Airborne Coastal survey for KHOA

June 12, 2014

Korea Hydrographic and
Oceanographic Administration

Summary

'13 survey operations

- Survey Area
- Application Equipment and Install
- Calibration
- Validation (Multi-beam vs. CZMIL)
- Data processing and Results

'14 survey operations(planned)

Q & A

Application Equipment & S/W

Airborne Lidar Bathymetry

* CZMIL(Coastal Zone Mapping and Imaging Lidar)

Hyper-Spectral Sensor

* CASI-1500

Software

* HydroFusion/TerraSolid

** Caris Hips & Sips/Caris GIS

Survey Period and Locations

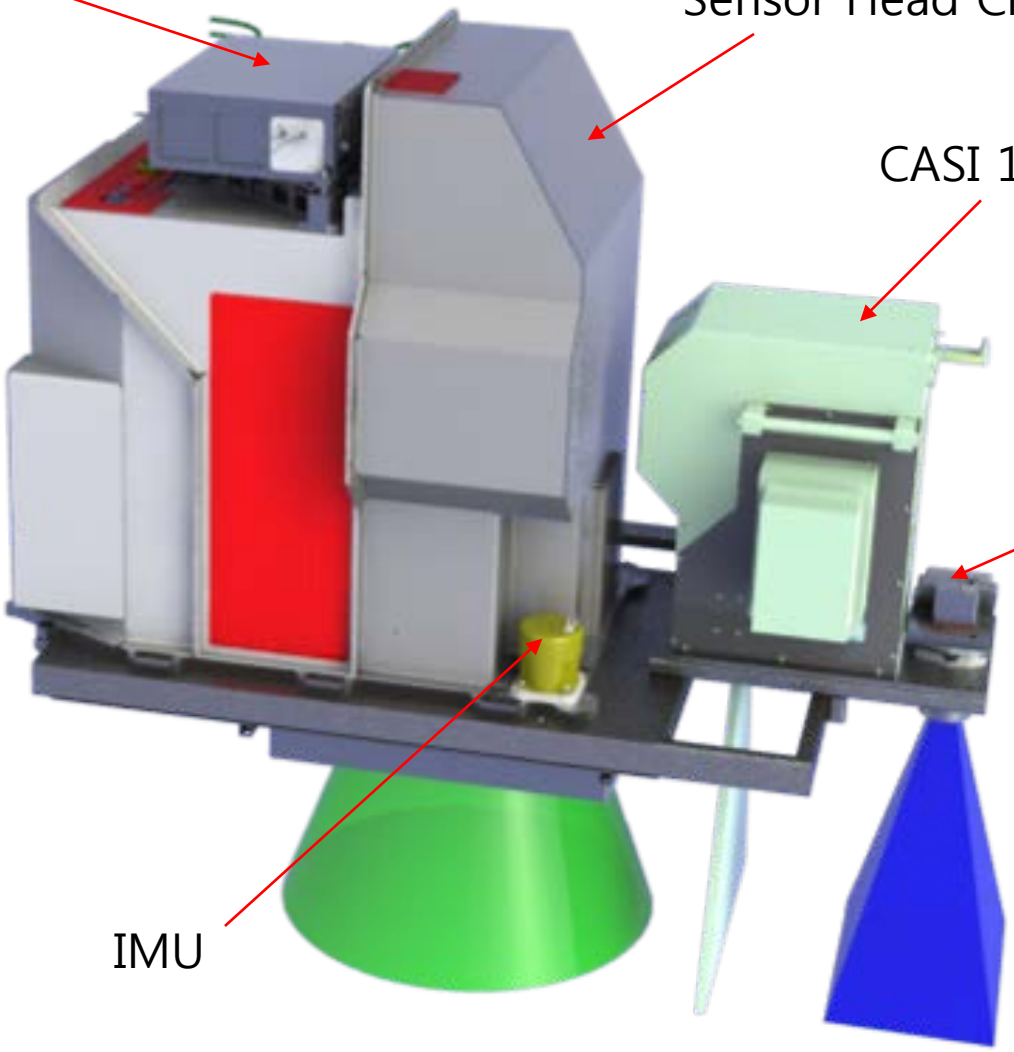
- September 18-22, 2013 (1st)
  November 1-8, 2013 (2nd)

- Jeju Island – Shallow & Clear Water Area
  South Sea – Aquaculture Area
  East Sea – Deep & Clean Water Area
  West Sea – Shallow & Turbid Water Area

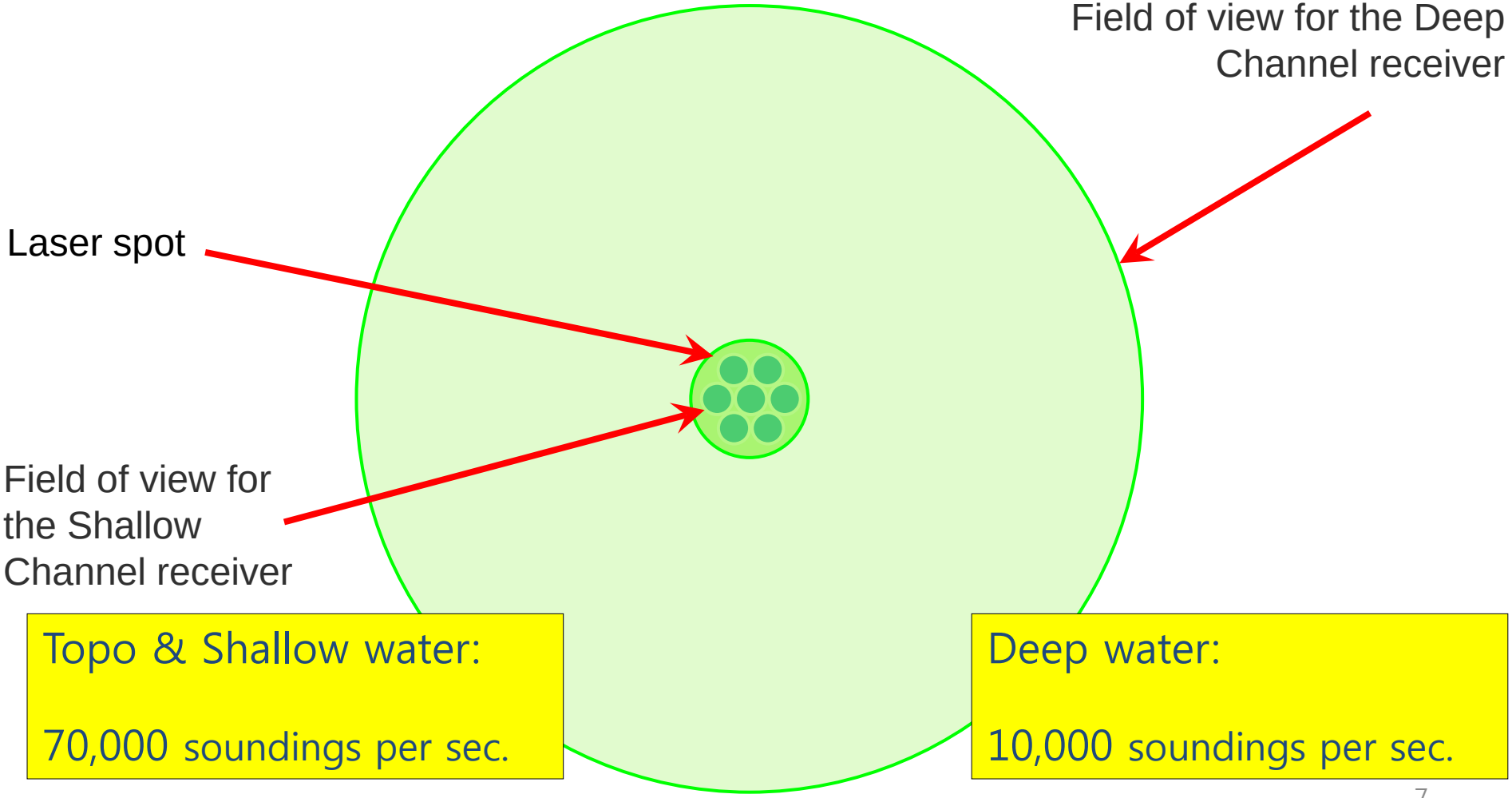
Summary

- ~2.75 TB of Raw Lidar Data Collected
  - 1st Trip: 9 Blocks collected at 400m, 600m or 800m
  - 2nd Trip: 17 Blocks collected at 400m, 600m or 800m

Summary


Laser
Sensor Head Chassis
CASI 1500 Spectrometer
Optech T-4800
Metric Camera
(16 Mpixel)
IMU

One Laser for Deep and Shallow Water Depth Measurement



Topo & Shallow water:

70,000 soundings per sec.

Deep water:

10,000 soundings per sec.

Equipment Install

Calibration

Topo calibration

* Muan Airport

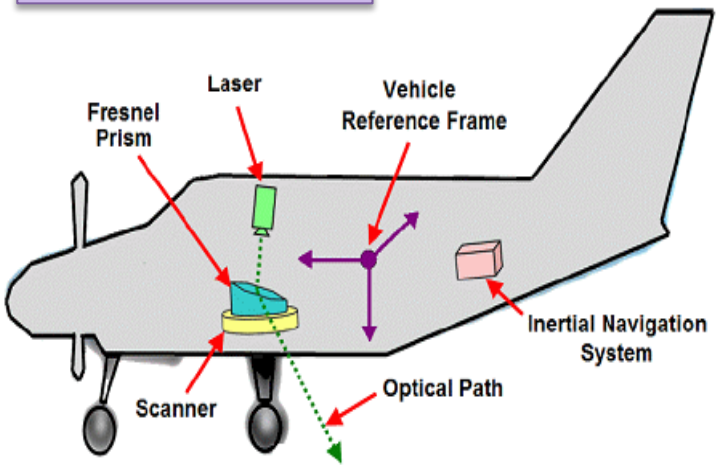
Bathy calibration

* '12 Multi-beam site(2 port)

Topographic

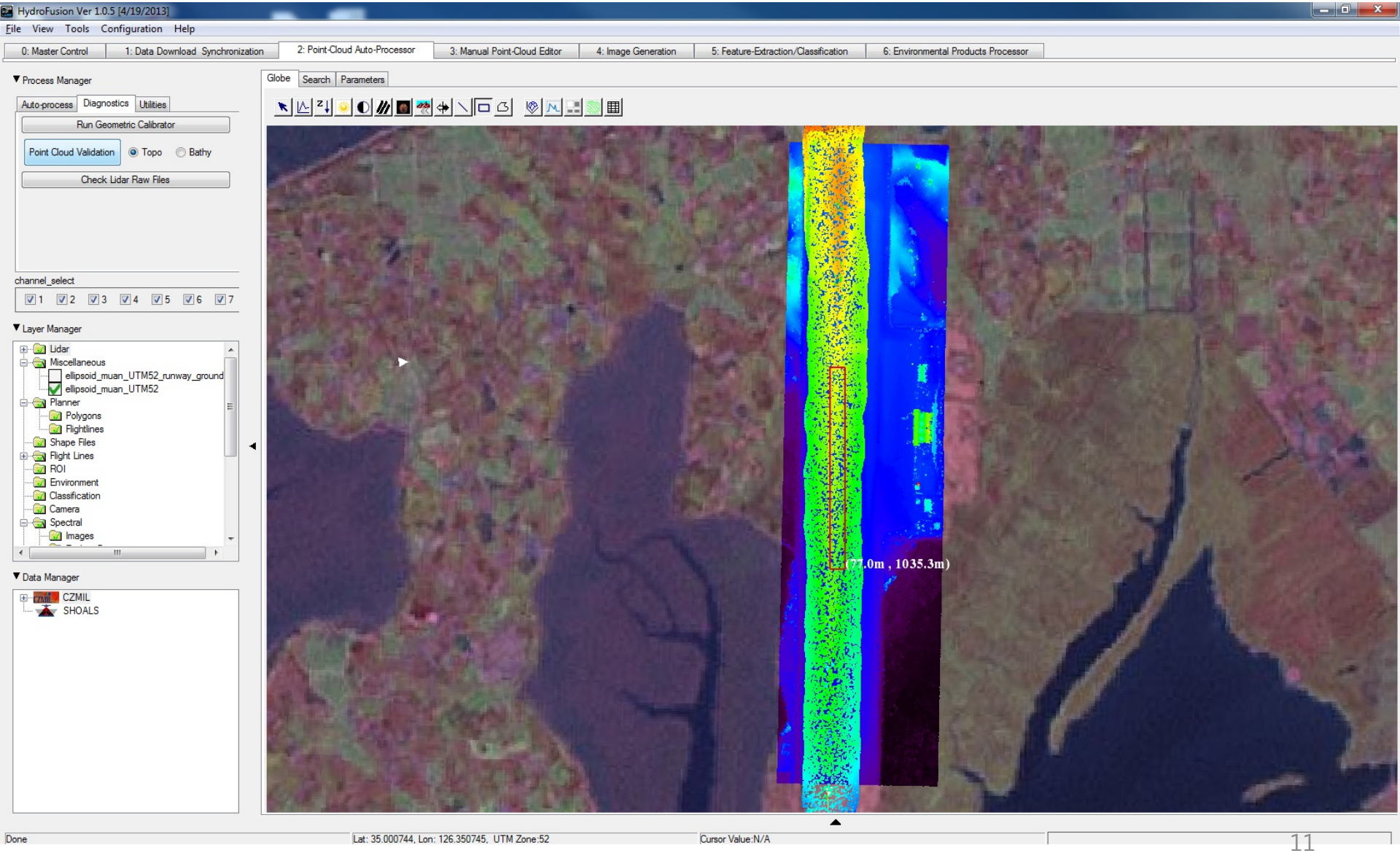
Bathymetric

Sensor location



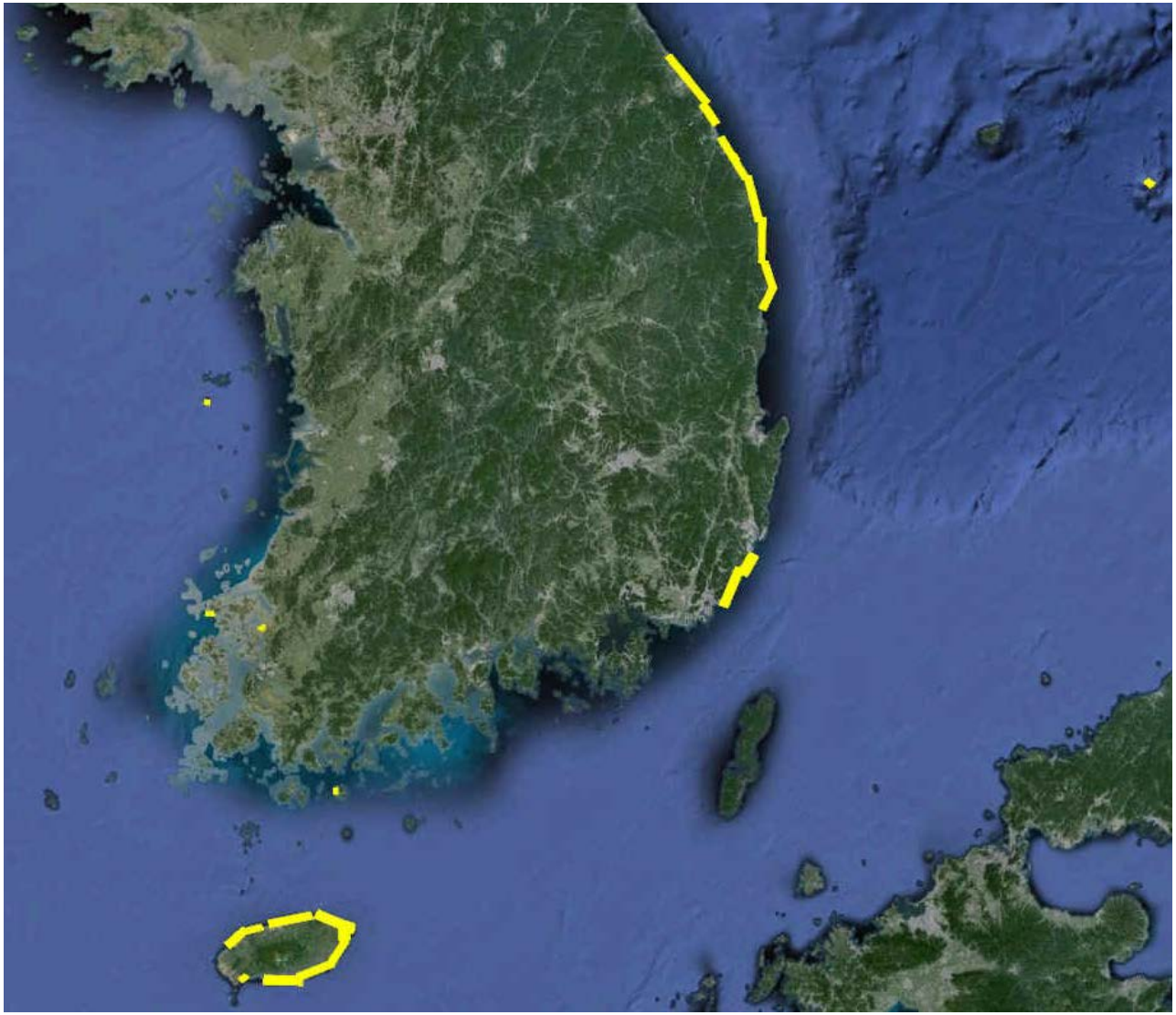
Calibration

2013 Survey Summary



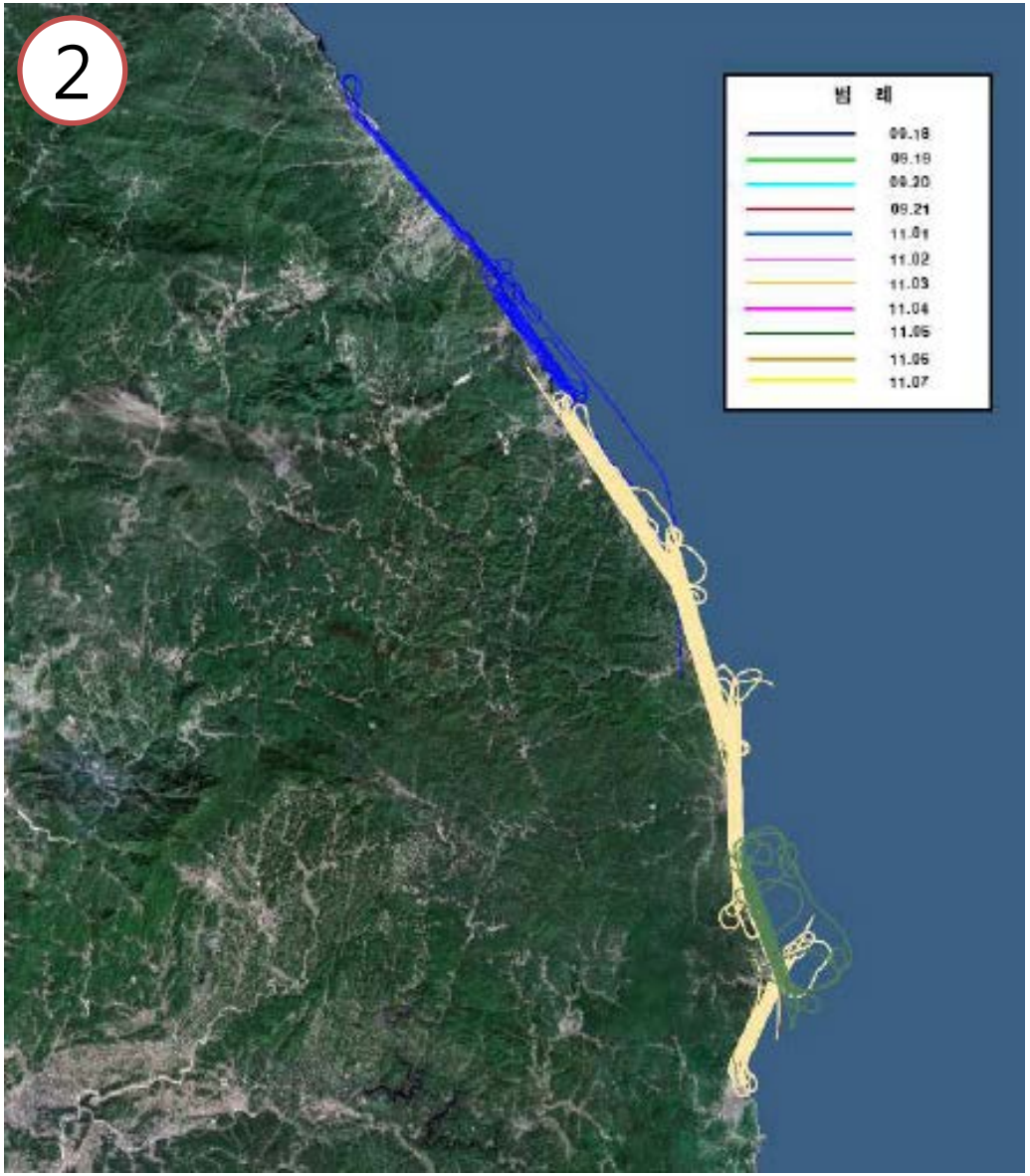
2013 Survey Summary

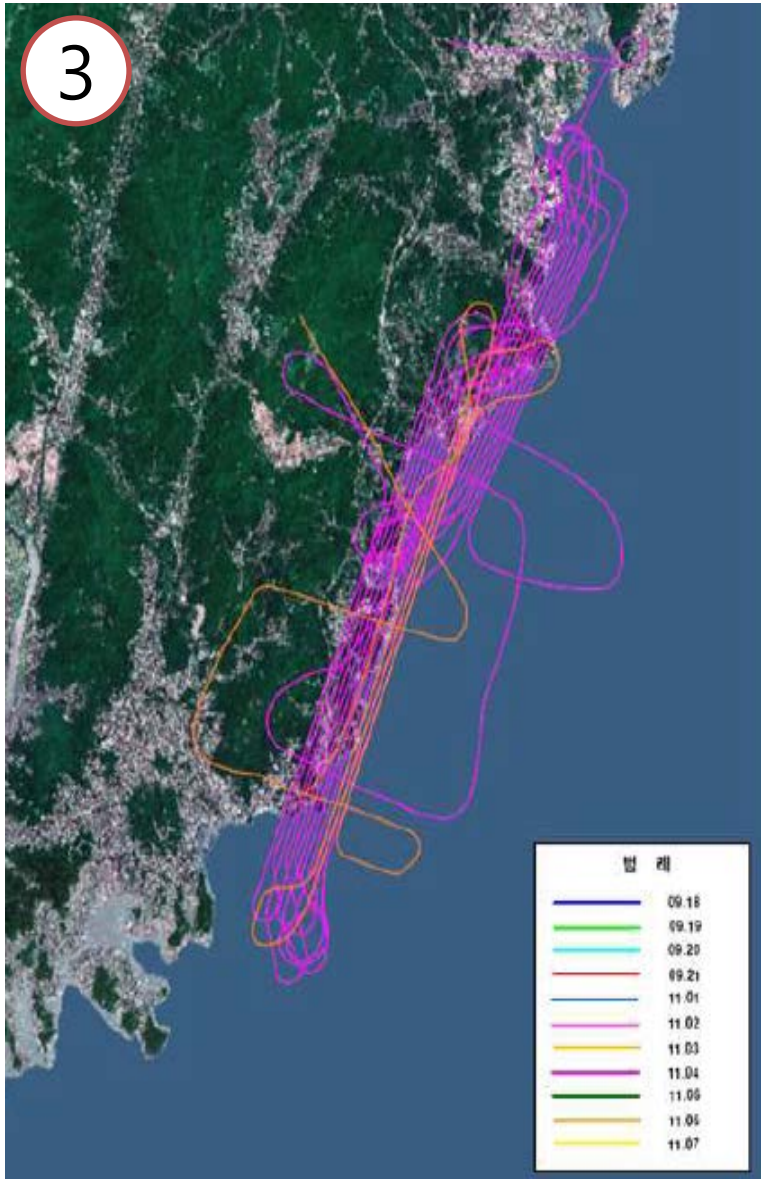
Survey Area



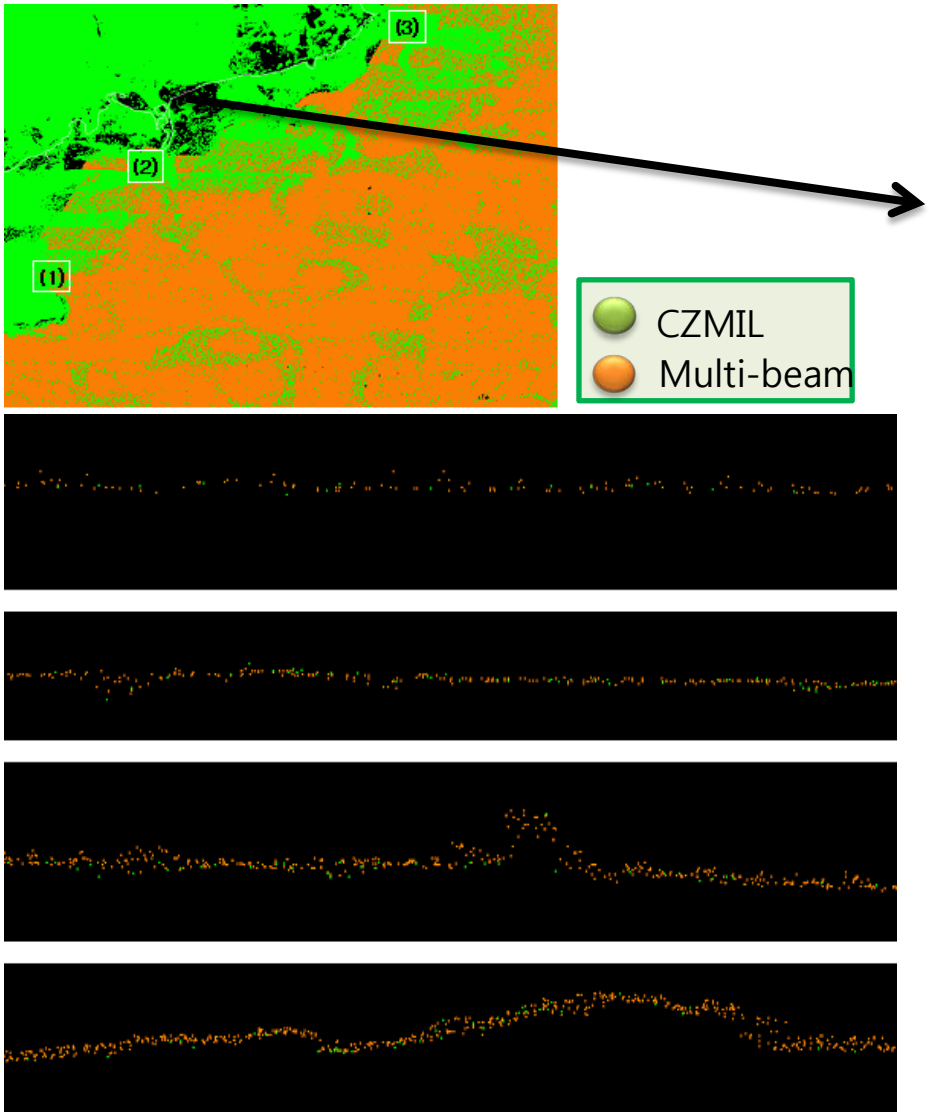
Data Collect

* Sep. 18~21(1st), Nov. 1~7(2nd)


2
범 례
09.18
09.19
09.20
09.21
11.01
11.02
11.03
11.04
11.05
11.06
11.07

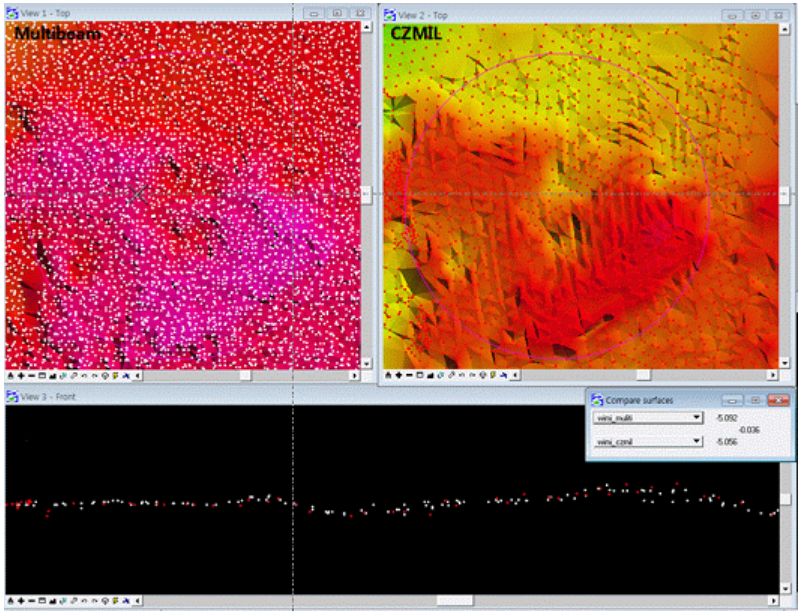

3
범 례
09.18
09.19
09.20
09.21
11.01
11.02
11.03
11.04
11.05
11.06
11.07

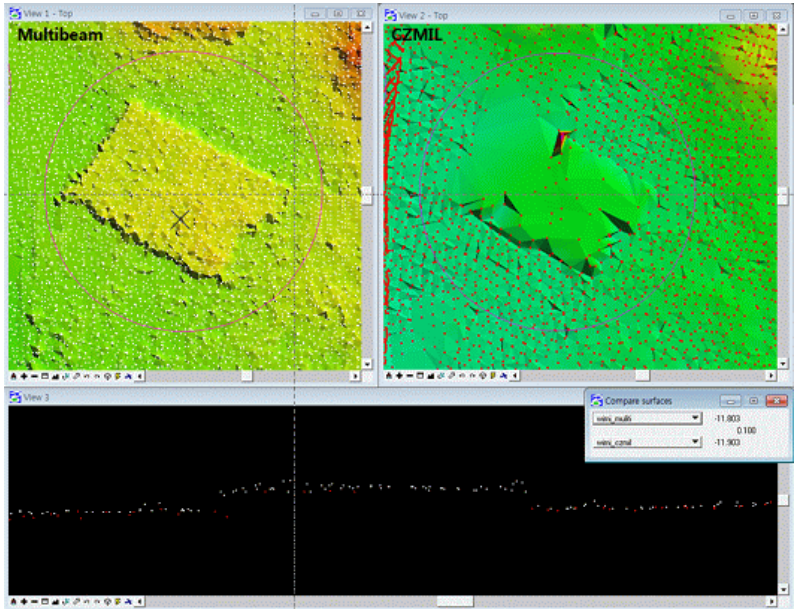
Multi-beam vs. CZMIL

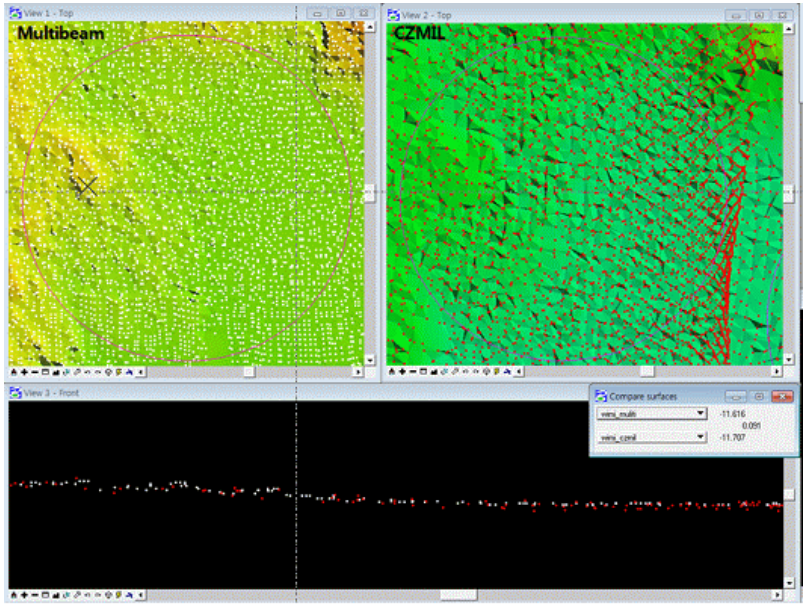


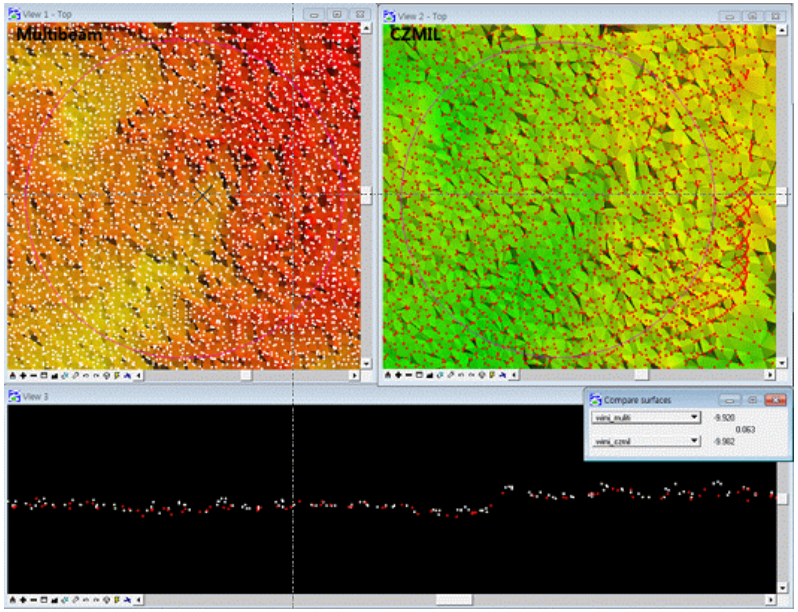
Easting	Northing	CZMIL(Z)	Multi Beam(z)	차이(Dz)
276823.21	3679927.70	-6.62	-6.569	0.051
276820.32	3679927.54	-6.67	-6.880	-0.21
276822.68	3679933.99	-6.36	-6.104	0.256
276818.62	3679930.53	-6.18	-6.278	-0.098
276812.03	3679931.25	-6.39	-6.795	-0.405
276810.01	3679929.48	-6.65	-6.922	-0.272
276822.64	3679943.60	-6.76	-6.711	0.049
276801.36	3679928.22	-6.47	-6.495	-0.025
276822.84	3679952.20	-6.60	-6.717	-0.117
276821.15	3679950.13	-6.61	-6.658	-0.048
276819.47	3679948.11	-6.70	-6.587	0.113
276817.71	3679946.12	-6.64	-6.621	0.019
276808.41	3679936.65	-6.07	-6.113	-0.043
276800.53	3679929.47	-6.47	-6.690	-0.22
276821.72	3679953.68	-6.90	-6.803	0.097
276820.04	3679951.60	-6.77	-6.605	0.165
276818.35	3679949.61	-6.59	-6.330	0.26
…	…	…	…	…
276792.10	3679940.79	-5.92	-5.982	-0.062
276786.60	3679935.00	-6.36	-6.437	-0.077
276784.70	3679933.12	-6.54	-6.489	0.051
276780.79	3679929.51	-6.70	-6.975	-0.275
276805.79	3679960.79	-6.69	-6.617	0.073
276789.71	3679951.81	-5.24	-5.297	-0.057
276786.57	3679947.51	-5.94	-5.808	0.132
276793.05	3679959.74	-5.73	-5.773	-0.043
276782.02	3679944.83	-5.97	-5.644	0.326
			Root mean square	0.182
			Std deviation	0.183

2013 Survey Summary









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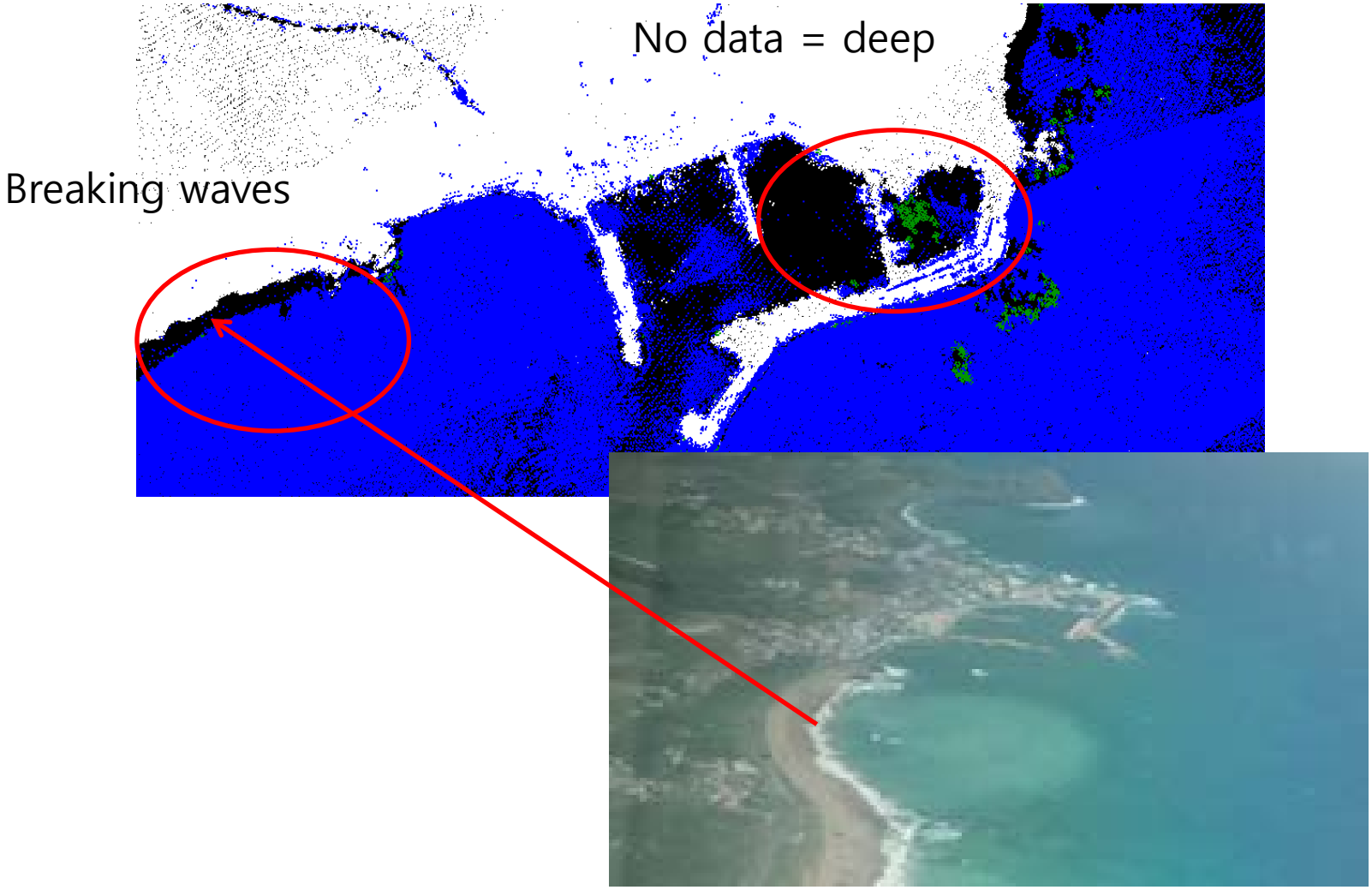

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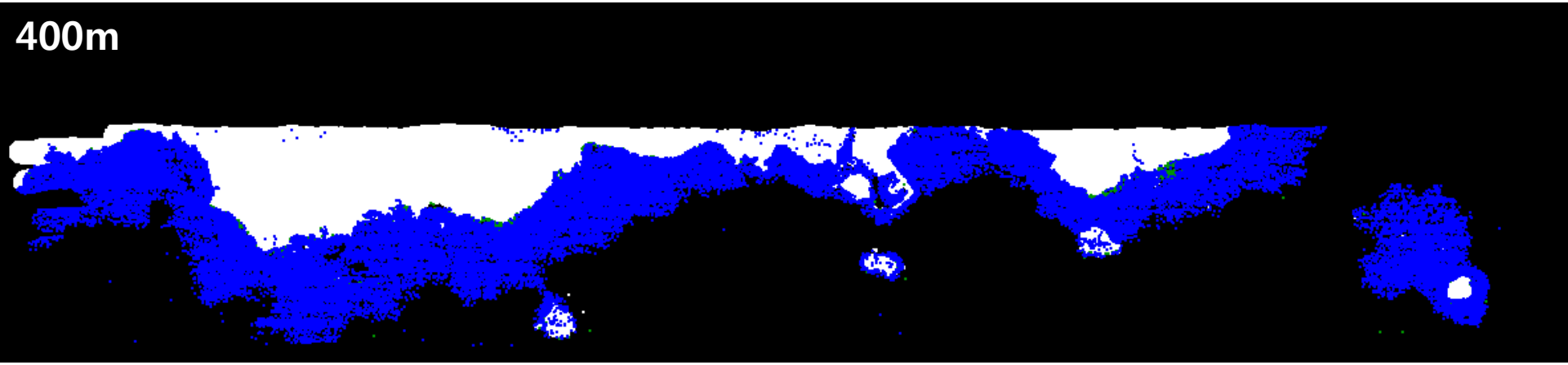

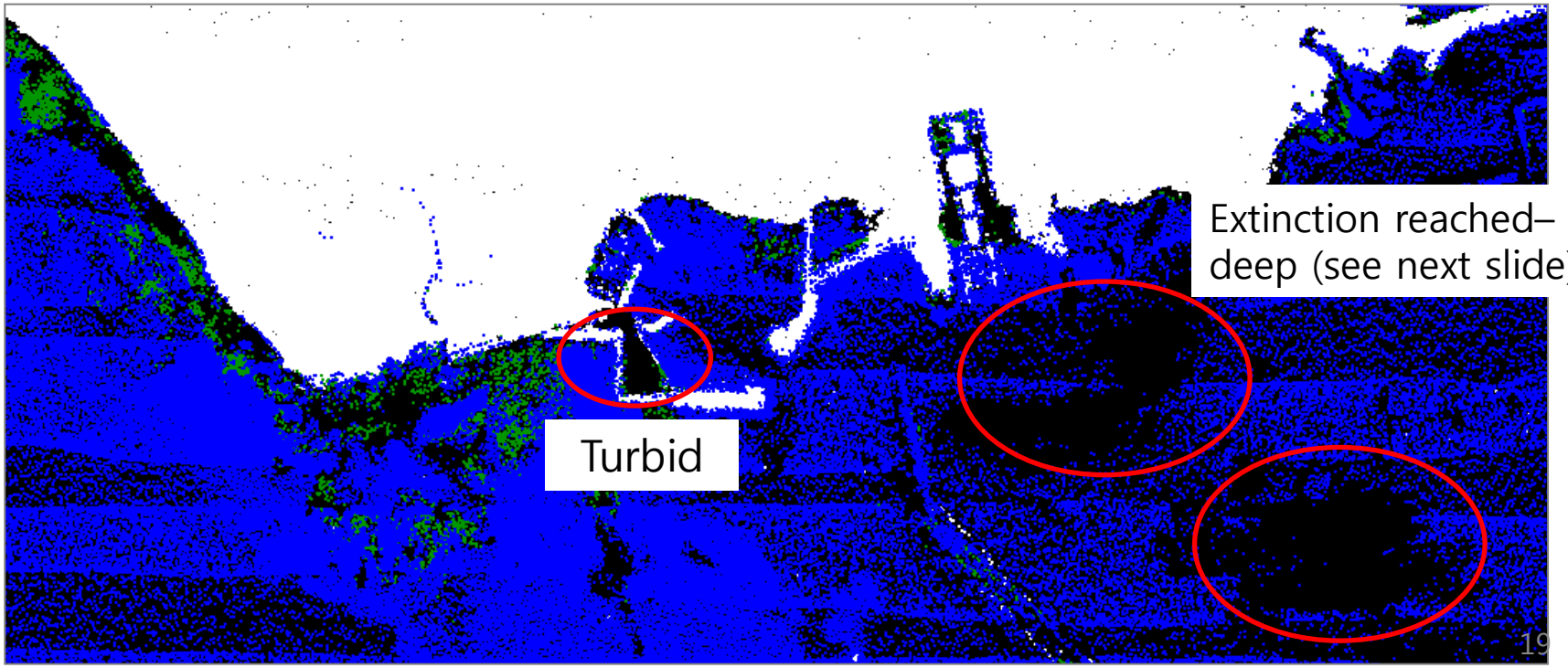

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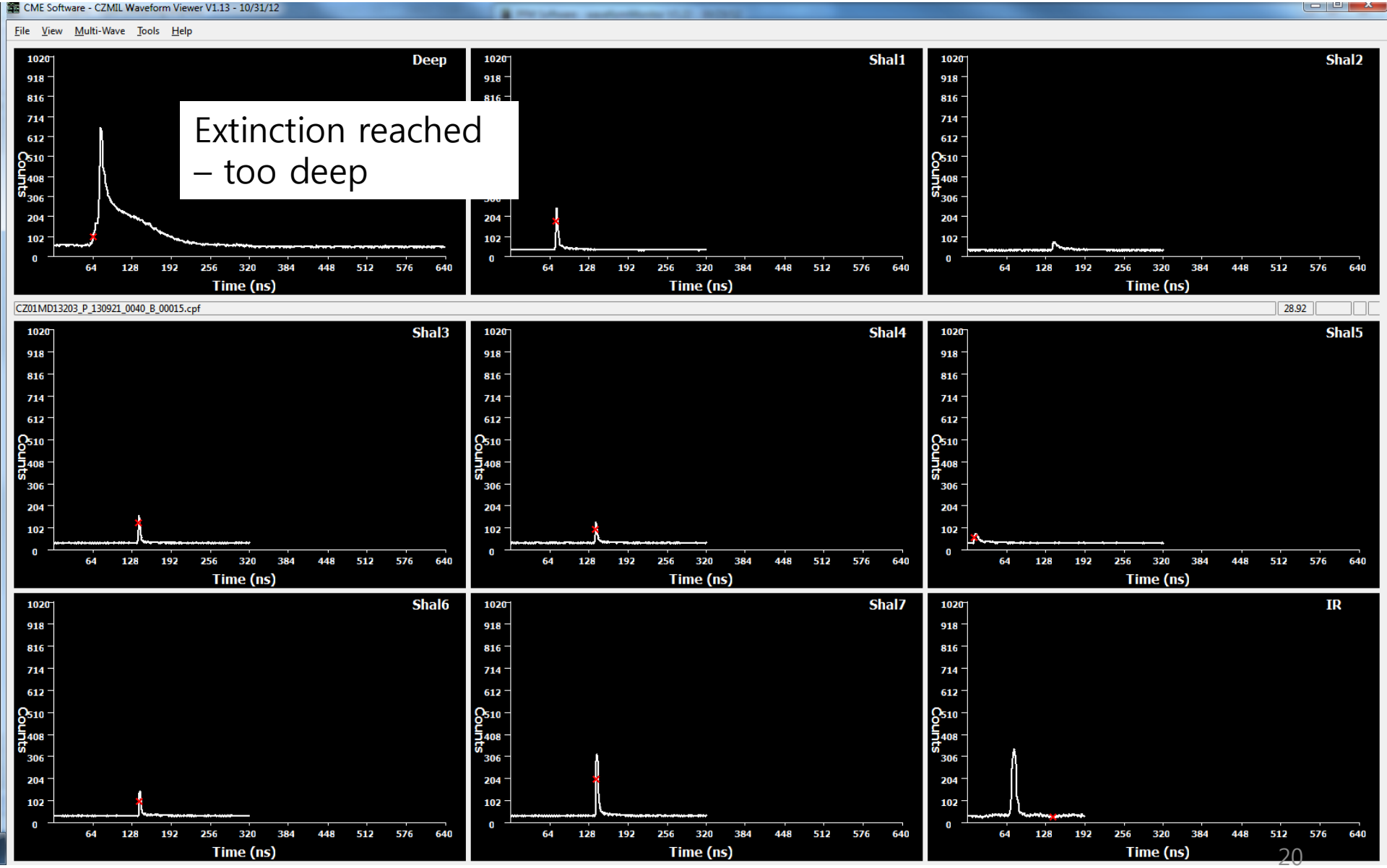
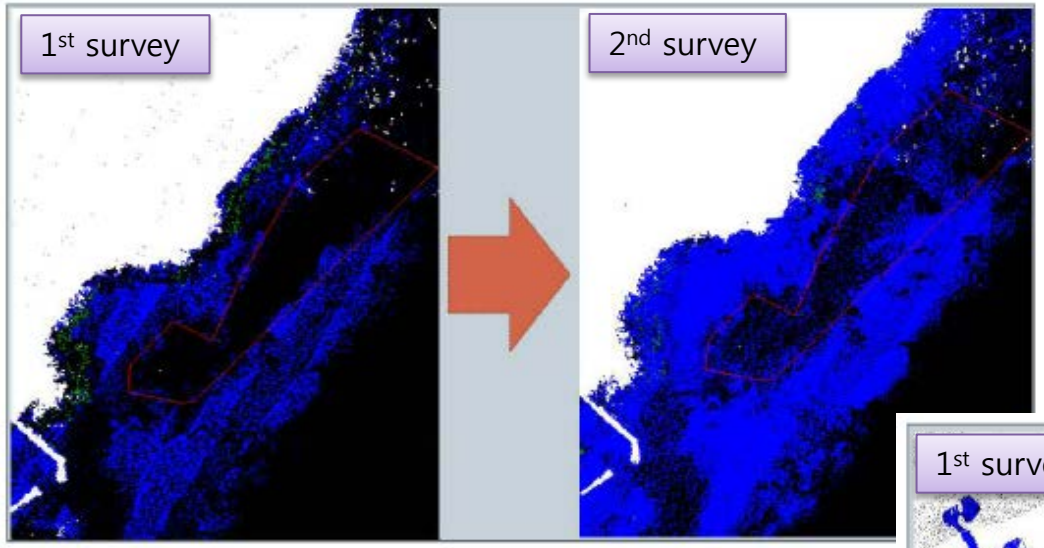
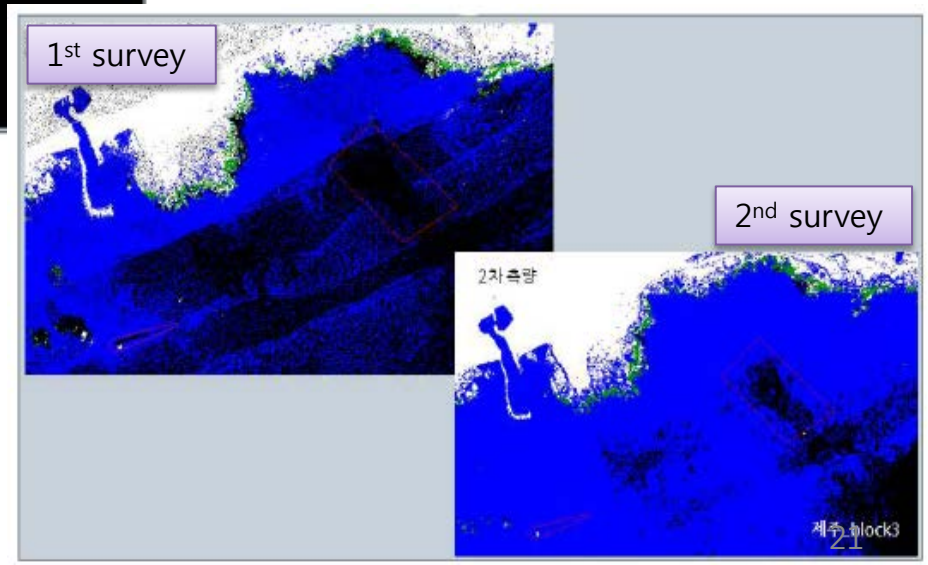


Extinction reached – too deep

Missing data and re-survey

* Turbid water, White forming, Floating matter, etc.





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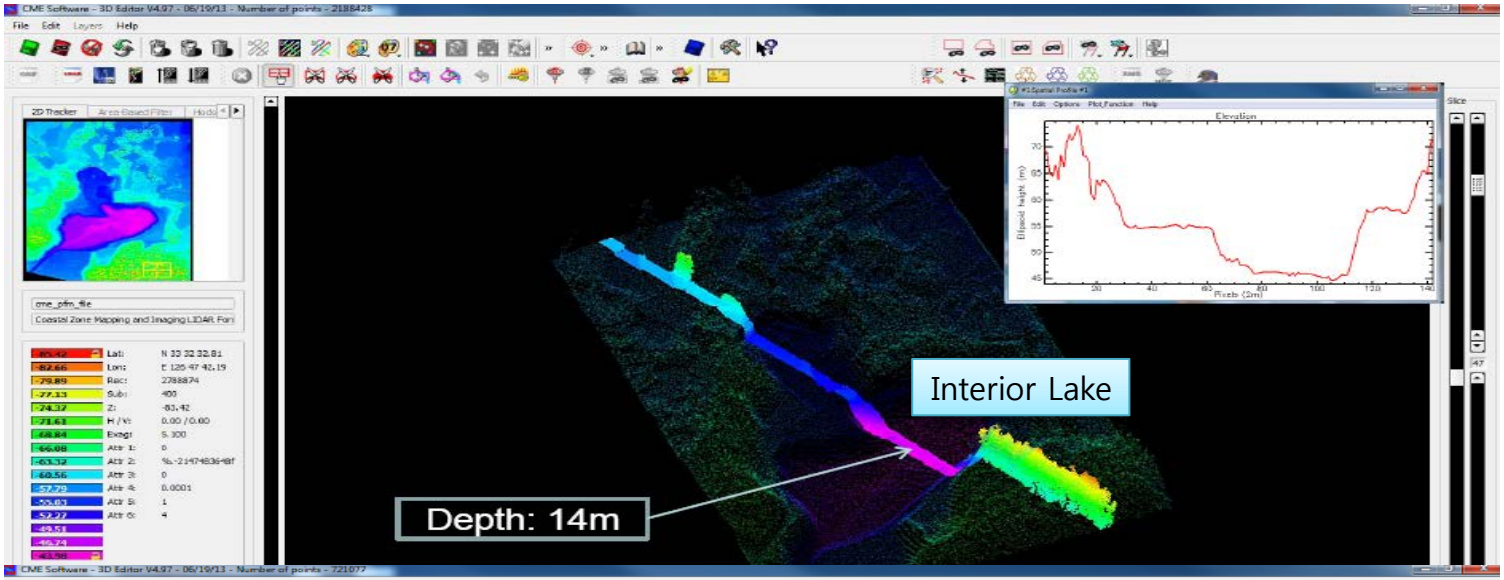

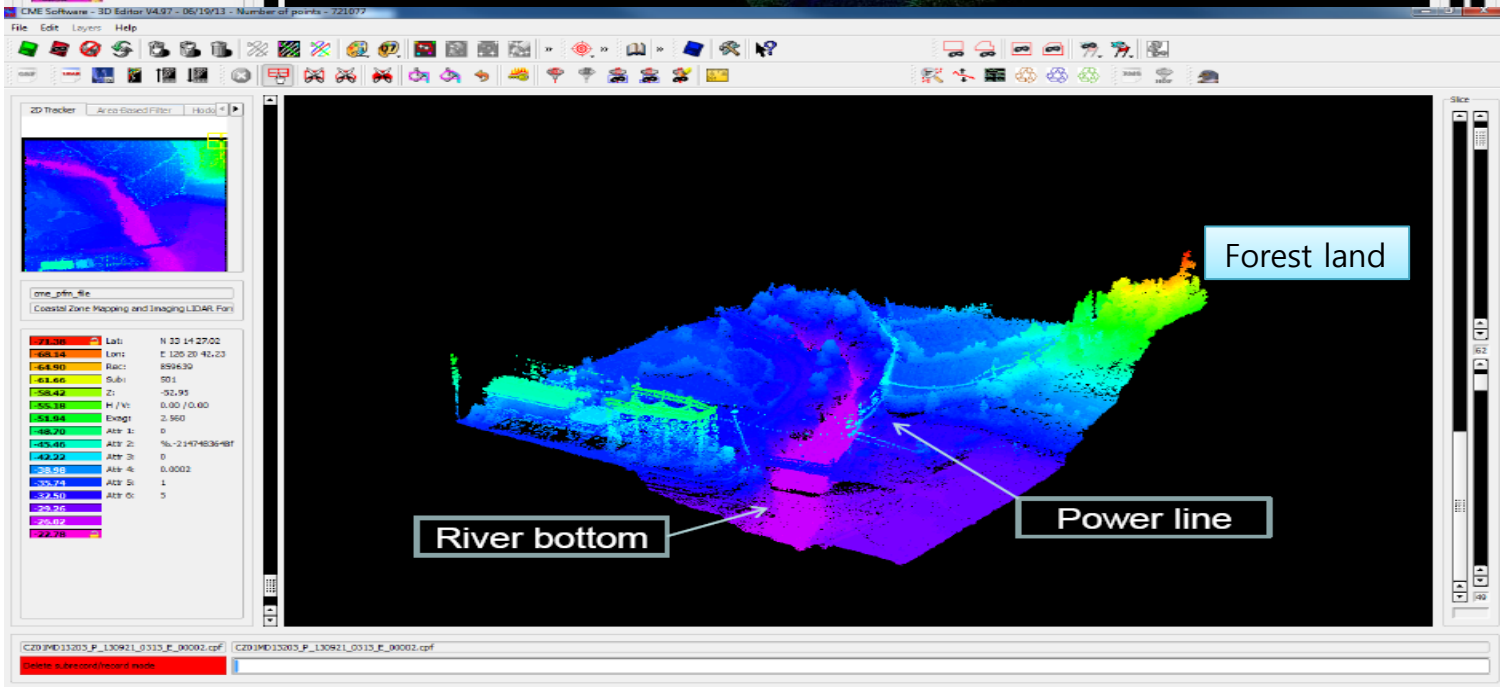

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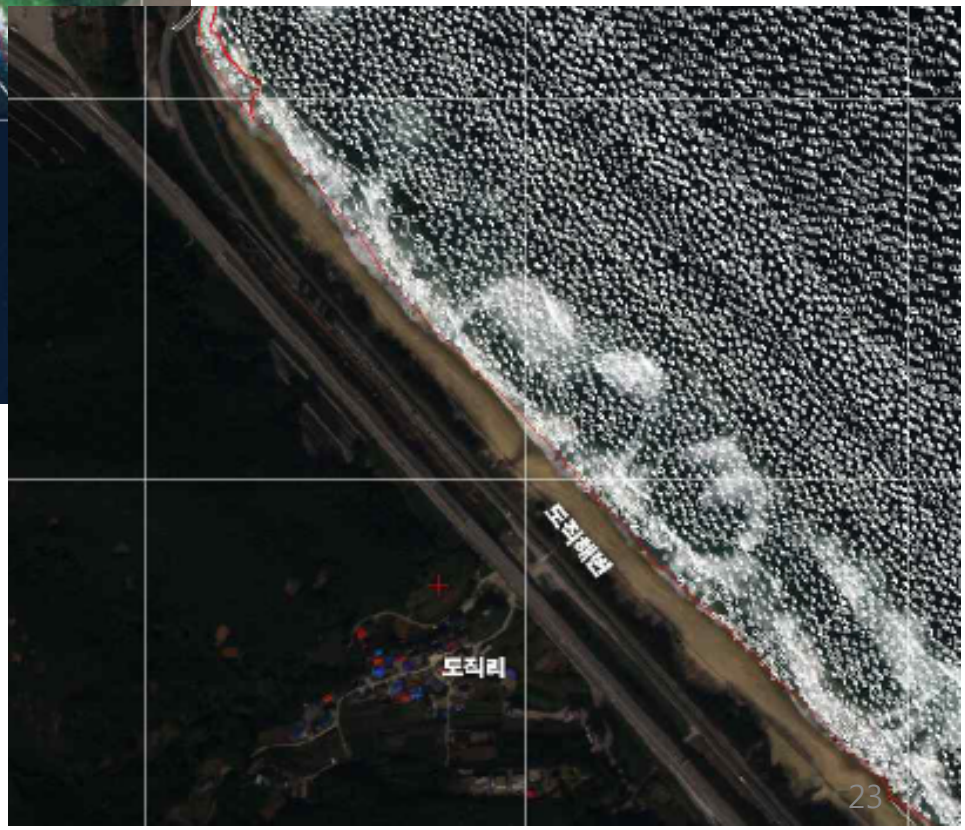

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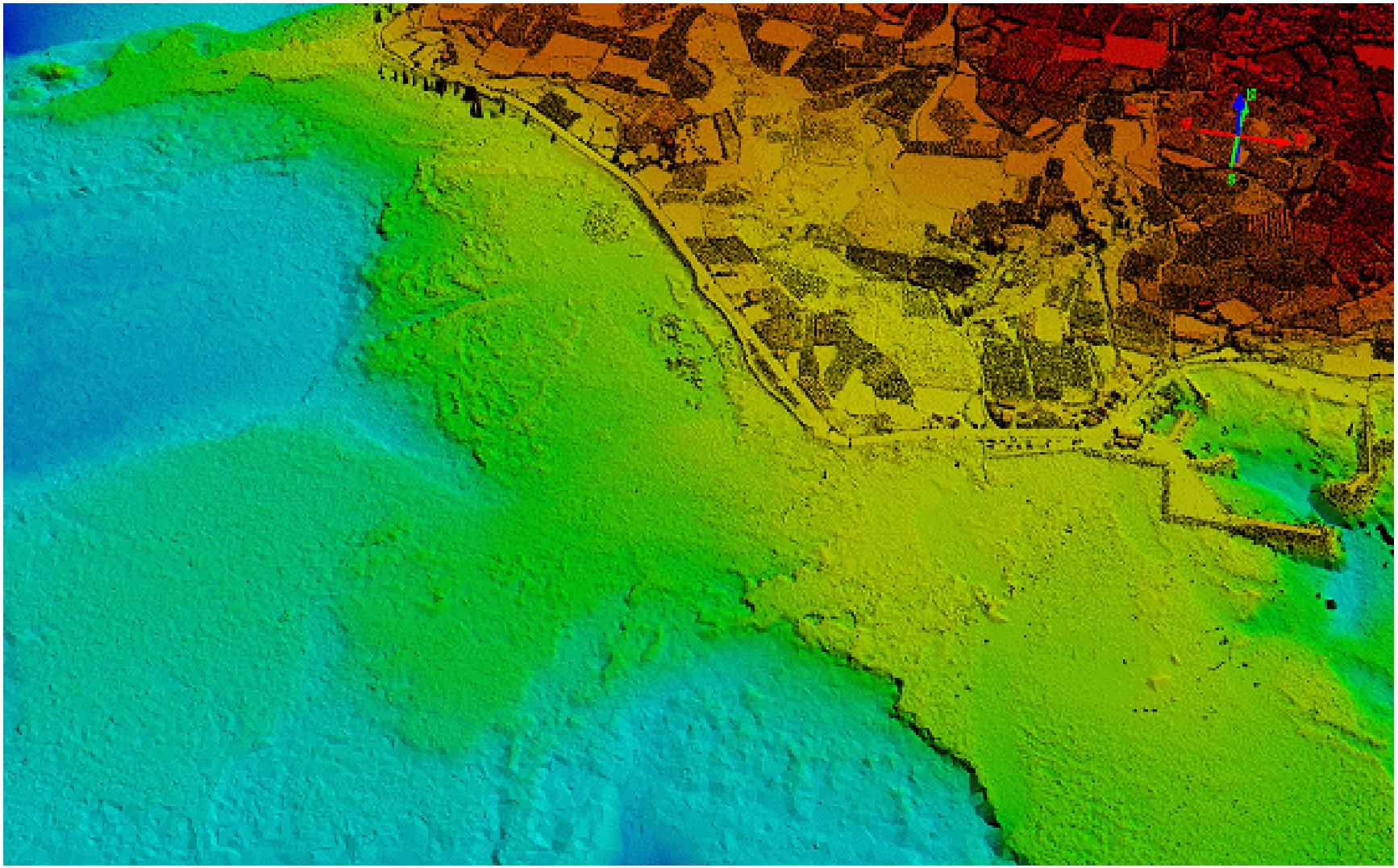

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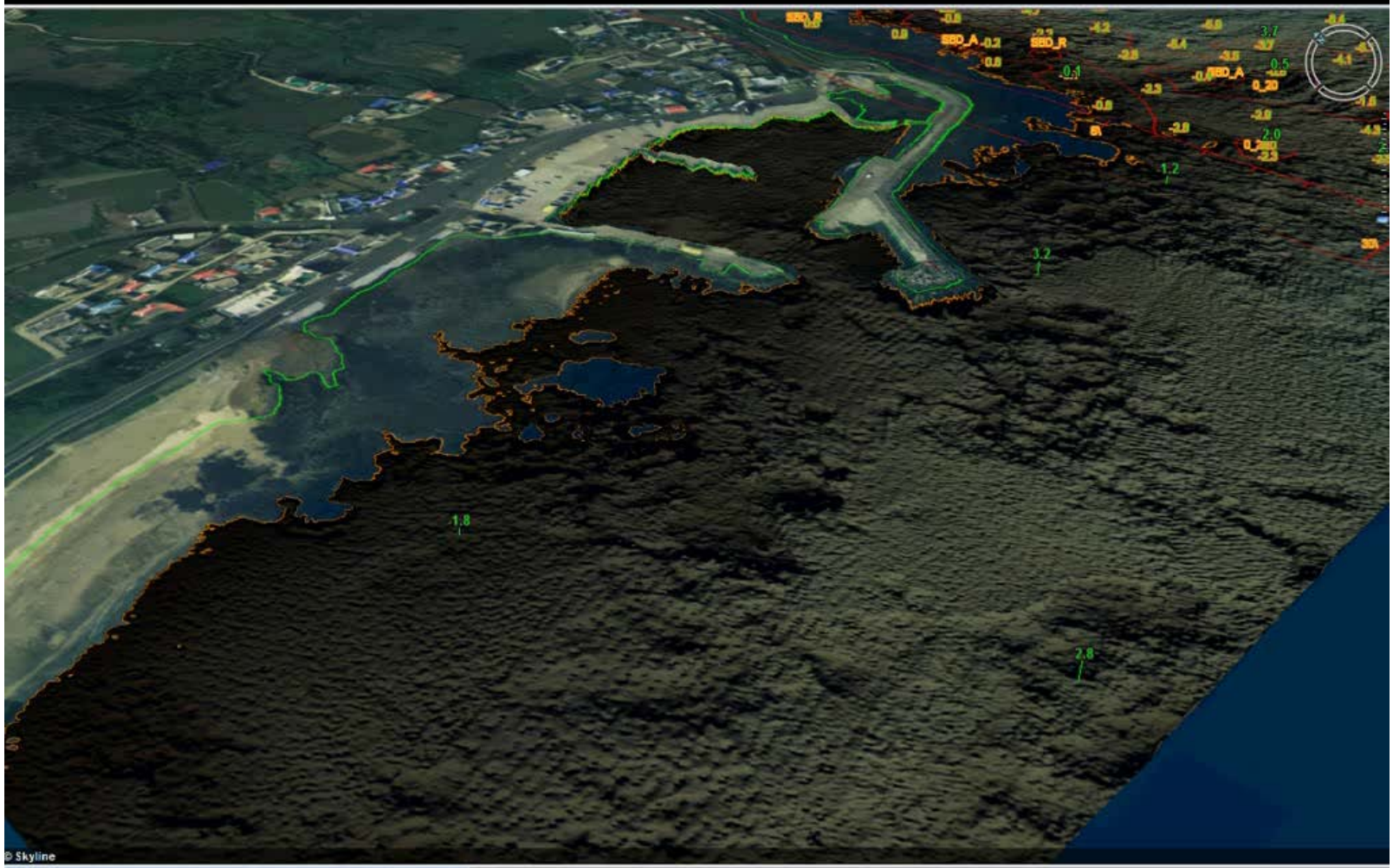
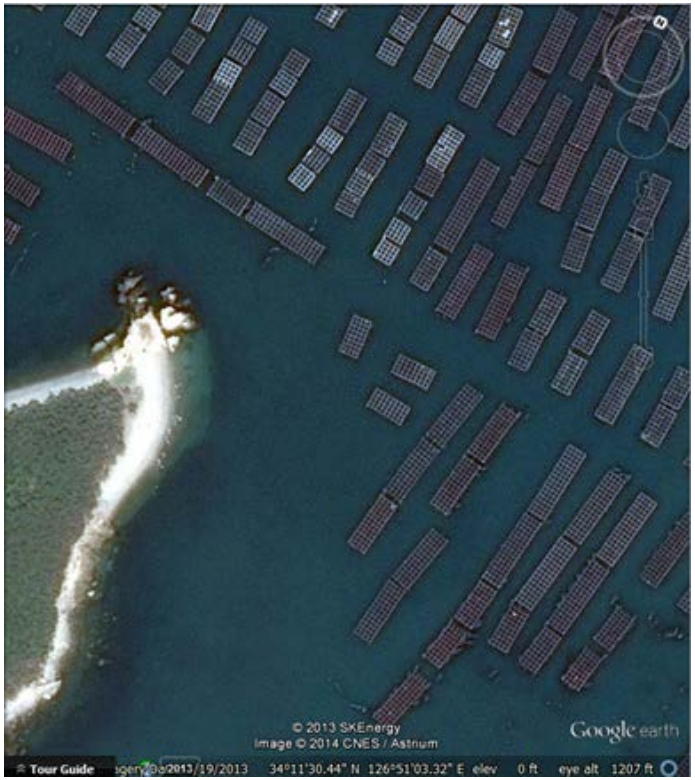


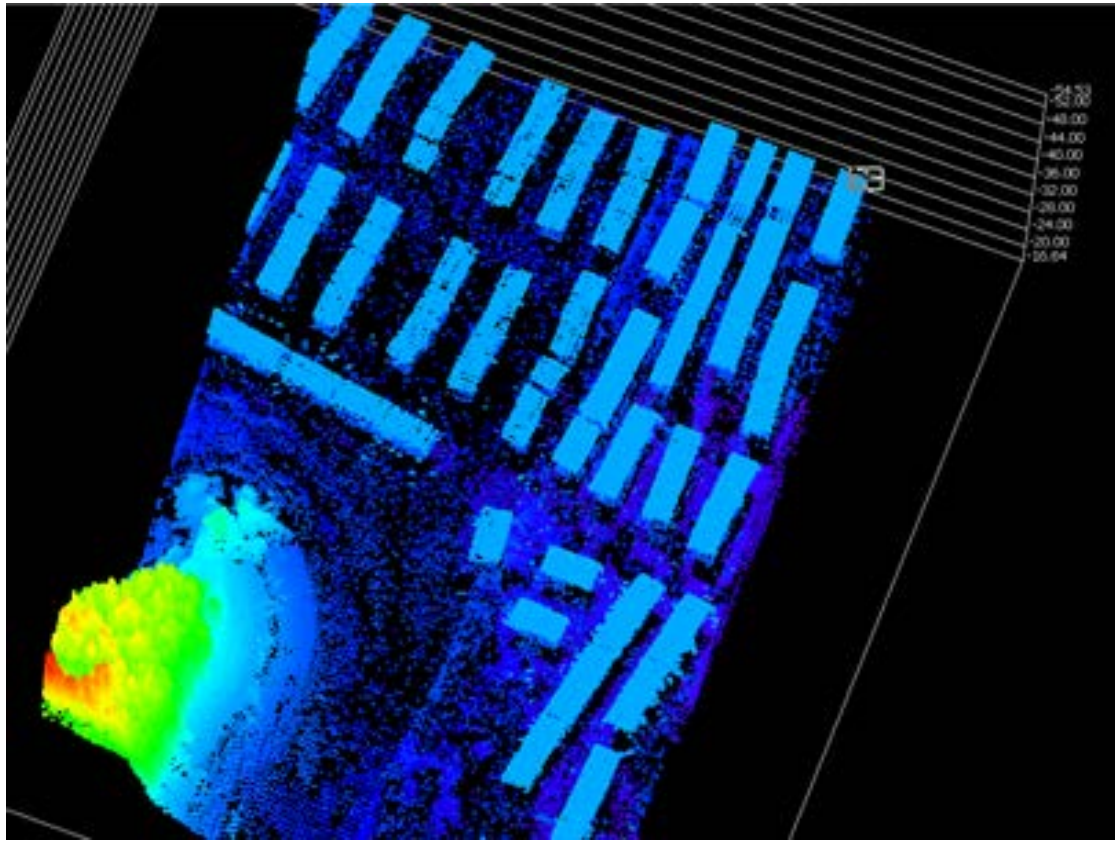
Products delivered by Optech

- Edited and Cleaned LAS Files (1.0)
- Kd Maps
- Elevation Images
- Point Cloud Classification Images
- Reflectance Images

2013 Survey Summary

South Sea





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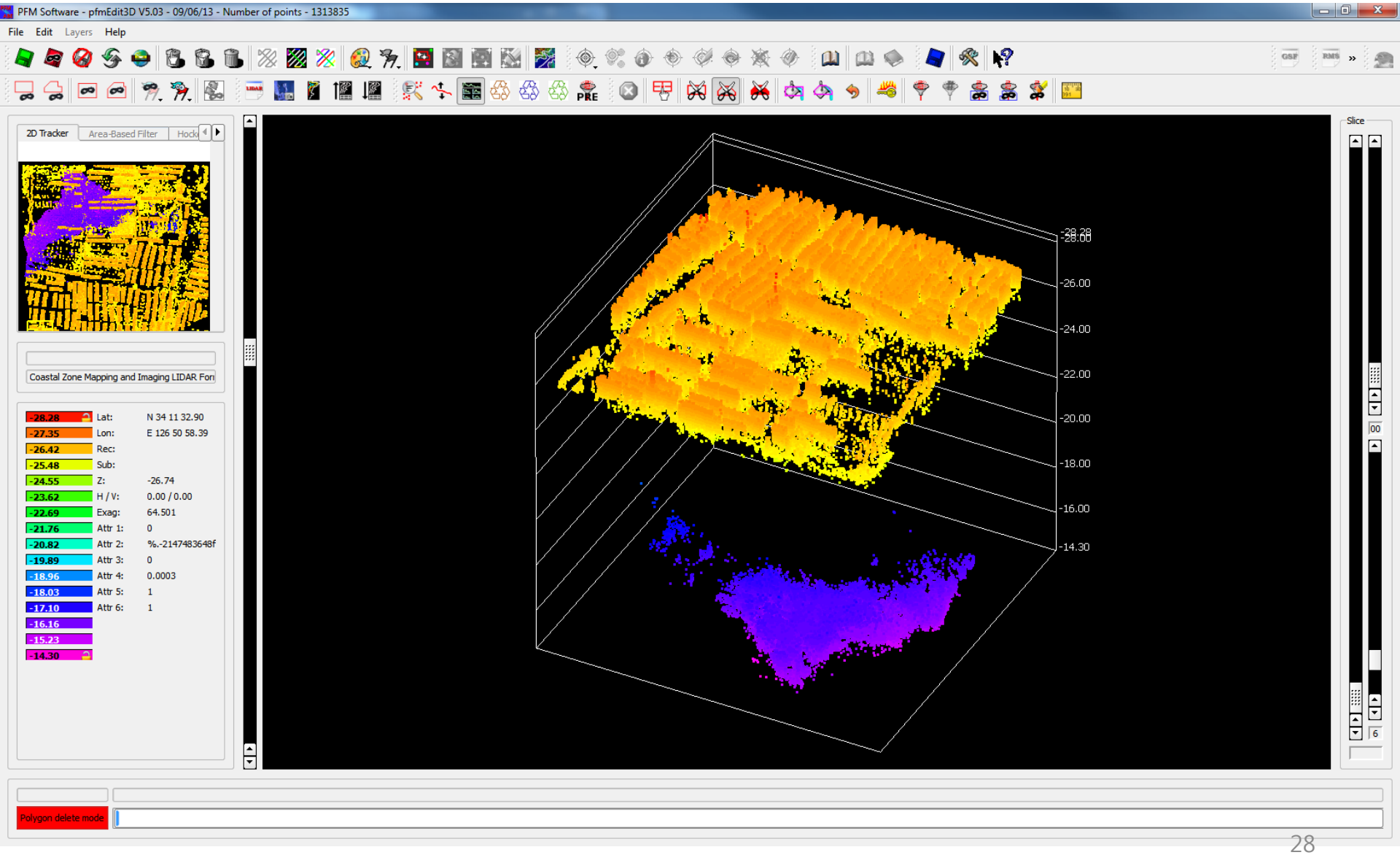
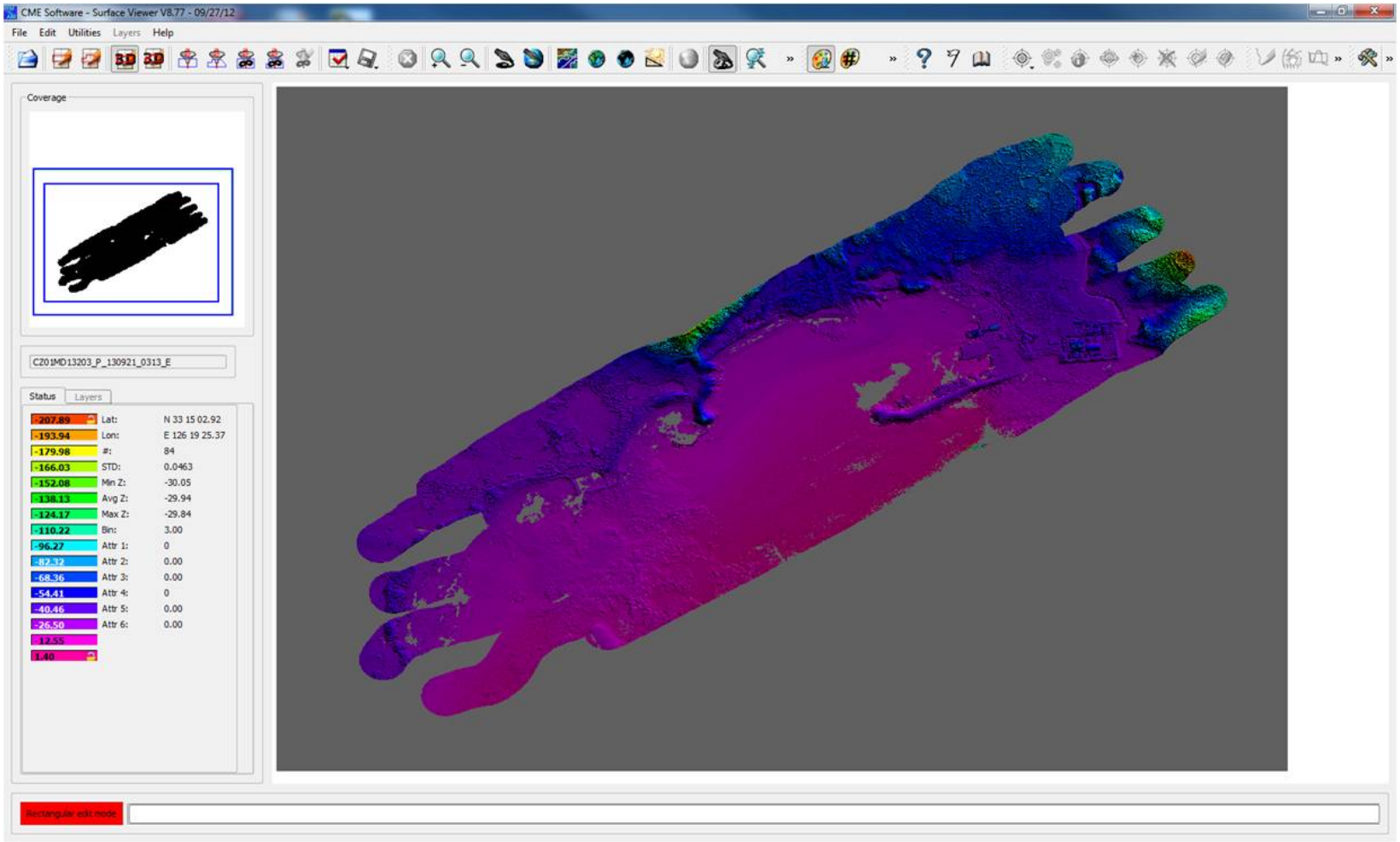


2013 Survey Summary

Jeju



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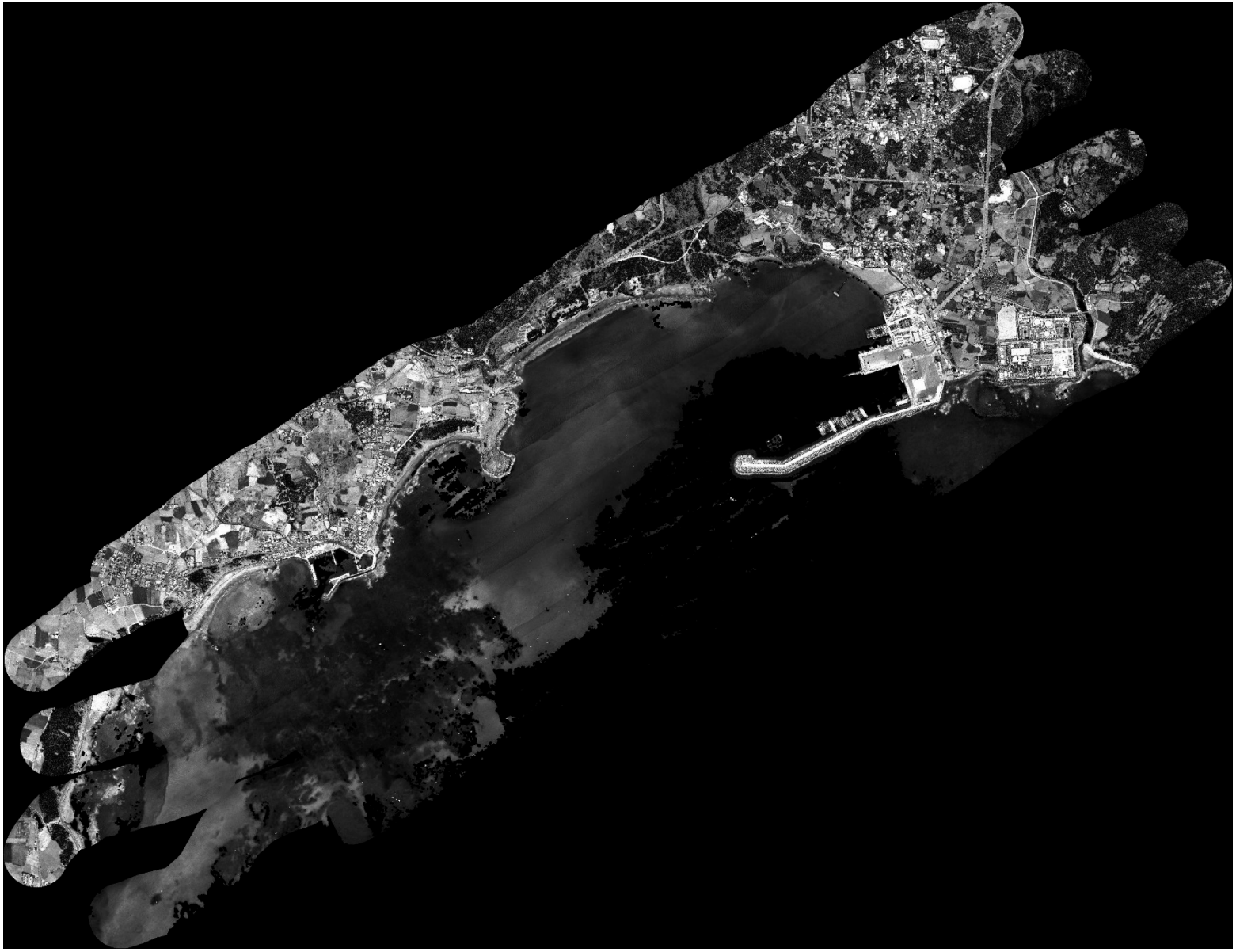
Jeju



Survey plan('14.6~12)

1st Airborne Bathymetric Survey

- Twice survey
  * Different conditions(date/ tide/ turbidity, etc.)

2nd Multi-beam Survey

- Navigation Hazards, Missing data area

3rd Side Scan Sonar

- Navigation Hazards Double-check

Questions

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Survey Division

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