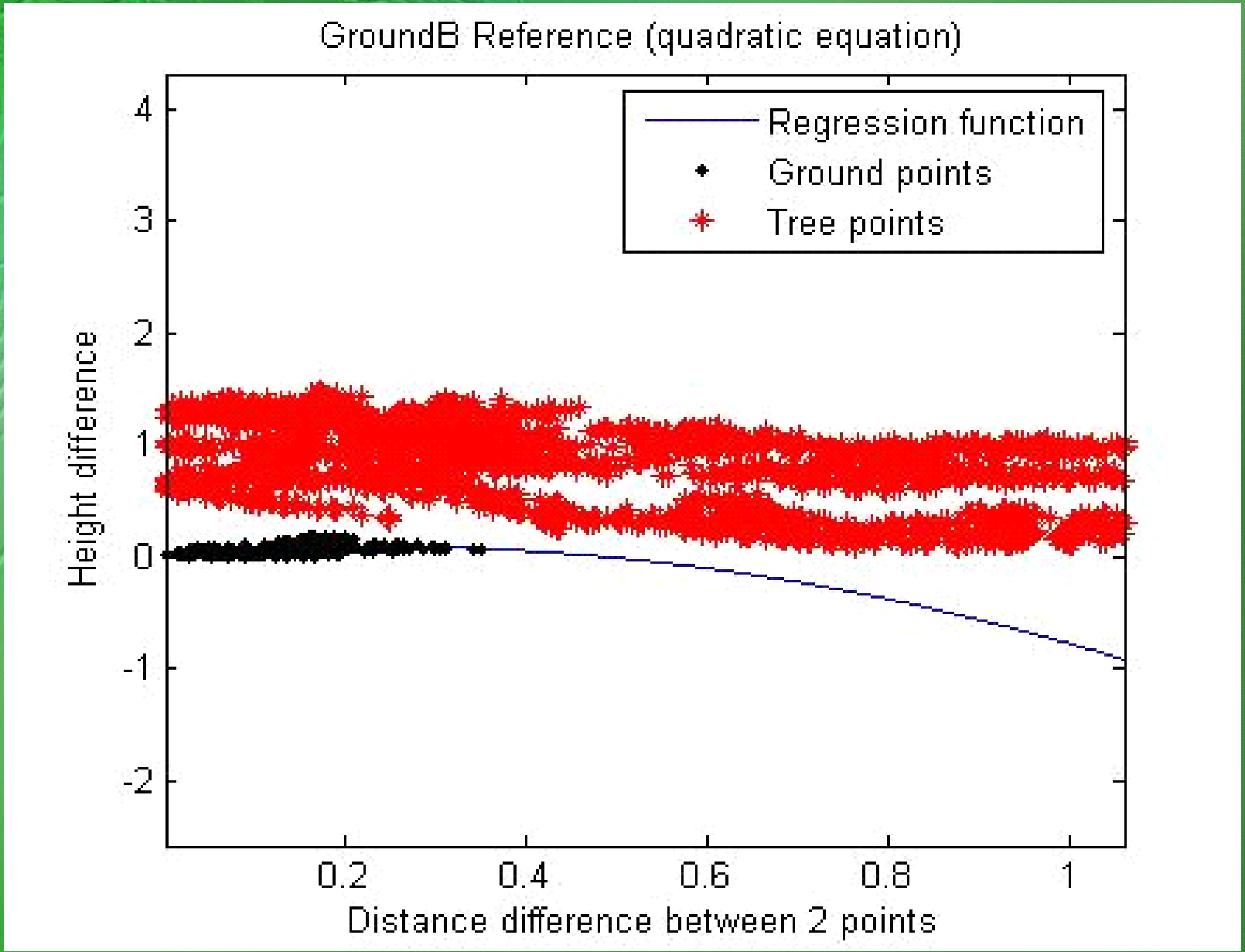
Ground reference point (random)



Regression Function



Ground B vs. Tree (Quadratic Regression)



Array Editor - Mix

Stack: Base

	1	2	3	4
186	-40.896	12.769	3.736	0
187	-40.851	12.692	3.665	0
188	-40.835	12.75	3.658	0
189	-40.875	12.653	3.648	0
190	-41.077	12.732	3.792	0
191	-40.94	12.632	3.685	0
192	-40.871	12.775	3.713	0
193	-40.923	12.635	3.676	0
194	-40.965	12.681	3.735	0
195	-41.009	12.838	3.845	0
196	-40.94	12.689	3.692	0
197	-40.897	12.721	3.672	0
198	-40.886	12.766	3.72	0
199	-41.035	12.644	3.746	0
200	-40.941	12.864	3.827	0
201	-40.632	11.328	4.275	1
202	-40.385	10.918	4.931	1
203	-40.702	11.321	4.684	1
204	-40.424	11.532	3.975	1
205	-40.285	13.327	4.041	1
206	-40.593	11.49	4.766	1
207	-40.706	12.663	4.396	1
208	-40.593	11.35	4.535	1

Adjust regression function

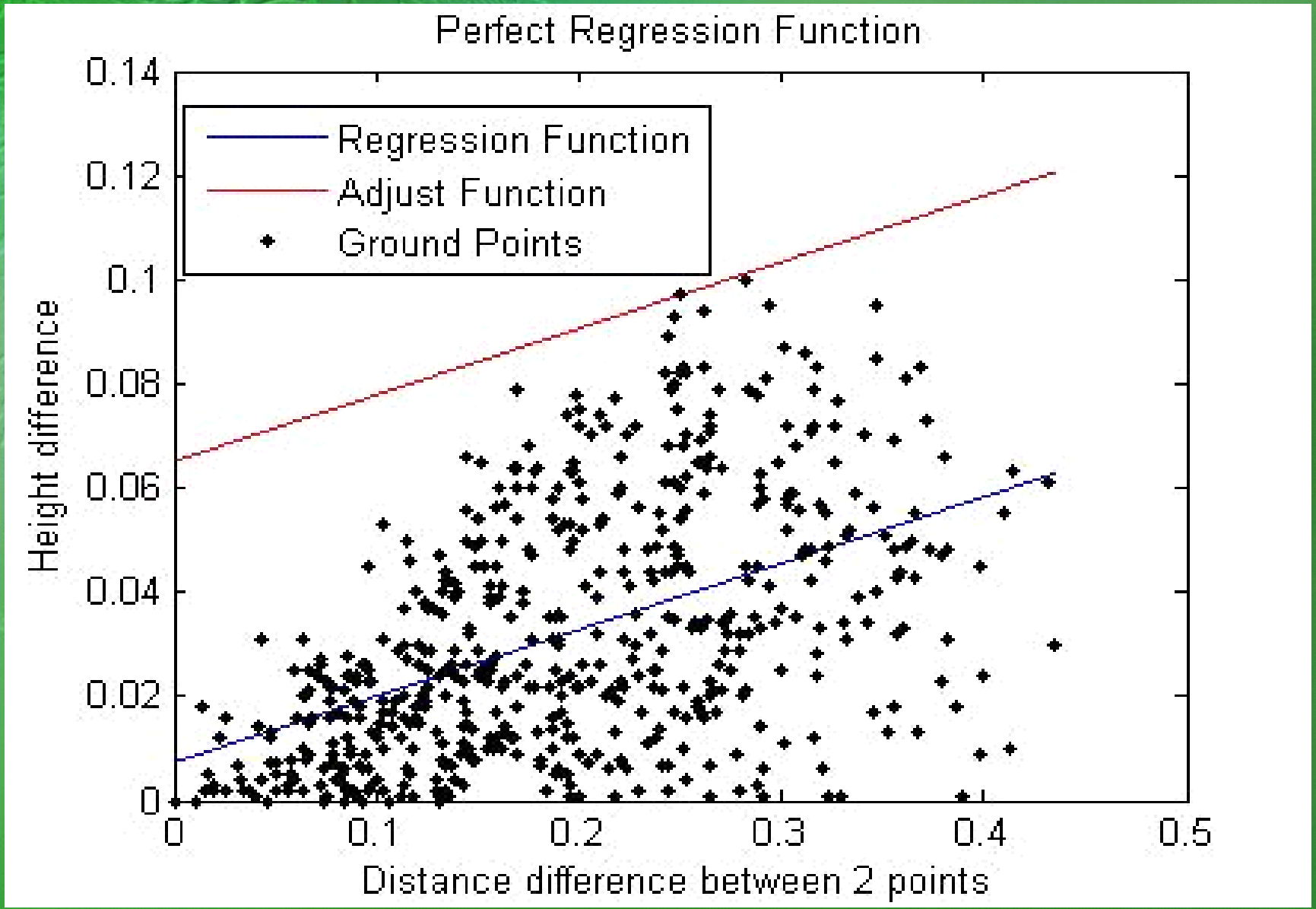
1. Add one column 0 stands for ground in Ground A, one column 1 stands for tree in Only Tree
2. Randomly pick 200 points each from Only Tree and Ground A to create a dataset called Mix
3. Adjust the intercept (b and c') to get best result

$$\triangle h = a \triangle d + b$$

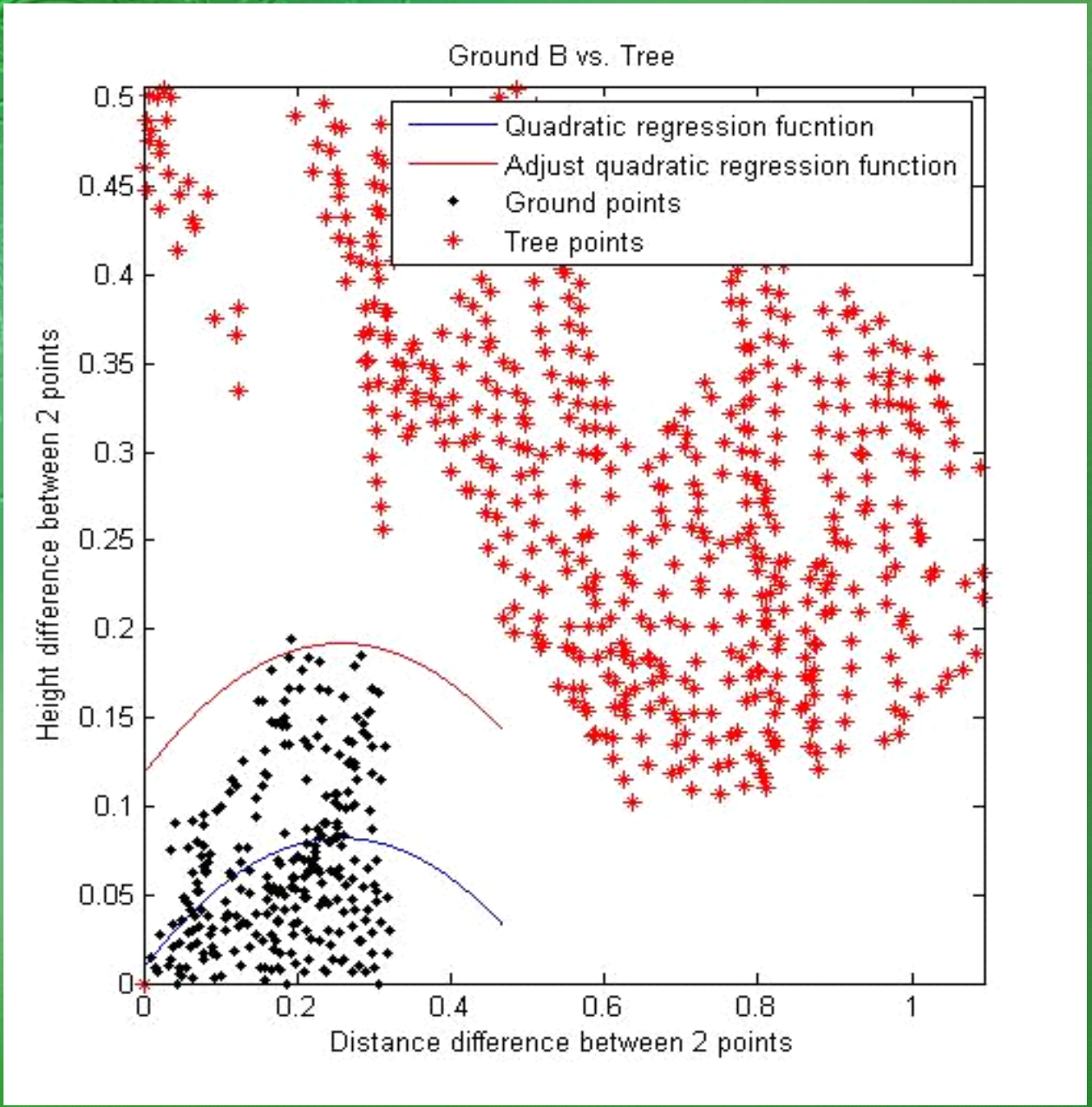
$$\triangle h = - a' \triangle d^2 + b' \triangle d + c'$$

Parameters	Ground	Tree	Total	Accuracy
C*15	114/200	113	227	0.50220
C*10	156/200	134	290	0.53793
C*6	167/200	14	181	0.92265

Adjusted Regression Function



Adjusted Regression Function



Final Results