




Gulf of Alaska
Integrated Ecosystem
Research Program
aka The Gulf of Alaska Project



Why Study the Gulf of Alaska?



The Gulf of Alaska sustains huge populations of marine animals. The strongest currents found along the coasts of North America flow here, dispersing sea life and nutrients from deeper waters across the shelf. This study looks at the physical and biological mechanisms that determine annual survival of juvenile groundfishes and forage fishes, which may differ between the eastern and western Gulf.

- Interdisciplinary study
 - >40 scientists from 11 institutions
 - 5 years (2010 – 2014)
 - \$17.5 million-study
- Gauntlet for groundfishes
 - Sablefish
 - Walleye pollock
 - Pacific ocean perch
 - Pacific cod
 - Arrowtooth flounder




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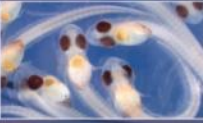
Interdisciplinary Study

More than 40 scientists from 11 institutions are taking part in this ecosystem study that integrates two field seasons (2011 and 2013) with ecosystem modeling to gain a thorough understanding of the key processes in the Gulf.


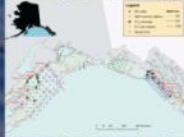


Gauntlet for Groundfishes


From 2010 to 2014, the Gulf of Alaska Integrated Ecosystem Research Program, funded by NPSB, NOAA and other partners, will be looking at the biological and oceanographic gauntlets faced by commercially important young-of-the-year groundfishes – walleye pollock, Pacific cod, Pacific ocean perch, sablefish and arrowtooth flounder.



Early life survival likely determines the year-class strength for these marine groundfishes. Climate, currents, temperature and other biophysical factors affect larval and juvenile transport, and settlement into suitable habitat. Competition and predation further affect survival.



gullofakalaska.nprb.org



The Gauntlet



currents

temperature, nutrients

prey, predation

competition

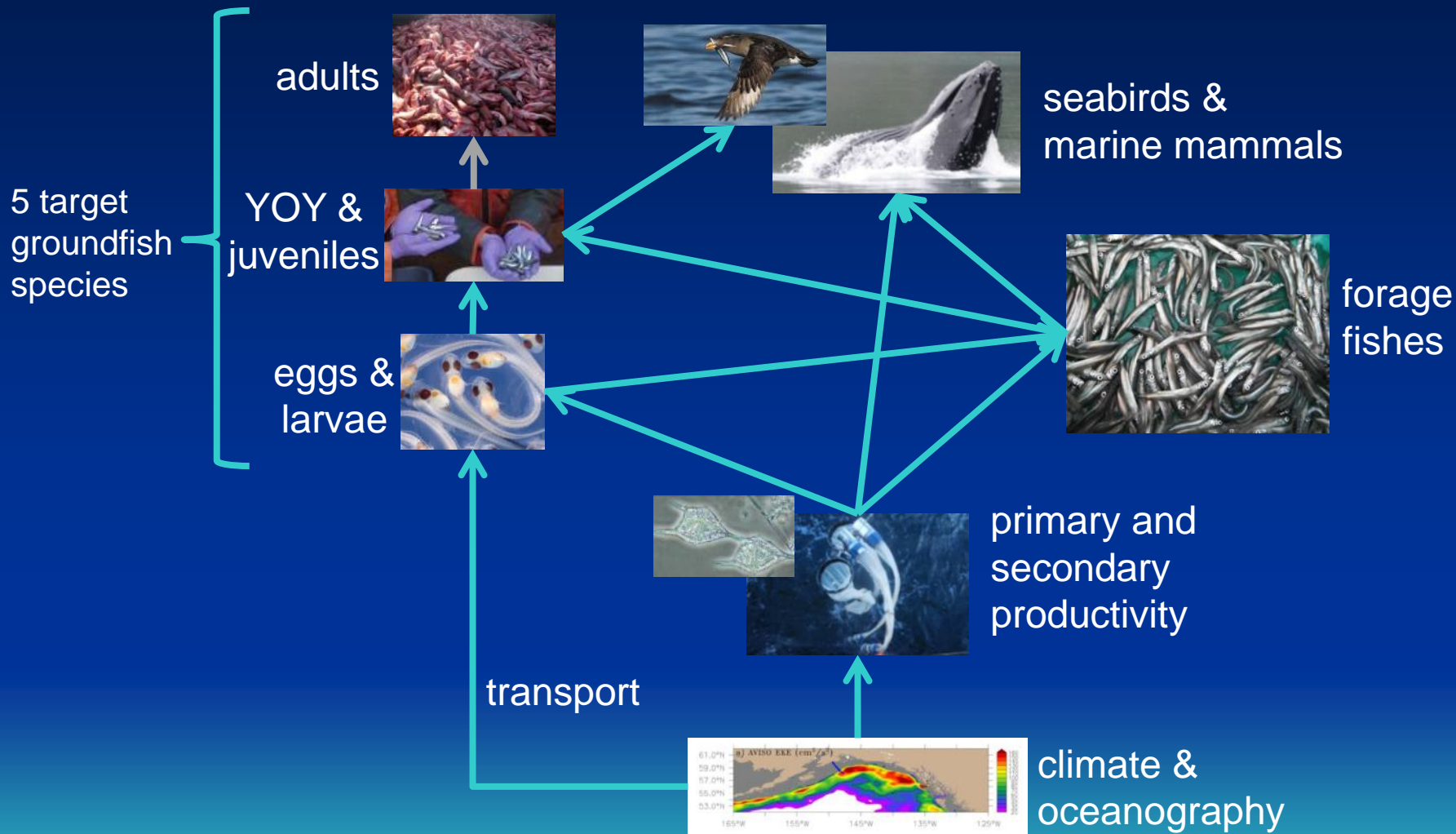
habitat



What factors most affect how
the 5 target species of
groundfish get from here...



...to here?

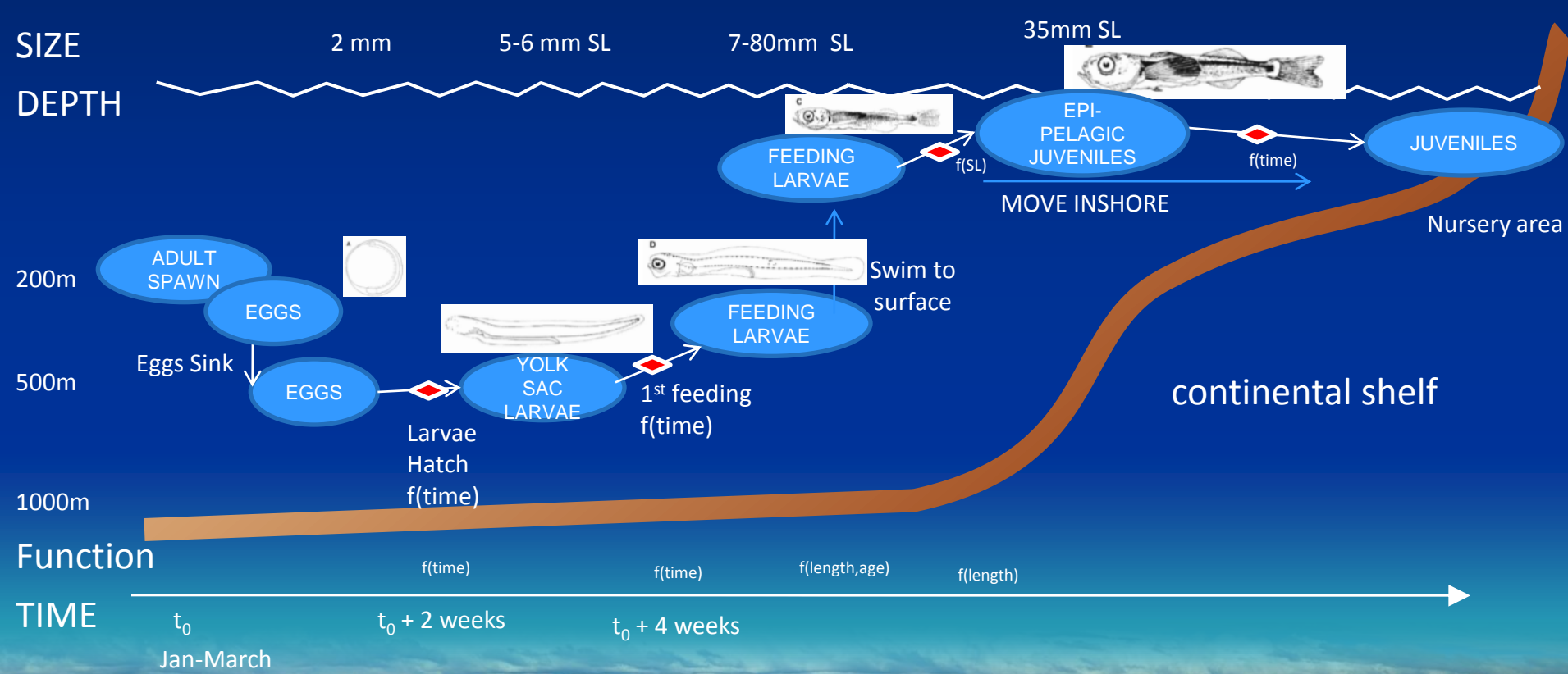
Project conceptual model



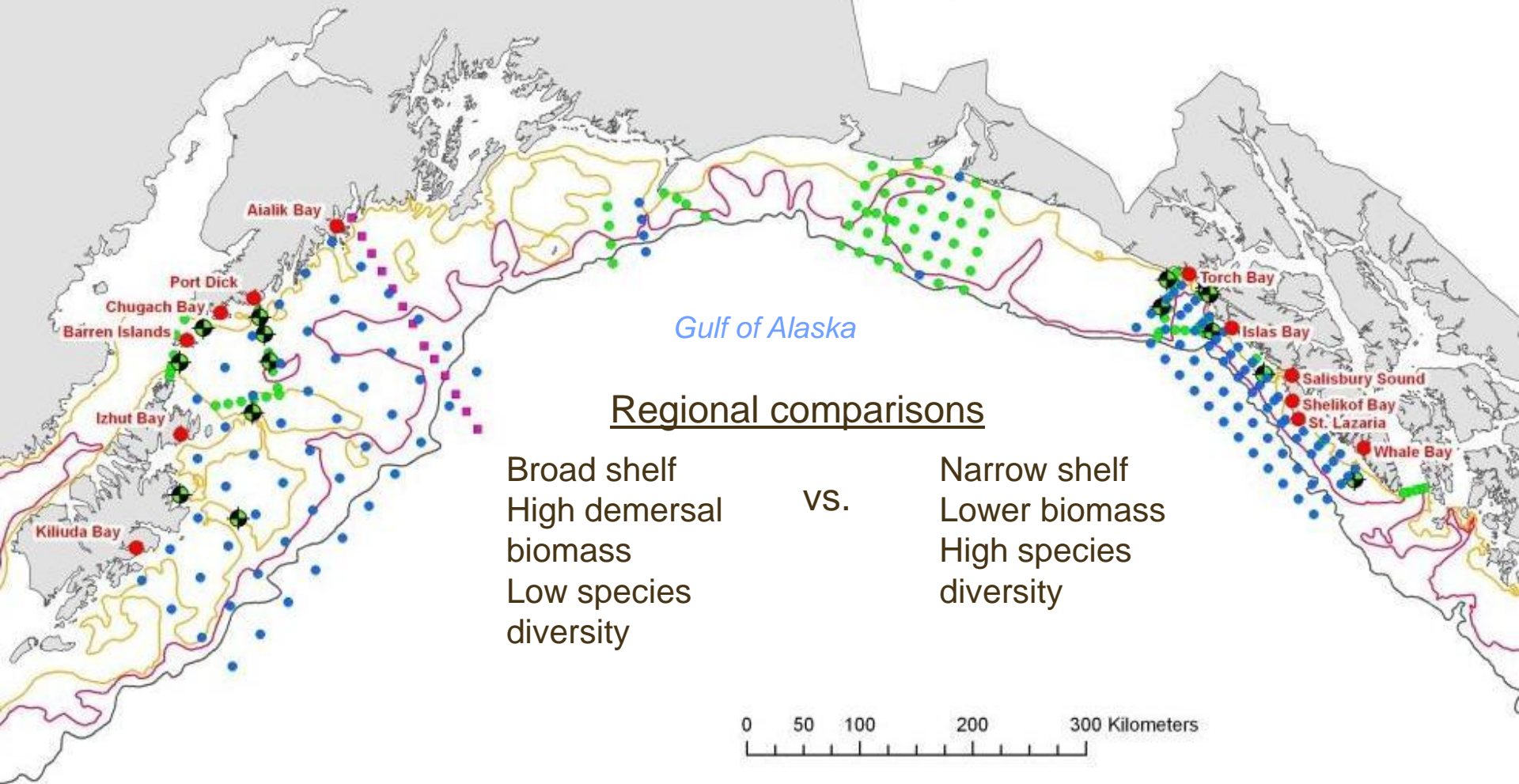
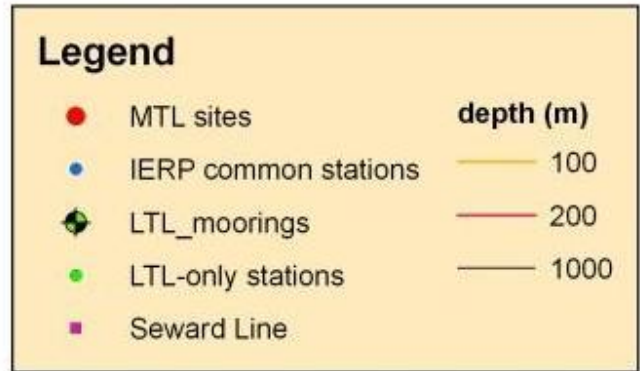
Sablefish Conceptual Model

Preliminary conceptual model (not final)

-  = Modeled 'Stage'
-  = Indicates 'switch' to next 'Stage'

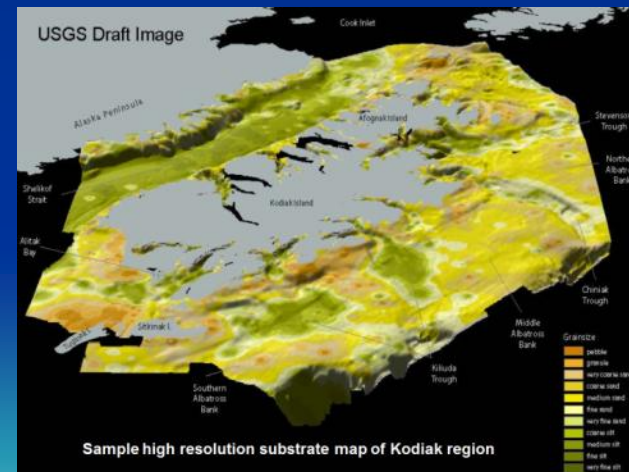


Geographic Scope



Interactions

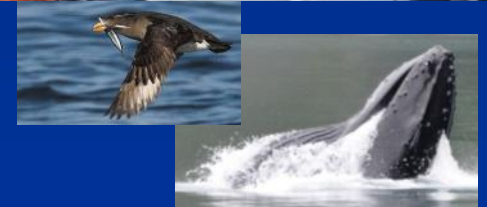
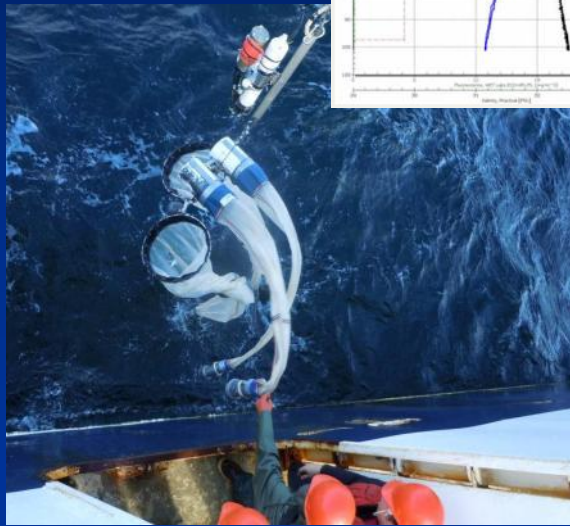
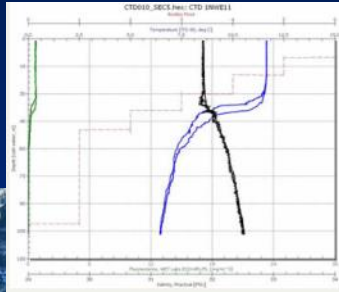
- Interactions between species vary with life stage, season and location.
- Competition and predation are influenced by
 - abundance, distribution and species composition of predators and prey
 - habitat requirements



Research components

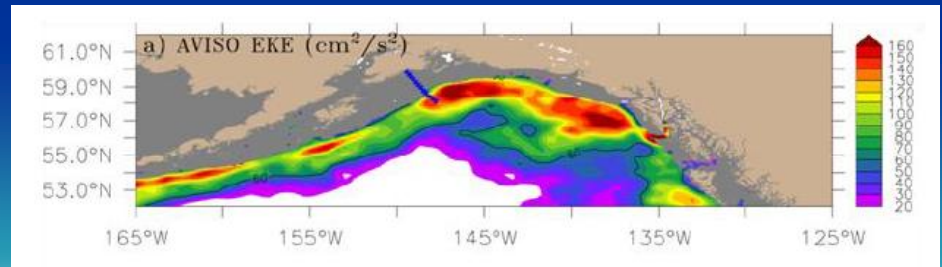
Middle trophic level

Upper trophic level



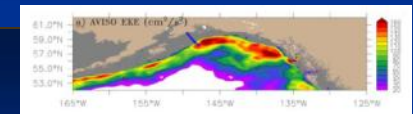
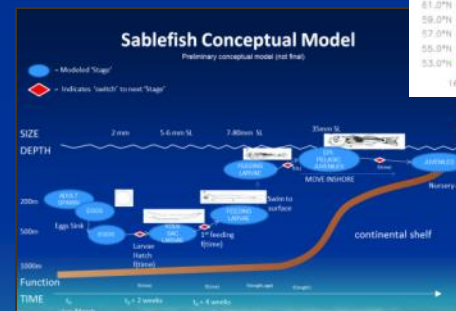
Lower trophic level

Modeling



Modeling

- Pattern analysis – historic data
- Ocean circulation (ROMS)
- Nutrient-Phytoplankton-Zooplankton
- Individual-Based Models (IBM)
 - Transport
 - Growth
 - Mortality
- Multi-species models



Retrospective Analysis

- Retrospective analysis will compile available long-term time series across all ecosystem components
 - Spatial-temporal analysis to reveal patterns and trends
 - Support modeling effort



Data Management

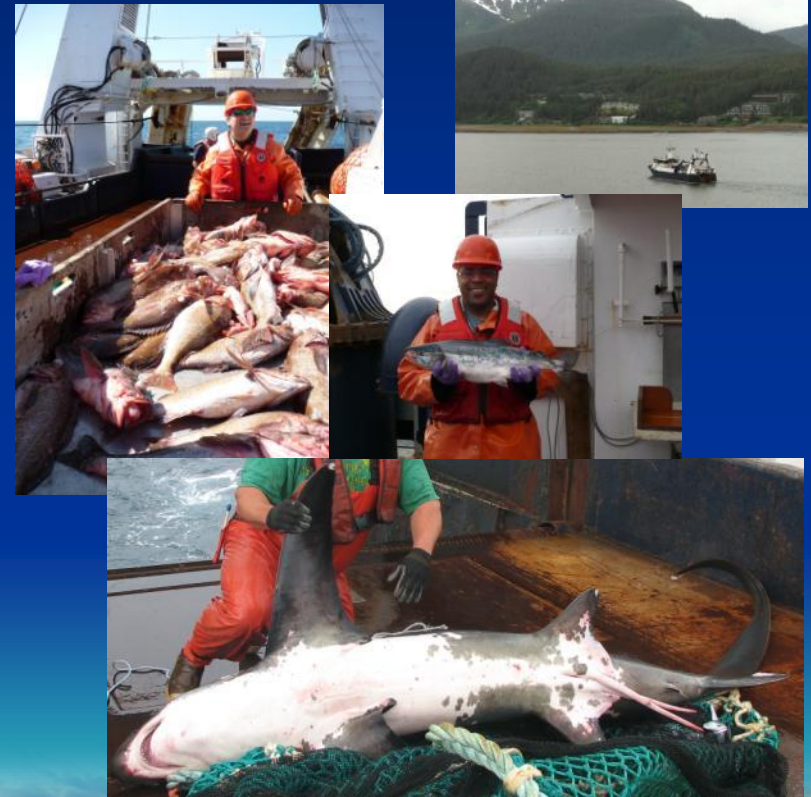
- Data management team will develop a data and metadata clearinghouse
 - web portal to facilitate data sharing for integrated analyses
 - ensure timely delivery of data & metadata by all PIs
- Data management RFP out now – proposals due Dec. 14



Communication, Education and Outreach

Website

Field blogs



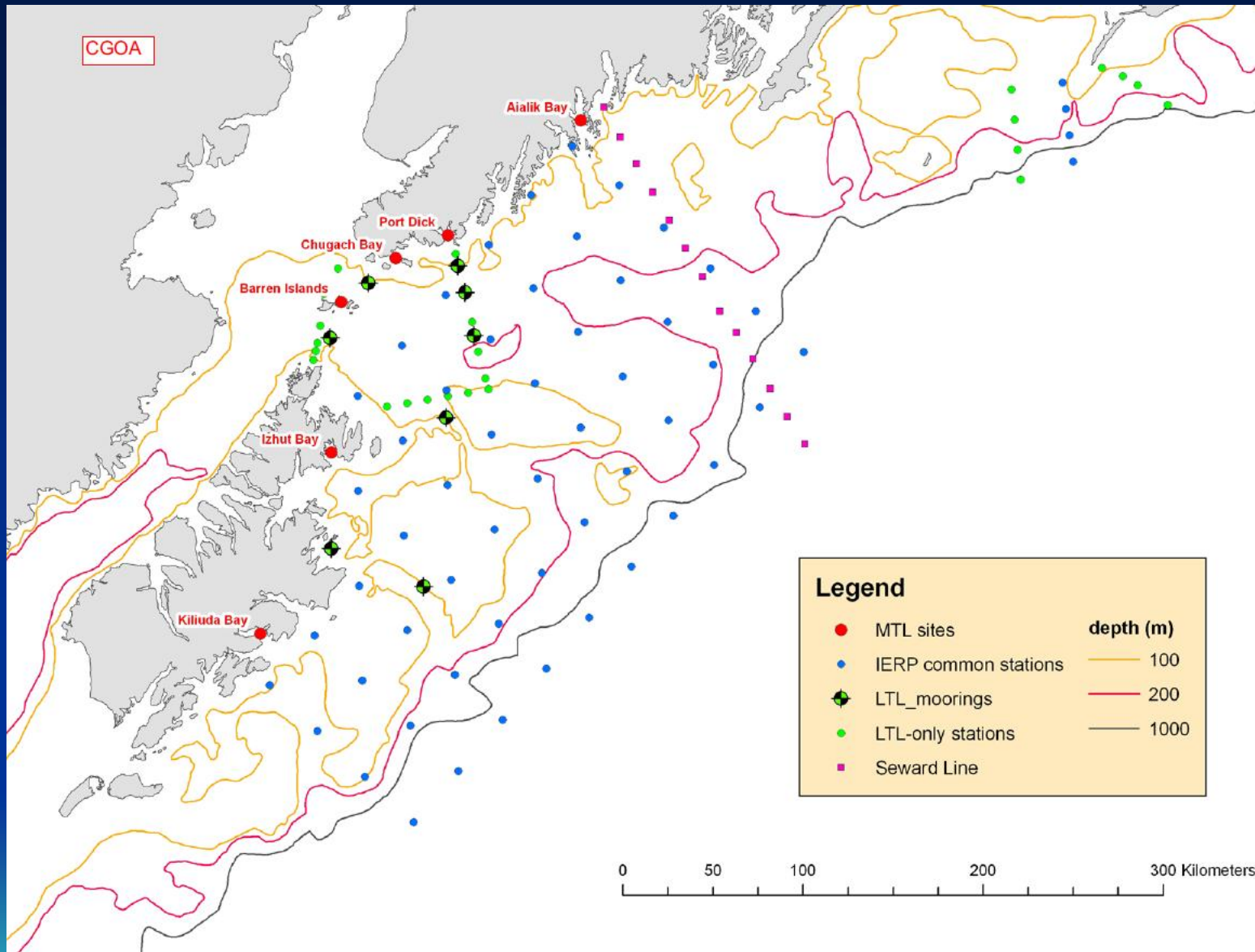
Gulf of Alaska Ecosystem EARTH Workshop

Jul 28 – Aug 2, 2011



Gulf of Alaska Project study sites near EVOS LTM sites

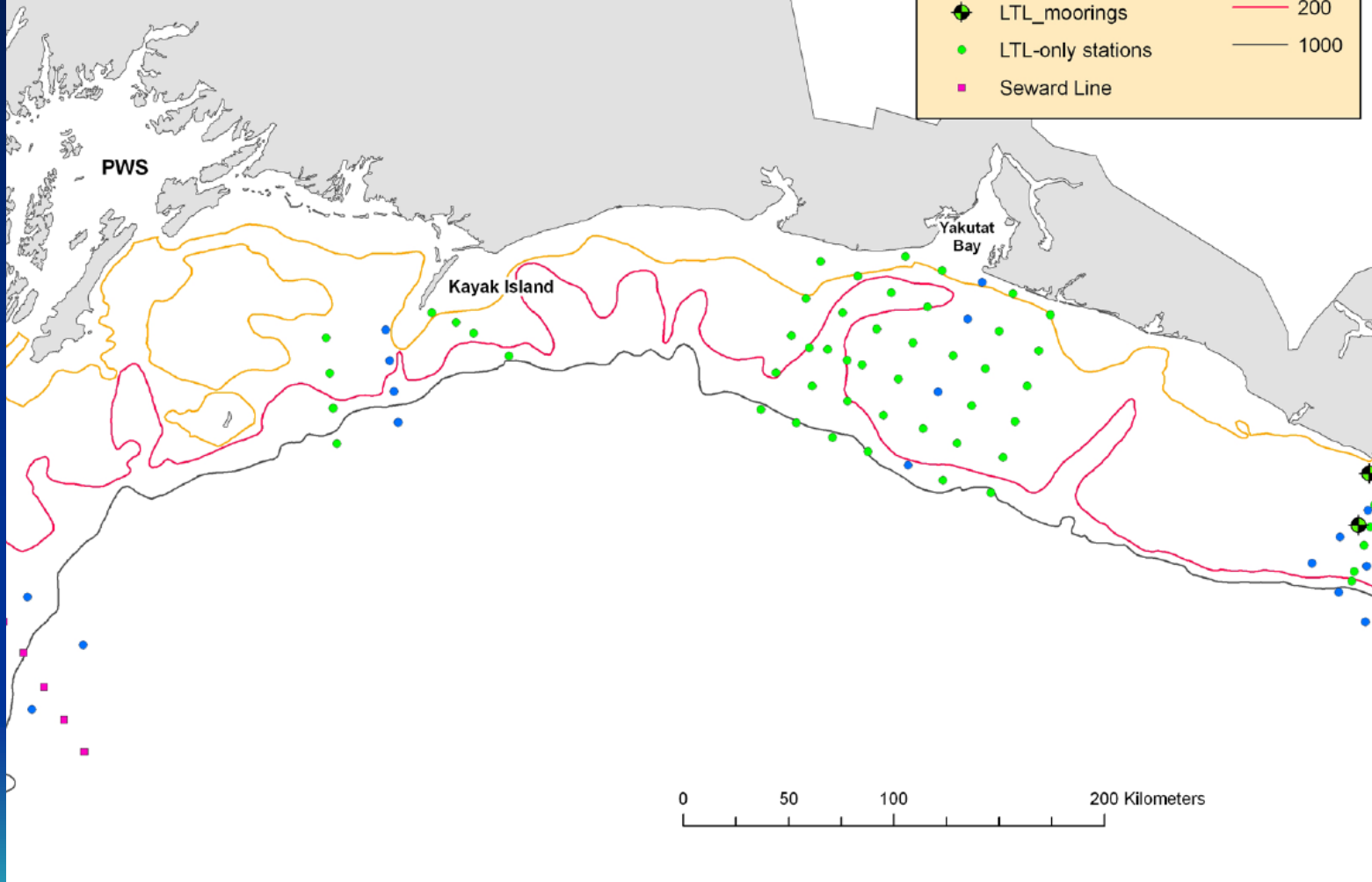




MID

Legend

- | | | |
|---|----------------------|-----------|
| ● | MTL sites | depth (m) |
| ● | IERP common stations | — 100 |
| ◆ | LTL_moorings | — 200 |
| ● | LTL-only stations | — 1000 |
| ■ | Seward Line | |

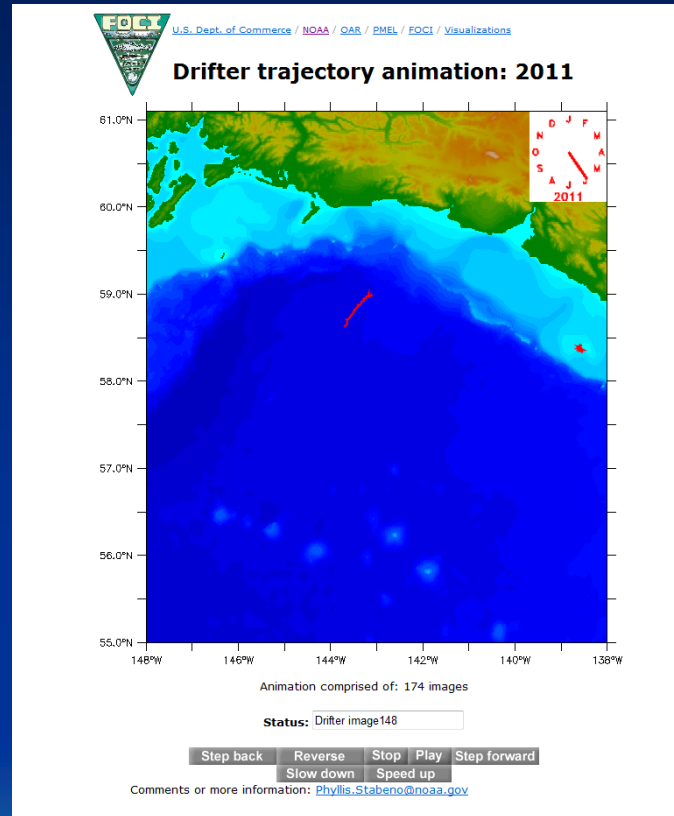


Sampling Logistics

- Field seasons in 2011 and 2013
 - Potential process cruise in 2012
 - Seasonal data collection
 - Spring (Apr – May)
 - Summer (Jul – Aug)
 - Fall (Sep – Oct)
- Western and Eastern
Gulf of Alaska



2011 Drifter animation (Yakutat)



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Ideas for collaborations,
leveraging of resources?





Thank you