\mathbf{ECCMEE}_{2120}

20.02.2020 SEAmBOTH final seminar, Roosa Mikkola

What will the sea look like in 21202



About ECOnnect

1.6.2018 - 31.5.2021

Create a vision of how climate change will modify the coastal and marine environment in the project area.

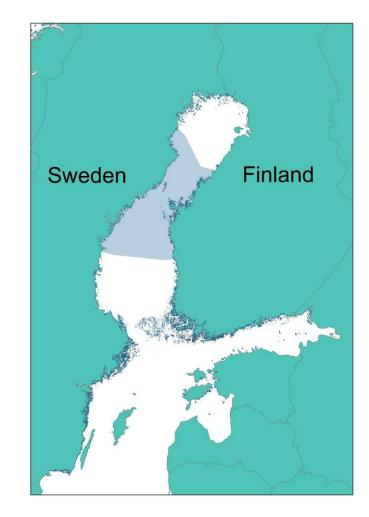
Offer tools for climate change adaptation and marine protection





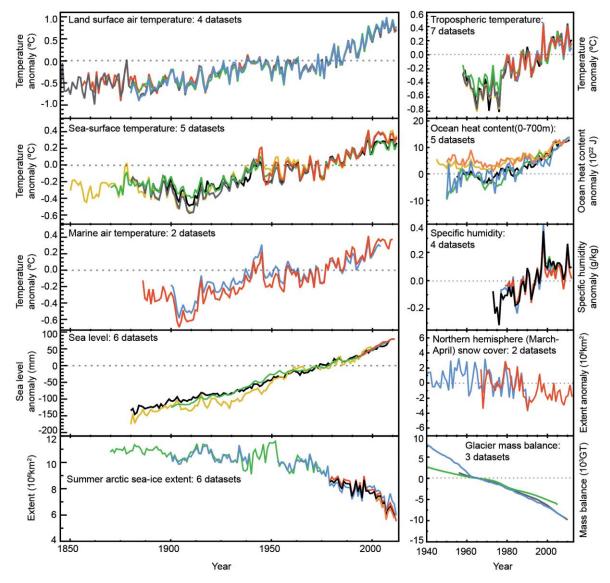


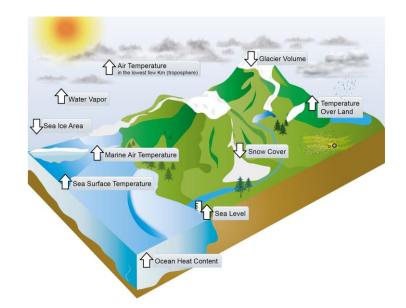




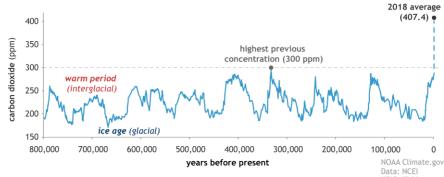








CO₂ during ice ages and warm periods for the past 800,000 years

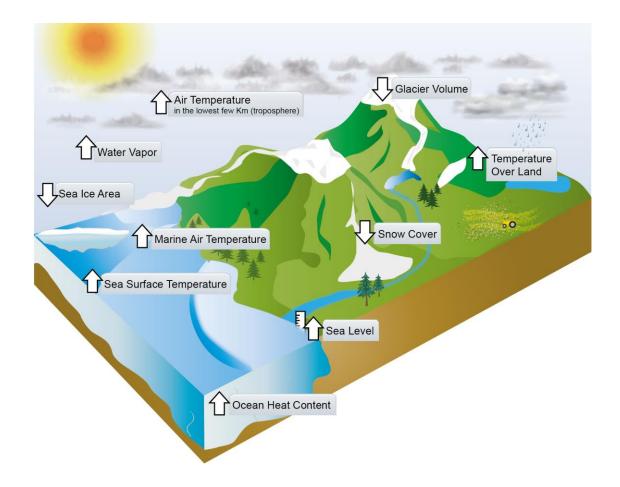


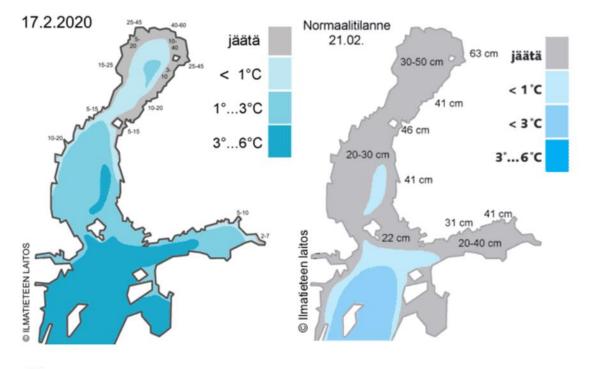
Source: IPCC AR5 WG1

Happened so far ...









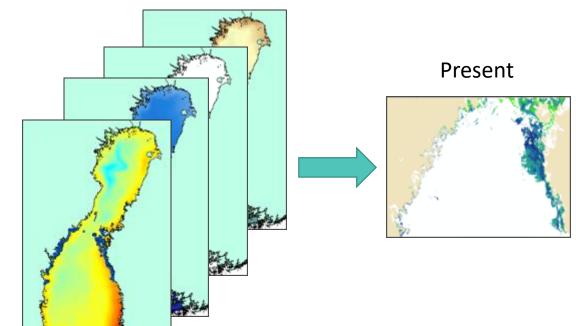
JÄÄTIEDOTUS 17.02.2020

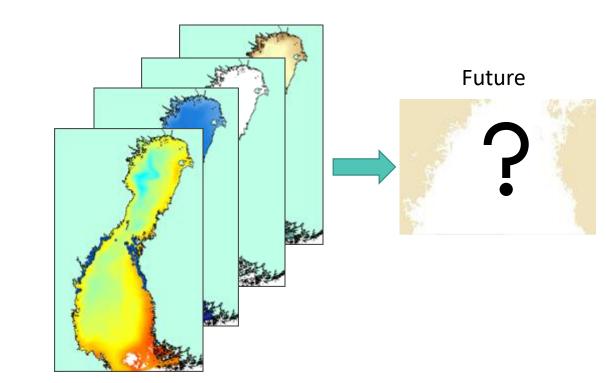
Source: IPCC AR5 WG1





How can we predict the "biological" future?

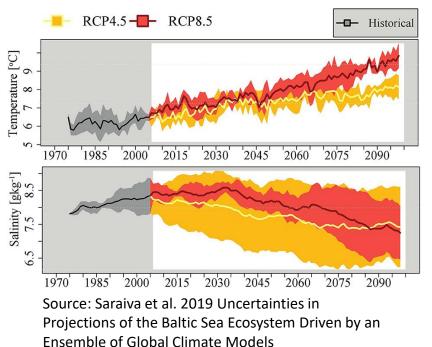


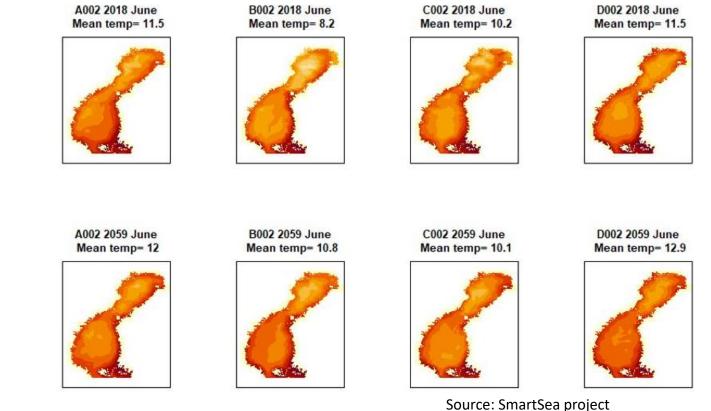






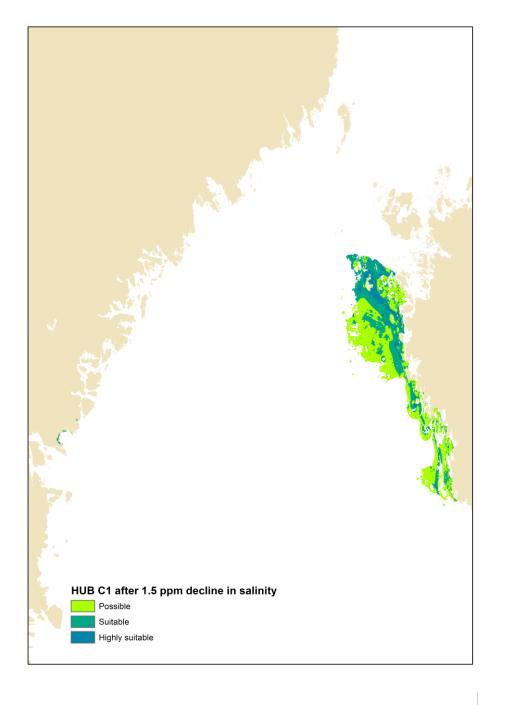
What we can foresee











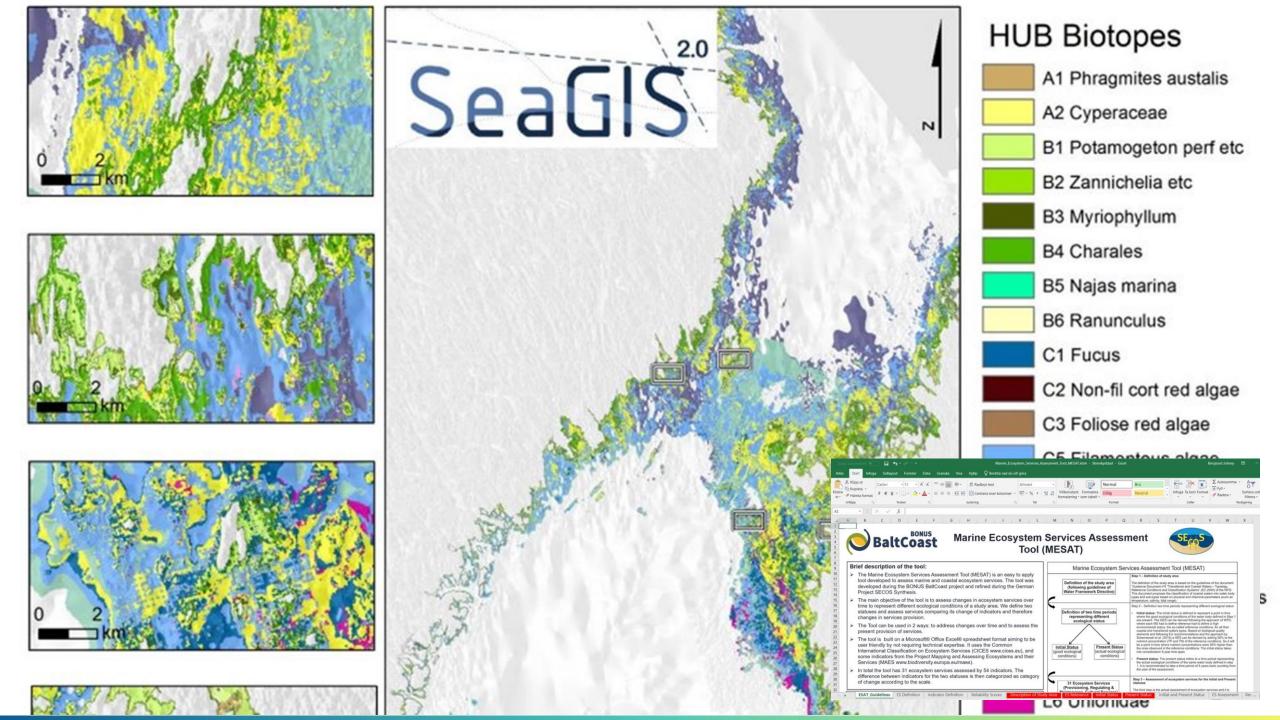
Impacts of future changes

- 52% decline of suitable areas for HUB C1
- Decrease in ecosystem services such as providing habitats, water filtration, chemical water control recreation



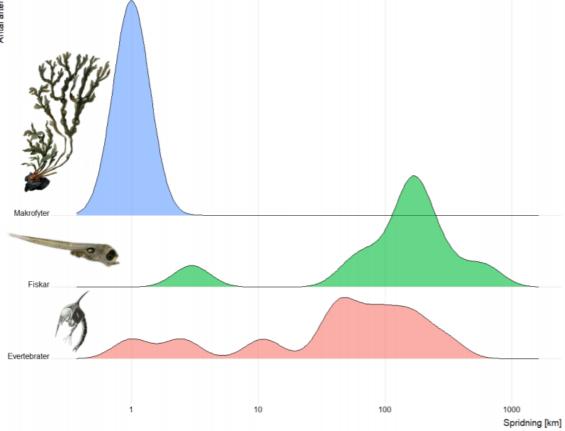






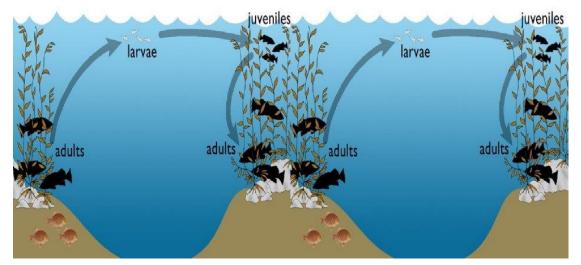
Classes of change for ecosystem services classes

		-5	-4	-3	-2	-1 0	1 2	3	4
	Wild plants, algae and their outputs	1			8			1	1
	Wild animals and their outputs								1
Provisioning	Animals from in situ aquaculture			1					
Services	Plants and algae from in situ aquaculture							1	
	Surface water for drinking purposes								
	Fibres and other materials from plants, algae and animals for direct use or processing	1							
	Materials from plants, algae and animals for agriculture								
	Surface Water for non-drinking purposes								
	Plant based resources								
	Animal based resources				2				
	Filtration/sequestration/storage/accumulation by ecosystems			44	18				
	Dilution by atmosphere, freshwater and marine ecosystems	-			2				
	Mass stabilisation and control of erosion rates								
Regulating &	Buffering and attenuation of mass flows								
Maintenance	Flood Protection	-			- 24				
	Maintaining nursery populations and habitats								
Services	Pest and Disease control	-							
	Decomposition and fixing processes	-							
	Chemical condition of salt waters	-					Provisioning Services		
	Global climate regulation by reduction of greenhouse gas concentrations	-			-				
S2373	Micro and regional climate regulation	_							
Exper	iential use of plants, animals and land-/seascapes in different environmental settings		-	-					
	Physical use of land-/seascapes in different environmental settings								
5 (25) - 24	Scientific and Educational	-							
Cultural	Heritage, cultural Entertainment		-						 Present
Services	Aesthetic	-							 Initial St
	Symbolic	-							
	Sacred and/or religious	-	-				X		
	Existence	-	-						
	Bequest	-	-			Cultural Services		Regulating & Mai	ntenance Serv



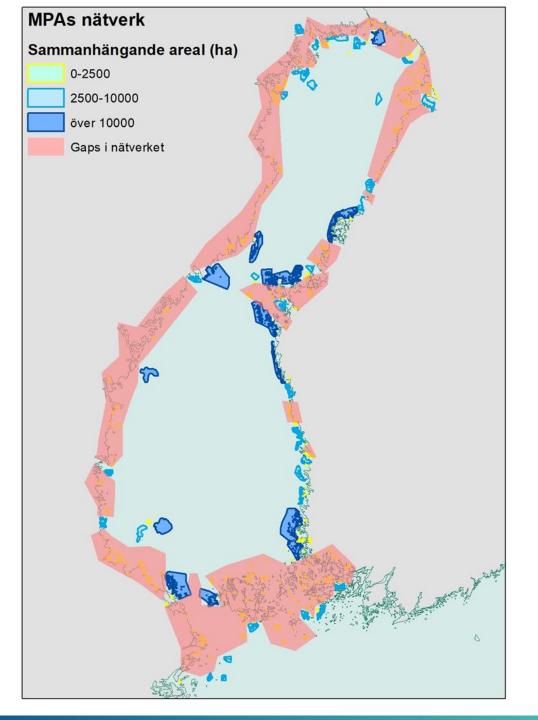
Source: Berkström et al. 2019 Ekologisk konnektivitet i svenska vatten, en kunskapssammanställning.

Connectivity

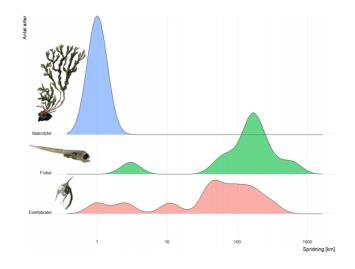


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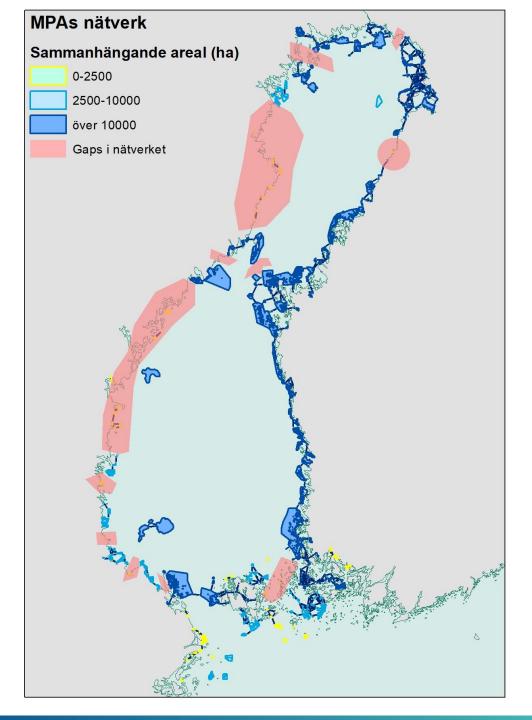


MPAs in a network with 2 km dispersal

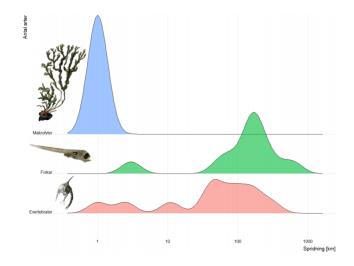








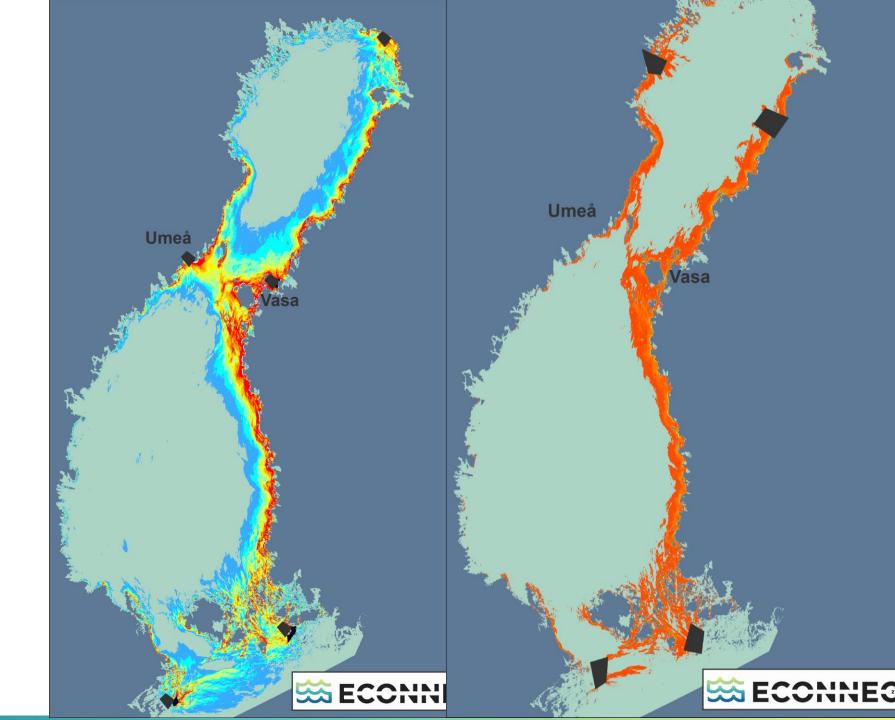
MPAs in a network with 10 km dispersal







Circuitscape



Conclusions

- All scenarios are predictions of possible futures
- Sustainable management needs to consider possible outcomes
- Magnitude of change unsure, some can also be seen as positive

