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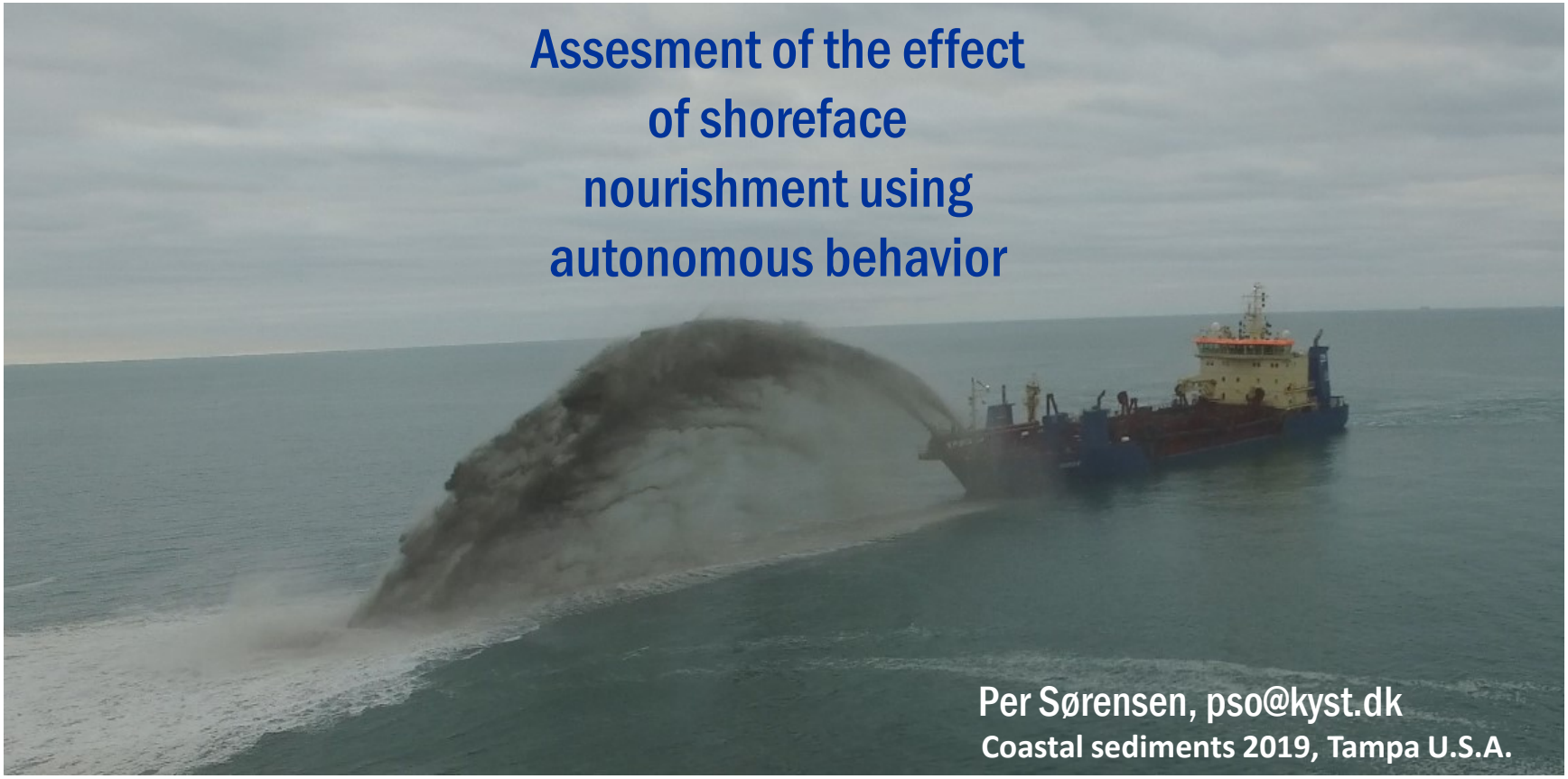
Assesment of the effect of shoreface nourishment using autonomous behavior

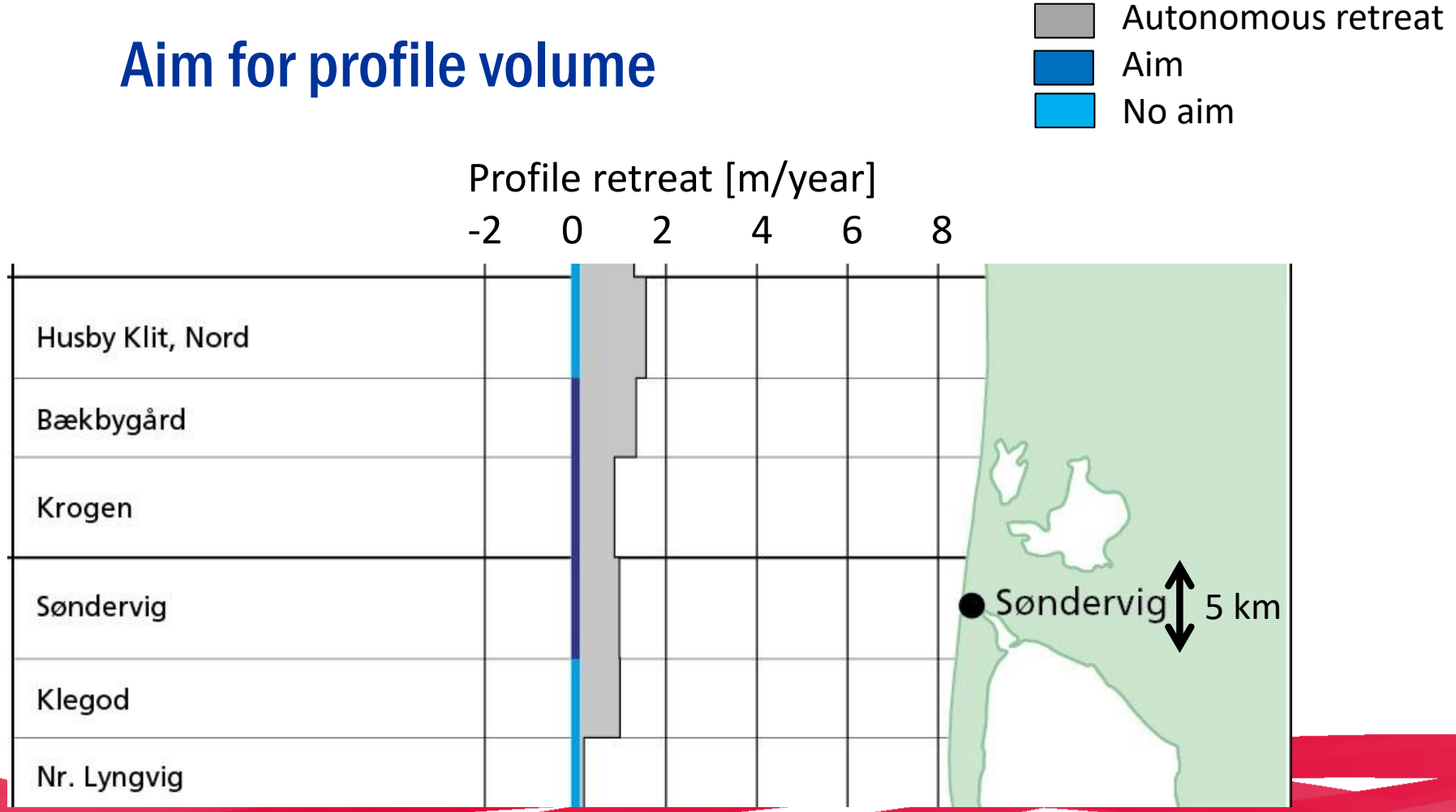


Per Sørensen, pso@kyst.dk

Coastal sediments 2019, Tampa U.S.A.

Safety aim

Aim for profile volume



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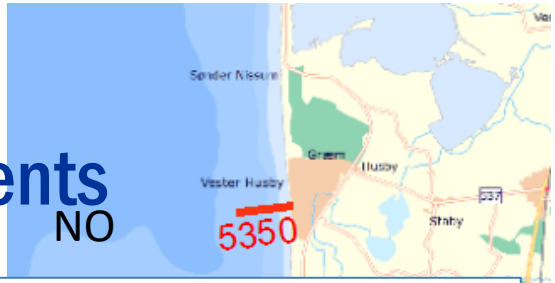
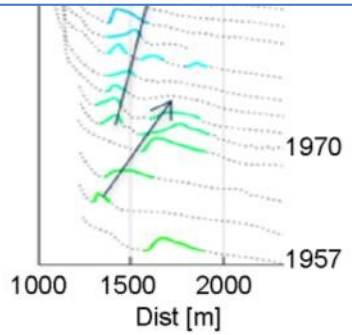
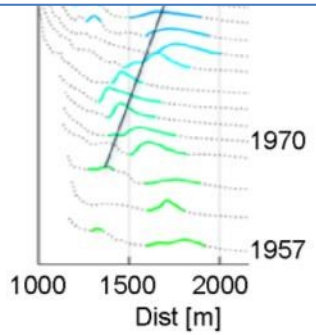
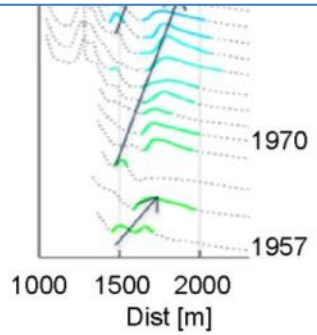
General bar behaviour and nourishments

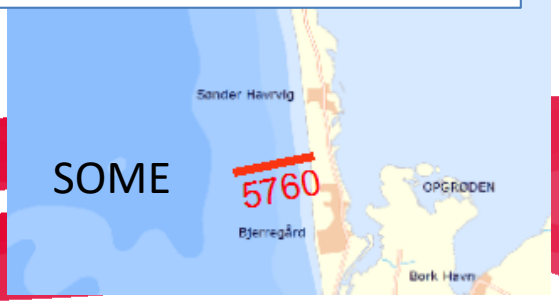


	No nourishments Line 5350			Some nourishments Line 5760			Many nourishments Line 5450		
	Offshore migration [m]	Life time [years]	Migration speed [m/year]	Offshore migration [m]	Life time [years]	Migration speed [m/year]	Offshore migration [m]	Life time [years]	Migration speed [m/year]
Bar 1	708	10	71	708	14	51	667	14	48
Bar 2	375	12	31	833	12	69	541	10	54
Bar 3	750	12	63	875	8	109	958	11	87
Bar 4	833	26	32	791	13	61	1167	20	58
Mean	667	15	49	802	12	73	833	14	62
Std.	174	6	18	62	2	22	245	4	15

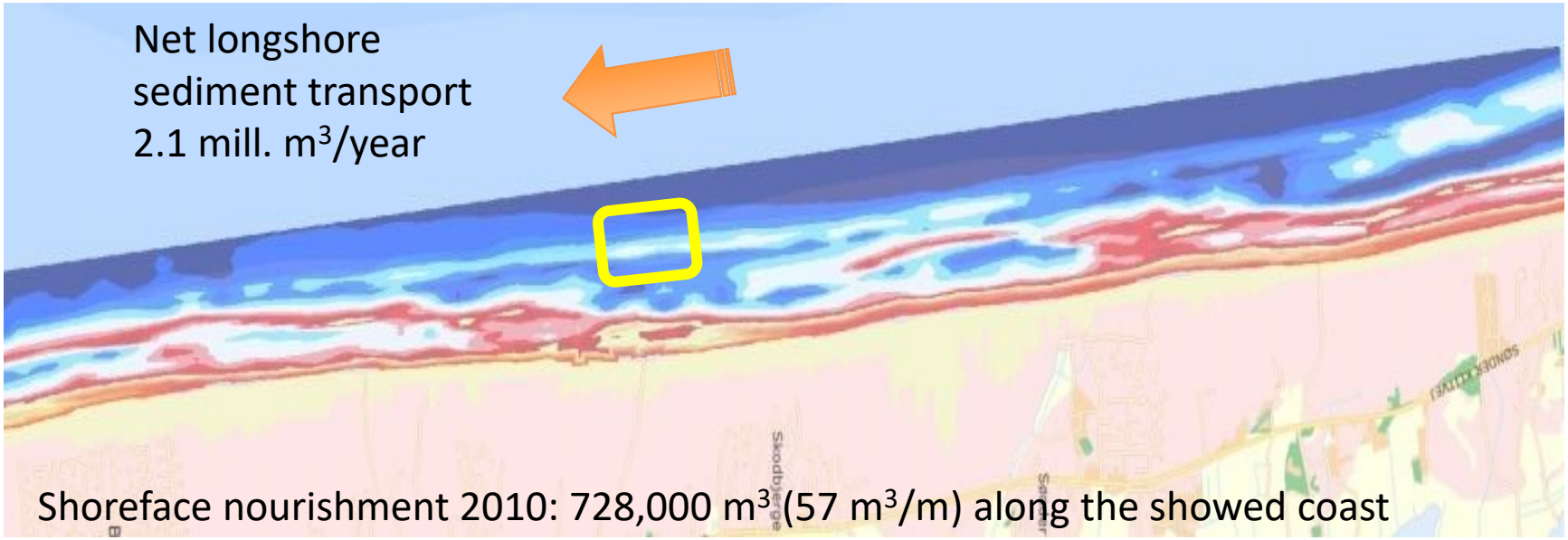


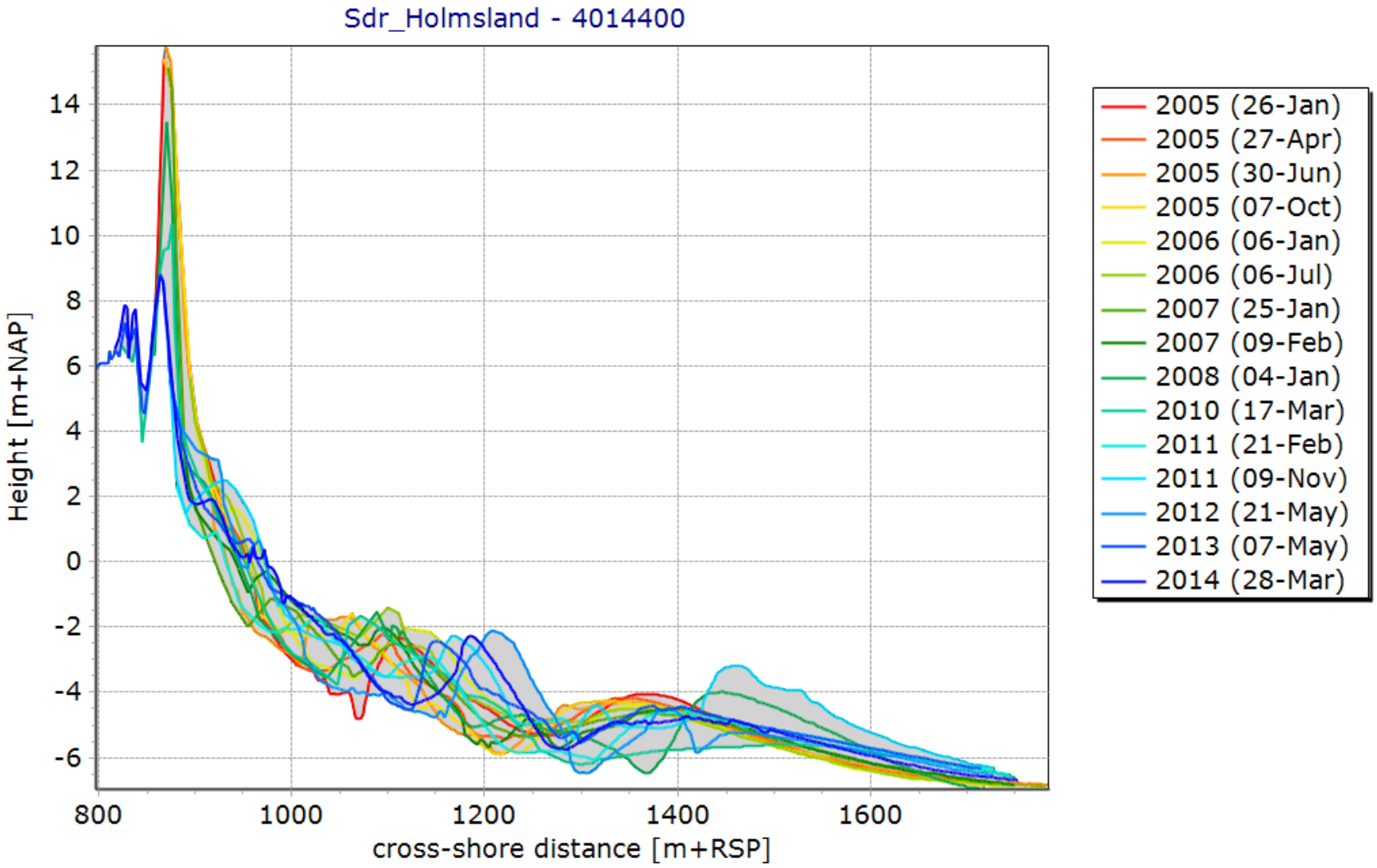




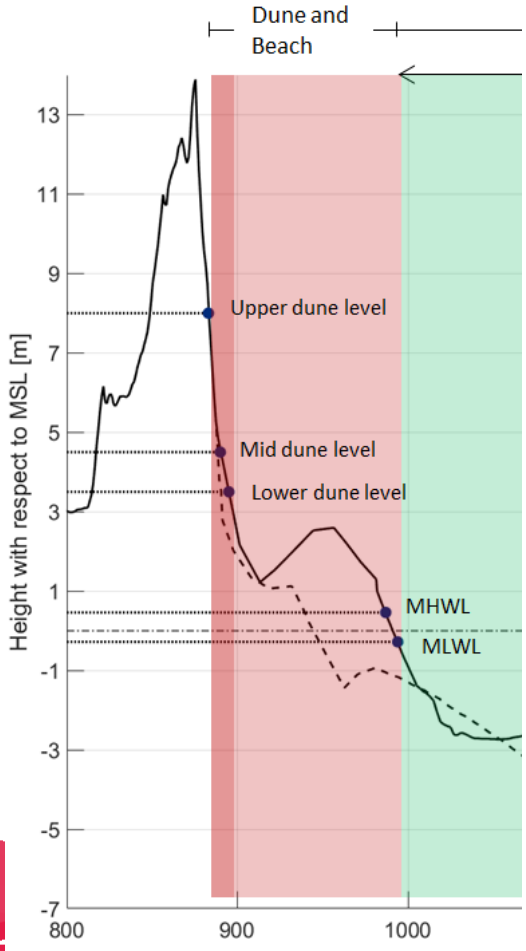


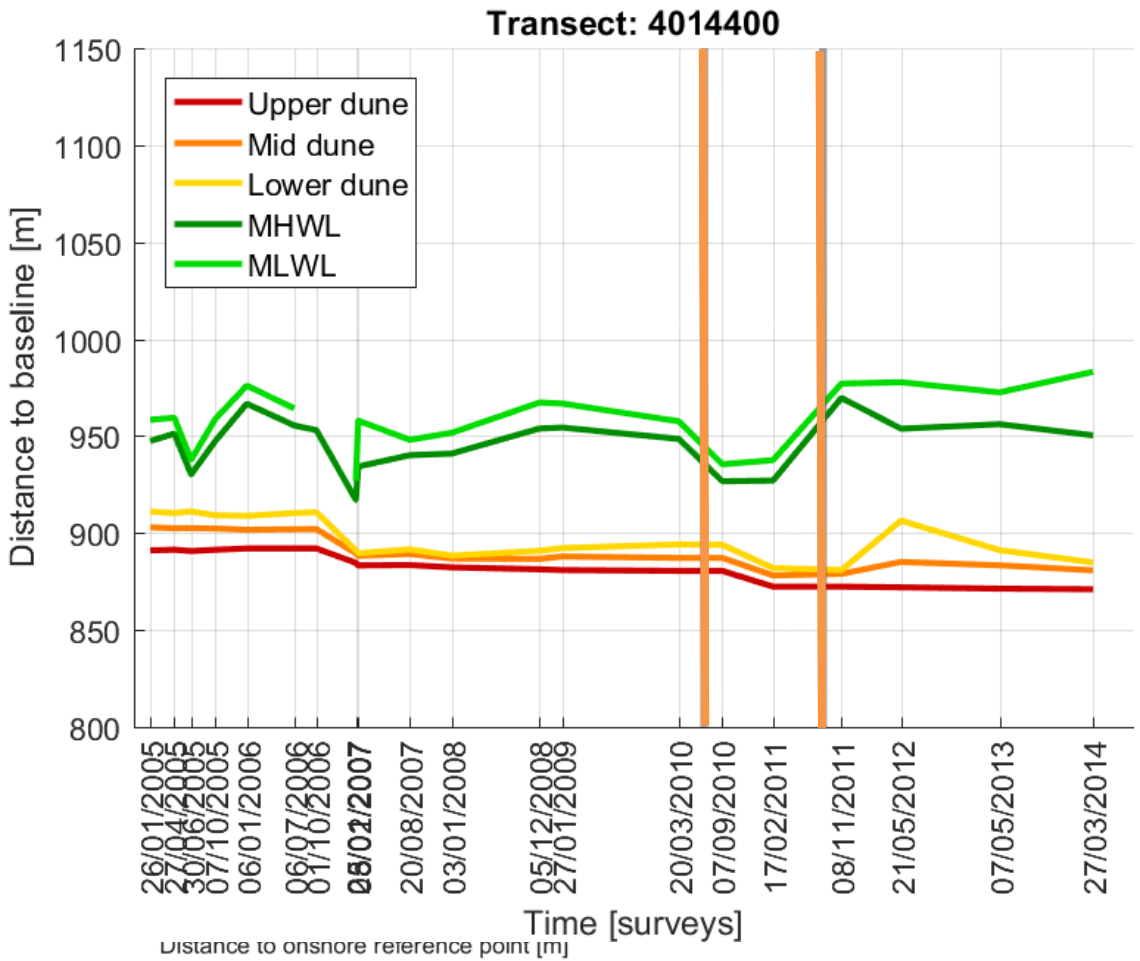
Shoreface nourishment 2011: 310,000 m^3 (400 m^3/m)




Sdr_Holmsland - 4014400
Height [m+NAP]
14
12
10
8
6
4
2
0
-2
-4
-6
800
1000
1200
1400
1600
cross-shore distance [m+RSP]
2005 (26-Jan)
2005 (27-Apr)
2005 (30-Jun)
2005 (07-Oct)
2006 (06-Jan)
2006 (06-Jul)
2007 (25-Jan)
2007 (09-Feb)
2008 (04-Jan)
2010 (17-Mar)
2011 (21-Feb)
2011 (09-Nov)
2012 (21-May)
2013 (07-May)
2014 (28-Mar)

Common coastal State Indicators





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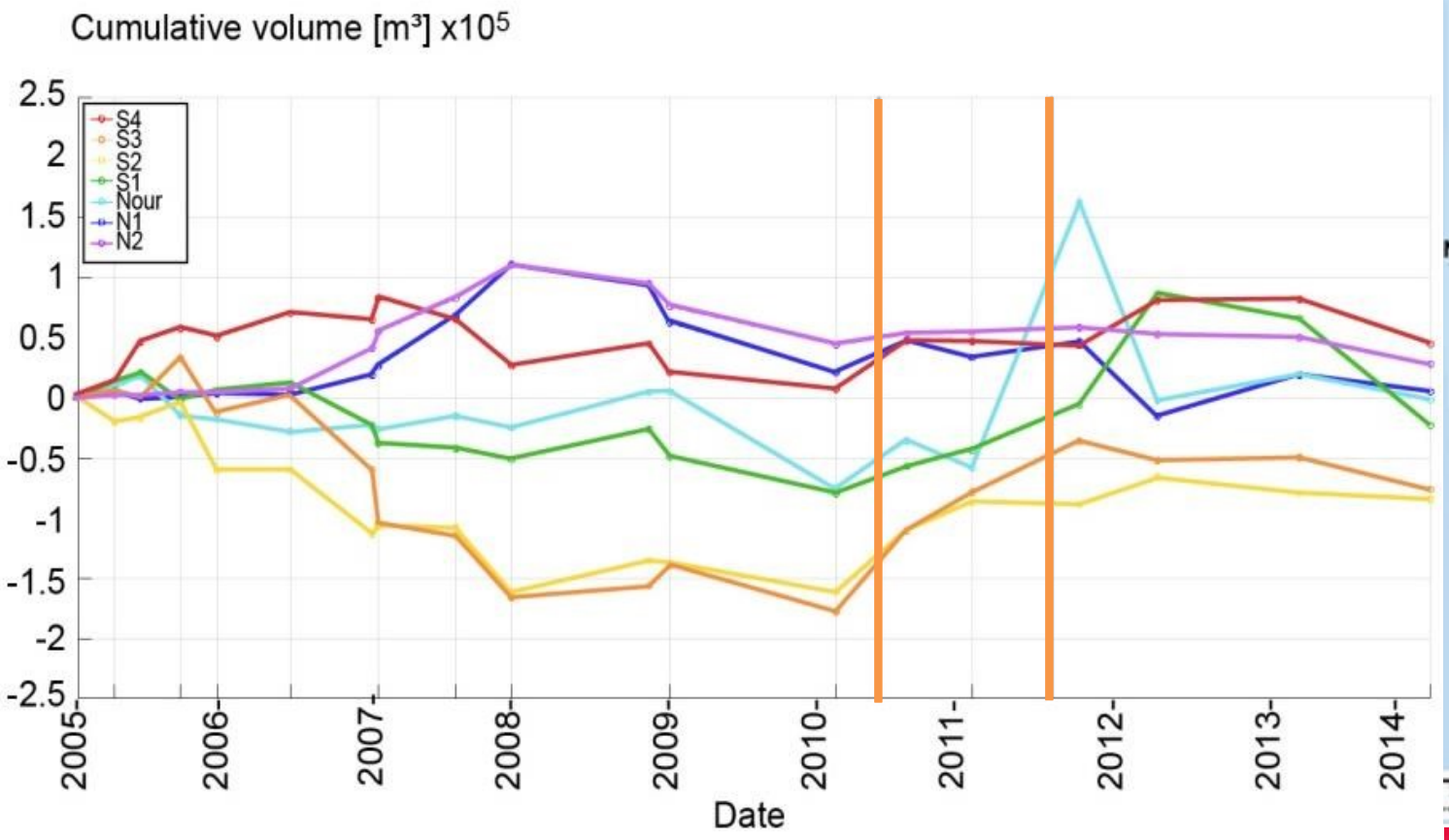
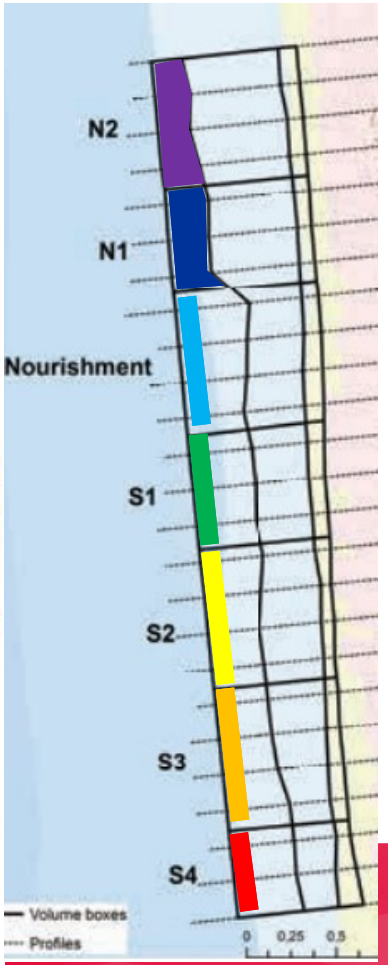
Volume changes alongshore





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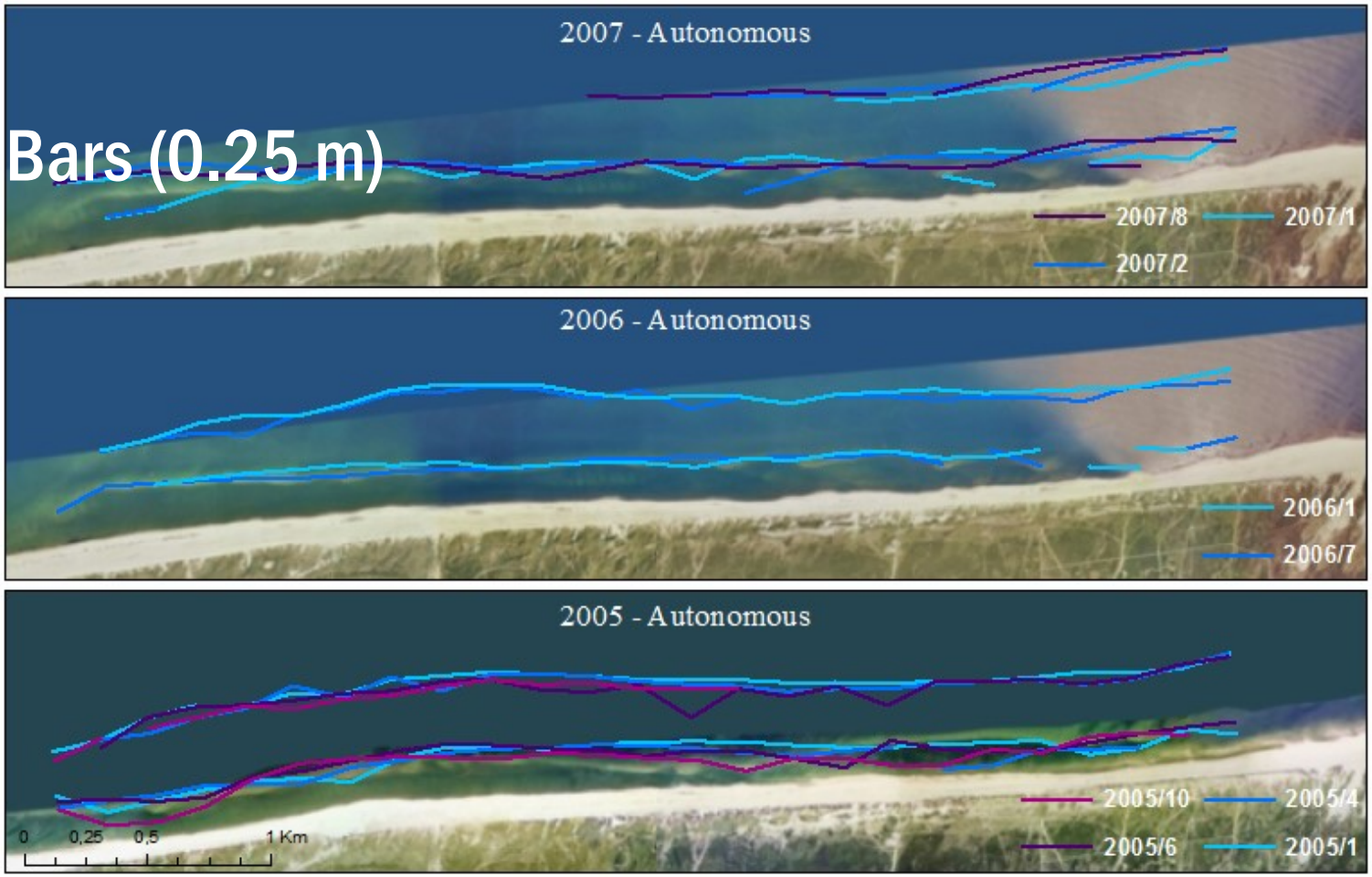

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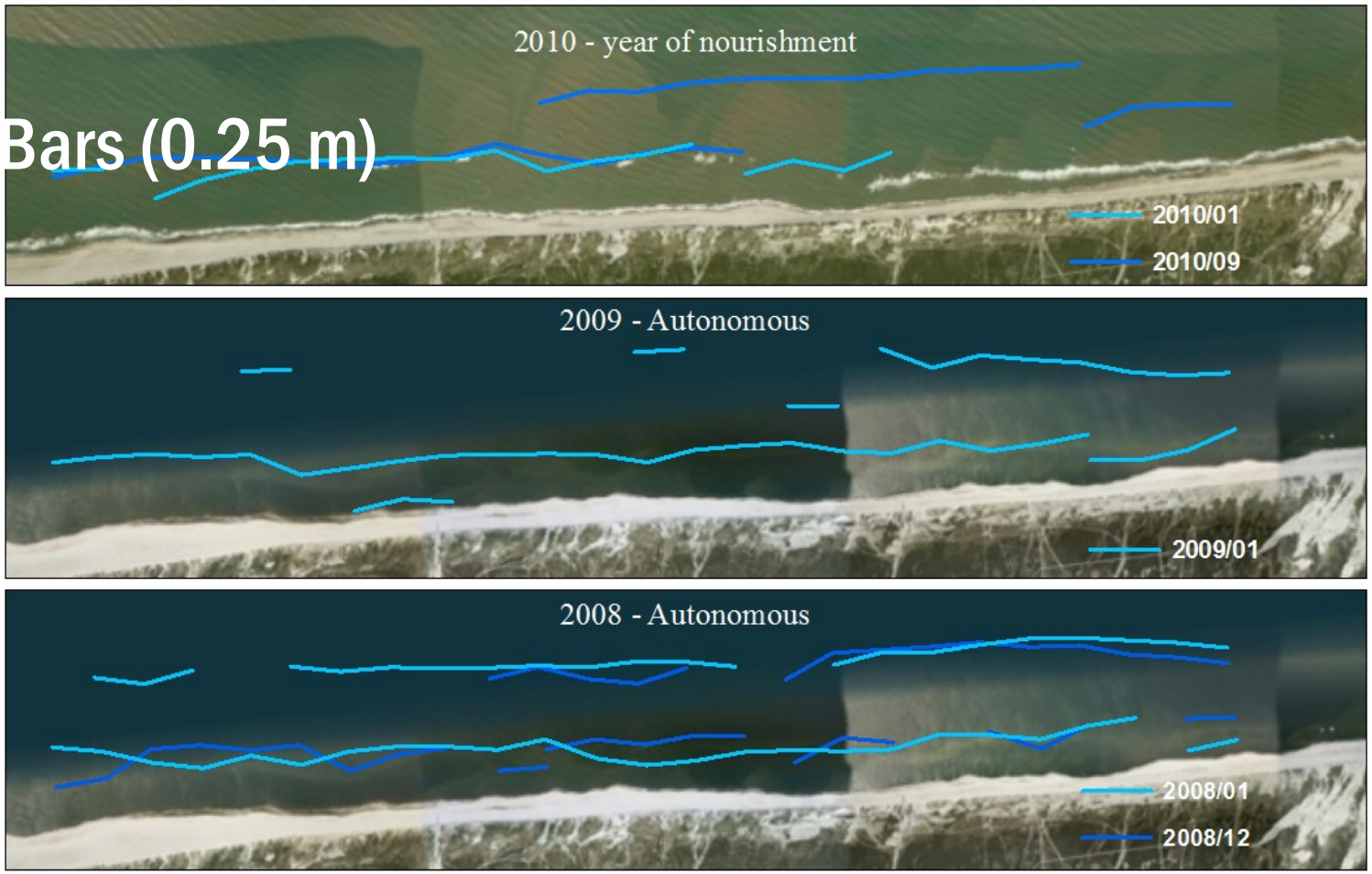

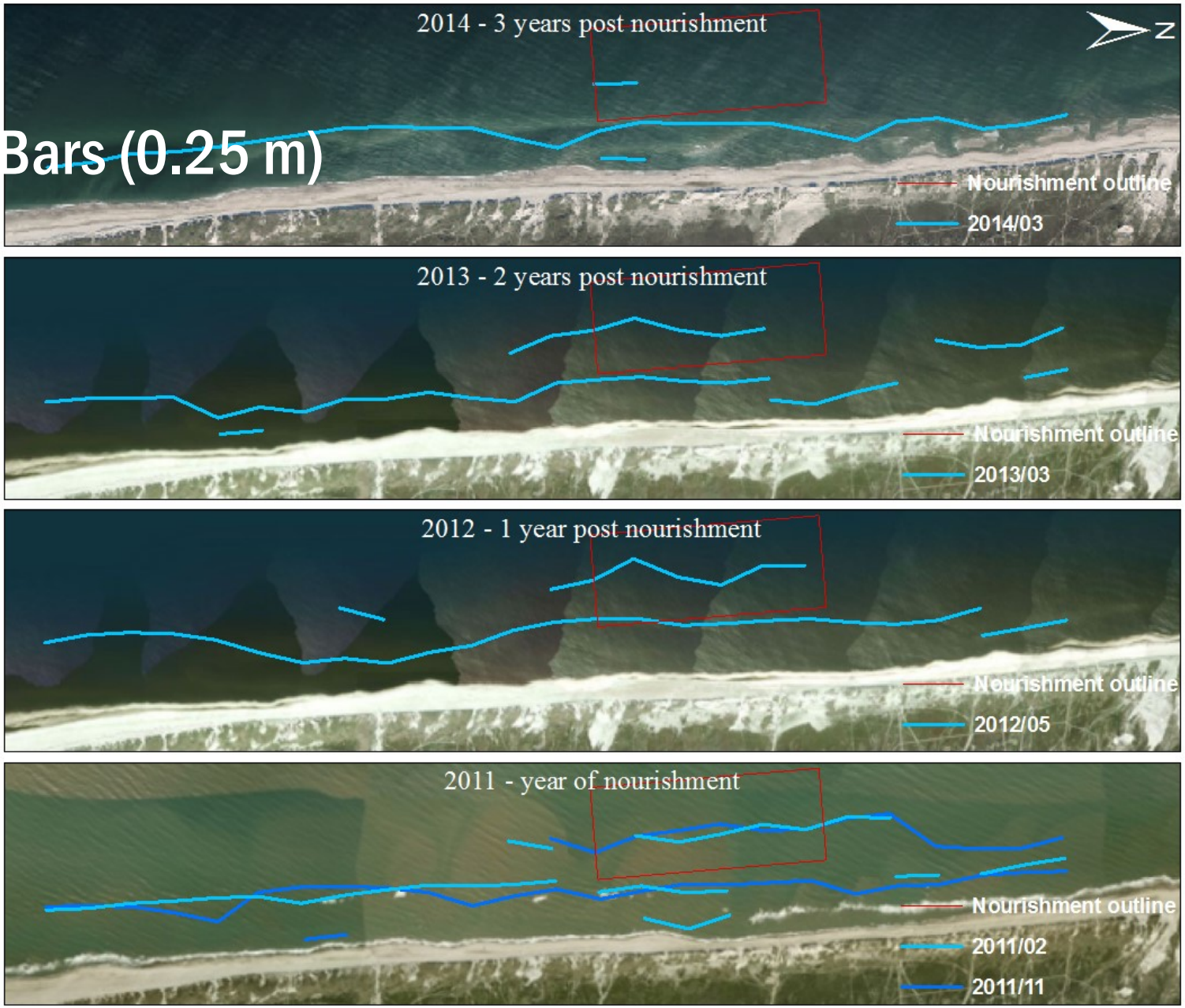
2014 - 3 years post nourishment
N
Bars (0.25 m)
Nourishment outline
2014/03
2013 - 2 years post nourishment
Nourishment outline
2013/03
2012 - 1 year post nourishment
Nourishment outline
2012/05
2011 - year of nourishment
Nourishment outline
2011/02
2011/11

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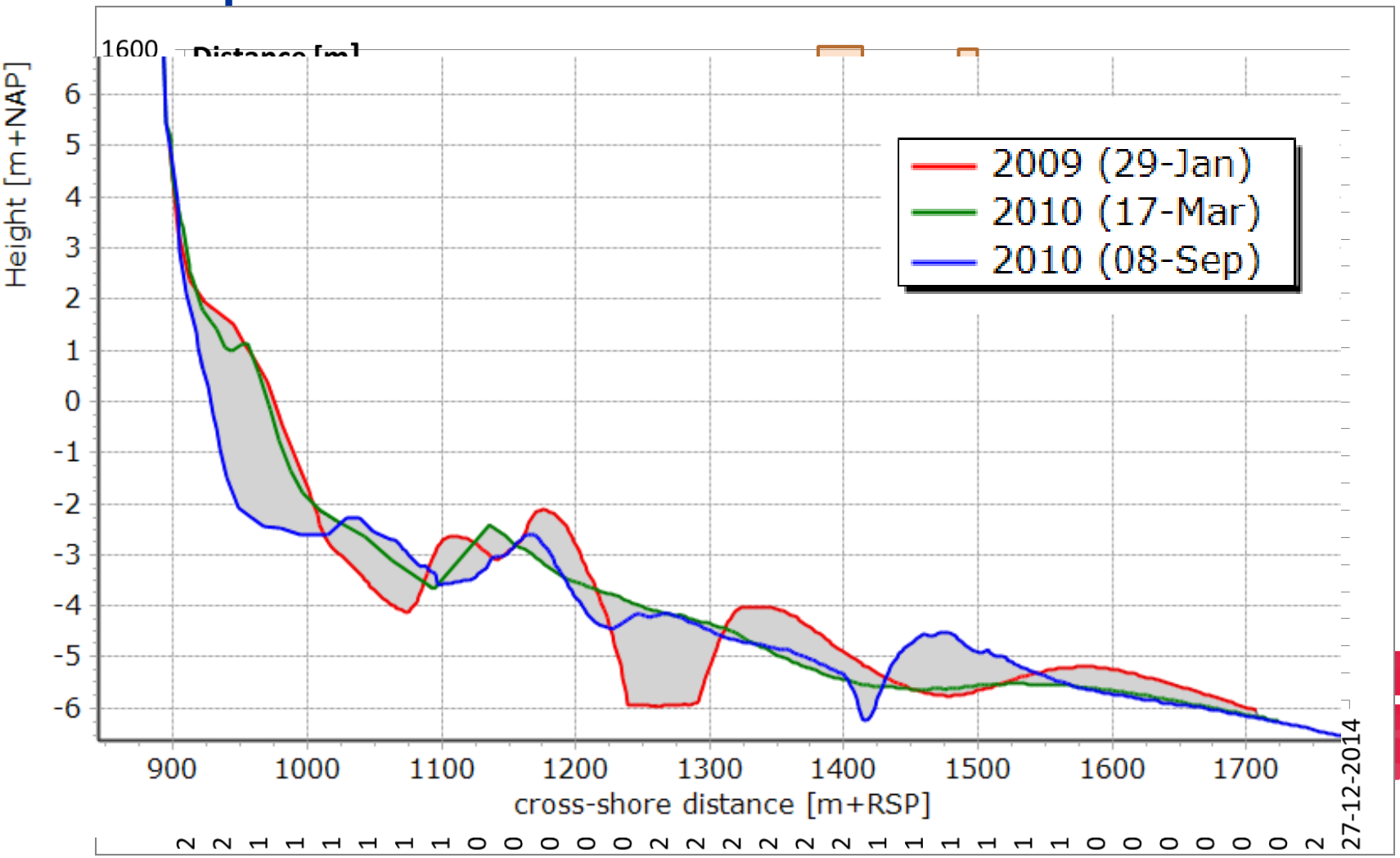
Bar position nourished area



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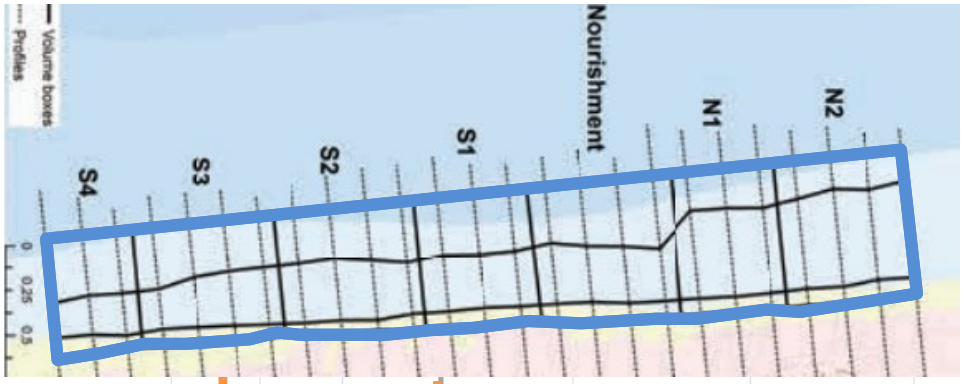
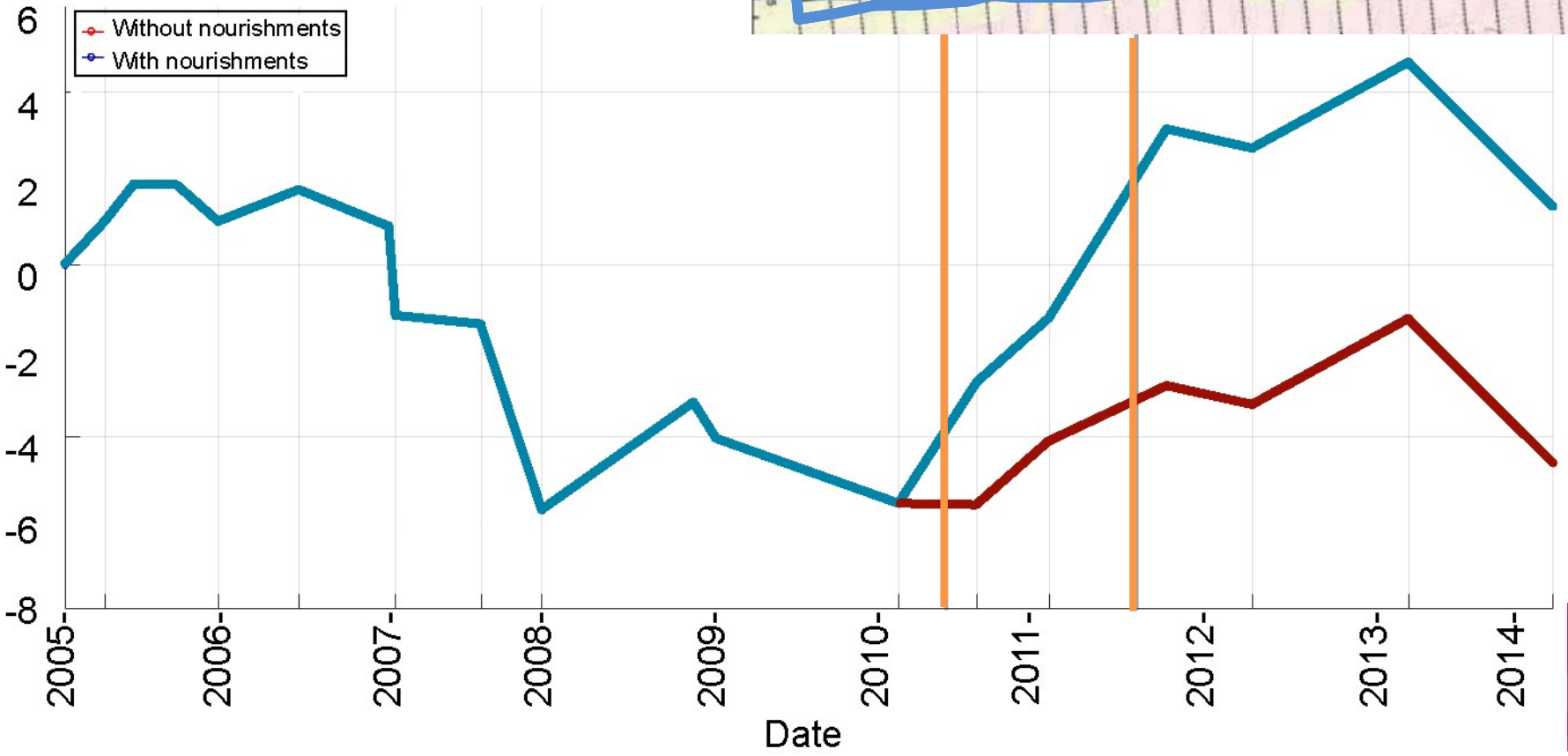
Total volume



Total cumulative volume [m³] x10⁵



Conclusion and further work

- Vital to know a coast autonomous behaviour, which requires a lot of monitoring.

- Define monitoring and indicators based on objective

- Further coanalysis (EOF, PC ?) Netherlands, Germany, Belgium, Denmark to get a better system understanding.
- Include previous nourishments in the analysis.
- Perhaps modeling.

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