3 (or 4) Ways to Improve Your Beach Profiles

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Volunteers

State of Maine Beach Profiling Project

Wells National Estuarine Research Reserve @ Laudholm

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Recommendations

Increasing Effort

1. Note the time when you reach the water.

2. Don’t profile if you can’t see the horizon clearly.

3. Keep your profile sticks level!

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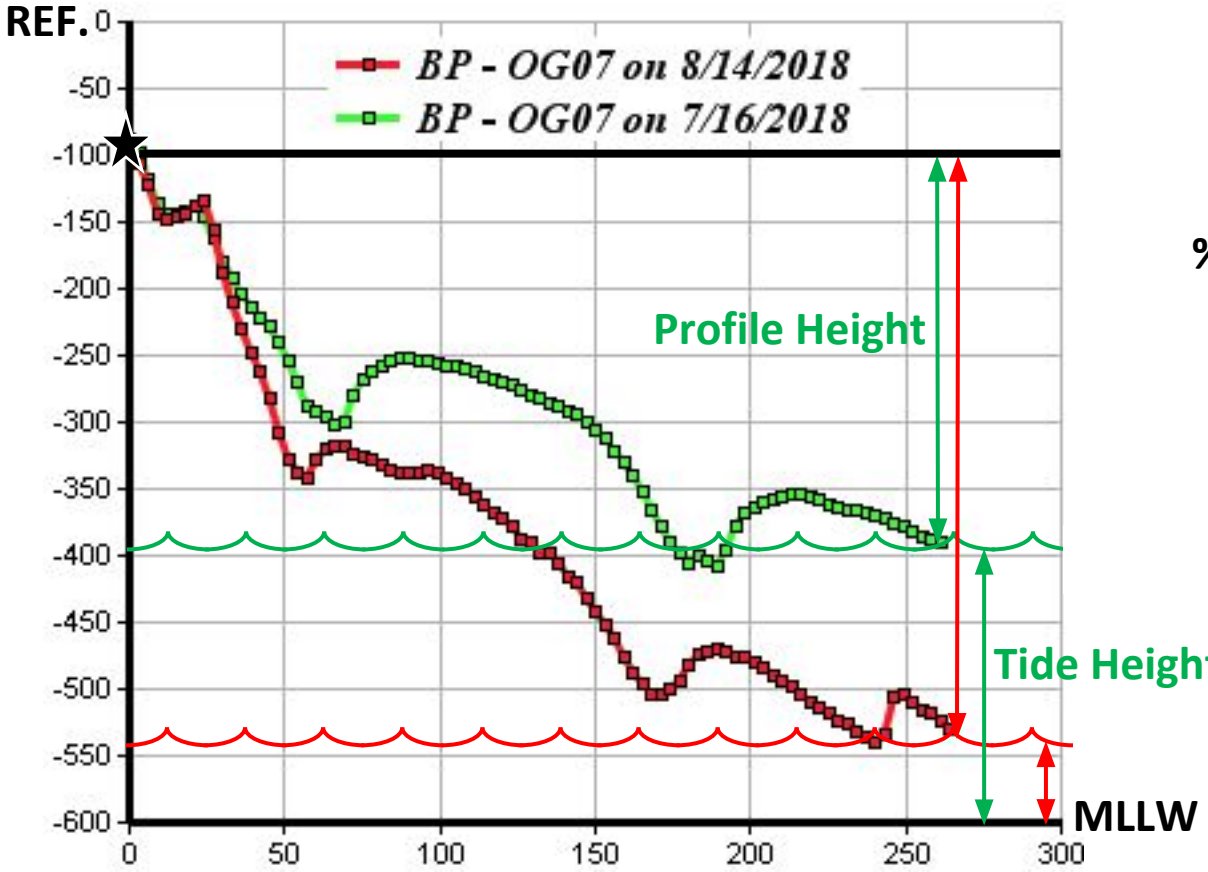
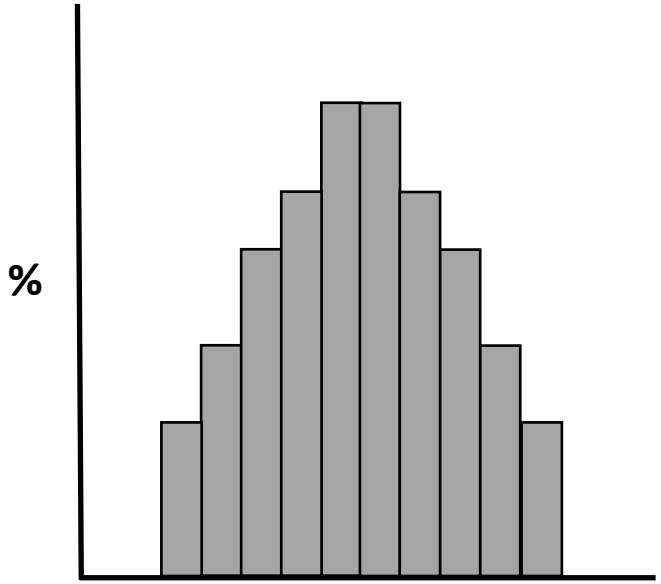
1. Note Time @ End – Emery, 1961

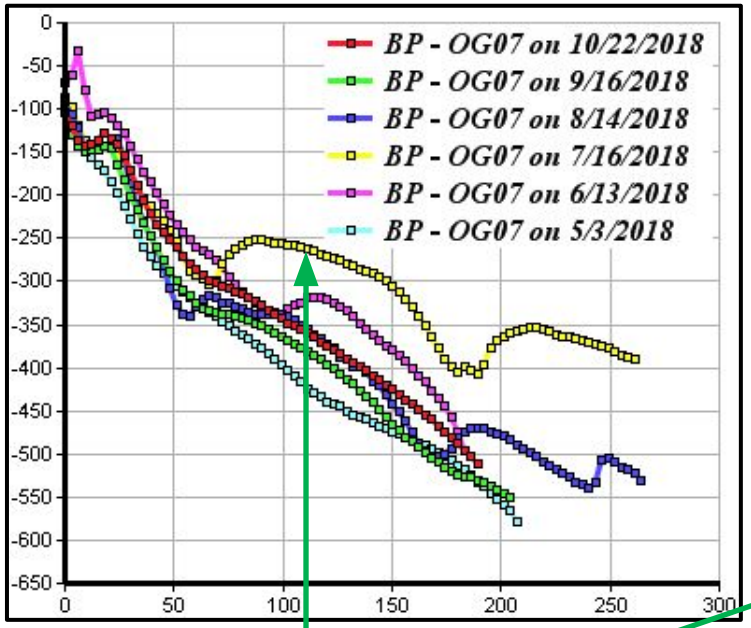


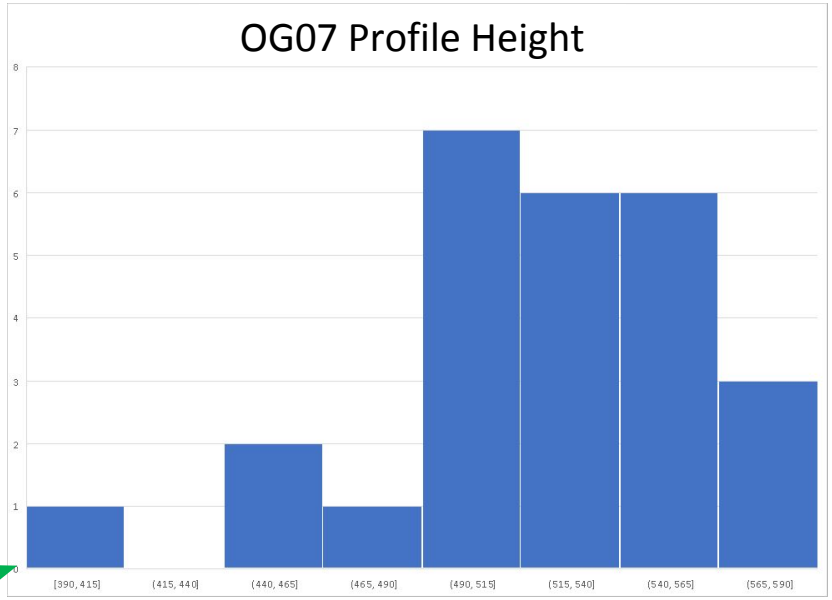


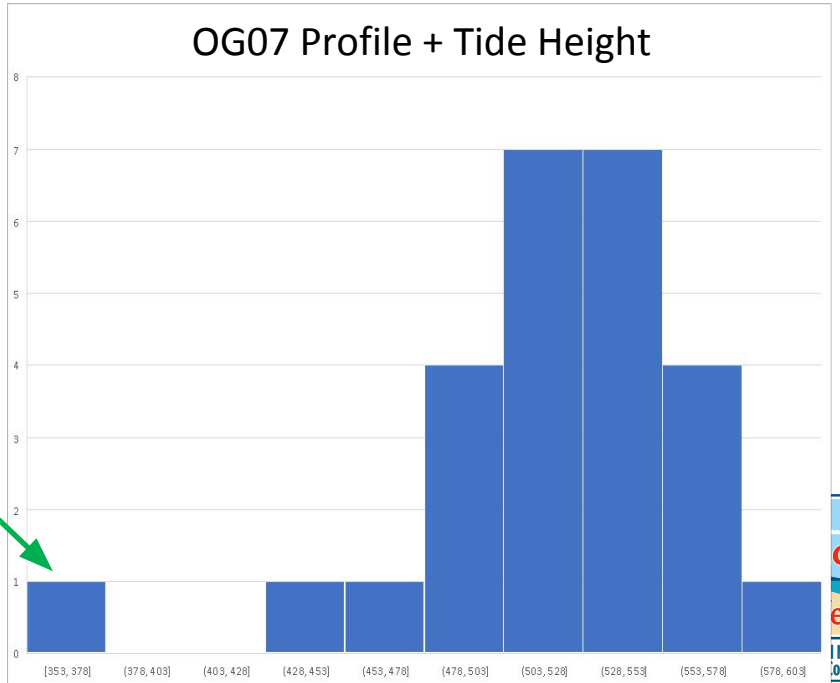
Profile+Tide = REF.-MLLW

Constant!

1. Note Time @ End - QC







Outlier

Does NOT improve profile accuracy…

DOES help identify ‘bad’ profiles! – Quality Control

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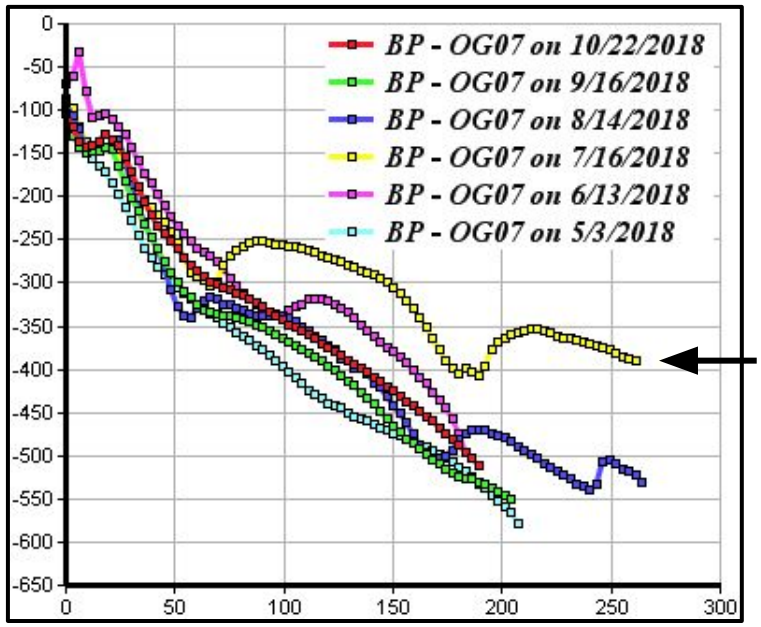
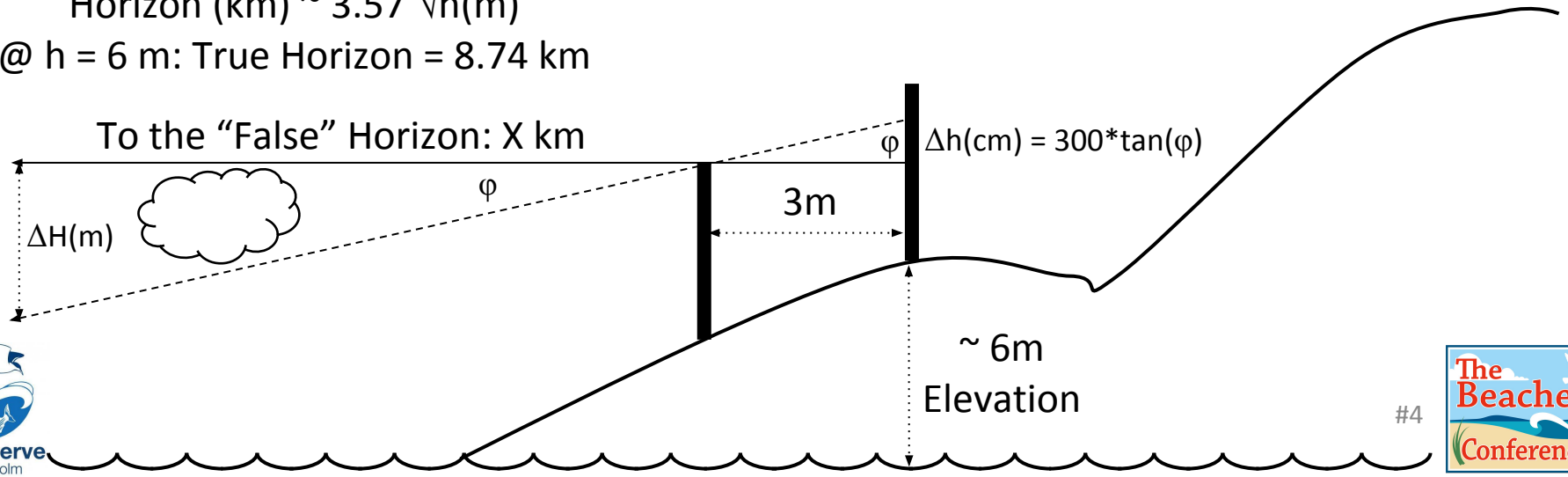
2. Clear Horizon – Surprisingly Important!

ΔH(m)	X(km)	φ(°)	Δh(cm)
10	1	0.57	3.0
10	2	0.29	1.5
10	5	0.11	0.6
20	1	1.15	6.0
20	2	0.57	3.0
20	5	0.23	1.2



Total Error: 1.5 m
90 intervals of 3 m
Interval Error: **1.7 cm**
Implies 0.32° Angle

Horizon (km) ~ 3.57 √h(m)
@ h = 6 m: True Horizon = 8.74 km



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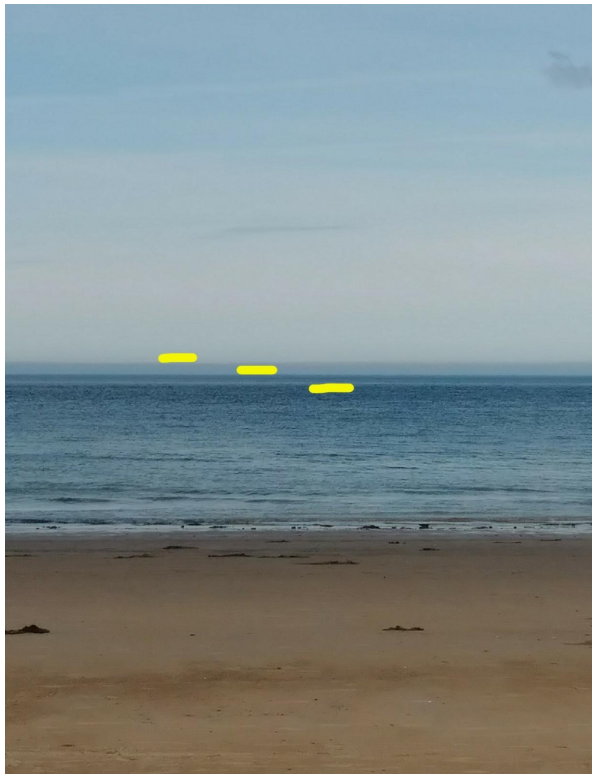
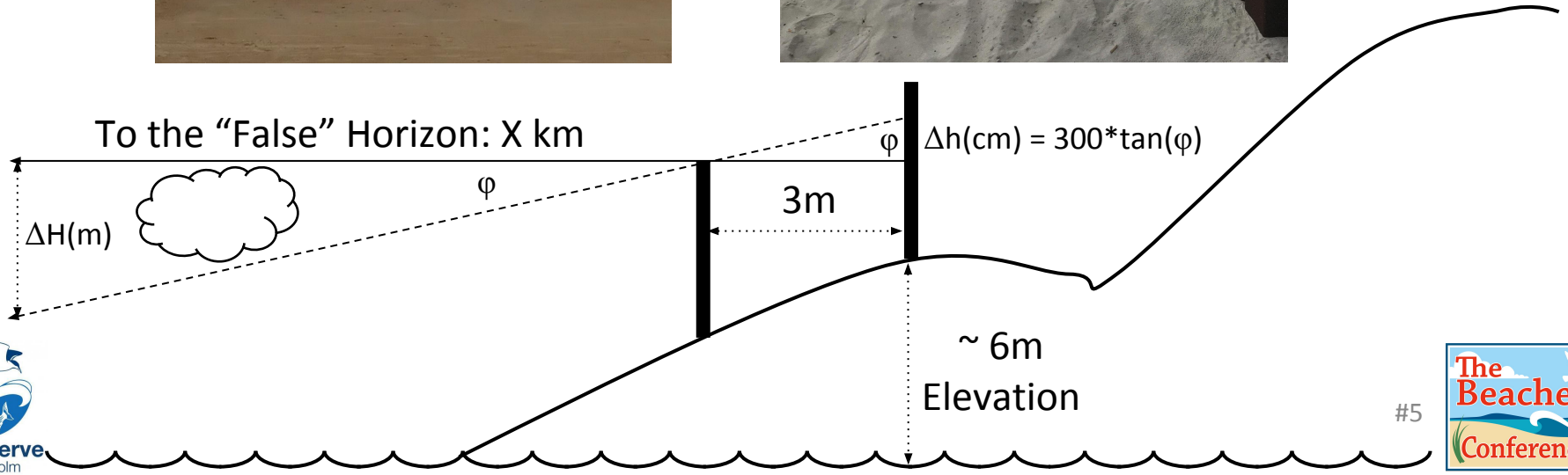
2. Clear Horizon – Surprisingly Important!





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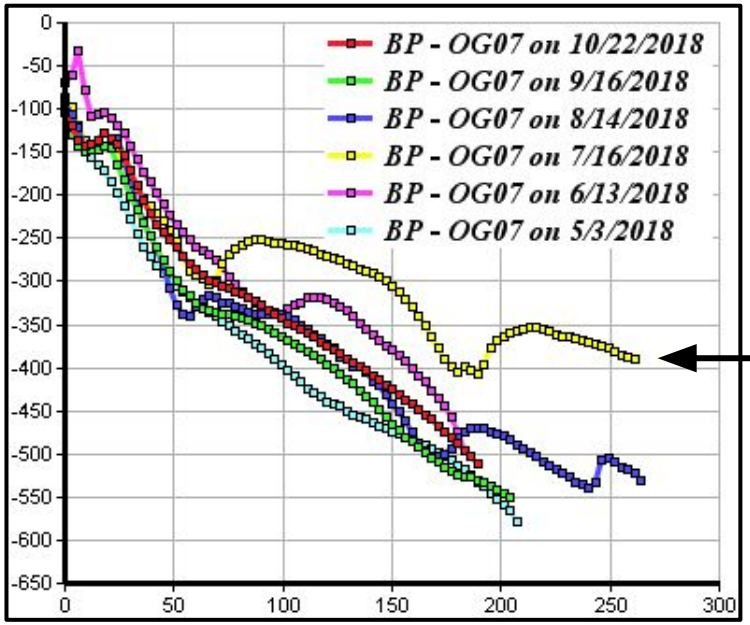
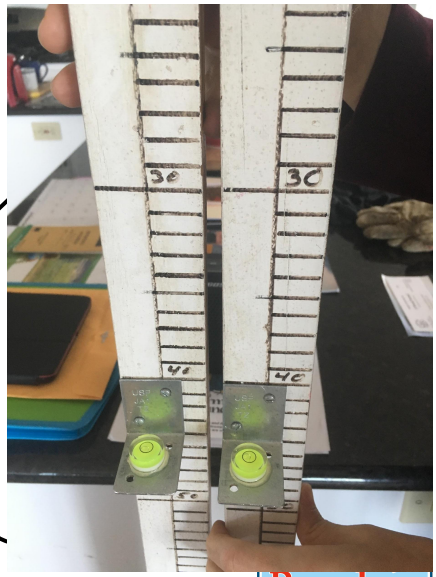
3. Level Sticks – Maine GS Guidelines

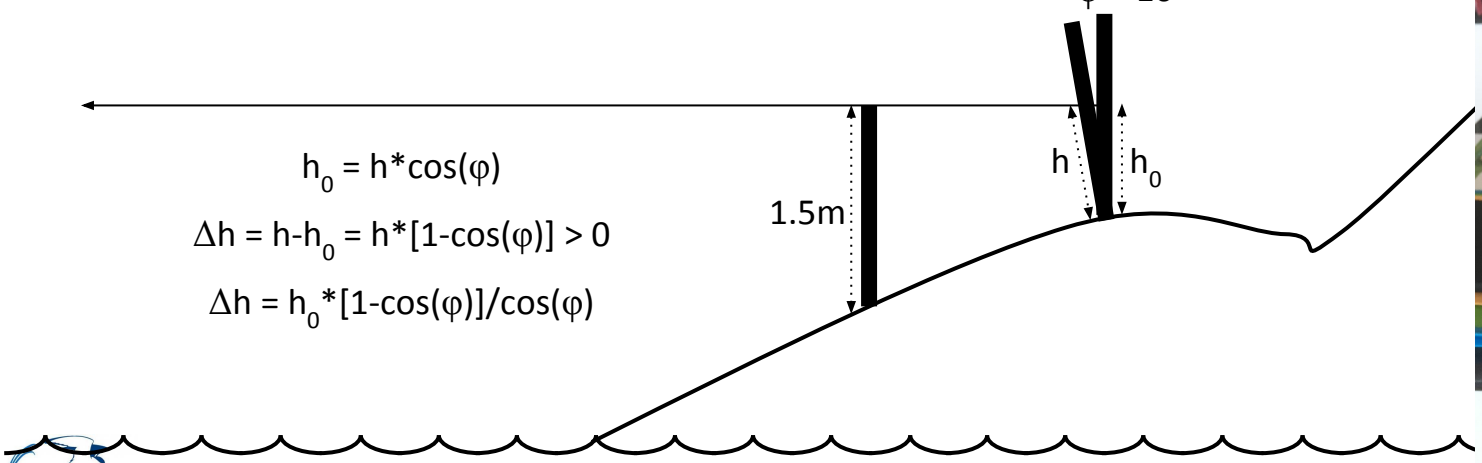
φ(°)	Δh(cm)
1	.02
2	.09
5	0.5
10	2.2
15	4.9



Total Error: 1.5 m
90 intervals of 3 m
Interval Error: **1.7 cm**
Implies 9° Angle

$4





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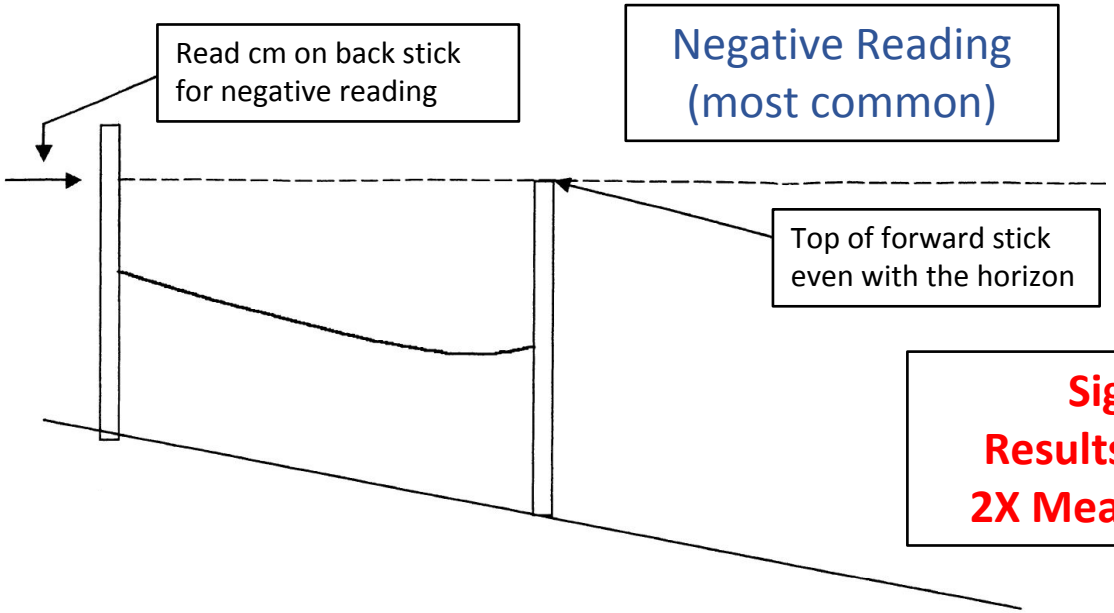
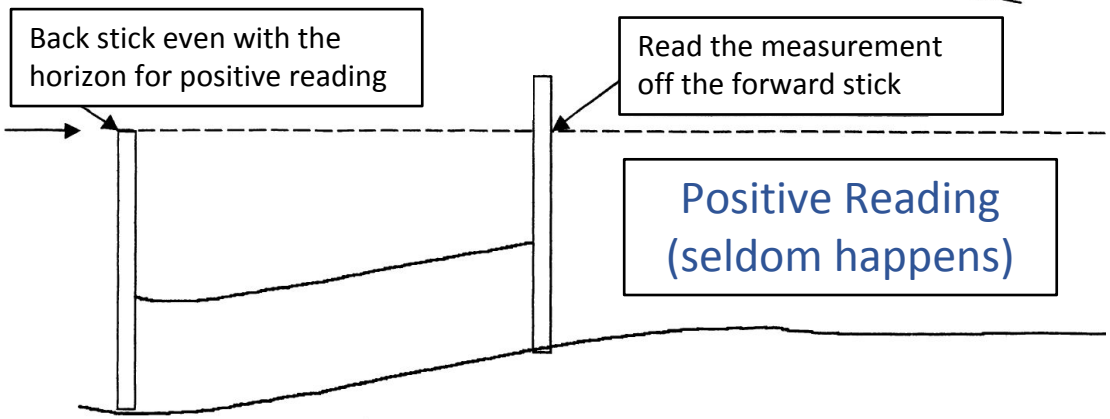
4. And last, but not least – Be Careful!



Sign Error
Results in Mistake
2X Measurement…



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Conclusions

1. Note the time when you reach the water.

   Improves quality control.

2. Don’t profile if you can’t see the horizon clearly.

   False horizon can ruin the whole profile.

3. Keep your profile sticks level.

   Inexpensive levels minimize errors.

4. Be careful! 😉

Thanks to the Wells Reserve @ Laudholm, the Maine Geological Survey, & NOAA/Maine Sea Grant!

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