



Advanced Tools for Infrastructure Design & Management

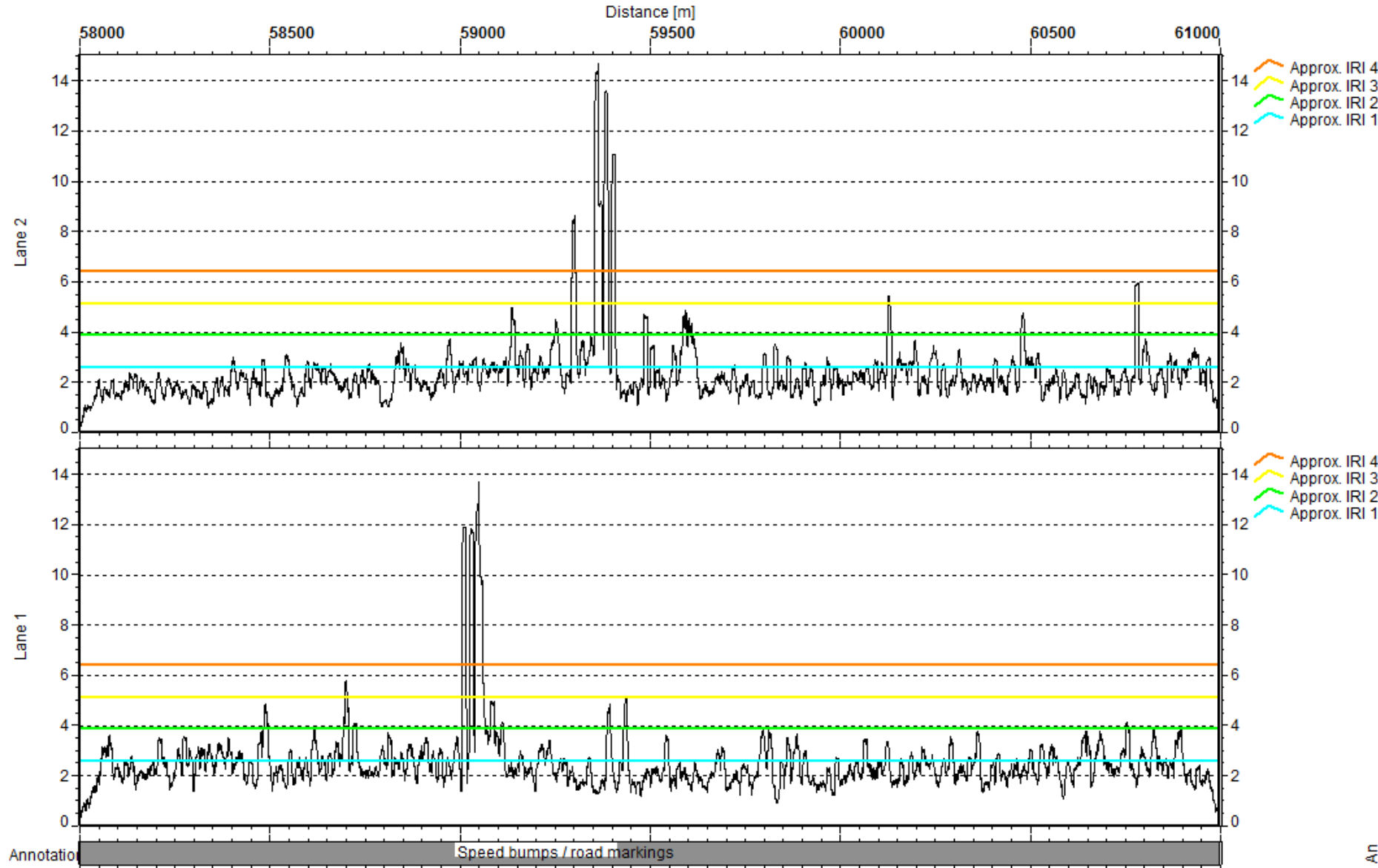
Section 10

Road 9, km 58-61



Roughness from Accelerometer Data

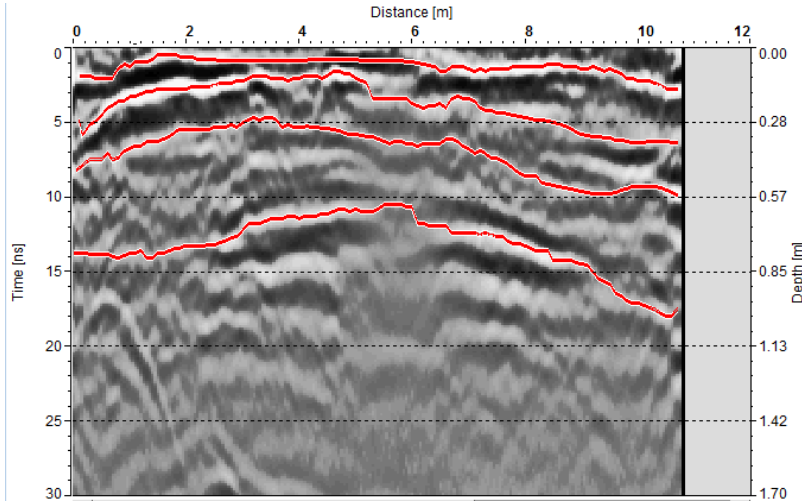
10_Road9_km58_61



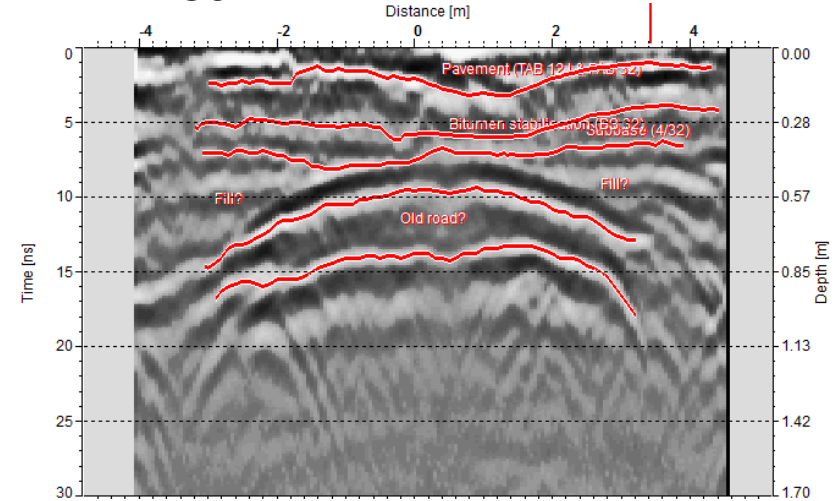
GPR Cross Sections

Materials	[cm]
Dense Asphalt concrete TAB 12I	4
Porous asphalt concrete PAB 16(32)	6
Crushed limestone bitumen impregnated	12
Crushed limestone subbase (wedged) / crushed limestone 4/32	12
Gravelly sand	> 75

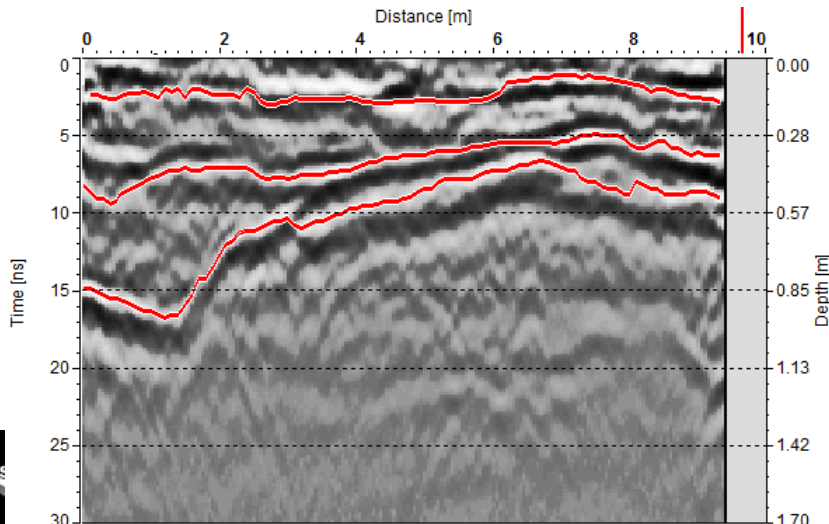
Km 58



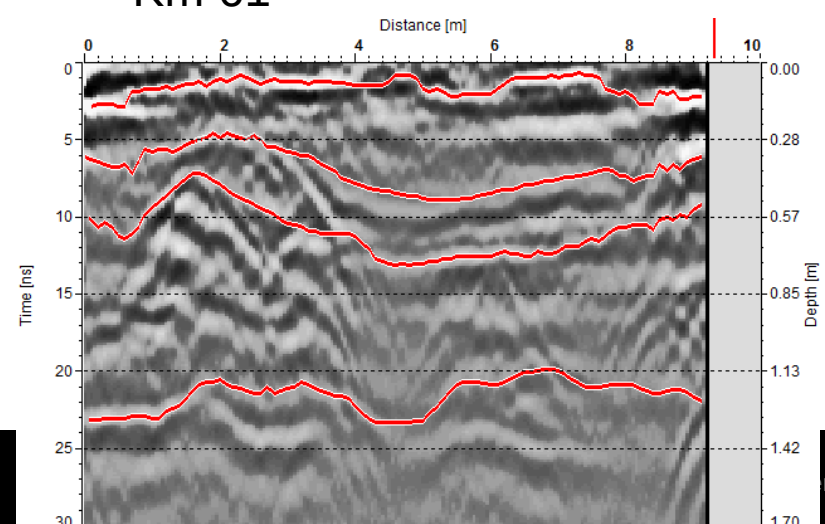
Km 59



Km 60



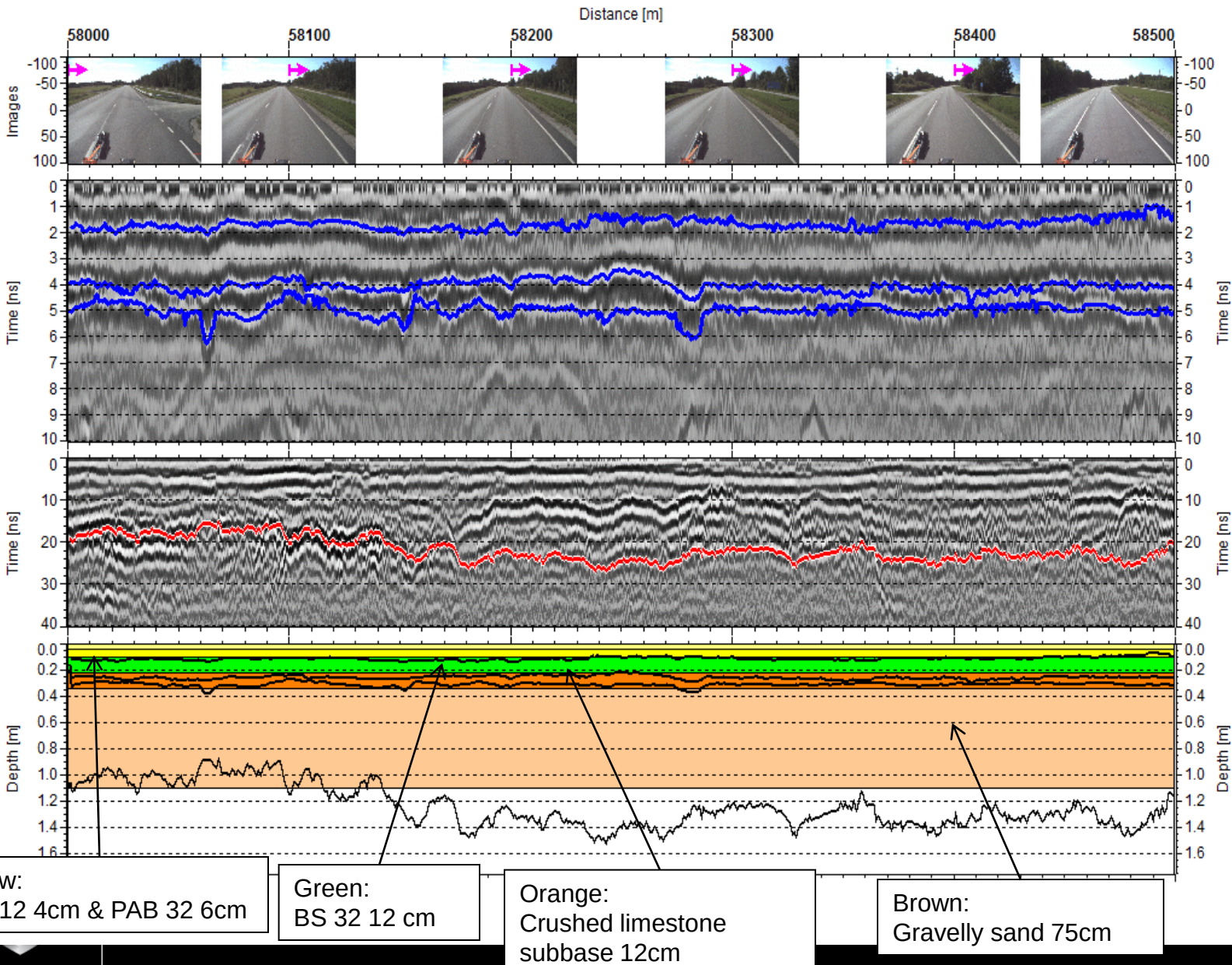
Km 61

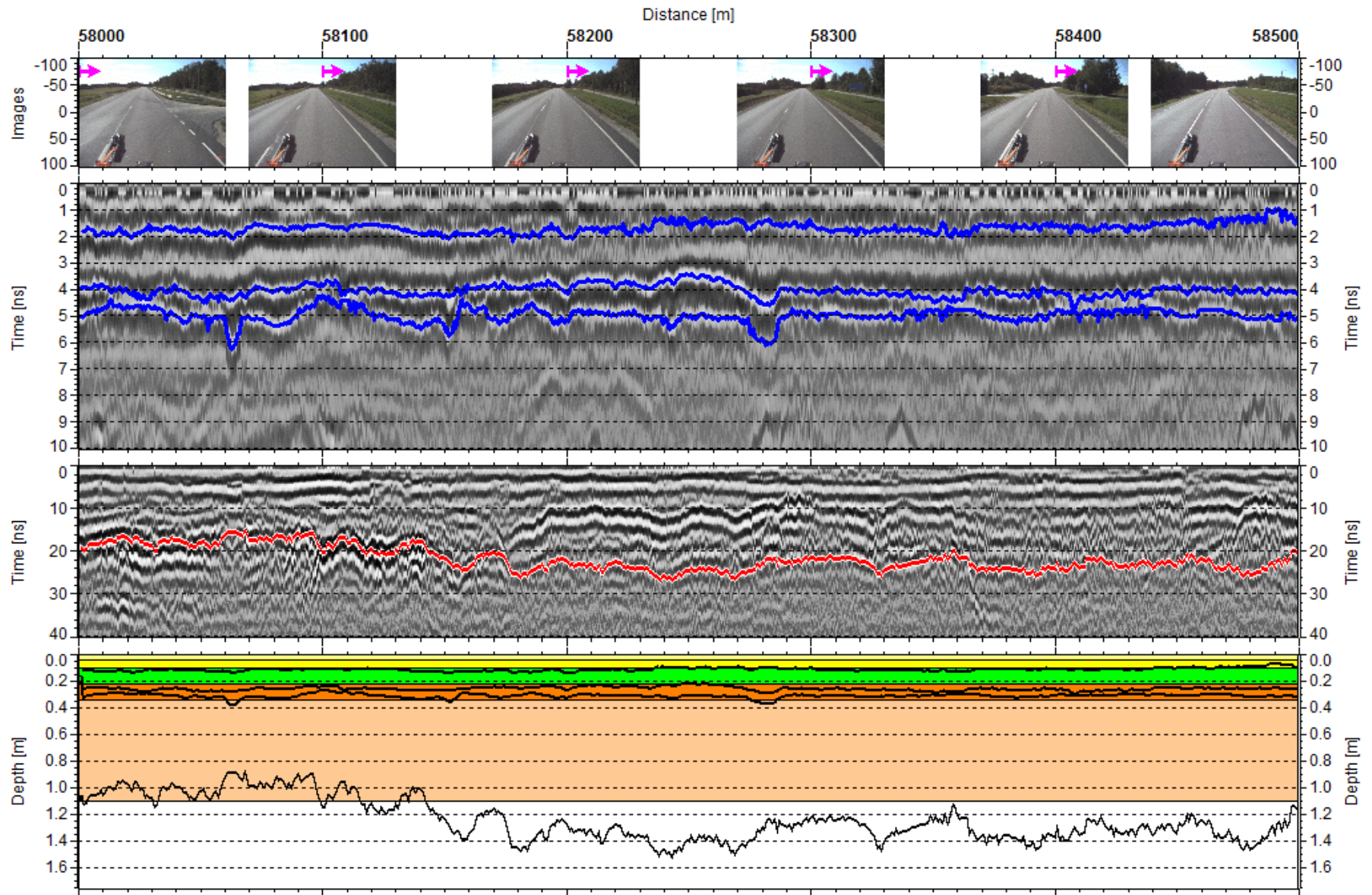


Explanation for longitudinal profiles

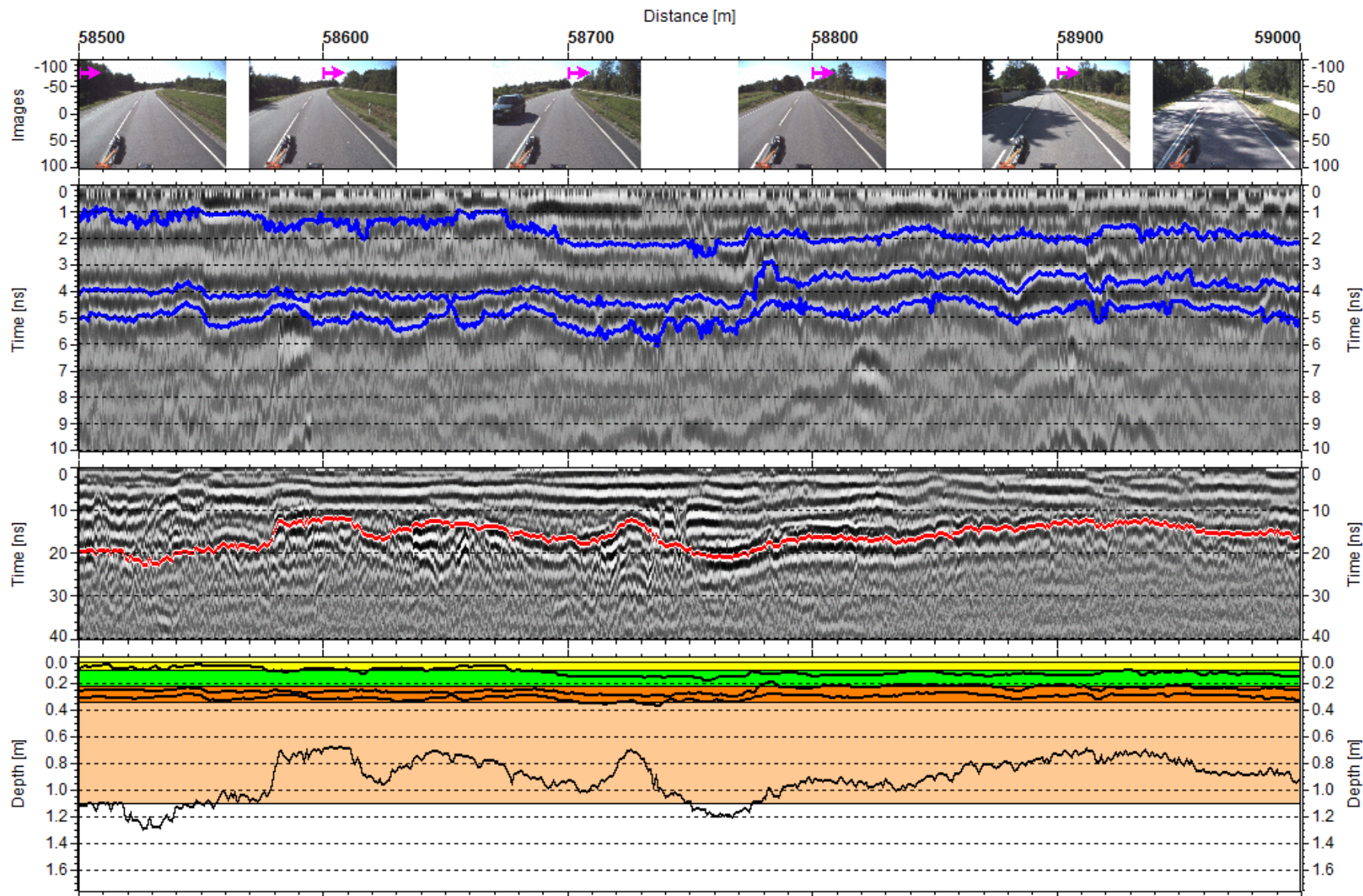
-Profiles are presented from Lane 1, right wheelpath

10_Road9_km58_61

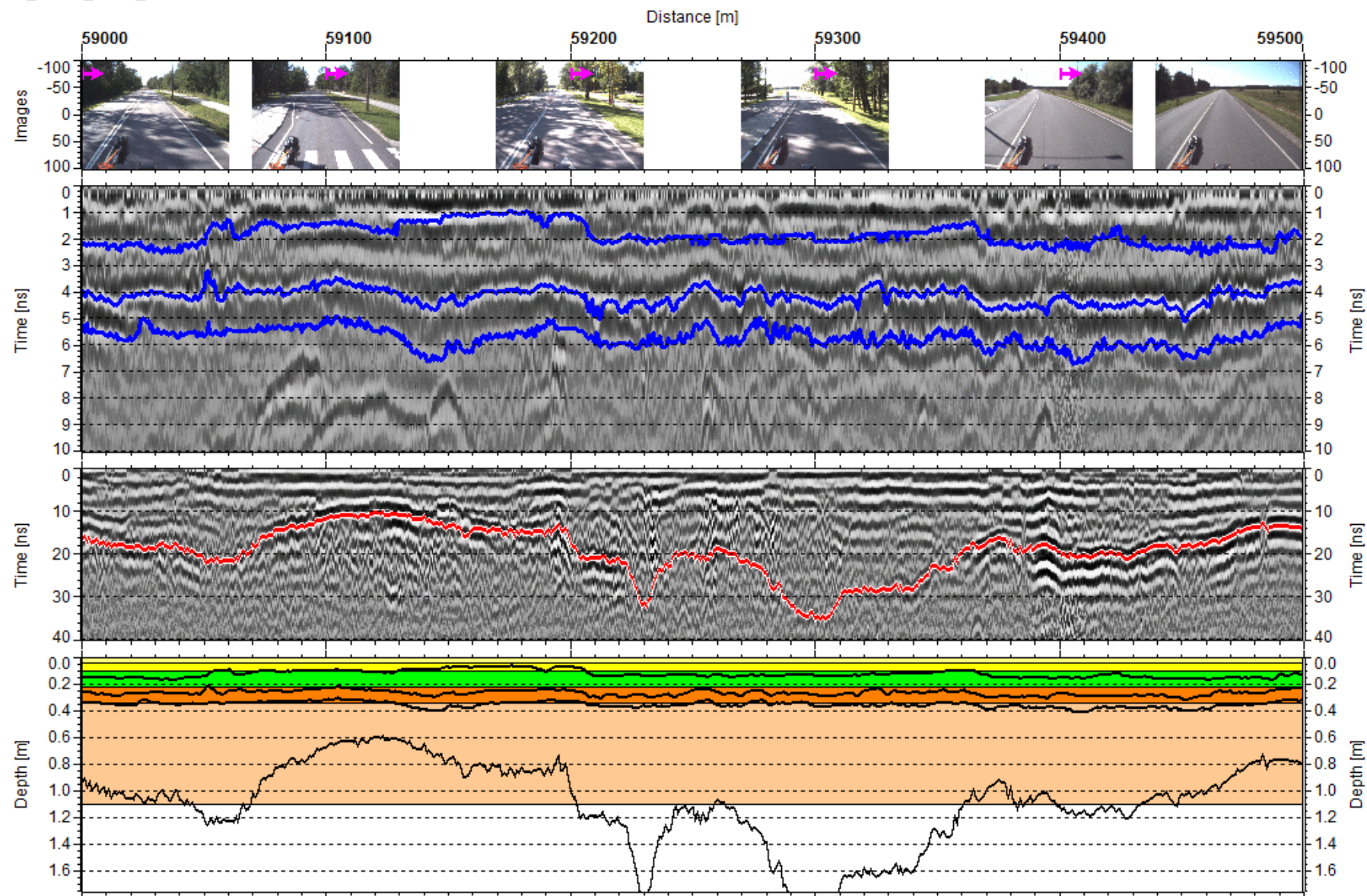




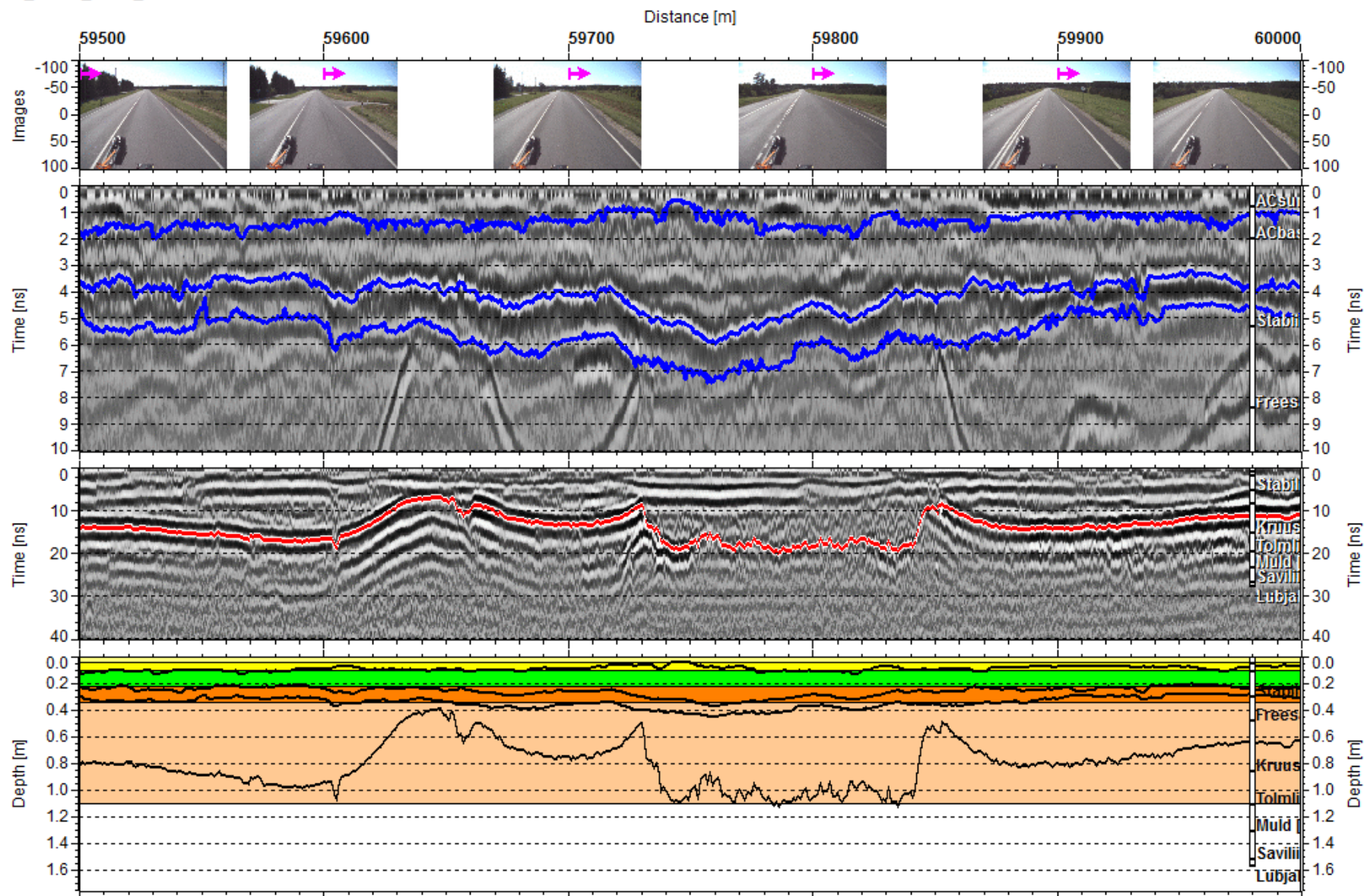
Roadscanners Oy, 10/2012



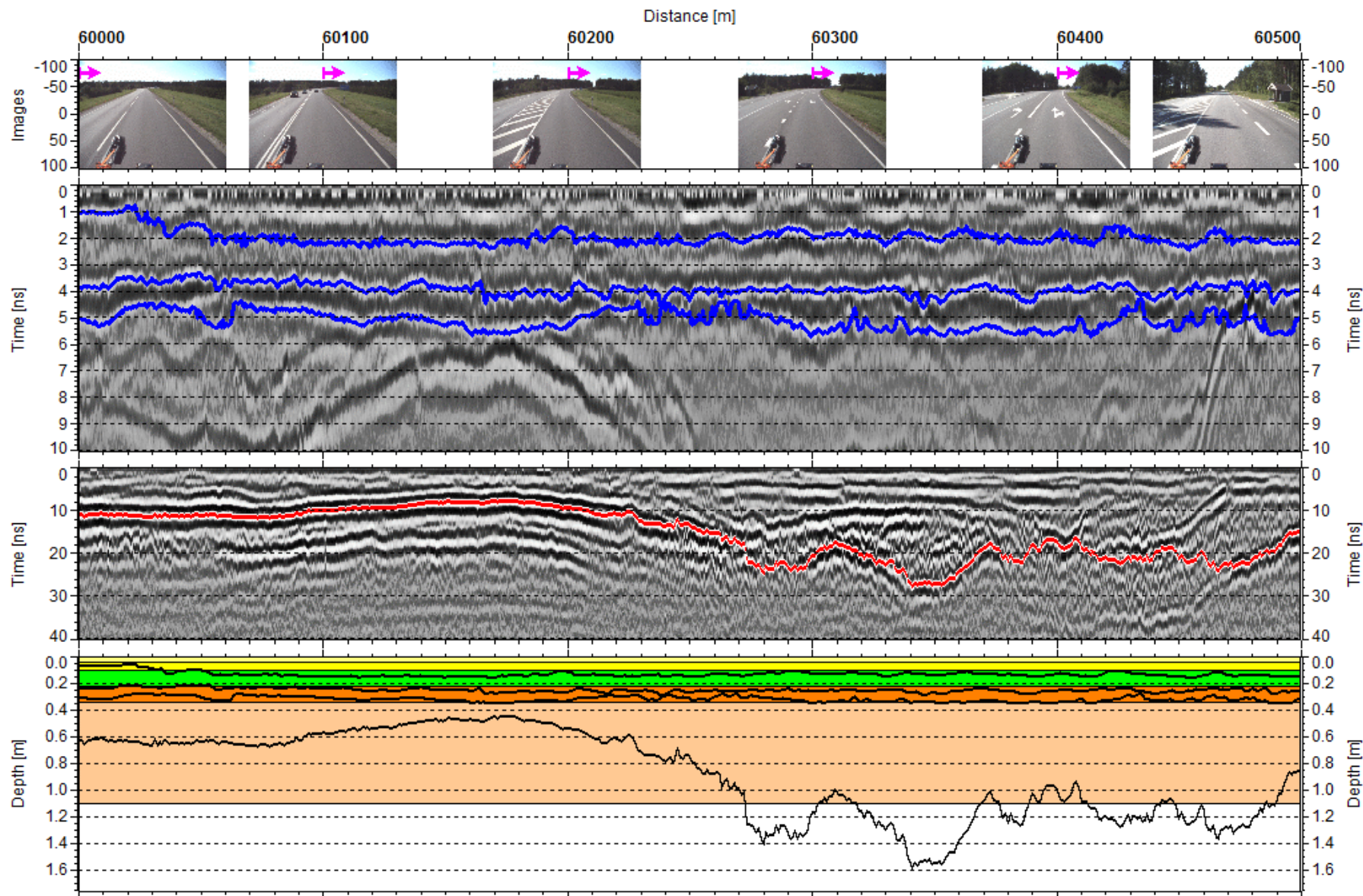
Roadscanners Oy, 10/2012



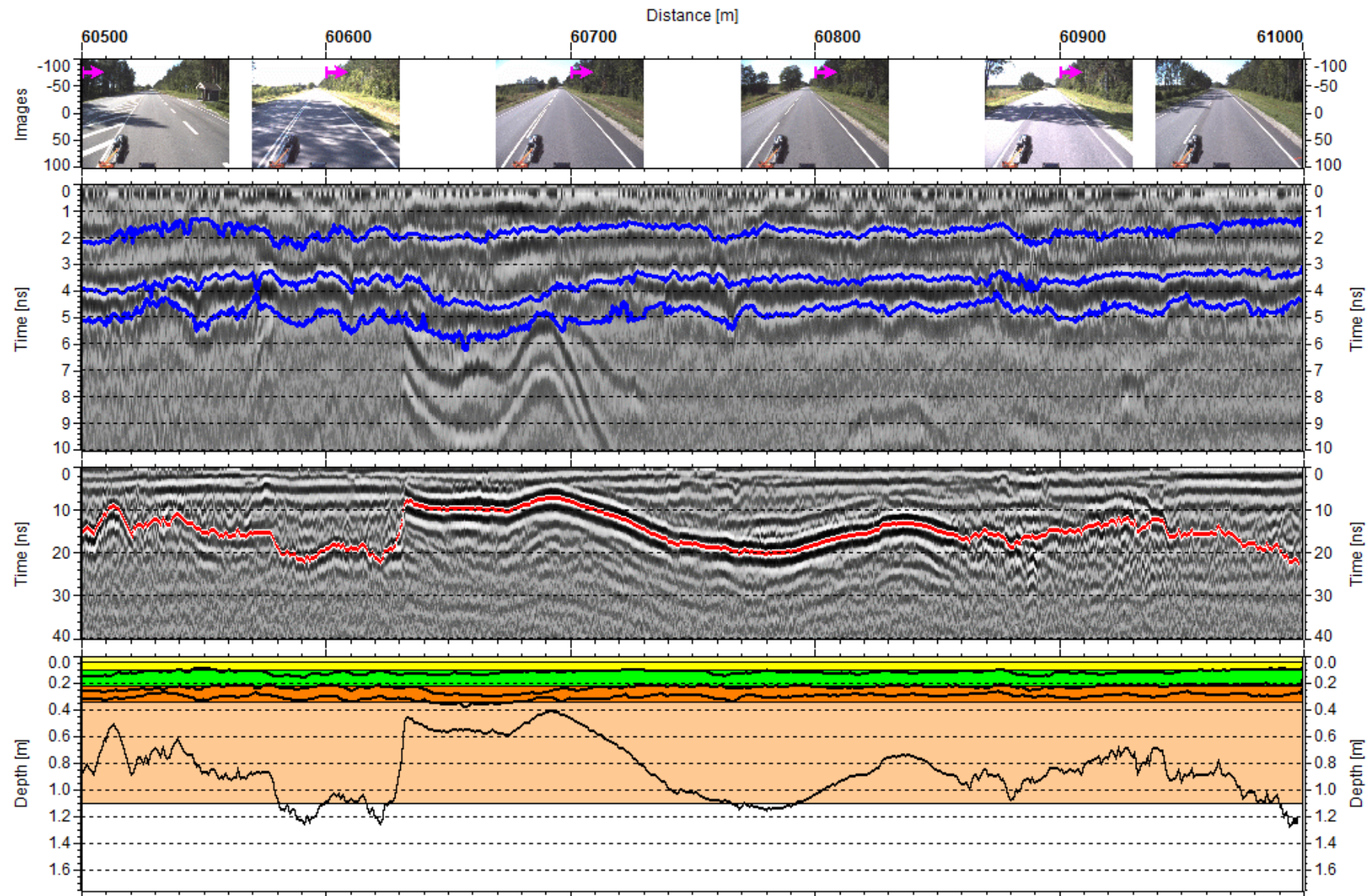
Roadscanners Oy, 10/2012



Roadscanners Oy, 10/2012



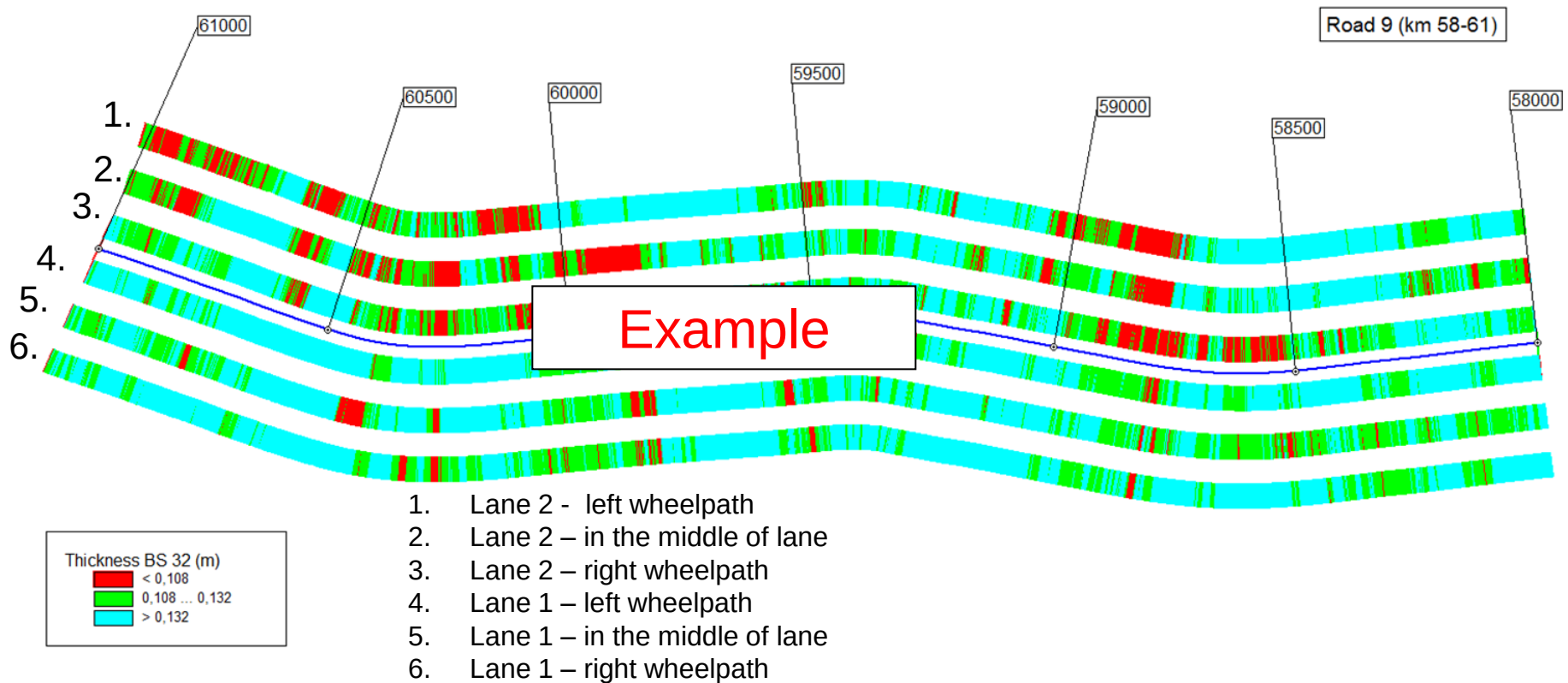
Roadscanners Oy, 10/2012



Explanation of Thickness Statistics and Maps

Table of average and statistical values:

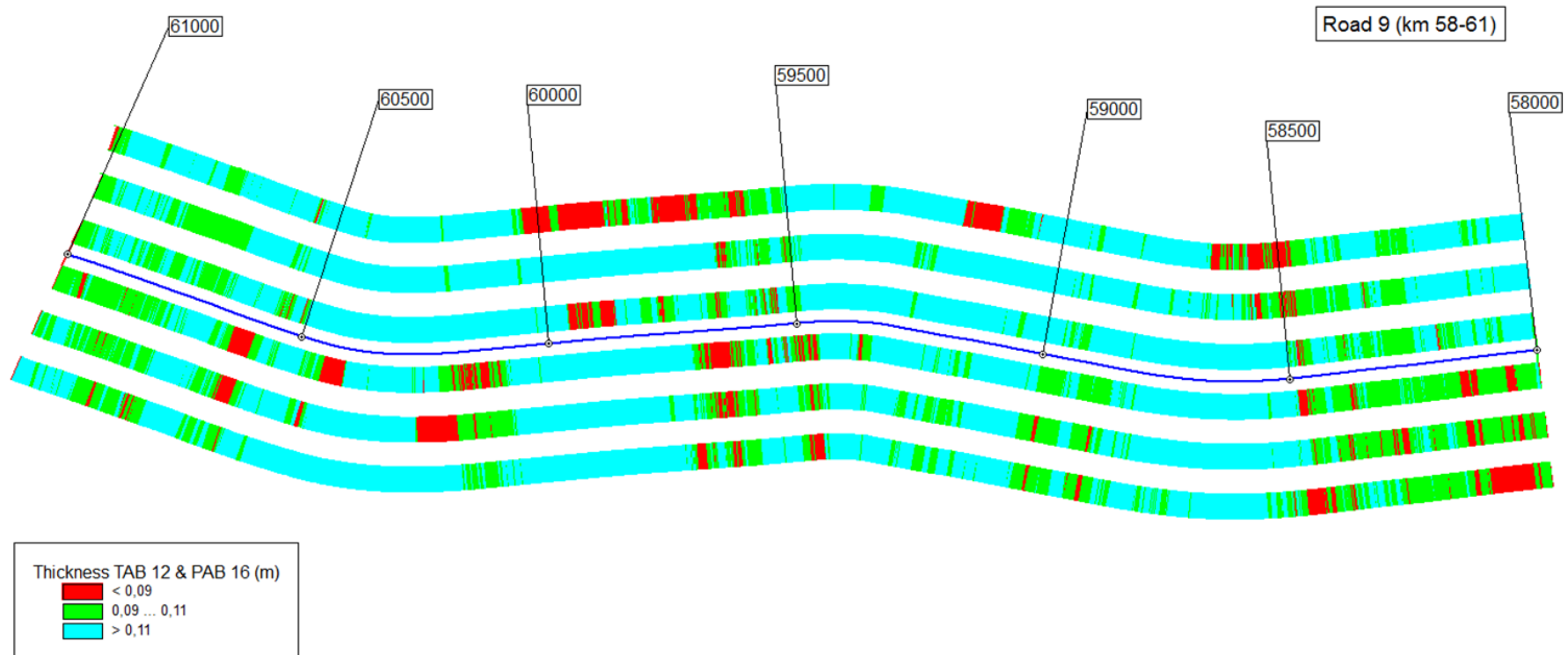
<i>Planned thickness = 0,04 m (TAB 12)</i>	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.063	0.064	0.064	0.061	0.061	0.063
% of distance where thickness is more than 10 % under	0.0	0.0	0.0	0.0	0.0	0.0
Average undershoot from planned in "more	Example					
% of distance where thickness is more than 10 % over						
Average overshoot from planned in "more than 10 % over" class (m)	0.023	0.024	0.024	0.021	0.021	0.023
% of distance where thickness is between +- 10 %	0.0	0.0	0.0	0.1	0.0	0.6
Standard deviation (m)	0.005	0.004	0.006	0.006	0.004	0.005



Maps of Layer Thicknesses

[1/3]

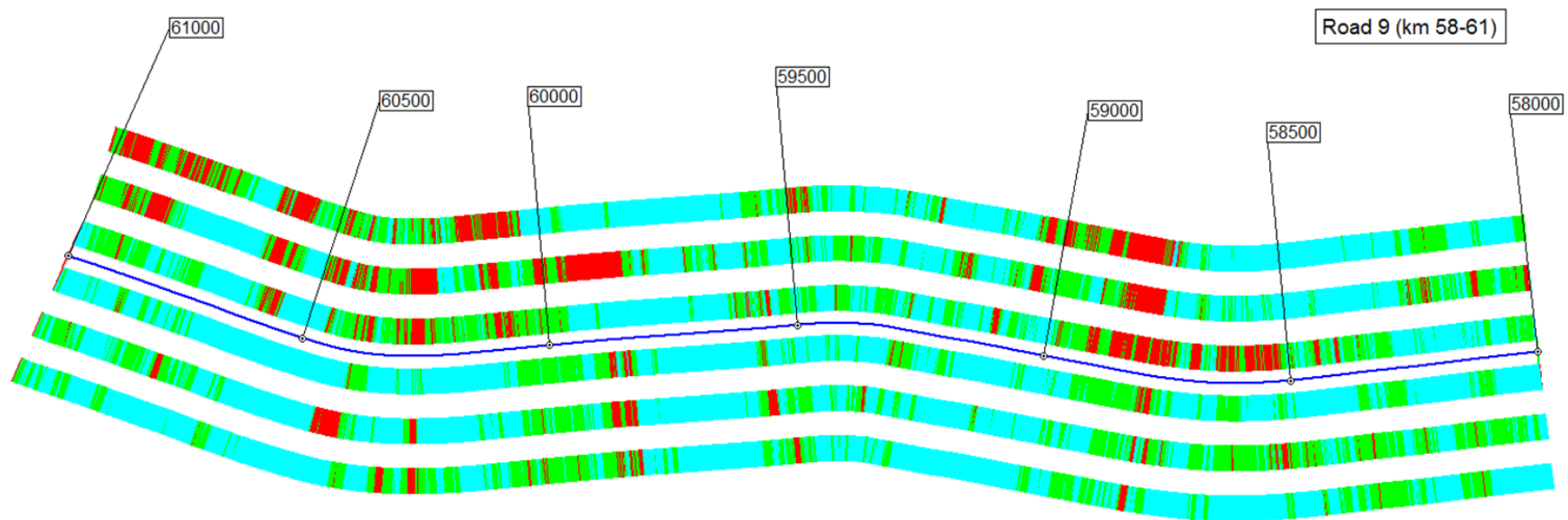
Planned thickness = 0,10 m (TAB 12 & PAB 16)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.116	0.115	0.114	0.123	0.126	0.115
% of distance where thickness is more than 10 % under	8.2	8.6	11.2	4.0	2.3	15.9
Average undershoot from planned in "more than 10 % under" class (m)	-0.028	-0.022	-0.019	-0.016	-0.017	-0.026
% of distance where thickness is more than 10 % over	59.4	54.2	51.5	70.5	73.4	59.1
Average overshoot from planned in "more than 10 % over" class (m)	0.031	0.031	0.030	0.033	0.034	0.031
% of distance where thickness is between +- 10 %	32.4	37.2	37.2	25.5	24.4	25.0
Standard deviation (m)	0.023	0.021	0.020	0.020	0.020	0.025



Maps of Layer Thicknesses

[2/3]

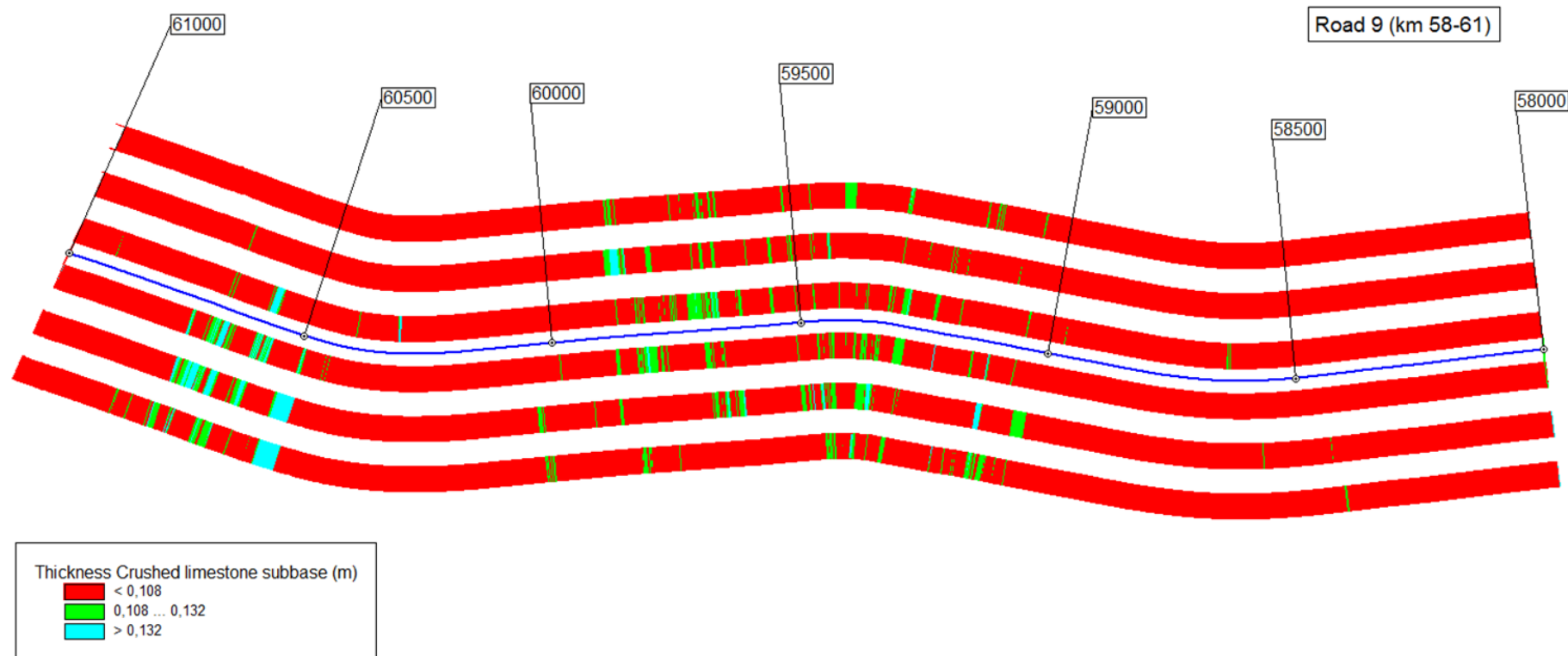
Planned thickness = 0,12 m (BS 32)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.142	0.138	0.145	0.131	0.127	0.136
% of distance where thickness is more than 10 % under	3.4	6.2	2.1	15.3	19.5	19.4
Average undershoot from planned in "more than 10 % under" class (m)	-0.025	-0.023	-0.027	-0.022	-0.026	-0.024
% of distance where thickness is more than 10 % over	64.5	53.9	70.8	42.3	41.7	49.5
Average overshoot from planned in "more than 10 % over" class (m)	0.034	0.034	0.034	0.034	0.029	0.041
% of distance where thickness is between +- 10 %	32.1	39.9	27.1	42.3	38.8	31.1
Standard deviation (m)	0.022	0.023	0.021	0.026	0.023	0.033



Maps of Layer Thicknesses

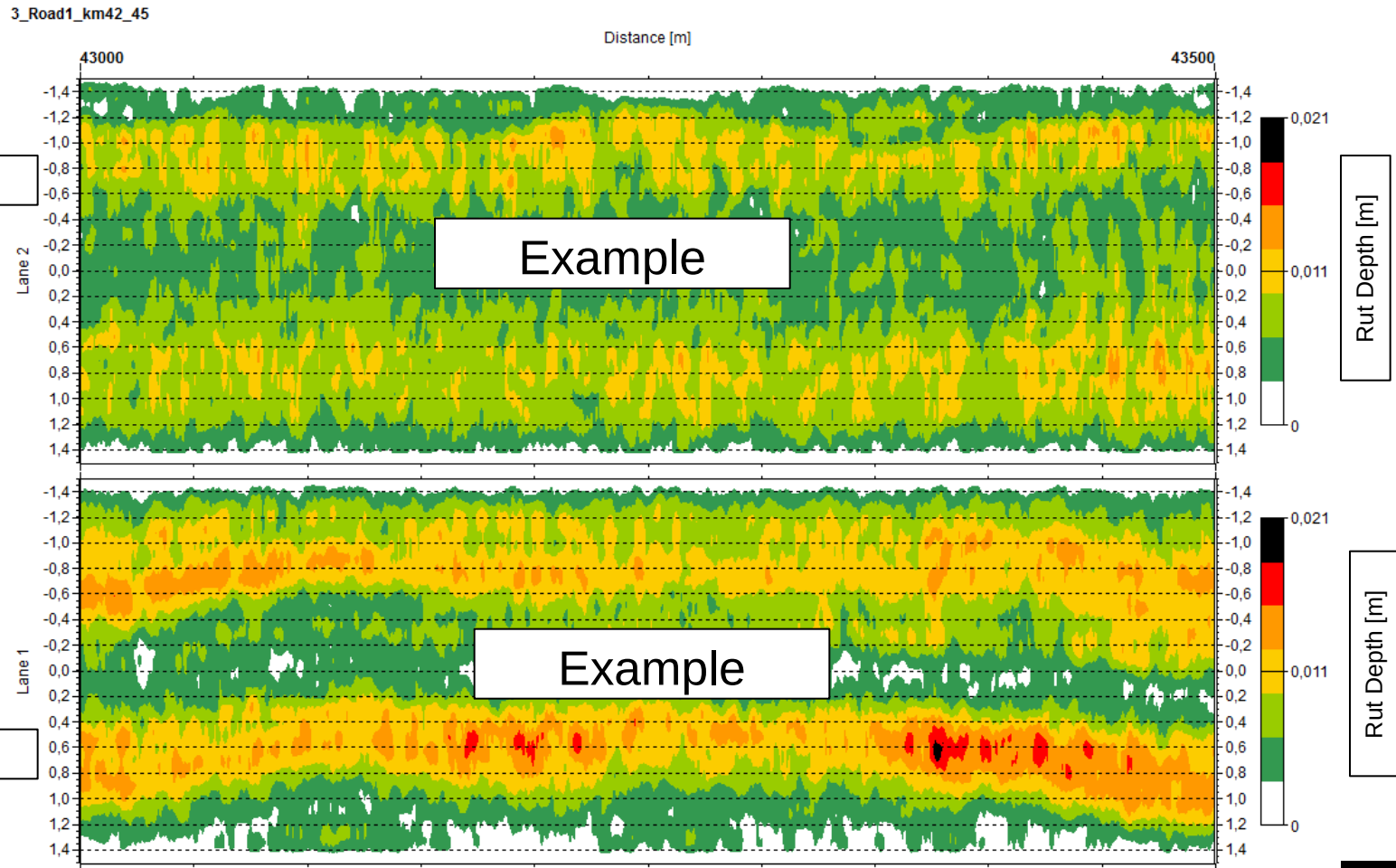
[3/3]

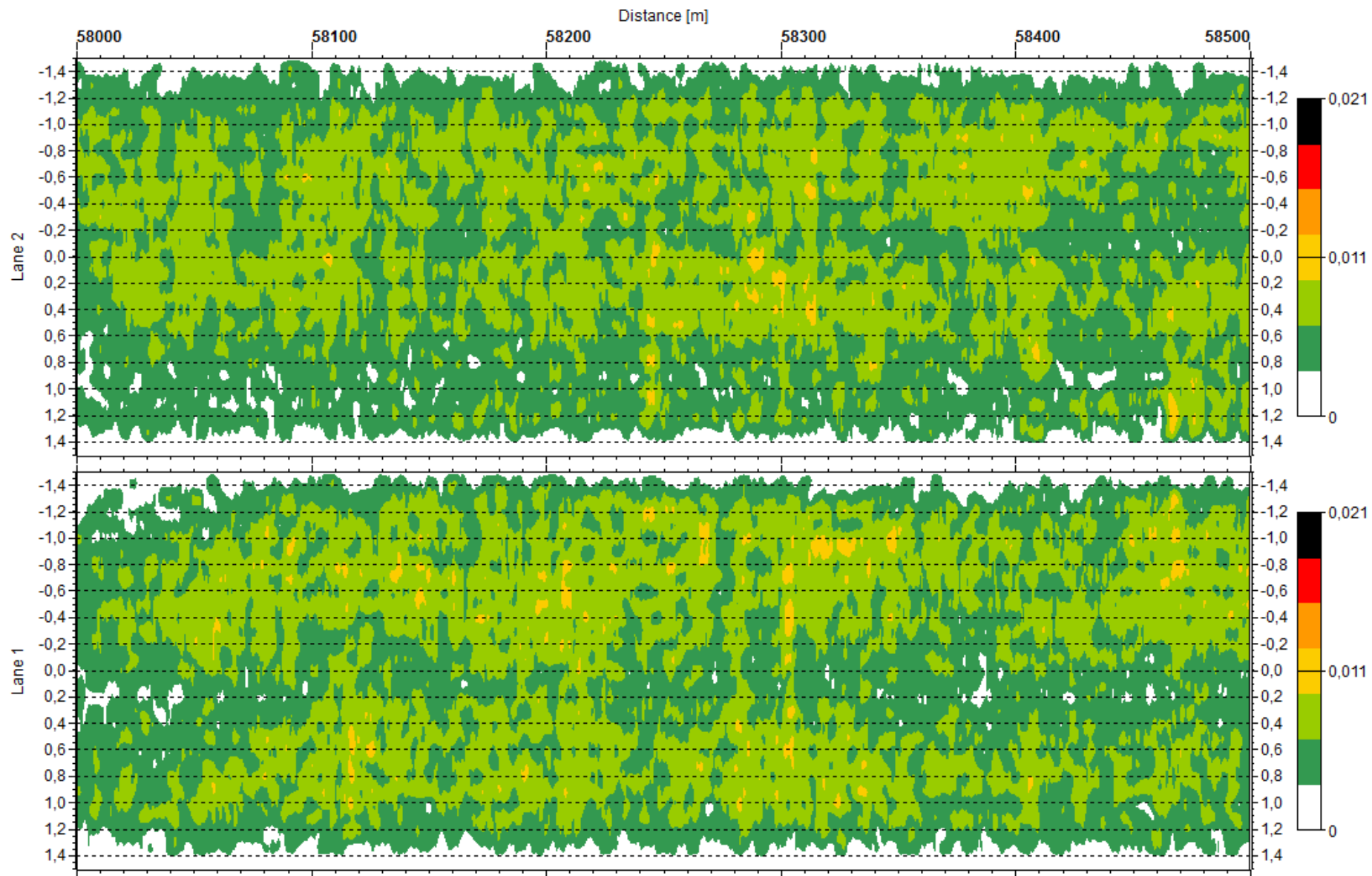
Planned thickness = 0,12 m (Crushed Limestone Subbase)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.079	0.081	0.074	0.075	0.071	0.069
% of distance where thickness is more than 10 % under	92.6	89.1	91.8	94.0	96.9	97.4
Average undershoot from planned in "more than 10 % under" class (m)	-0.045	-0.045	-0.050	-0.047	-0.051	-0.052
% of distance where thickness is more than 10 % over	1.9	4.1	1.5	0.7	0.8	0.1
Average overshoot from planned in "more than 10 % over" class (m)	0.074	0.038	0.028	0.026	0.020	0.013
% of distance where thickness is between +- 10 %	5.5	6.9	6.7	5.2	2.3	2.5
Standard deviation (m)	0.026	0.025	0.022	0.021	0.020	0.020

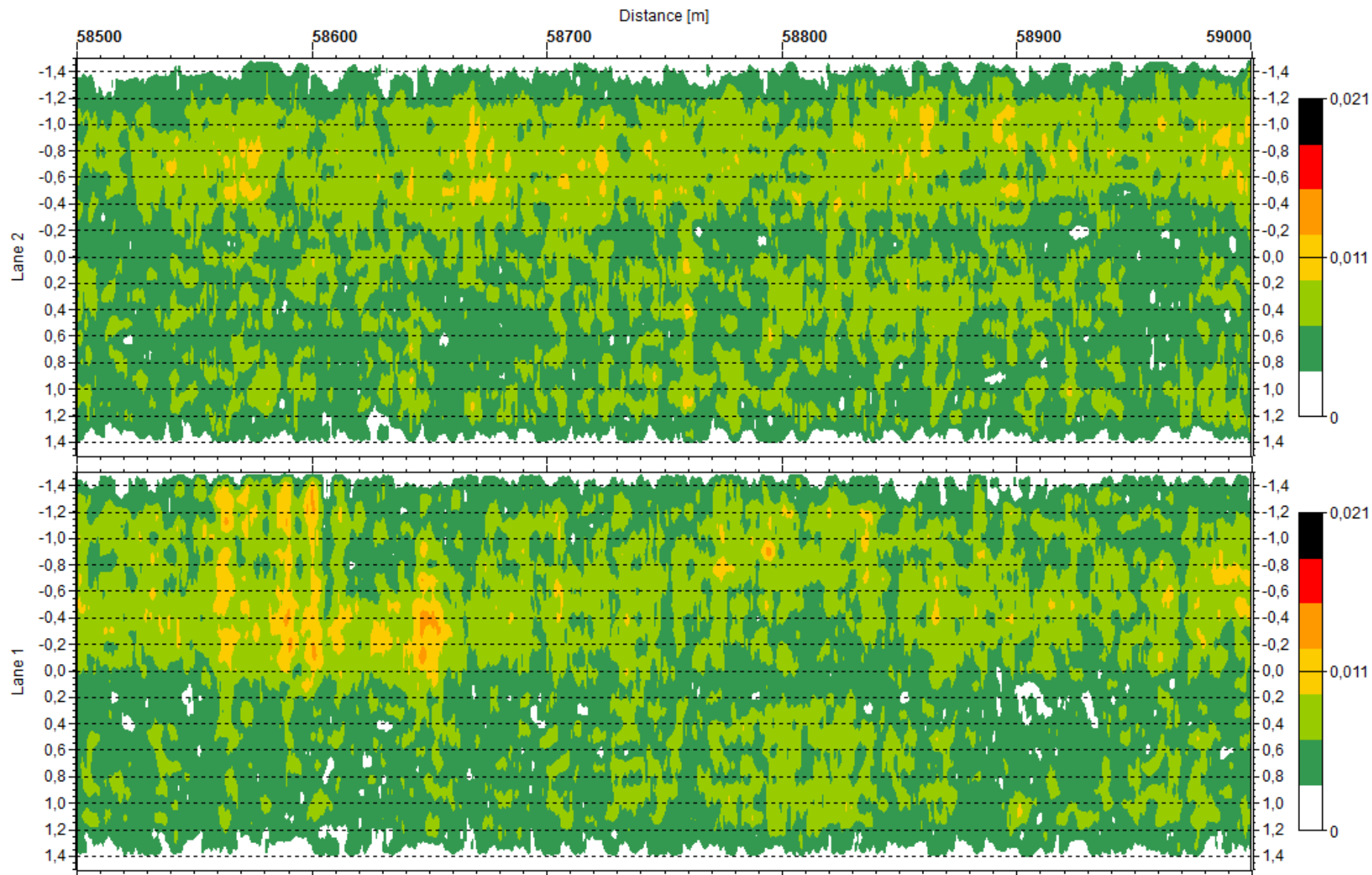


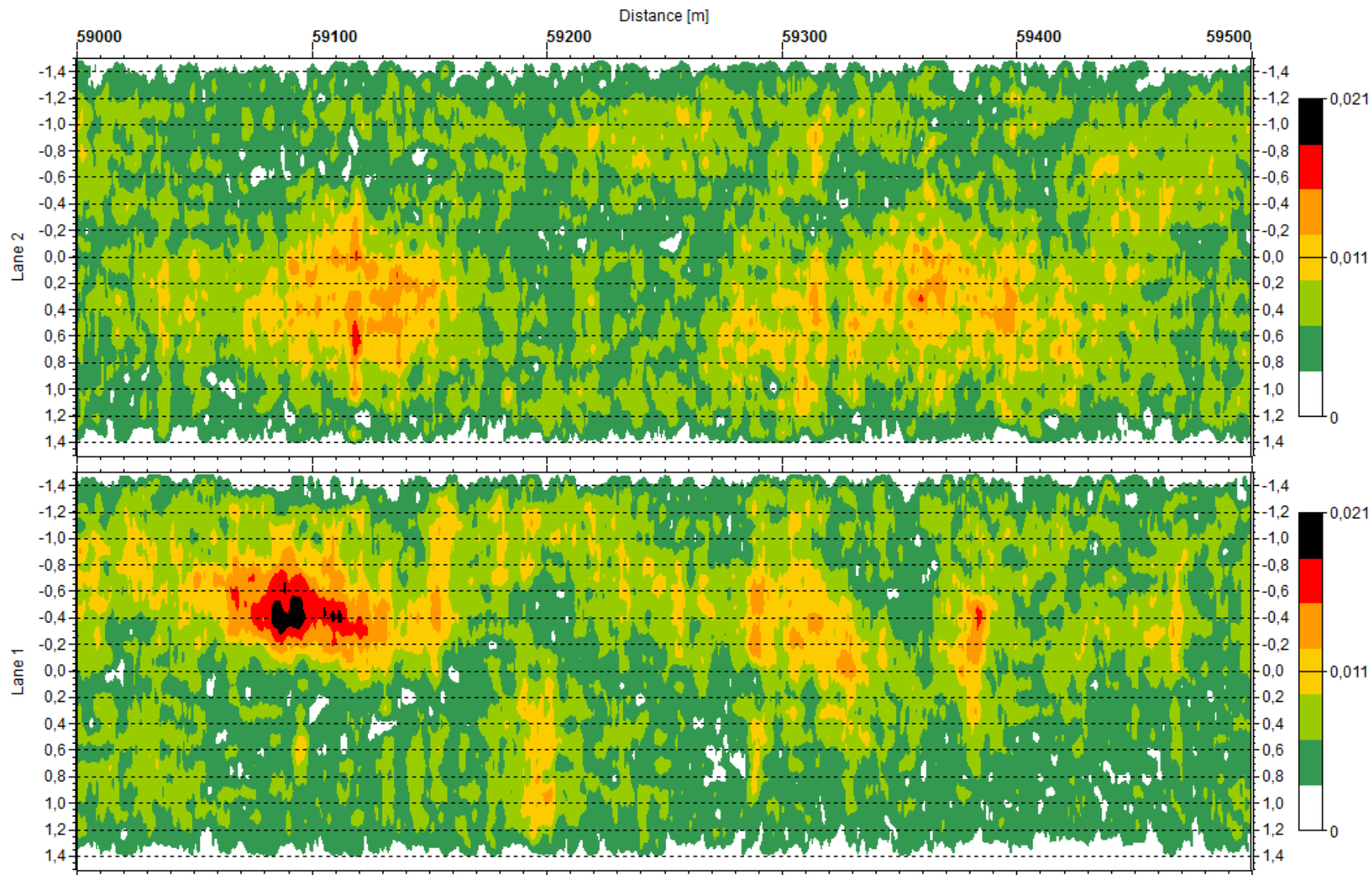
Explanation of Rut Analysis from Laser Scanner Data

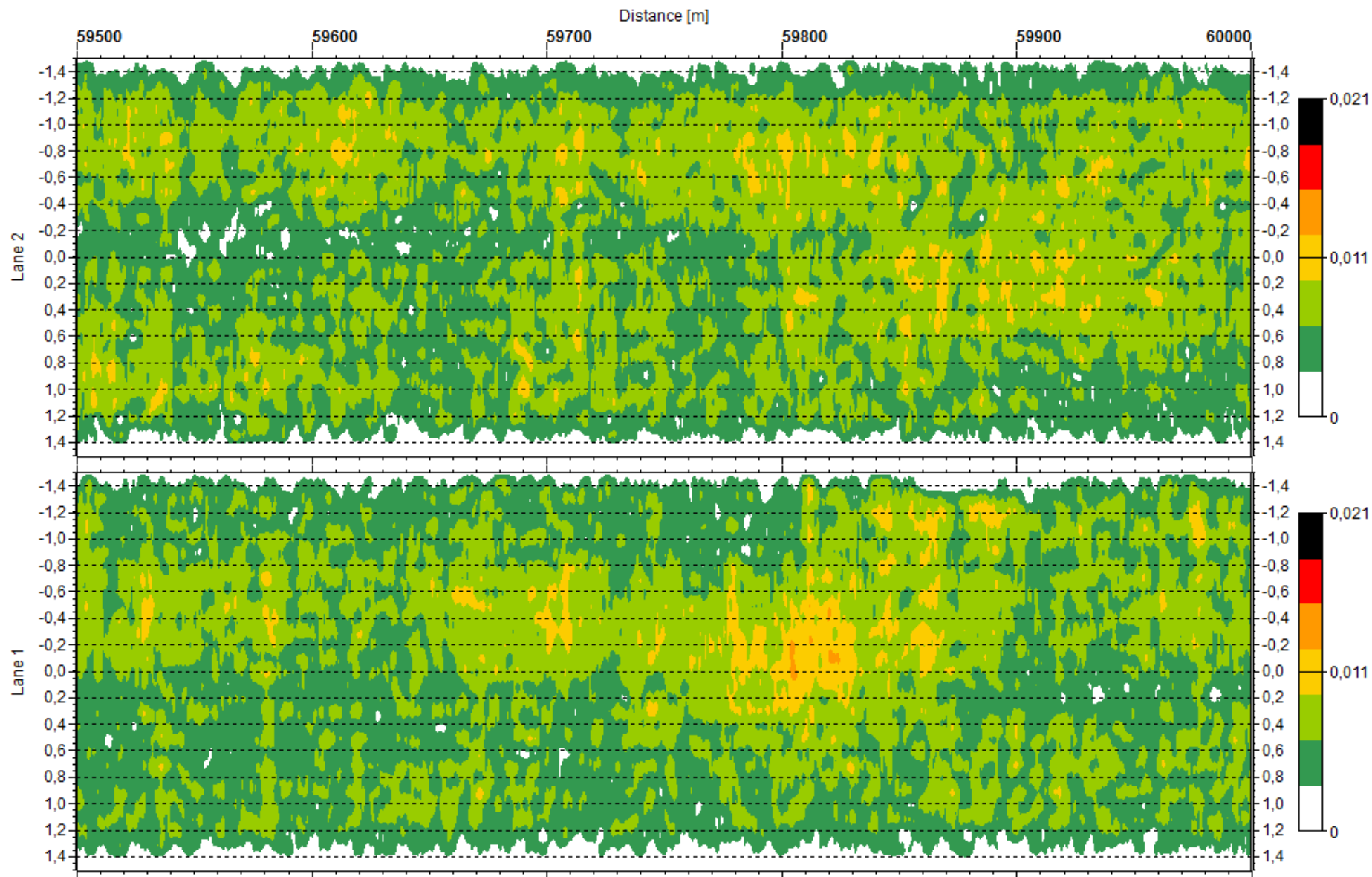
- Rutting was calculated from the laser scanner data using the wire rutting method and rutting was averaged over 5m distances.
- Rutting was analyzed from both driving lanes and from both wheel tracks.

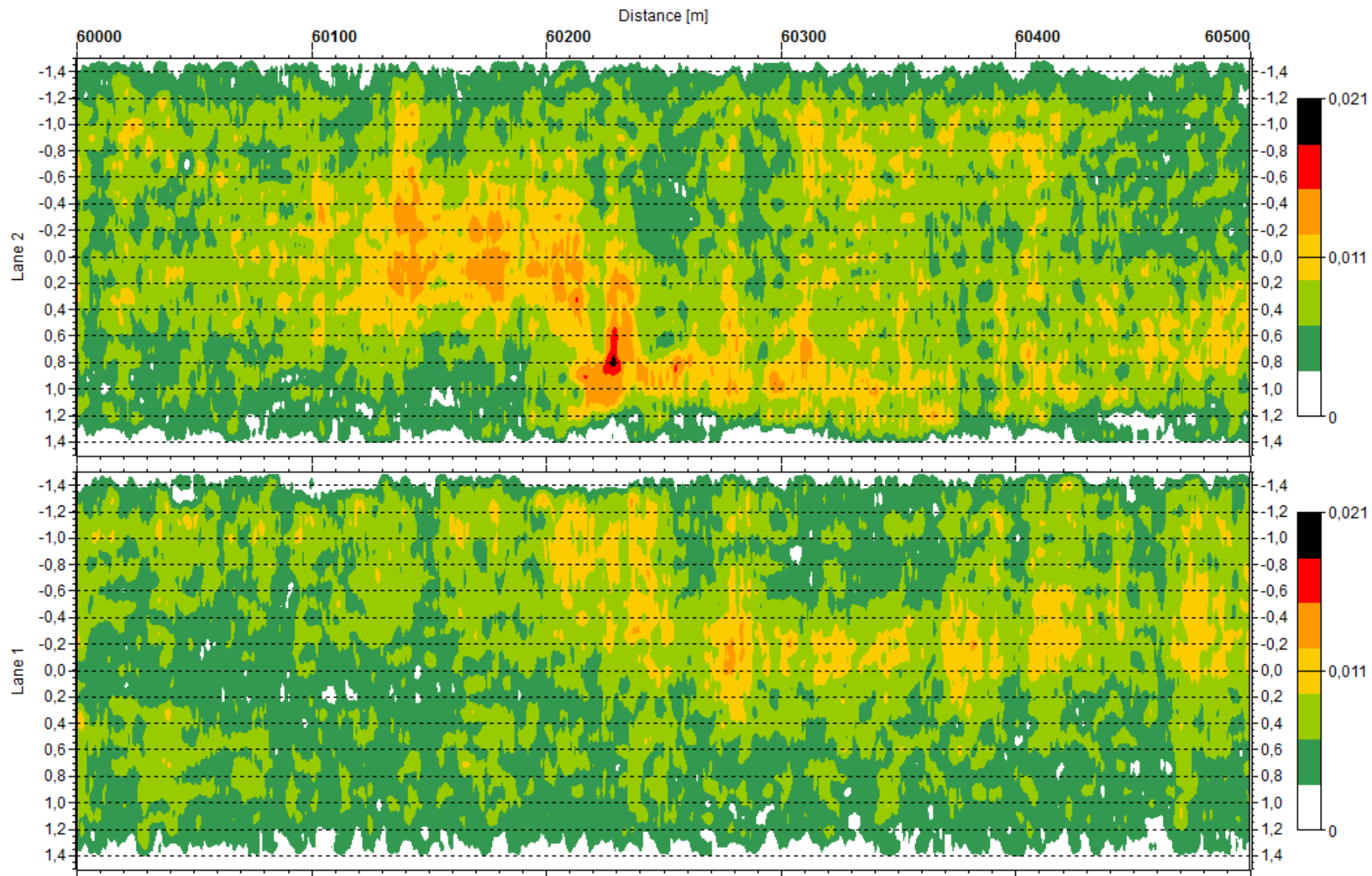


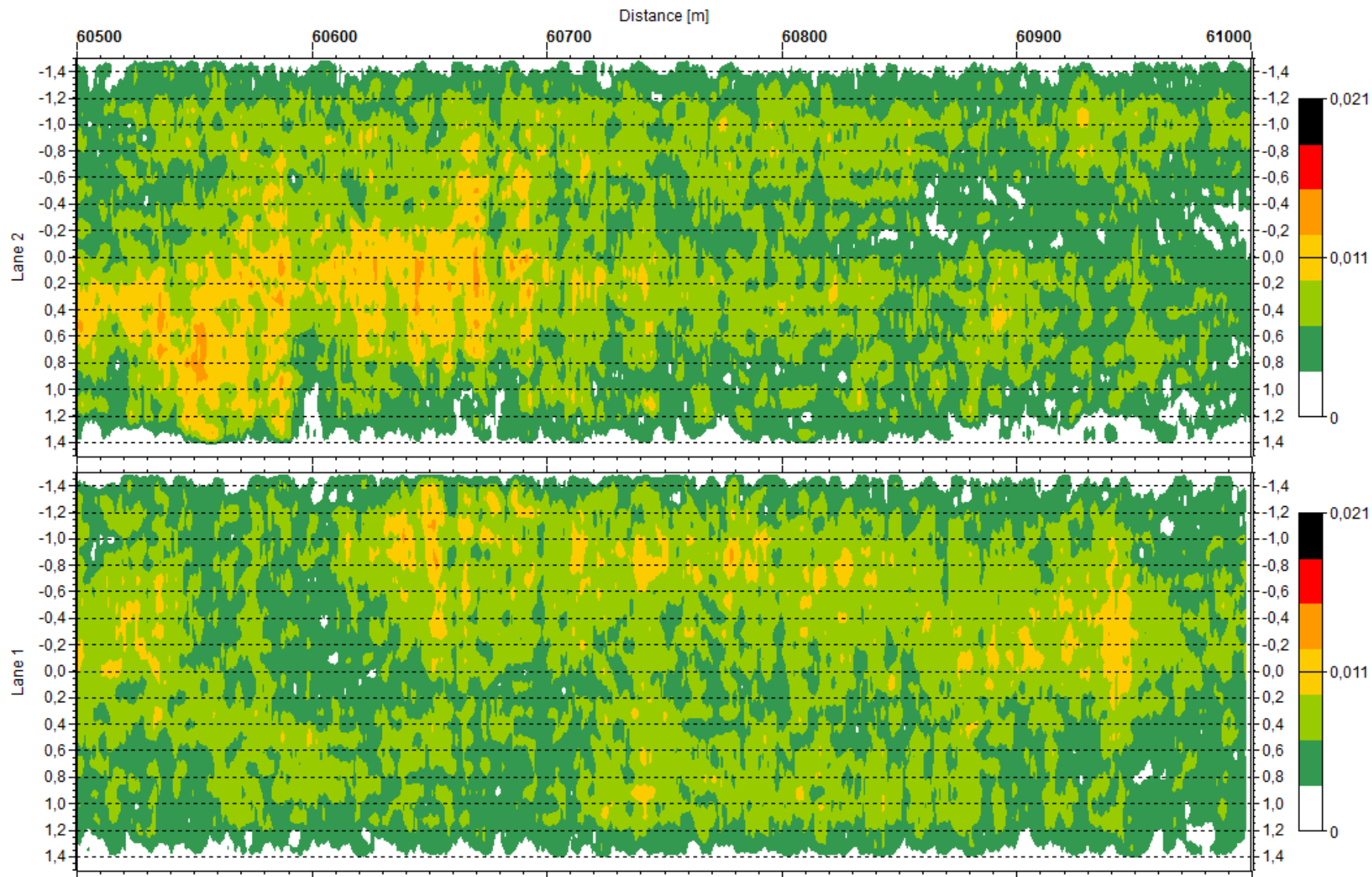












Example of Laser Scanner Data

