



**NOAA
FISHERIES**

Alaska Fisheries
Science Center

Resource Assessment &
Conservation Engineering Division
Groundfish Assessment Program

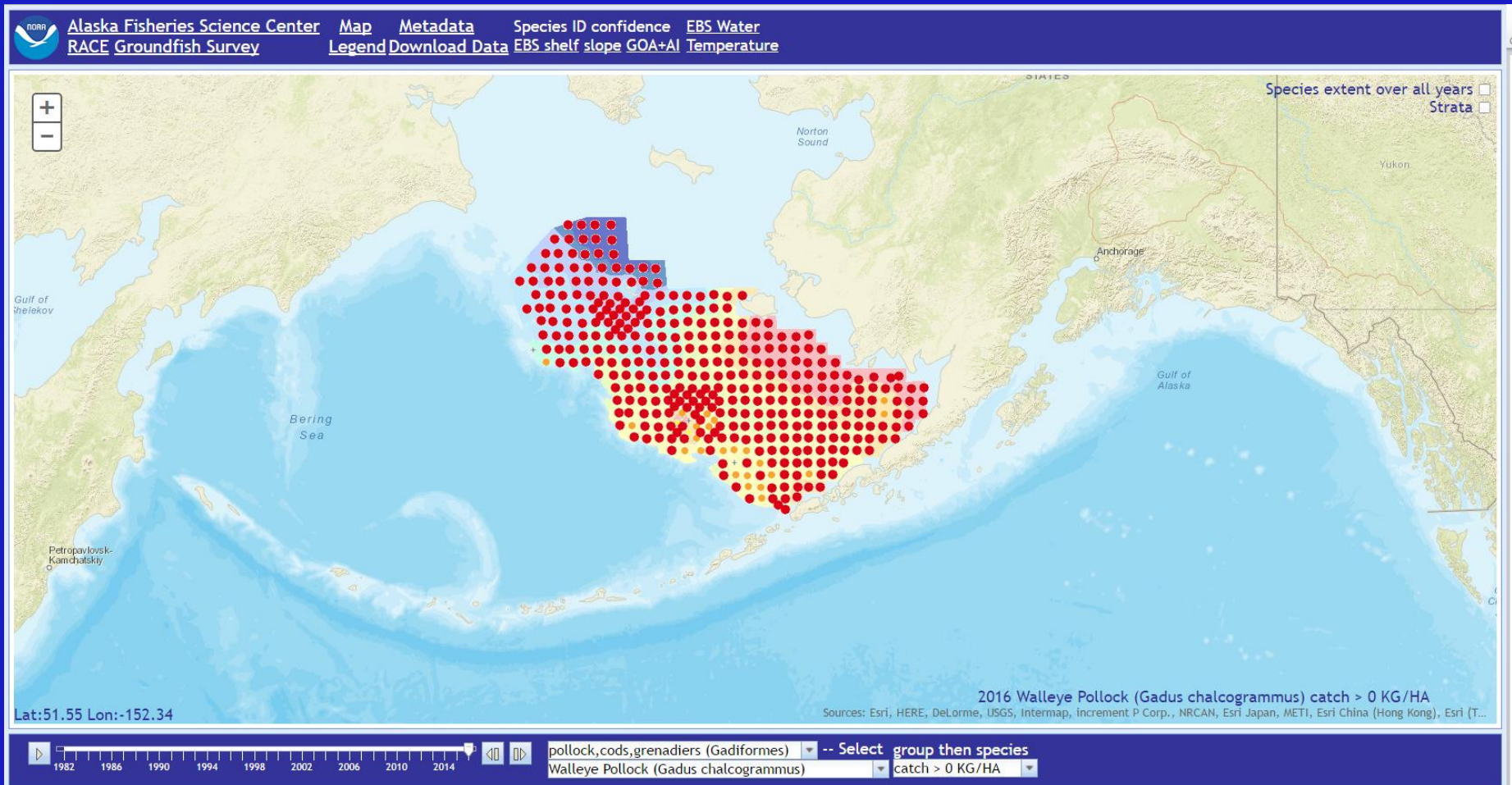
September 14, 2016

Results from the 35th Eastern Bering Sea Shelf Bottom Trawl Survey in 2016



2016 EBS Shelf BT available ONLINE!

http://www.afsc.noaa.gov/RACE/groundfish/survey_data/default.htm



EBS Shelf Survey Charters

Eastern Bering Sea shelf (20–200 m)



FV Alaska Knight
2010 -present
7th year



FV Vesteraalen
2014 -present
3rd year

Eastern Bering Sea upper continental slope (200–1200 m)



FV Cape Flattery
2016
1st year

General

Length measurements (total 170,196)

Taxon	Number
walleye pollock	46,296
yellowfin sole	26,727
northern rock sole	18,528
flathead sole	17,745
Pacific cod	17,175
arrowtooth flounder	15,545
Alaska plaice	6,312
Alaska skate	4,249
Kamchatka flounder	3,081
Bering flounder	2,700
Pacific halibut	2,248
plain sculpin	1,967
Arctic cod	1,724
yellow Irish lord	1,050
great sculpin	749
rex sole	642
Sakhalin sole	523
Greenland turbot	505
starry flounder	448
bigmouth sculpin	352
Other fish taxa	1,630

General

Age structure collections in 2016

Length-stratified

Pacific cod	854
Yellowfin sole	884
Northern rock sole	526
Pacific halibut	560
Alaska plaice	488
Kamchatka flounder	524
Greenland turbot	335
Yellow Irish lord	256

Random

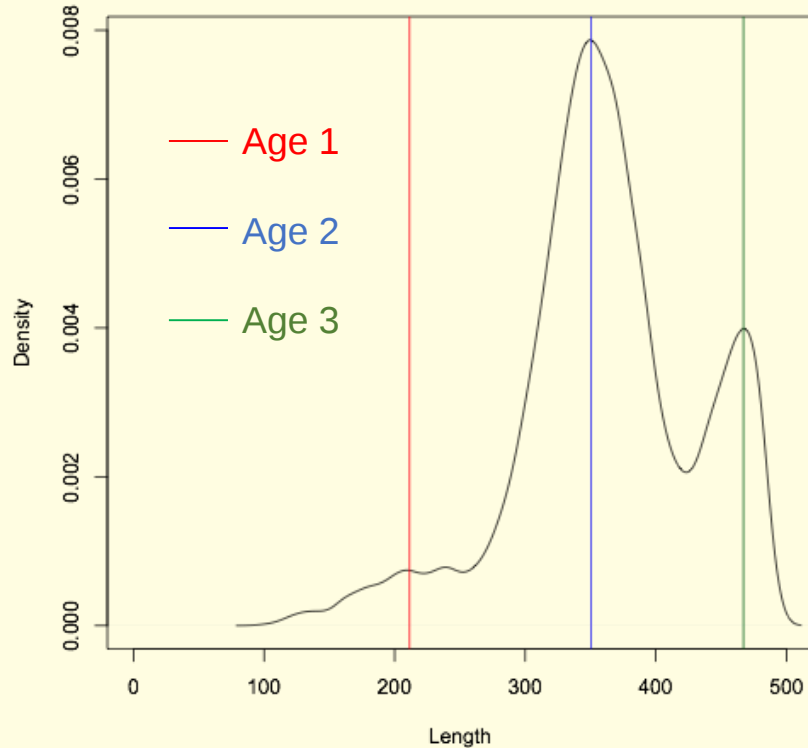
Walleye pollock ^{*10}	1,780
Pacific cod (NPRB)**	780
Arctic cod	Lots
Saffron cod	103
Flathead sole**	714
Arrowtooth flounder*	775

* Years sampled randomly

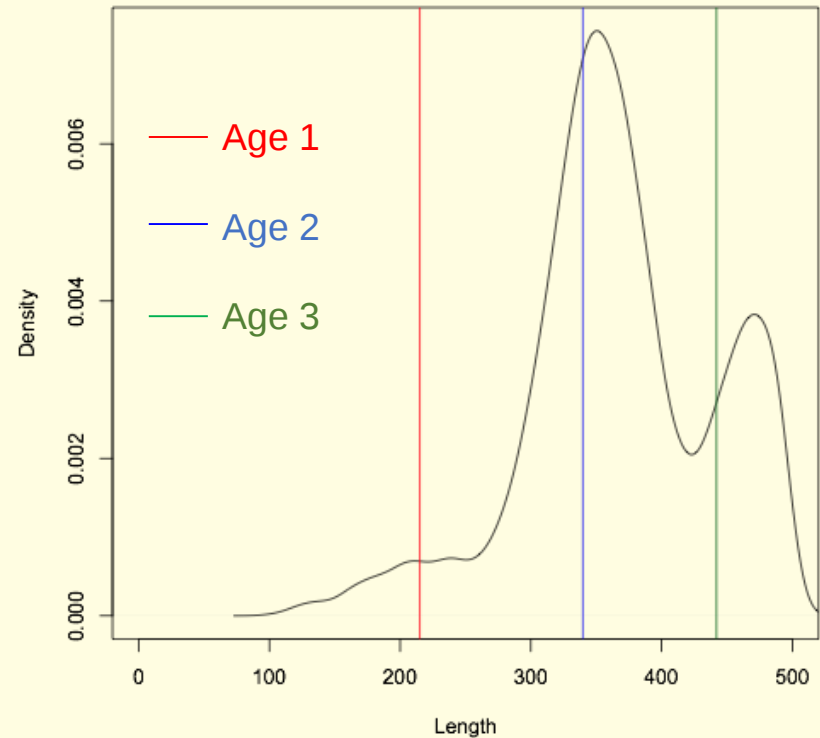
Pacific cod size-at-age 2015

Cianelli et al. NPRB quarterly report (8/16)

Random samples

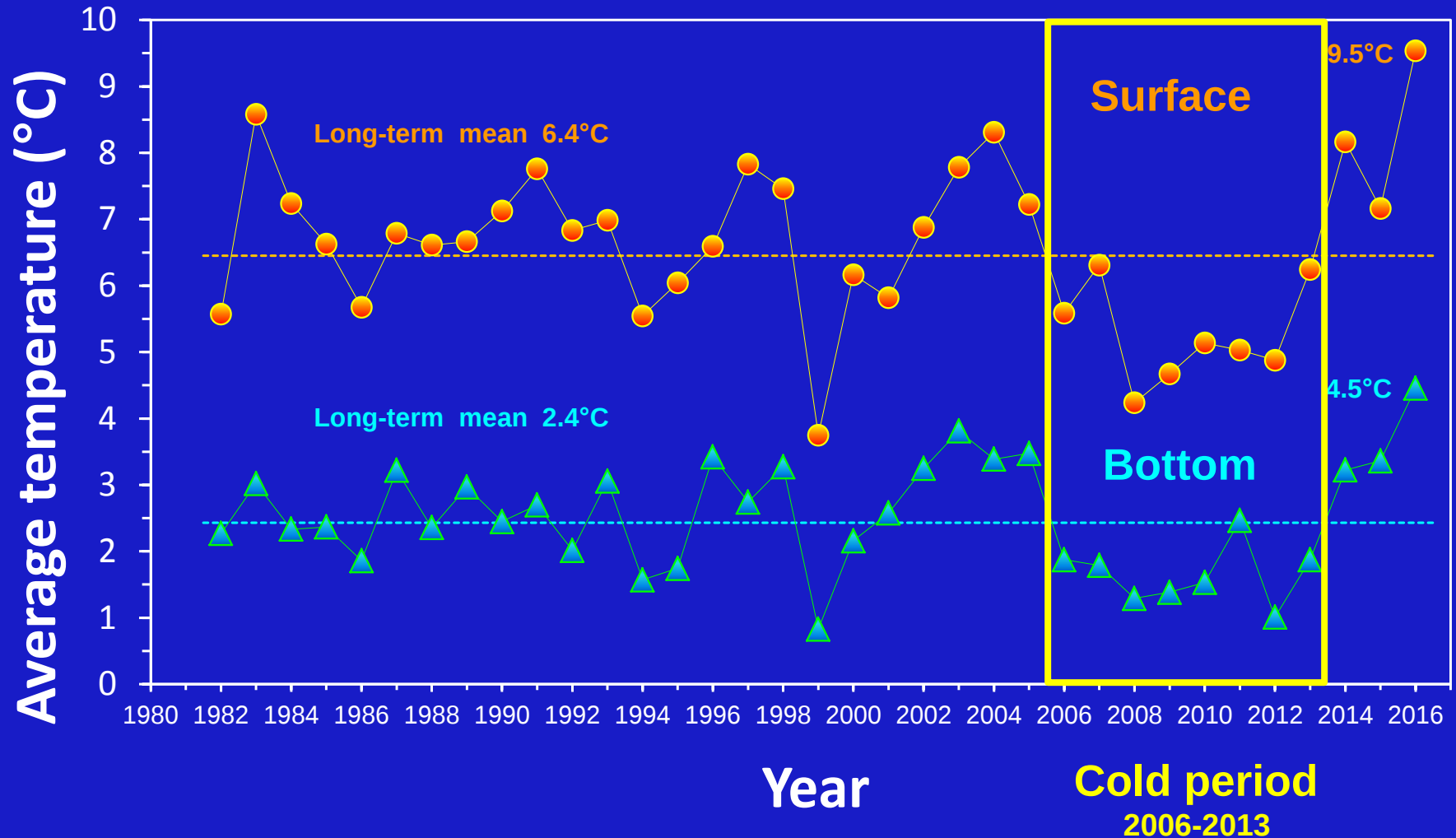


Length-stratified samples



EBS shelf environment

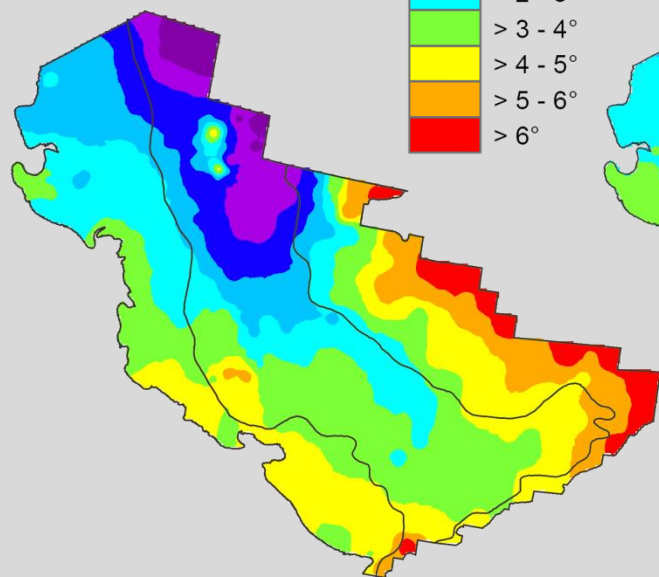
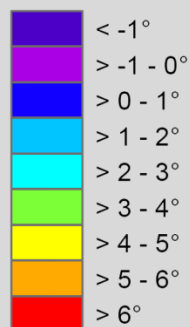
Average surface and bottom temperatures



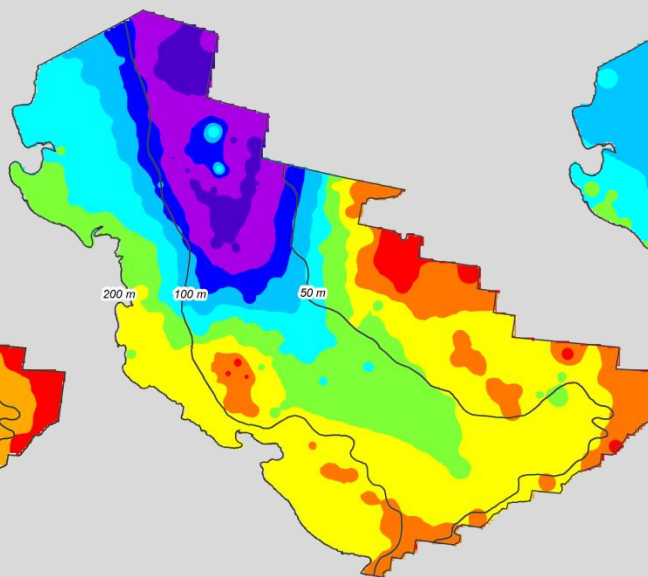
EBS shelf environment

Bottom temperatures

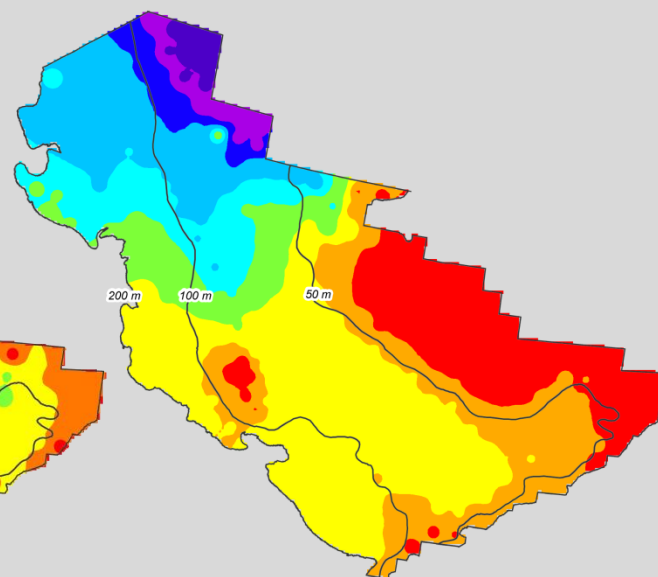
Bottom temperature °C



2014

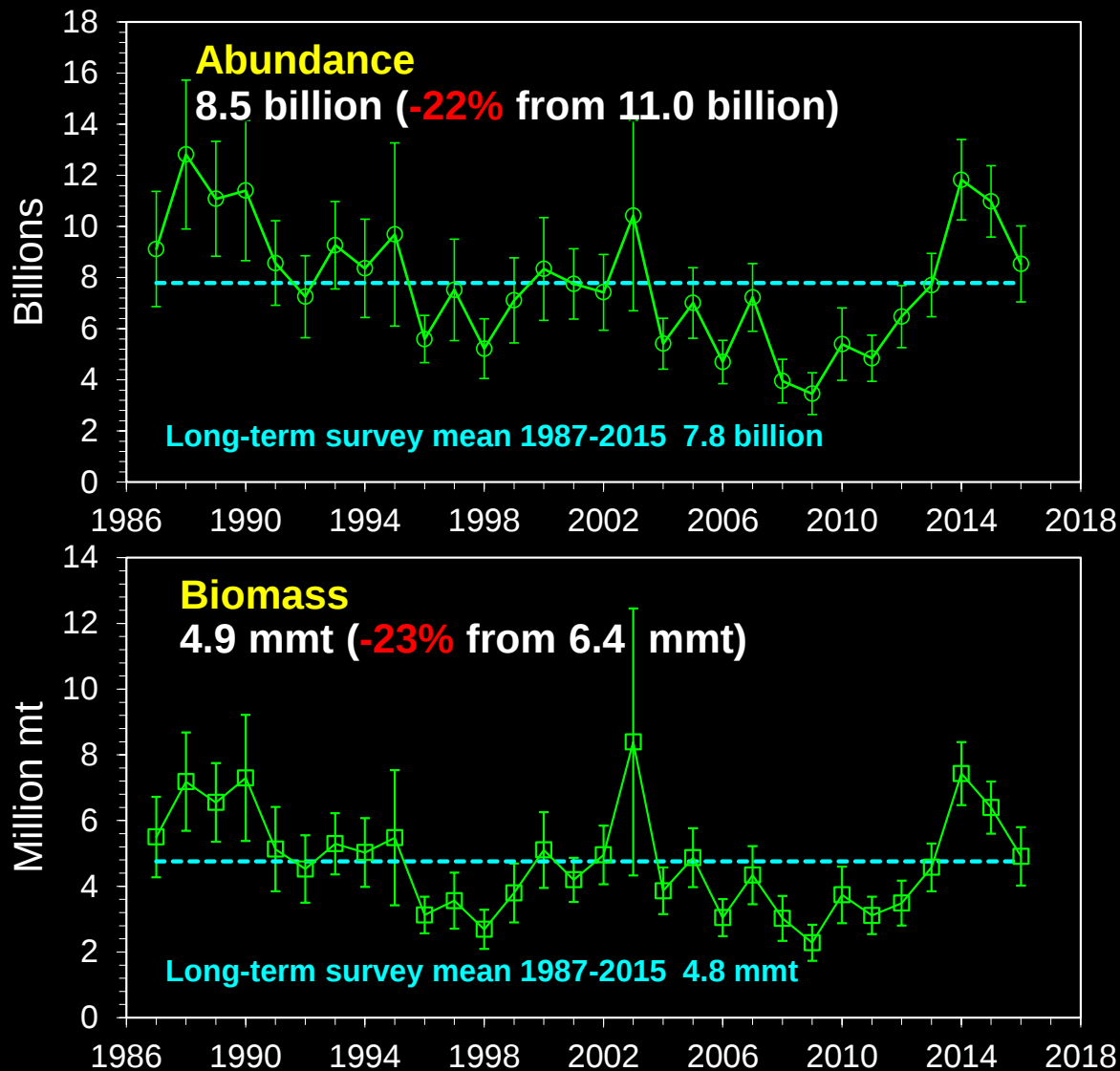


2015



2016

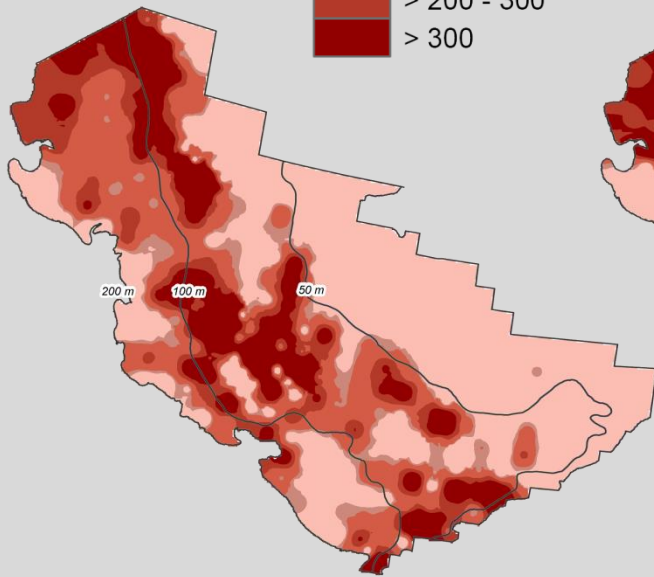
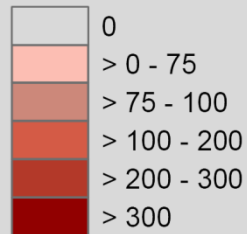
Walleye pollock trends



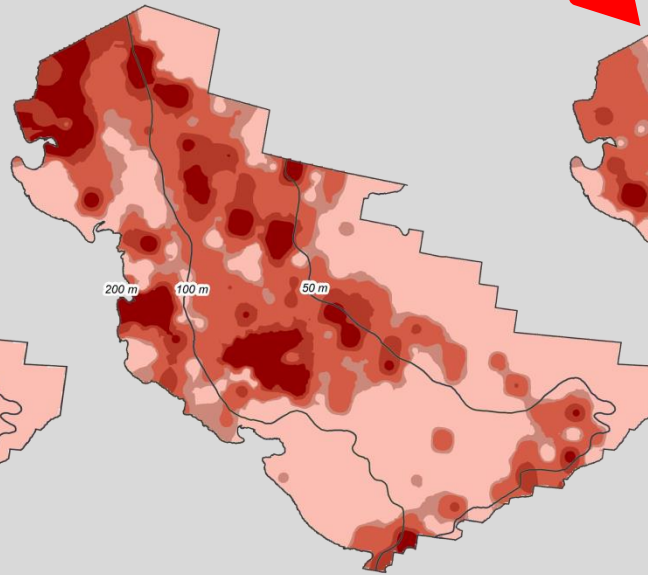
Walleye pollock

Distribution and Abundance

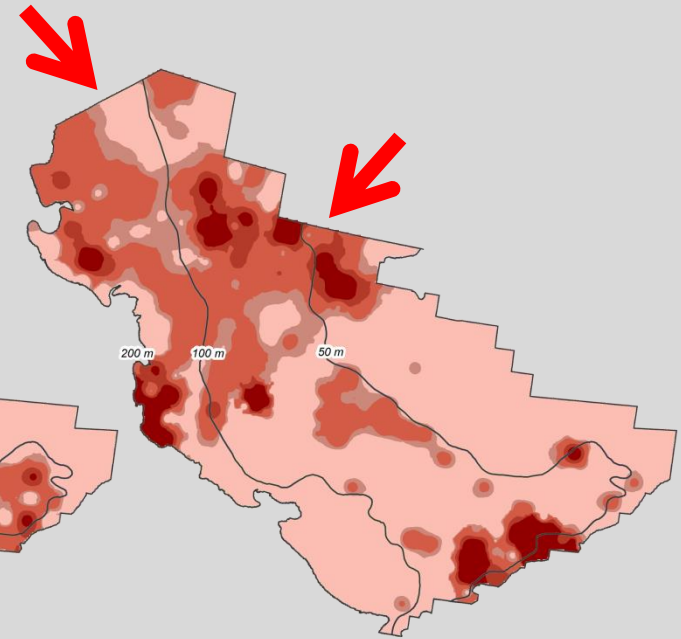
Pollock kg/ha



2014



2015

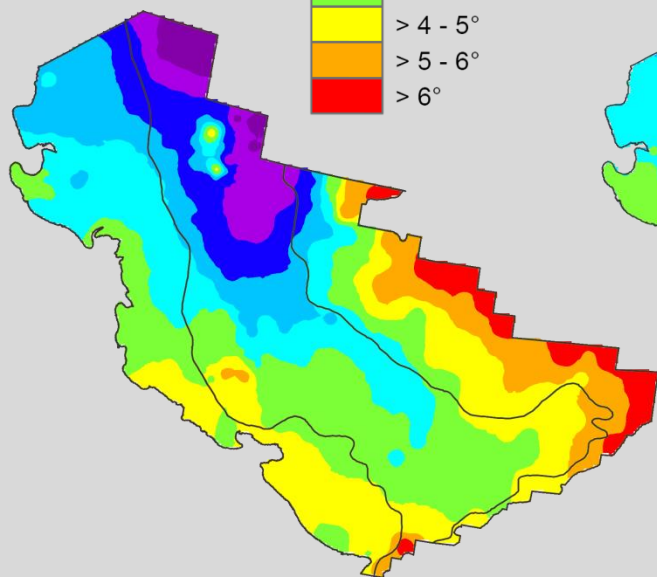
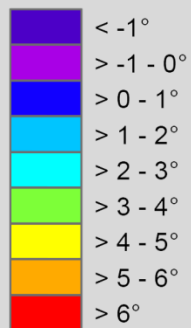


2016

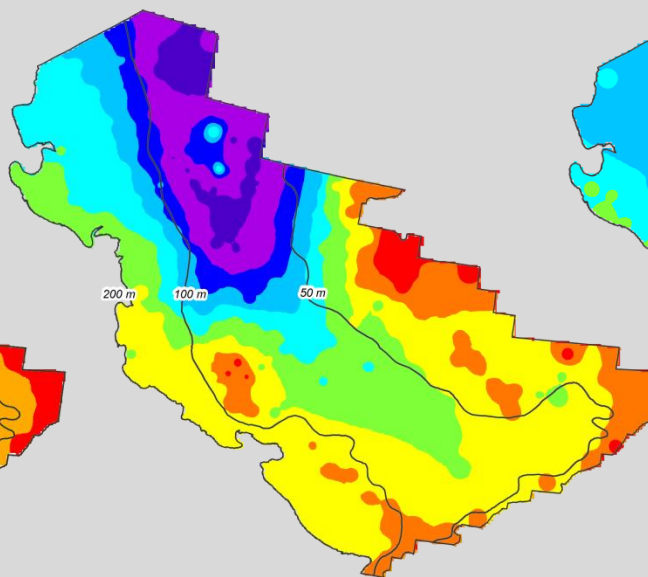
EBS shelf environment

Bottom temperatures

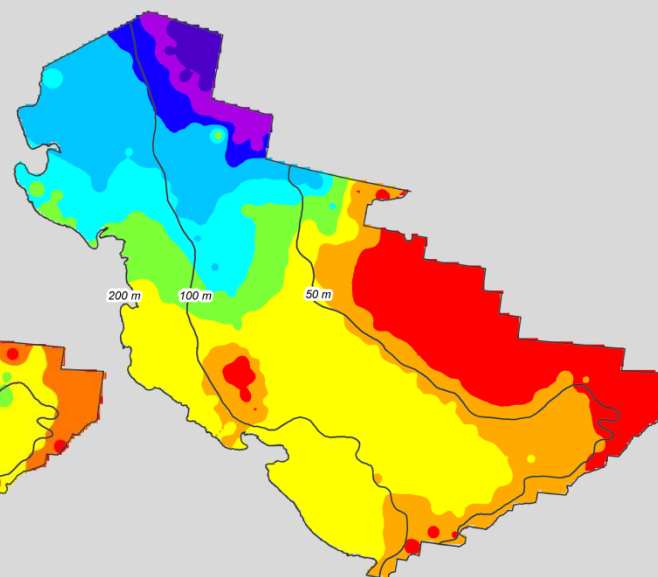
Bottom temperature °C



2014



2015



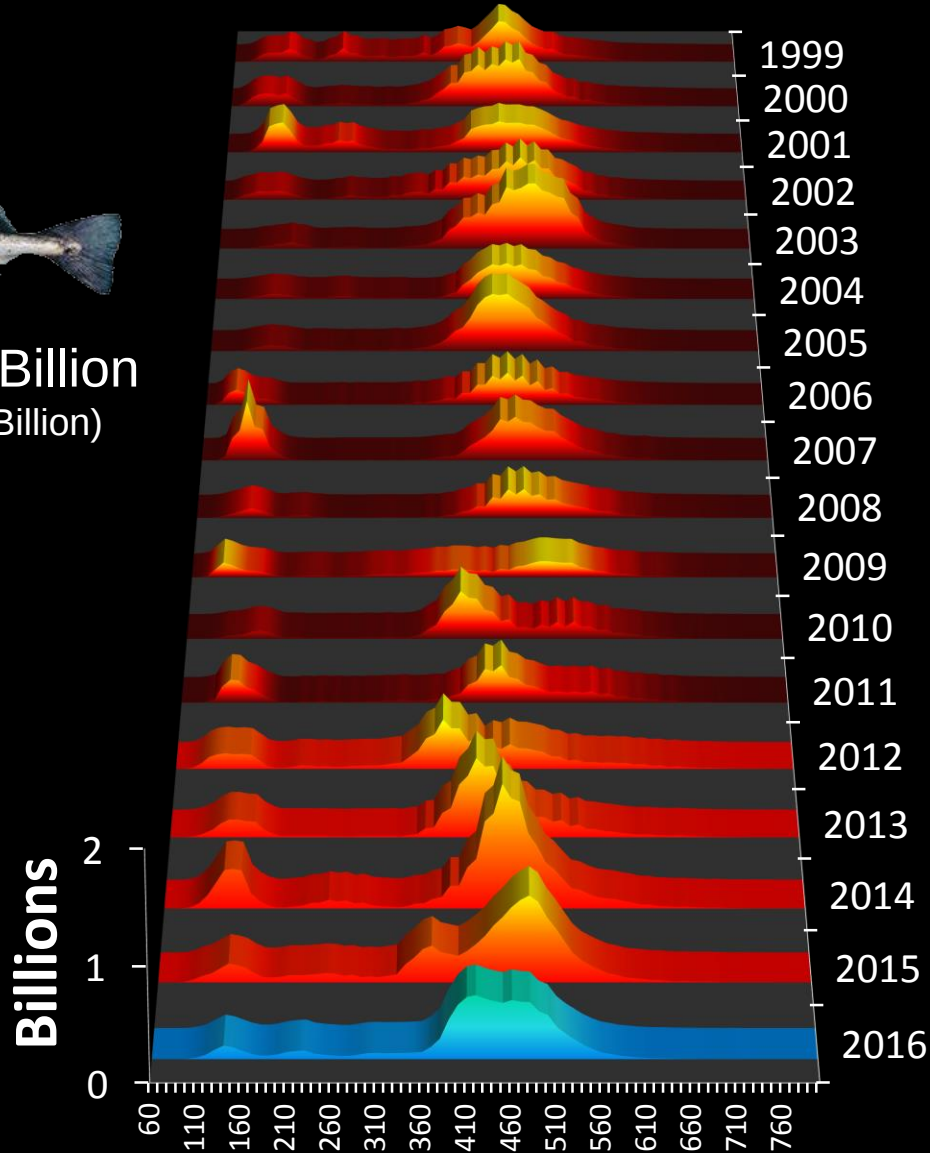
2016

Walleye pollock

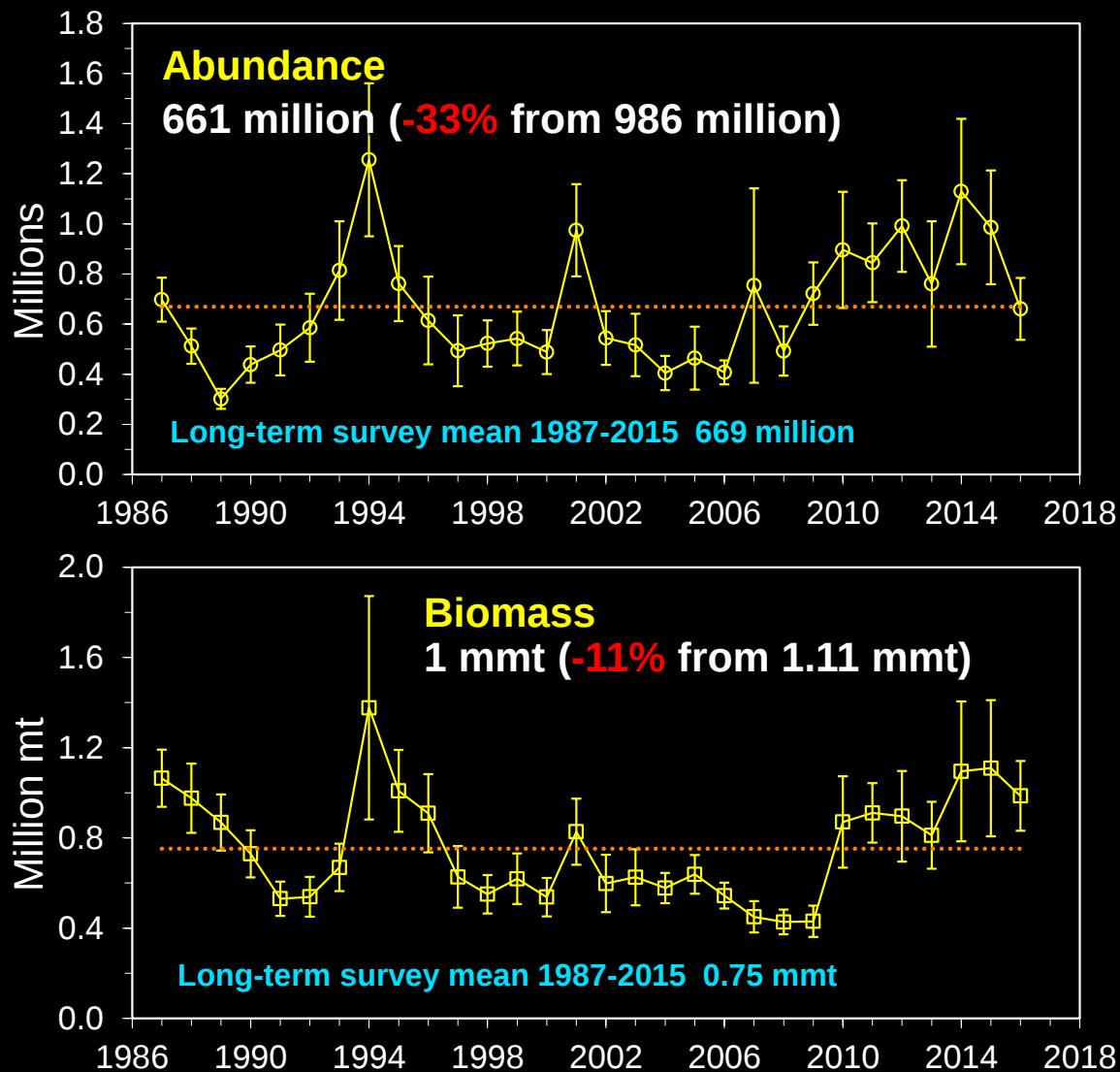
Survey abundance-at-length



Tot. abund. = 8.5 Billion
(-22% from 2015 - 11 Billion)

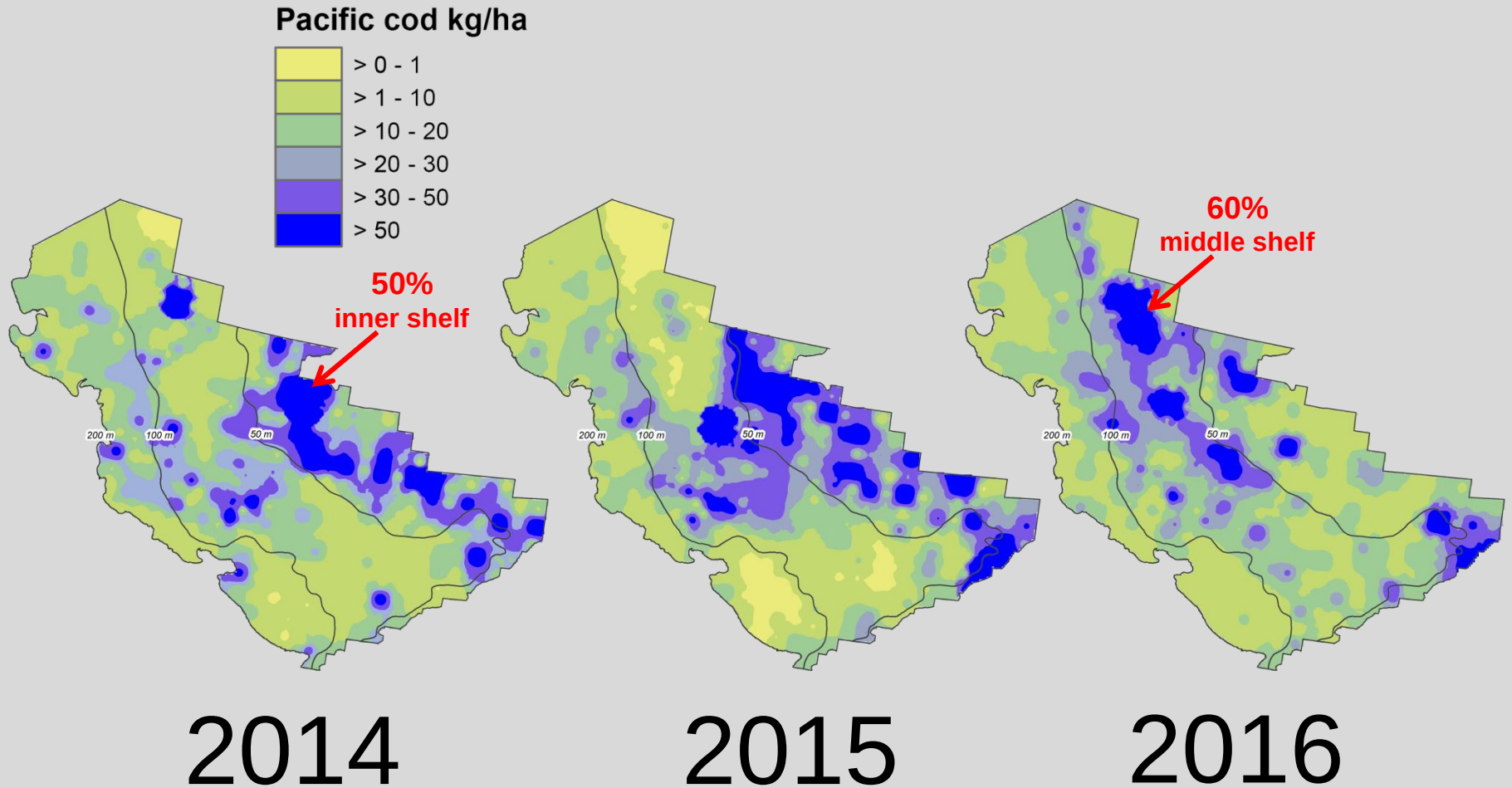


Pacific cod trends



Pacific cod

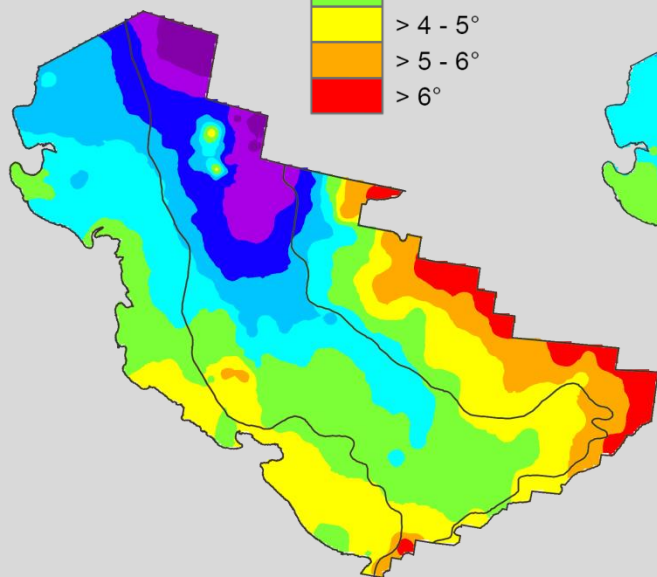
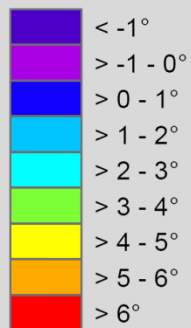
Distribution and Abundance



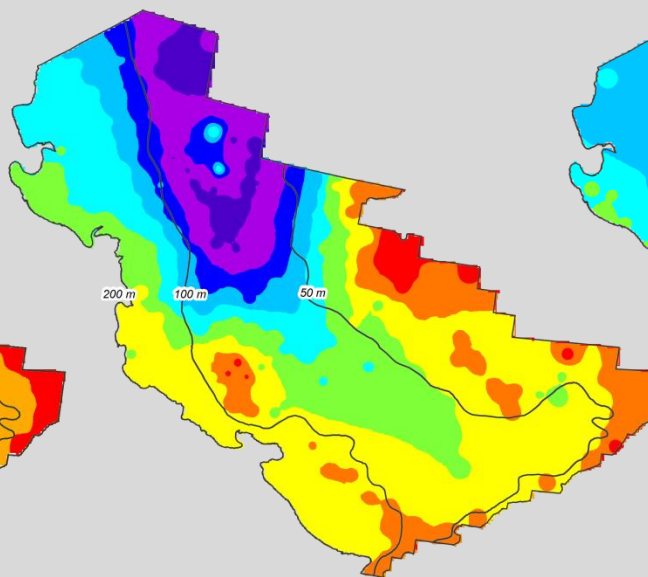
EBS shelf environment

Bottom temperatures

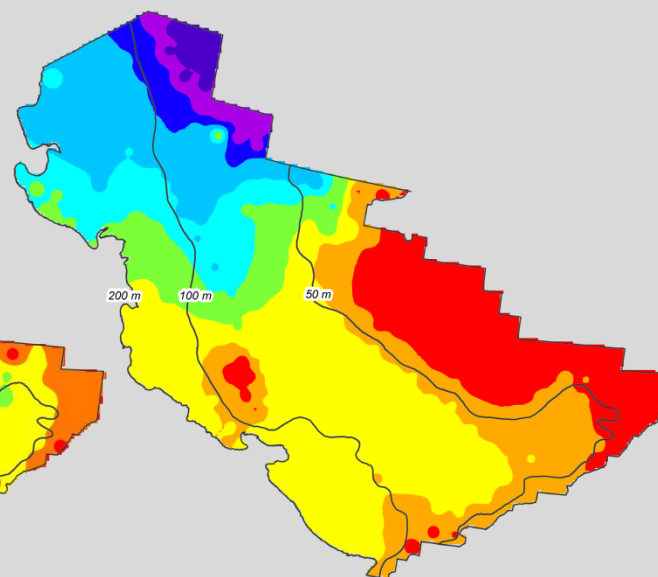
Bottom temperature °C



2014



2015



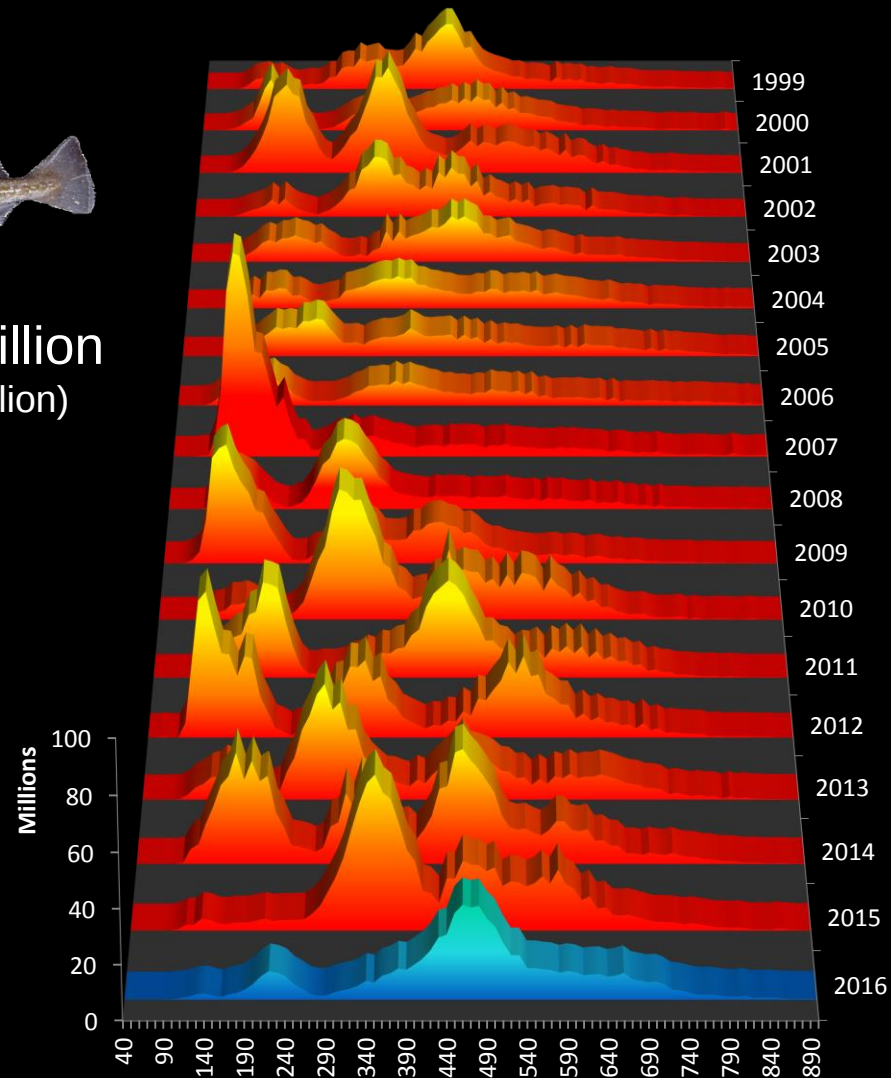
2016

Pacific cod

Survey abundance-at-length

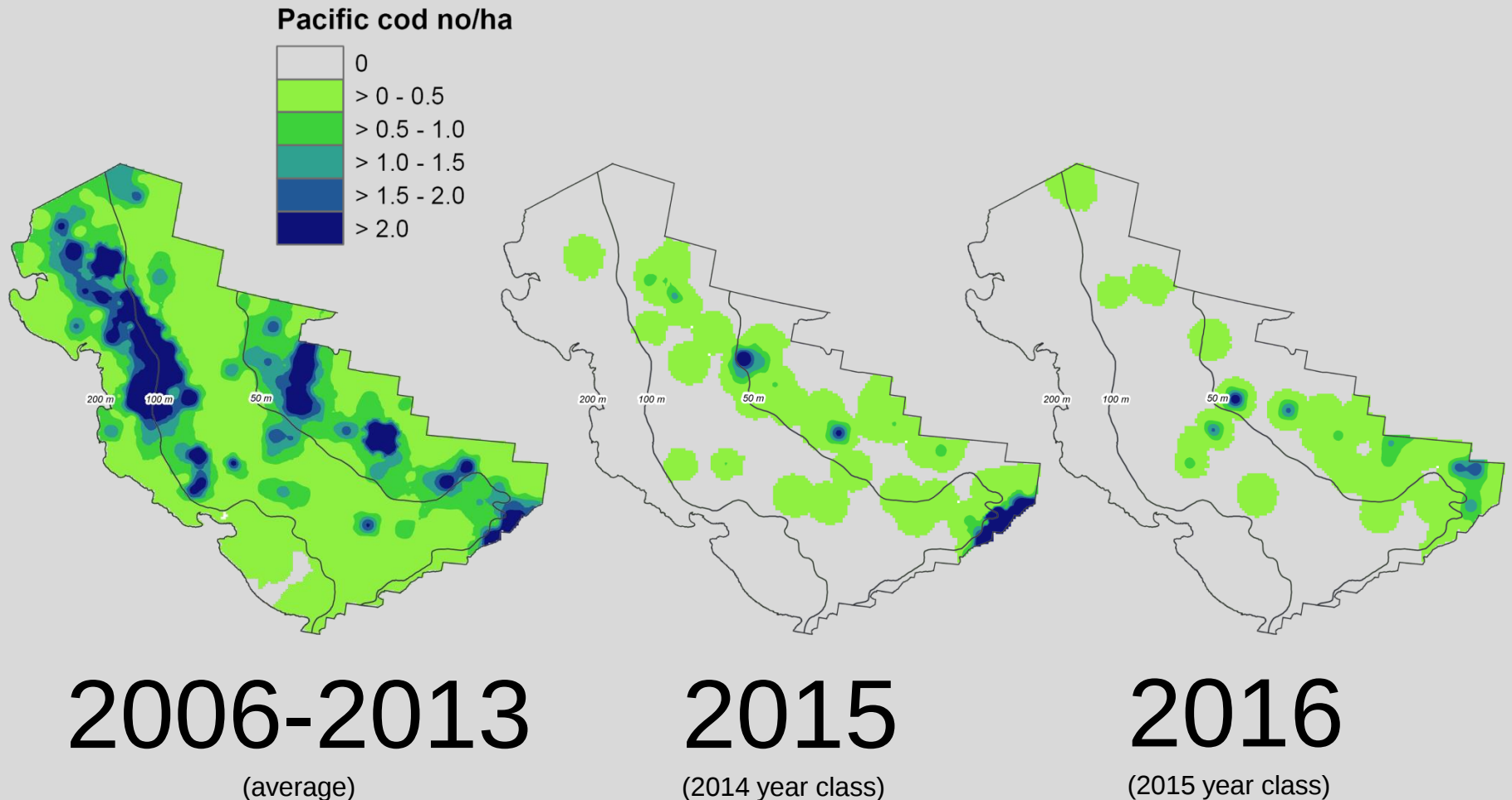


Tot. abund. = 661 million
(-33% from 2015 – 986 million)

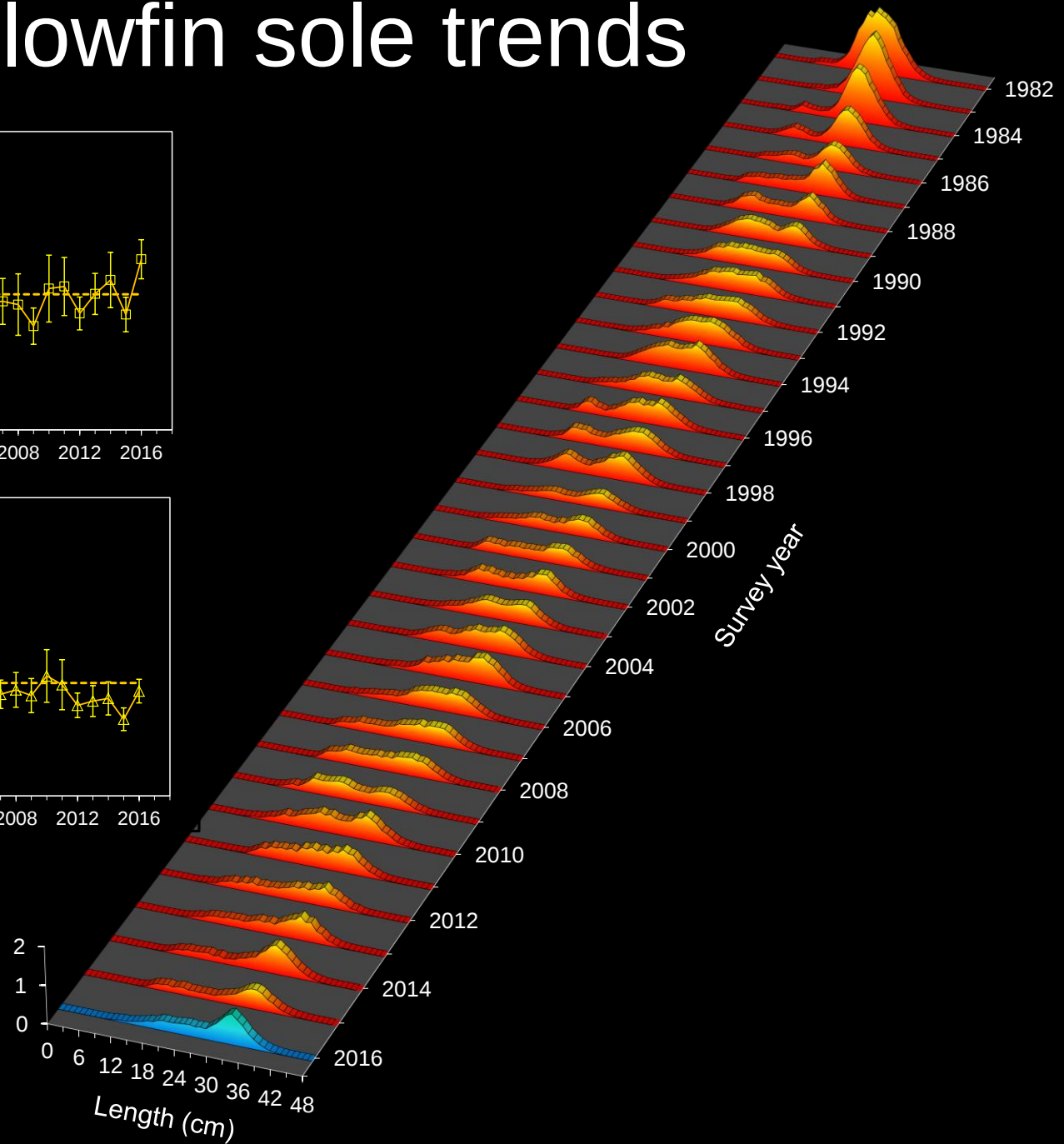
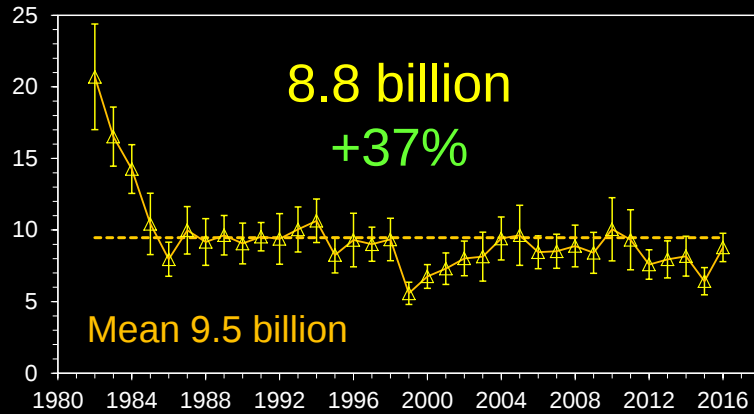
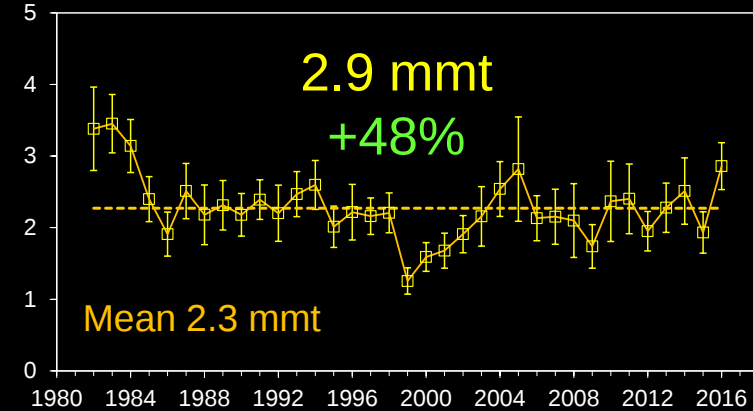


Pacific cod

Distribution and Abundance 1-year olds (≤ 180 mm)

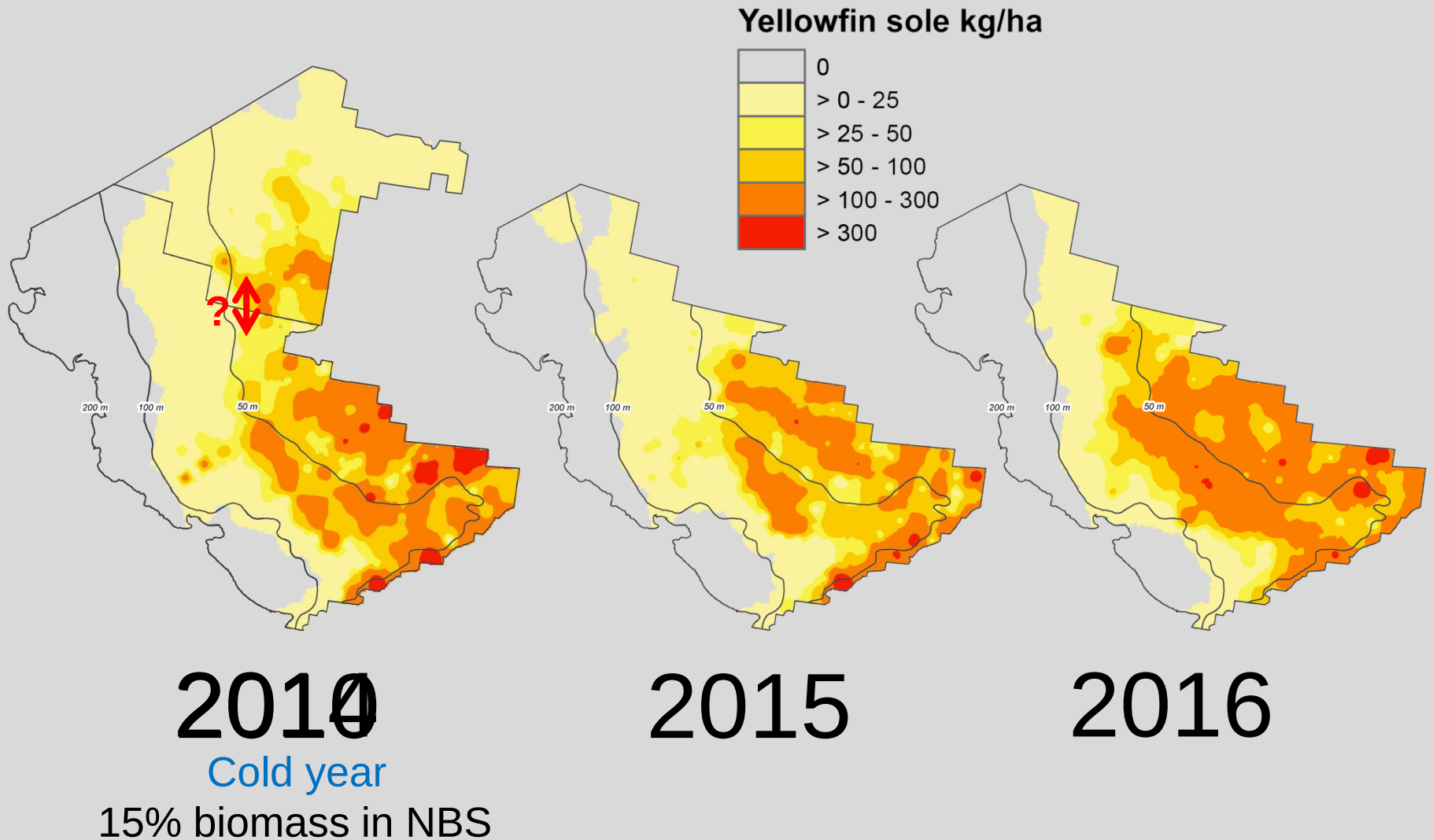


Yellowfin sole trends

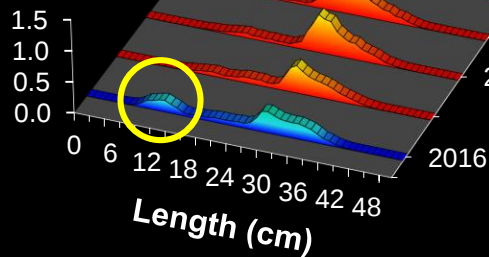
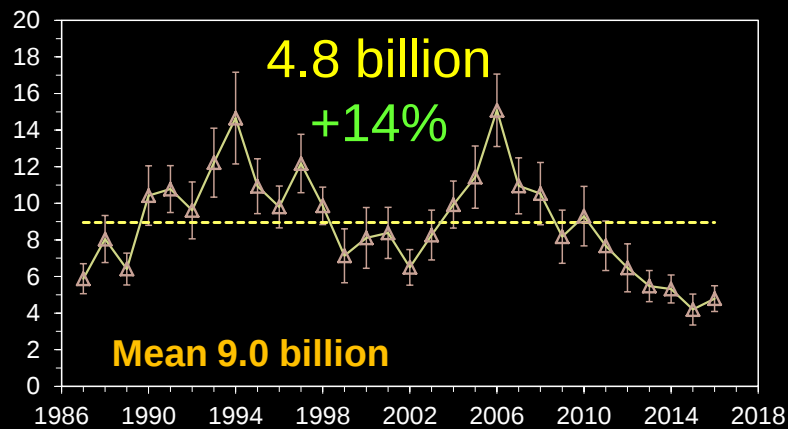
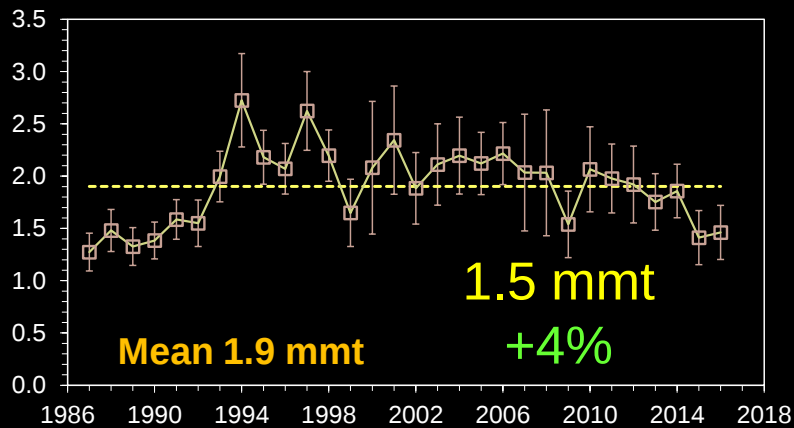


Yellowfin sole

Distribution and Abundance



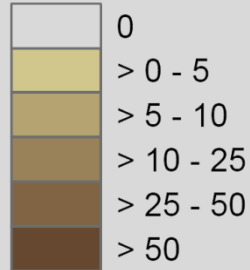
Northern rock sole trends



Arrowtooth flounder

Distribution and Abundance

Arrowtooth fl. kg/ha



Biomass 475K mt

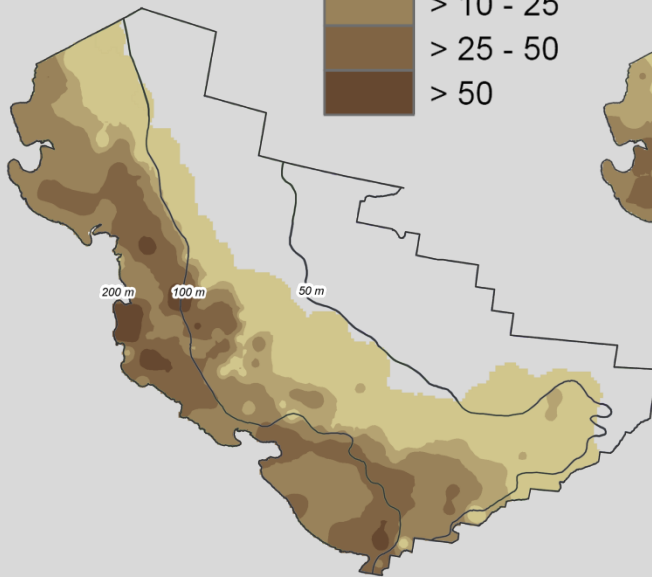
+16%

Mean 451K mt

Abundance 838 million

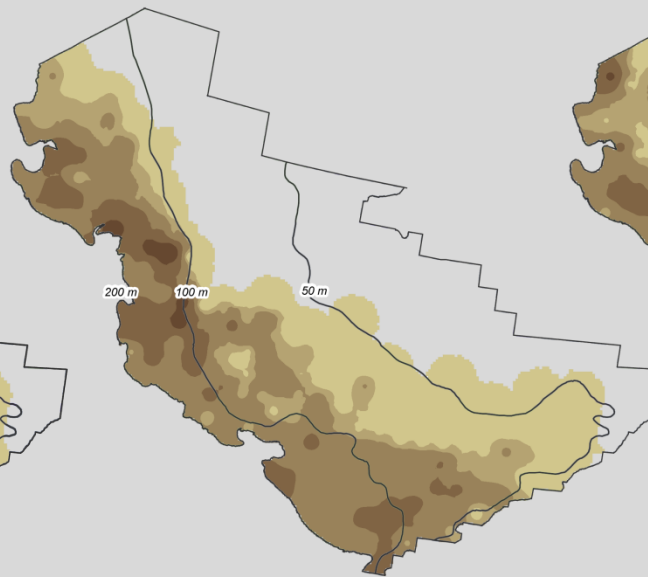
+36%

Mean 838 million

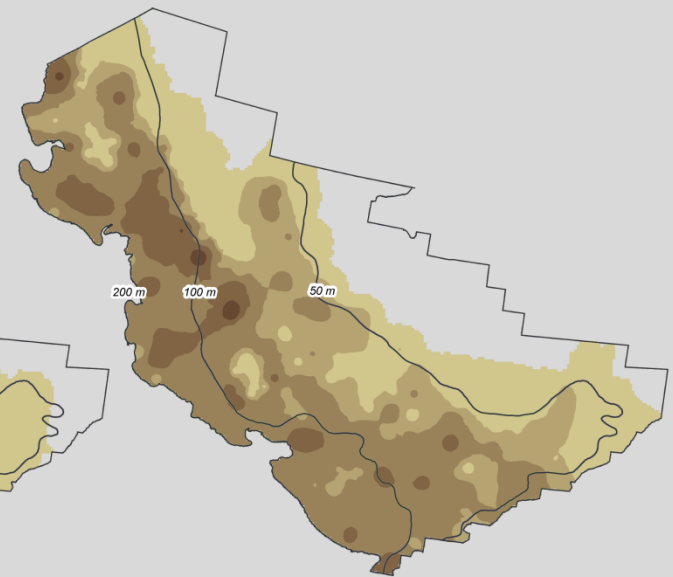


2014

Cold year

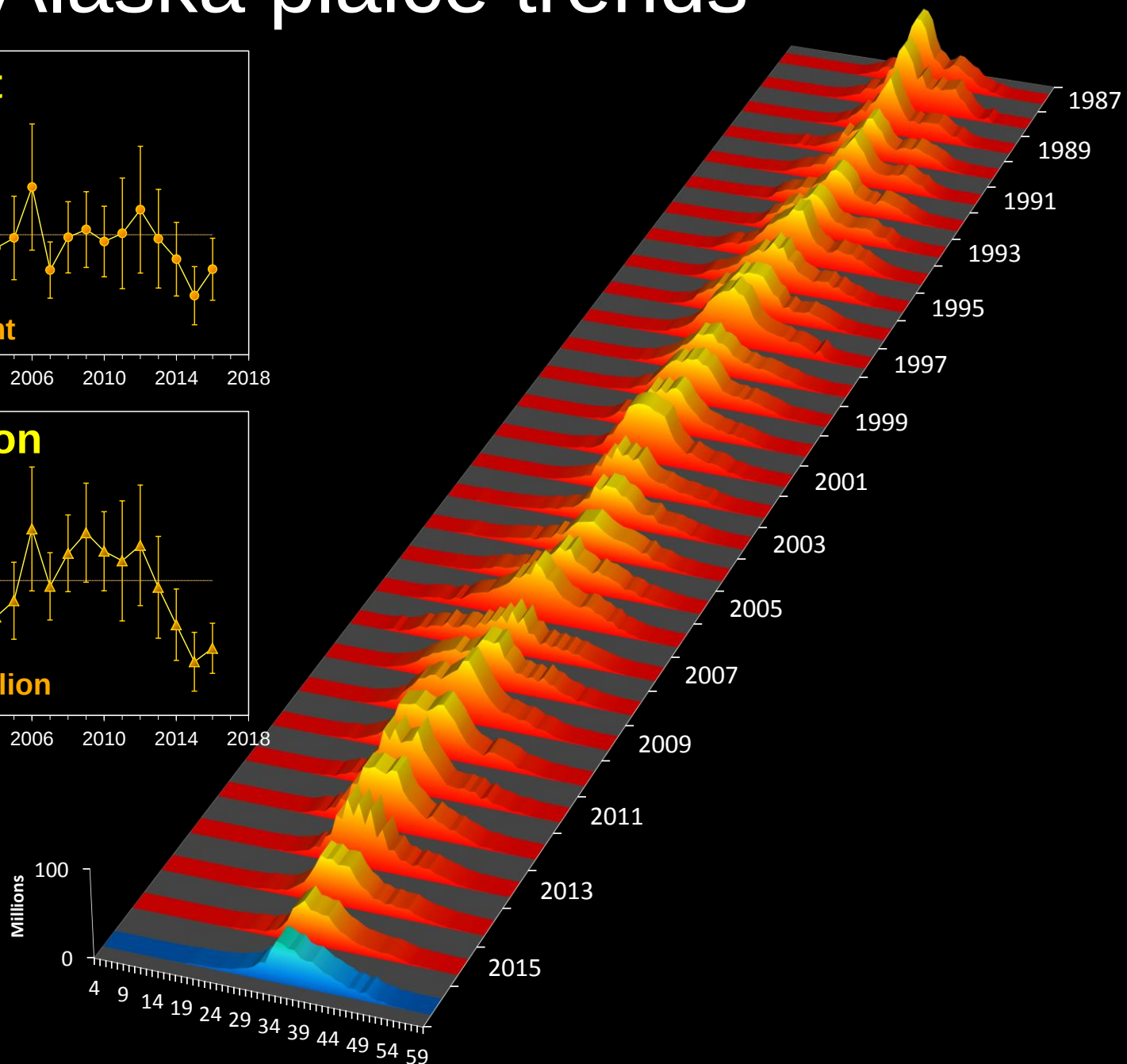
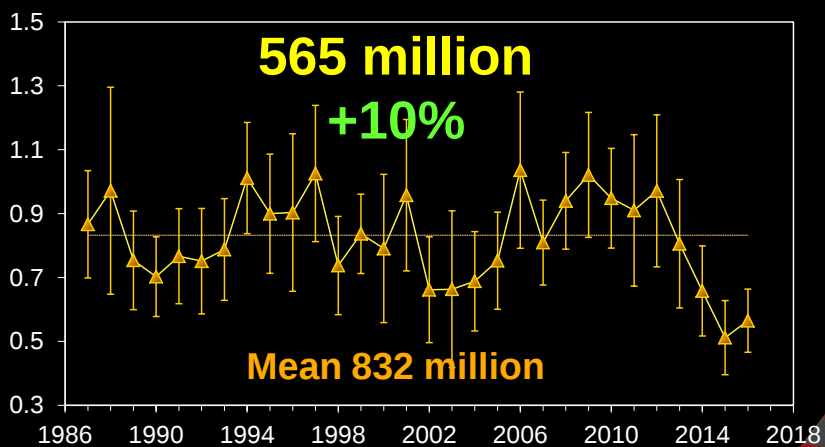
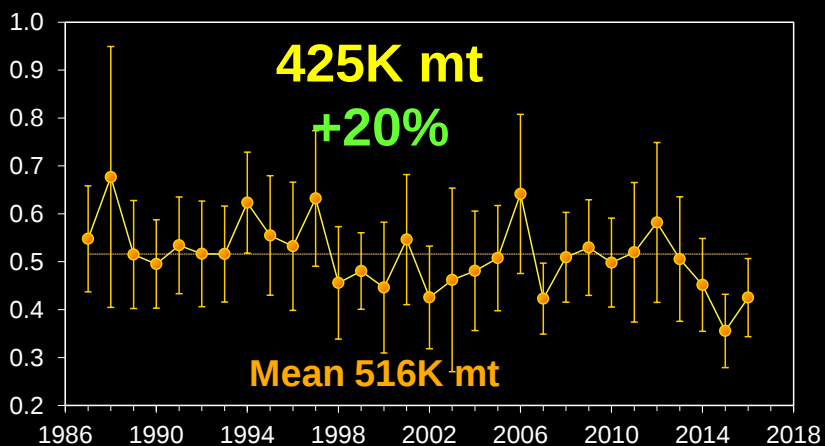


2015



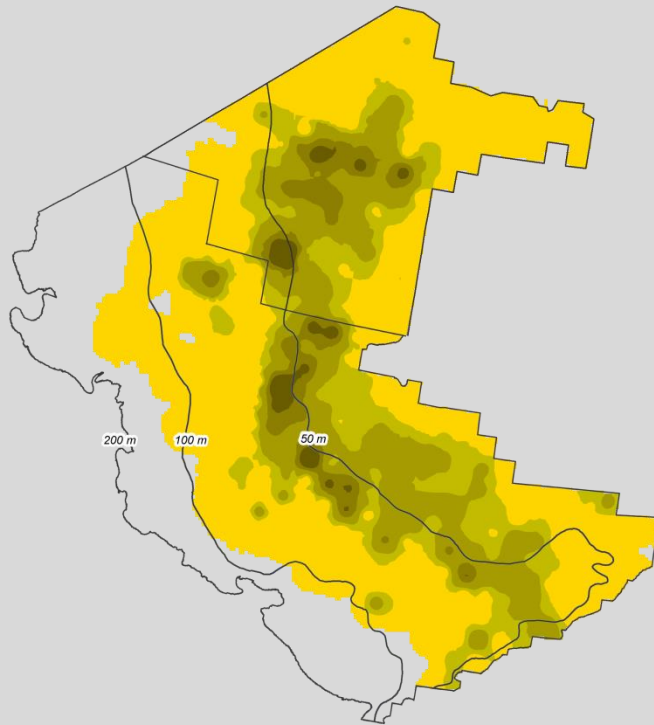
2016

Alaska plaice trends

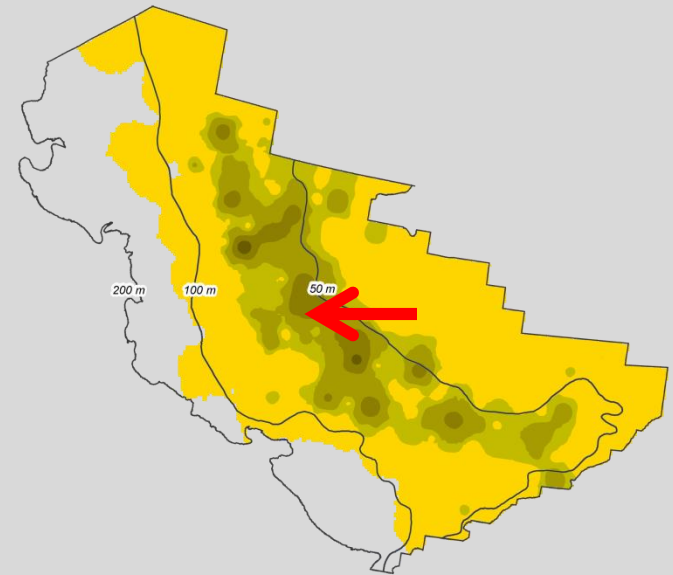
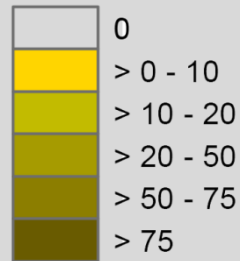


Alaska plaice (cold pool species)

Distribution and Abundance



Alaska plaice kg/ha



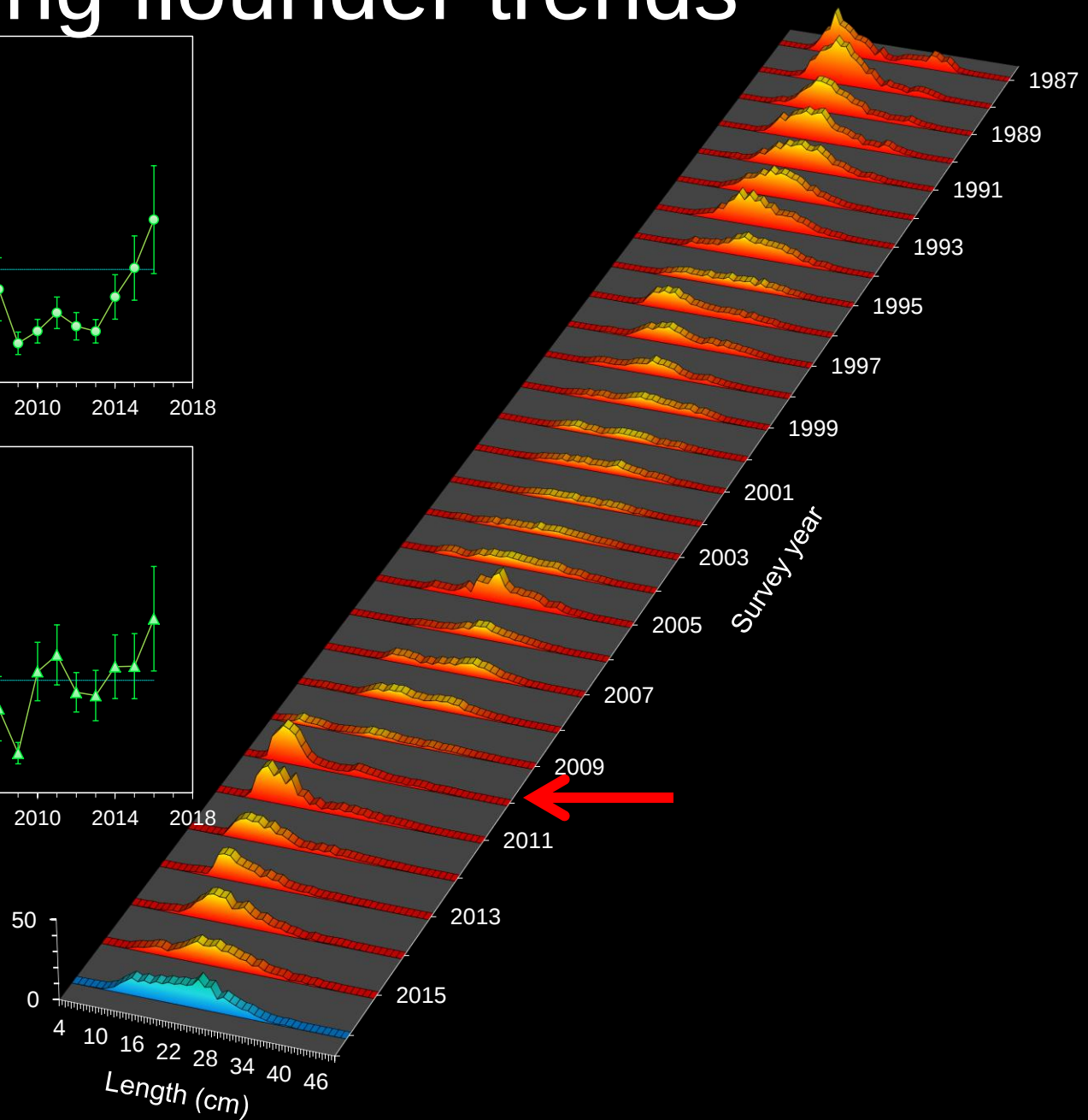
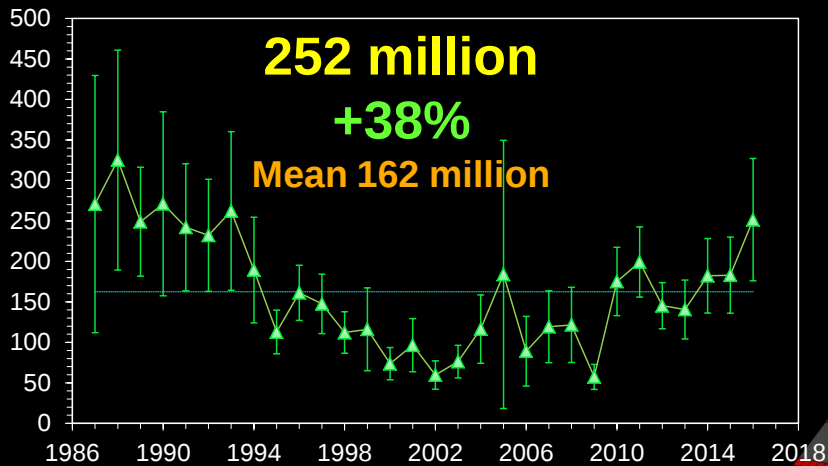
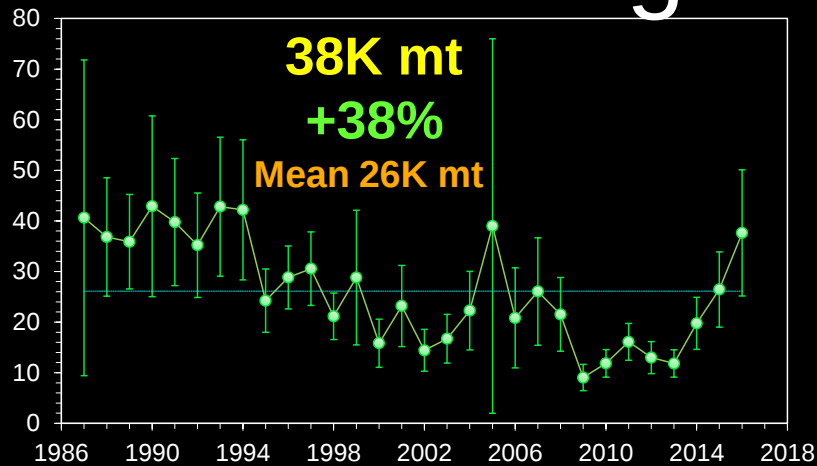
2010

38% biomass in NBS

Cold year

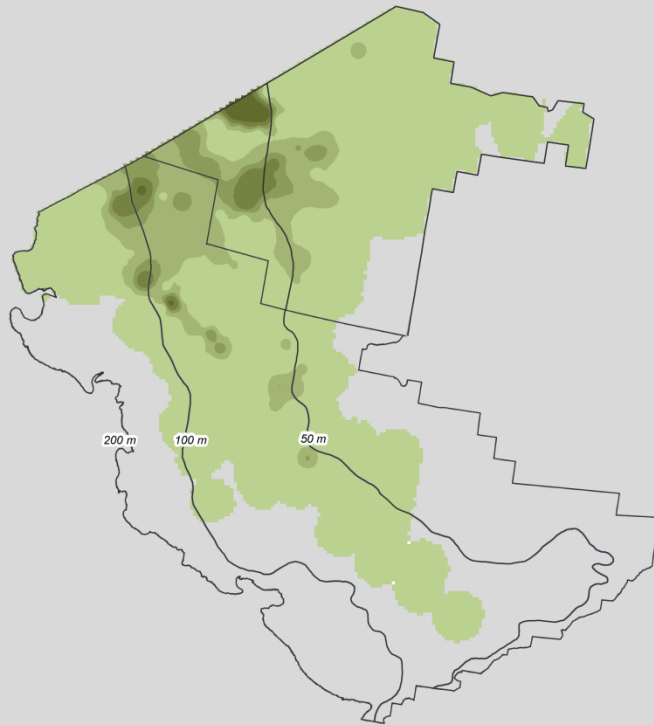
2016

Bering flounder trends



Bering flounder (cold pool species)

Distribution and Abundance

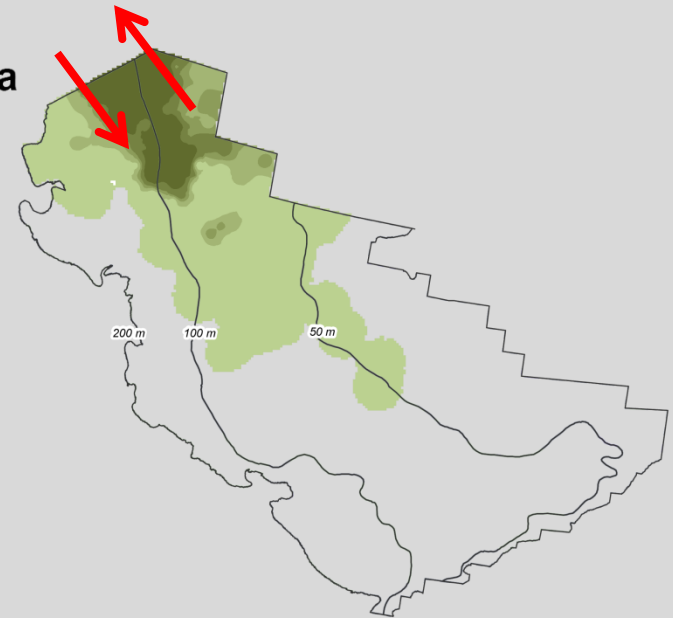
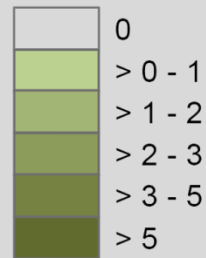


2010

51% biomass in NBS!

Cold year

Bering flounder kg/ha



2016

Flathead sole trends

Abundance 1.6 billion

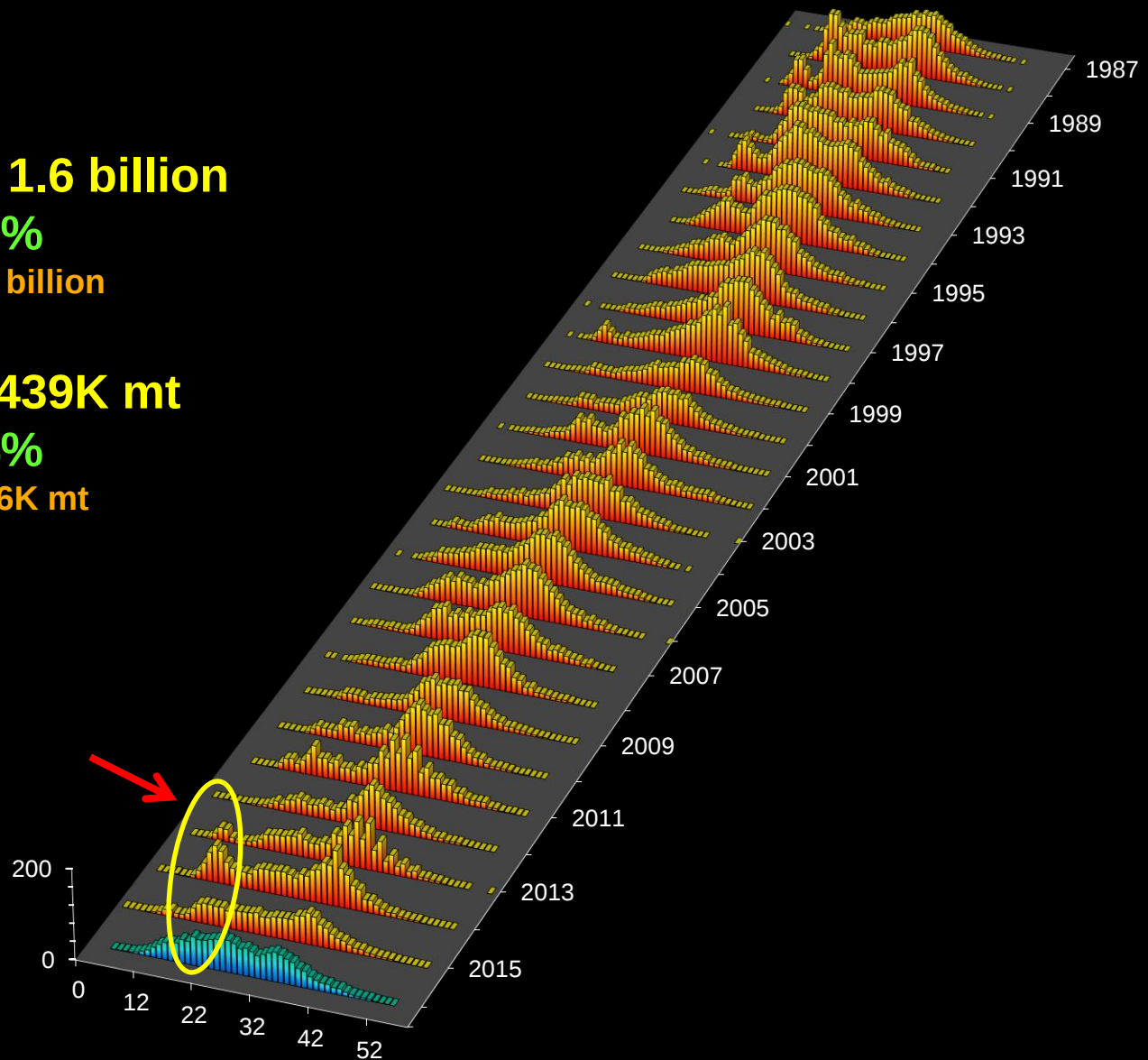
+21%

Mean 1.8 billion

Biomass 439K mt

+14%

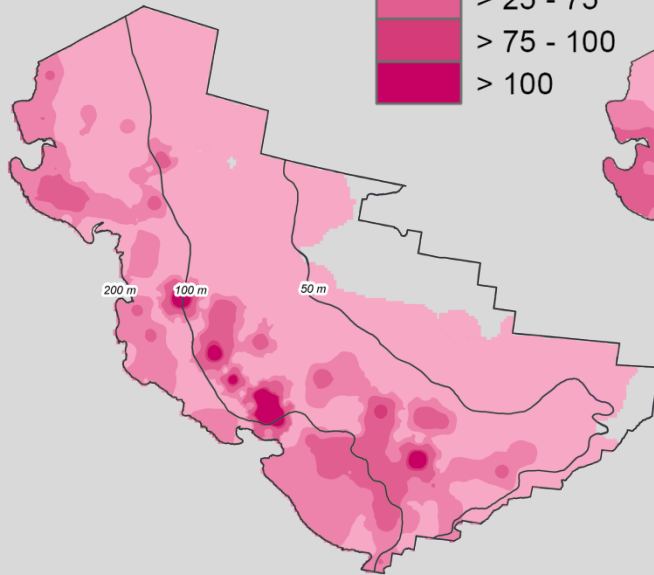
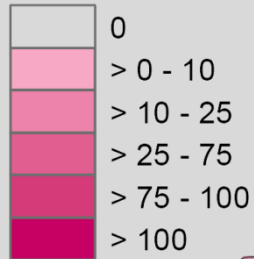
Mean 536K mt



Flathead sole

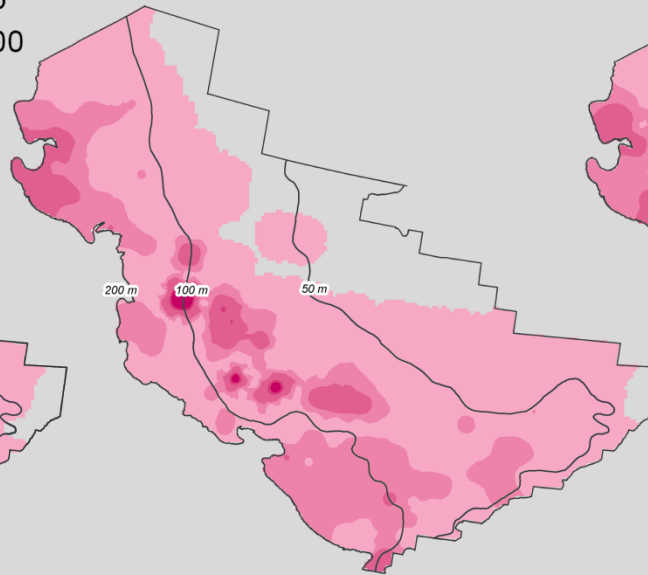
Distribution and Abundance

Flathead sole kg/ha

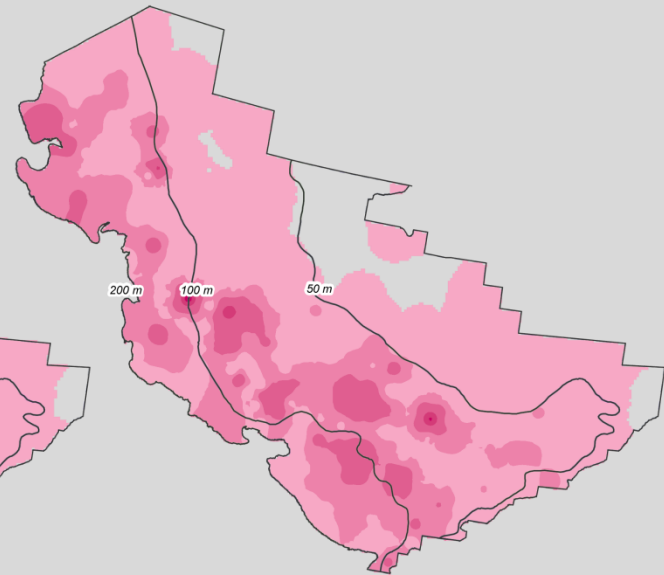


2014

Cold year



2015



2016

EBS Shelf Survey Results

Other Flatfishes and Alaska skate

Taxon	Year	Survey Biomass (Thousands mt)	% change	Survey Abundance (Millions)	% change
Kamchatka fl.	2015	60		123	
	2016	55	-8%	124	1%
Greenland turbot	2015	25		21	
	2016	22	-11%	14	-34%
Pacific halibut	2015	172		64	
	2016	154	-11%	66	3%
Alaska skate	2015	448		110	
	2016	551	23%	122	11%