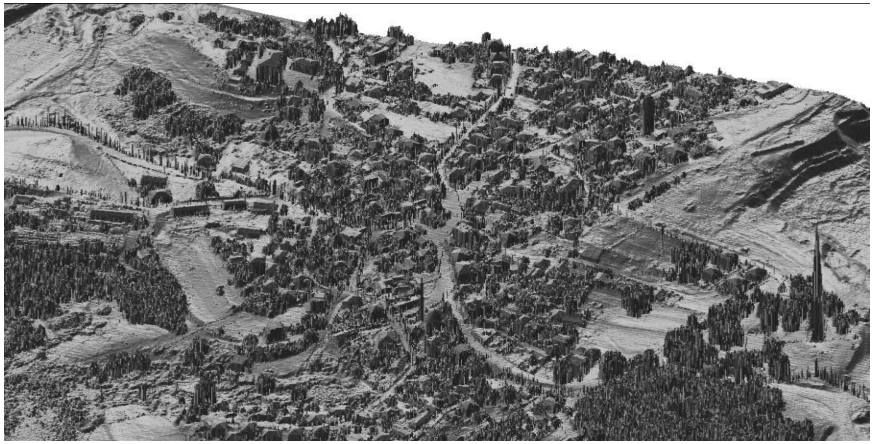
"Akıllı Şehircilik Uygulamalarında 3 Boyutlu Kent Modellerinin Kullanımı"

Gürcan Büyüksalih
3-Boyutlu Harita ve CBS Müd.
Bimtaş-İBB

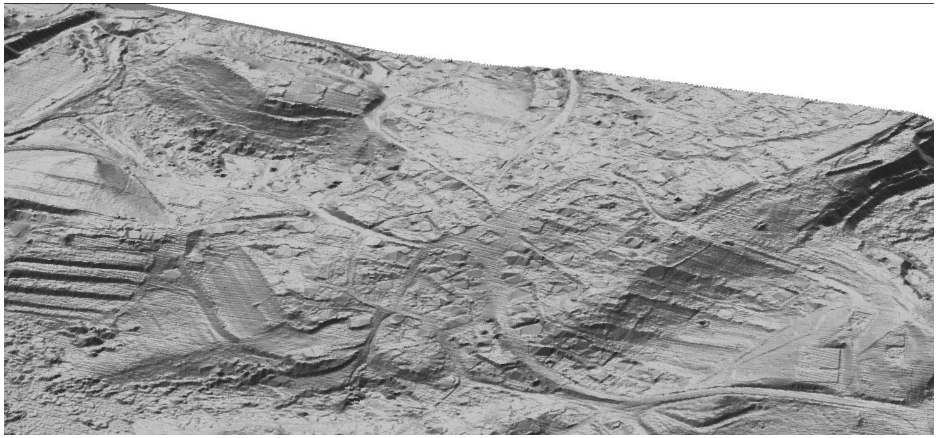
DÜNYA CBS GÜNÜ 2015
18-19 Kasım 2015
Ankara

3 Boyutlu Kent Modeli Üretimi

5400 km²
Riegl Q680i lidar cihazı
400 kHz lazer frekansı, 600m uçuş yüksekliği,
80 kn → 16 points/m²
Lazer foot print 30cm
IGI DigiCam 60 f=50mm mid-format kamera
Ürünler; LAS verileri, DSM, DTM,
ortogörüntüler ve 3D kent modeli.



DSM

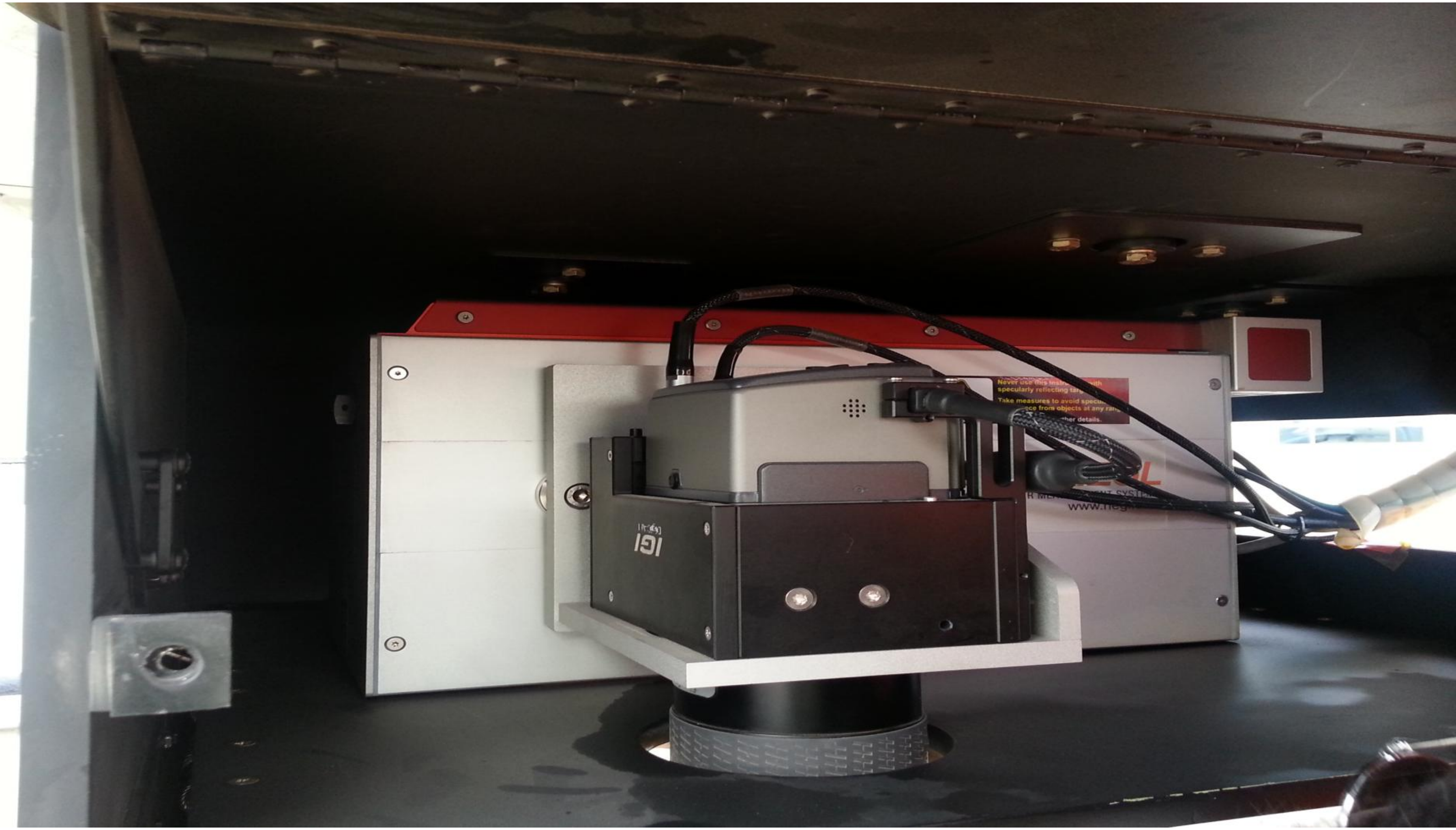


DTM

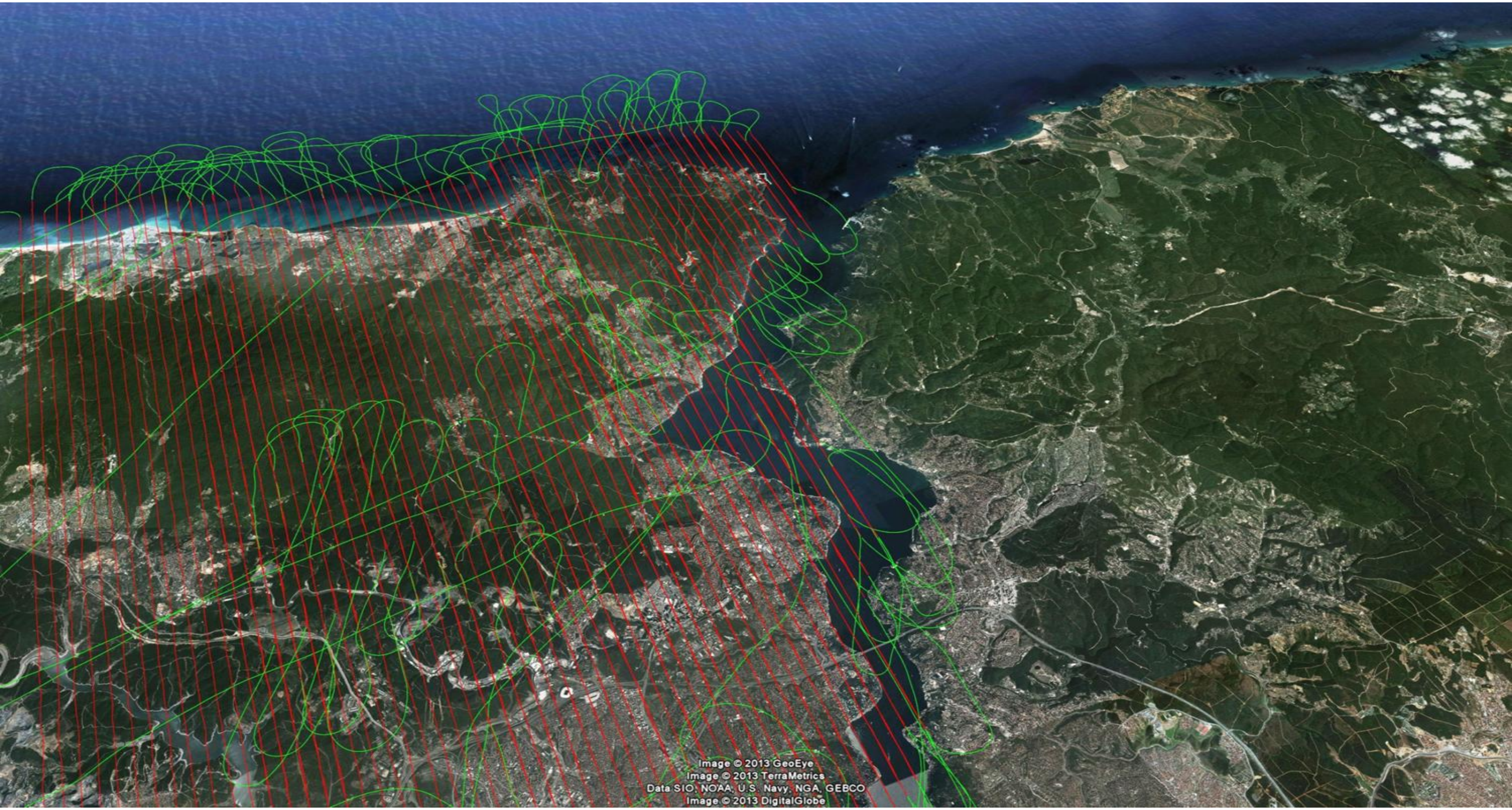
Bell JR206

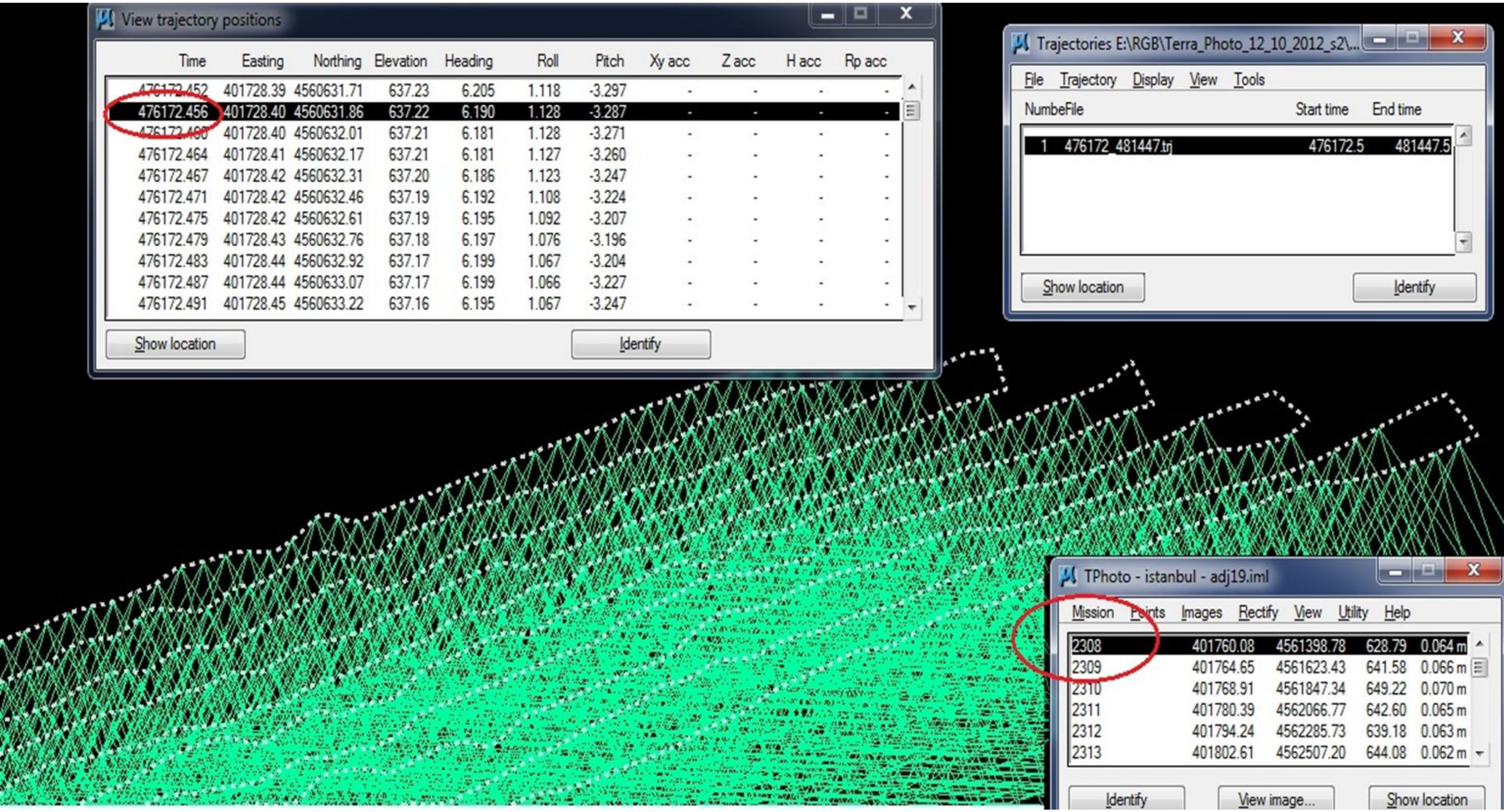
FAA Certified Pod (Lazer, IMU, Kamera)

Lazer (Riegl Q680i)

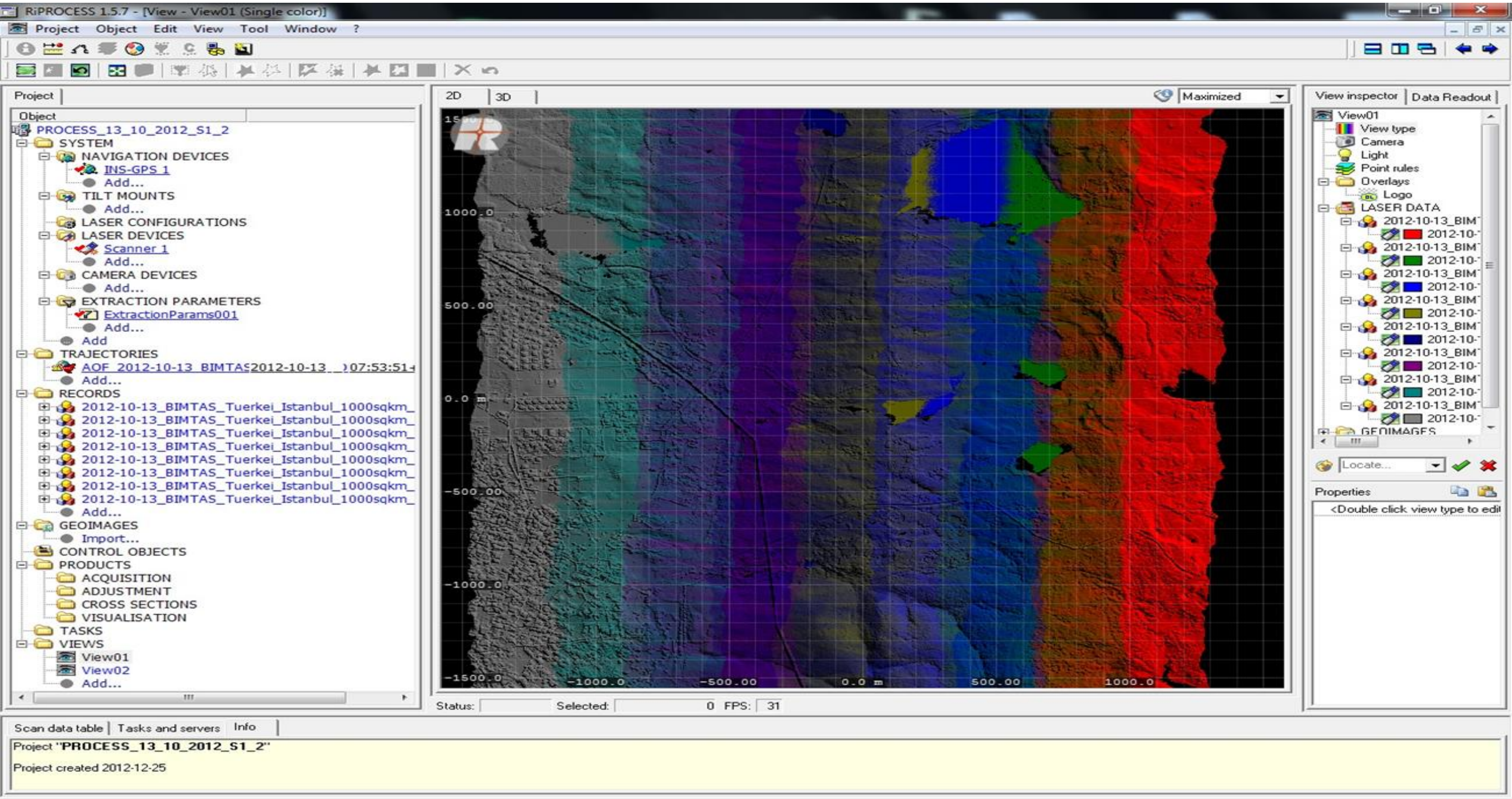


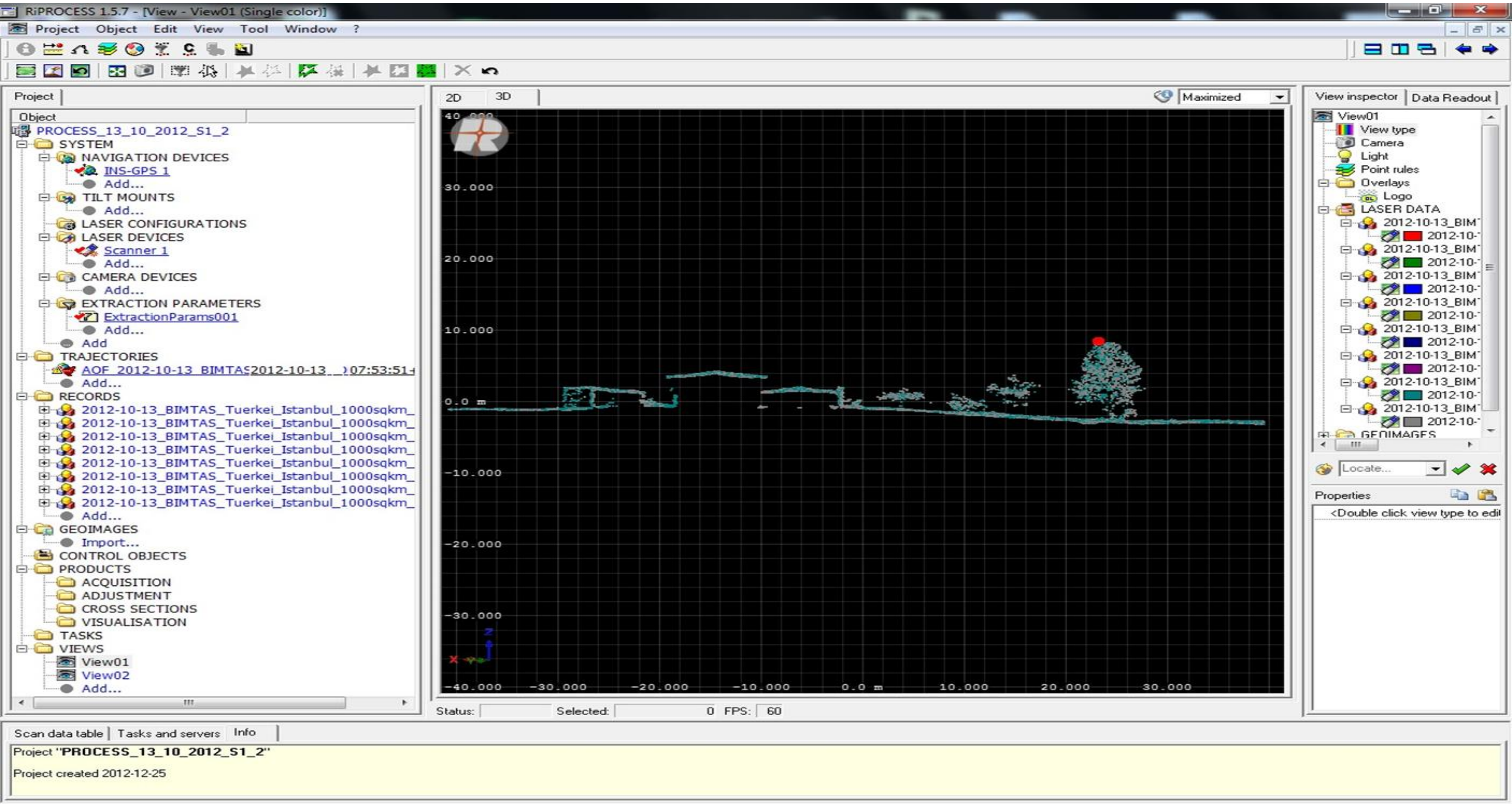
Uçuş Hatları

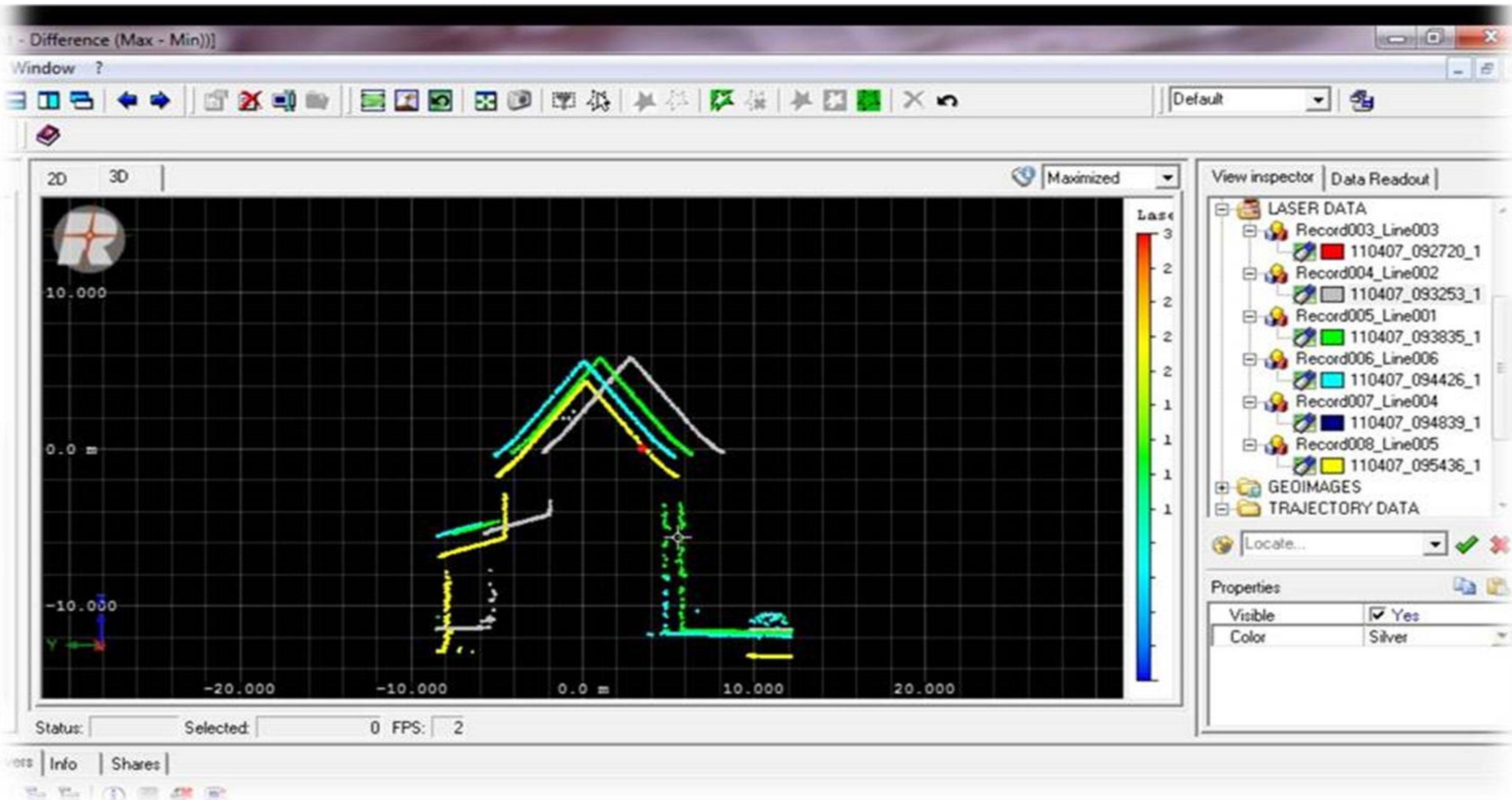



View trajectory positions
Time Easting Northing Elevation Heading Roll Pitch Xy acc Z acc H acc Rp acc
476172.452 401728.39 4560631.71 637.23 6.205 1.118 -3.297 - - - -
476172.456 401728.40 4560631.86 637.22 6.190 1.128 -3.287 - - - -
401728.40 4560632.01 637.21 6.181 1.128 -3.271 - - - -
476172.464 401728.41 4560632.17 637.21 6.181 1.127 -3.260 - - - -
476172.467 401728.42 4560632.31 637.20 6.186 1.123 -3.247 - - - -
476172.471 401728.42 4560632.46 637.19 6.192 1.108 -3.224 - - - -
476172.475 401728.42 4560632.61 637.19 6.195 1.092 -3.207 - - - -
476172.479 401728.43 4560632.76 637.18 6.197 1.076 -3.196 - - - -
476172.483 401728.44 4560632.92 637.17 6.199 1.067 -3.204 - - - -
476172.487 401728.44 4560633.07 637.17 6.199 1.066 -3.227 - - - -
476172.491 401728.45 4560633.22 637.16 6.195 1.067 -3.247 - - - -
Show location
Identify
Trajectories E:\RGB\Terra_Photo_12_10_2012_s2\...
File Trajectory Display View Tools
NumbeFile Start time End time
1 476172_481447.trj 476172.5 481447.5
Show location
Identify
TPhoto - istanbul - adj19.iml
Mission Points Images Rectify View Utility Help
2308 401760.08 4561398.78 628.79 0.064 m
2309 401764.65 4561623.43 641.58 0.066 m
2310 401768.91 4561847.34 649.22 0.070 m
2311 401780.39 4562066.77 642.60 0.065 m
2312 401794.24 4562285.73 639.18 0.063 m
2313 401802.61 4562507.20 644.08 0.062 m
Identify
View image...
Show location

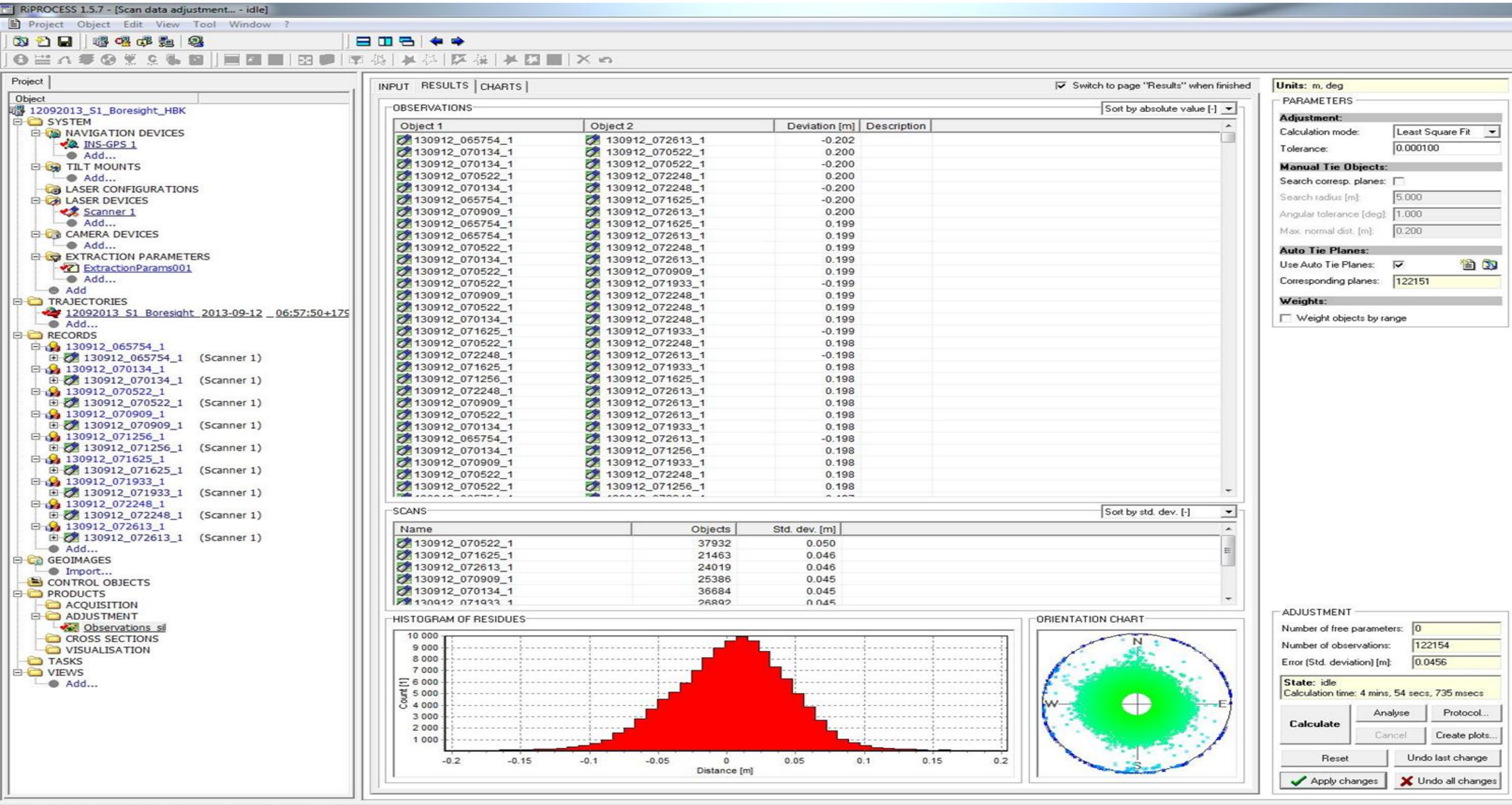
Las verisi üretimi




RiPROCESS 1.5.7 - [View - View01 (Single color)]
Project Object Edit View Tool Window ?
Project
Object
PROCESS_13_10_2012_S1_2
SYSTEM
NAVIGATION DEVICES
INS-GPS 1
Add...
TILT MOUNTS
LASER CONFIGURATIONS
LASER DEVICES
Scanner 1
CAMERA DEVICES
EXTRACTION PARAMETERS
ExtractionParams001
TRAJECTORIES
RECORDS
2012-10-13_BIMTAS_Tuerkei_Istanbul_1000sqkm_
GEOIMAGES
Import...
CONTROL OBJECTS
PRODUCTS
ACQUISITION
ADJUSTMENT
CROSS SECTIONS
VISUALISATION
TASKS
VIEWS
View01
View02
2D 3D
Maximized
View inspector Data Readout
View type
Camera
Light
Point rules
Overlays
Logo
LASER DATA
Locate...
Properties
<Double click view type to edit
Status: Selected: 0 FPS: 60
Scan data table Tasks and servers Info
Project "PROCESS_13_10_2012_S1_2"
Project created 2012-12-25

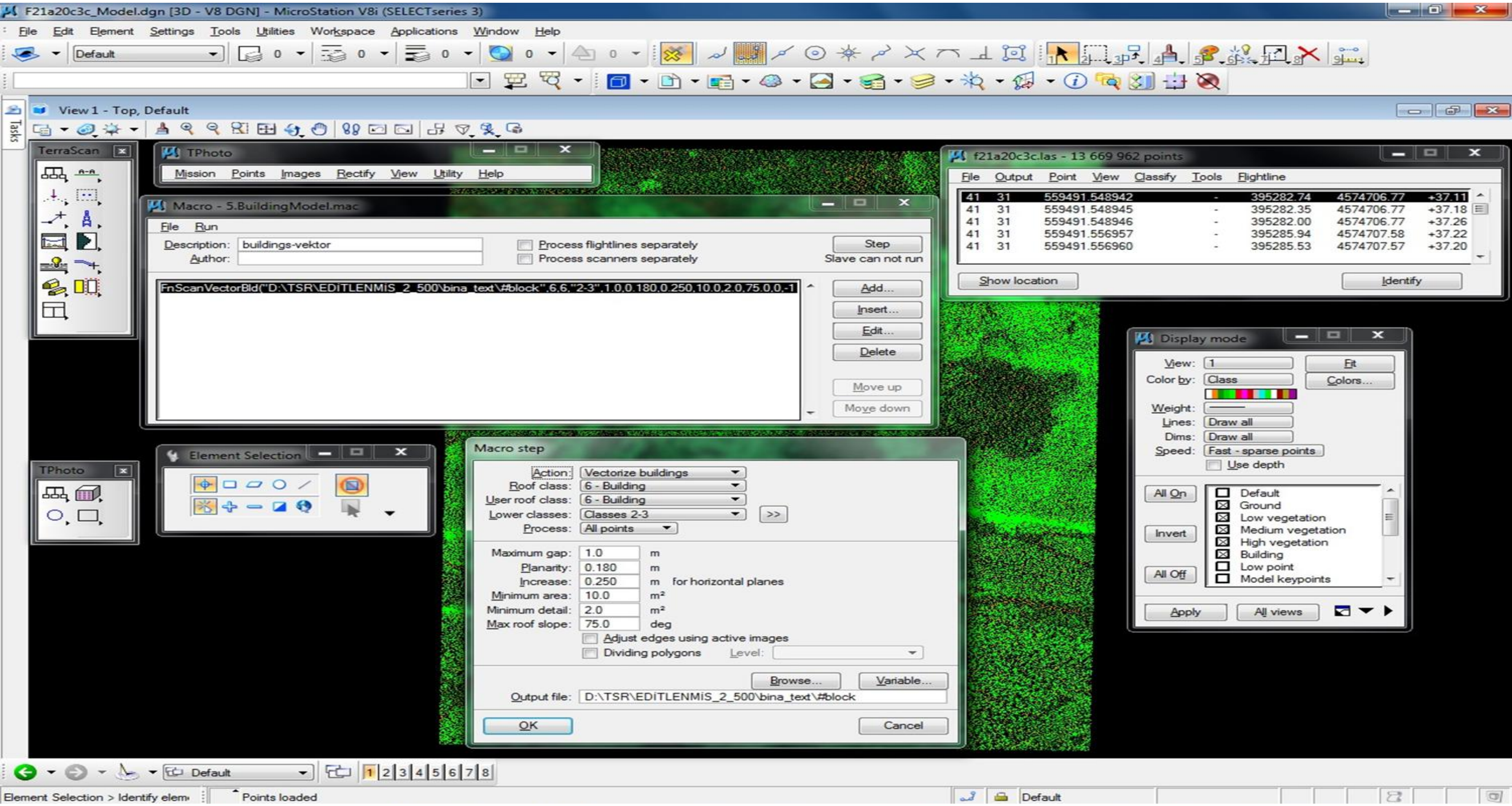


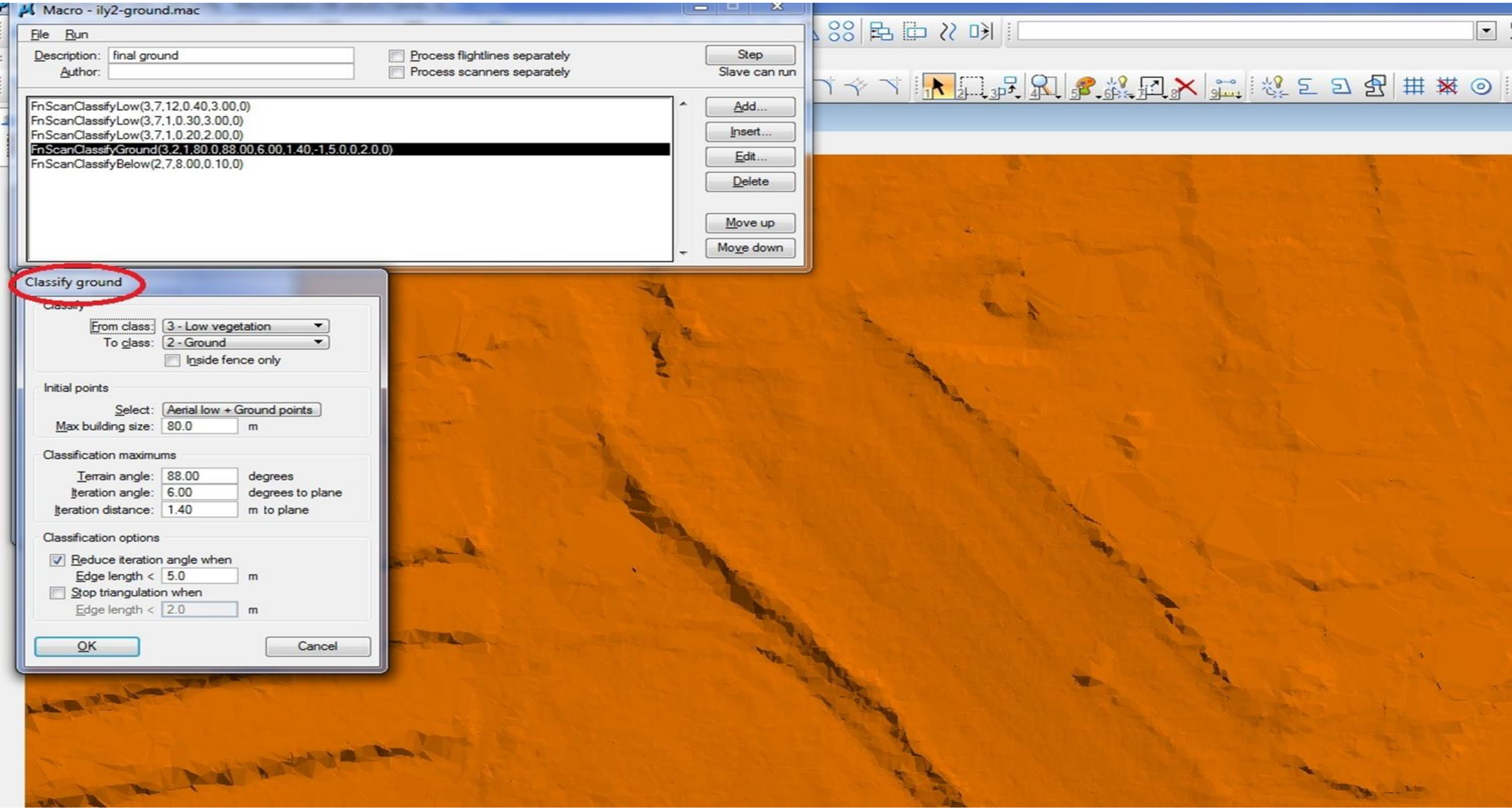
- Difference (Max - Min))]
Window ?
Default
2D
3D
Maximized
View inspector
Data Readout
LASER DATA
Record003_Line003
110407_092720_1
Record004_Line002
110407_093253_1
Record005_Line001
110407_093835_1
Record006_Line006
110407_094426_1
Record007_Line004
110407_094839_1
Record008_Line005
110407_095436_1
GEOIMAGES
TRAJECTORY DATA
Locate...
Properties
Visible
Yes
Color
Silver
10.000
0.0 m
-10.000
-20.000
-10.000
0.0 m
10.000
20.000
Status:
Selected:
0
FPS:
2
Info
Shares



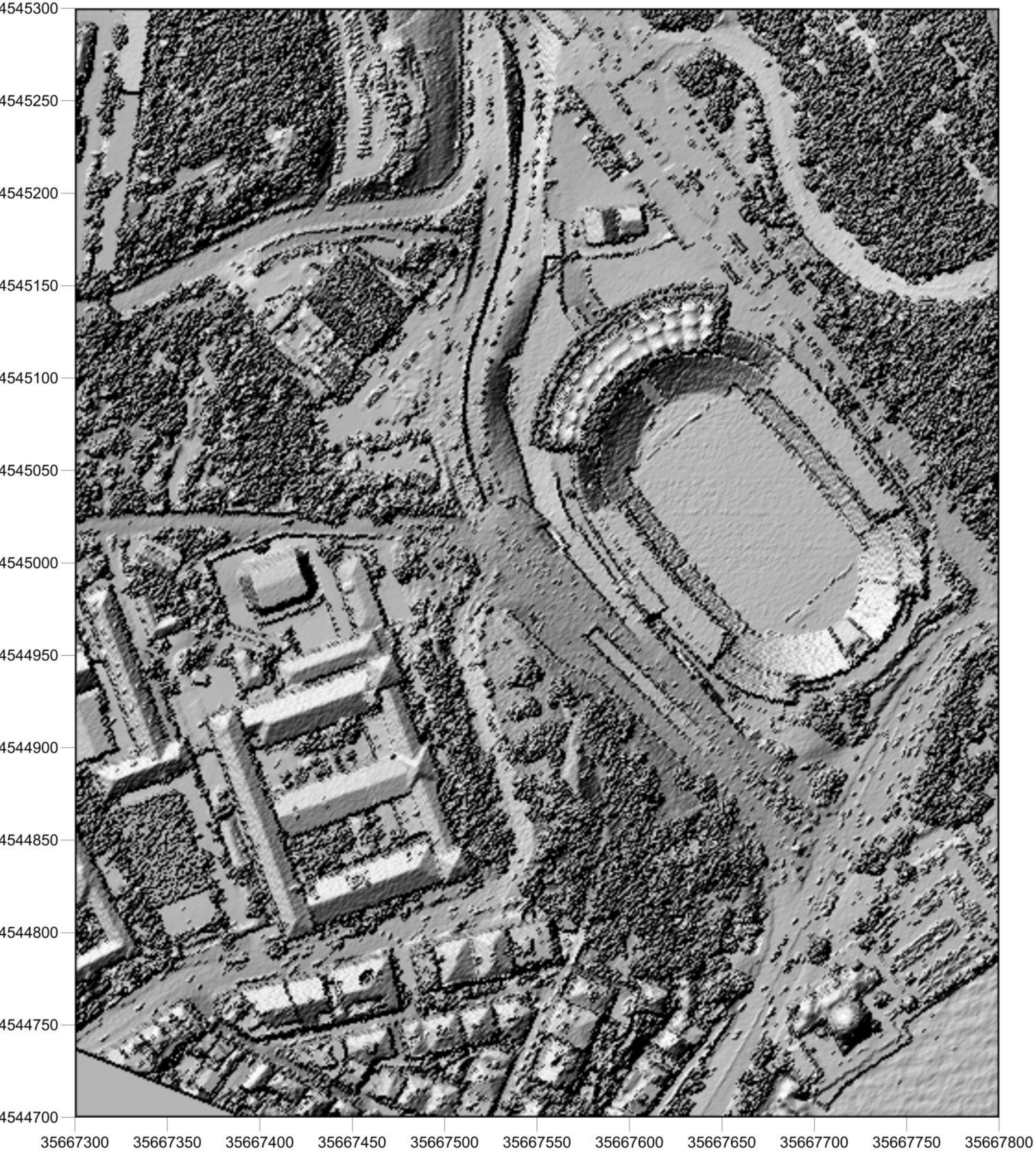
RiPROCESS 1.5.7 - [Scan data adjustment... - idle]
Project Object Edit View Tool Window ?
Project
Object
12092013_S1_Boresight_HBK
SYSTEM
NAVIGATION DEVICES
INS-GPS 1
Add...
TILT MOUNTS
LASER CONFIGURATIONS
LASER DEVICES
Scanner 1
CAMERA DEVICES
EXTRACTION PARAMETERS
ExtractionParams001
TRAJECTORIES
12092013_S1_Boresight_2013-09-12__06:57:50+17
RECORDS
130912_065754_1 (Scanner 1)
130912_070134_1 (Scanner 1)
130912_070522_1 (Scanner 1)
130912_070909_1 (Scanner 1)
130912_071256_1 (Scanner 1)
130912_071625_1 (Scanner 1)
130912_071933_1 (Scanner 1)
130912_072248_1 (Scanner 1)
130912_072613_1 (Scanner 1)
GEOIMAGES
Import...
CONTROL OBJECTS
PRODUCTS
ACQUISITION
ADJUSTMENT
Observations_sil
CROSS SECTIONS
VISUALISATION
TASKS
VIEWS
INPUT RESULTS CHARTS
Switch to page "Results" when finished
OBSERVATIONS
Sort by absolute value [-]
Object 1 | Object 2 | Deviation [m] | Description
130912_065754_1 | 130912_072613_1 | -0.202
130912_070134_1 | 130912_070522_1 | 0.200
130912_070134_1 | 130912_070522_1 | -0.200
130912_070522_1 | 130912_072248_1 | 0.200
130912_070134_1 | 130912_072248_1 | -0.200
130912_065754_1 | 130912_071625_1 | -0.200
130912_070909_1 | 130912_072613_1 | 0.200
130912_065754_1 | 130912_071625_1 | 0.199
130912_065754_1 | 130912_072613_1 | 0.199
130912_070522_1 | 130912_072248_1 | 0.199
130912_070134_1 | 130912_072613_1 | 0.199
130912_070522_1 | 130912_070909_1 | 0.199
130912_070522_1 | 130912_071933_1 | -0.199
130912_070909_1 | 130912_072248_1 | 0.199
130912_070522_1 | 130912_072248_1 | 0.199
130912_070134_1 | 130912_072248_1 | 0.199
130912_071625_1 | 130912_071933_1 | -0.199
130912_070522_1 | 130912_072248_1 | 0.198
130912_072248_1 | 130912_072613_1 | -0.198
130912_071625_1 | 130912_071933_1 | 0.198
130912_071256_1 | 130912_071625_1 | 0.198
130912_072248_1 | 130912_072613_1 | 0.198
130912_070909_1 | 130912_072613_1 | 0.198
130912_070522_1 | 130912_072613_1 | 0.198
130912_070134_1 | 130912_071933_1 | 0.198
130912_065754_1 | 130912_072613_1 | -0.198
130912_070134_1 | 130912_071256_1 | 0.198
130912_070909_1 | 130912_071933_1 | 0.198
130912_070522_1 | 130912_072248_1 | 0.198
130912_070522_1 | 130912_071256_1 | 0.198
SCANS
Sort by std. dev. [-]
Name | Objects | Std. dev. [m]
130912_070522_1 | 37932 | 0.050
130912_071625_1 | 21463 | 0.046
130912_072613_1 | 24019 | 0.046
130912_070909_1 | 25386 | 0.045
130912_070134_1 | 36684 | 0.045
HISTOGRAM OF RESIDUES
Count [1]
Distance [m]
ORIENTATION CHART
N
W
E
S
Units: m, deg
PARAMETERS
Adjustment:
Calculation mode: Least Square Fit
Tolerance: 0.000100
Manual Tie Objects:
Search corresp. planes:
Search radius [m]: 5.000
Angular tolerance [deg]: 1.000
Max. normal dist. [m]: 0.200
Auto Tie Planes:
Use Auto Tie Planes:
Corresponding planes: 122151
Weights:
Weight objects by range
ADJUSTMENT
Number of free parameters: 0
Number of observations: 122154
Error (Std. deviation) [m]: 0.0456
State: idle
Calculation time: 4 mins, 54 secs, 735 msecs
Calculate
Analyse
Protocol...
Cancel
Create plots...
Reset
Undo last change
Apply changes
Undo all changes

Veri sınıfları

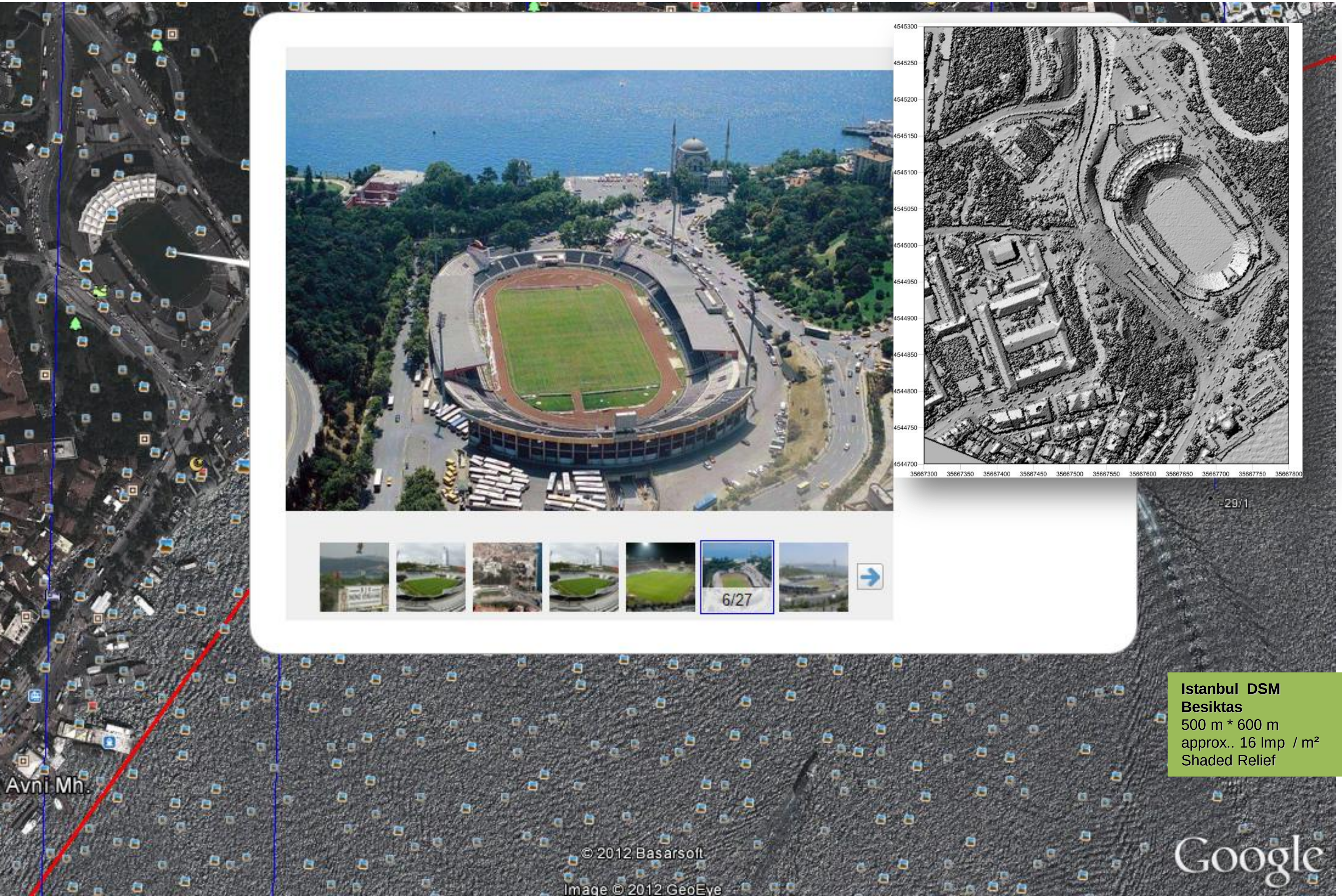



Macro - ily2-ground.mac
File Run
Description: final ground
Author:
Process flightlines separately
Process scanners separately
Step
Slave can run
FnScanClassifyLow(3,7,12,0.40,3.00,0)
FnScanClassifyLow(3,7,1,0.30,3.00,0)
FnScanClassifyLow(3,7,1,0.20,2.00,0)
FnScanClassifyGround(3,2,1,80.0,88.00,6.00,1.40,-1,5.0,0,2.0,0)
FnScanClassifyBelow(2,7,8.00,0.10,0)
Add...
Insert...
Edit...
Delete
Move up
Move down
Classify ground
From class: 3 - Low vegetation
To class: 2 - Ground
Inside fence only
Initial points
Select: Aerial low + Ground points
Max building size: 80.0 m
Classification maximums
Terrain angle: 88.00 degrees
Iteration angle: 6.00 degrees to plane
Iteration distance: 1.40 m to plane
Classification options
Reduce iteration angle when
Edge length < 5.0 m
Stop triangulation when
Edge length < 2.0 m
OK
Cancel

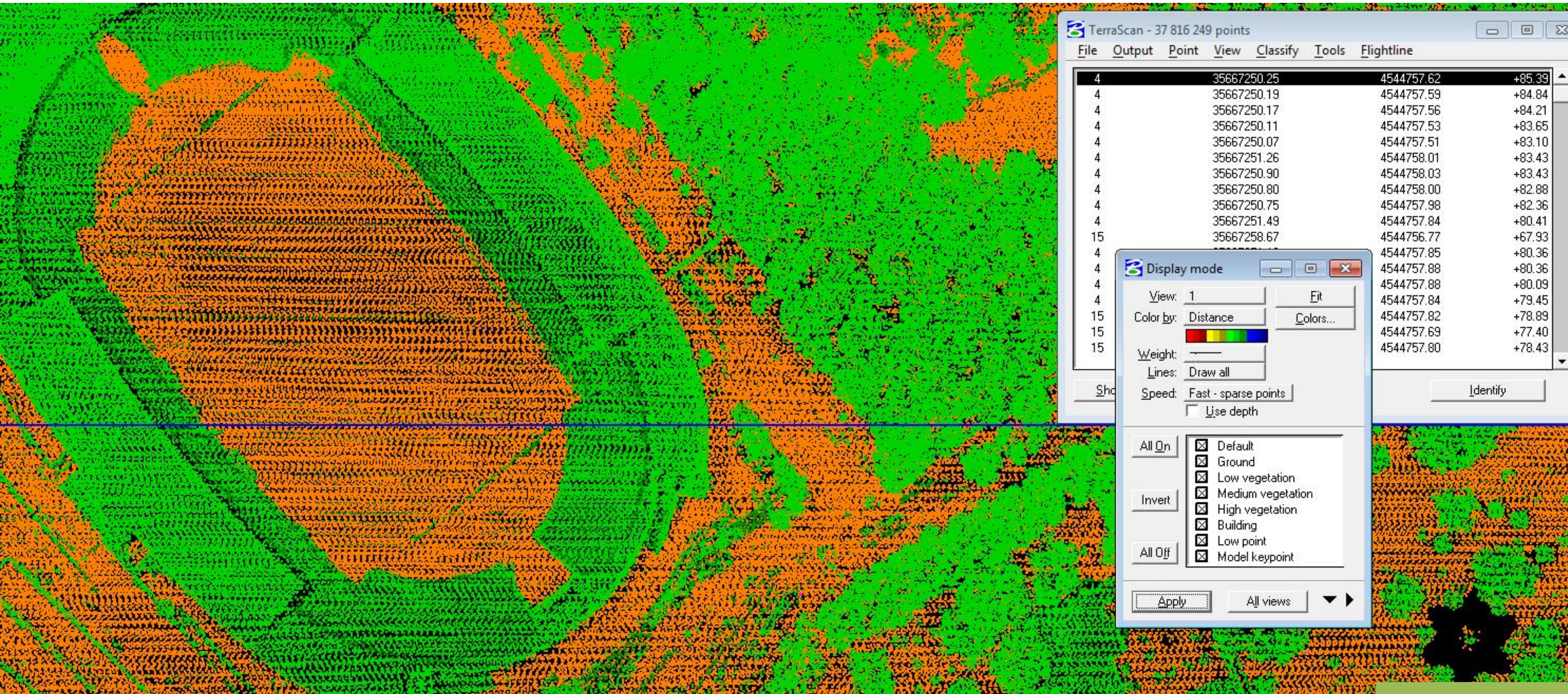
Istanbul DSM
2,5 km * 2 km
approx.. 16 lmp / m²
Shaded Relief



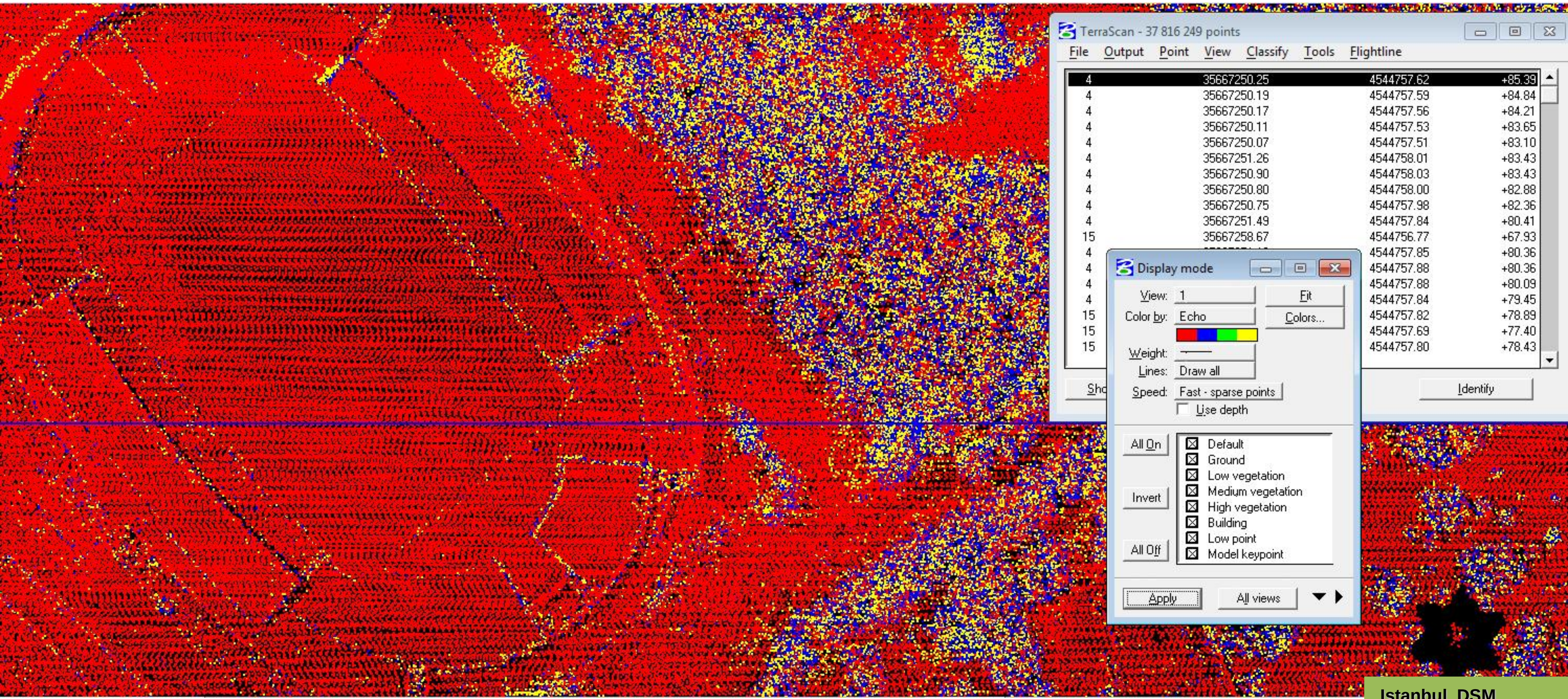
Istanbul DSM
Besiktas
500 m * 600 m
approx.. 16 lmp / m²
Shaded Relief



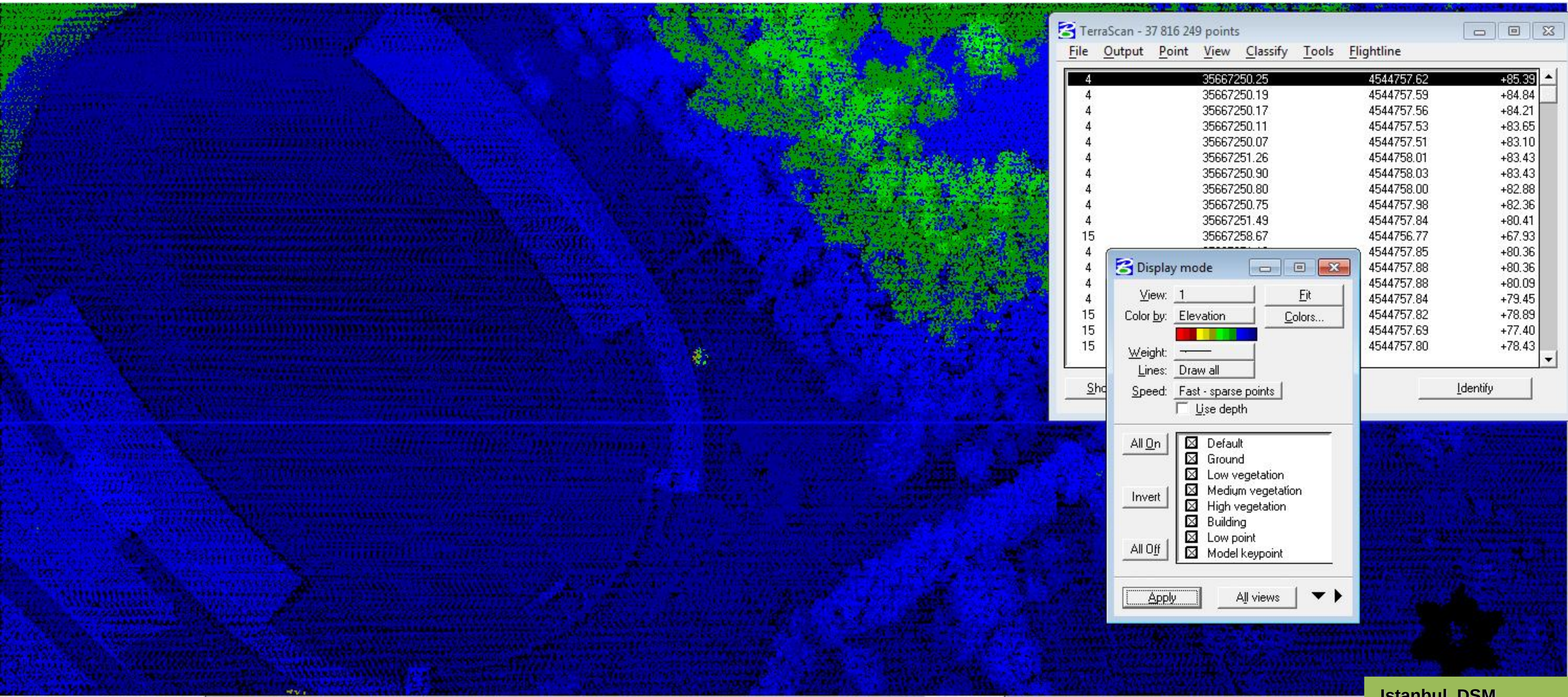
Istanbul DSM
Besiktas
500 m * 600 m
approx.. 16 Imp / m²
Shaded Relief



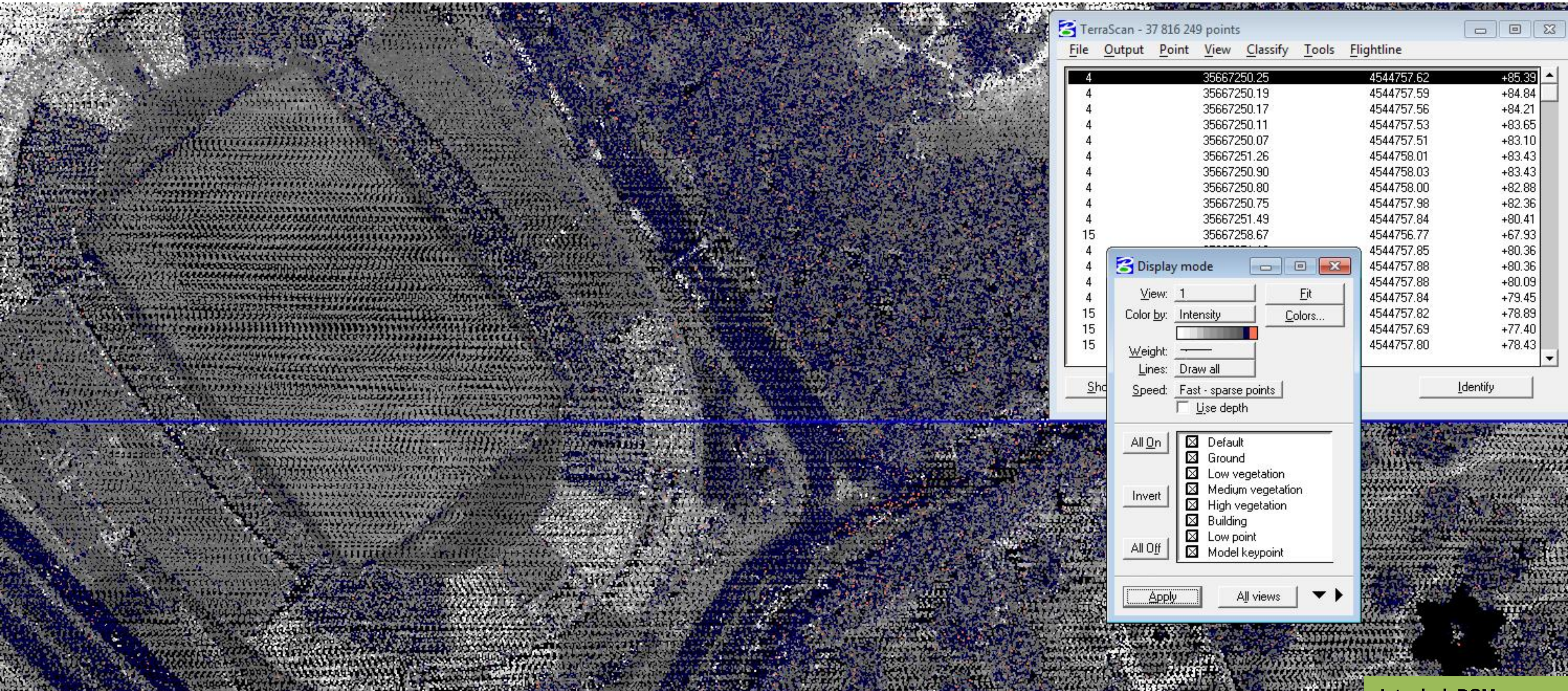
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



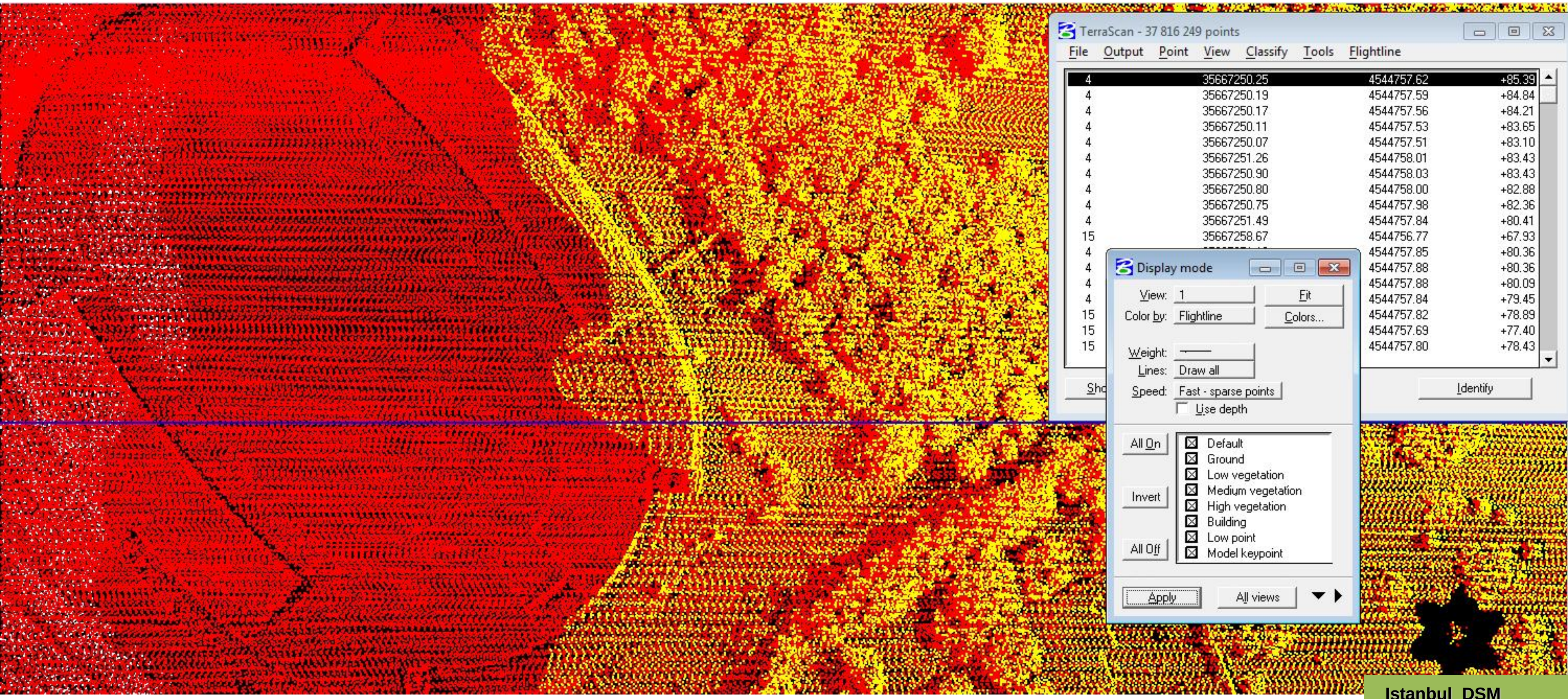
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



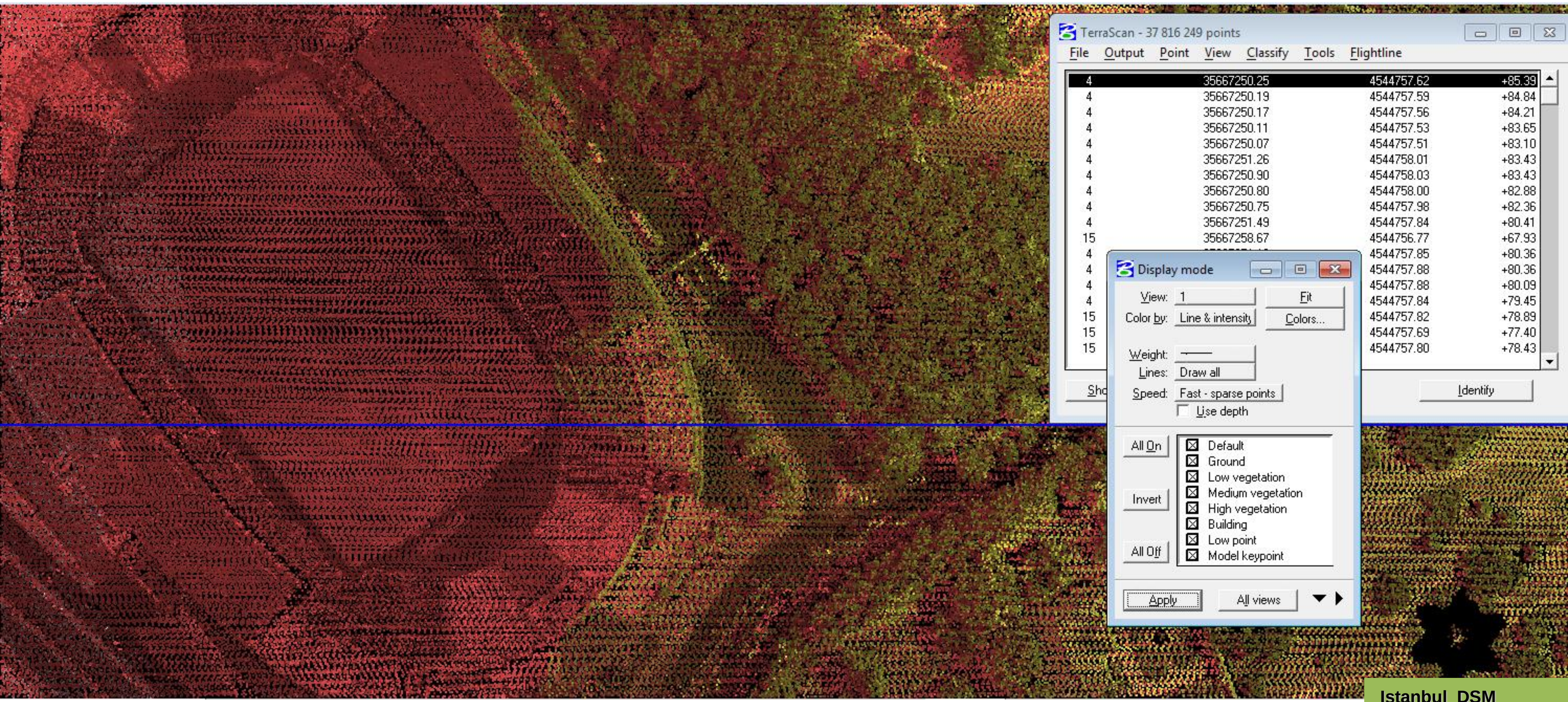
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



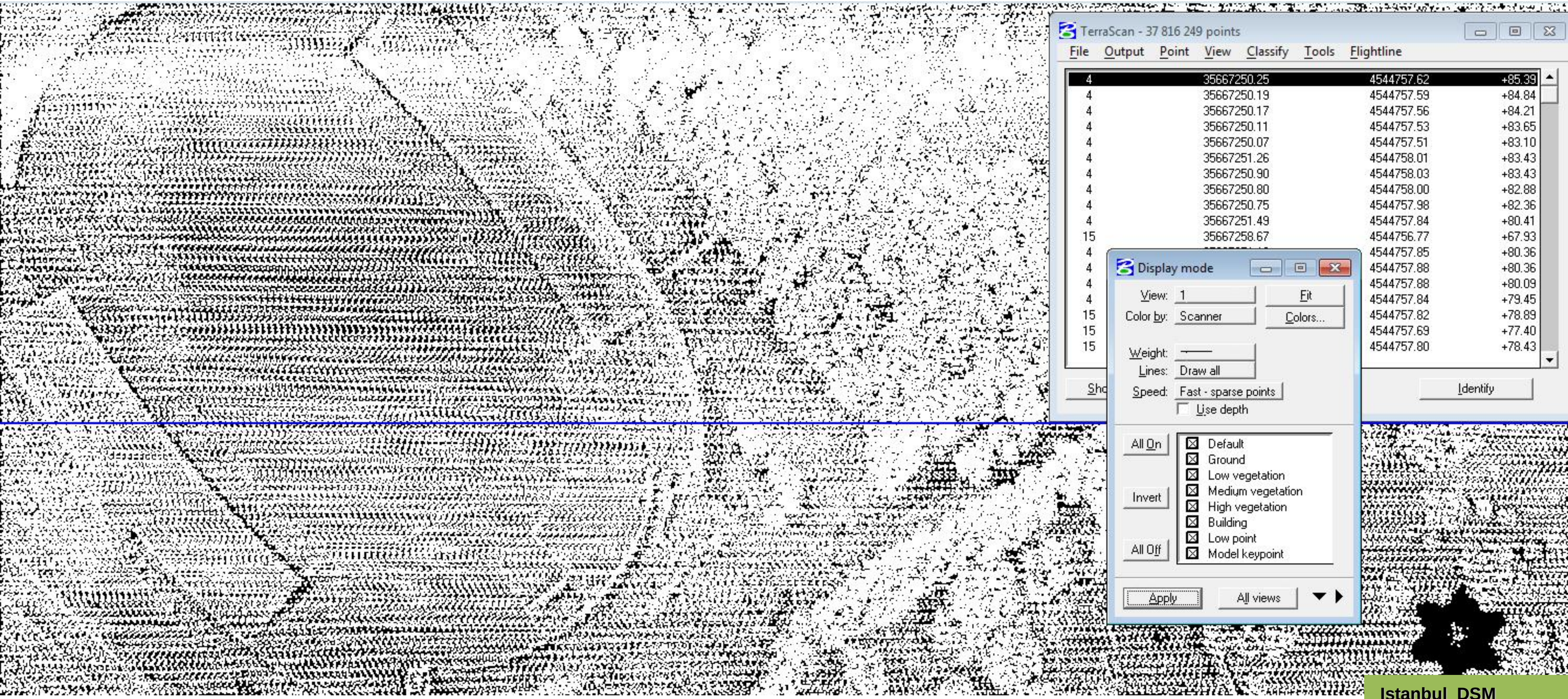
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 lmp / m²



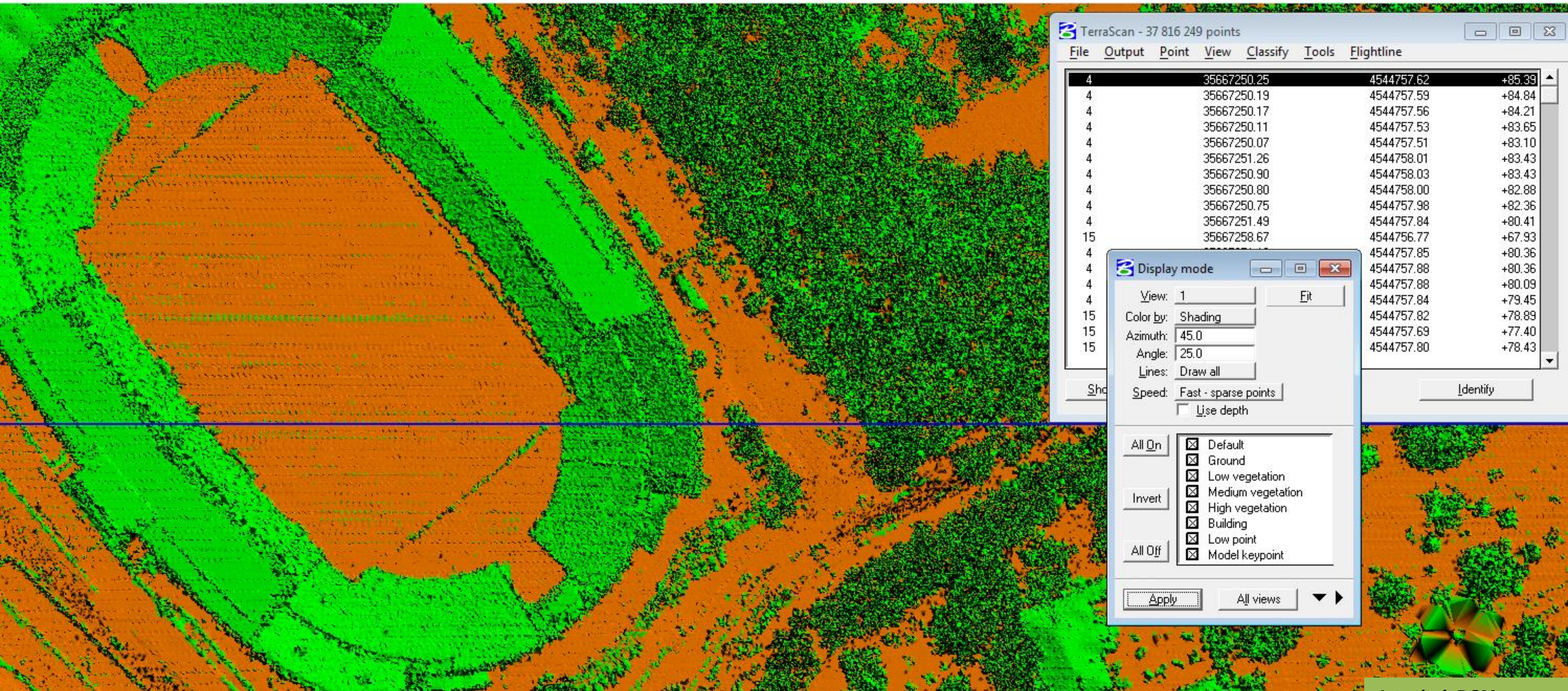
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



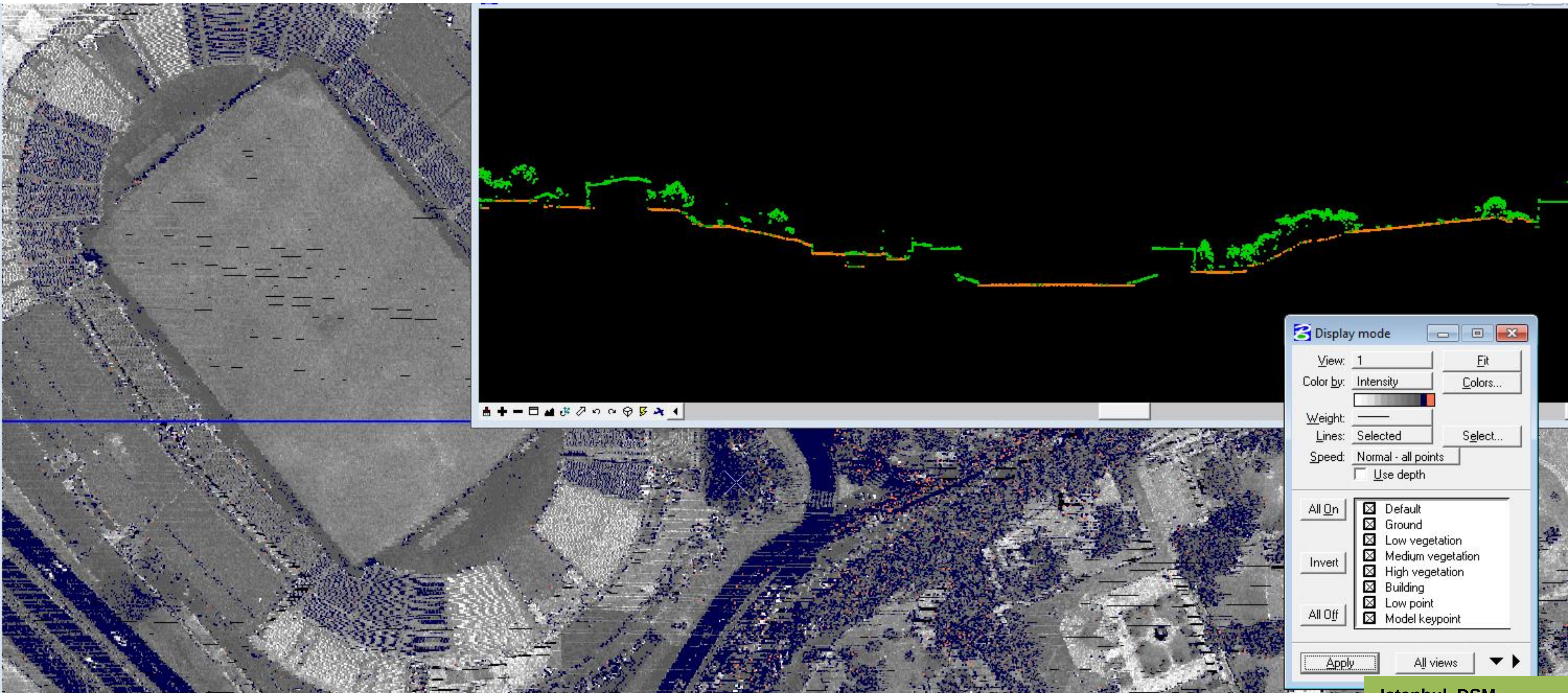
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



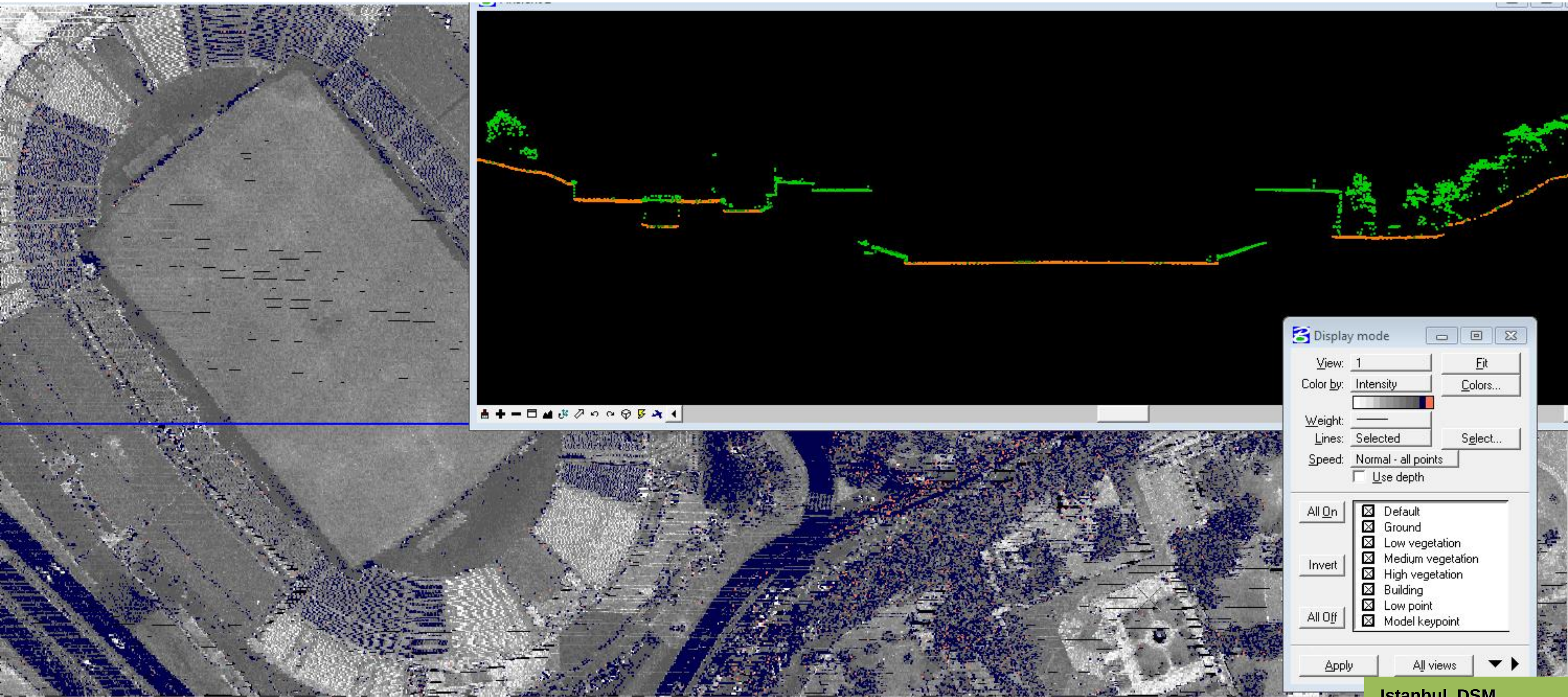
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



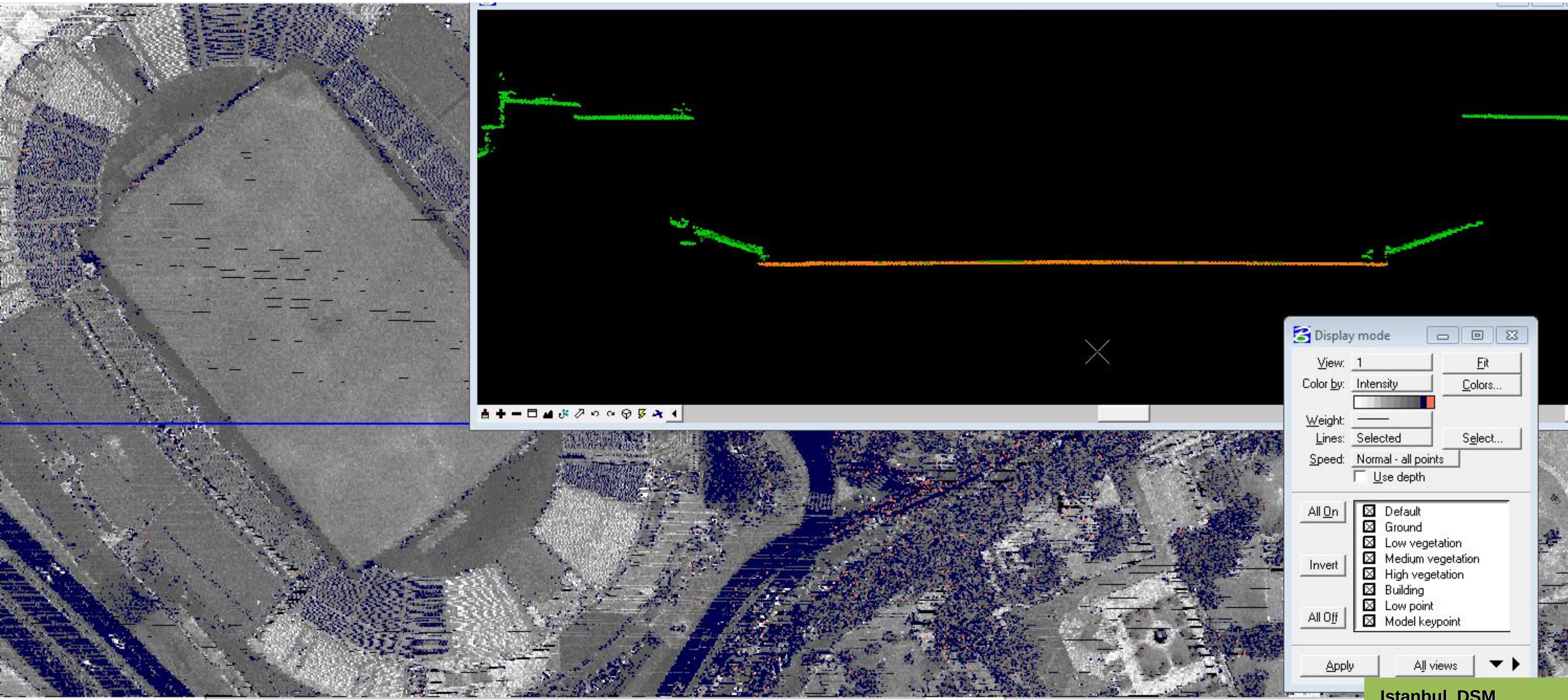
Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



Istanbul DSM
Besiktas
500 m * 600 m
approx. 16 Imp / m²



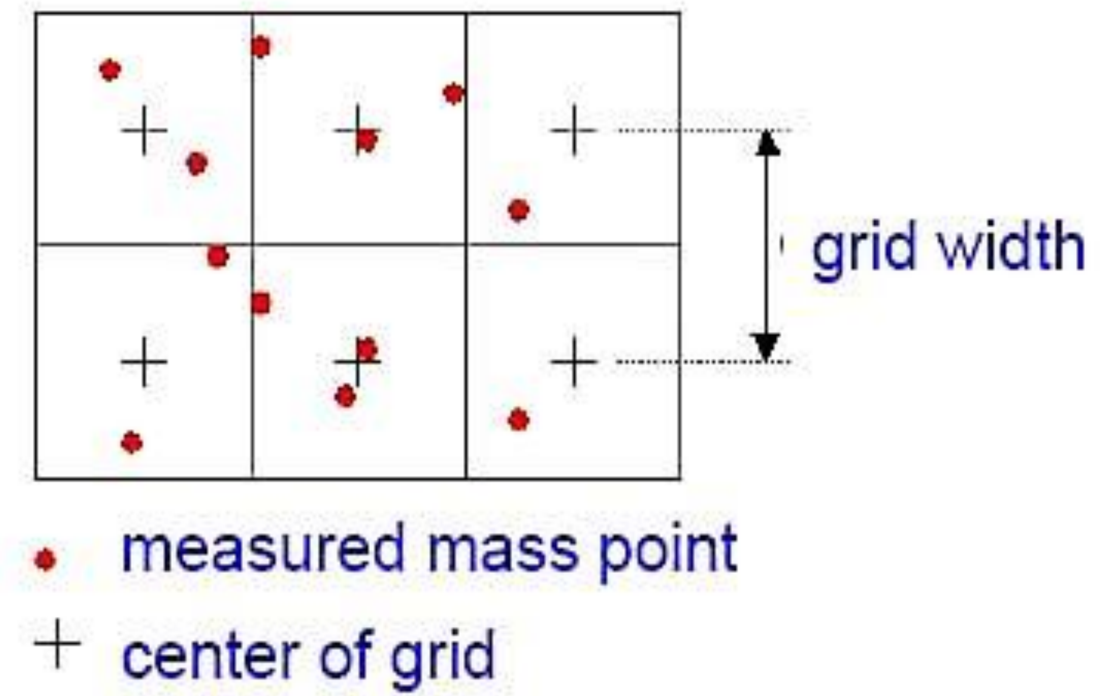
Istanbul DSM Besiktas

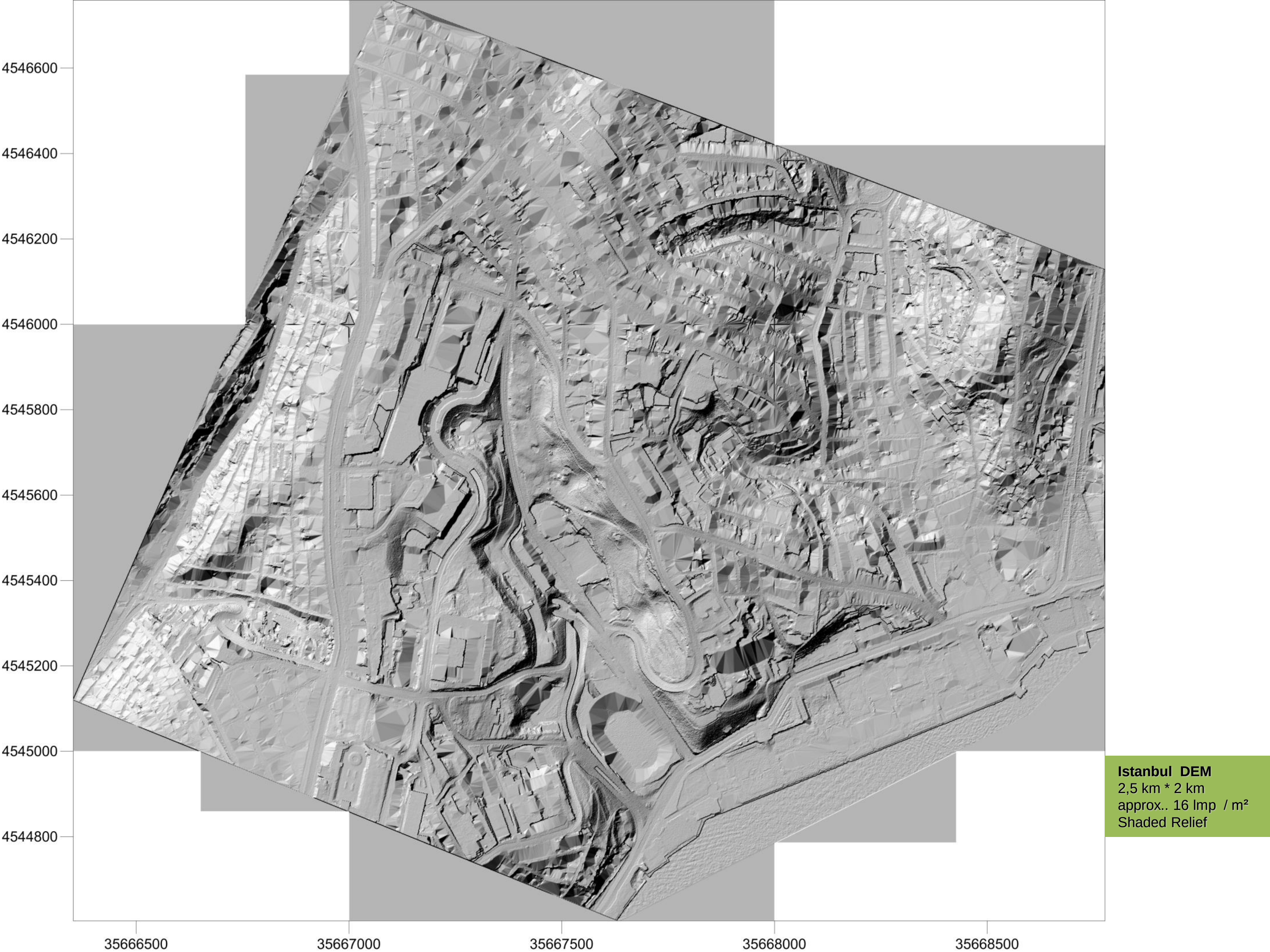
500 m * 600 m

approx. 16 Imp / m^2

Laser scanning – reduction of original ground points to raster

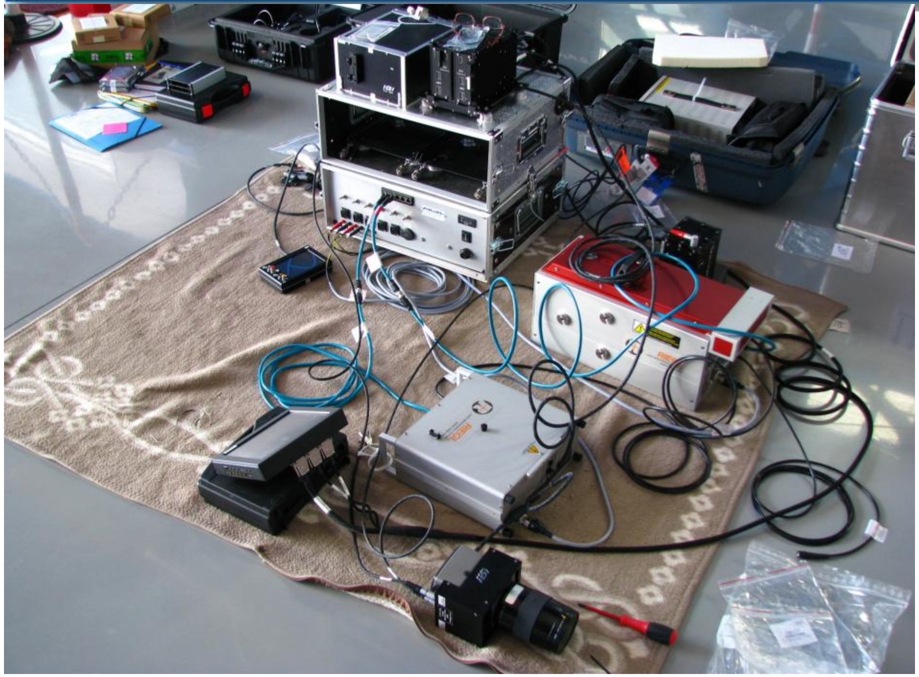
Rasterization: Generate Heights for grid points from irregular distributed masspoints

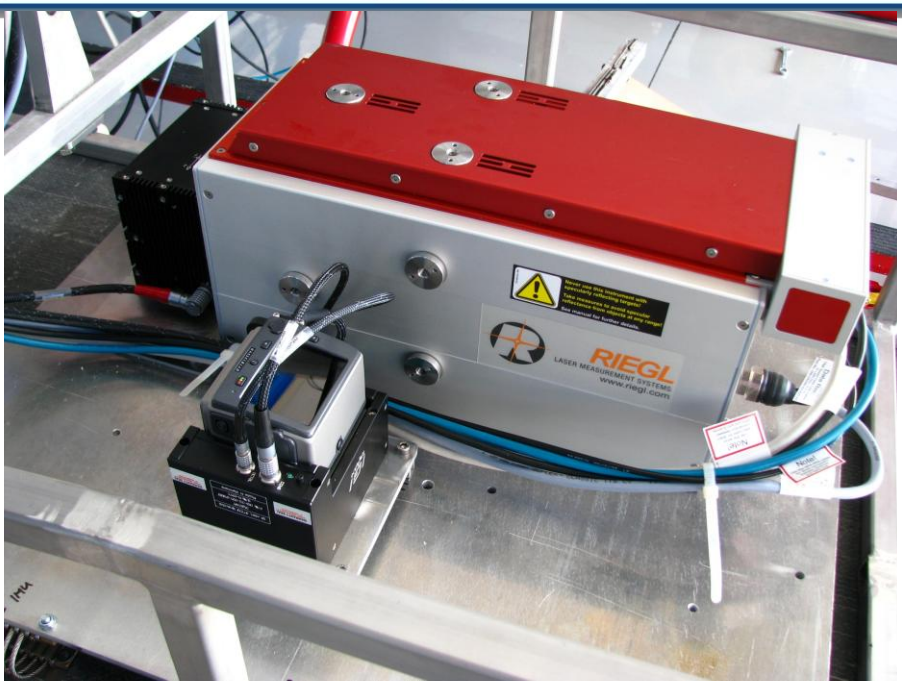



4546600
4546400
4546200
4546000
4545800
4545600
4545400
4545200
4545000
4544800
35666500
35667000
35667500
35668000
35668500
Istanbul DEM
2,5 km * 2 km
approx.. 16 Imp / m²
Shaded Relief

IGI Digicam Camera

SPECIFICATIONS 60 Megapixel	
Sensor Size	60 Megapixel, 40.248 x 53.736 mm
Pixel Size	6.0 µm
Image Size	8956 x 6708 pixels
Maximum Frame Rate	1.6 sec
SSD Storage Units	Storage Units for 5800 images (500 GB)





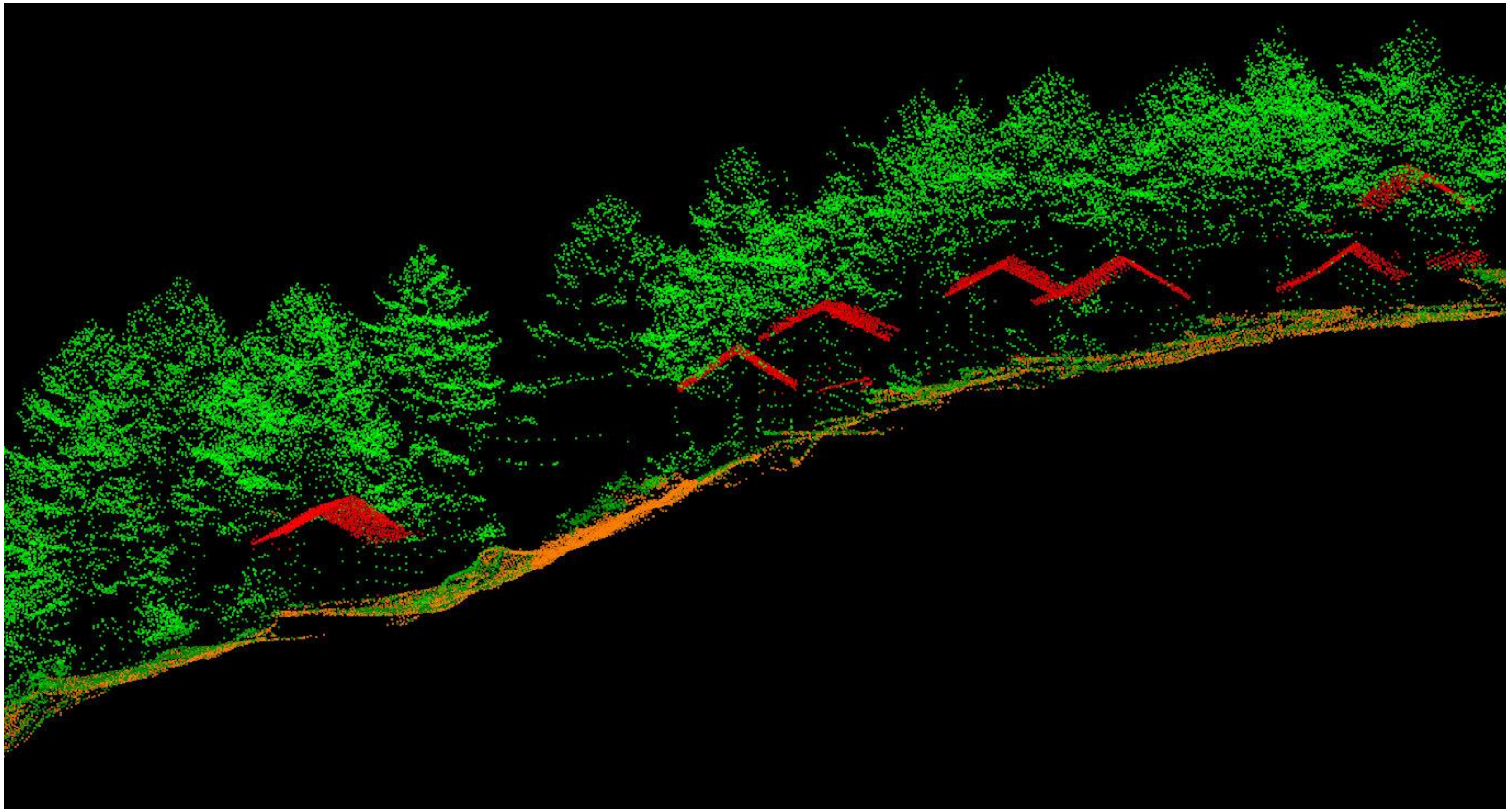
Orto-görüntüler

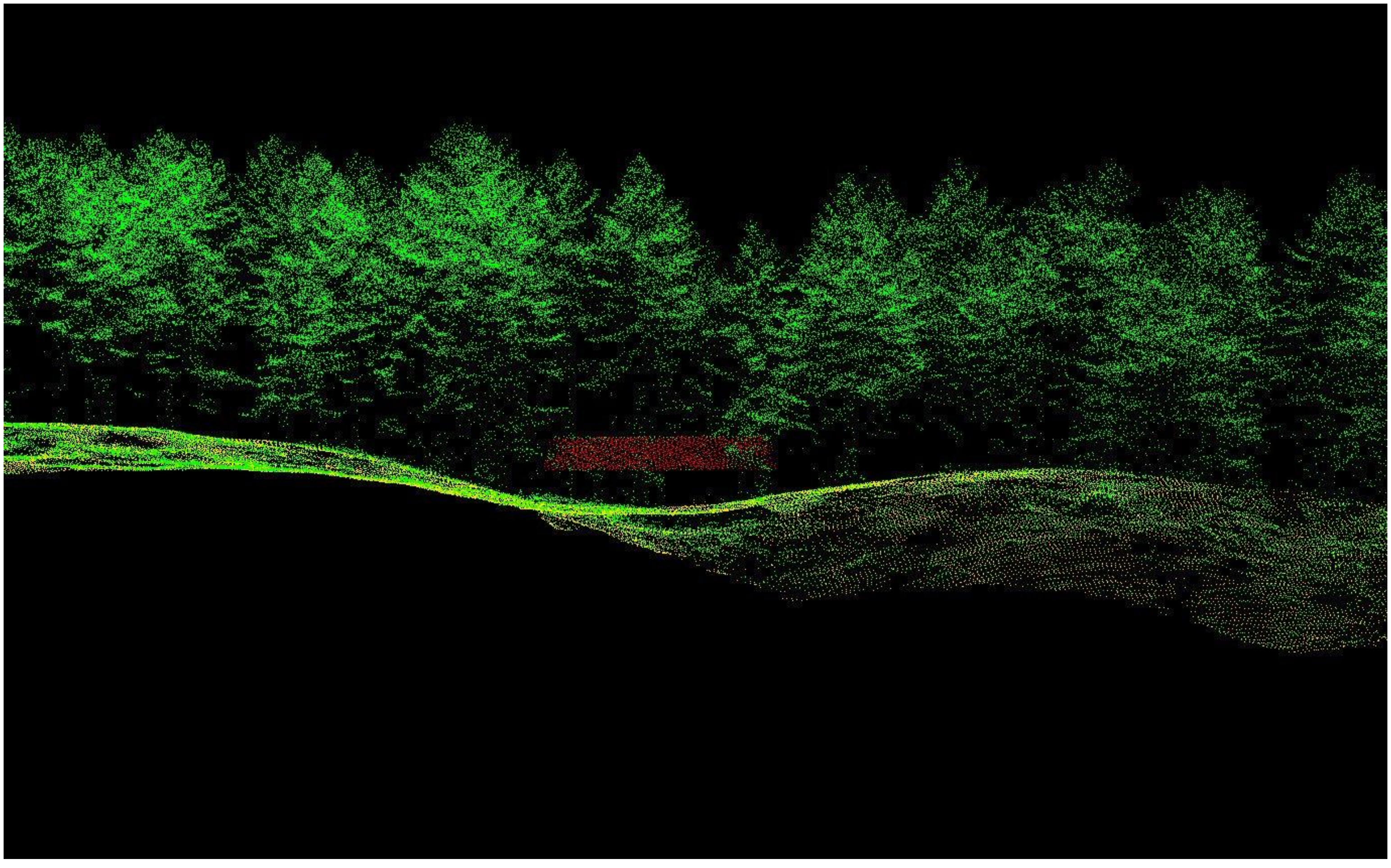
Seam line

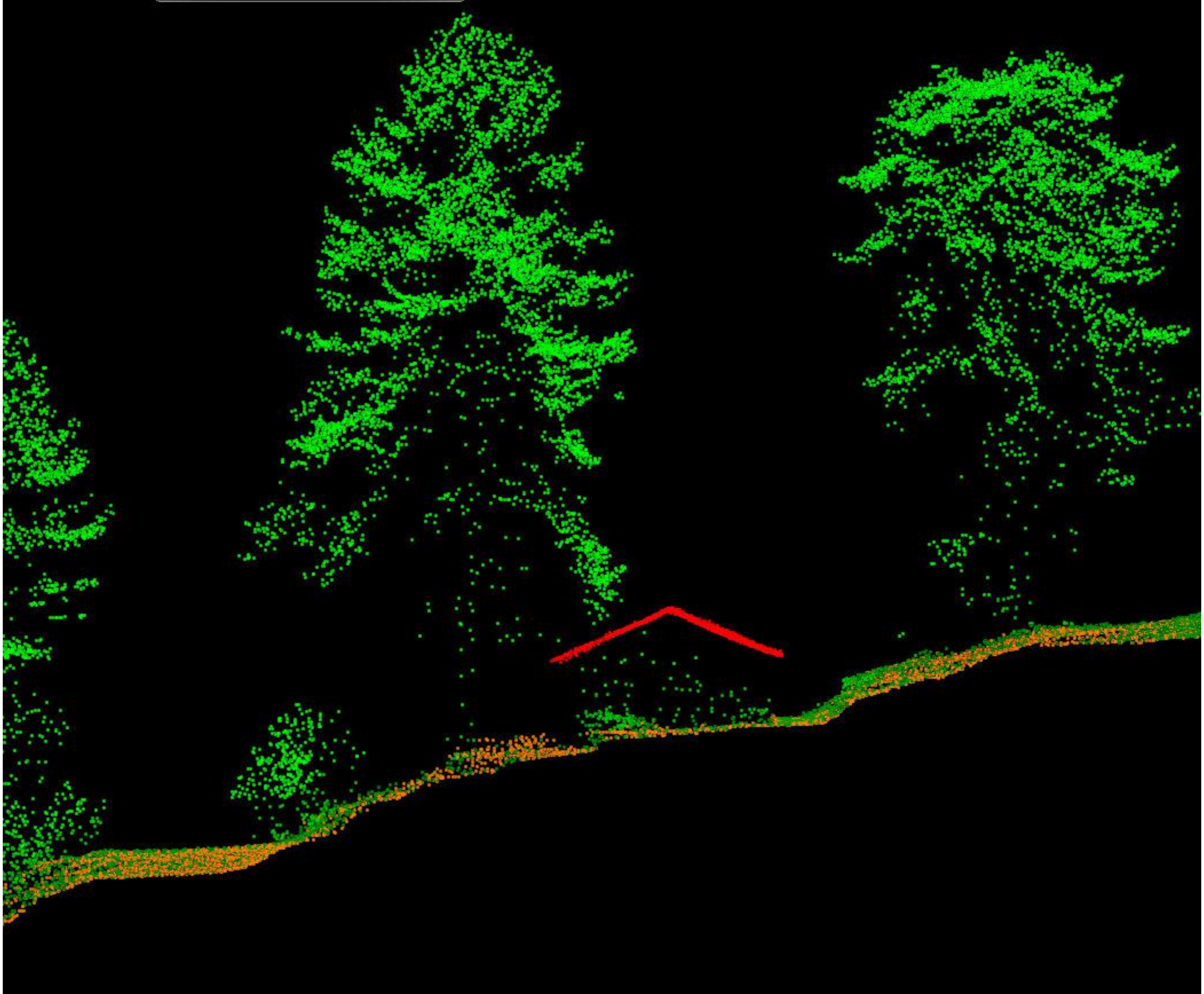
RGB

RGB
1 km²   DSM-6665-45415
16pts/ m²

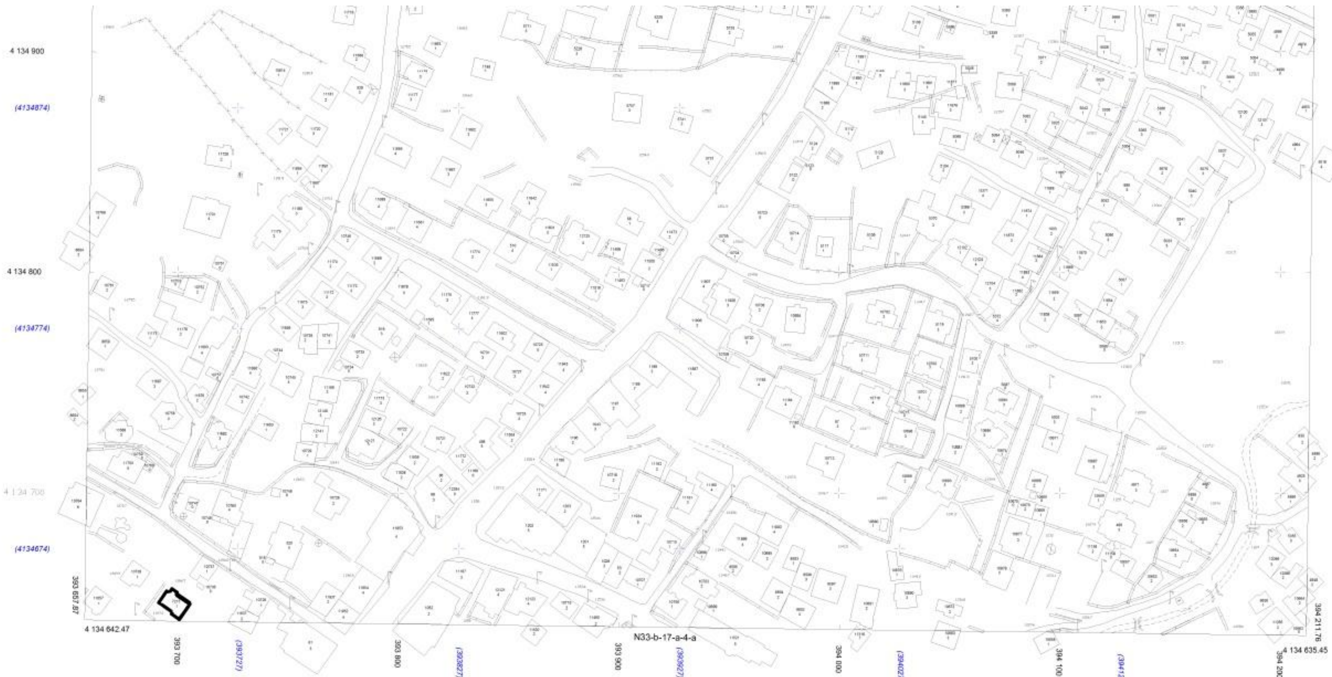
Yayla ormanlarındaki binalar








GÜNSAN



LEJANT

BİNA		ENERJİ NAKİL HATTI	
ASFALT YOL		TELÇİT	
TOPRAK YOL		MERDİVEN	
TAHTA PERDE		SUNDURMA	
YAYLA SINIRI		ROGAR KAPAĞI	
DERE		REKLAM TABELASI	
HARABE		CAMİ	
KAT ADEDİ	1.2.3	PİLON	
DEMİRPARMAKLIK		BİNA NO	1.2.3....10200
DUVAR		ORMAN	
ELEKTRİK DİREĞİ			
TELEFON DİREĞİ			

1/1000

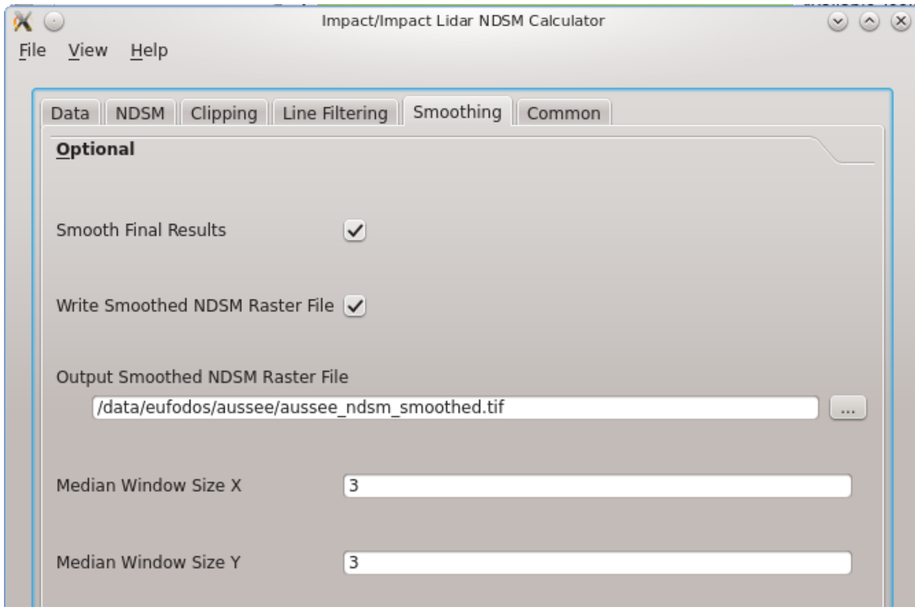
HAZIRLAYANLAR	DENETİM VE KONTROL KOMİSYONU			ONAY
DOÇ.DR. GÜRCAN BÜYÜKSALİH HARİTA YÜK. MÜH.	BAŞKAN	ÜYE	ÜYE	
	KABUL KOMİSYONU			
	BAŞKAN	ÜYE	ÜYE	

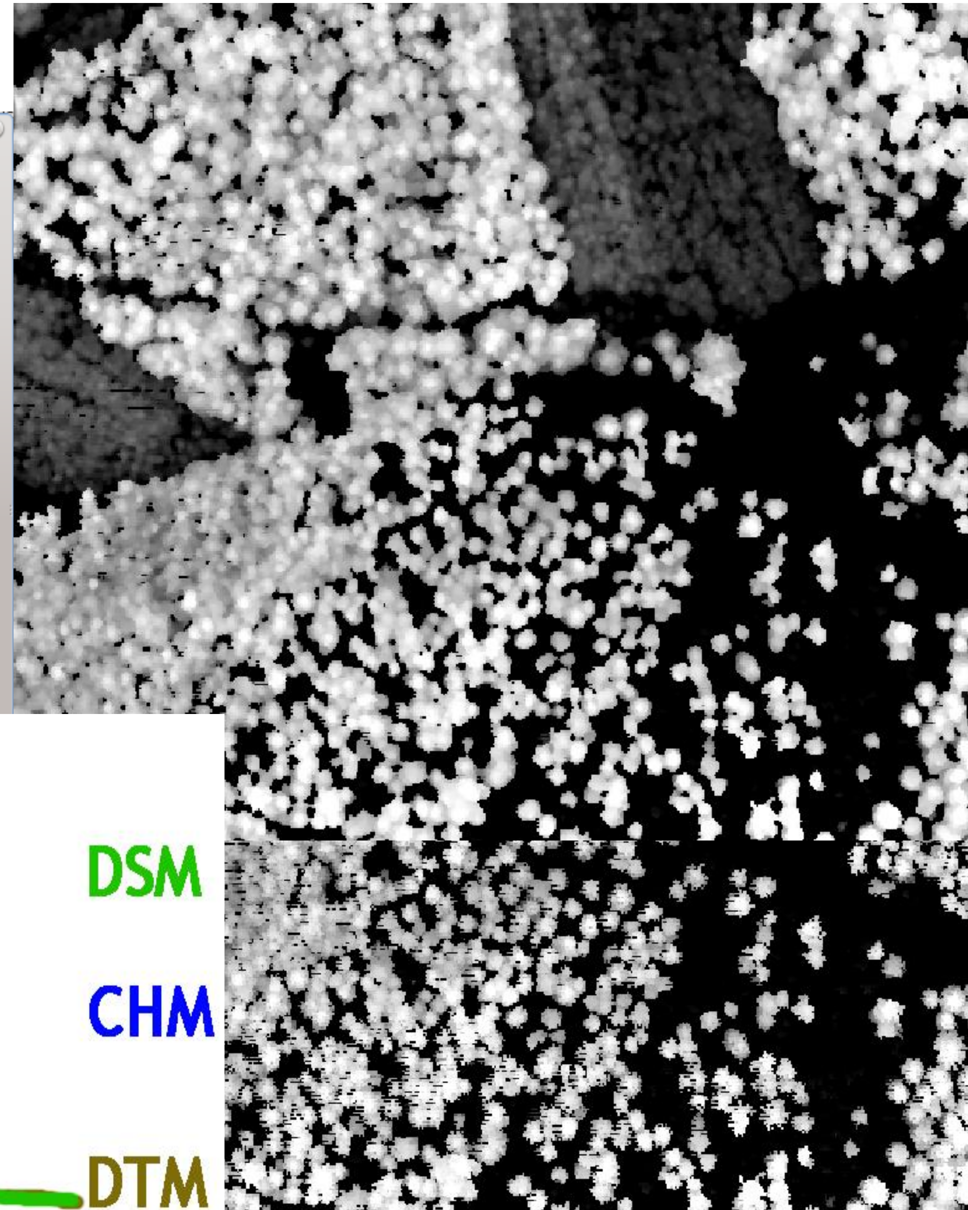
NOT:Orman İşletme Müdürlüğü-Pozantı DİĞER ÖZEL BÜTÇELİ KURULUŞLAR ORMAN GENEL MÜDÜRLÜĞÜ tarafından yaptırılan Akçatekir Yaylası Hava Lidar Teknolojisi ile 1/1000 Ölçekli Hali Hazır Harita Yapımı Alımı projesi kapsamında Boğaziçi Peyzaj İnşaat Müşavirliği Tek. Hiz. Ağaç San. ve Tic. A.Ş. adı altında üretilmiştir.

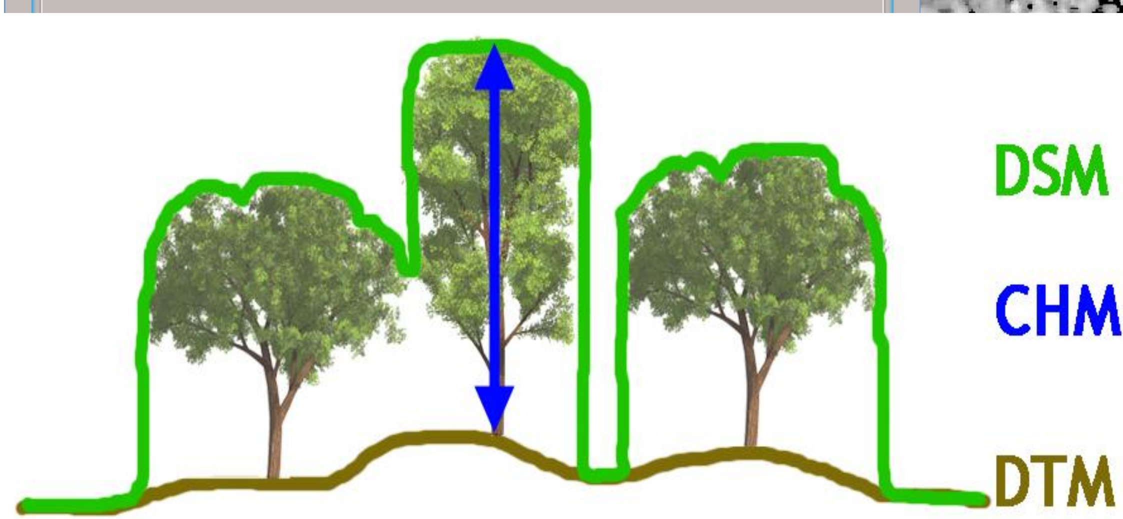
1- AKÇATEKİR YAYLASI

ELİPSOİD : GRS80
DATUM : ITRF96
PROJEKSİYON : UTM (3)
D.O.M : 36
: ITRF (GRS80)
: ED 50

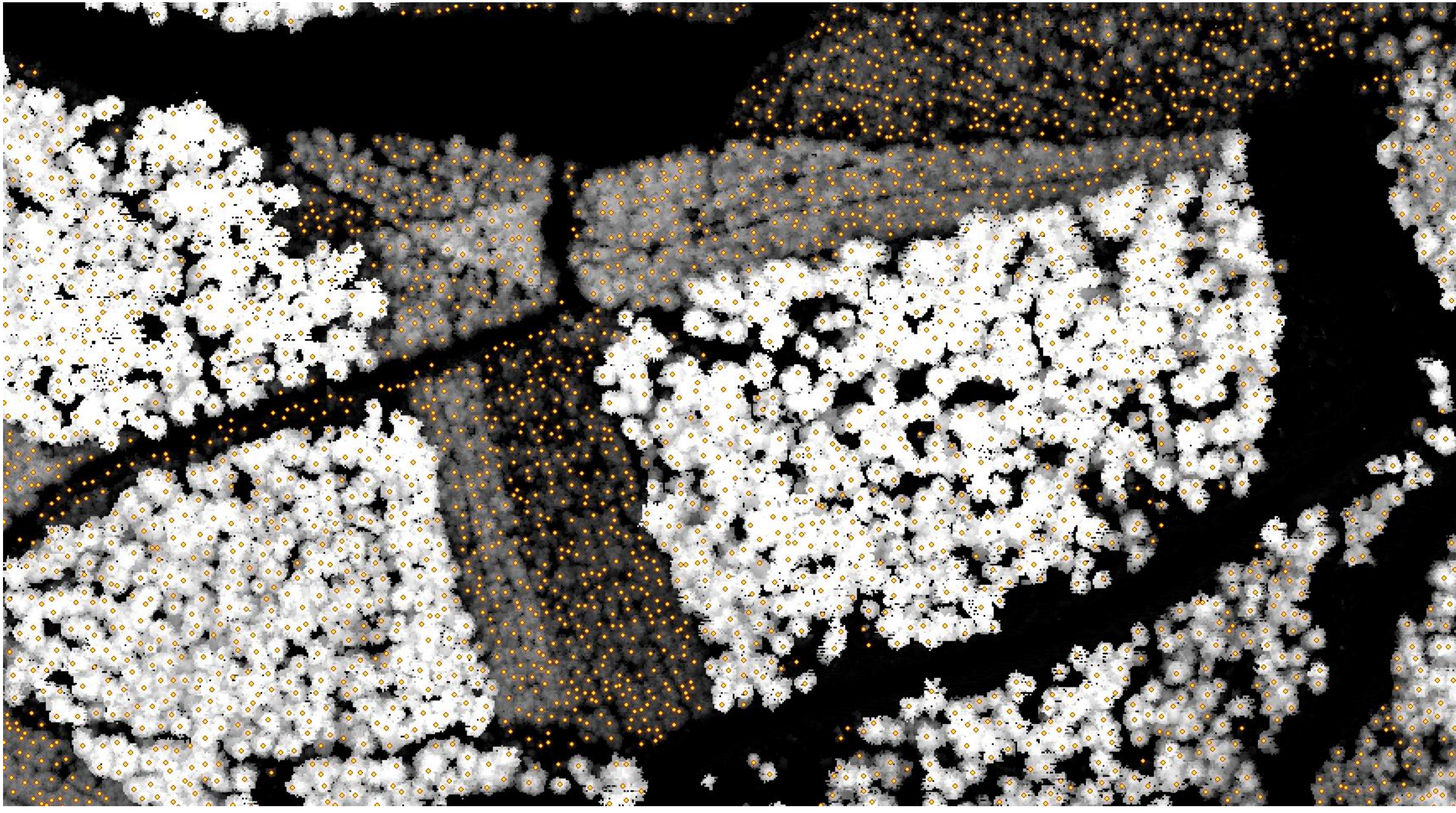
LiDAR Toolbox
nDSM - Generation







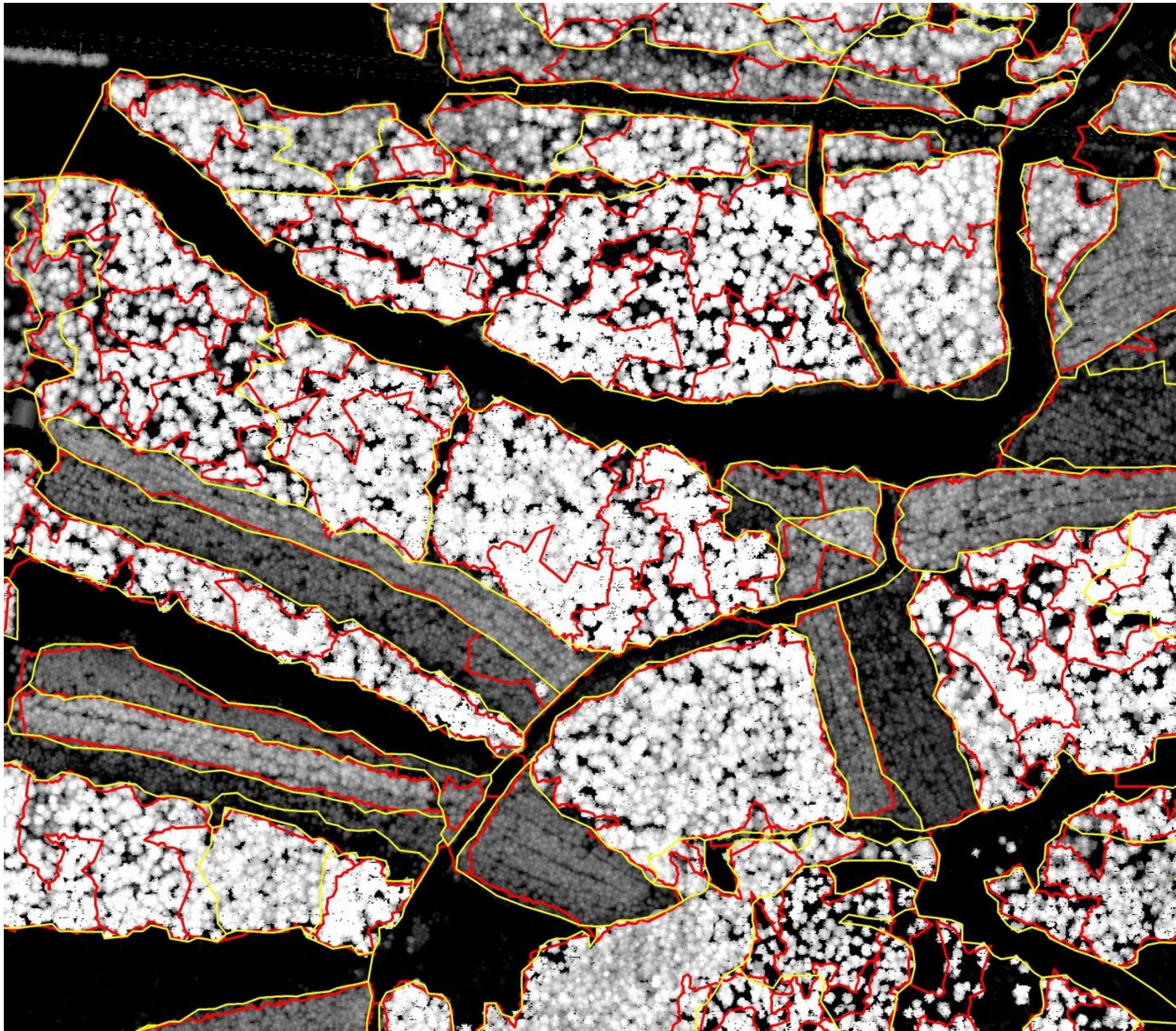
LiDAR Toolbox
Tree Tops



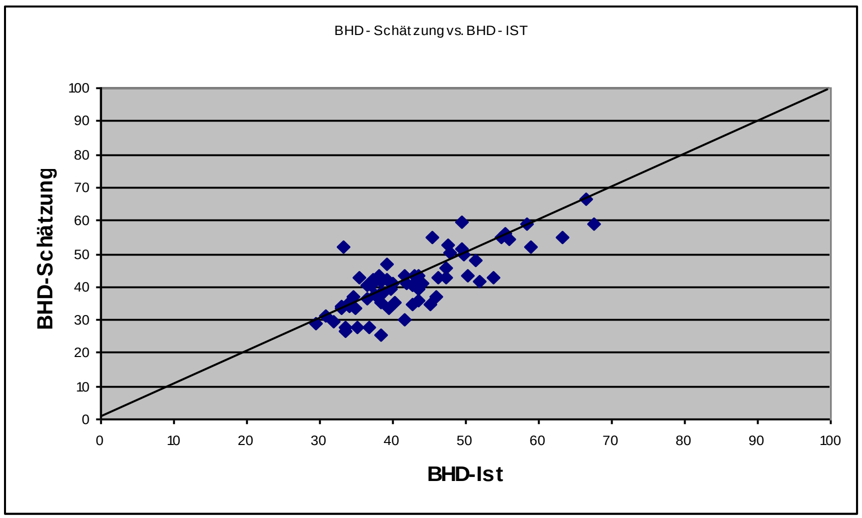
Results -
Segmentation of Forest Stands

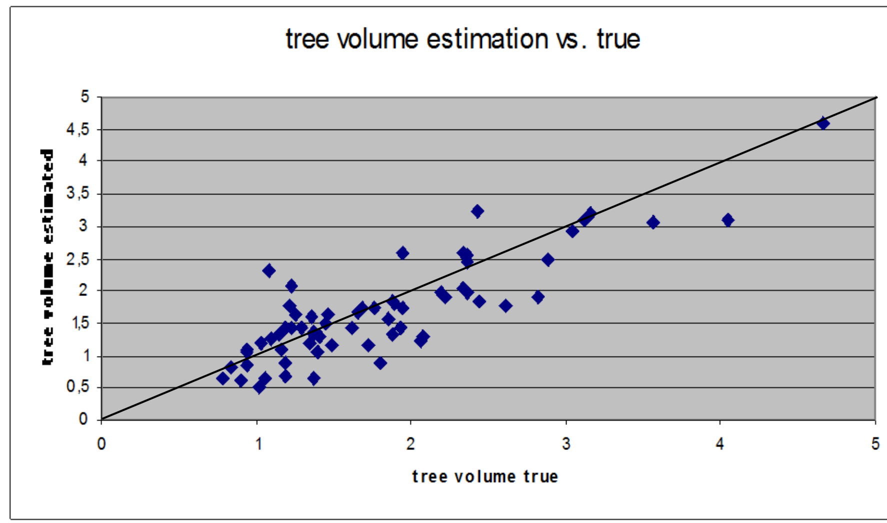
- **The comparison with visual-manual delineation showed, that the visual interpretation result is usually more generalized**

	Buffer 2 m	Buffer 4 m
Correct	60 %	87 %
Commission error	61 %	43 %
Omission error	40 %	13 %



Results -
Single Tree Volume



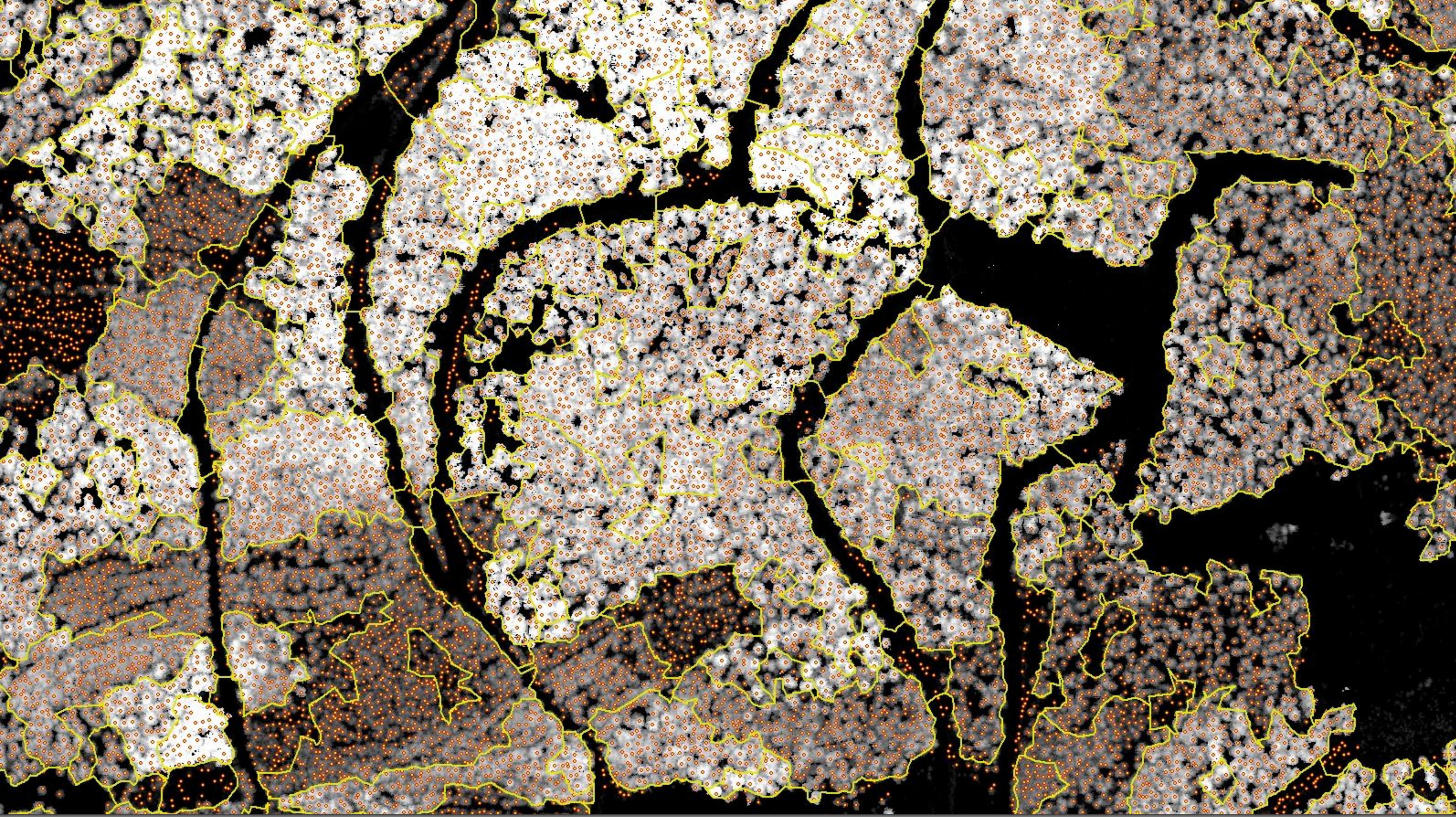


BHD Estimation
(70 reference trees):

mean: -1,4 cm
stdev: 5,8 cm
av. acc.: 87,7 %

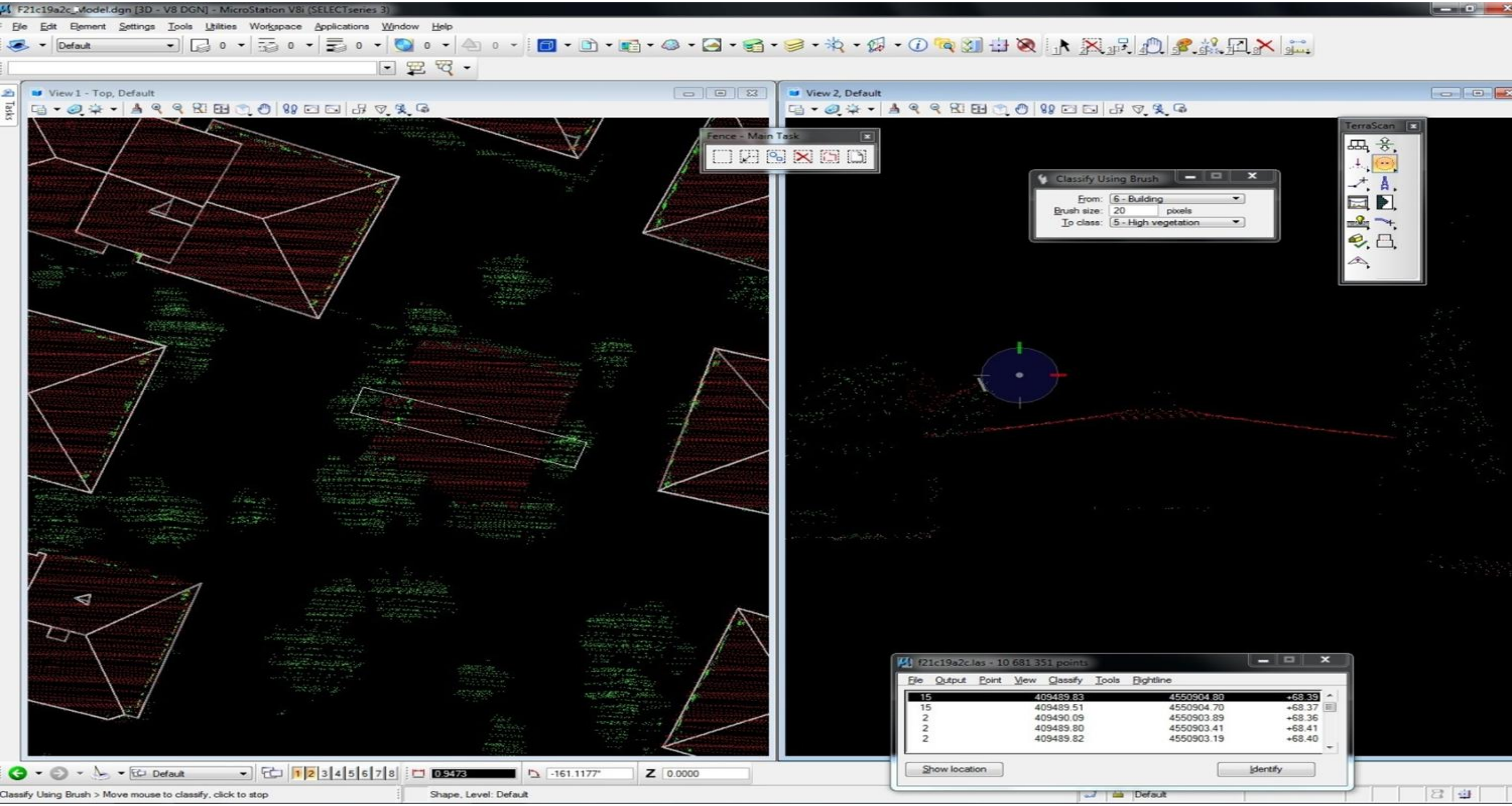
TREE VOLUME Estimation
(70 reference trees):

mean: 0,17 m³
stdev: 0,59 m³
av. acc.: 86,3 %

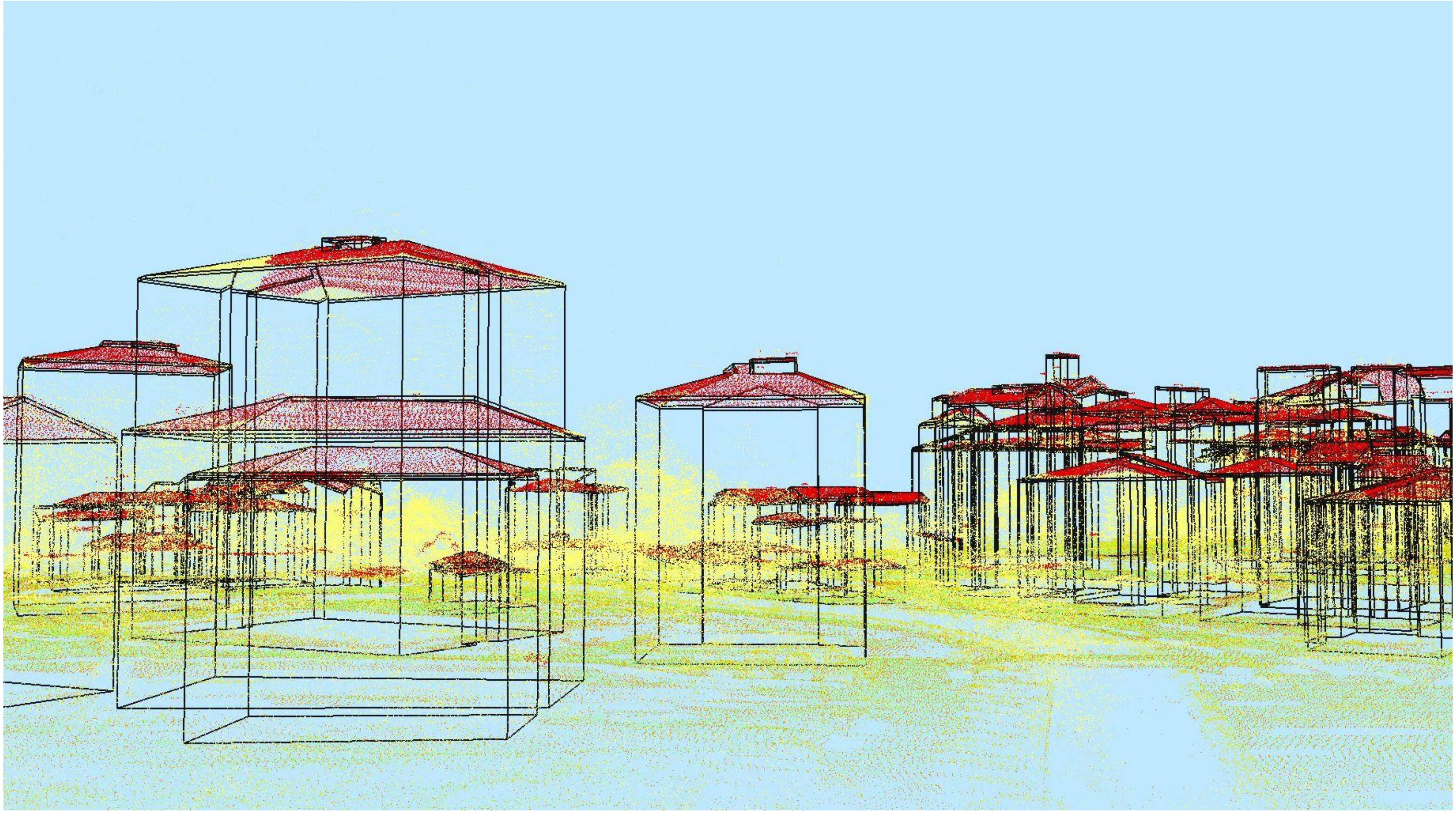


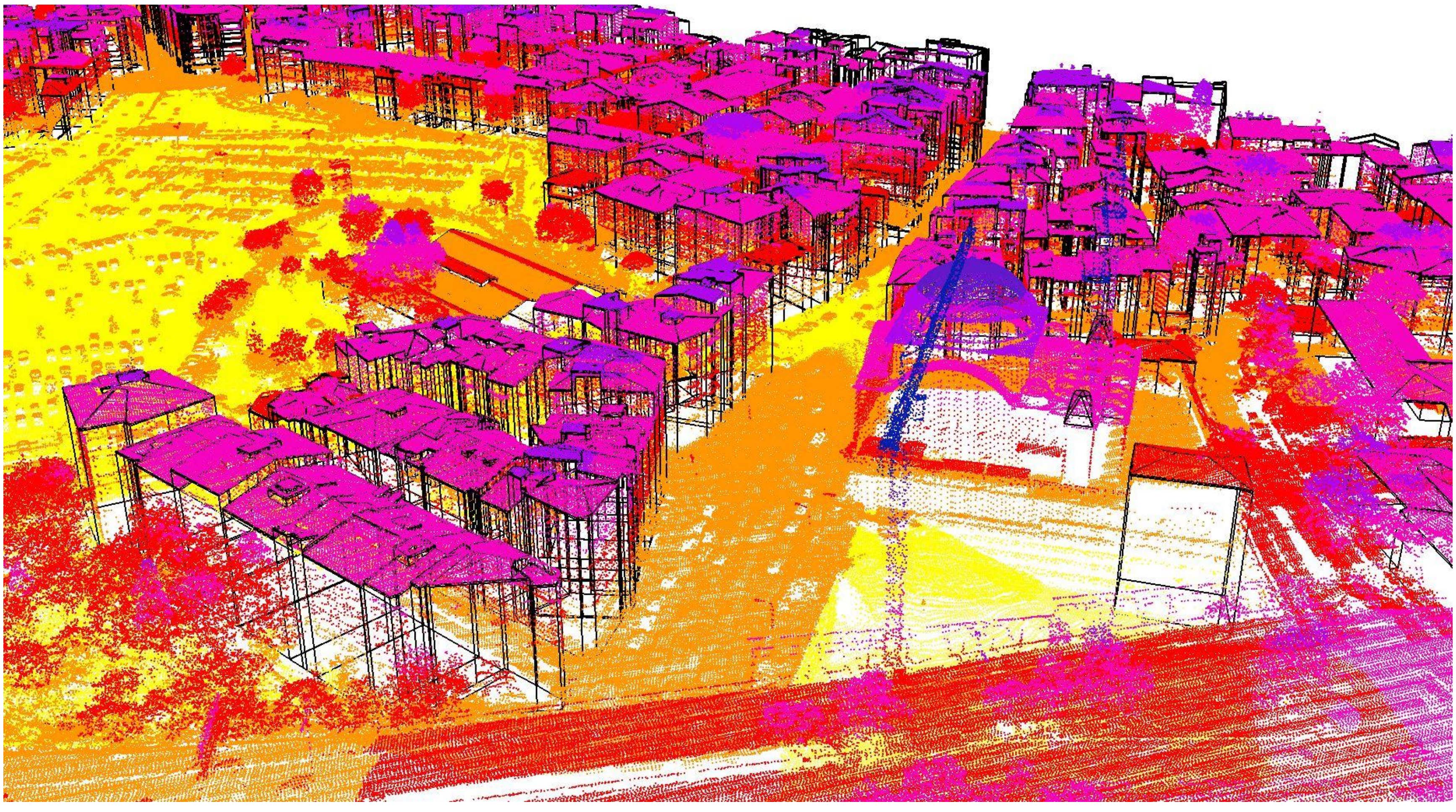
AREA	Deckung	Deckung_OH	Deckung_UH	Mischgrad	Mittelh	Mittelh_St	Nadel	Oberh	Oberh_Std	PERIMETER	RI_Laub	RI_Nadel	Stufe	StufeLaub	StufeNadel	Unterh	Unterh_Std
3662	0,5	0,3	0,2	1,31	21,2923	9,69761	84,5	31,1943	1,38507	414	5631	30703	6	6	6	0	0
8292	0,6	0,3	0,3	1	23,0448	7,21014	100	31,4276	2,38389	604	0	101259	6	7	6	0	0
6100	0,5	0,2	0,3	1	17,7054	6,67898	100	24,5241	1,13802	464	0	39514	5	5	5	0	0
2060	0,6	0,1	0,5	1,35	6,61306	4,86383	82,5	14,5621	5,68126	350	923	4354	2	2	2	3,5	0,1
4667	0,7	0,4	0,3	1,16	27,8378	15,4849	92	41,5271	0,756459	412	5947	68399	7	7	7	0	0
11719	0,9	0,4	0,5	1,01	22,6484	5,13271	99,5	28,4905	1,31534	1104	918	182707	6	6	6	0	0
4865	0,8	0,3	0,5	1,01	21,4421	6,89074	99,5	29,5508	1,90493	380	330	65706	6	6	6	0	0
15640	0,8	0,3	0,5	1	22,0135	5,13306	100	28,6286	2,01981	1106	0	228087	6	6	6	0	0
7990	0,5	0,1	0,4	1,78	9,44457	6,88549	61	20,5618	2,03751	910	10252	16035	99	99	99	0	0
1124	0,7	0,1	0,7	1,8	7,60108	4,64174	60	14,1286	6,6842	234	1264	1896	2	2	2	4,3	0
5241	0,7	0,3	0,5	1,52	12,3848	11,2379	74	30,8661	2,84671	768	12369	35205	6	6	6	0	0
10485	0,8	0,3	0,5	1	14,7666	4,3155	100	20,4041	1,40177	1194	0	94558	5	4	5	0	0
1095	0,7	0,3	0,4	1	17,605	3,13167	100	21,1143	1,38604	266	0	10501	5	4	5	0	0
7264	0,6	0,2	0,4	1,04	15,0223	5,25276	98	21,0294	1,77755	772	873	42823	5	4	5	0	0
14217	0,7	0,2	0,5	1,33	16,4804	9,33838	83,5	28,7391	2,42057	874	23727	120077	6	6	6	0	0
2210	0,8	0,2	0,6	1,64	9,30926	7,55651	68	23,9206	2,61829	302	4222	8973	5	5	5	0	0

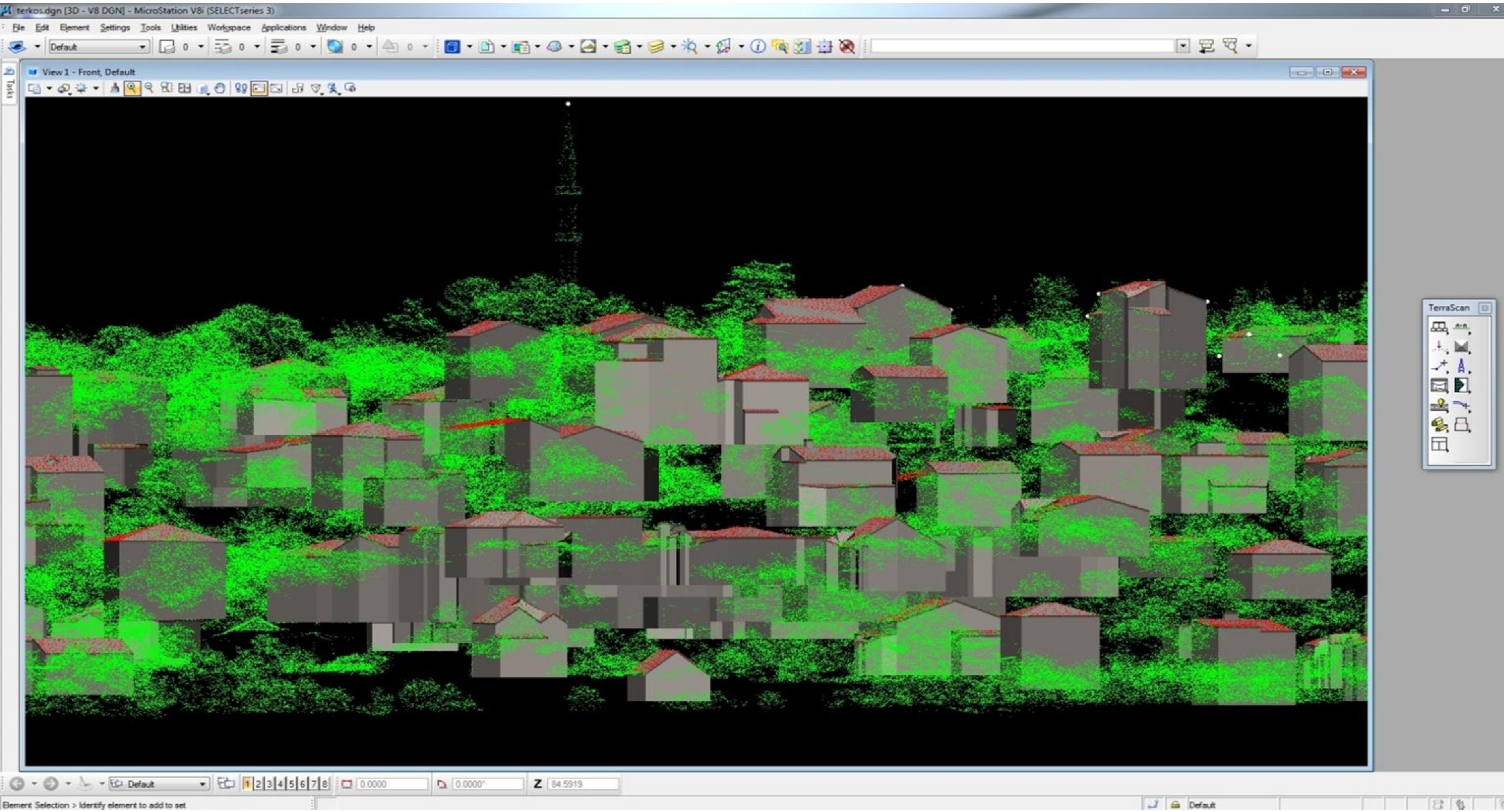
Bina Vektörleri



3D Binalar



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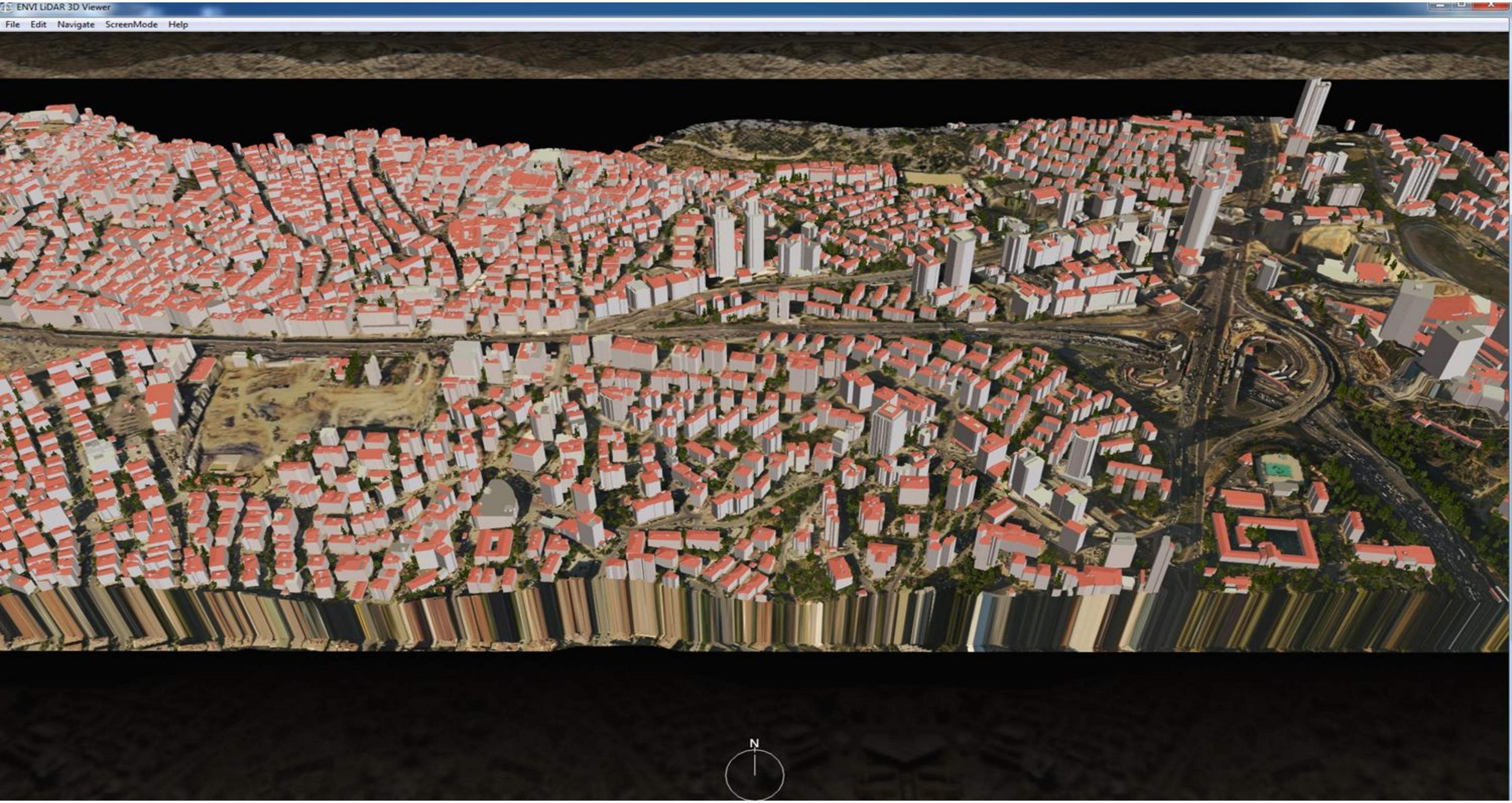
File
Edit
Element
Settings
Tools
Utilities
Workspace
Applications
Window
Help
Default
View 1 - Front, Default
TerraScan
Default
0.0000
Z
84.5919
Element Selection > Identify element to add to set
Default

3D Kent Modeli (CityGML)



ENVI LiDAR 3D Viewer
File Edit Navigate ScreenMode Help
N


ENVI LiDAR 3D Viewer
File Edit Navigate ScreenMode Help
N

LOD3 Model


V-Ray Adv 2.10.01 | file: subyan.max | frame: 00000 | primitives: 18618 | render time: 0h 3m 12.2s

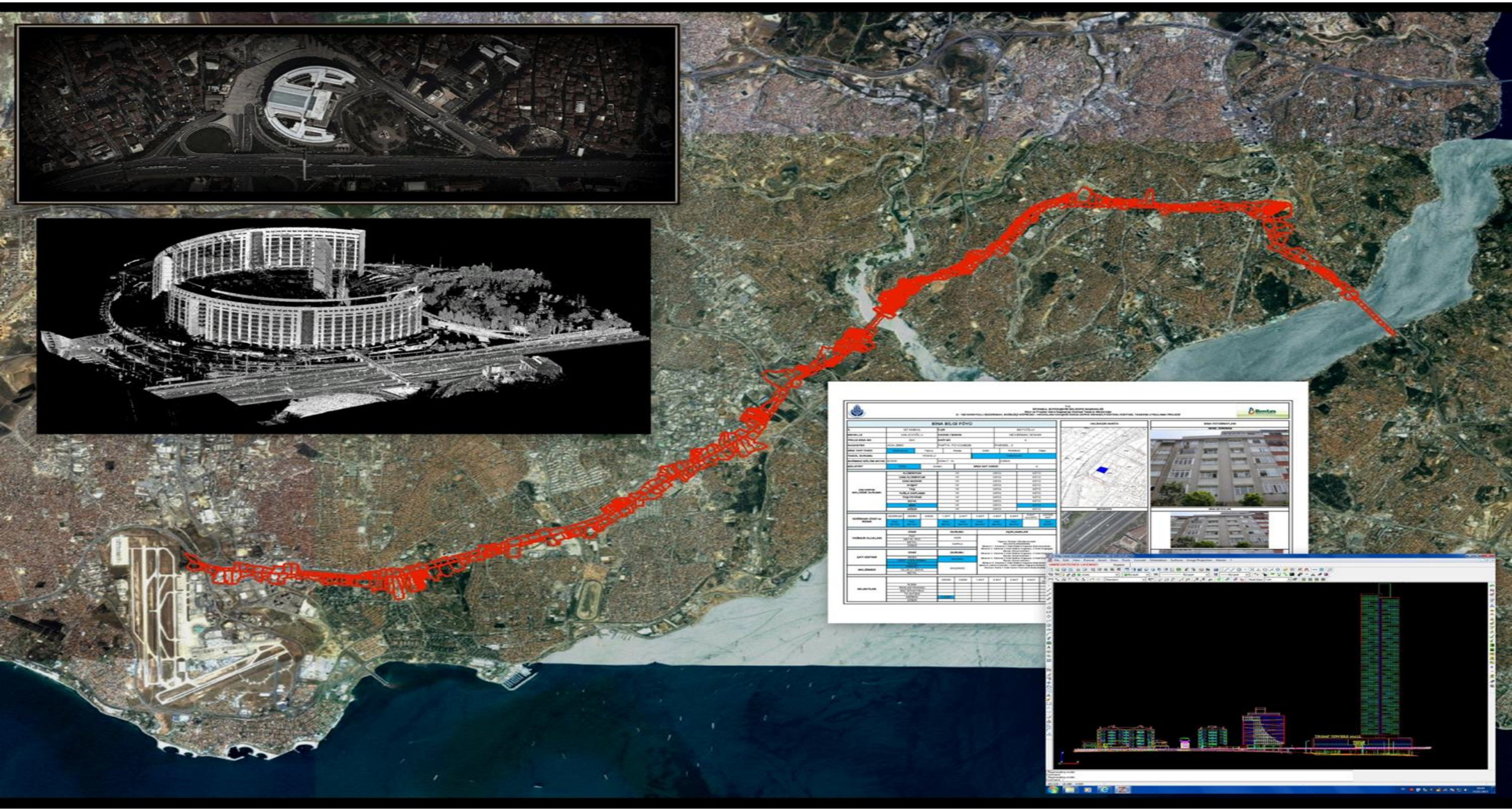

V-Ray Adv 2.10.01 | file: trabzon_tasarim_son_eklemeler_cikmadanonce_yedek.max | frame: 00000 | primitives: 840 | render time: 0h 18m 7,8s

Yersel Lazer Tarama

- RiEGL VZ-400
- Leica ScanStation C10
- Tarihi yarımada da 1000’e yakın anıtsal ve sivil mimari örneği bina LOD3 düzeyinde modellenmiştir
- ZMAP→3D CAD Çizimi

Mobil Lazer Sistemleri

- D100’ün 100km lik kısmı Riegl VMX-450
- 3D CAD çizimleri
  katı model üretimi
- Kentsel tasarım
  projesi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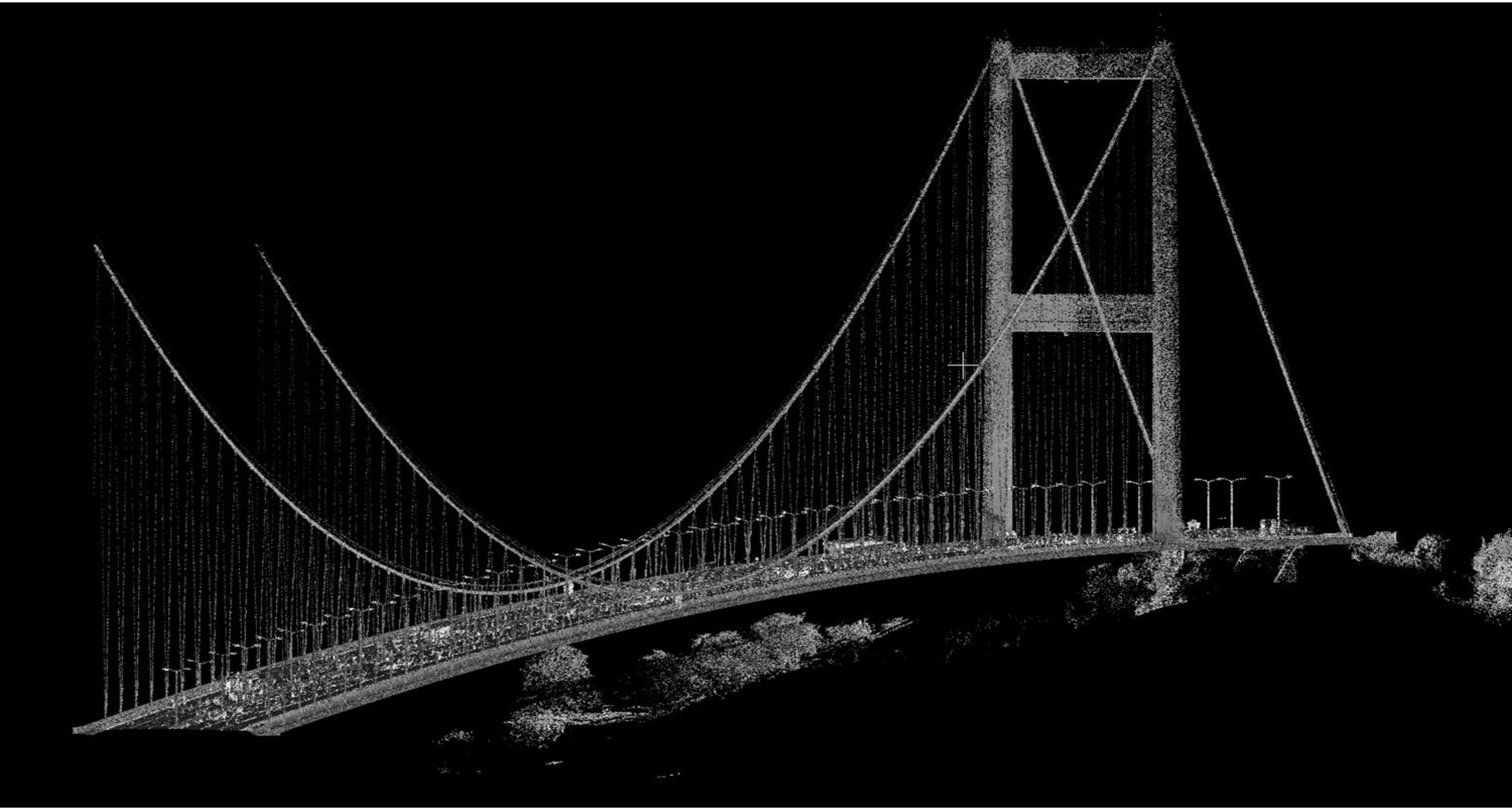
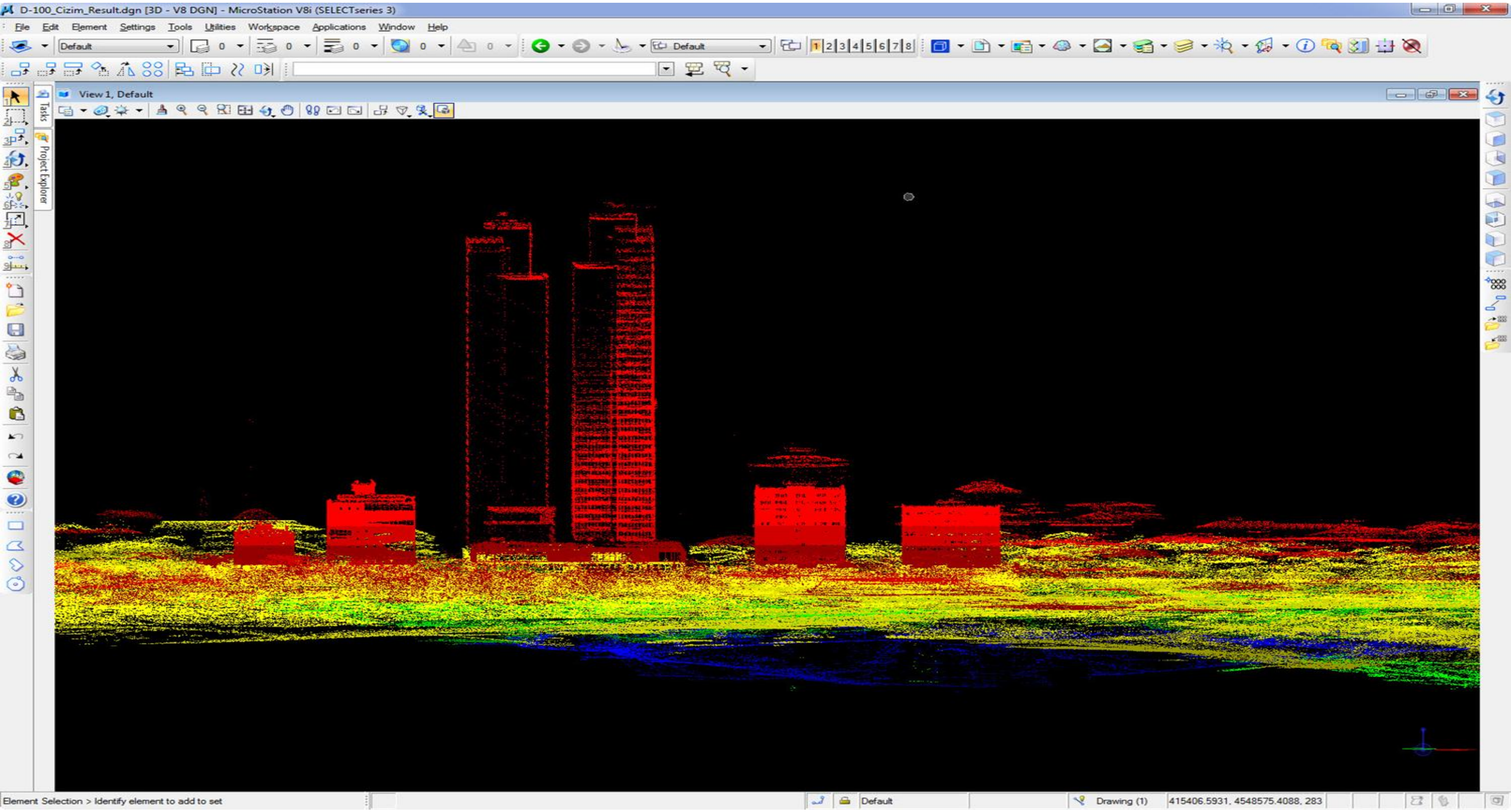
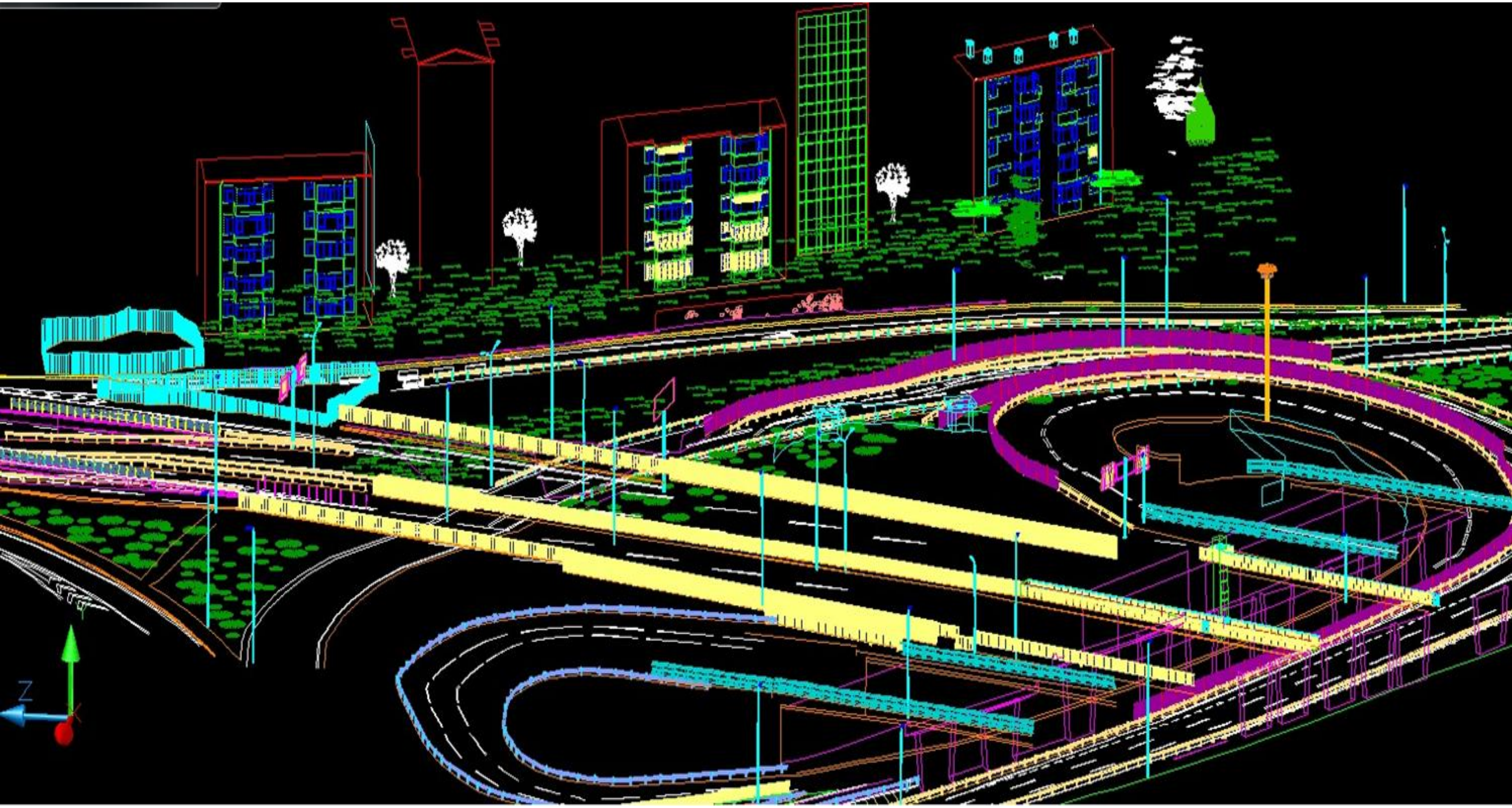


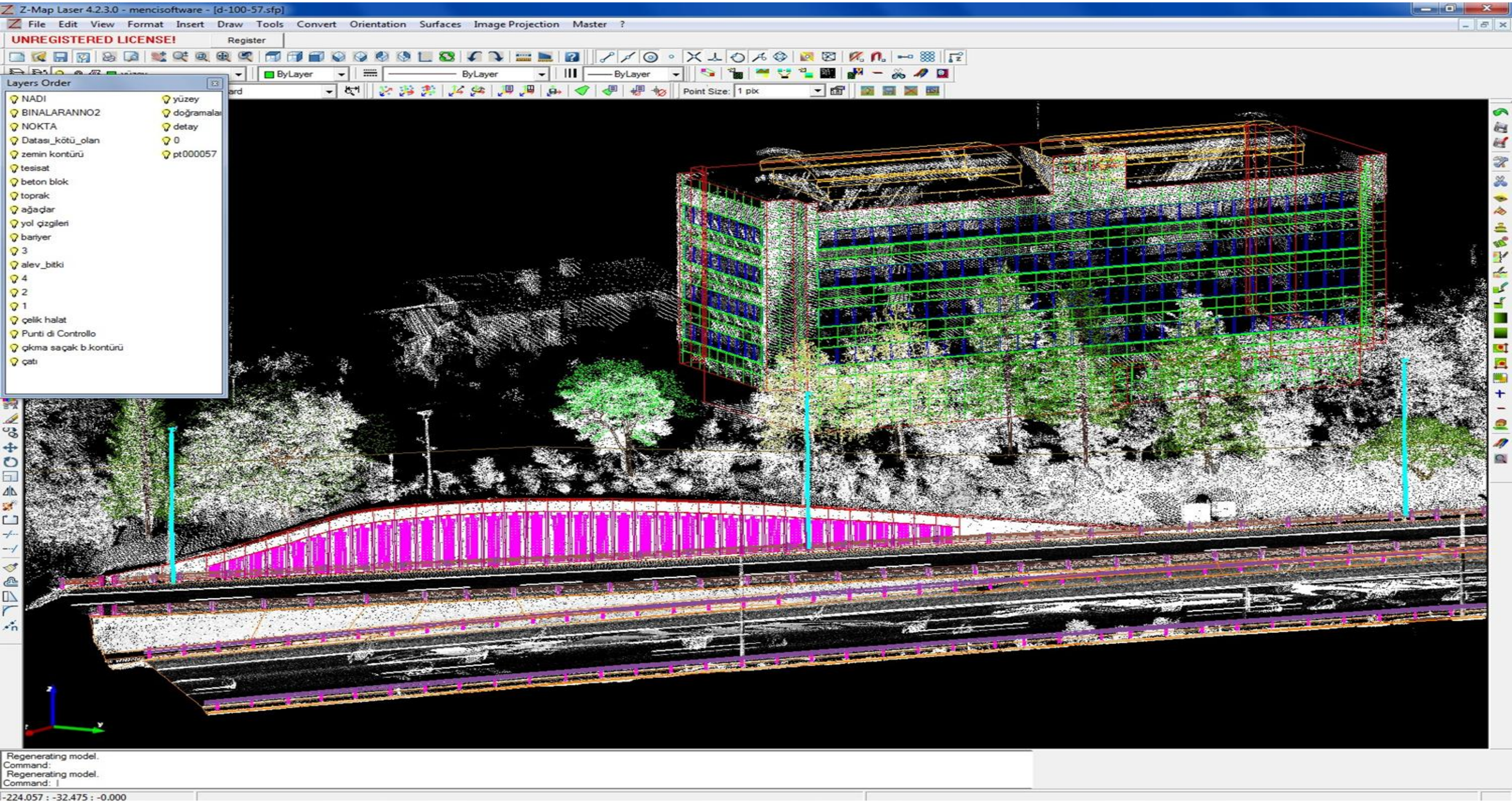

D-100_Cizim_Result.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 3)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
Default
View 1, Default
Tasks
Project Explorer
Element Selection > Identify element to add to set
Default
Drawing (1)
415406.5931, 4548575.4088, 283

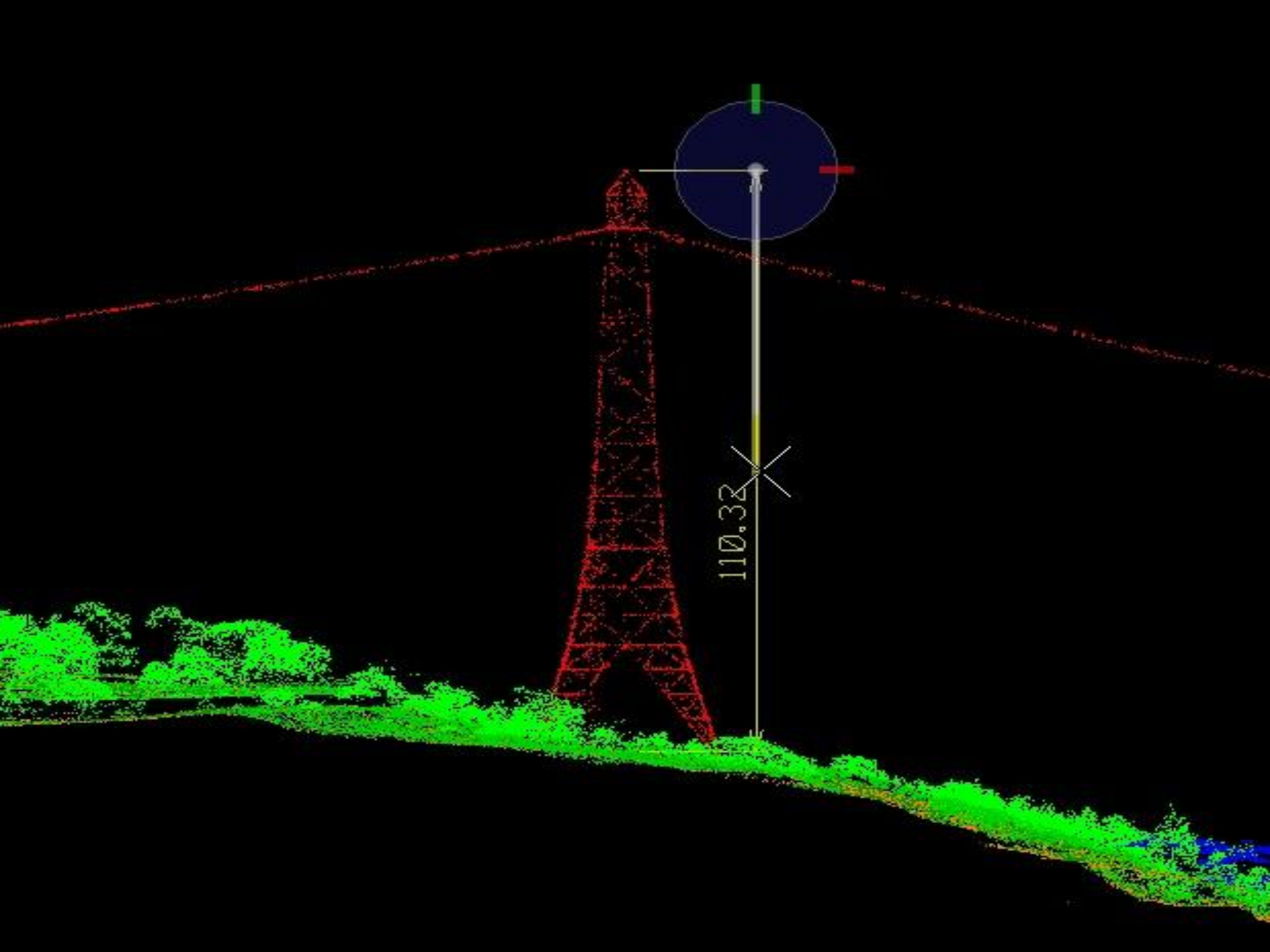
3D CAD Çizimi



Doku görüntüleri

3D CAD çizimi ve nokta bulutu

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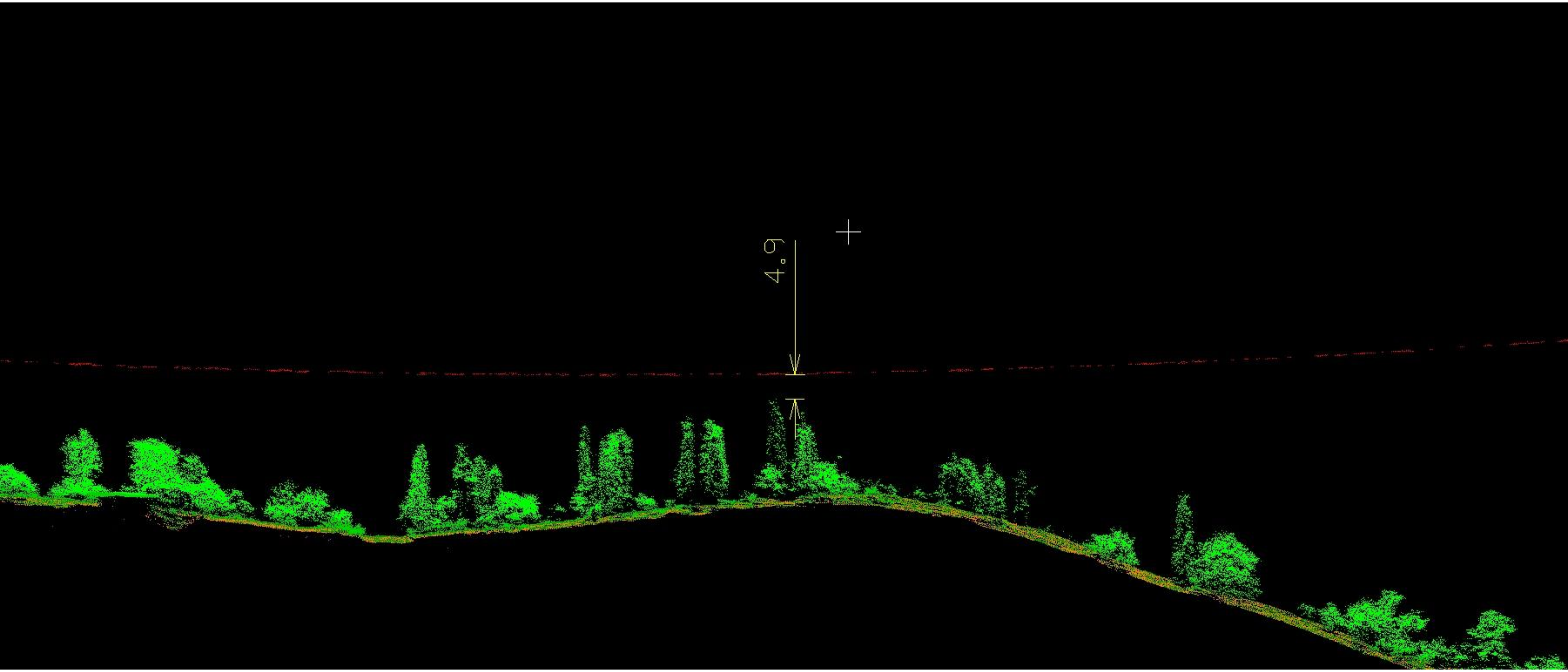
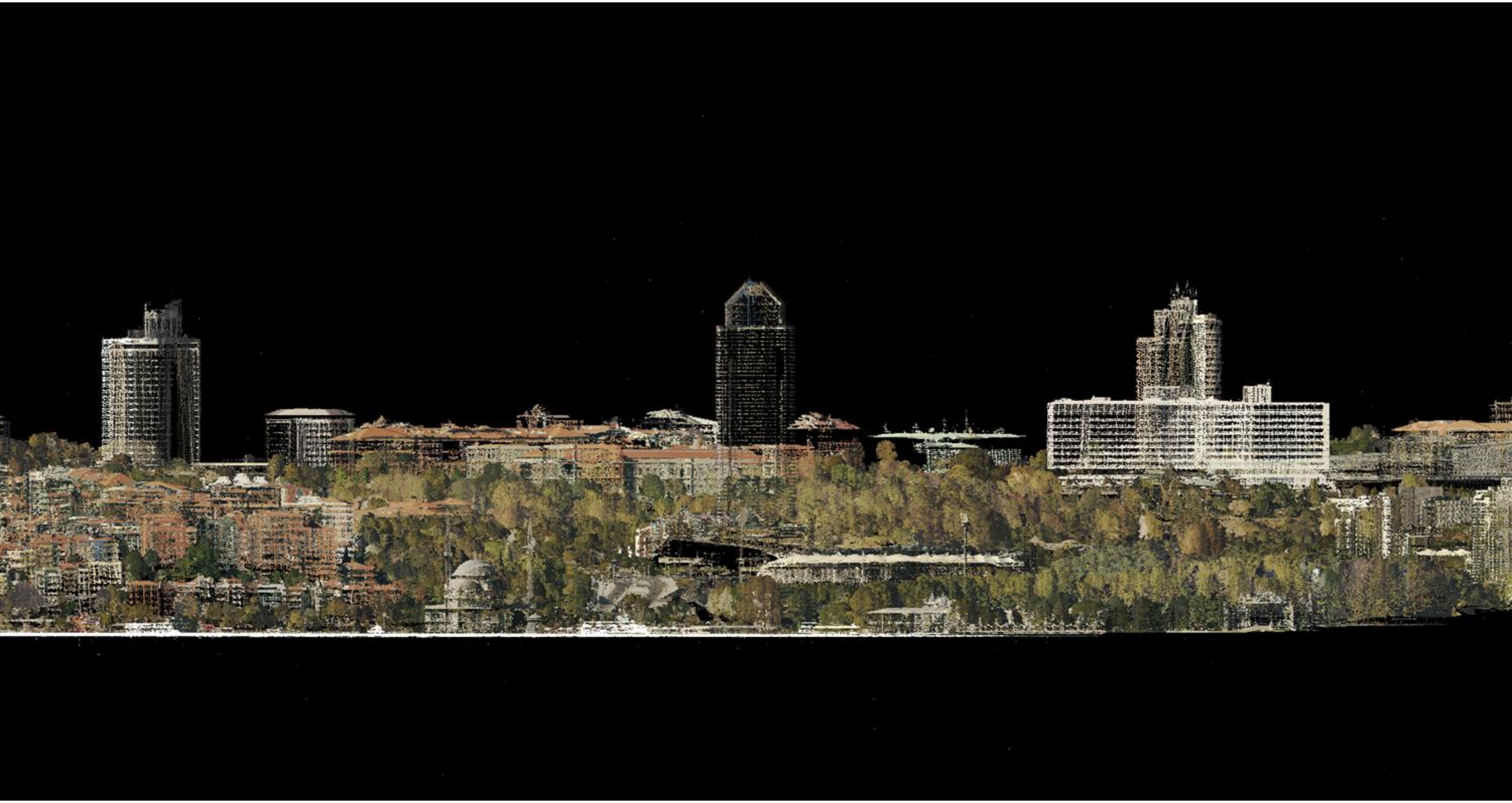

4.9

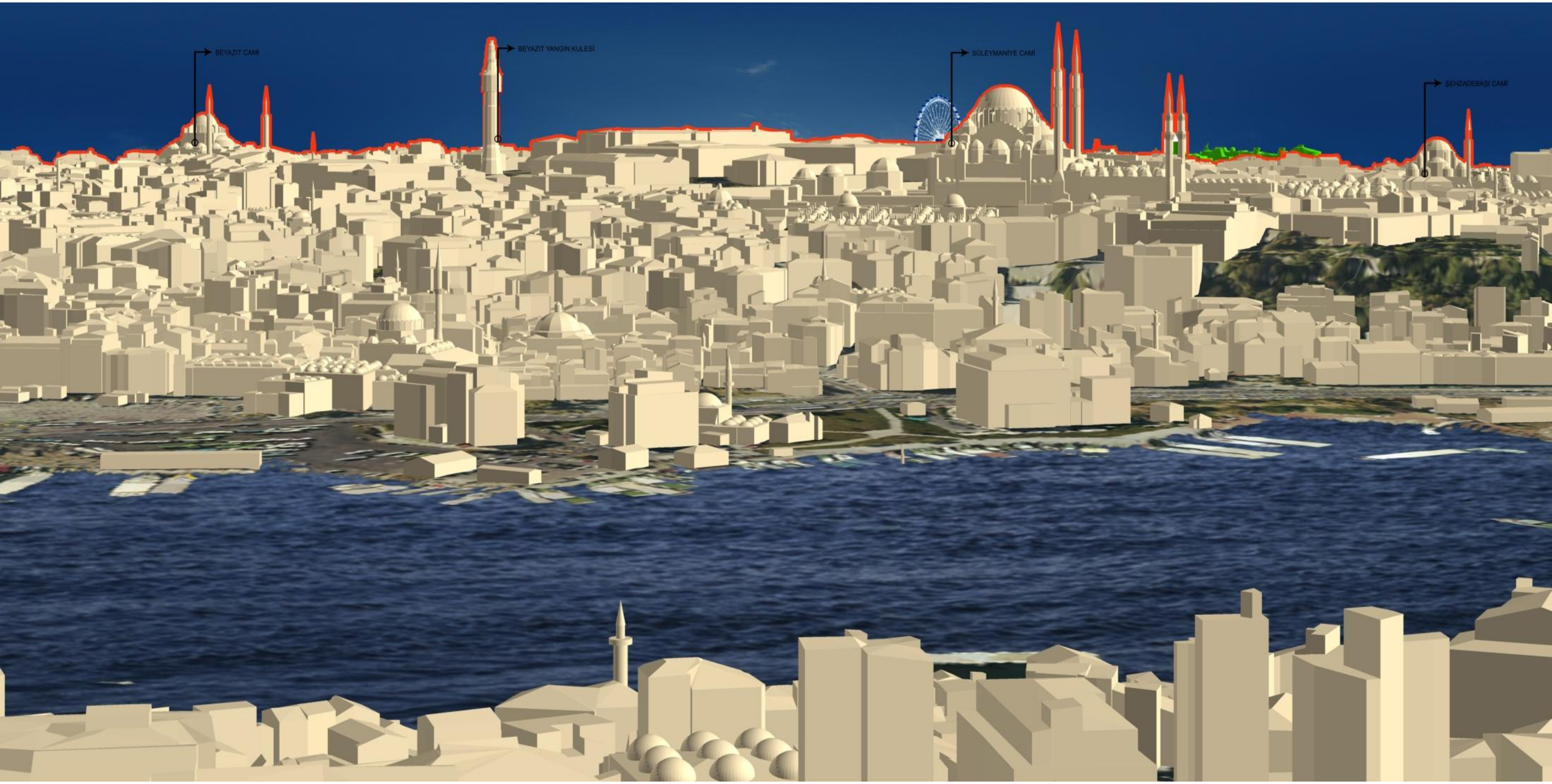
192.6 kW
Günlük
-92.8 kW
Güneş Paneli
0.0 kW
-64.1 kW
Saat
04:00
Gün
21
Ay
5
Tek Cam, Ahşap Çerçeve
Tuğla, İzolasyon, Tuğla
Eğimli Kiremit Kaplama
Ahşap Çerçeveli Ahşap Kapı
Saatlik Hesap
Günlük Hesap
Sahneler


1755.9 kW
Günlük
847.6 kW
Güneş Paneli
Eğiklik
32.49
Güney Açı
50
Genişlik
2
Yükseklik
3
Güney Açısı 50.0°
Eğiklik 32.5°
Panel Alanı 6.00 m²
Toplanan Güneş Enerjisi
Yıllık 8790.1 kW
1 - Ocak 263.2 kW
2 - Şubat 356.8 kW
3 - Mart 601.9 kW
4 - Nisan 739.7 kW
5 - Mayıs 1048.4 kW
6 - Haziran 1109.5 kW
7 - Temmuz 1187.2 kW
8 - Ağustos 1130.7 kW
9 - Eylül 954.5 kW
10 - Ekim 727.3 kW
11 - Kasım 430.4 kW
12 - Aralık 240.6 kW
61.6 kW
Gün
21
Ay
8
Saatlik Hesap
Günlük Hesap
Tek Cam, Ahşap Çerçeve
Tuğla, İzolasyon, Alçıpan
Eğimli Tahta Kaplama
Ahşap Çerçeveli Ahşap Kapı (%25
Sahneler

Siluet analizi




BÜYÜK ÇAMLICA
TV KULESİ
SULTANAHMET CAMİ
AYASOFYA MÜZESİ
SELİMİYE KIŞLASI
HAYDARPAŞA ÜNİVERSİTESİ
HAYDARPAŞA YERLEŞKESİ
GÜLHANE ASKERİ TIP
AKADEMİSİ
TCDD LİMAN İŞLT. GÜMRÜKLÜ
EŞYA AMBARLARI

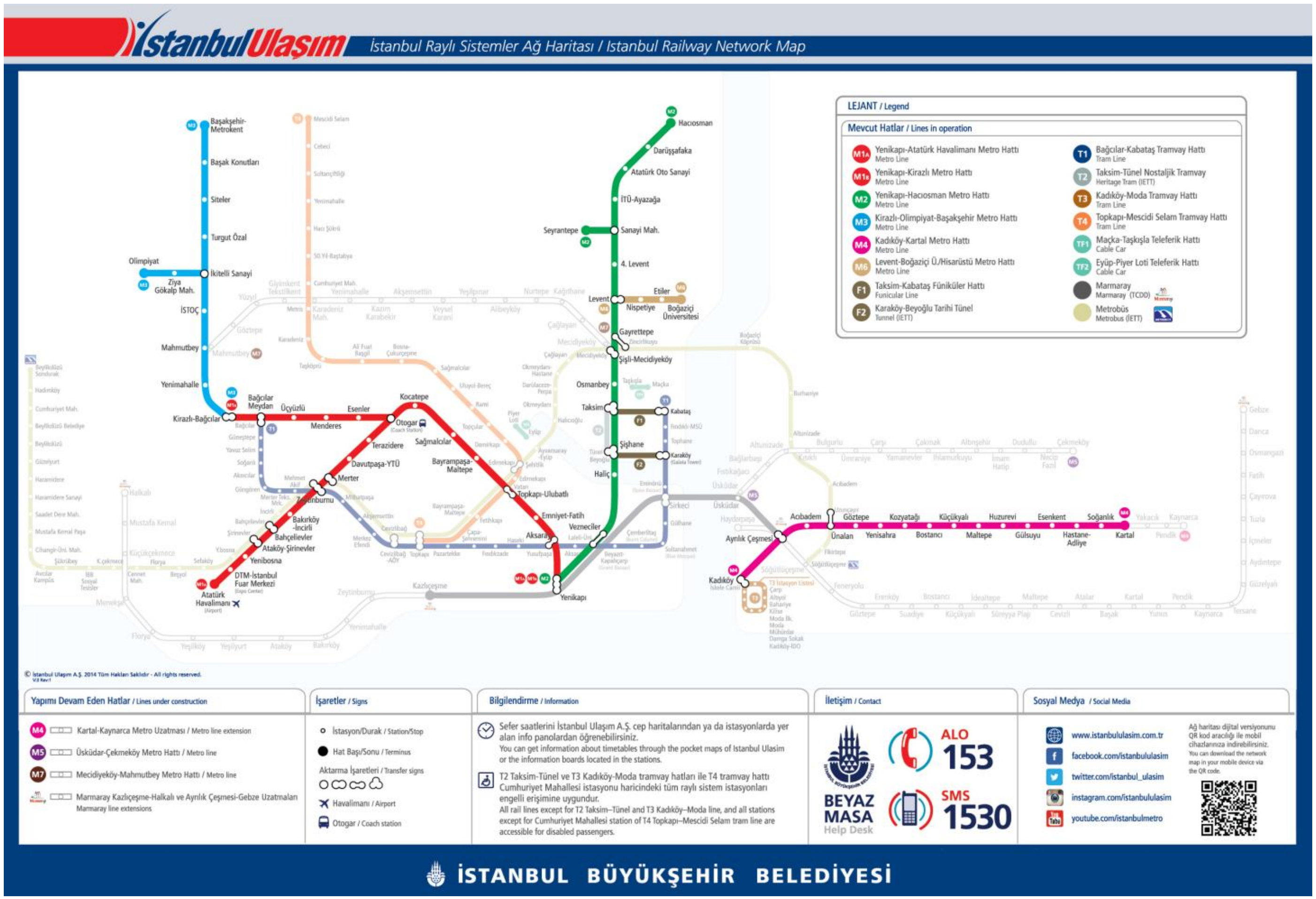


Galata Tower ----- Yenikapi

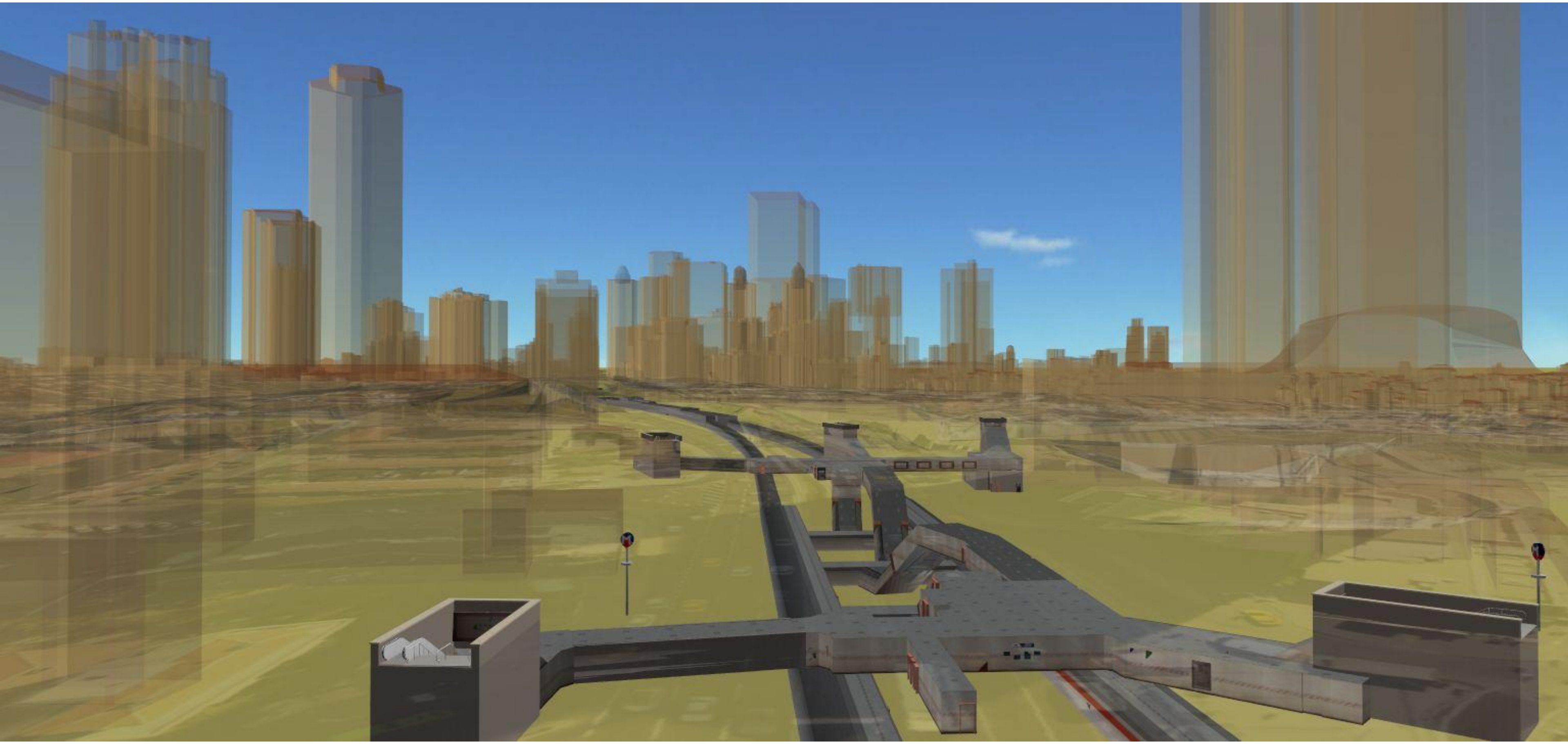
Bosphorus Bridge --- Yenikapi

Harem ---- Yenikapi

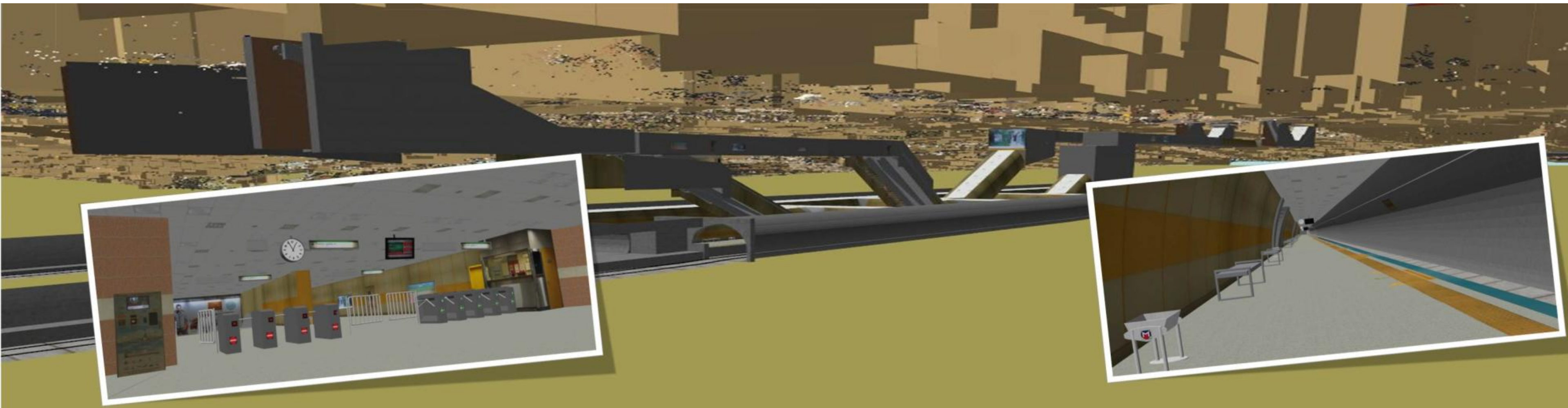
Metro Hatları

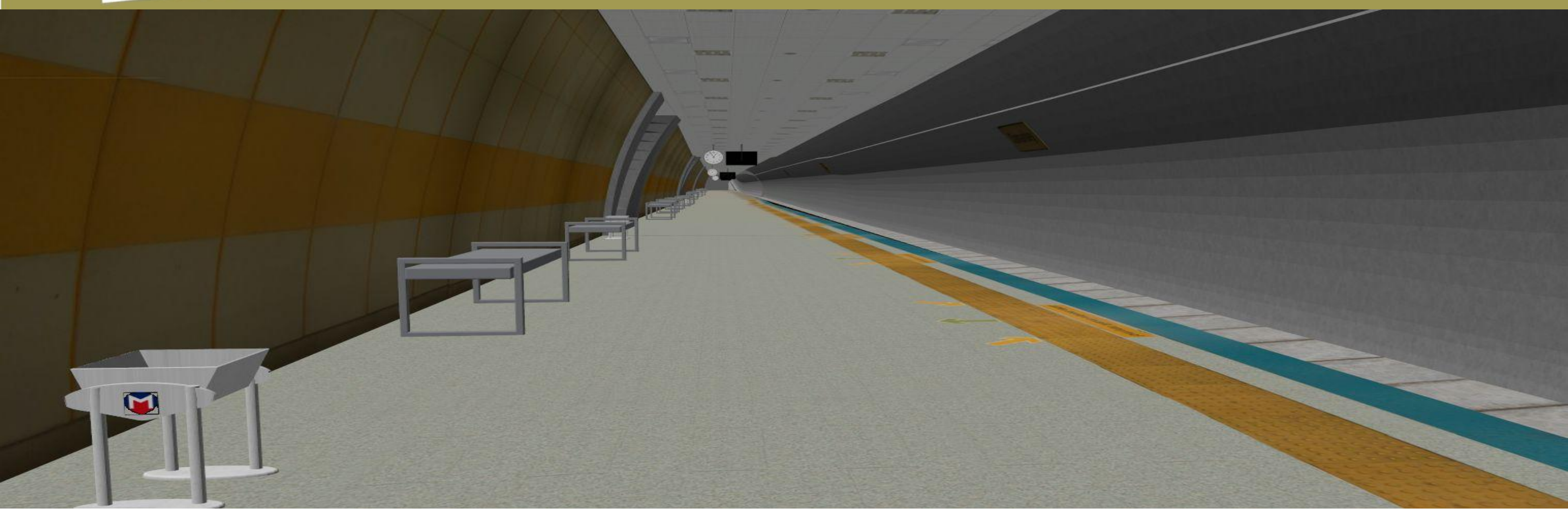


3D Metro



3D Metro



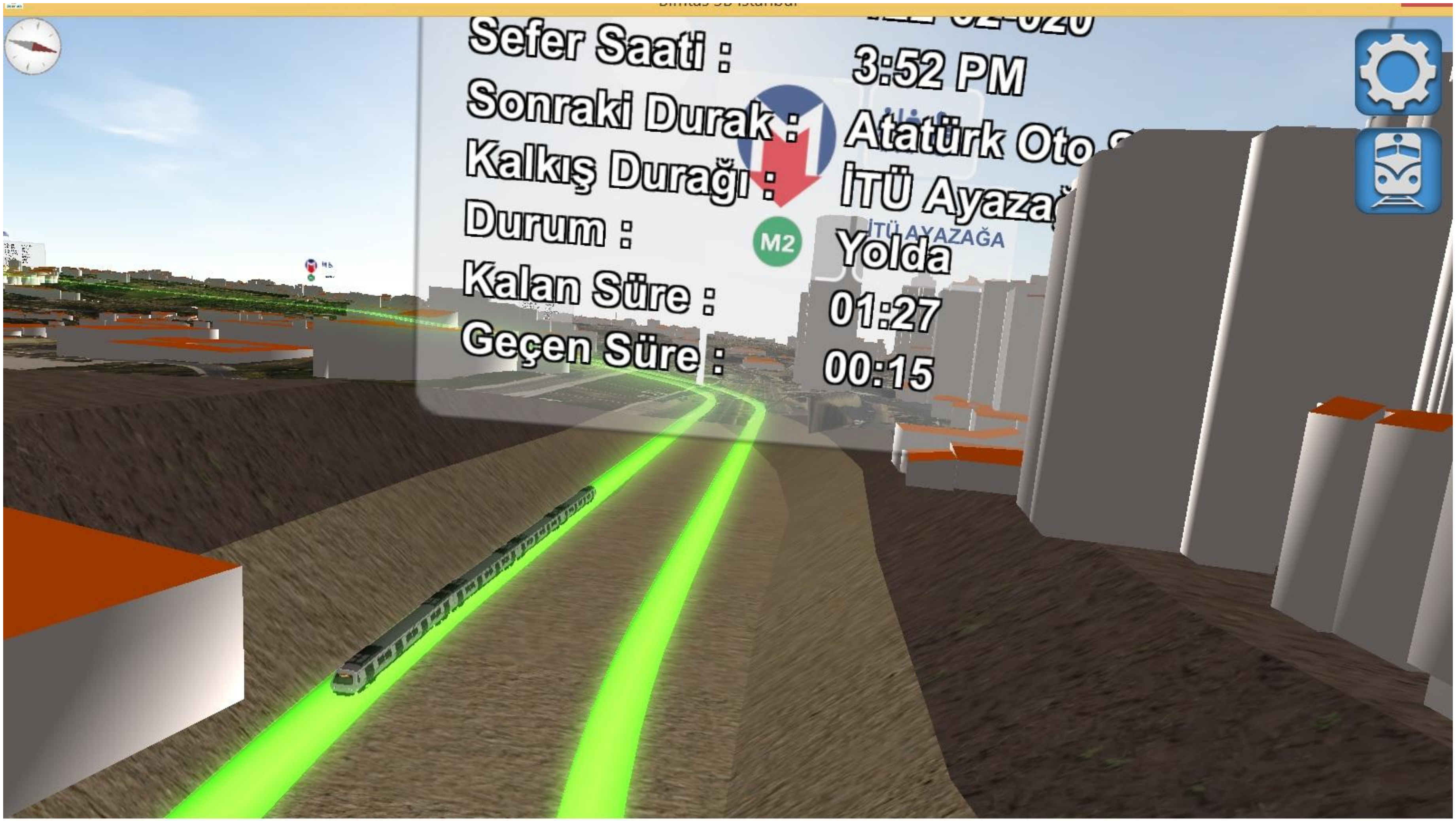


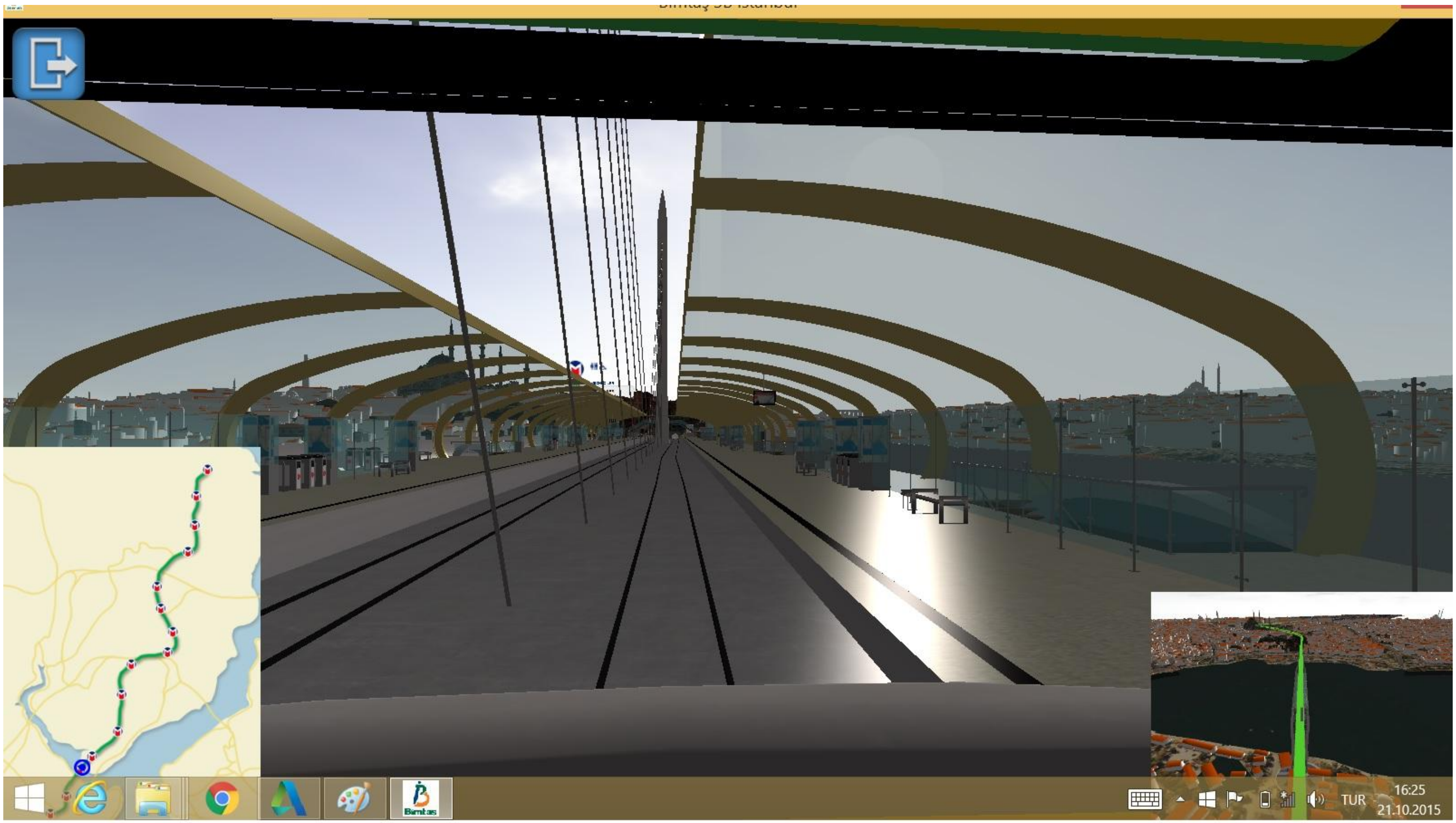
Sefer Simülasyonu (Günde 790 sefer)

					Peak Saat			Peak Olmayan Saat			İSTASYON ARASI GİDİŞ SÜRESİ
Station	Mesafe (m)	Yükseklik (mm)	Ortalama Hız (km/h)	Yüksek Hız (km/h)	Varış Zamanı hh:mm:ss	Durma m:ss	Ayrılış Zamanı hh:mm:ss	Varış Zamanı hh:mm:ss	Durma m:ss	Ayrılış Zamanı hh:mm:ss	
Kartal	0	3574	0	80	00:00:00	00:01:30	00:01:30	00:00:00	00:01:30	00:01:30	00:00:00
Soğanlık	1765	3574	51.66	80	00:02:03	00:00:25	00:02:28	00:02:03	00:00:25	00:02:28	00:02:03
Hastane	1273	3574	38.51	80	00:04:02	00:00:25	00:04:27	00:04:02	00:00:25	00:04:27	00:01:59
Esenkent	1098	3574	31.12	80	00:06:09	00:00:25	00:06:34	00:06:09	00:00:25	00:06:34	00:02:07
Gülsuyu	1042	3574	32.62	80	00:08:04	00:00:25	00:08:29	00:08:04	00:00:25	00:08:29	00:01:55
Huzurevi	974	3574	35.06	80	00:09:44	00:00:25	00:10:09	00:09:44	00:00:25	00:10:09	00:01:40
Maltepe	887	3574	29.84	80	00:11:31	00:00:25	00:11:56	00:11:31	00:00:25	00:11:56	00:01:47
Küçükyalı	2089	3574	42.73	80	00:14:27	00:00:25	00:14:52	00:14:27	00:00:25	00:14:52	00:02:56
Bostancı	2239	3574	47.41	80	00:17:17	00:00:25	00:17:42	00:17:17	00:00:25	00:17:42	00:02:50
Kozyatağı	1284	3574	33.99	80	00:19:33	00:00:25	00:19:58	00:19:33	00:00:25	00:19:58	00:02:16
Yenisahra	1357	3574	54.28	80	00:21:03	00:00:25	00:21:28	00:21:03	00:00:25	00:21:28	00:01:30
Göztepe	2015	3574	36.64	80	00:24:21	00:00:25	00:24:46	00:24:21	00:00:25	00:24:46	00:03:18
Ünalan	977	3574	30.85	80	00:26:15	00:00:25	00:26:40	00:26:15	00:00:25	00:26:40	00:01:54
Acıbadem	1386	3574	38.68	80	00:28:24	00:00:25	00:28:49	00:28:24	00:00:25	00:28:49	00:02:09
Ayrılık Çeşmesi	1466	3574	38.52	80	00:30:41	00:00:25	00:31:06	00:30:41	00:00:25	00:31:06	00:02:17
Kadıköy	1333	3574	37.20	80	00:32:50	00:01:30	00:34:20	00:32:50	00:01:30	00:34:20	00:02:09

1765
3038
4136
5178
6152
7039
9128
11367
12651
14008
16023
17000
18386
19852
21185
21185

3D Simülasyon




TUR
16:25
21.10.2015


Bimtaş 3B İstanbul
29.80
Enlem : 41.022928, Boylam : 28.059367
Batı : 420877.67, Kuzey : 4545388.35
Yükseklik : 155.4

Teşekkür Ederim.