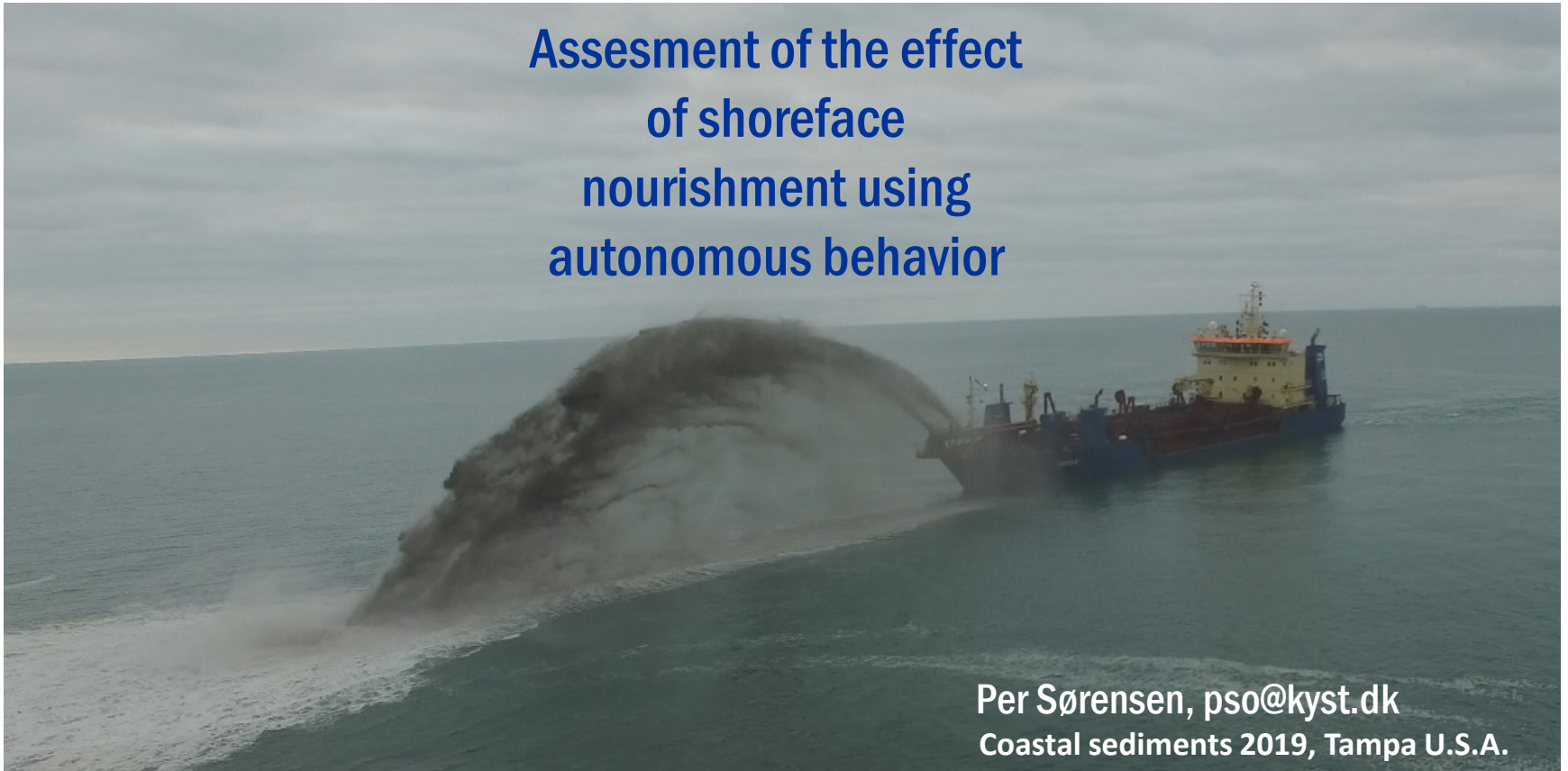




## Assesment of the effect of shoreface nourishment using autonomous behavior



Per Sørensen, [ps0@kyst.dk](mailto:ps0@kyst.dk)  
Coastal sediments 2019, Tampa U.S.A.






**Safety aim**

**Flood prone  
area**

**Safety buffer**

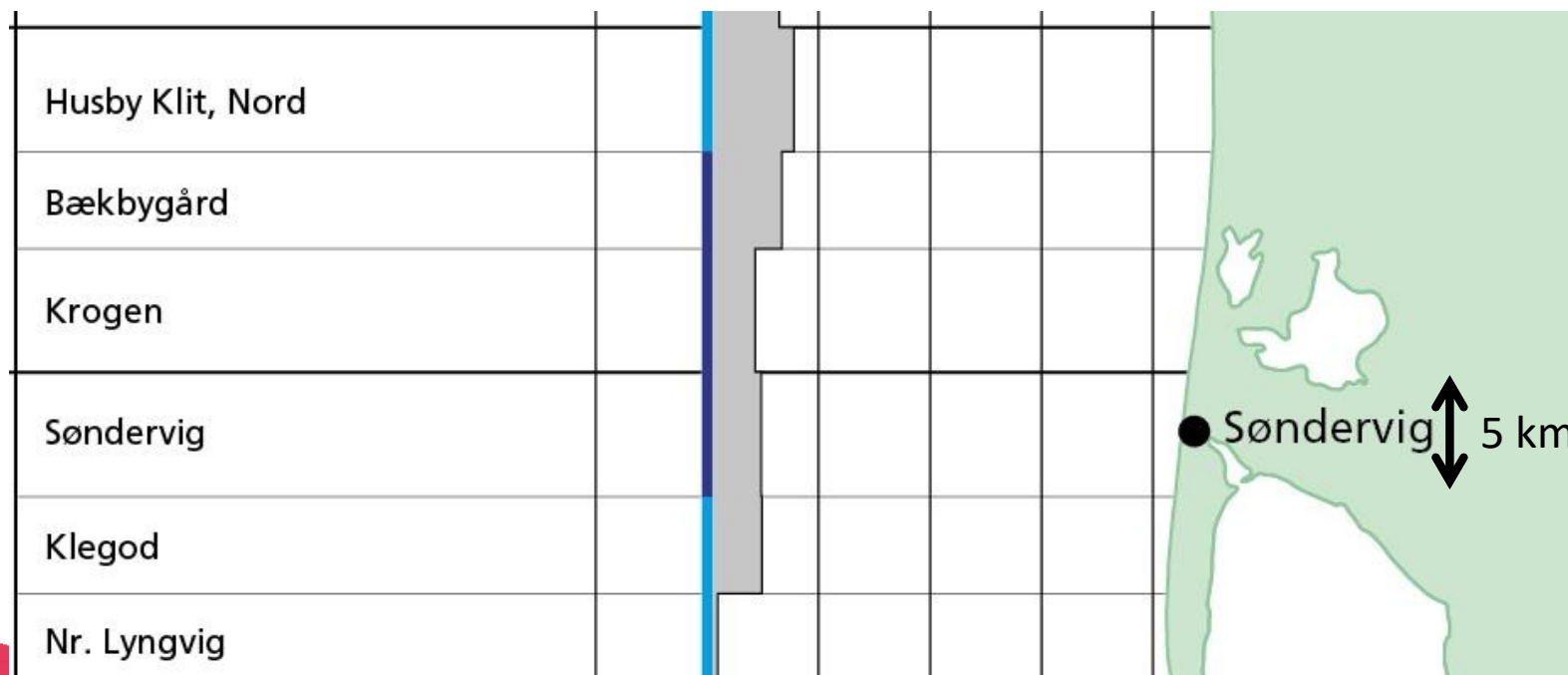


## Aim for profile volume

-  Autonomous retreat
-  Aim
-  No aim

Profile retreat [m/year]

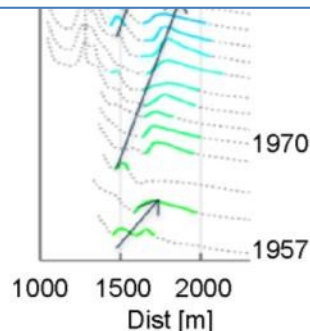
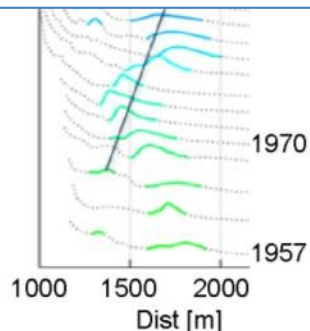
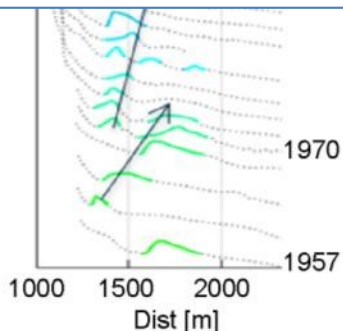
-2    0    2    4    6    8



# General bar behaviour and nourishments

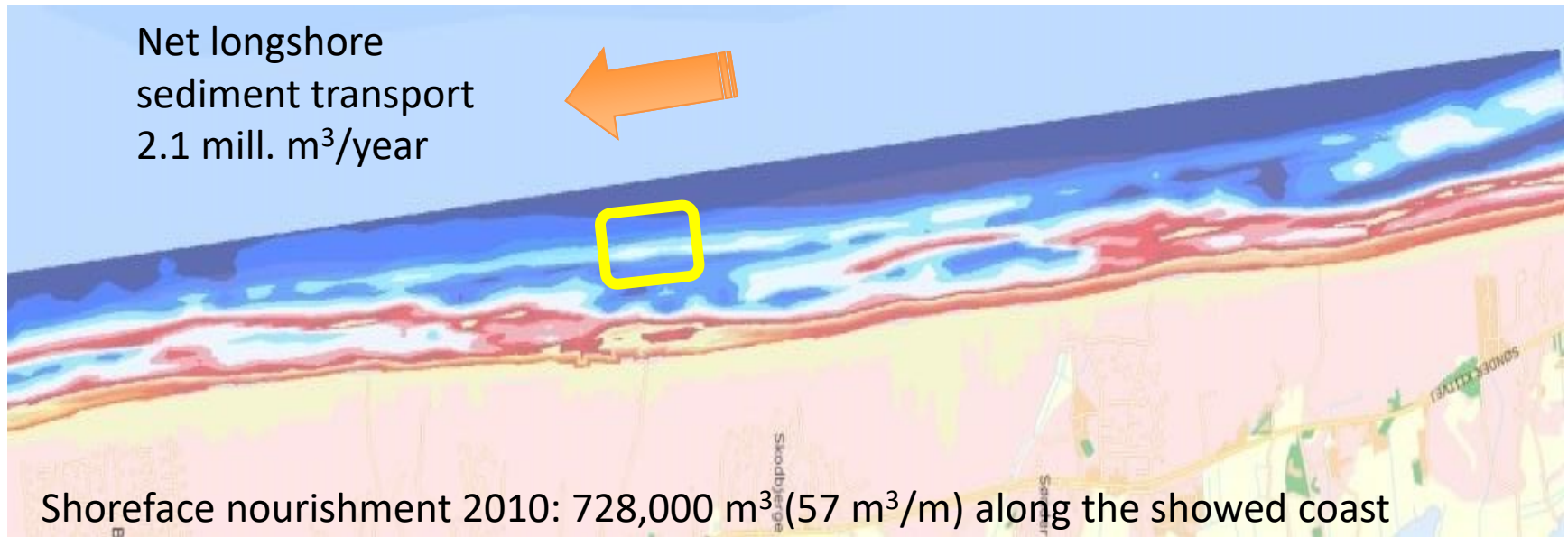


	No nourishments Line 5350			Some nourishments Line 5760			Many nourishments Line 5450		
	Offshore migration [m]	Life time [years]	Migration speed [m/year]	Offshore migration [m]	Life time [years]	Migration speed [m/year]	Offshore migration [m]	Life time [years]	Migration speed [m/year]
Bar 1	708	10	71	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



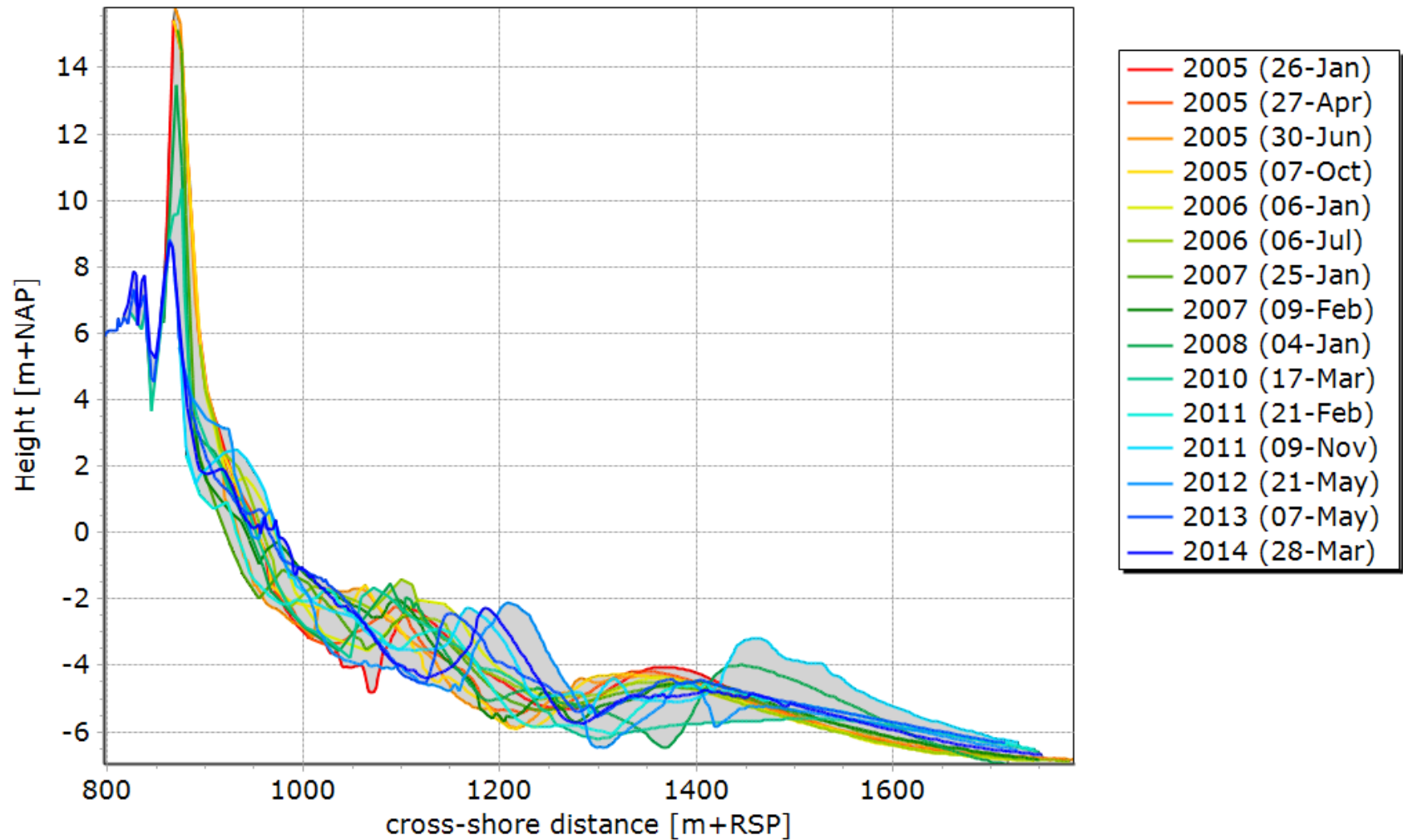


## Shoreface nourishment 2011: 310,000 m<sup>3</sup> (400 m<sup>3</sup>/m)

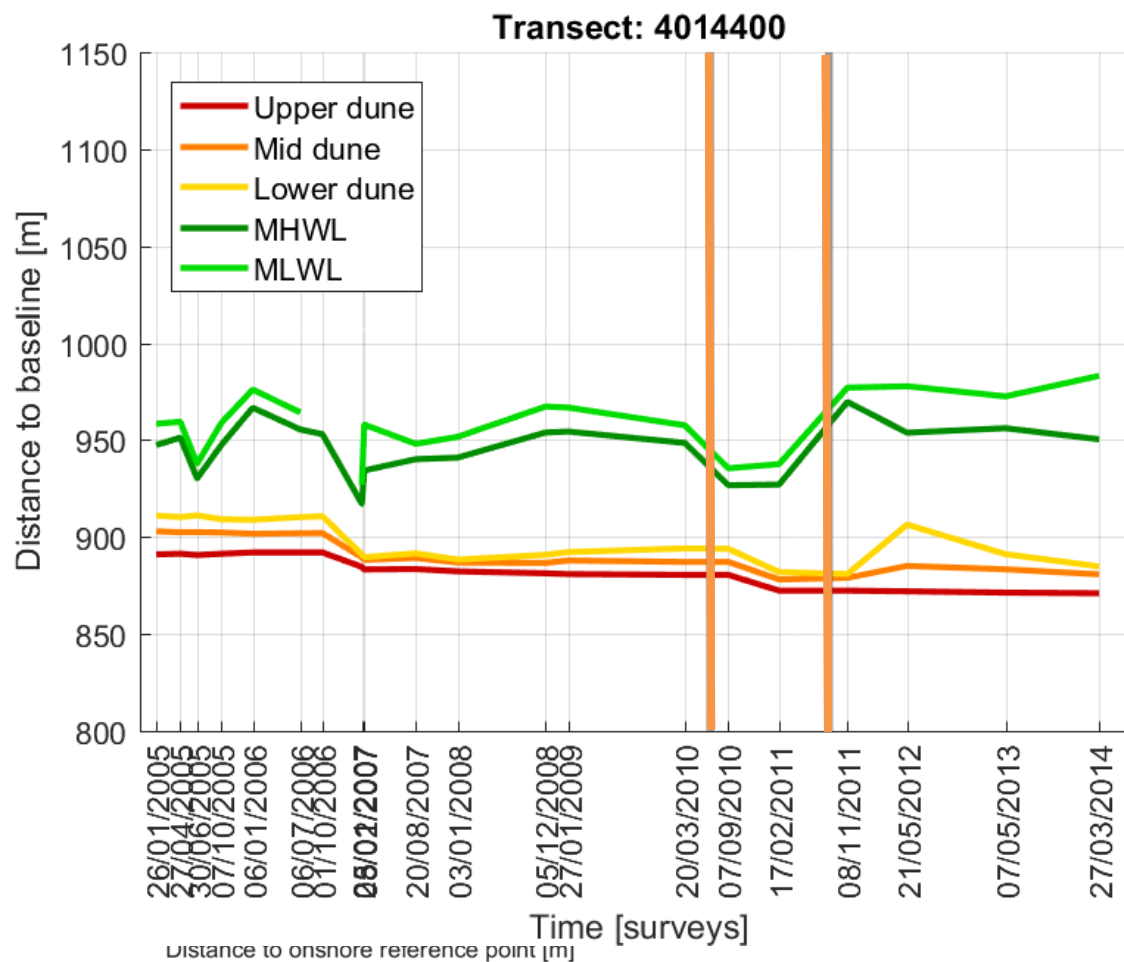
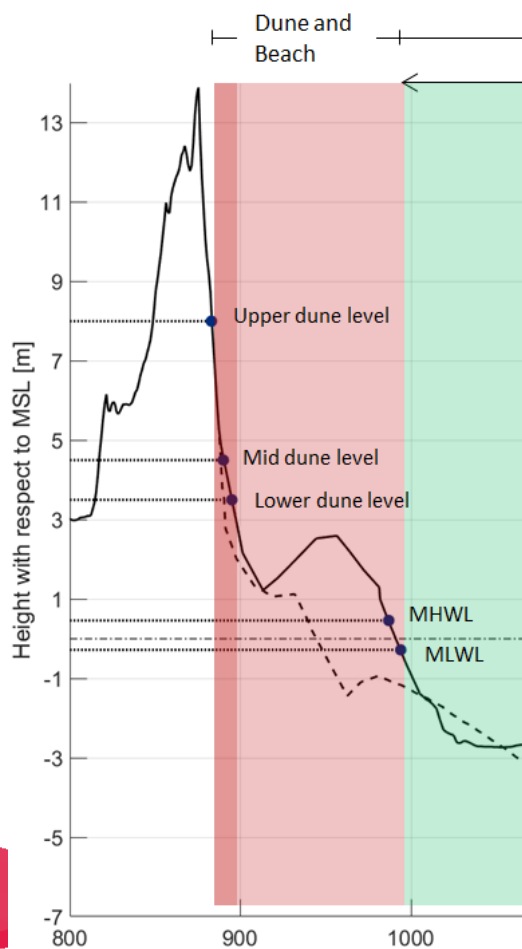




### Sdr\_Holmsland - 4014400

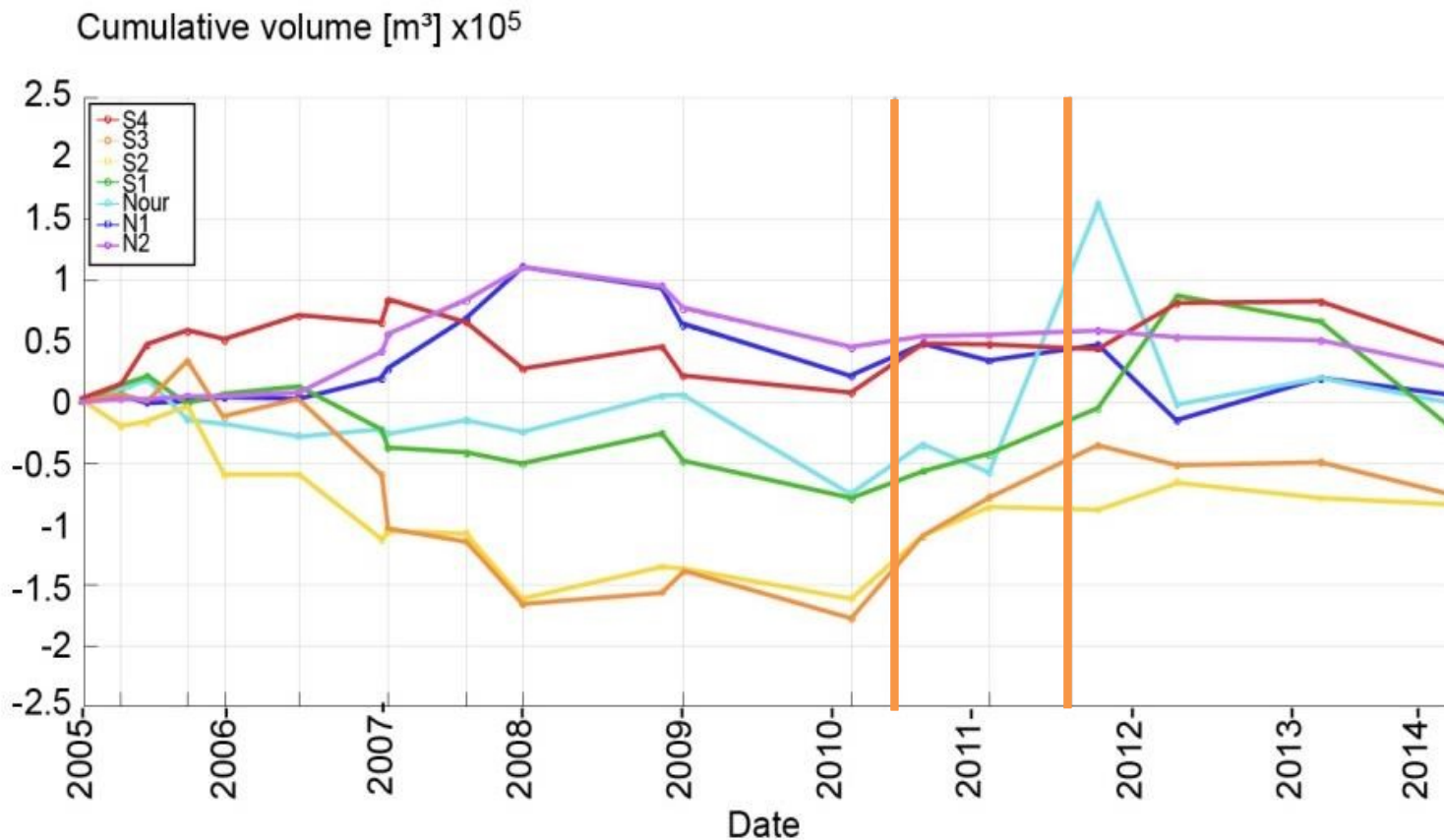


# Common coastal State Indicators



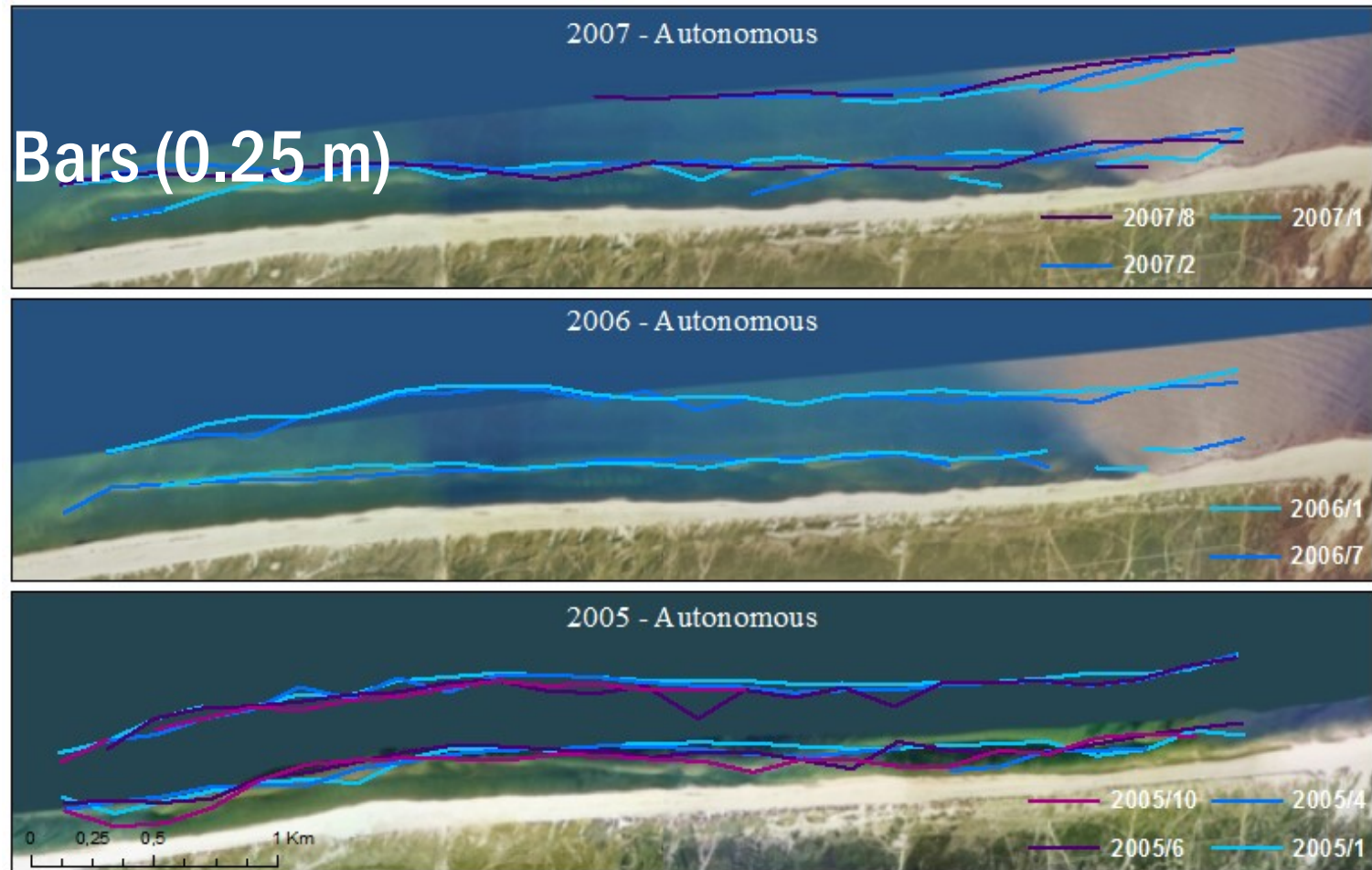


# Volume changes alongshore

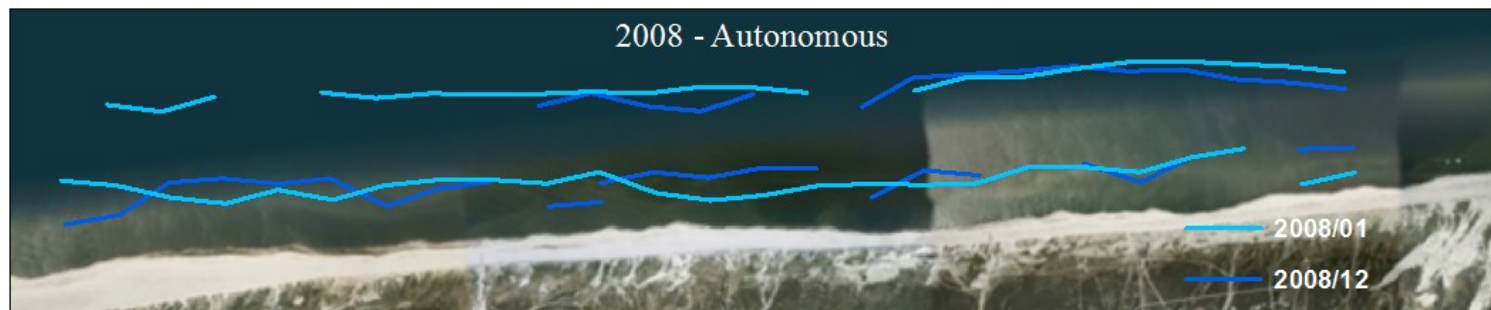




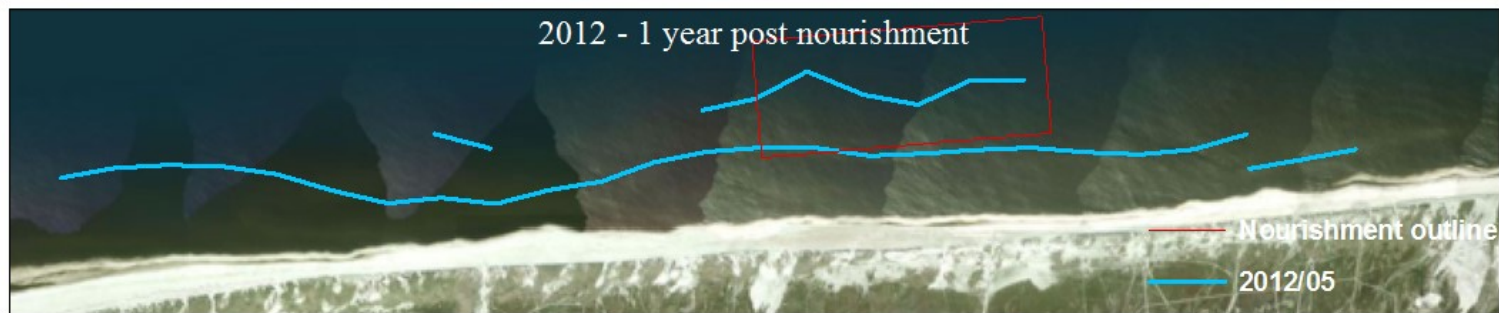
Bars (0.25 m)



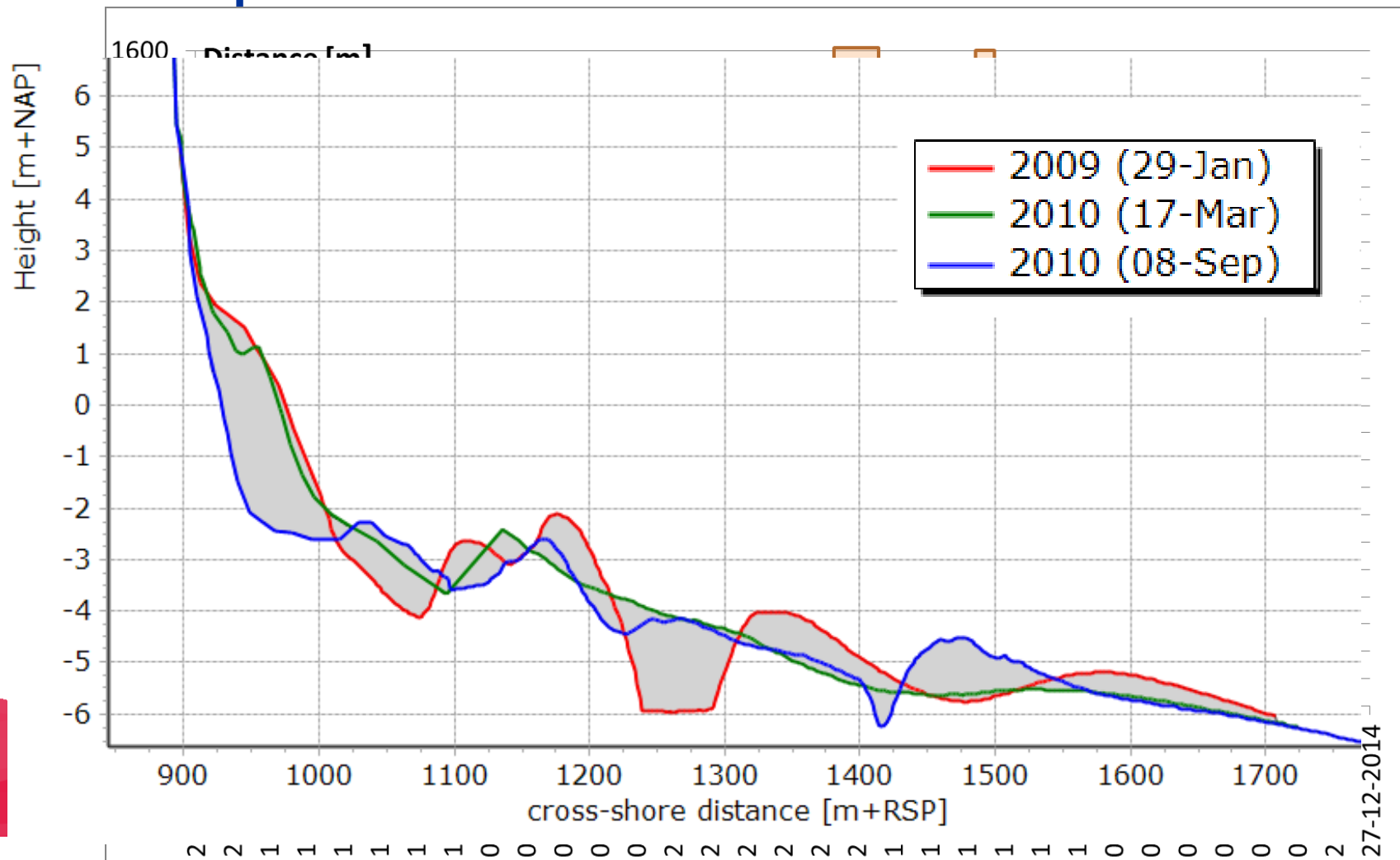
Bars (0.25 m)







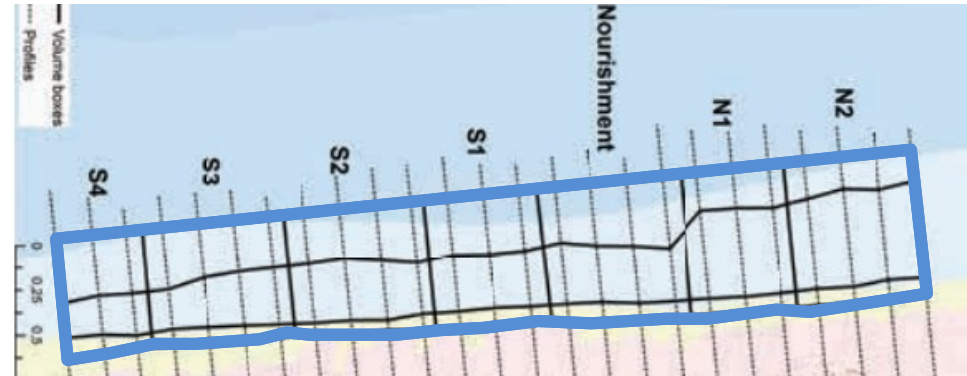
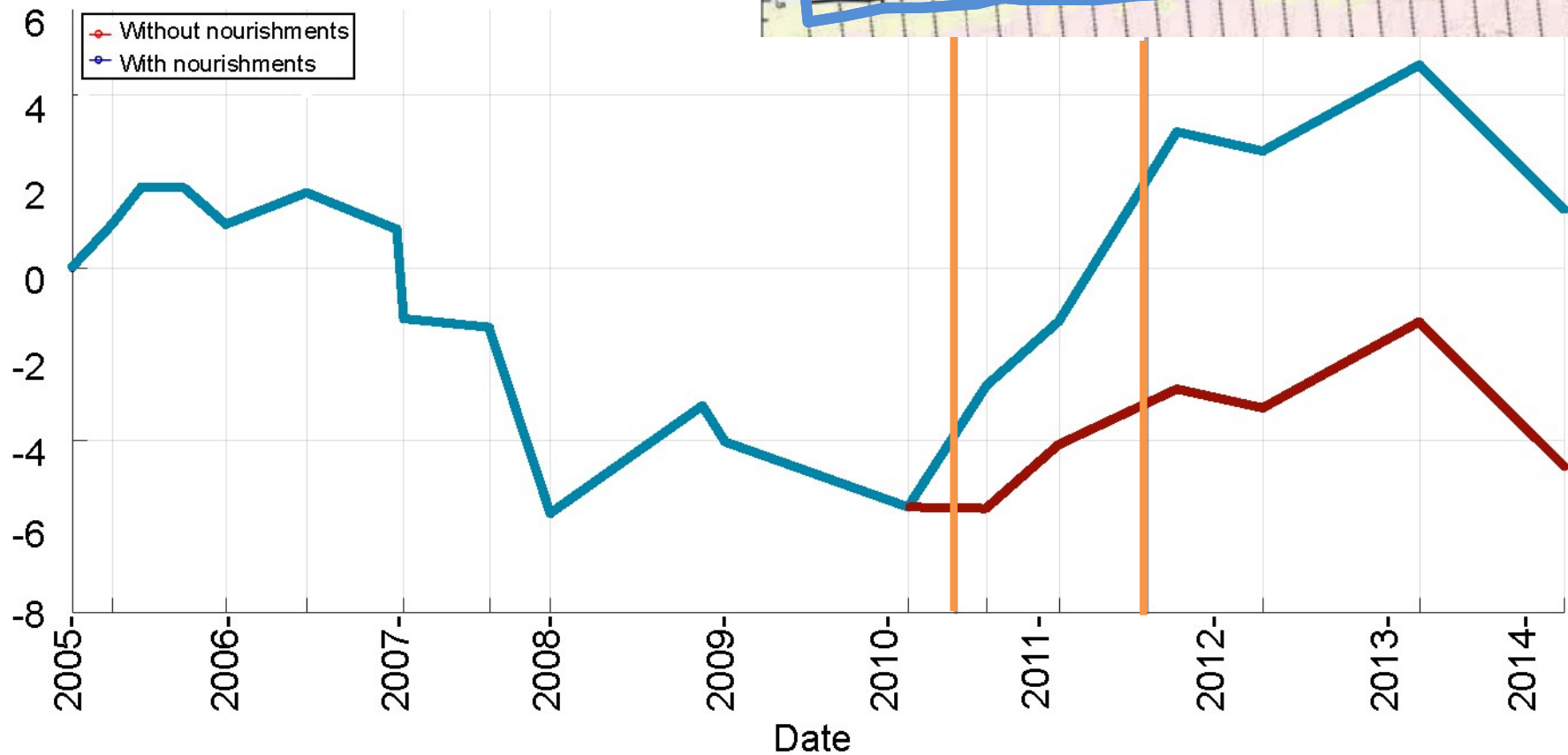
## Bar position nourished area





# Total volume

Total cumulative volume [ $\text{m}^3$ ]  $\times 10^5$







## 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.



**Thank you for your attention**