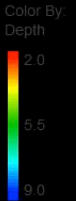


29 April, 2013

Practical Multibeam Training for Hydrographers



Portland, Oregon, USA

April 22-27, 2013

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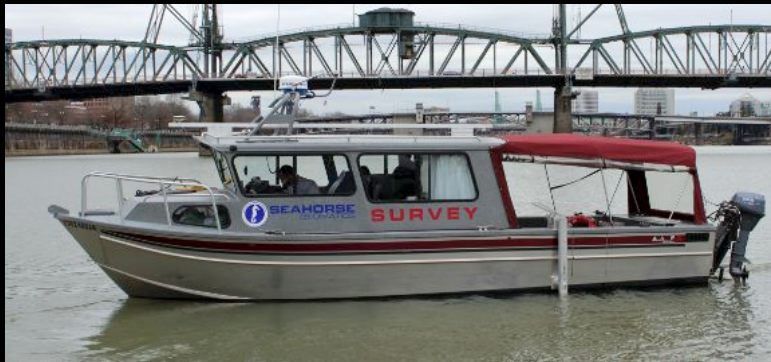
Portland April 2013 NORBIT/Seahorse Geomatics - First international NORBIT Training

Attended by 6 nationalities

Training conducted @ Salty's River Seafood Grill as well as Seahorse Geomatics vessel

Instrumentation

- SONAR; Norbit iWBMS (Integrated Applanix GNSS), WBMS bathymetry system x 2, WBMS FLS, NORBIT Rotator (SIDUS)
- Motion/GNSS; Applanix iWBMS, Novotel FSAS, SMC 108, CDL Minisense 3, Hemisphere V330
- Software ; Hypack Hysweep, CARIS



SeaHorse Geomatics vessel with iWBMS mounted



Data Processing in the evenings



iWBMS First client delivery

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Agenda – Portland April 2013 Training Content : 5 day training session

Acoustic & Sonar Theory

Beam forming, frequency, mills-cross, sound speed, etc. etc. etc.

FLS on water practical training

Intro to MBES Sensor layout on vessel

MB Sonar Theory

Beamforming (Rx), Bottom Detection, Snippets/Sidescan, WaterColumn, etc.

Applanix Theory

Offsets, lever arms, patch test

Hydrographic Principles

Geodesy, Sound Speed, Tide, Draft, Squat, Heave,

On-Water - Carry out bar check and patch test

Multibeam Alignment Test (Patch) Processing

Hydrographic Principles, Survey Planning & Budgeting, Survey Specifications, The Performance Test, Swath Coverage Determination, Ping Rates vs. Speed

On-Water – carry out full survey of grid area over sandwaves, Carry out infrastructure survey (breakwater, cards, targets etc.)

Survey Acquisition Review, Hysweep Data Processing, Performance Testing

CARIS Data Processing

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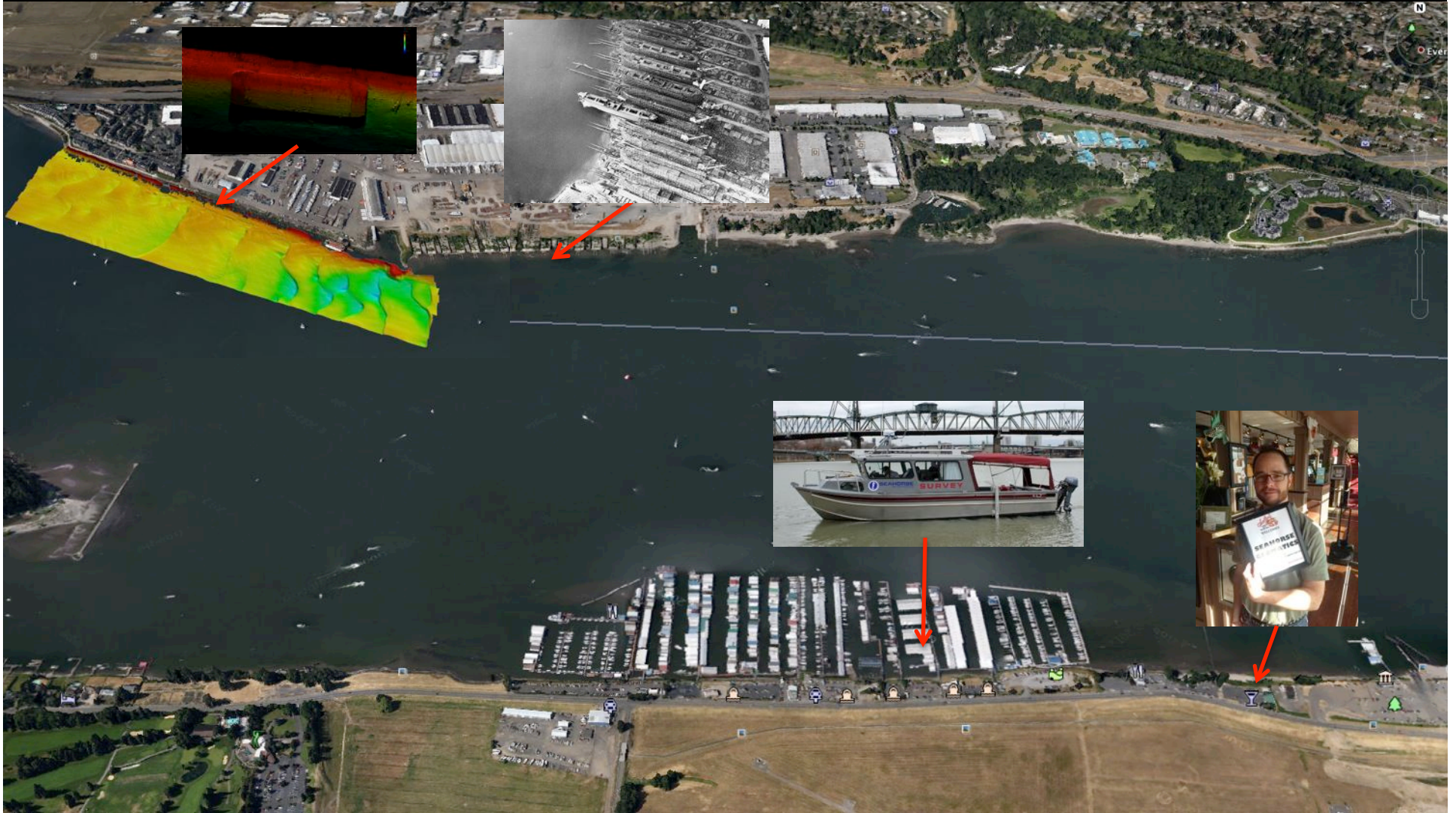
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Agenda – Portland April 2013

Survey Columbia River : Everything CLOSE easy access water



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Agenda – Portland April 2013 iWBMS installation



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Agenda – Portland April 2013 Survey Columbia River



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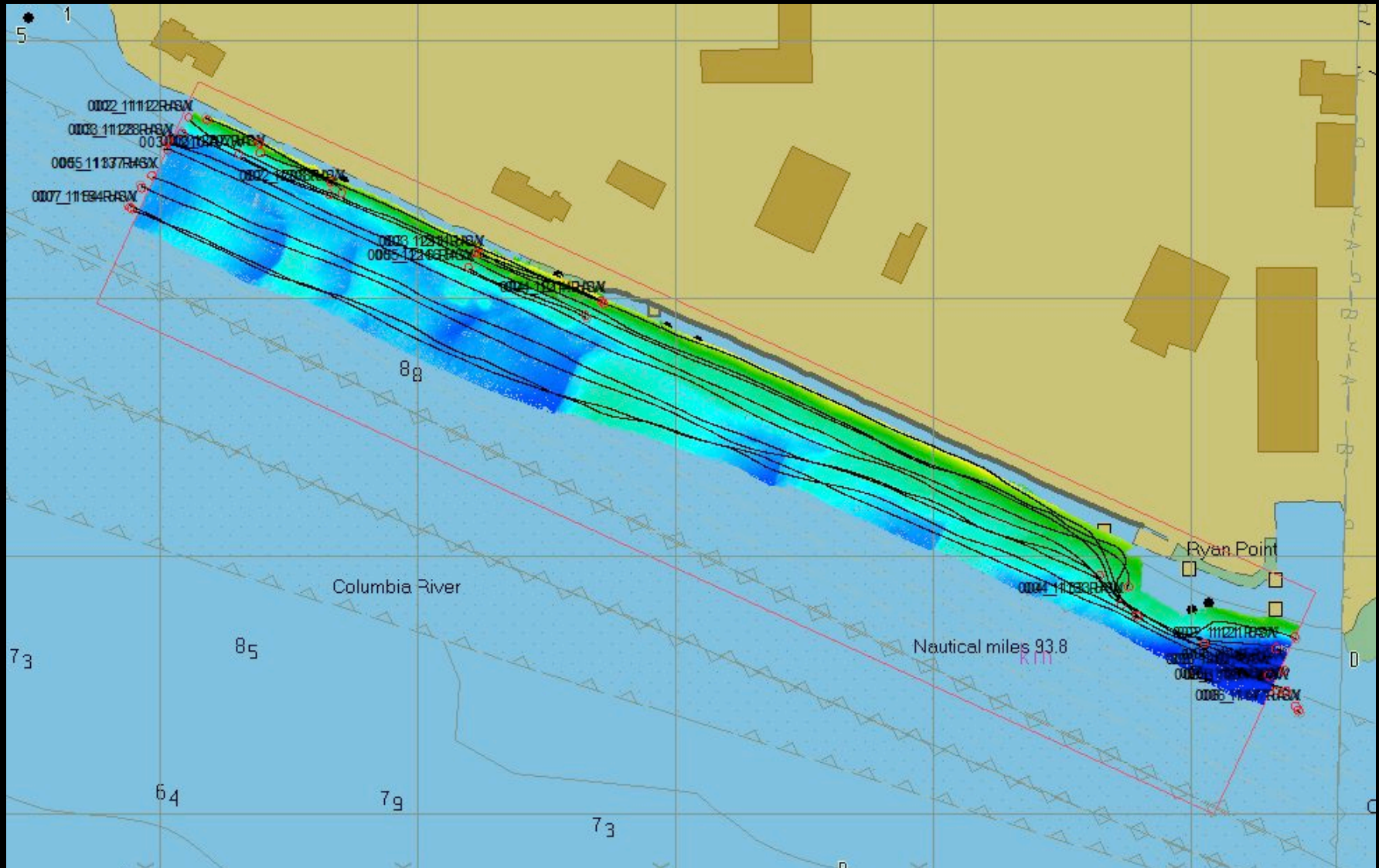
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Agenda – Portland April 2013 Results : Survey Lines Columbia River



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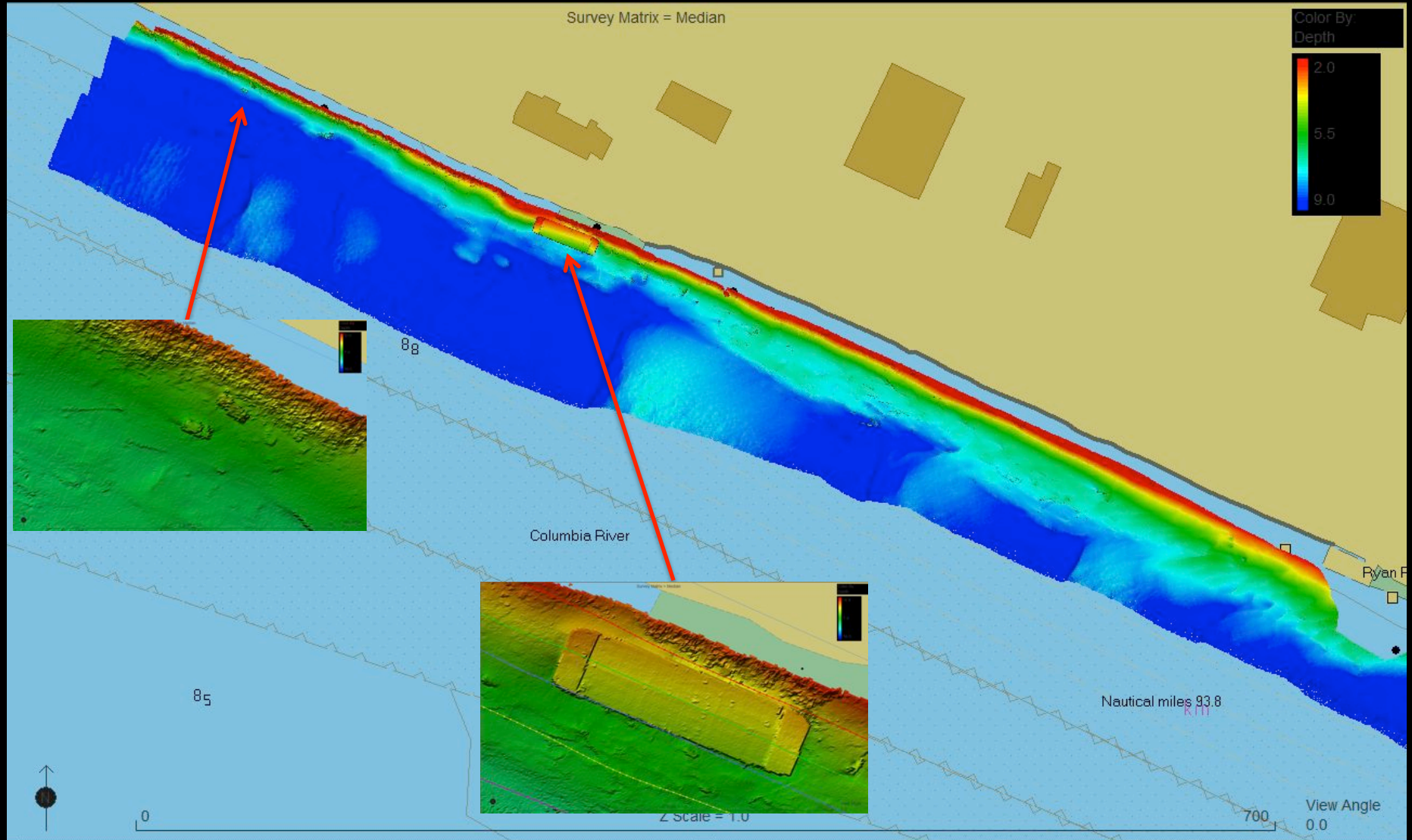
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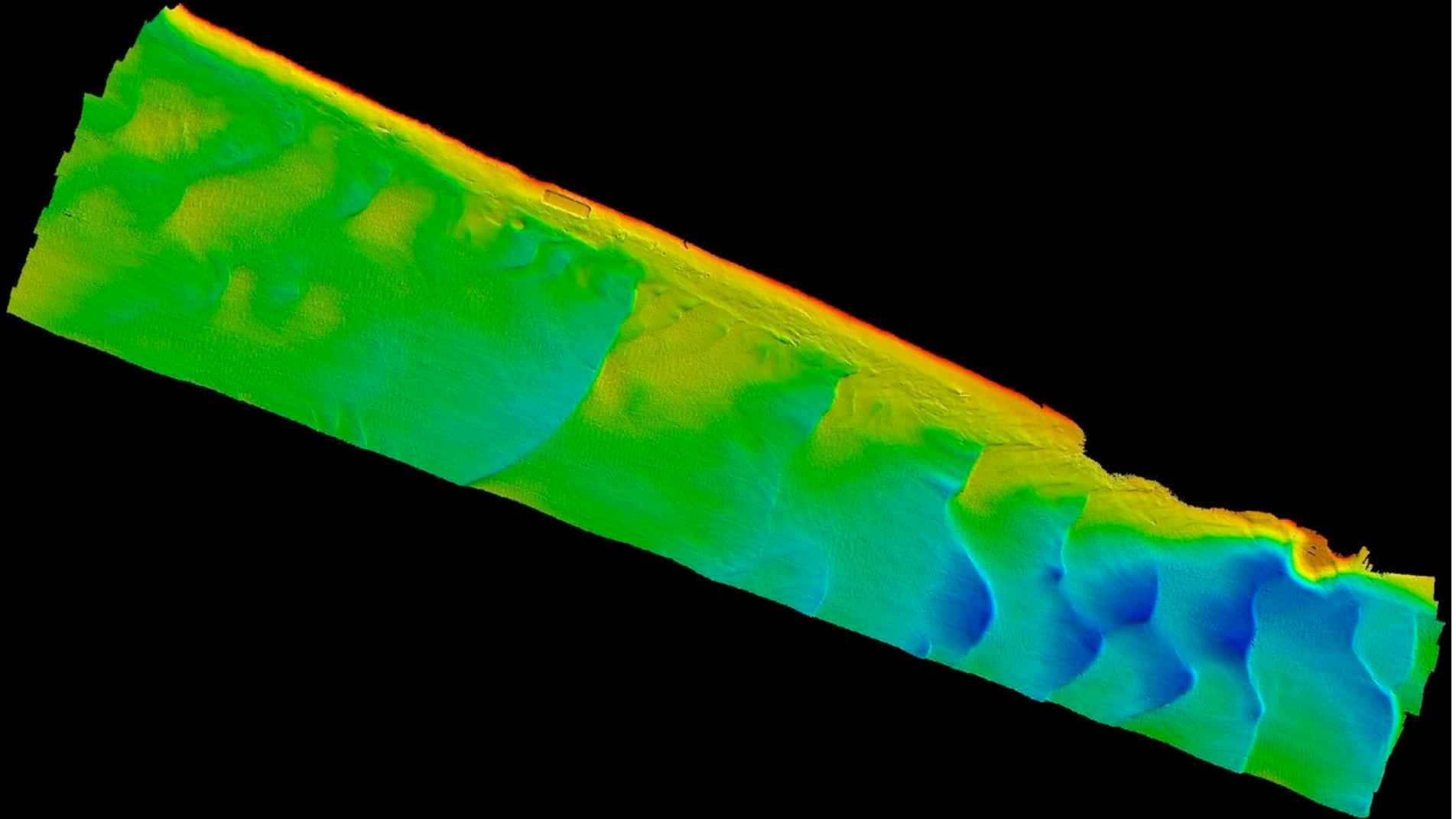
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Results : Survey Columbia River



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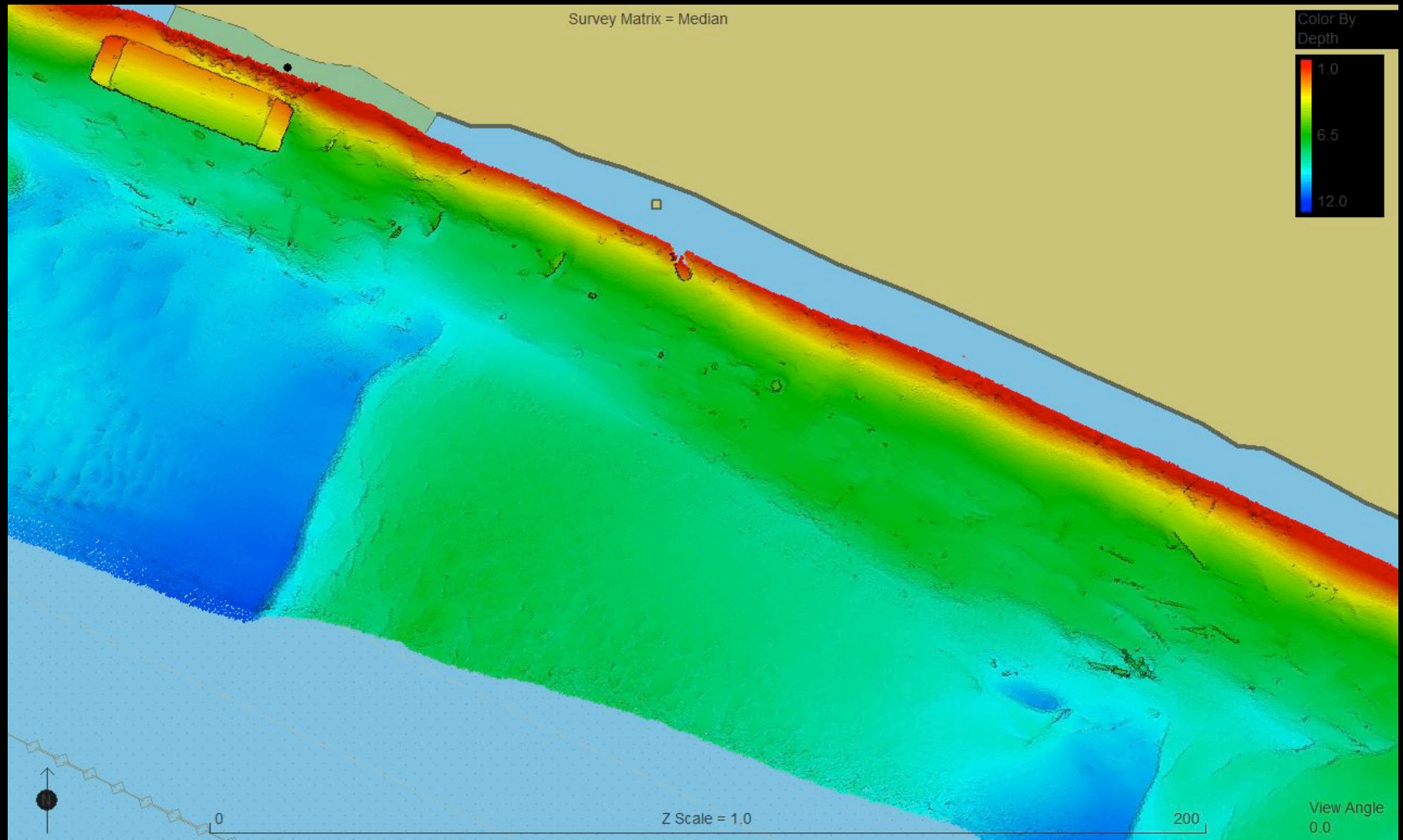
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Agenda – Portland April 2013 Results : Survey Columbia River



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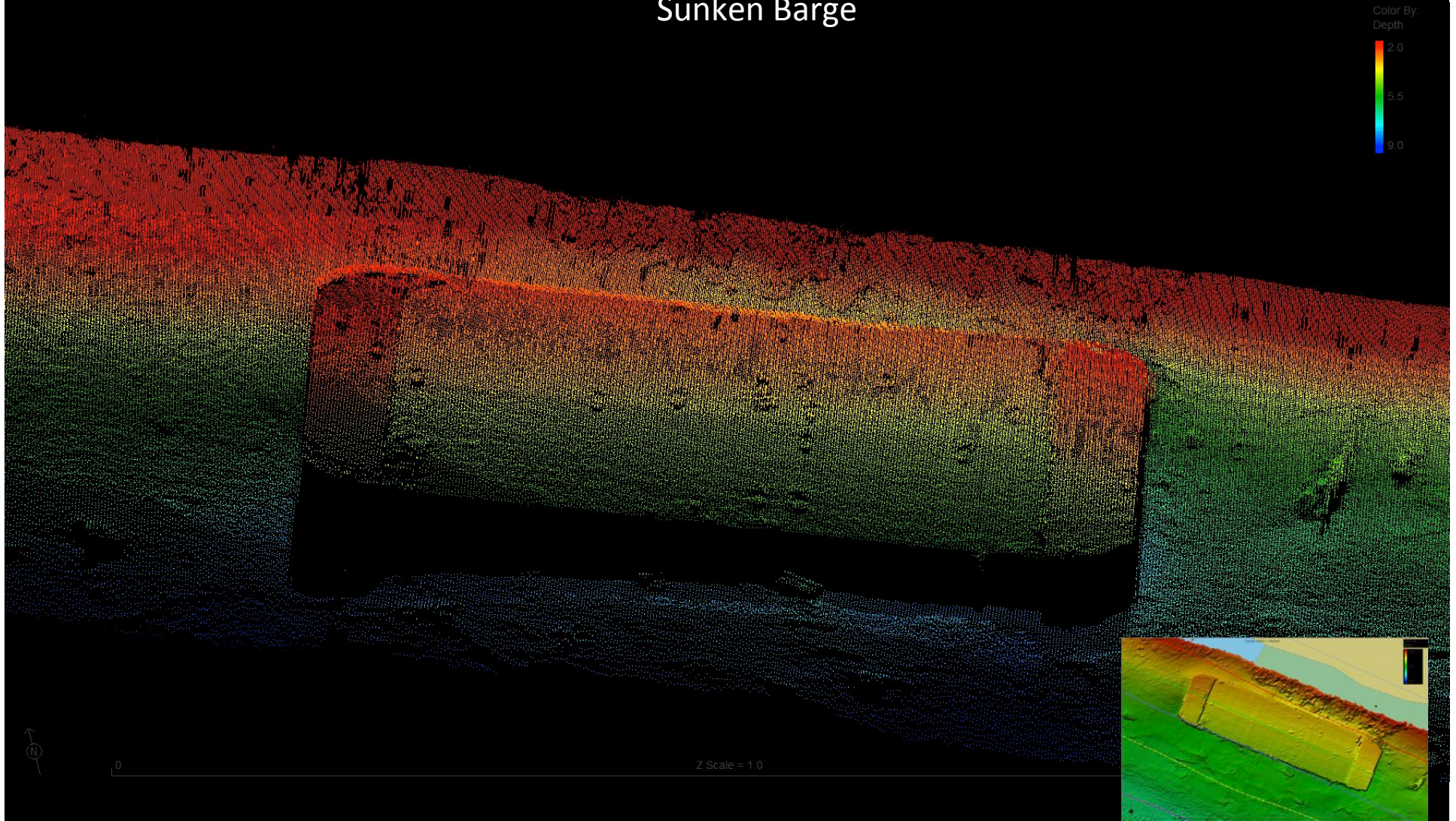
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29 April, 2013

Agenda – Portland April 2013 Results : Survey Columbia River Sunken Barge



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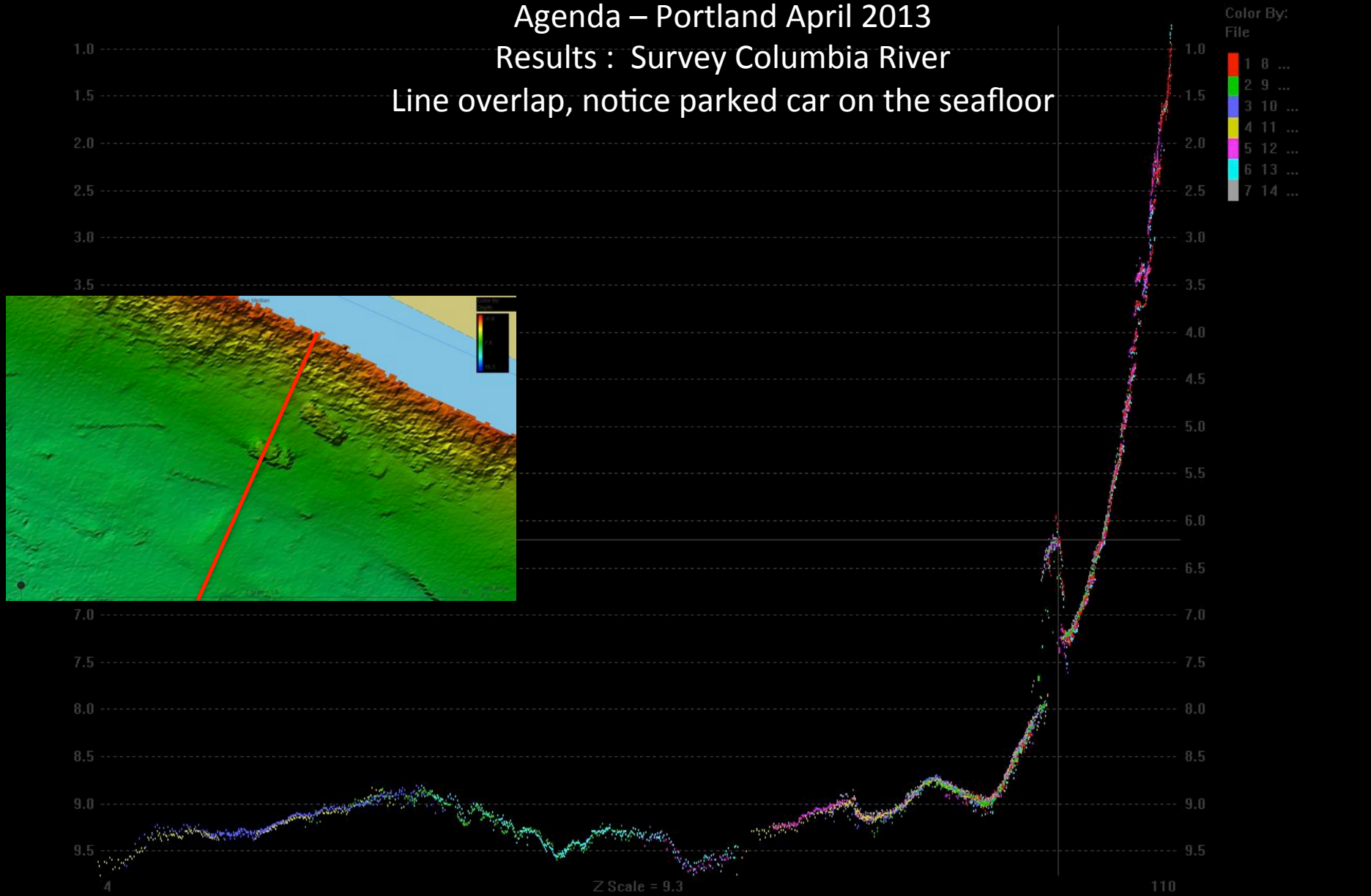
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29 April, 2013

Agenda – Portland April 2013 Results : Survey Columbia River

Line overlap, notice parked car on the seafloor



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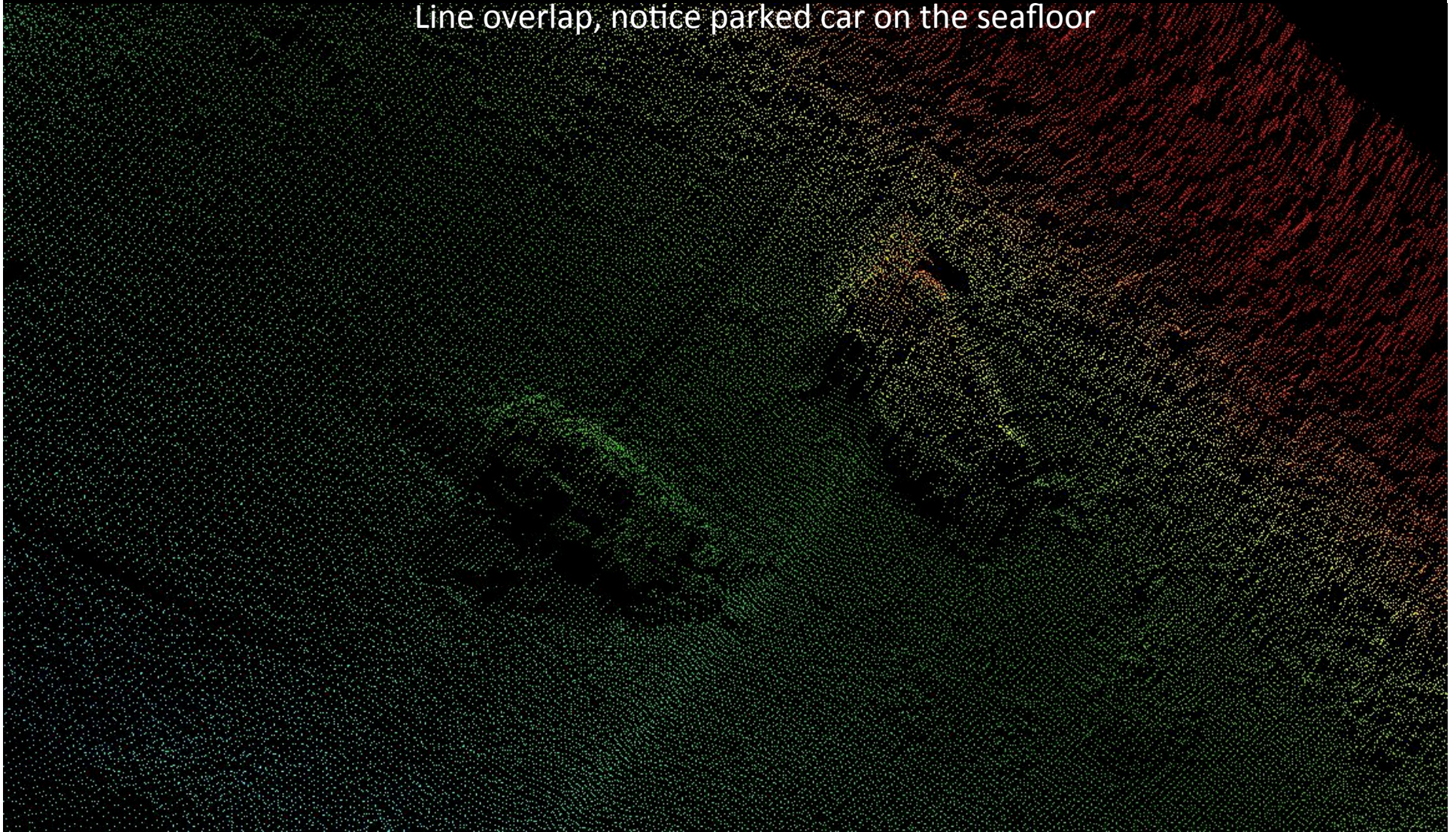
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29 April, 2013

Agenda – Portland April 2013
Results : Survey Columbia River

Line overlap, notice parked car on the seafloor



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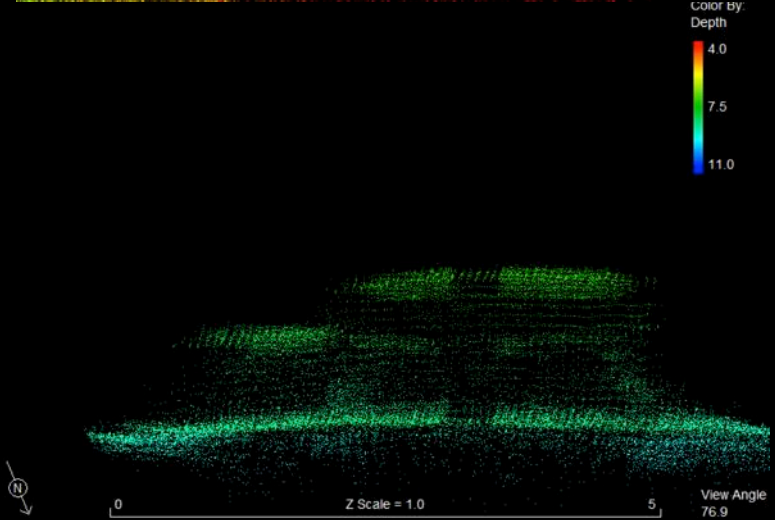
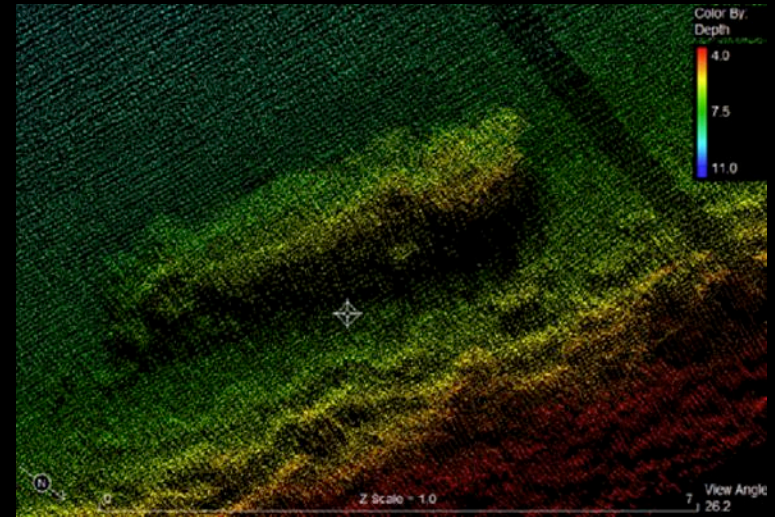
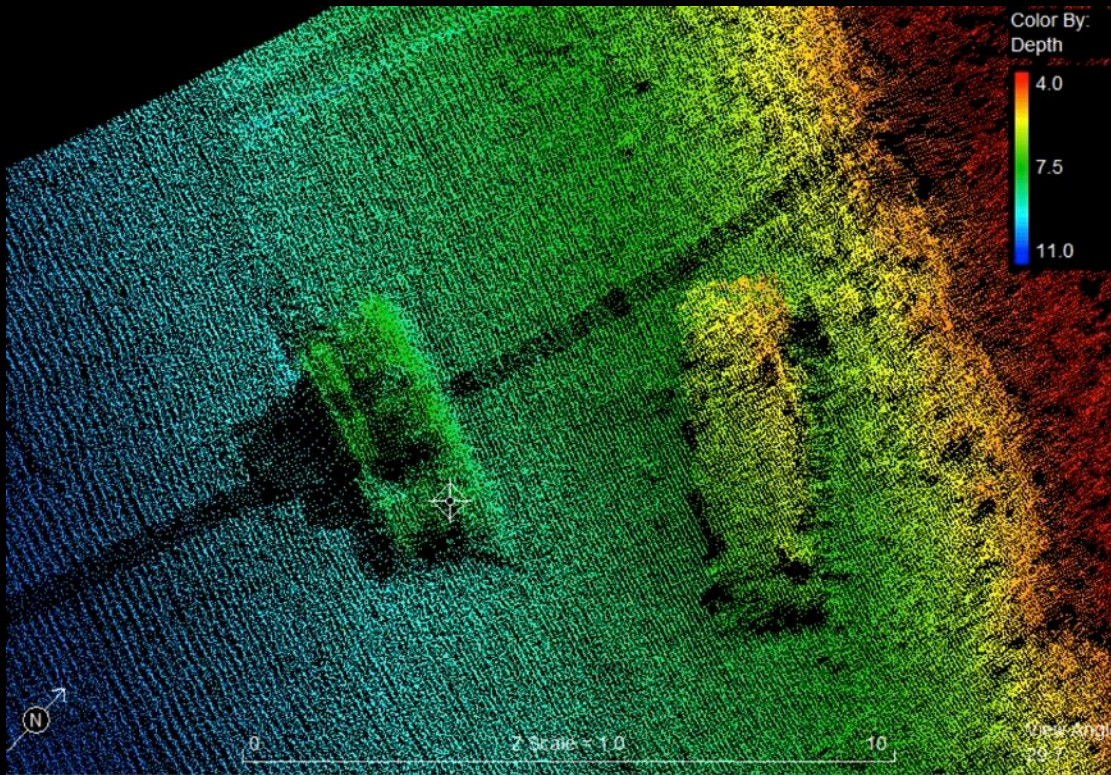
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Agenda – Portland April 2013 Results : Survey Columbia River



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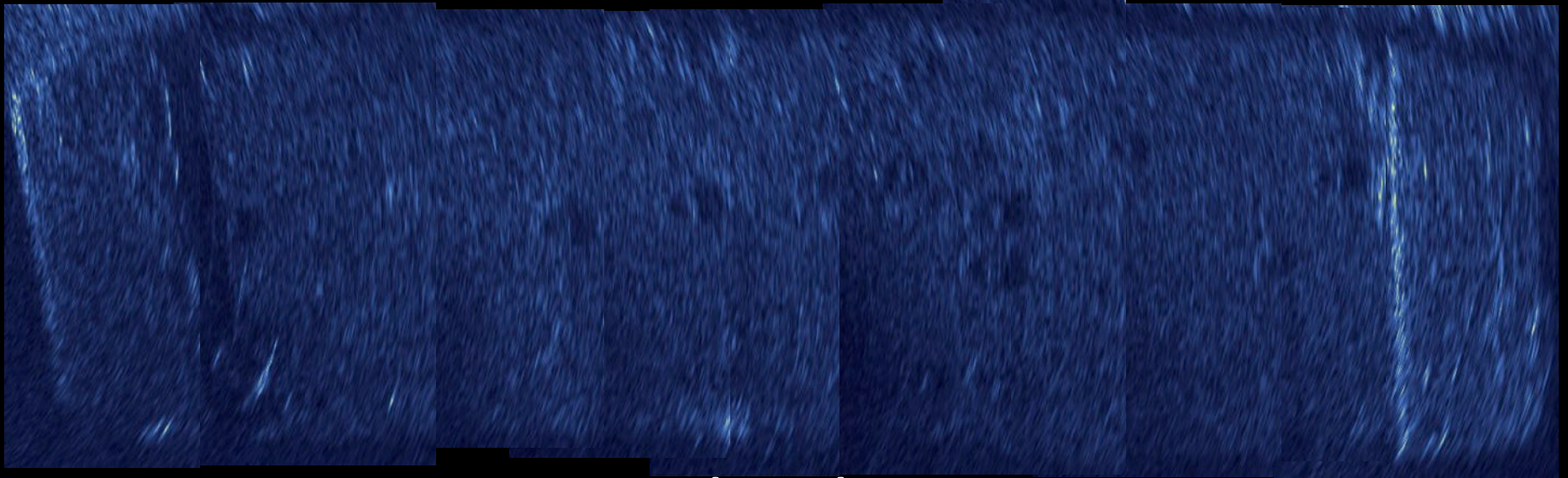
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Portland April 2013



Survey Columbia River FLS

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Results : Survey Columbia River FLS



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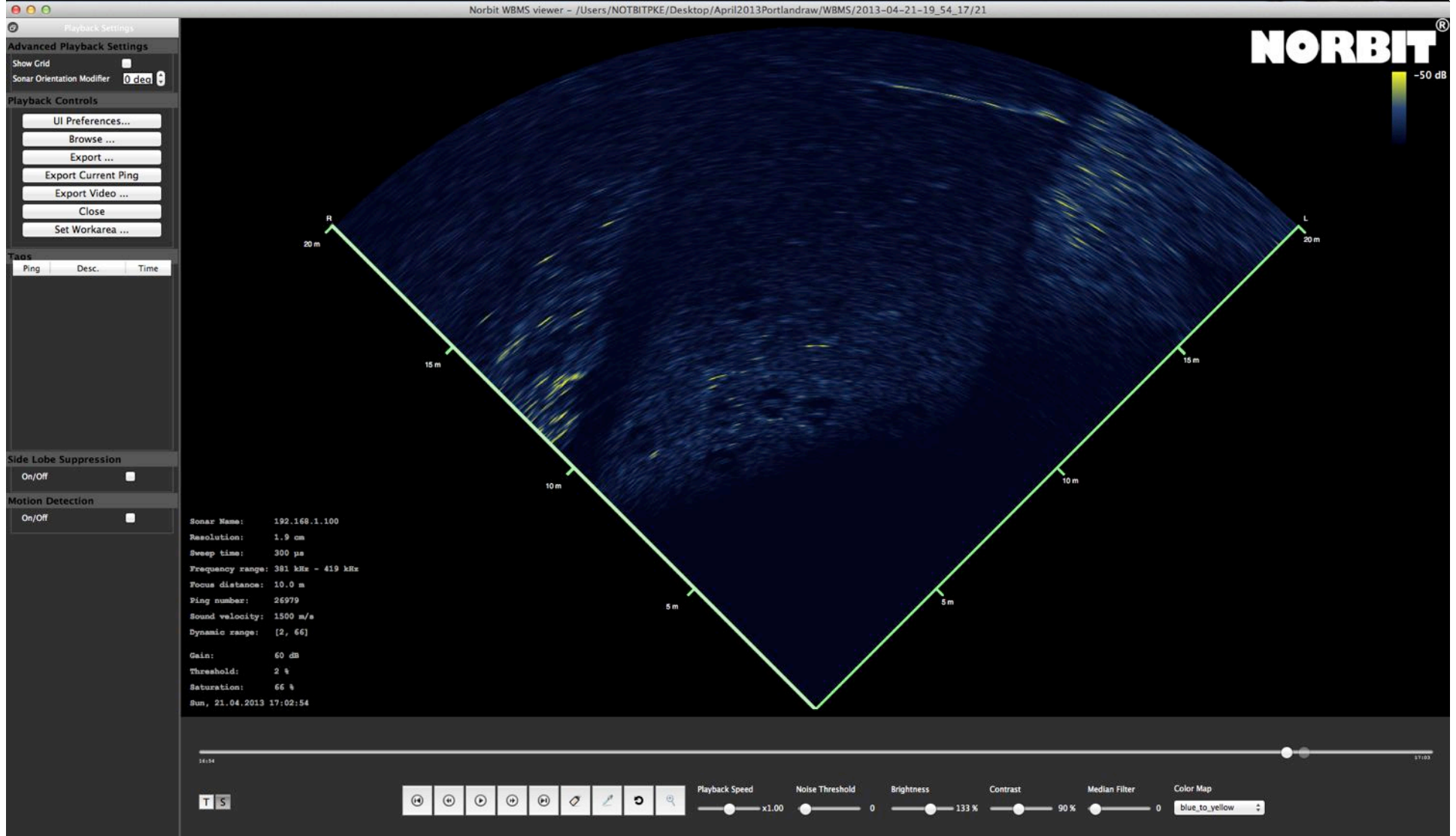
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Agenda – Portland April 2013

Results : Survey Columbia River FLS



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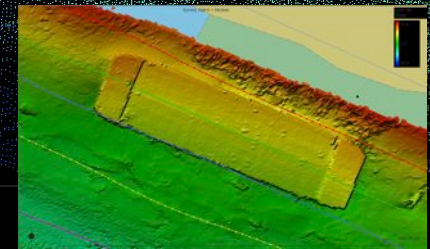
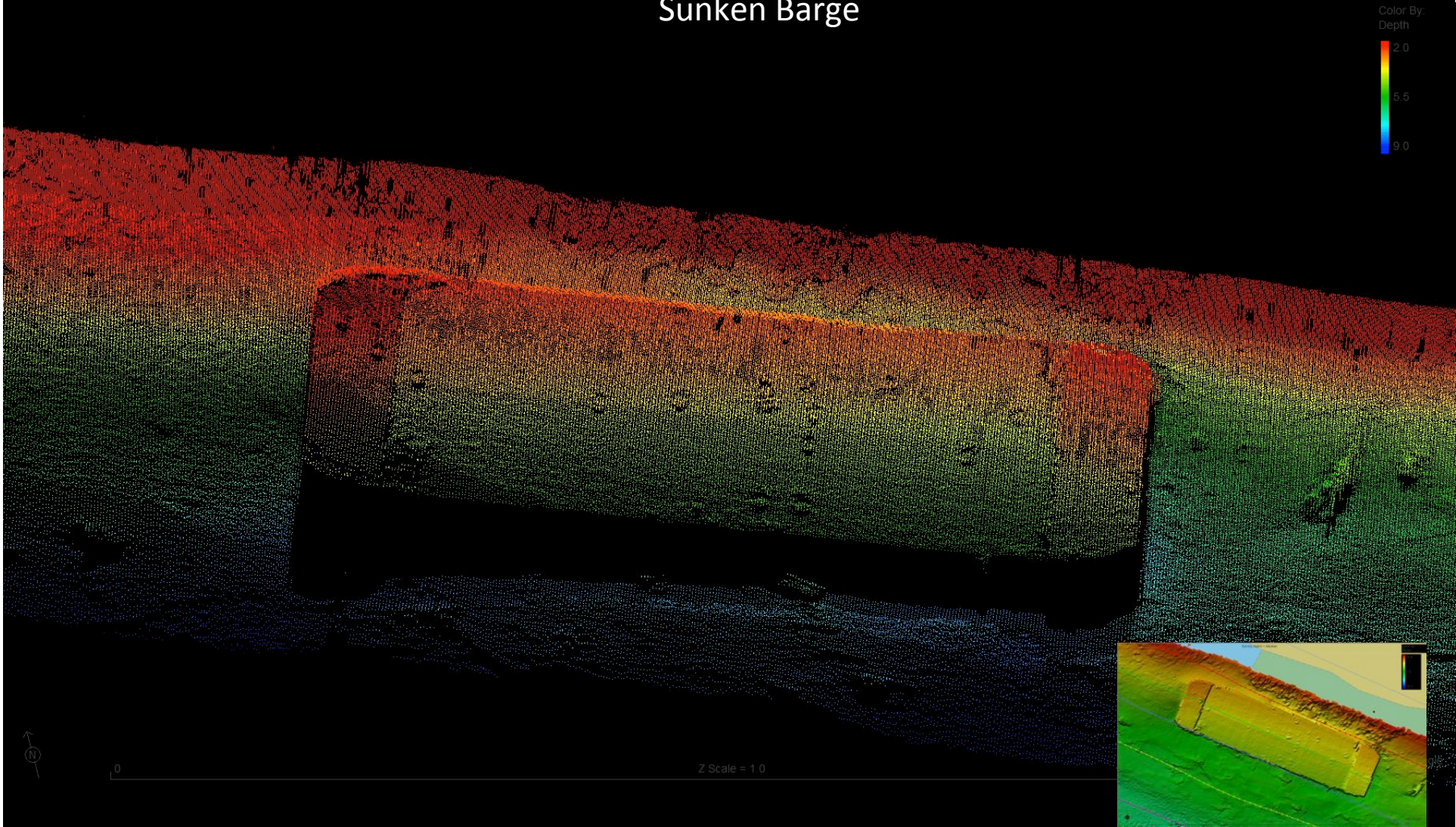
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29 April, 2013

Agenda – Portland April 2013

Results : Survey Columbia River

Sunken Barge



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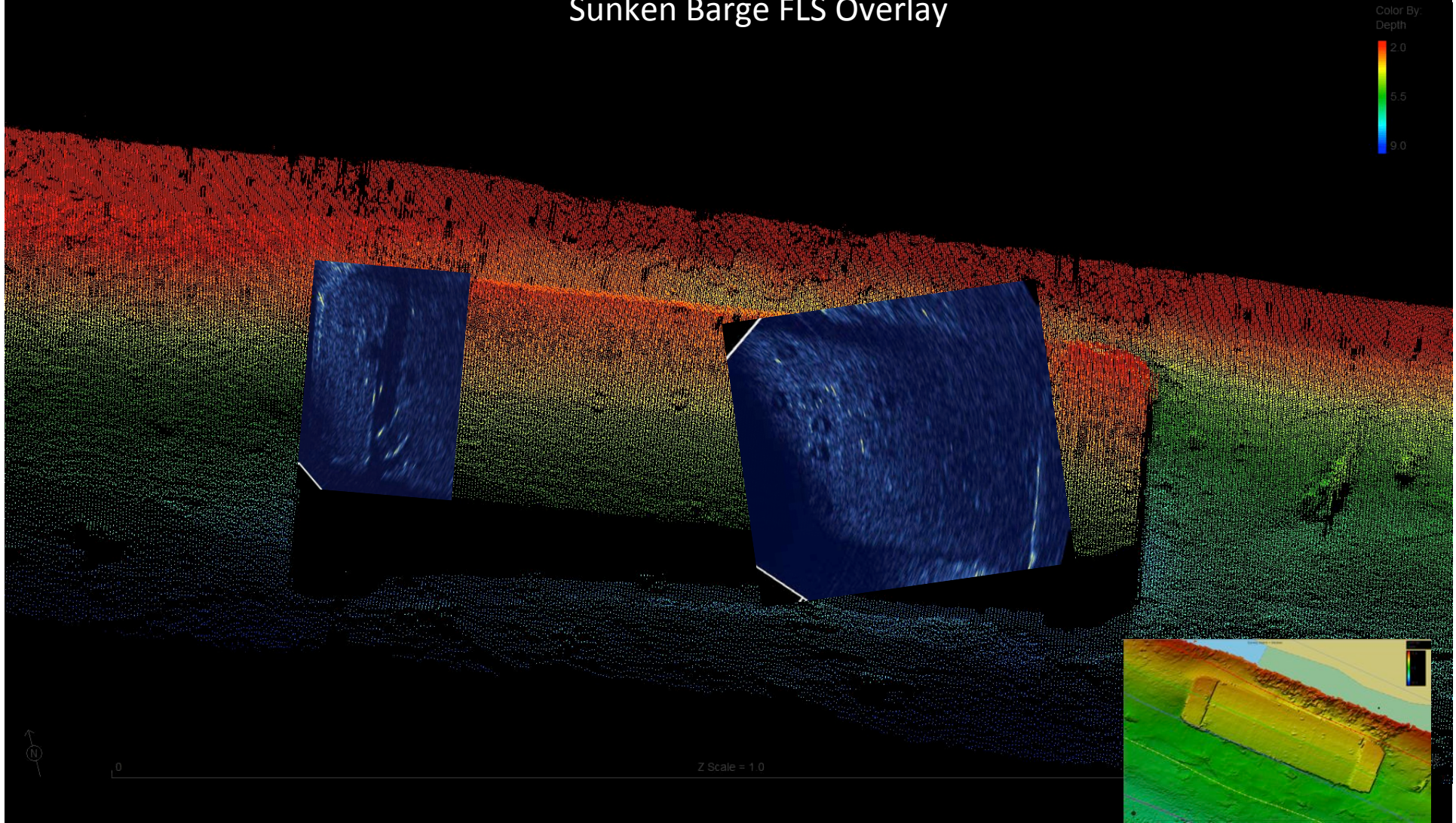
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Agenda – Portland April 2013 Results : Survey Columbia River Sunken Barge FLS Overlay



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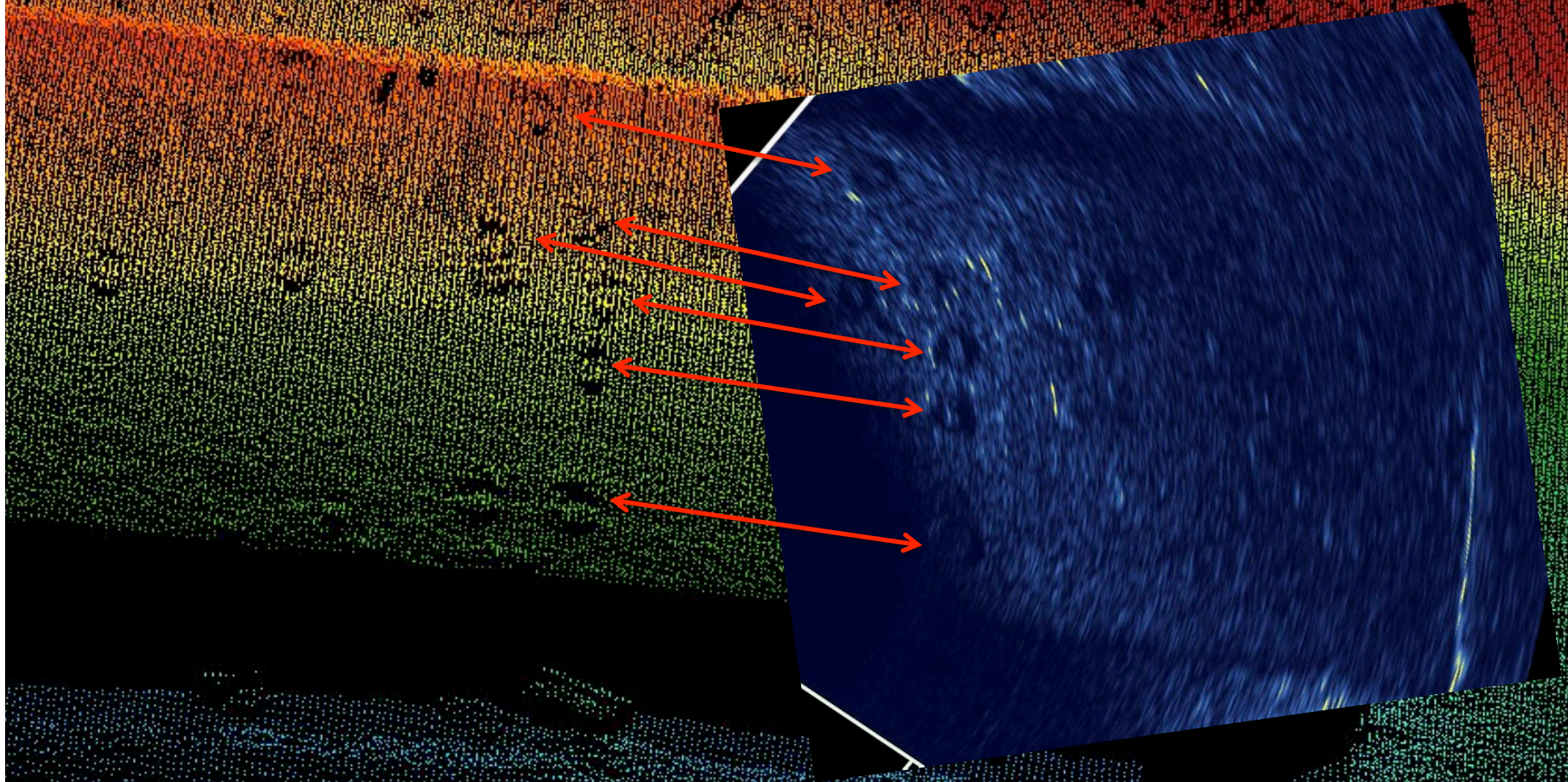
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29 April, 2013

Agenda – Portland April 2013
Results : Survey Columbia River
Sunken Barge FLS Overlay



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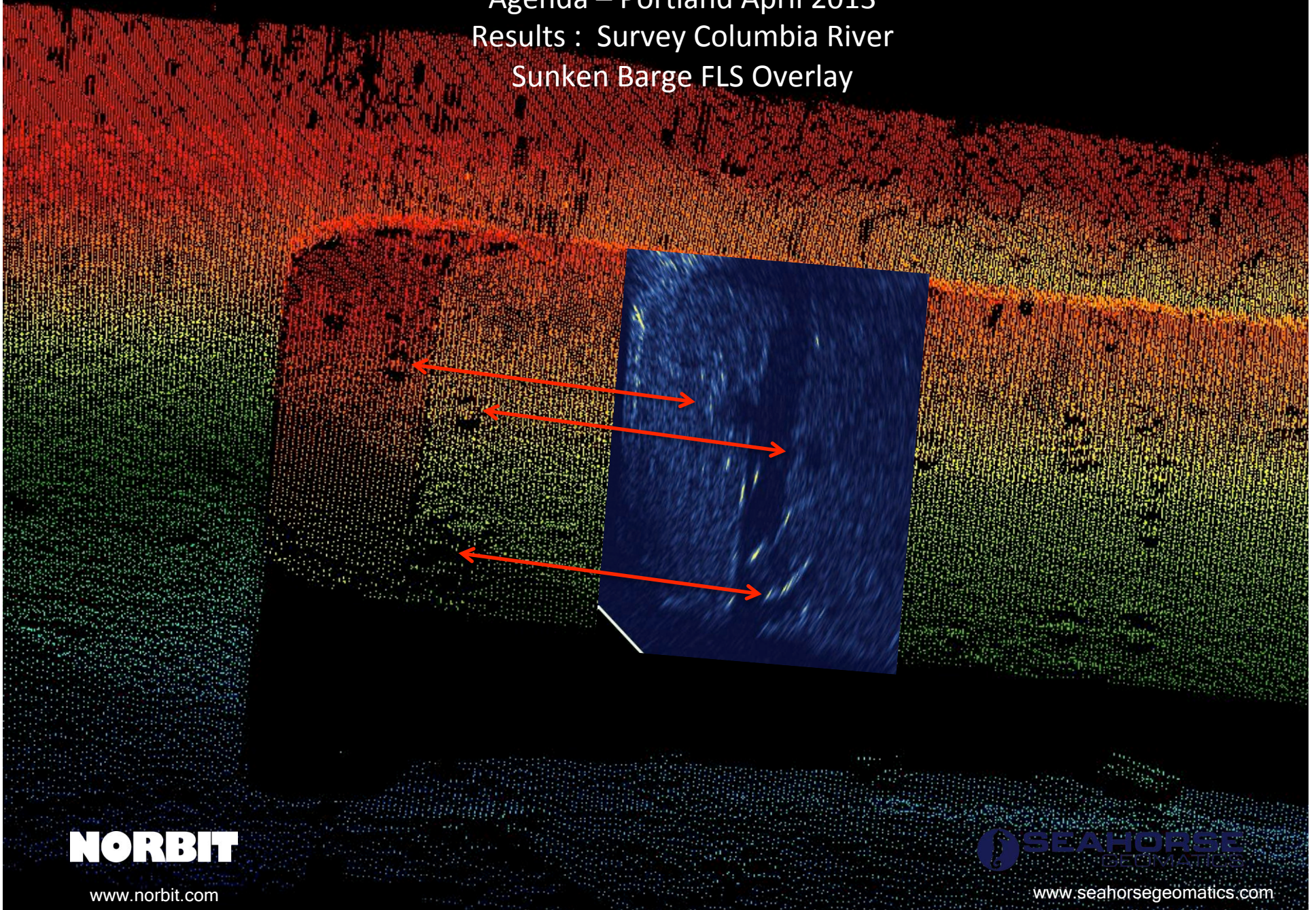
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Results : Survey Columbia River
Sunken Barge FLS Overlay



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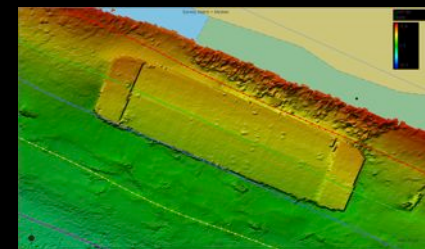
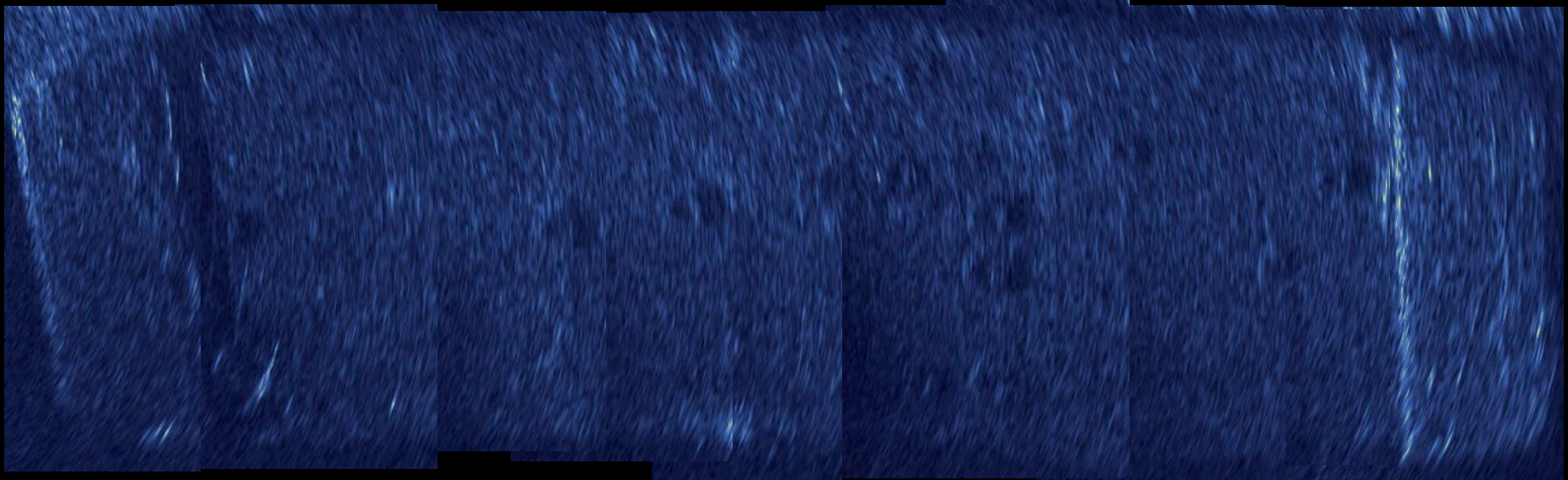
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Agenda – Portland April 2013
Results : Survey Columbia River
Barge FLS Mosaic



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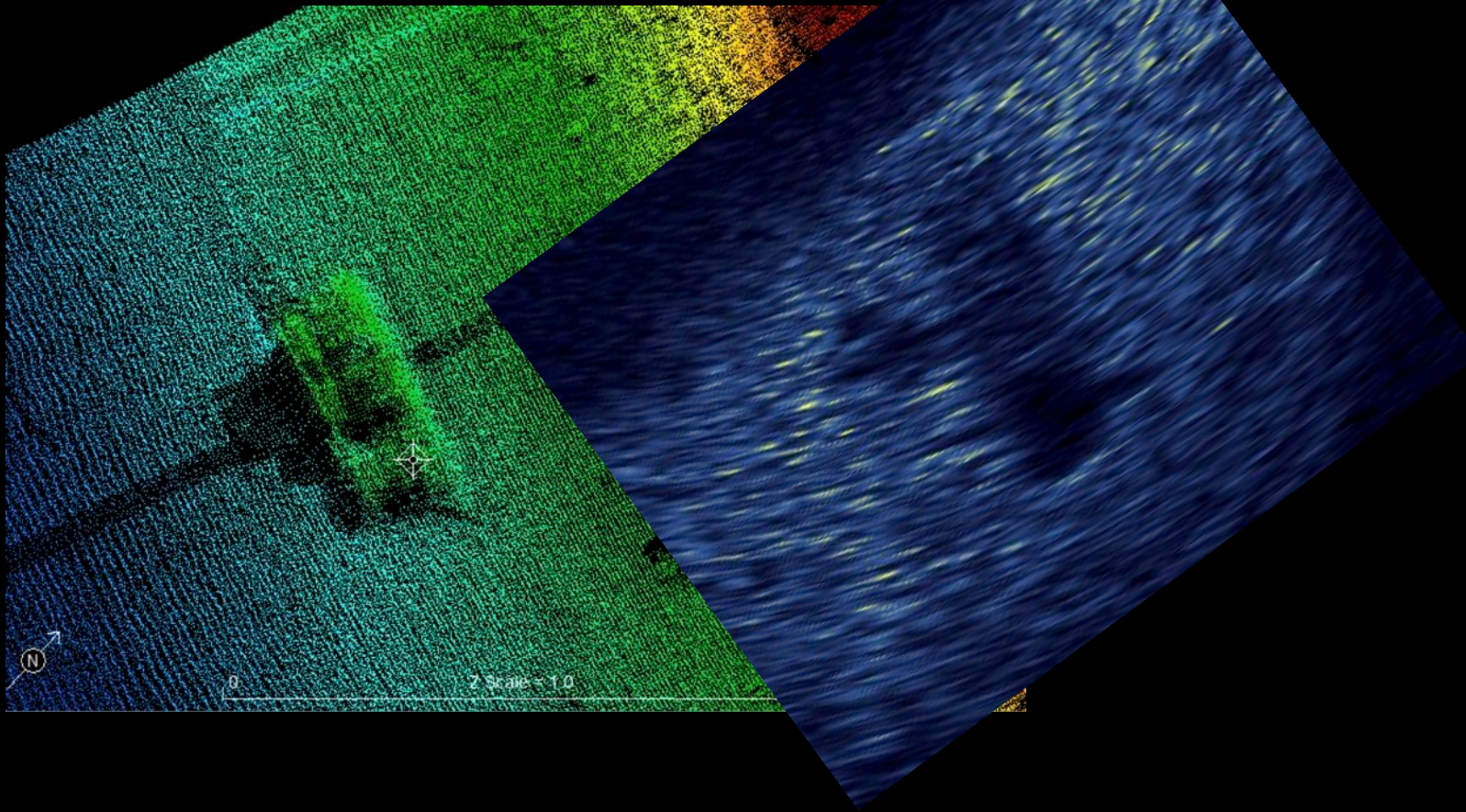
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Results : Survey Columbia River



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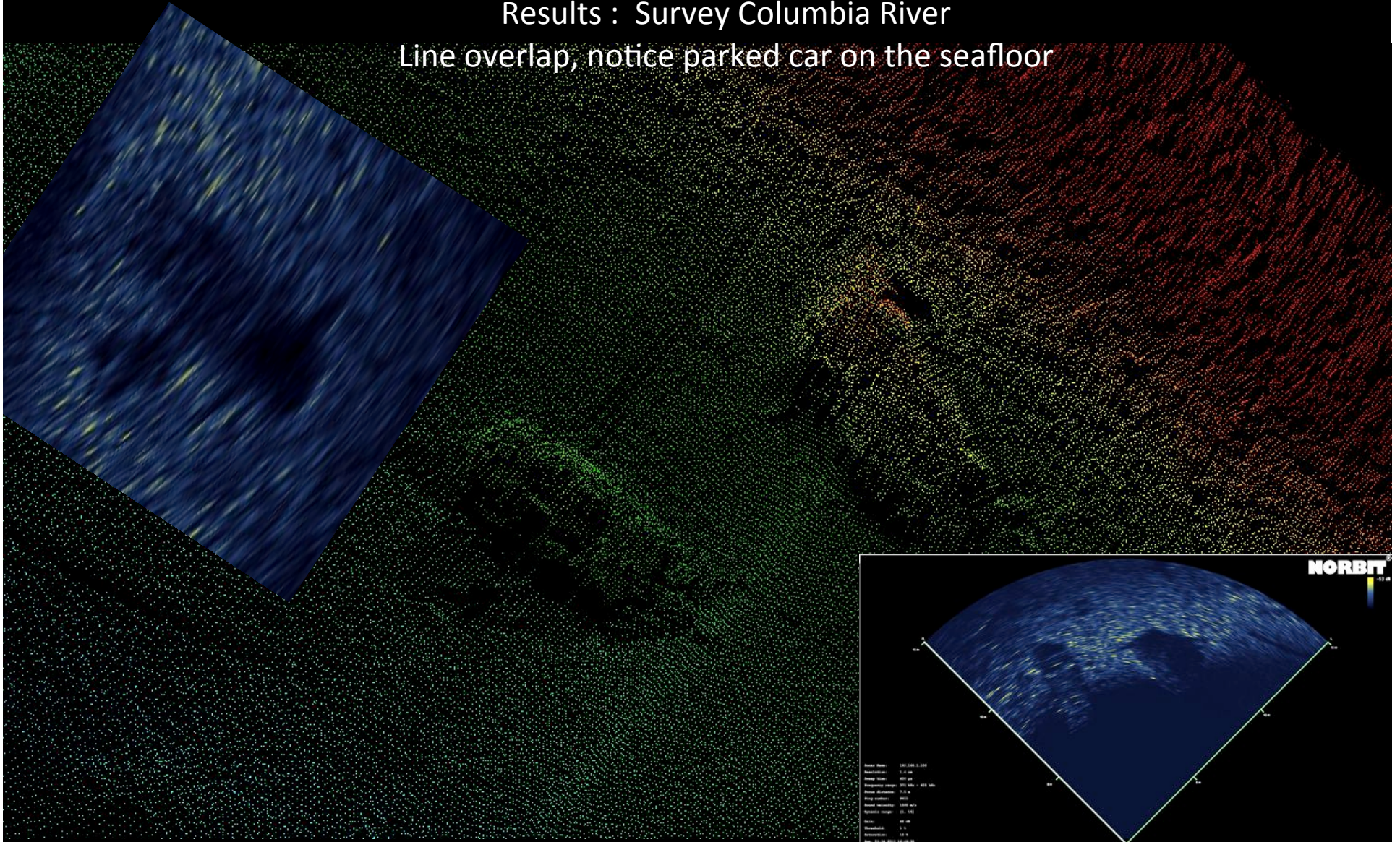
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Line overlap, notice parked car on the seafloor



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Results : Survey Columbia River Downtown

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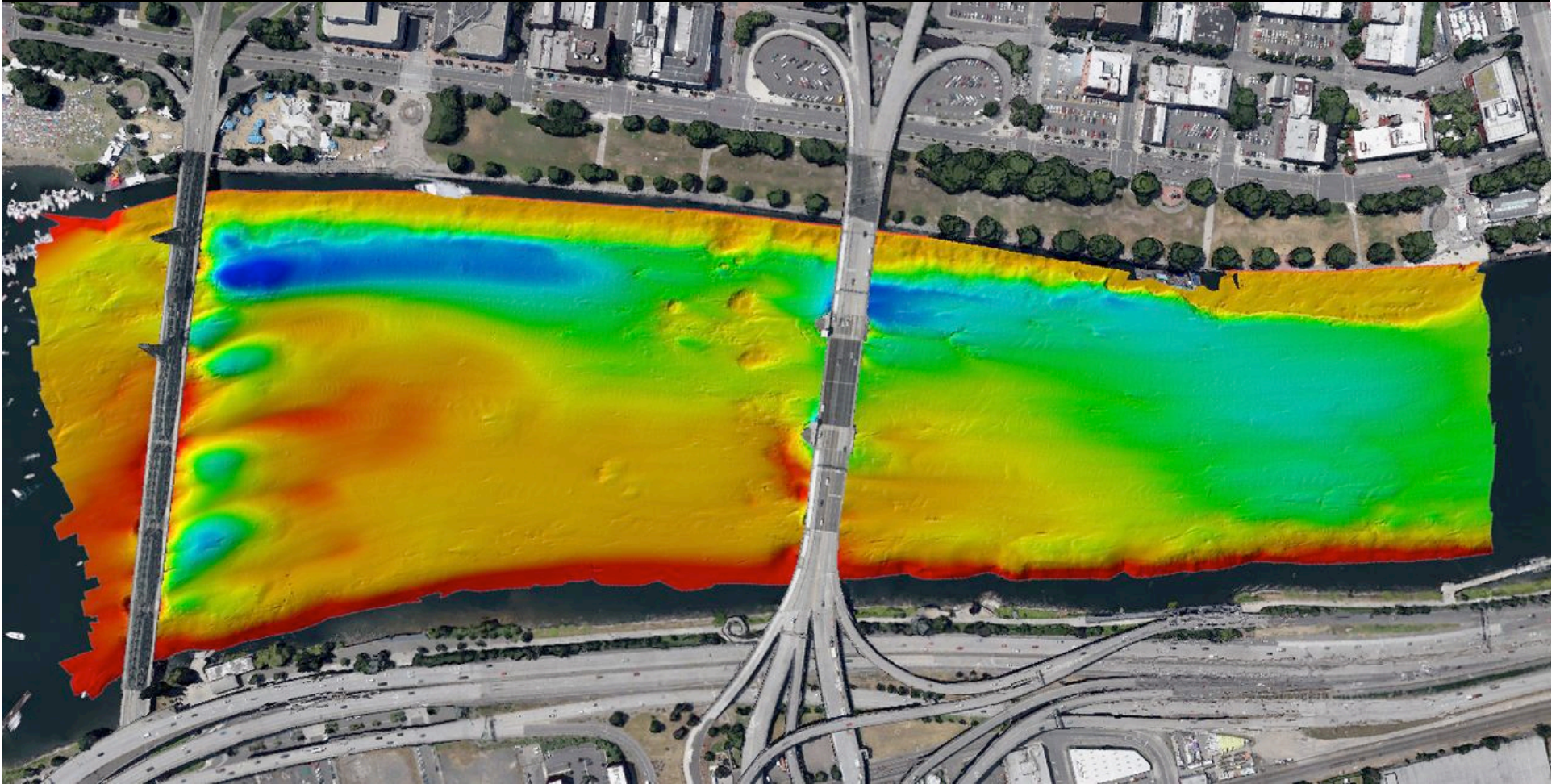
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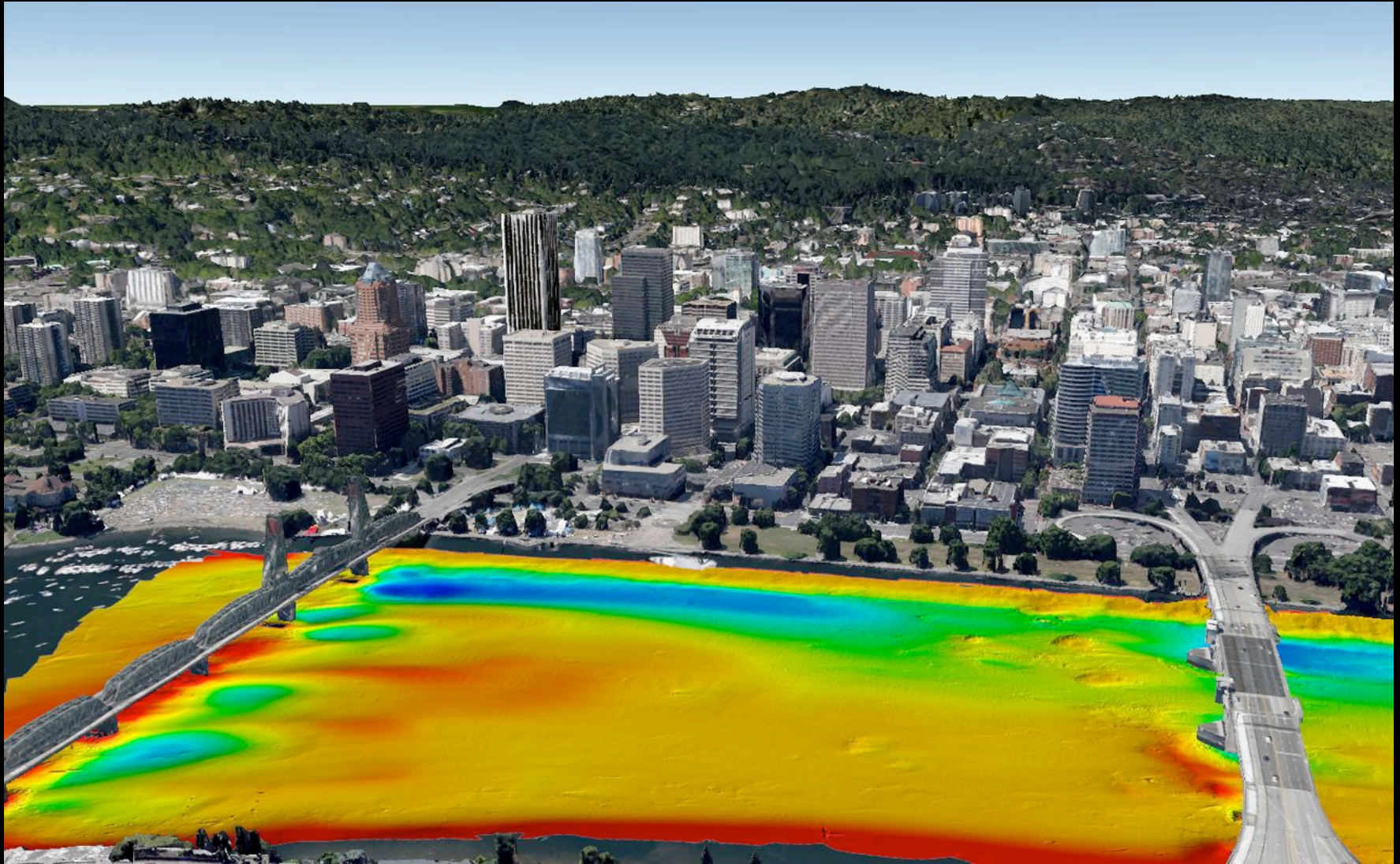
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