



NOAA
FISHERIES

Alaska Fisheries
Science Center

Seattle, WA

Recent perspectives on workshops to develop fisheries scenarios for climate models

Alan Haynie

PICES 2016 Annual Meeting

W5 - WKSICCME

San Diego, CA USA

November 4, 2016



The ICES/PICES Workshop on Economic Modelling of the Effects of Climate Change on Fish and Fisheries (WKSICCME_Econ)

- Chaired by Alan Haynie (USA), Sophie Gourguet (France), John Pinnegar (UK), Lisa Pfeiffer (USA), and Jörn Schmidt (Germany)
- June 3-4, 2016 in Brest, France connected to MSEAS meeting
- ~35 people
- Mixture of economists, other social scientists, and biologists

Brest June 2016 ICES/PICES workshop goals

- representative future fishing and ecosystem scenarios.
- fisheries management policies
- models of fishery behaviour that can be used to project the implications of different climate models

The primary geographic focus of the meeting was the ICES/PICES countries, but considerable concern was raised regarding research exploring linkages between climate change and fisheries health in developing and Southern Hemisphere countries.

The one and a half days of the workshop were organized between

- quick background talks on projects (5 minutes),
- breakout sessions (participants were typically in 3 groups),
- discussion of breakout session outcomes with the entire group.

Identify the socioeconomic data and features of the suite of representative future fishing and ecosystem scenarios to evaluate climate change effects on fish and fisheries.

We considered the following questions:

- 1) How to define the pathway?
- 2) What are the implications of this choice?
- 3) What are the feedback mechanisms that need to be considered in economic scenarios?

Identify how fisheries management policies will interact with climate change

- Discussed the interactions between climate change and management strategies.
- Recognized that we have to be aware of the responses over time; extrapolation of the current fishery-to-fish is unlikely to be stable over time.
- Need to consider current management and how existing institutions (e.g., management agencies) are likely to be impacted by changing environment.

Identify suites of bioeconomic and spatially explicit models of fishery behaviour that can be used to project the implications of different climate models

Our plan was to discuss...

- (i) which data are needed: from data-rich to data-poor fisheries,
- (ii) specific economic scenarios for small-scale fisheries,
- (iii) matching climate-fish models to specific economic and social science models and indicators.

Identify suites of bioeconomic and spatially explicit models of fishery behaviour that can be used to project the implications of different climate models

the group agreed to focus on matching climate-fish models to specific economic and social science models.

Consequently the 3 breakout groups focused on the questions of which socio-economic indicators and models could be used in climate-fish models.

Next Steps

- Different participants working on scenarios
- Papers in early state to lay out different scenarios & summarize existing scenarios
- Additional intercessional workshop discussed



ACLIM Project Workshop focused on Socioeconomics

August 30, 2016, Alaska Fisheries Science Center,
Seattle, WA

The ACLIM team



Anne Hollowed



Kirstin Holsman



Alan Haynie



Albert Hermann



Wei Cheng



Andre Punt



Darren Pilcher



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Jim Ianelli



Ingrid Spies



Stephen Kasperski



Cody Szuwalski



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Michael Dalton



Paul Spencer



Tom Wilderbuer

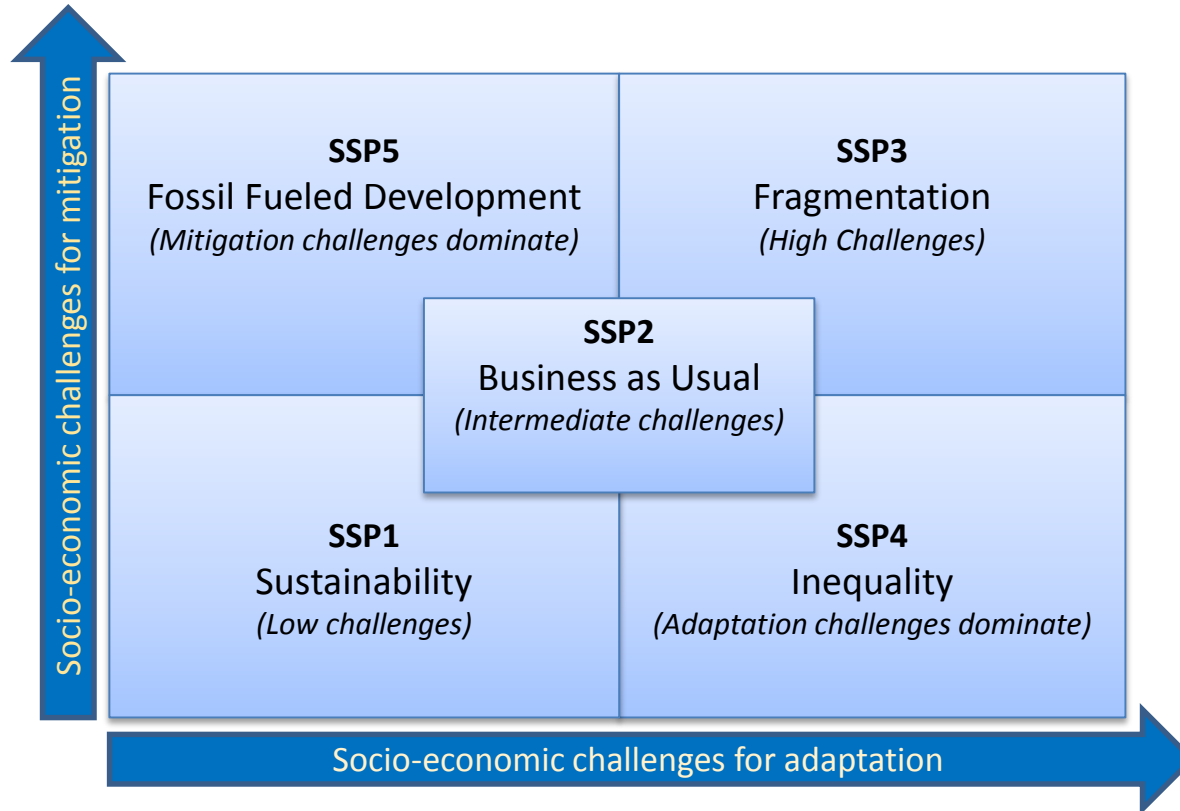


William Stockhausen

Meeting Goals

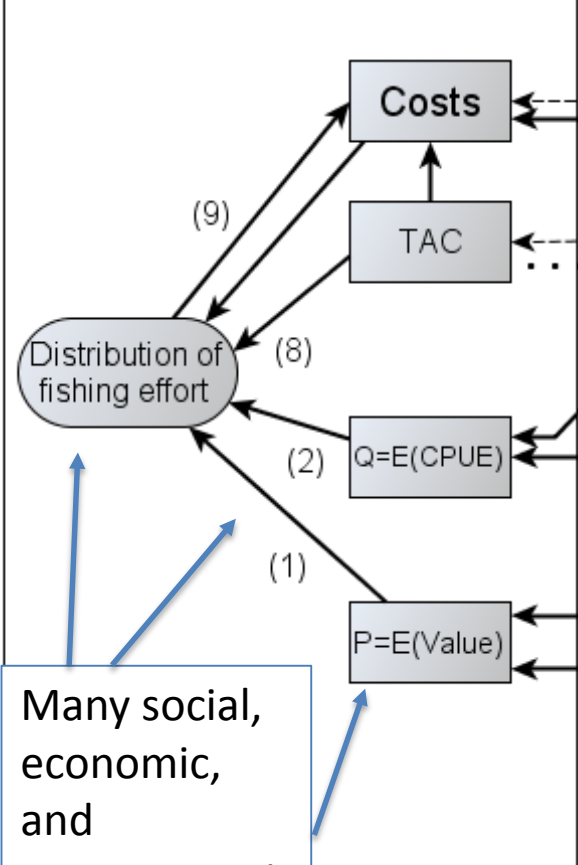
- 1) Discuss how the fishery/economics components of ACLIM will interface with the biological components & discuss how physical data may directly enter some fishery components.
- 2) Identify and refine different medium and long-term fishery / economics scenarios that we will apply to all of the models.
- 3) Define the boundaries of the effort – what species and fisheries are currently included & will be in the future? What will we do in terms of community impacts, etc.?
- 4) How should best communicate our work? What types of output will be most useful?

ACLIM Socio-Economic Scenarios are being developed based on IPCC Shared Socio-Economic Pathways (SSPs)



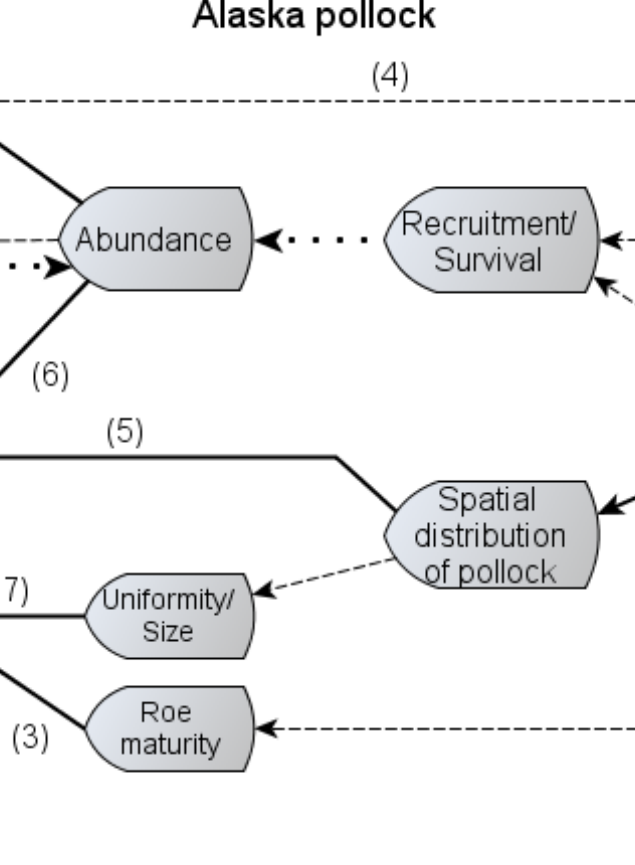
What features of these scenarios are most important for North Pacific fisheries management?

(a) Harvesters' fishing decisions

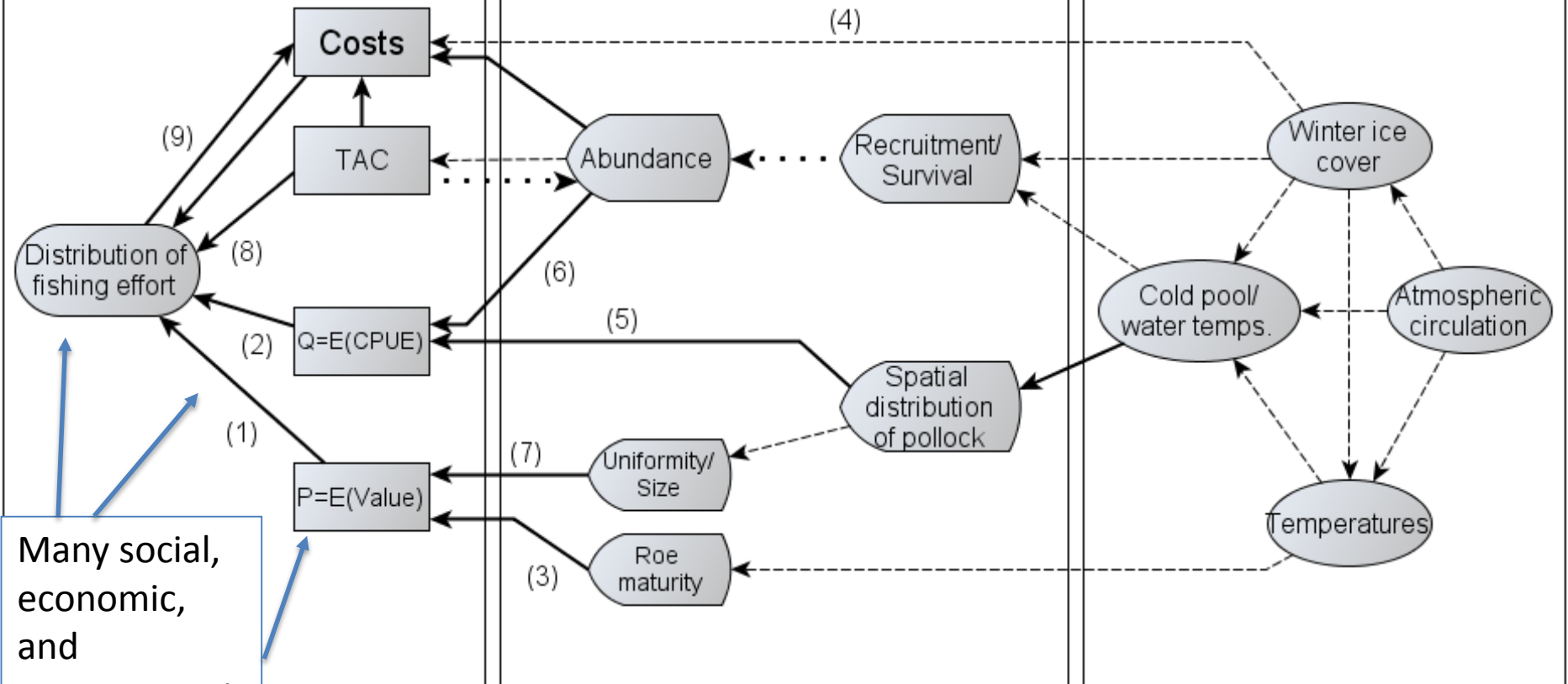
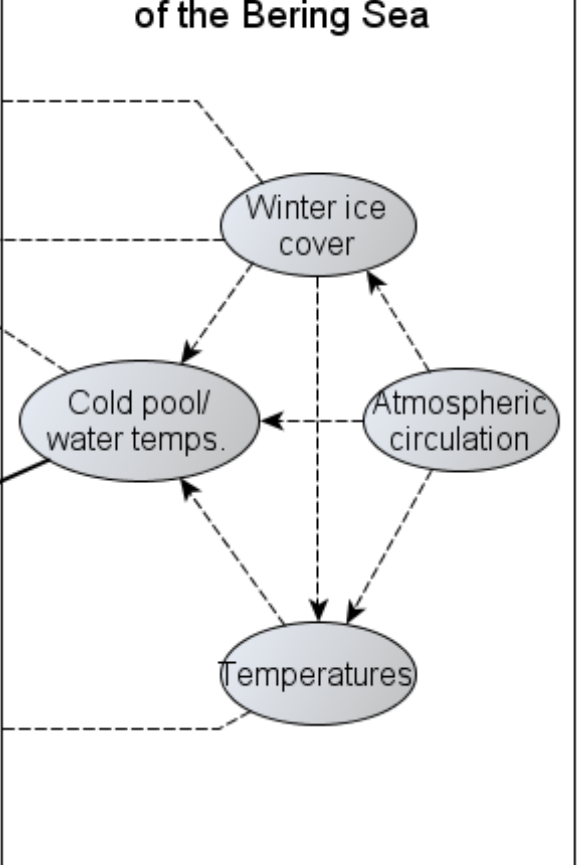


Many social, economic, and management factors.

(b) Biological characteristics of Alaska pollock



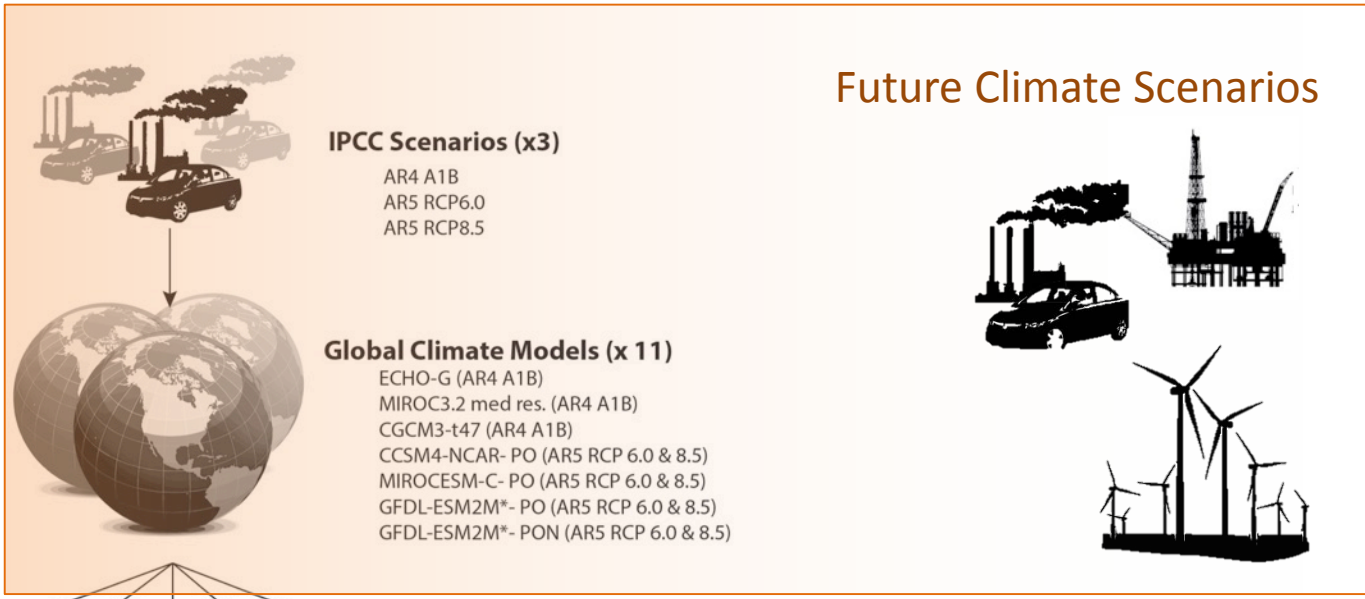
(c) Environmental characteristics of the Bering Sea



Alaska CLIMate Project

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FATE: Fisheries & the Environment
SAAM: Stock Assessment Analytical Methods
S&T: Climate Regimes & Ecosystem Productivity

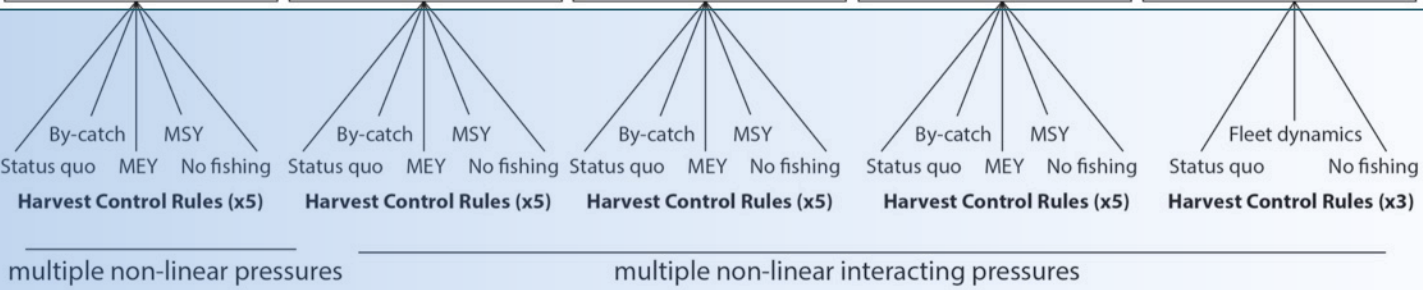


Future Climate Scenarios



Bering Sea Models

Climate-enhanced Models

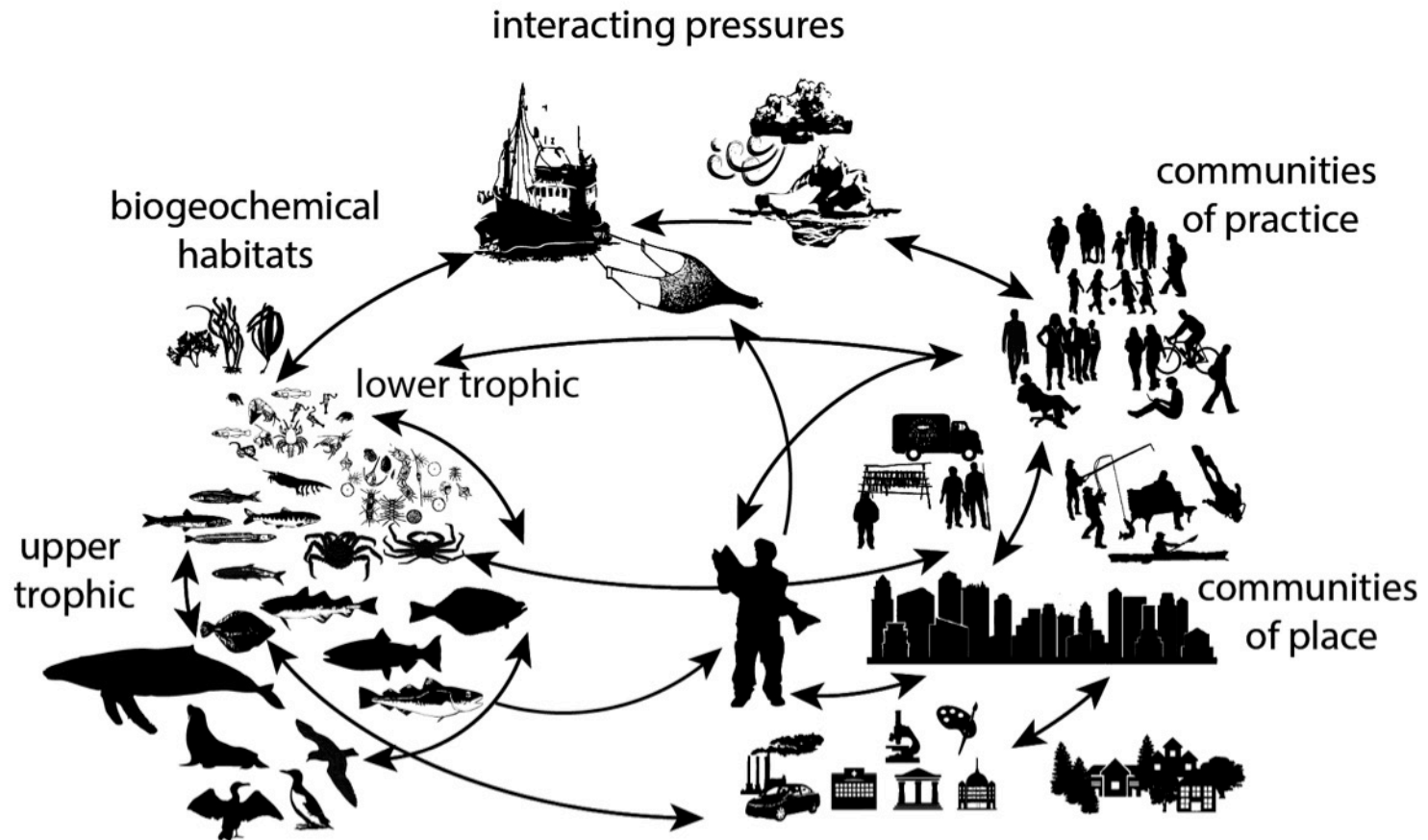


Fishing Scenarios

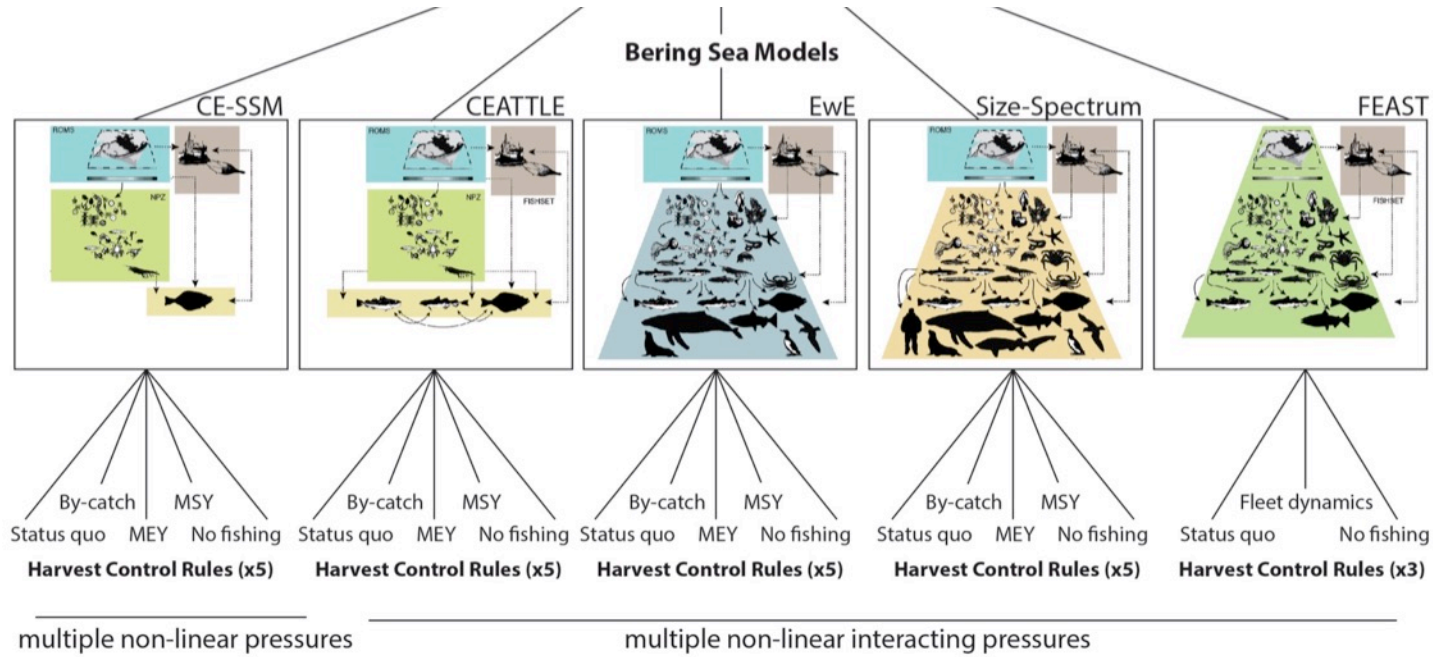


- How do hypotheses best drive research across disciplines?
 - How do bottom-up vs. top-down models look different?

ACLIM utilizes a fully integrated approach



ACLIM: *Alaska Climate-change
Integrated Modeling project*



ACLIM
utilizes
economic
models of
different
complexity

- Effort response to abundance
- Maximum economic yield (MEY)
- Bycatch-constrained optimizations
- Spatial models of fleets