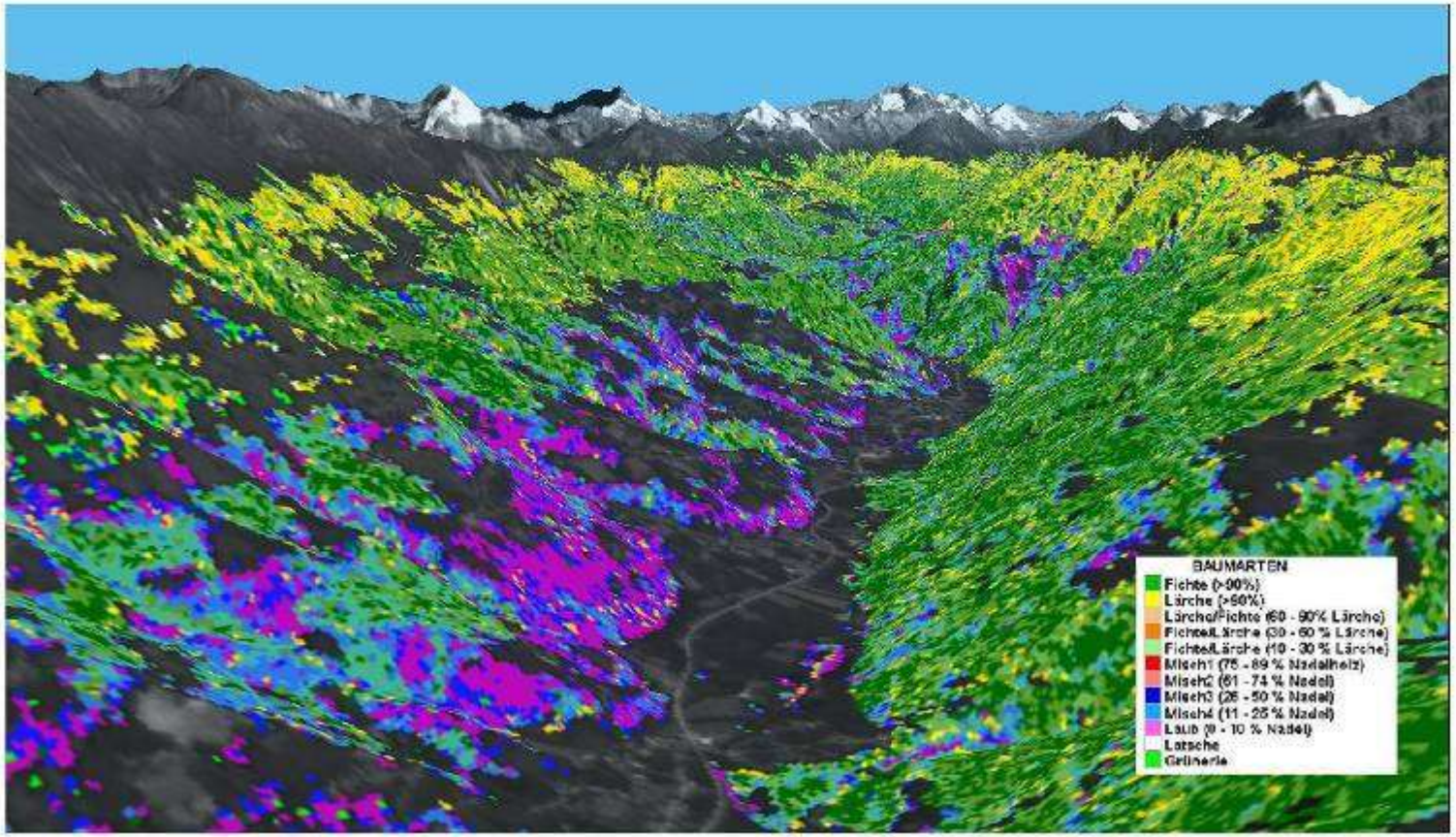
Классификация типов смешения



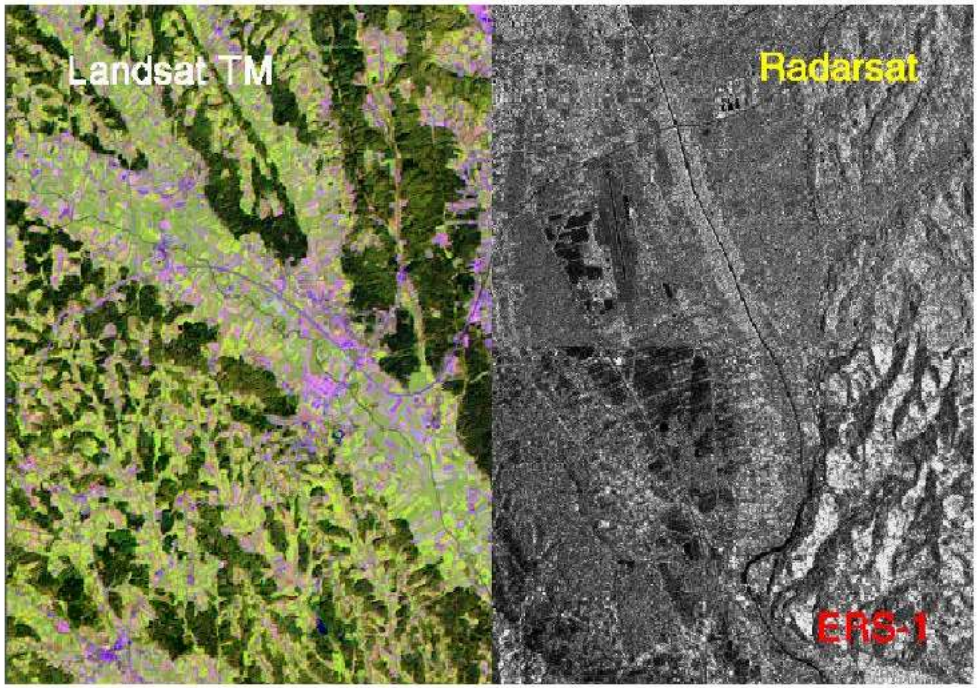
Точность классификации типов смешения

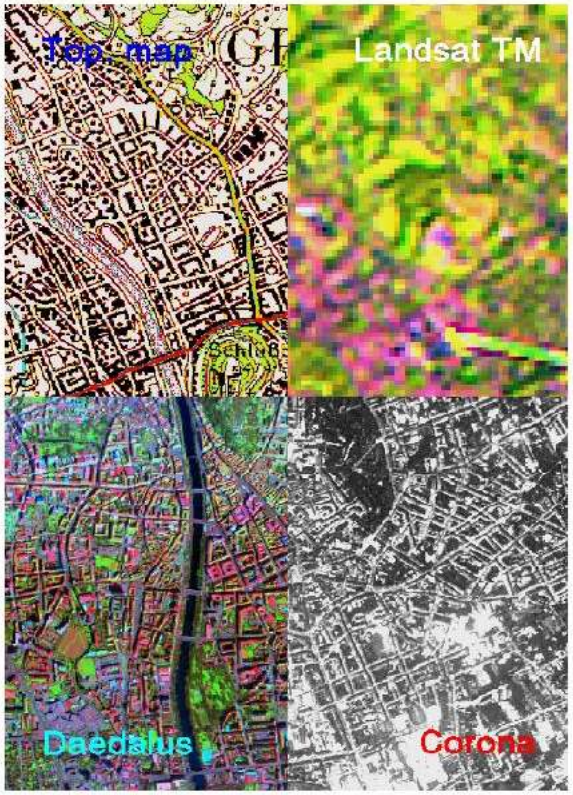
Classification	Overall Accuracy
Aus Satellitenbildern	
• Waldgrenze	>95 %
• 5 Kronenschlussklassen ohne topograph. Korrektur	57 %
• 5 Kronenschlussklassen mit topograph. Korrektur	70-80 %
• 3 Kronenschlussklassen mit topograph. Korrektur	>90 %
• 12 Bestandestypen mit topograph. Korrektur	>75 %
• 7 Bestandestypen mit topograph. Korrektur	85 %

Точность классификации типов смешения

Class	Accuracy (%) of object-based-classification (hierarchical classificator)	Accuracy (%) of maximum-likelihood-classification
Maize	83.33	37.83
Vegetable	70.59	41.97
Grain	75.00	64.87
Grassland	75.00	65.78

Multisensor Image Mosaics





Источник	Классификация	точность
Aerial photo	7 классов по возрасту	82 %
Landsat TM	3 класса по возрасту	78 %
Landsat TM	5 классов по плотности кроны	75 %
Landsat TM	7 классов по смешению пород	85 %

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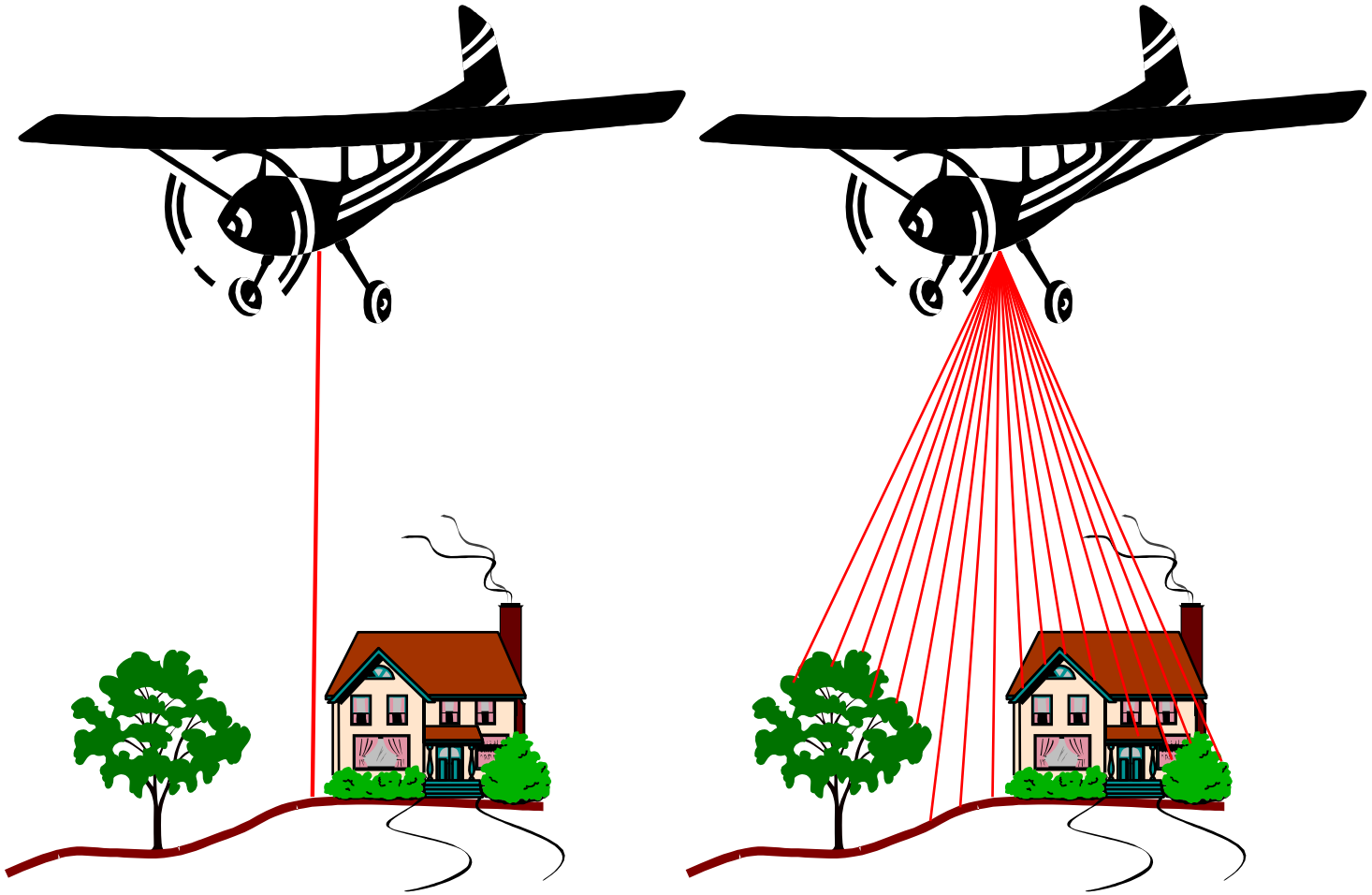
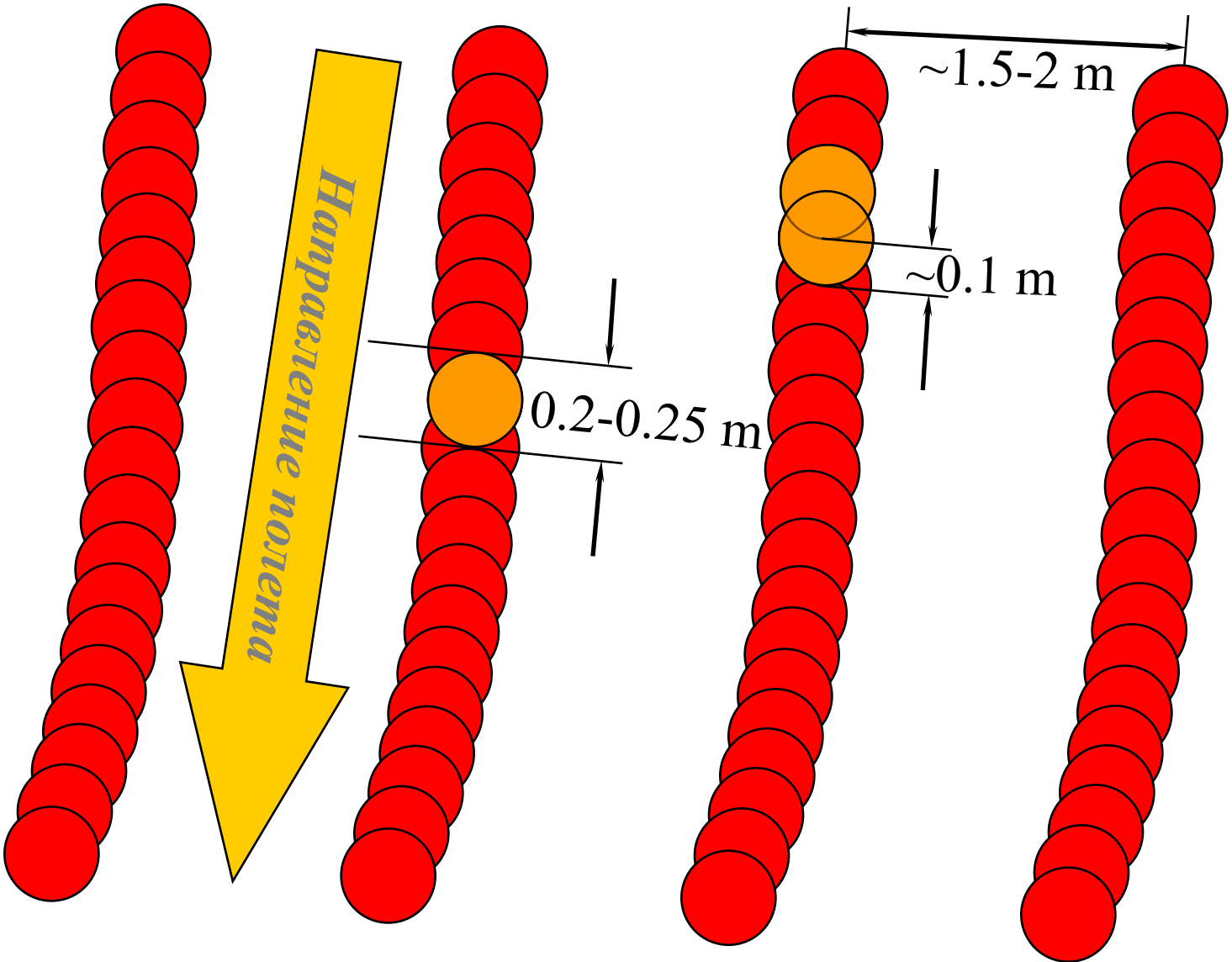
Benefits and handicaps of different methods to estimate forest attributes




Hauptfahrtrichtung
0.2-0.25 m
~1.5-2 m
~0.1 m

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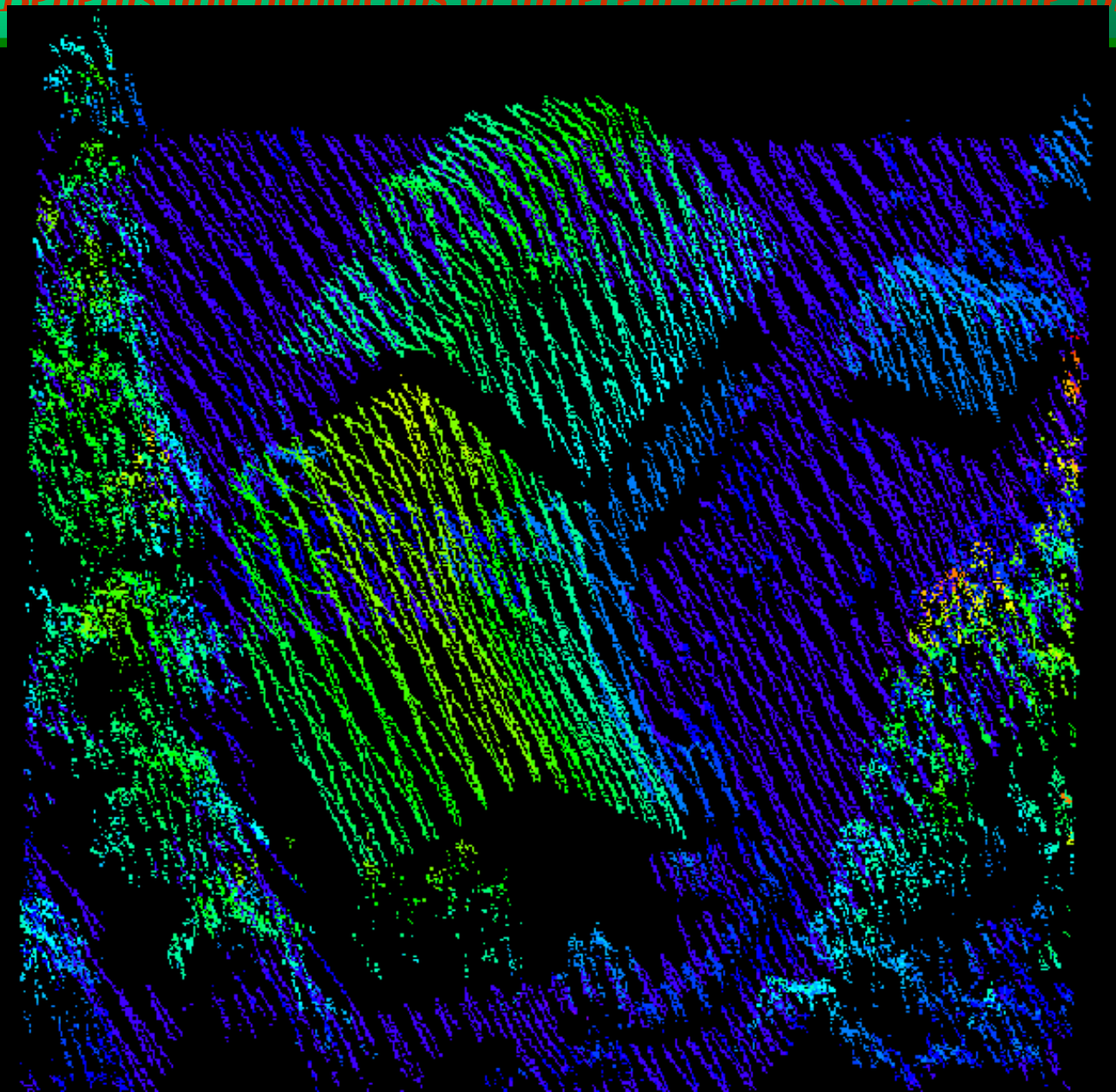

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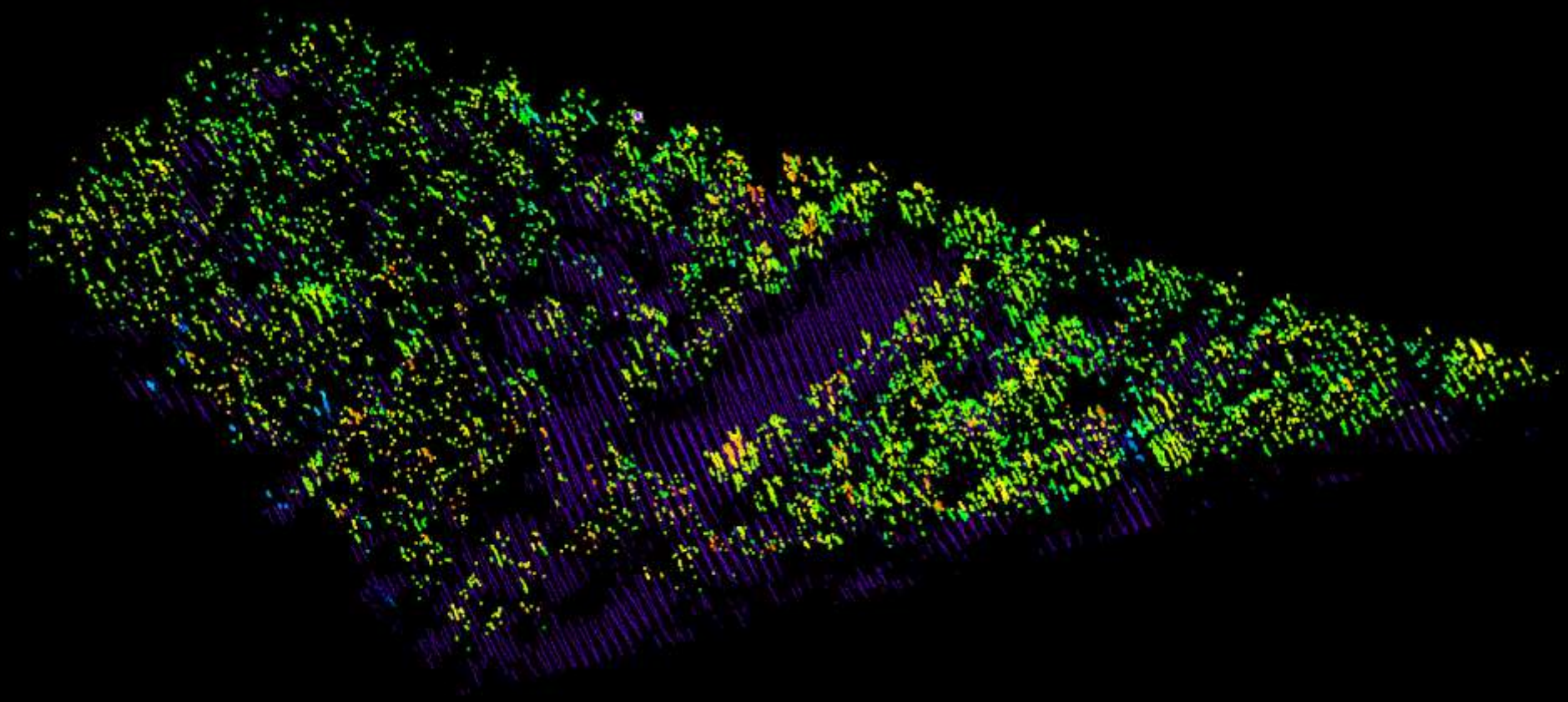

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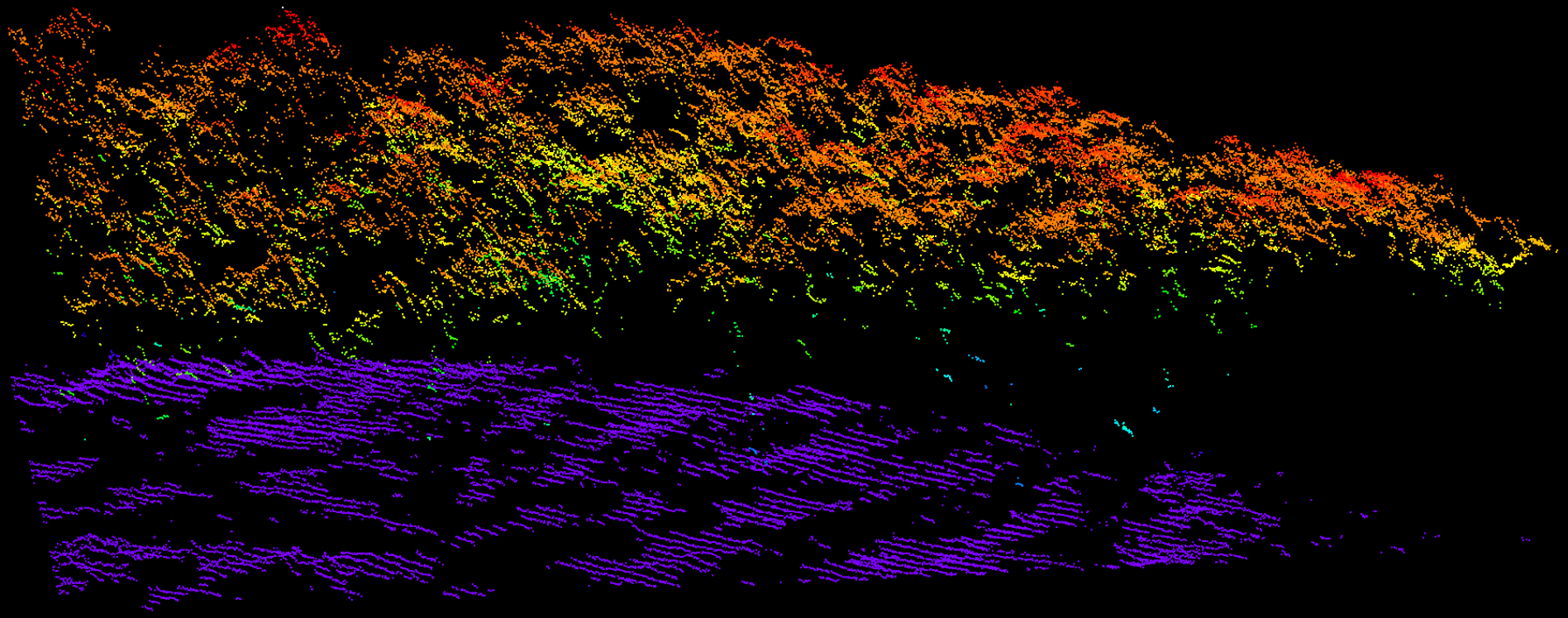
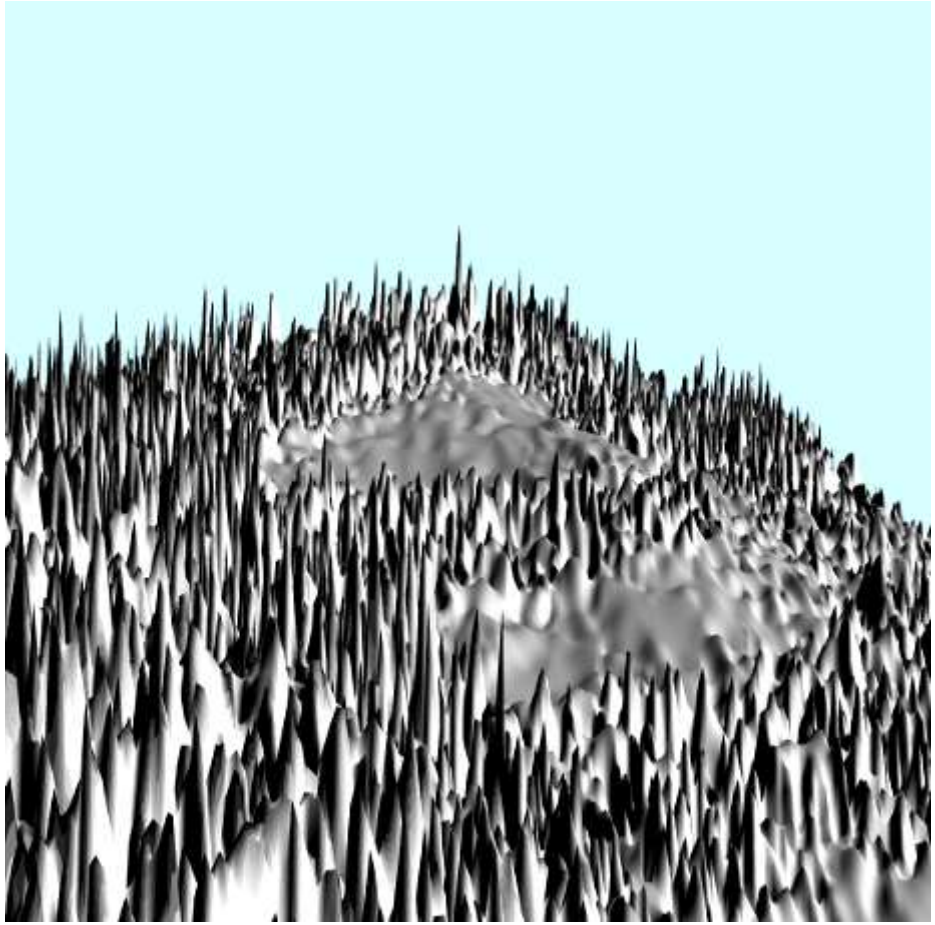
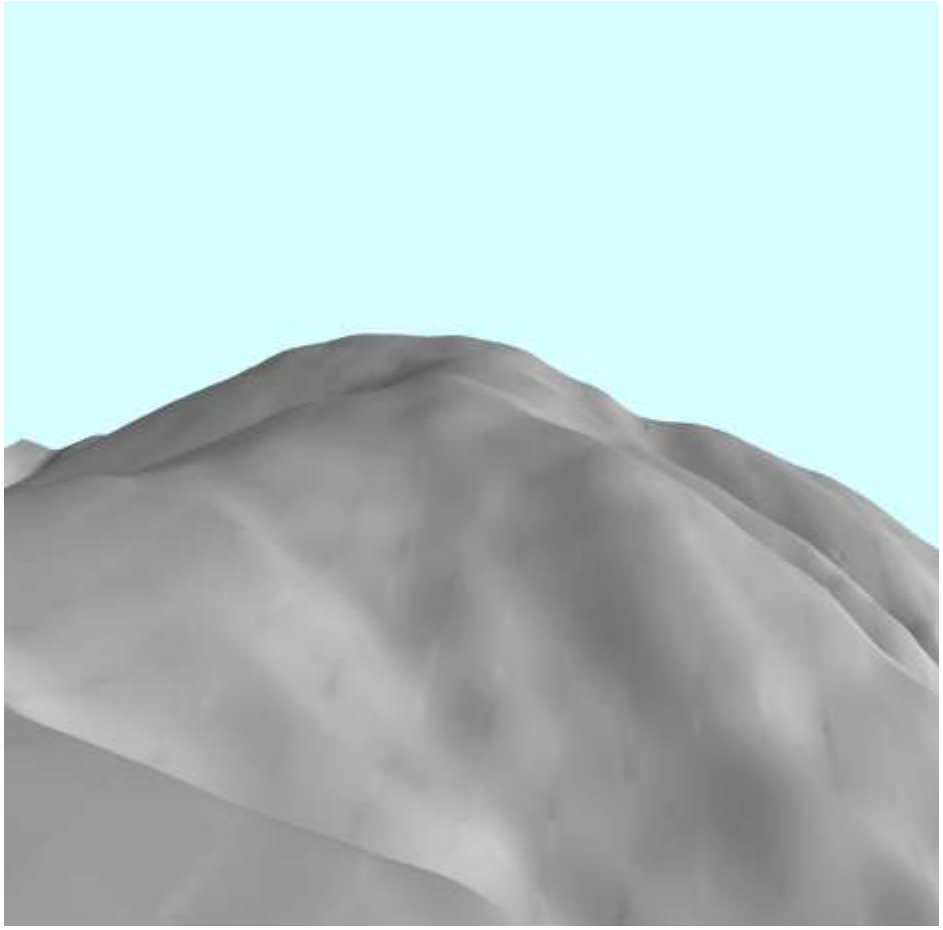
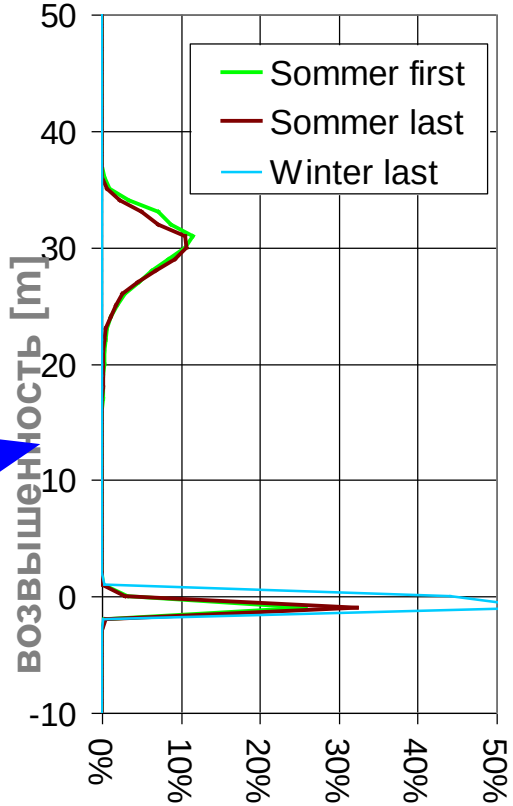


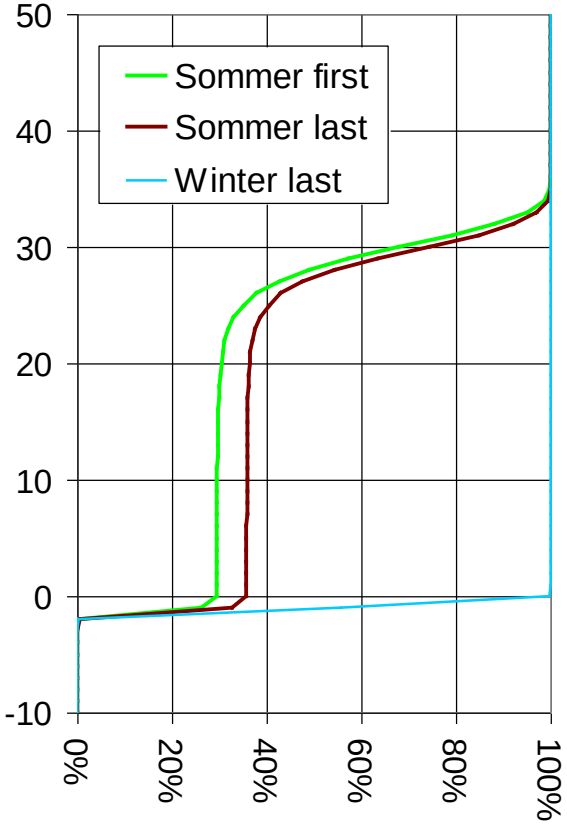




Буковый лес

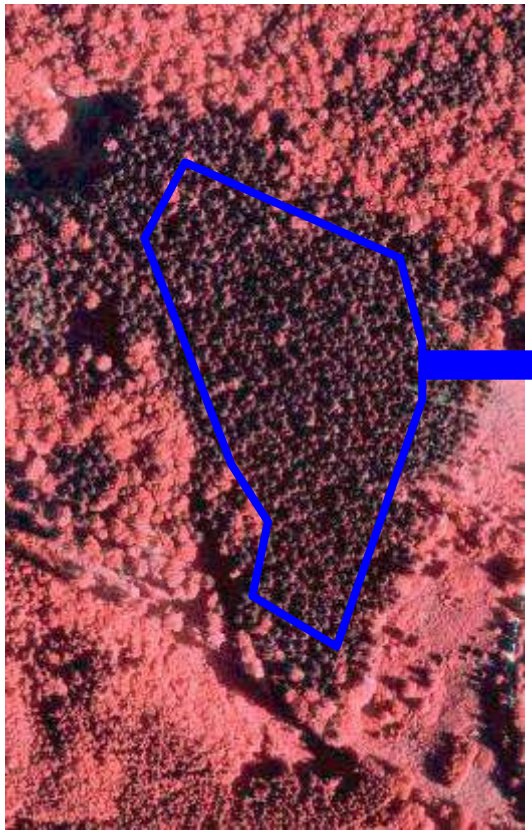


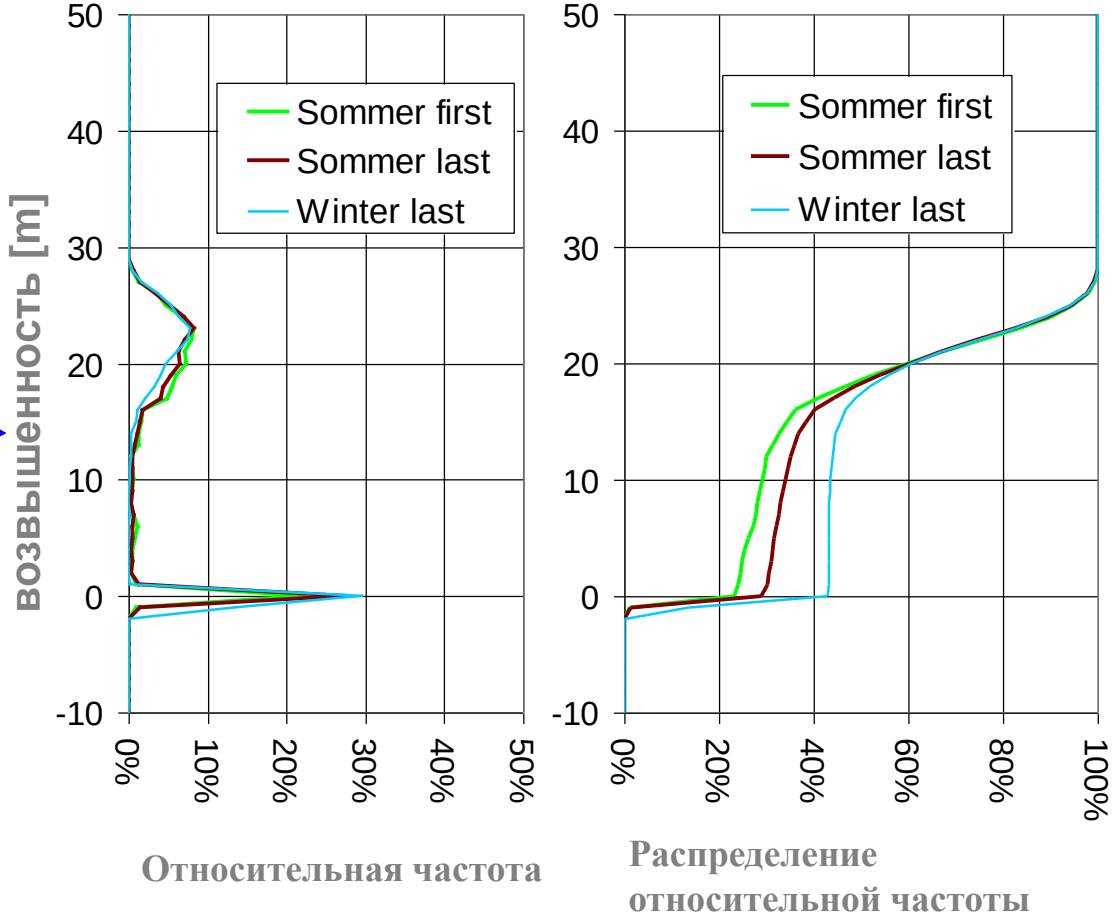
Относительная частота

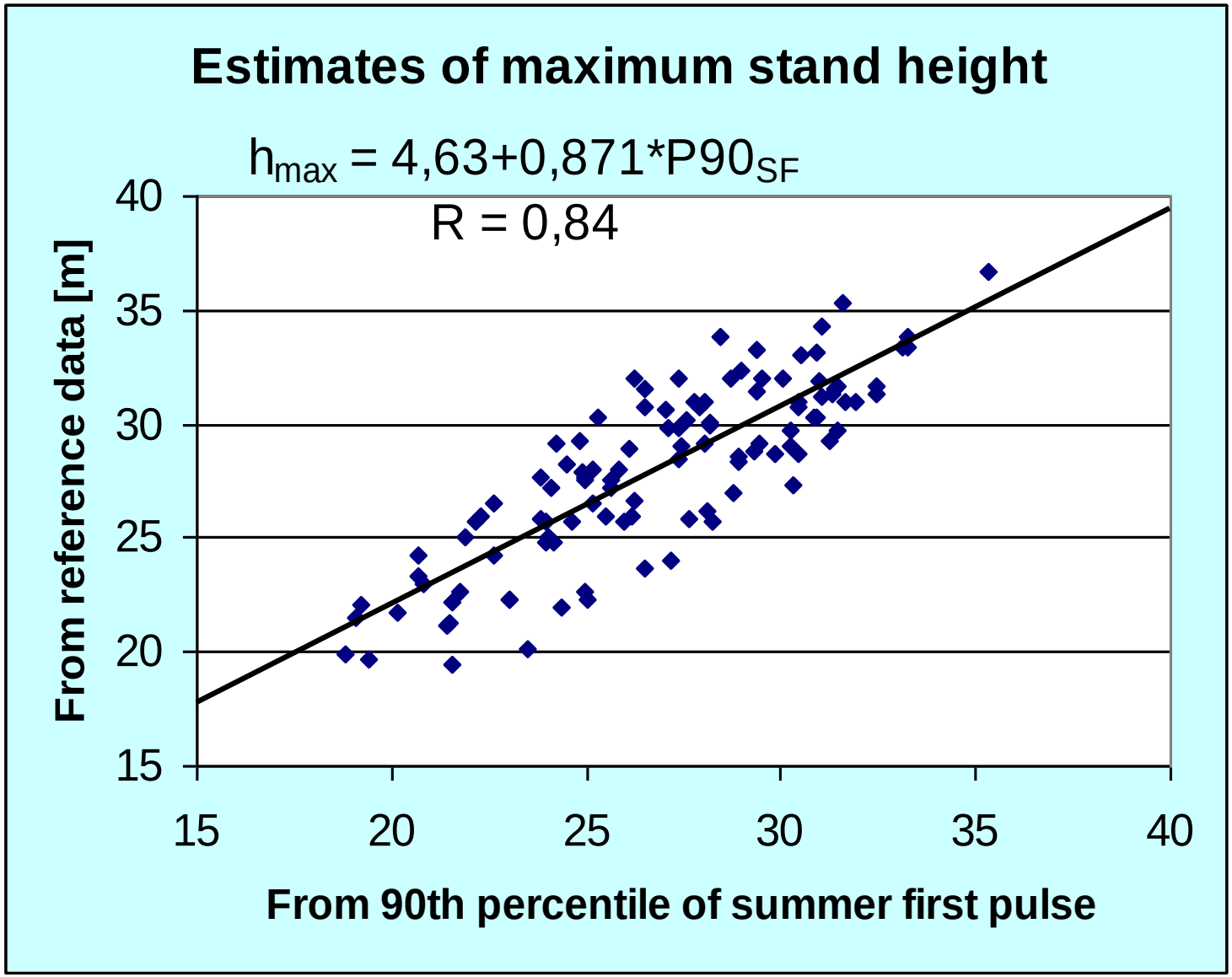


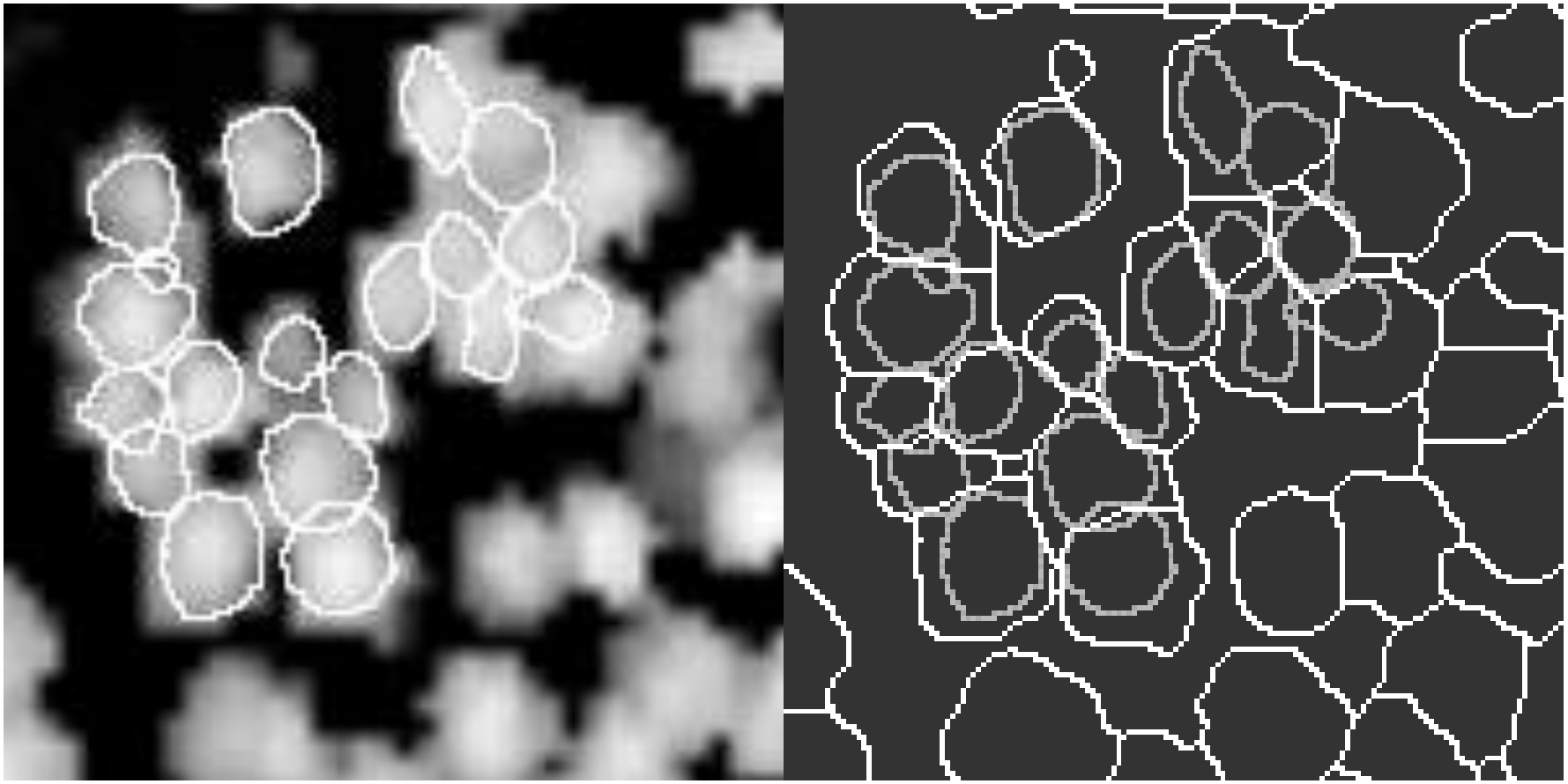
Распределение относительной частоты

Еловый лес

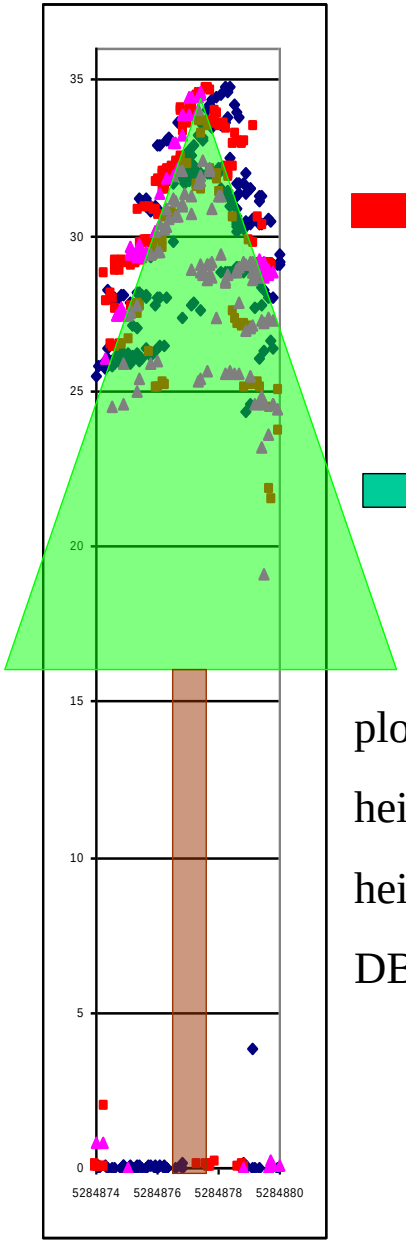



возвышенность [m]
50
40
30
20
10
0
-10
Sommer first
Sommer last
Winter last
0%
10%
20%
30%
40%
50%
Относительная частота
0%
20%
40%
60%
80%
100%
Распределение относительной частоты


Estimates of maximum stand height
h_{max} = 4,63+0,871*$P90_{SF}$
R = 0,84
From reference data [m]
40
35
30
25
20
15
15
20
25
30
35
40
From 90th percentile of summer first pulse



Кроновое картирование (слева) и сегментация – светлые линии - vs. Кроновое картирование – темные линии (справа)



Laser-data

3 x 1m strip

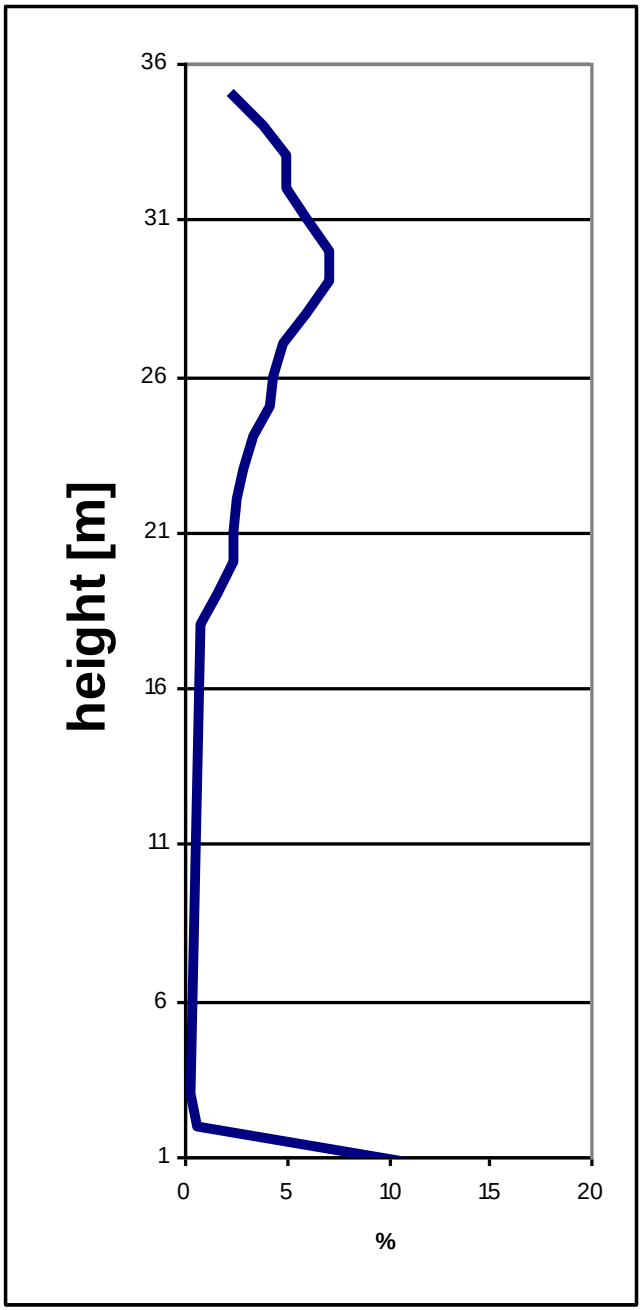
schematized Spruce

plot 6 number 19

height=34m

height of living crown=16m

DBH=60cm



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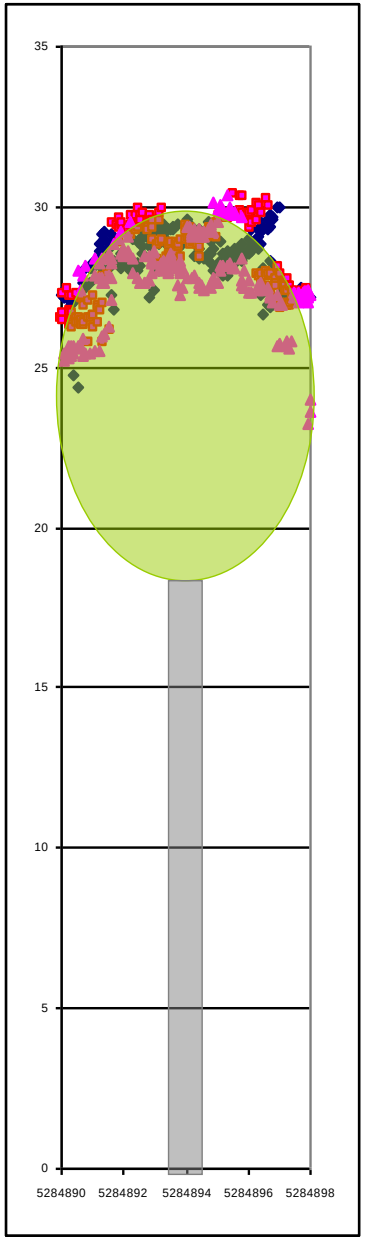


Laser-data

3 x 1m strip

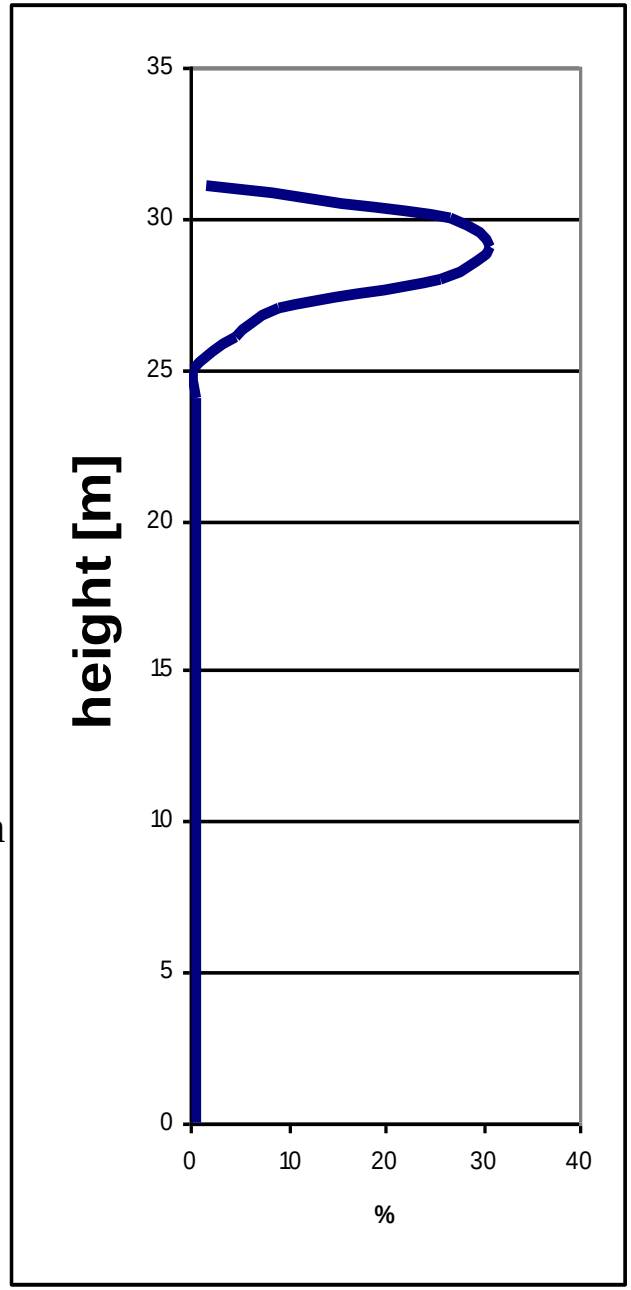
schematized Beech

plot 6 number 19

height=30m

height of living crown=18m

DBH=54cm



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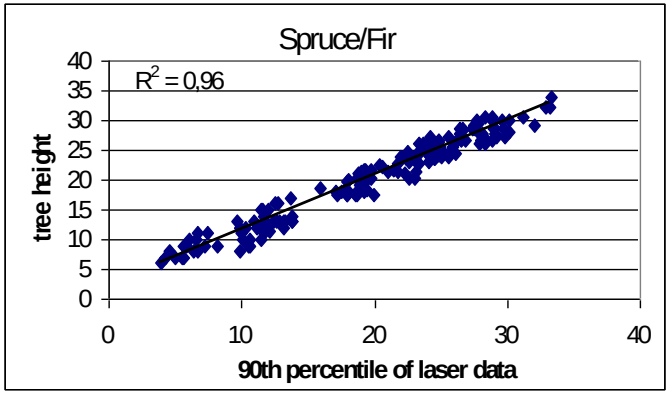

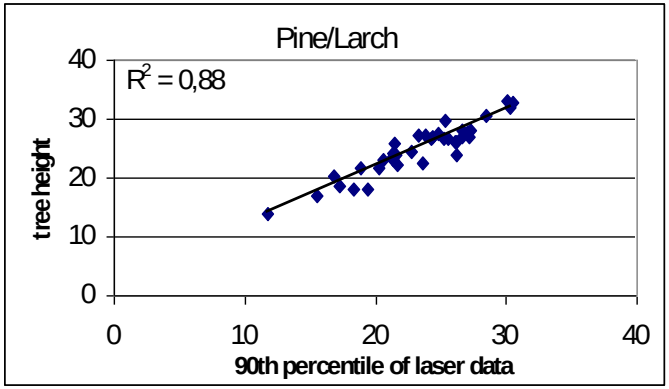

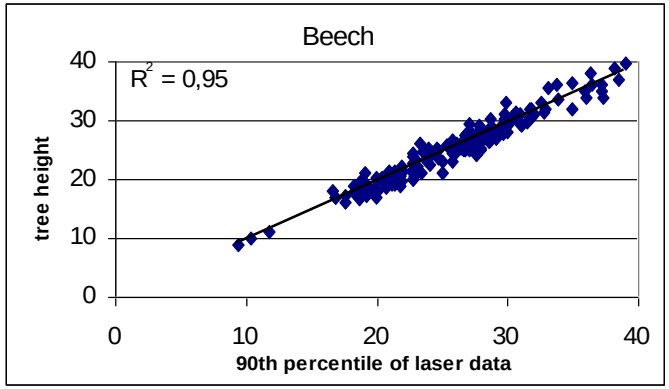

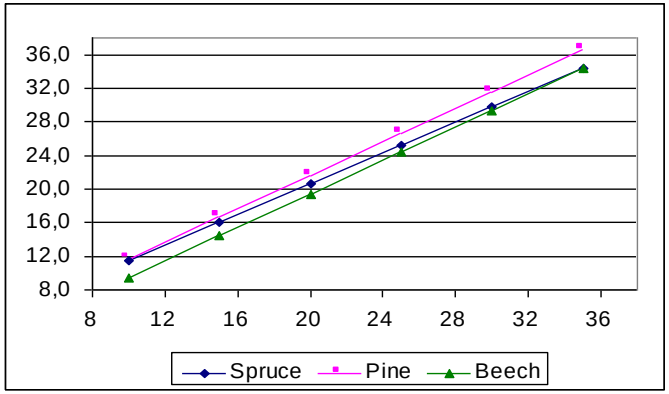

Оценка высоты дерева с 90го процентиля первого летнего лазерного сканирования ели и пихты, сосны и лиственницы, и бука, сравнение моделей

	Mean height [m]			Basal area [ml]			Volume [mi]		
	Mean	**s**	**CV%**	**Mean**	**s**	**CV%**	**Mean**	**s**	**CV%**
	16,4	7	43	17,9	10,1	56	156,5	105,2	67
(1)	RI	SEE	SE%	RI	SEE	SE%	RI	SEE	SE%
Aerial photograph	0,34	5,4	32	0,48	7,0	38	0,48	73	46
Spot XS	0,37	5,9	36	0,44	7,6	42	0,44	79	50
Landsat TM	0,26	6,1	37	0,38	8,0	45	0,35	85	54
Spot PAN	0,17	6,4	39	0,31	8,4	47	0,31	88	56
ERS SAR	0,03	7,0	42	0,07	9,8	55	0,06	102	65
							Mean	s	CV%
							166	59	36
(2)							RI	SEE	SE%
Aerial photograph A							0,44	44	27
Aerial photograph B							0,36	47	28
							Mean	s	CV%
							156	97	62
(3)							RI	SEE	SE%
Landsat TM							0,66	56	36
							Mean	s	CV%
							267	158,7	59
(4)							RI	SEE	SE%
Aerial photograph							0,72	84	32
							Mean	s	CV%
							198	50	25
(5)							RI	SEE	SE%
Aerial photograph							0,59	32	16
							Mean	s	CV%
							430,2	155	36
(6)							RI	SEE	SE%
Aerial photograph							0,81	68	16
	Mean	s	CV%	Mean	s	CV%	Mean	s	CV%
	25,4	7	26	36,4	11,8	32	416	110,7	27
	RI	SEE	SE%	RI	SEE	SE%	RI	SEE	SE%
Laser	0,77	1,8	8	0,74	6,1	12	0,71	60	15

(1) Hyyppä et al., 2000 (4) Beisch et al., 1996
(2) Holmgren et al., 1997 (5) Spellmann, 1986
(3) Holmgren et al., 2000 (6) Akca et al., 1987

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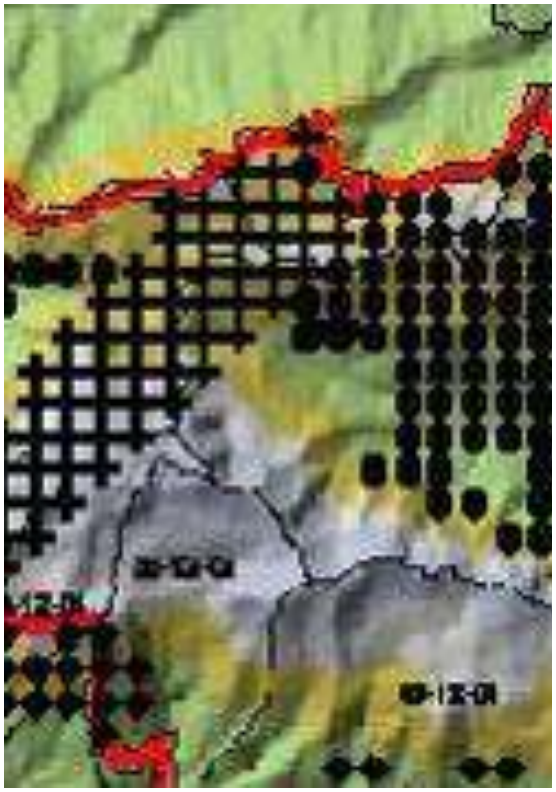
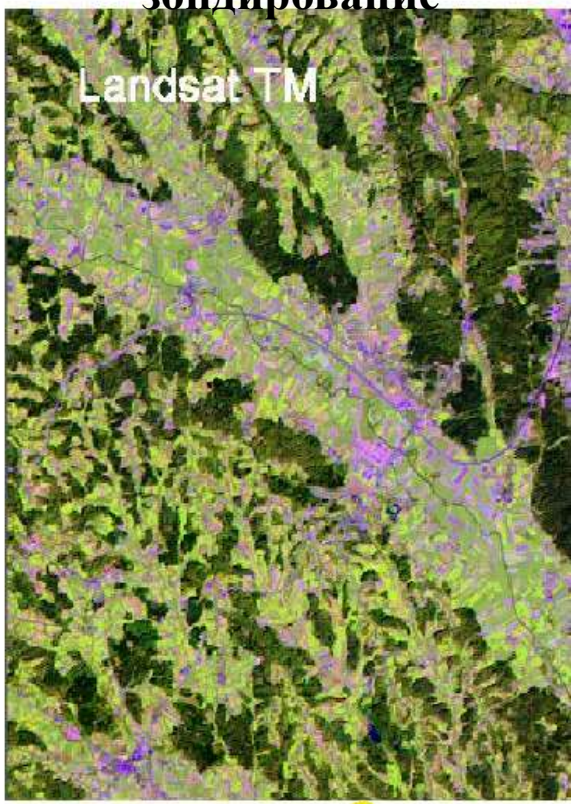
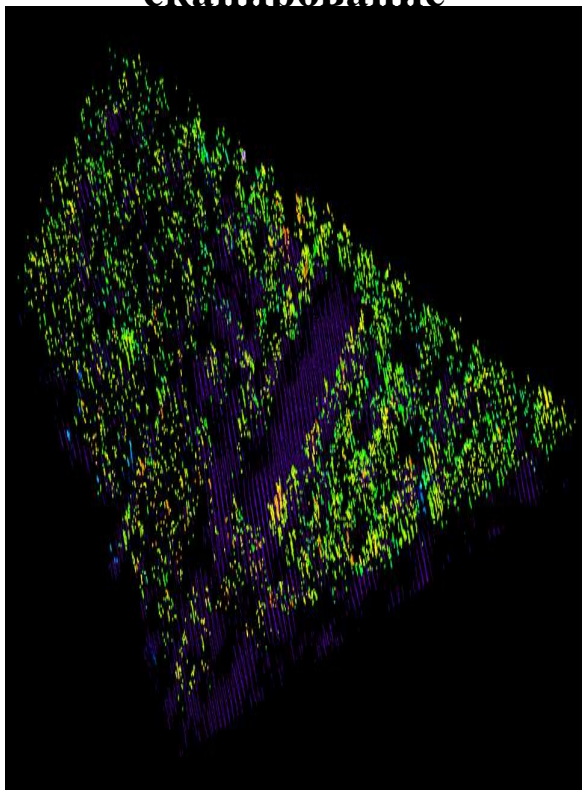
опись



Дистанционное зондирование



Лазерное сканирование



Thanks for your attention

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