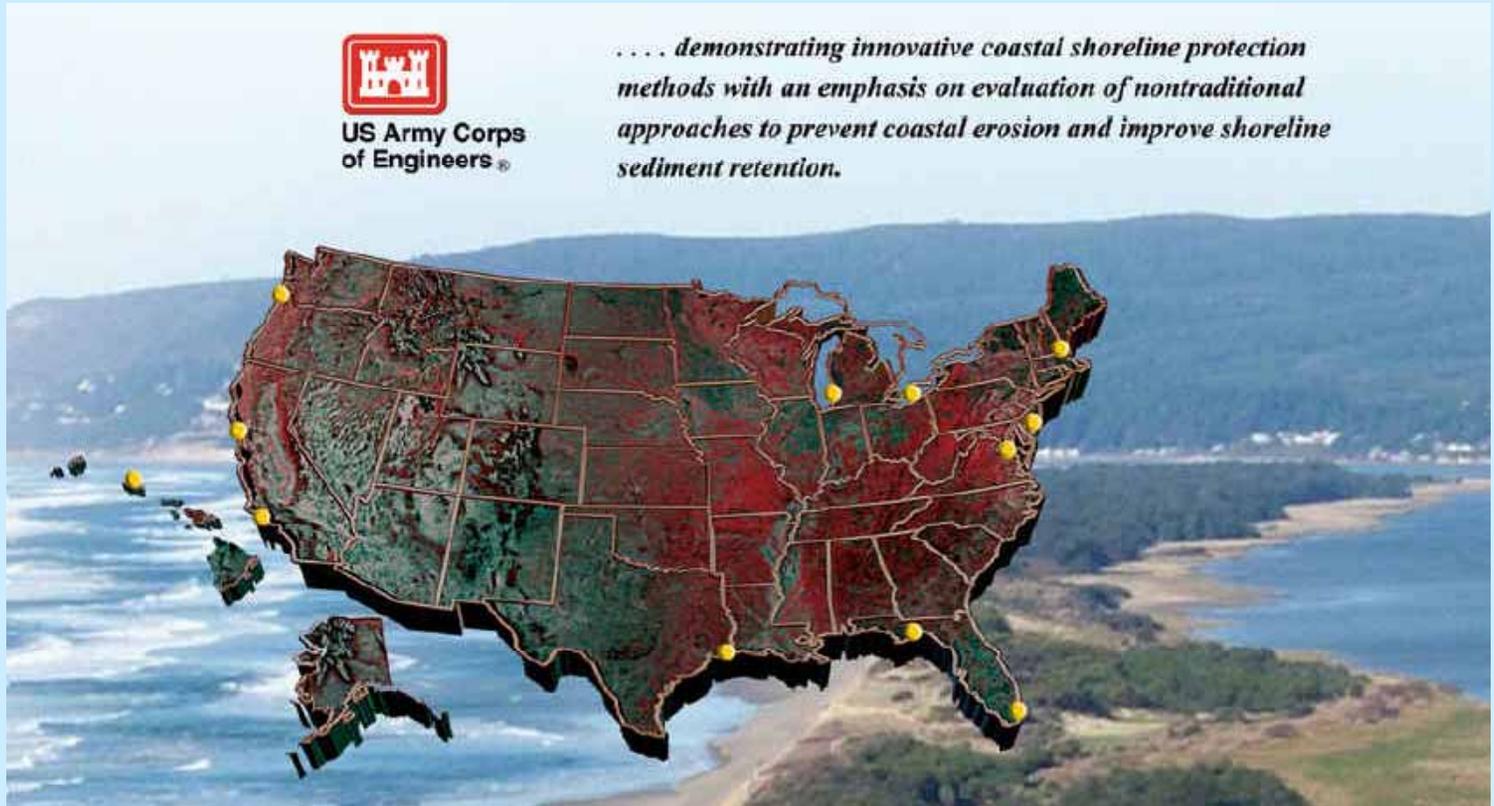


# National Shoreline Erosion Control Demonstration and Development Program



# Netarts Spit, Oregon

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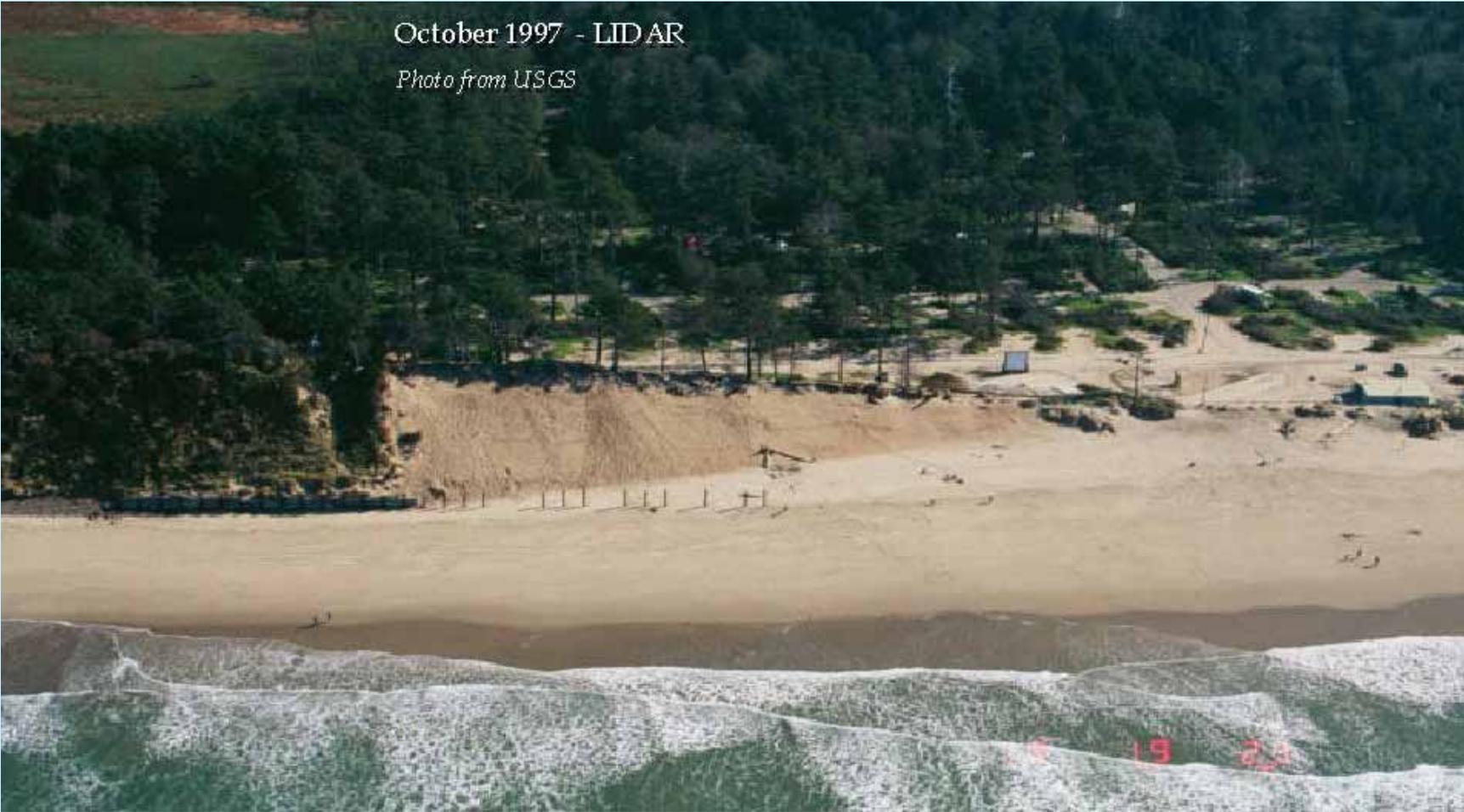


2/25/2002



October 1997 - LIDAR

*Photo from USGS*





Cape Lookout State Park -11/98

*Photo by David Revell*



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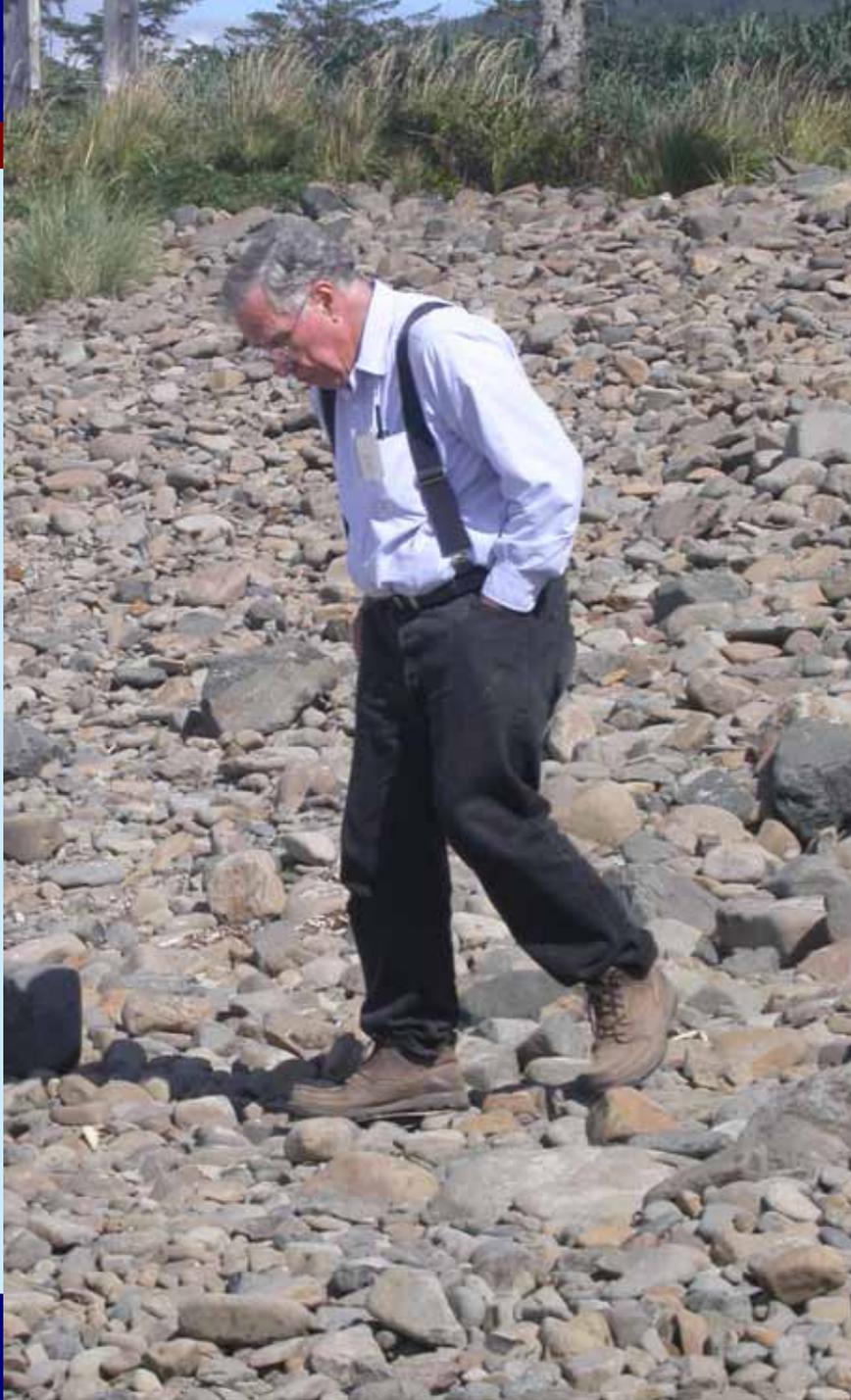
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# North End of Project

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# Dune and Beachfill

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# Large Stones Rolled Up Dune

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# Erosion at South End of Project

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# Erosion at South End of Park

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# Continued Erosion South of Project

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Netarts Spit

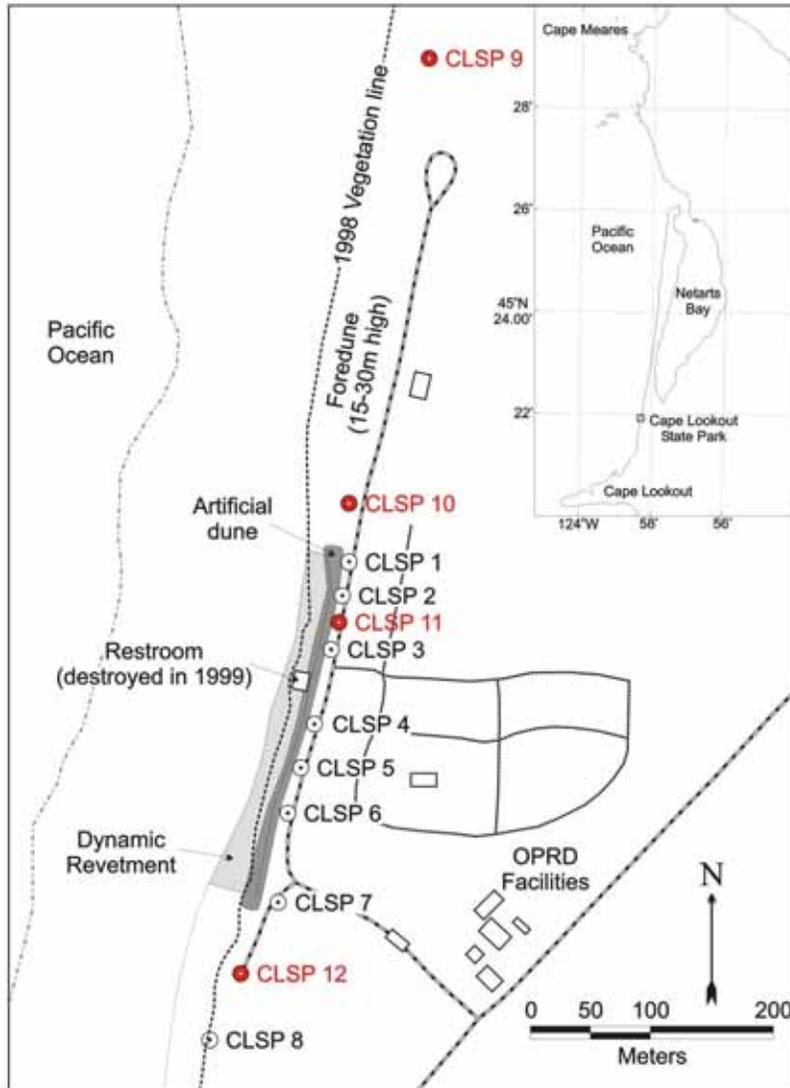


Cape Lookout  
Survey Sites

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# Survey Grid

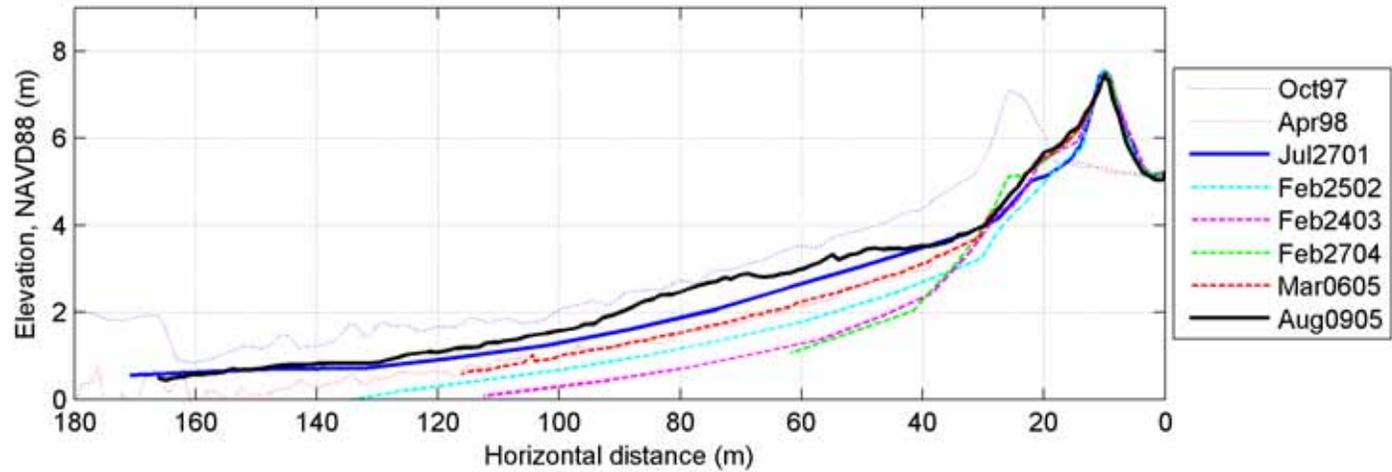


# Northern Section Project

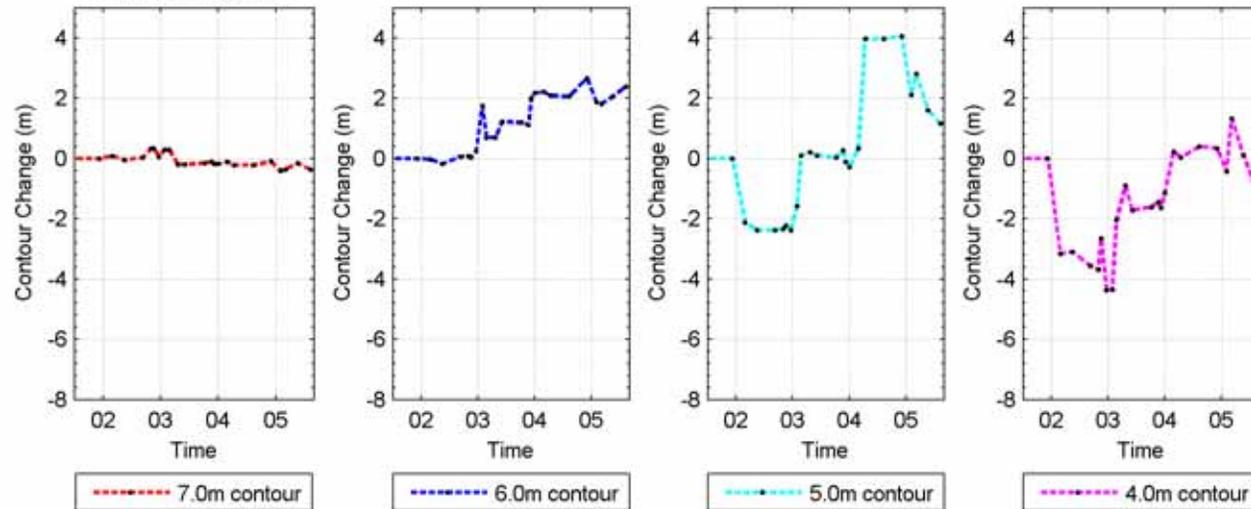
SECTION

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### Cape Lookout Profile 3



### Contour Change Plots

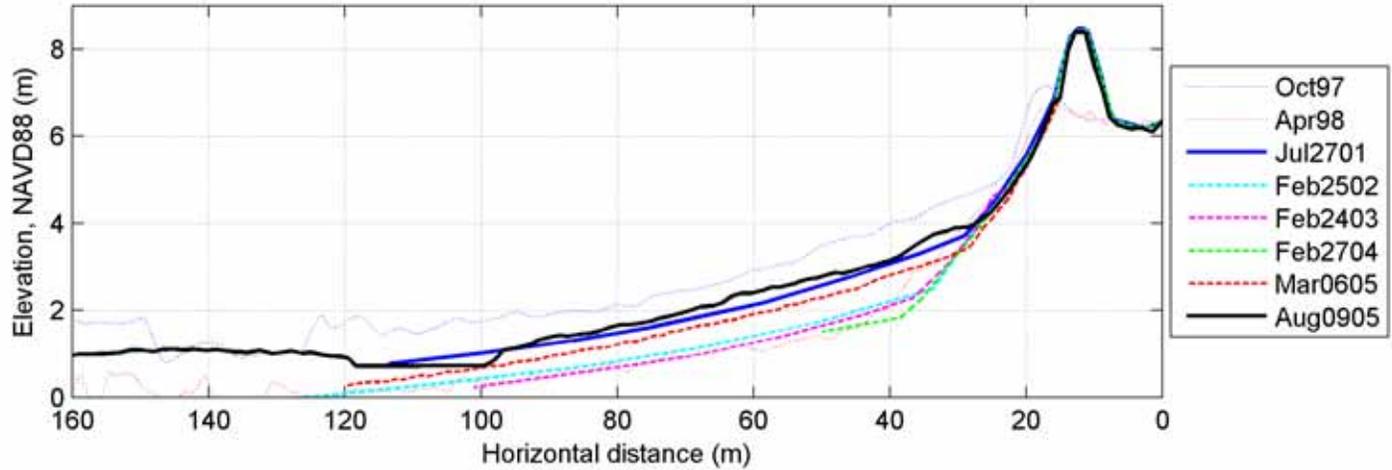


# Southern Section Project

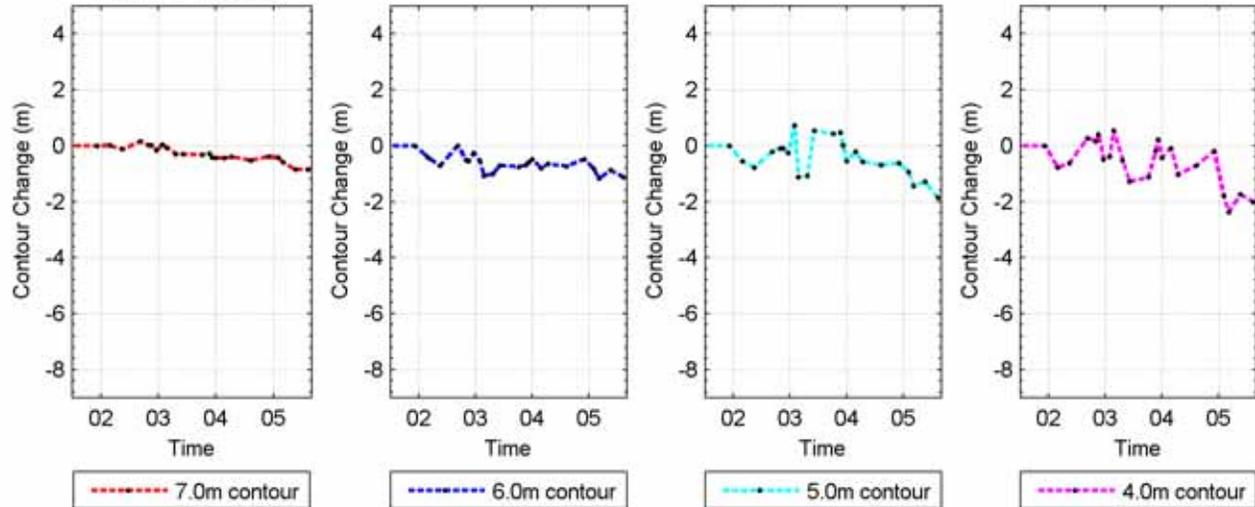
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Cape Lookout Profile 6



Contour Change Plots

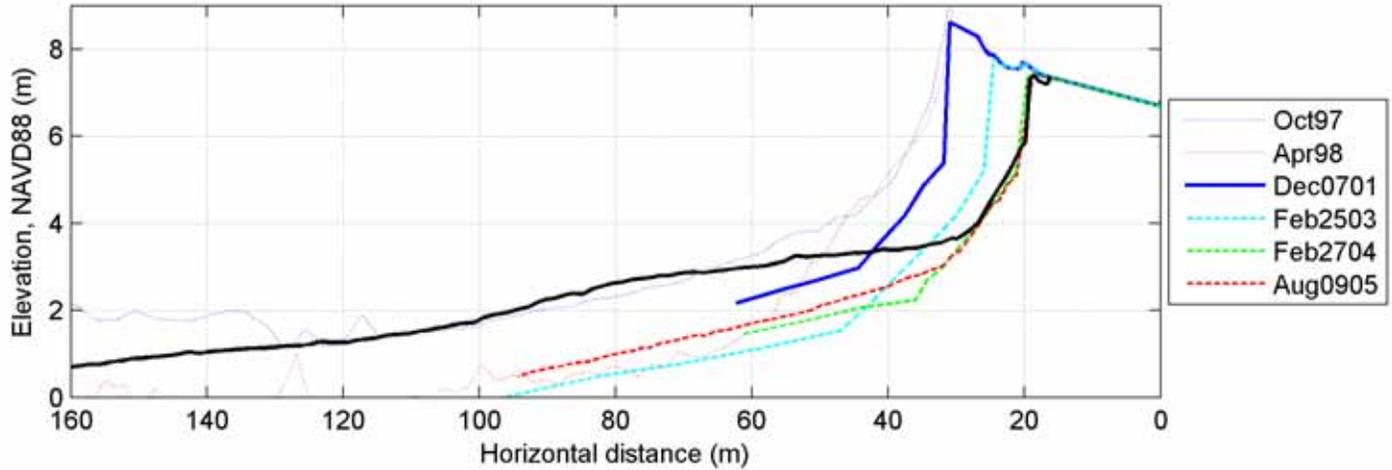


# Native Beach to South

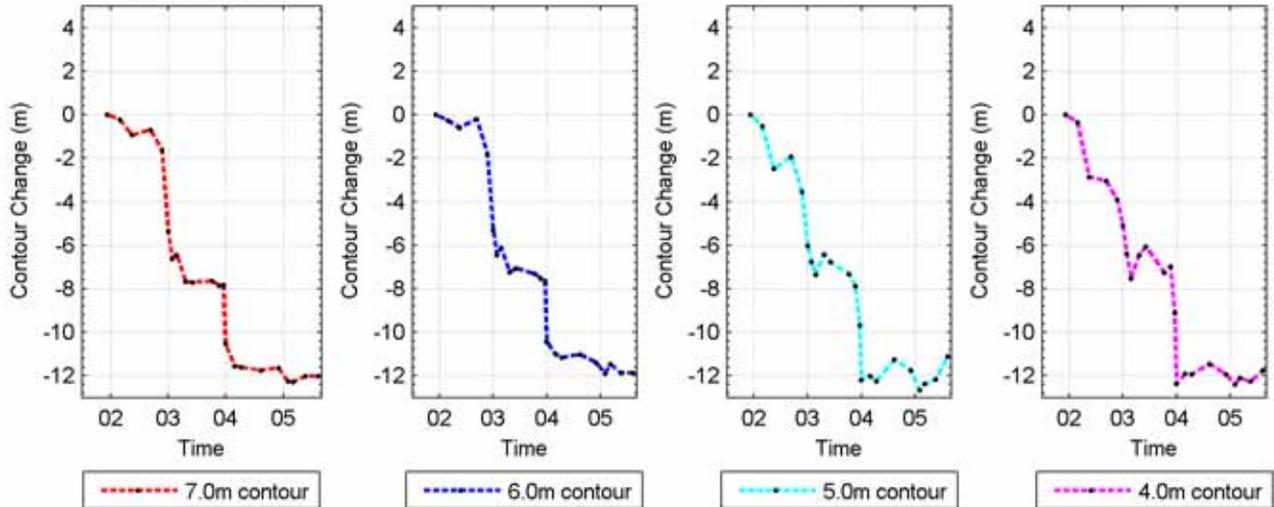
SECTION

227

Cape Lookout Profile 8



Contour Change Plots

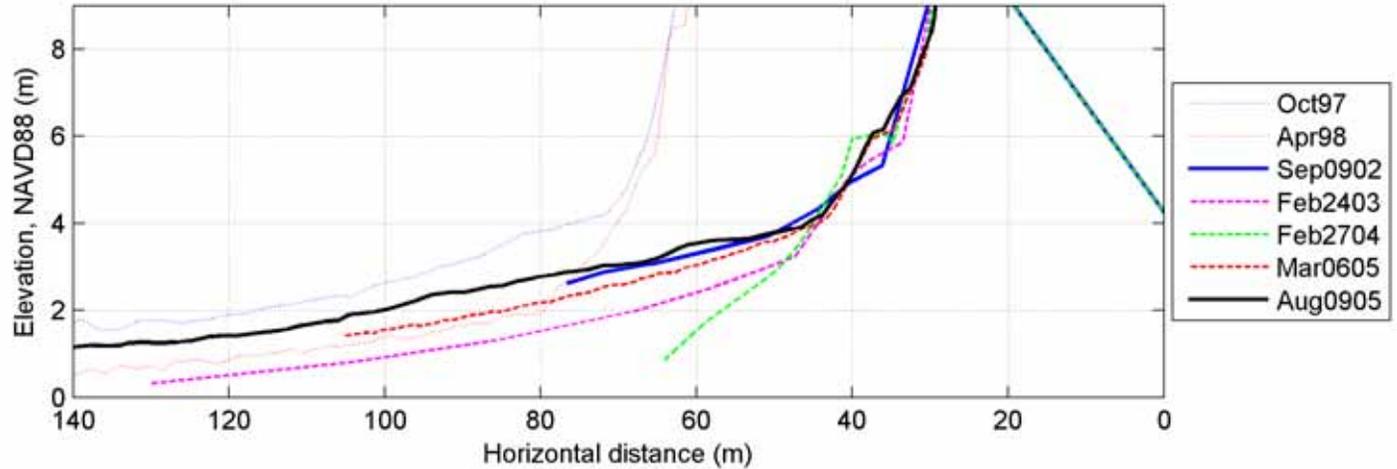


# Native Beach to North

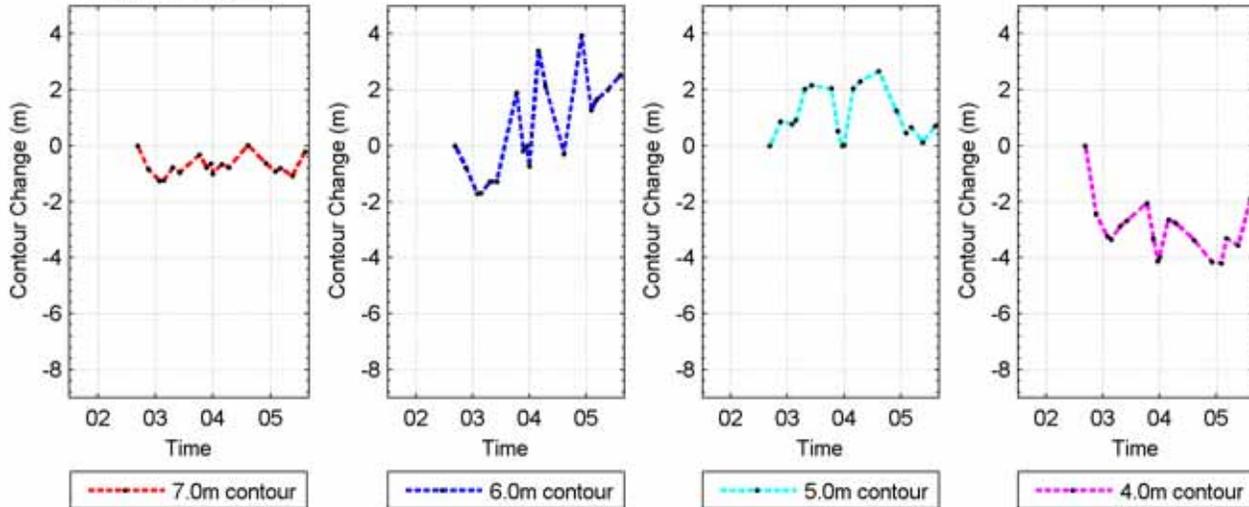
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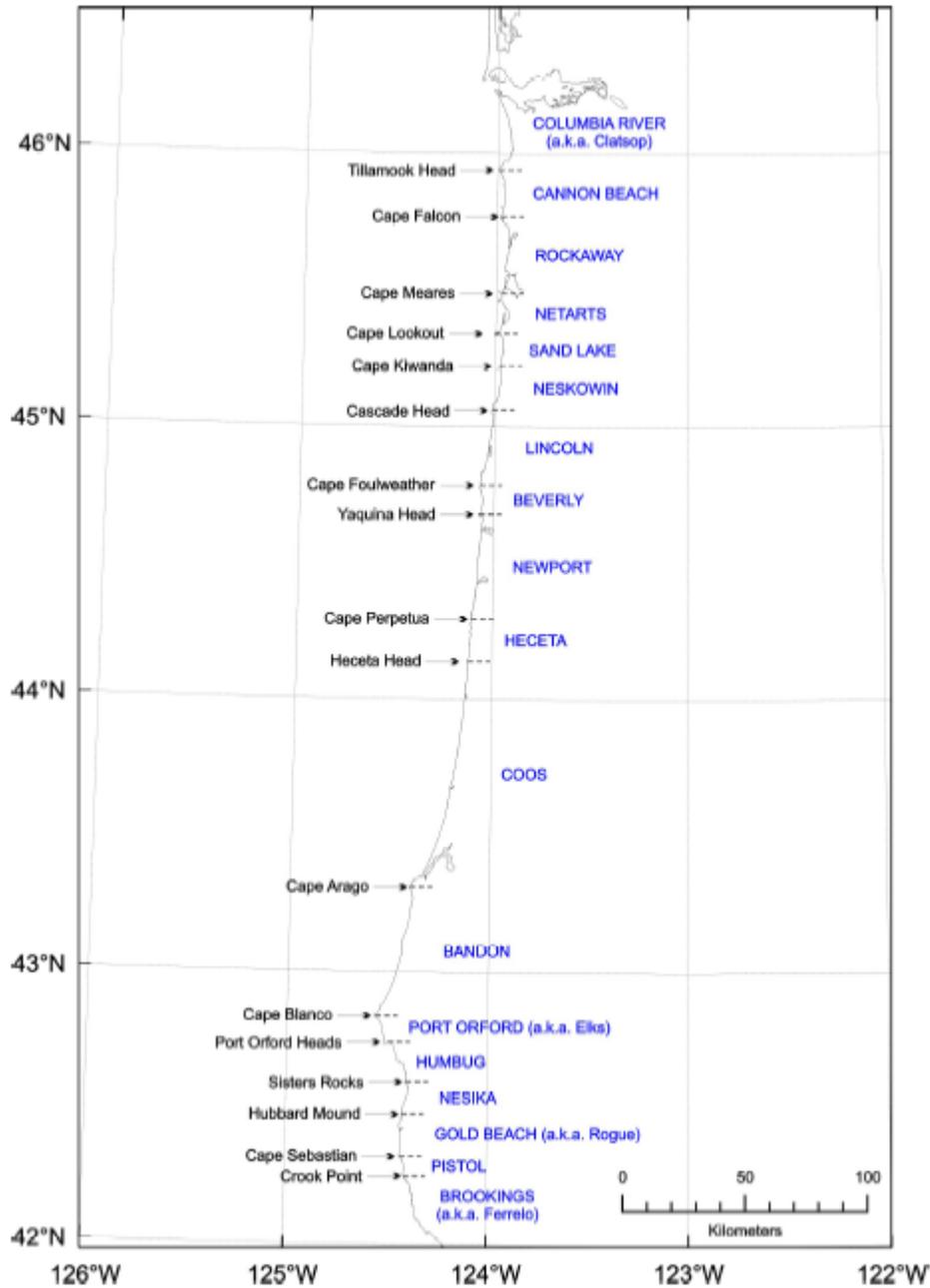
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### Cape Lookout Profile 9



### Contour Change Plots





# Map of Oregon Coast Littoral Cells



# Summary of Gravel Beaches in Oregon

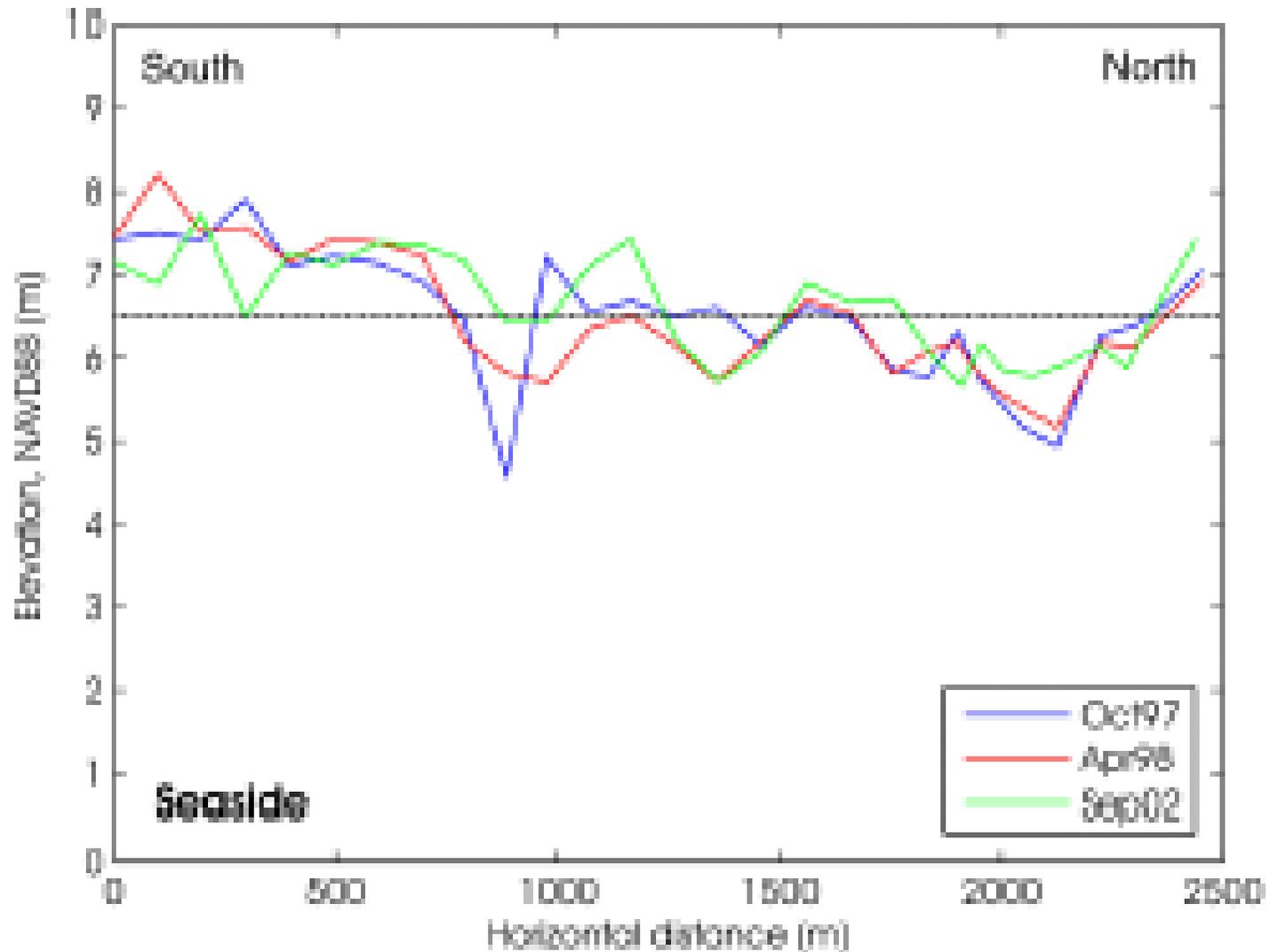
Profile (N = 27)	Gravel Beach Crest Elevation (m)	Gravel Beach Slope (°)	Sand Beach Slope (°)	Width of Gravel Beach (m)	Gravel Volume (m <sup>3</sup> .m <sup>-1</sup> )	Grain size (Ø (mm))
Seaside 1	6.6	14.0	-	54	150	-5.68 (51.3)
Seaside 2	6.6	8.9	0.5	47	124	-6.02 (64.9)
Seaside 3	5.8	8.6	0.8	132	427	-6.11 (69.1)
Arch Cape 1	6.5	11.9	2.2	25	46	-5.96 (62.3)
Arch Cape 2	6.7	9.3	2.8	23	53	-5.44 (43.4)
Cove Bch 1	7.0	12.6	1.0	33	104	-5.74 (53.5)
Cove Bch 2	7.1	23.8	0.5	45	160	-6.19 (73.0)
Neahkahnie 1	7.1	9.0	1.5	12	51	-6.44 (86.8)
Neahkahnie 2	6.2	7.5	2.2	27	40	-6.26 (76.6)
Neahkahnie 3	7.3	9.0	-	50	177	-7.00 (128.0)
Cape Meares 1	6.8	8.6	1.1	30	81	-6.44 (86.8)
Cape Meares 2	5.8	6.9	1.8	52	102	-6.65 (100.4)
Short Bch 1	7.4	10.5	2.0	27	67	-5.81 (56.1)
Short Bch 2	7.2	11.4	1.4	20	41	-5.77 (54.6)
Oceanside 1	6.0	13.0	2.5	8	14	-5.33 (40.2)
Oceanside 2	5.5	11.3	2.3	6	11	-
Netarts Spit <sup>a</sup>	5.6	11.4	1.6	11	24	-6.16 (71.5)
Netarts Spit <sup>b</sup>	6.9	10.4	2.6	27	66	-6.46 (88.0)
Cummins Crk 1	5.5	13.8	2.4	7	8	-5.96 (62.3)
Cummins Crk 2	4.9	9.4	1.7	12	12	-5.93 (61.0)
Cummins Crk 3	6.8	11.3	3.7	18	42	-
Bob Creek	6.9	10.0	-	26	52	-5.91 (60.1)
Murial Ponsler 1	6.7	12.8	1.8	13	14	-5.67 (50.9)
Murial Ponsler 2	5.7	11.8	3.0	14	7	-6.65 (100.4)



# Variation in Berm Crest Elevation

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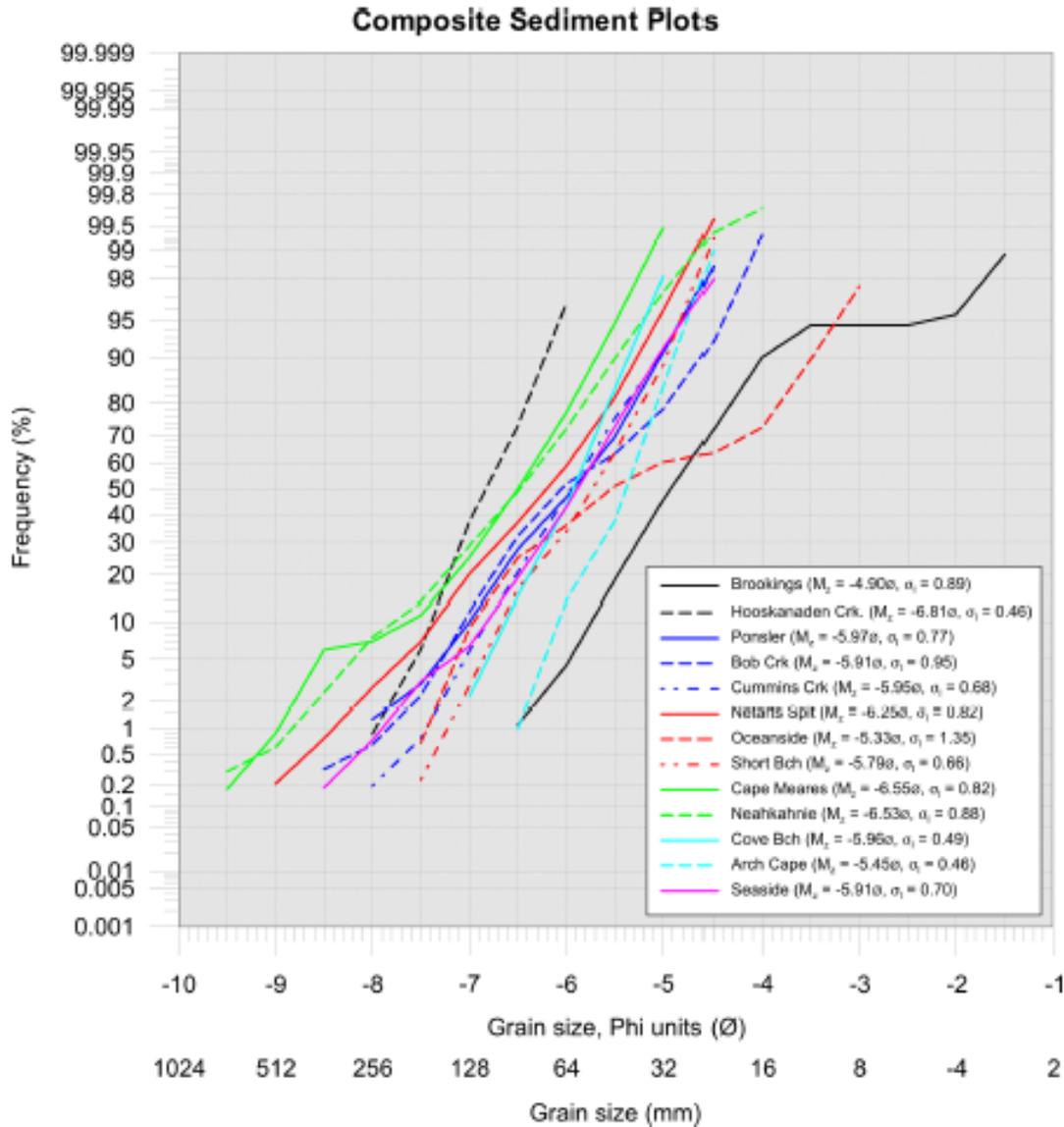


# Gravelometer for Stone Sizes

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Grain Size  
Distributions  
on the Oregon  
Coast



# Design Recommendations

- Minimum recommended berm elevation is 7 m
- Recommended gravel slope is 11 degrees
- Recommended mean stone size is  $-6.00 \Phi$  (64 mm)
- Berm width was approx. 28 m on the northern beaches and 35% smaller on southern beaches
- Berm volume was approx  $77\text{m}^3/\text{m}$  on the northern beaches and 57% smaller on the southern coast



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# PIT Tag

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# Drilling for PIT Tag

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# PIT Tags Epoxied in Stone

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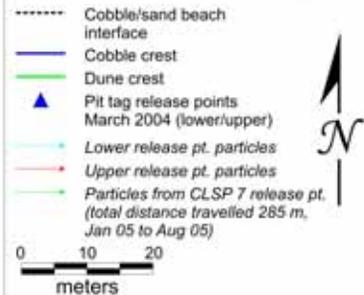
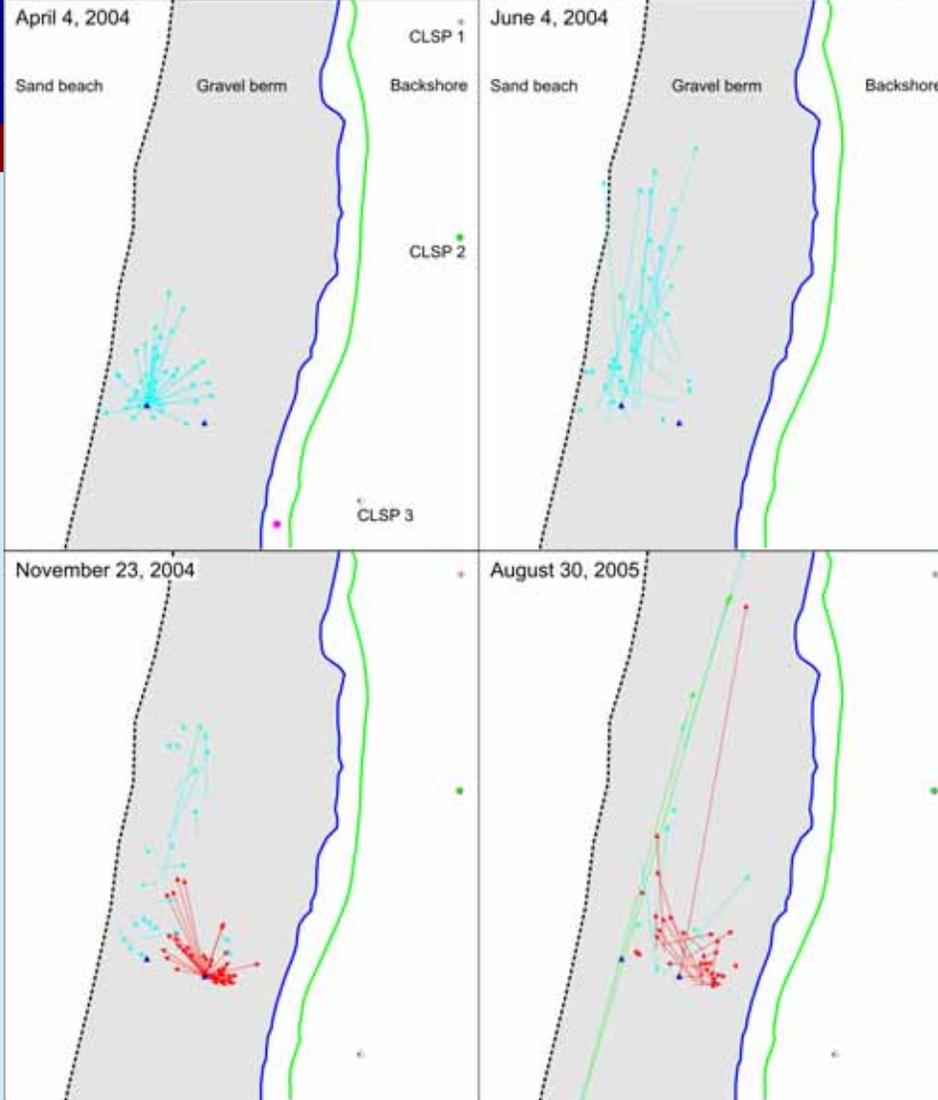
# Locating PIT Tags w/ Small Antenna

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# Conclusions

- Cobble berm revetments can be used to protect and stabilize a dune system
- Data from studying Cape Lookout and 26 other gravel beaches have led to development of design guidance for the Oregon coast
- A similar analysis can be utilized to develop design guidance for other parts of the country
- A radio tag system can be effectively used to trace movement of individual cobbles and study their deterioration



Thank You!

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Questions?

