

# On the Development of a 3-Tier Nested Estuarine Classification for Southeast Alaska

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Katlian Bay, Sitka



# Presentation Outline

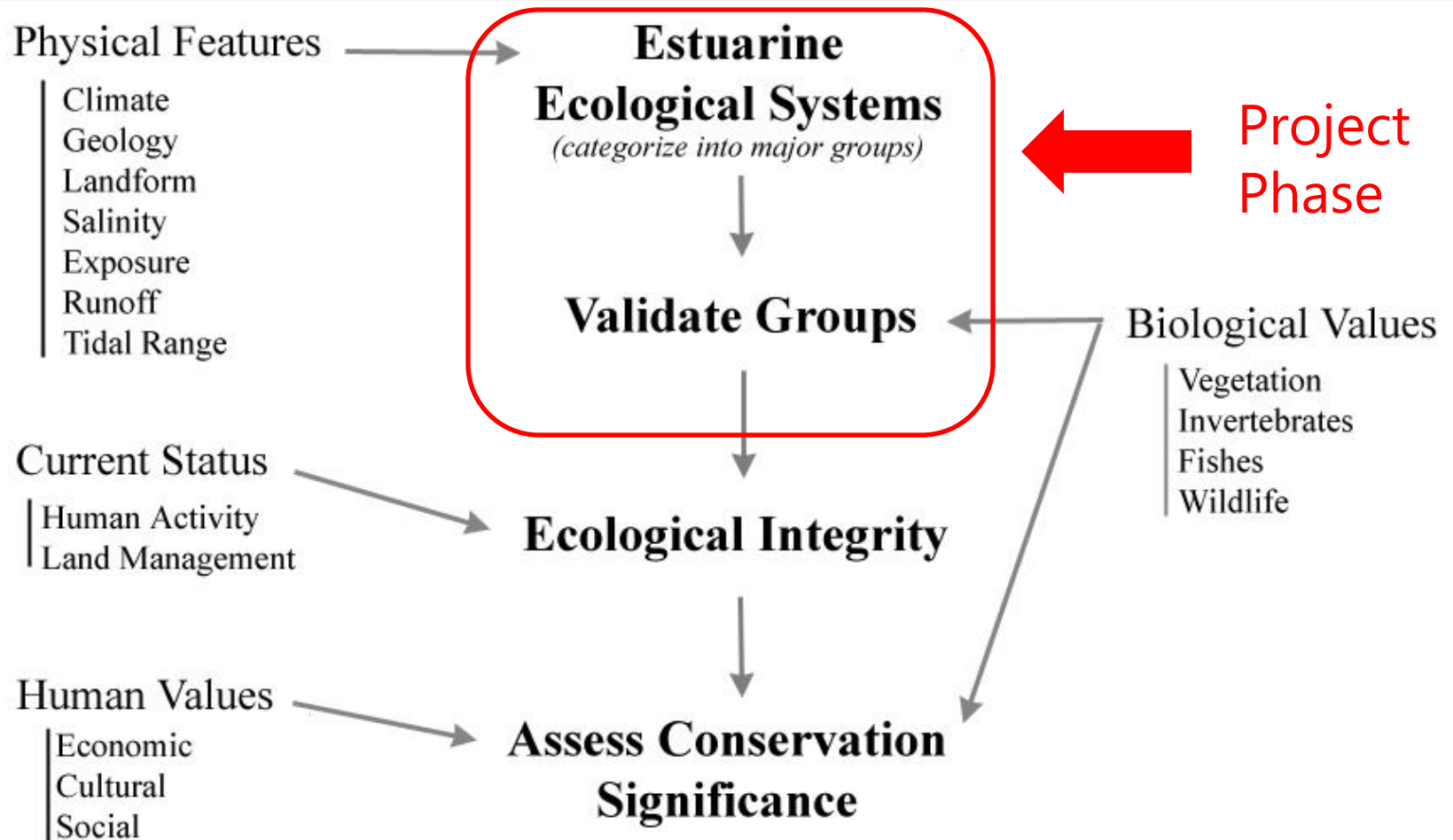
- Project purpose
- Conservation planning framework
- Spatially nested concept
- The 3-Tiers of the classification:
  - Data
  - Analysis
  - Results
- An example: Chaik Bay, Admiralty Island



# Project Purpose

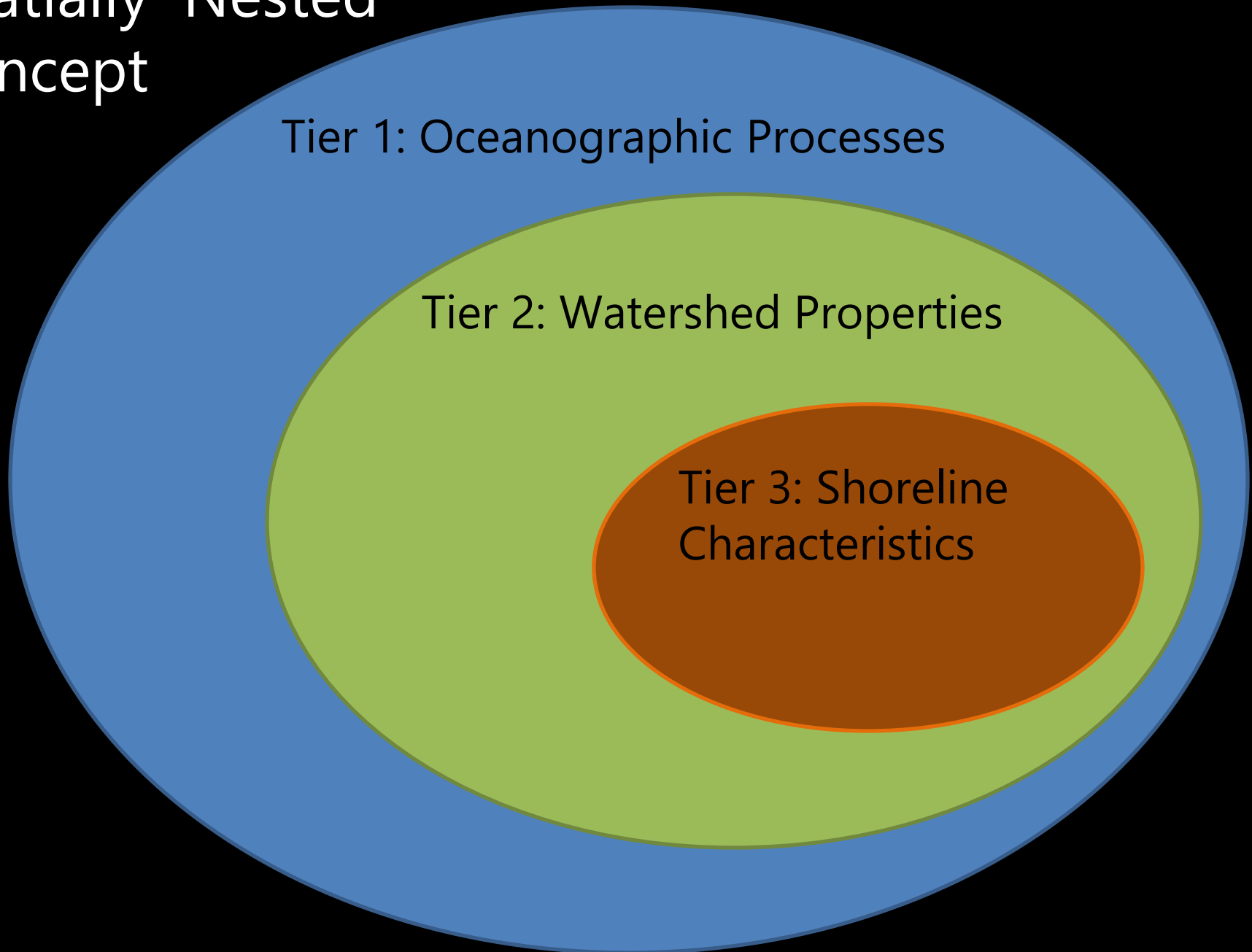
- Develop an ecological framework for species and ecosystems based on ecological processes
- Useful for identifying representative ecosystems for management, restoration, research, and conservation planning.

# Conservation Planning Framework



(from Graham et al. 1999 )

# Spatially Nested Concept



# Tier 1: Oceanographic Processes

Sea Surface Temperature

+

Ocean Salinity

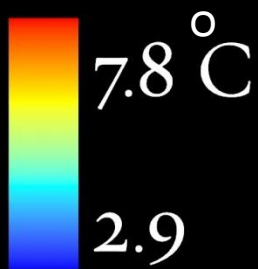
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Ocean Basins



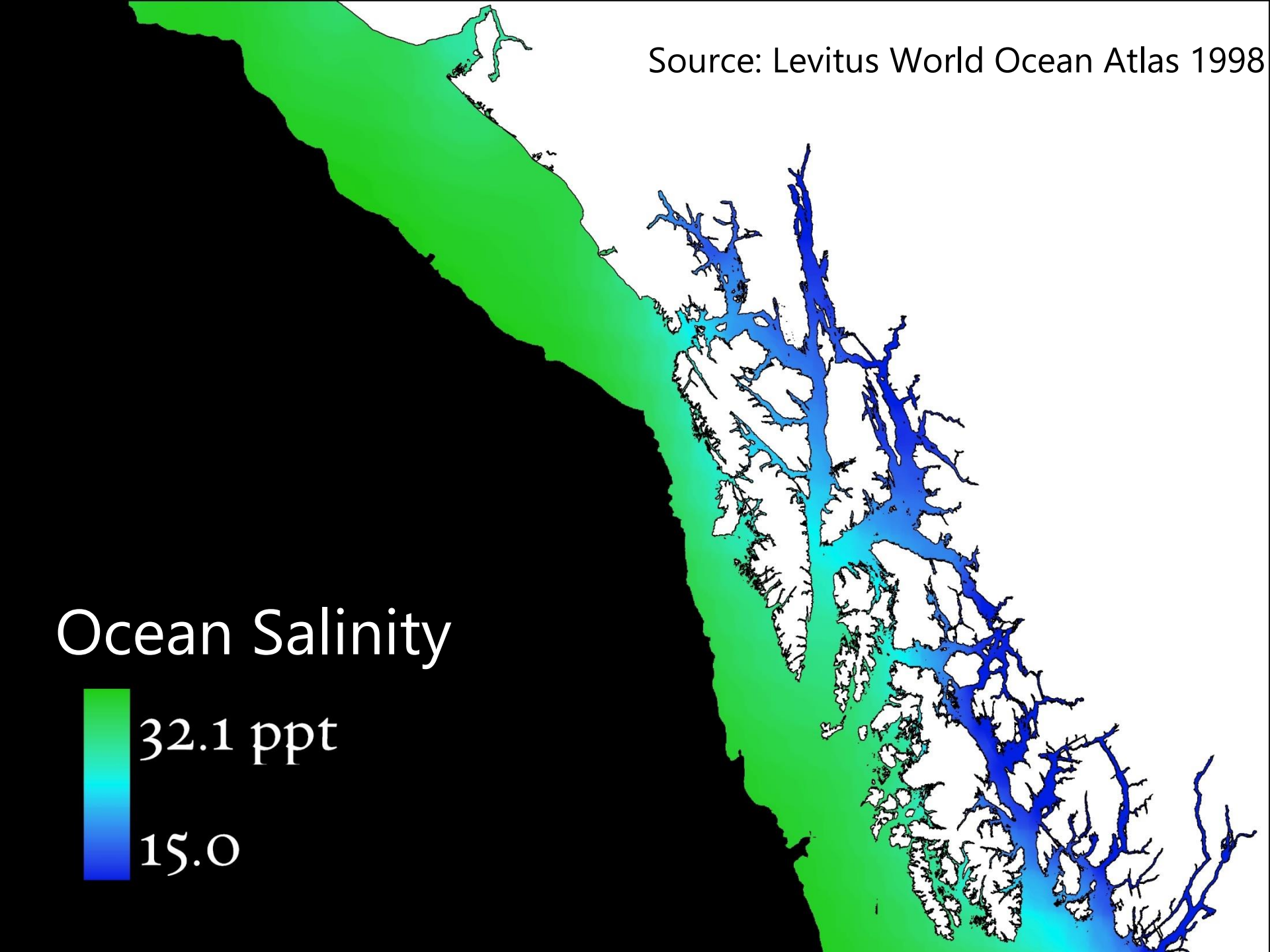
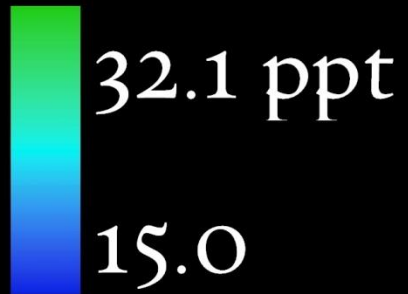
Source: AVHRR Imagery  
2006 – 2008 mean

# Sea Surface Temperature



Source: Levitus World Ocean Atlas 1998

Ocean Salinity

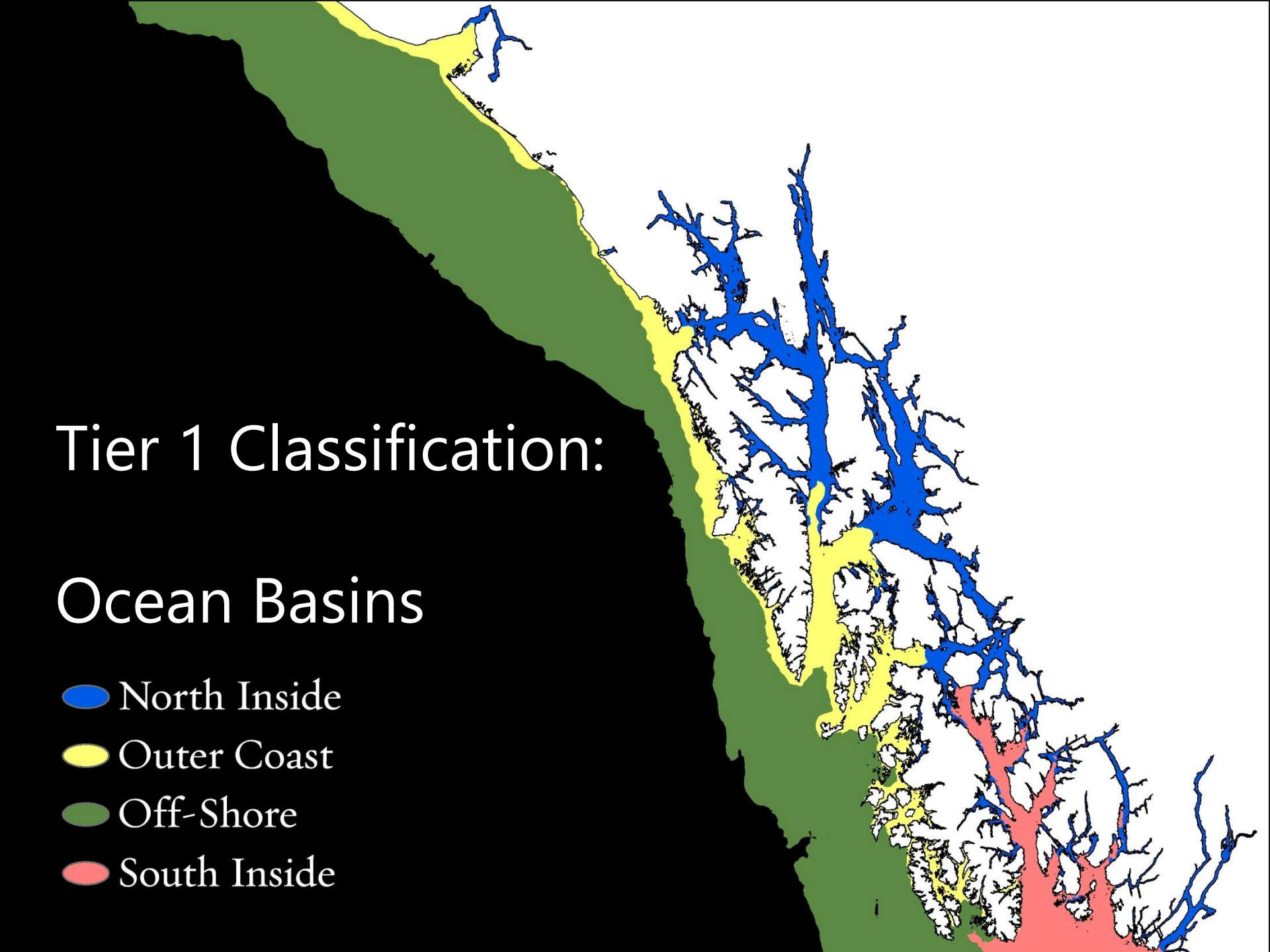




# Tier 1 Classification:

## Ocean Basins

- North Inside
- Outer Coast
- Off-Shore
- South Inside



# Tier 2: Watershed Characteristics

*Hydrologic Regime*

*Marine Influence*

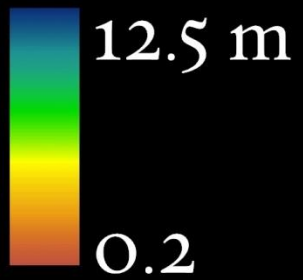
% Glacier  
+  
Mean Annual Discharge  
+  
Snow Accumulation

Wave Exposure = Watershed Classification



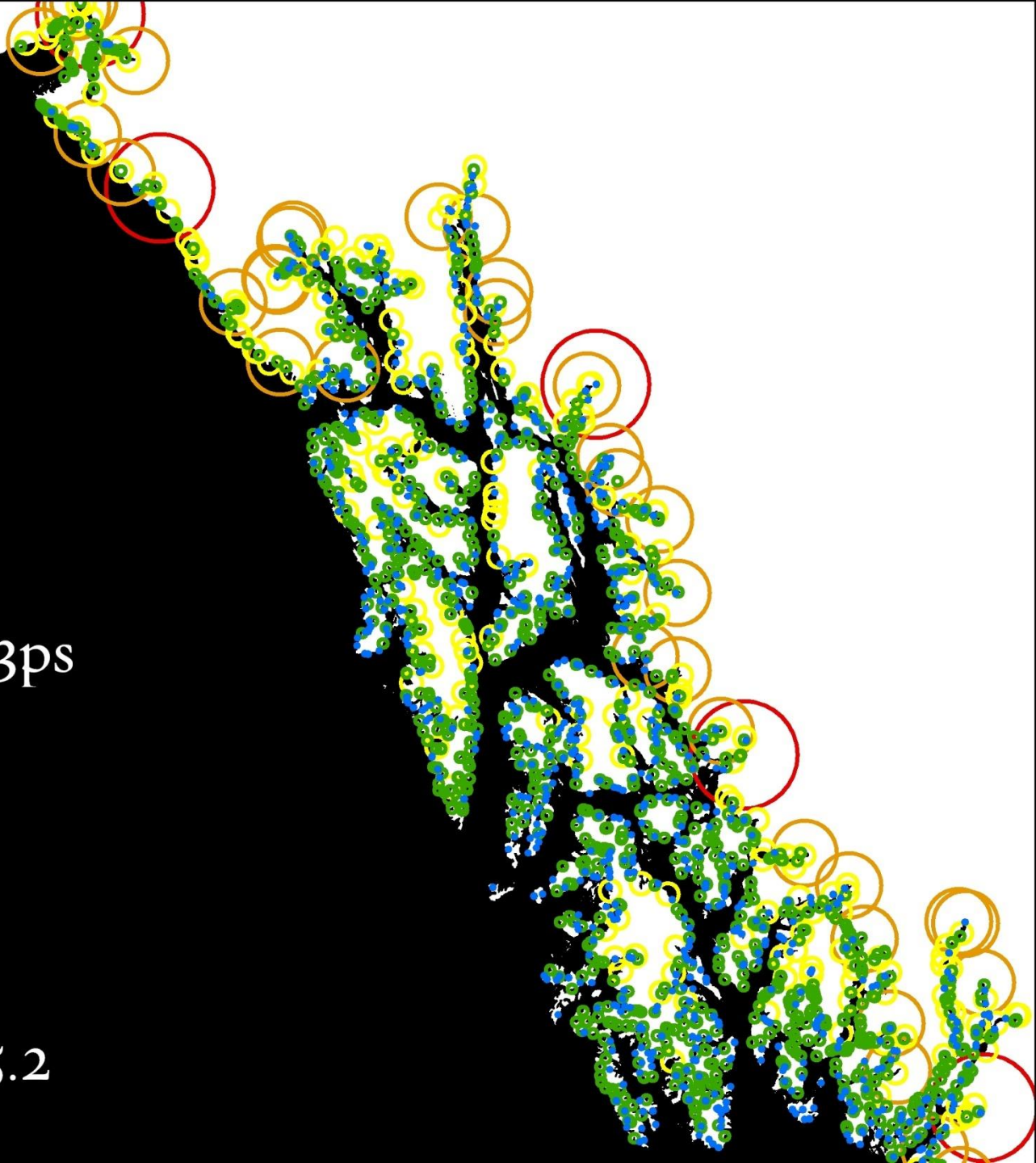
Source: PRISM Climate Model  
1970-2000 mean

Precipitation



# Discharge

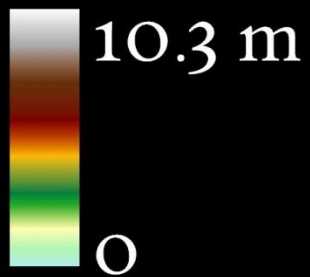
- 0.0 - 0.9 m3ps
- 0.9 - 6.5
- 6.5 - 43.7
- 43.7 - 289.6
- 289.6 - 1915.2





Source: PRISM Climate Model  
1970-2000 mean

# Snow Fall



Source: USGS Glacier Coverage



Glaciated



# Watershed Hydrologic Type



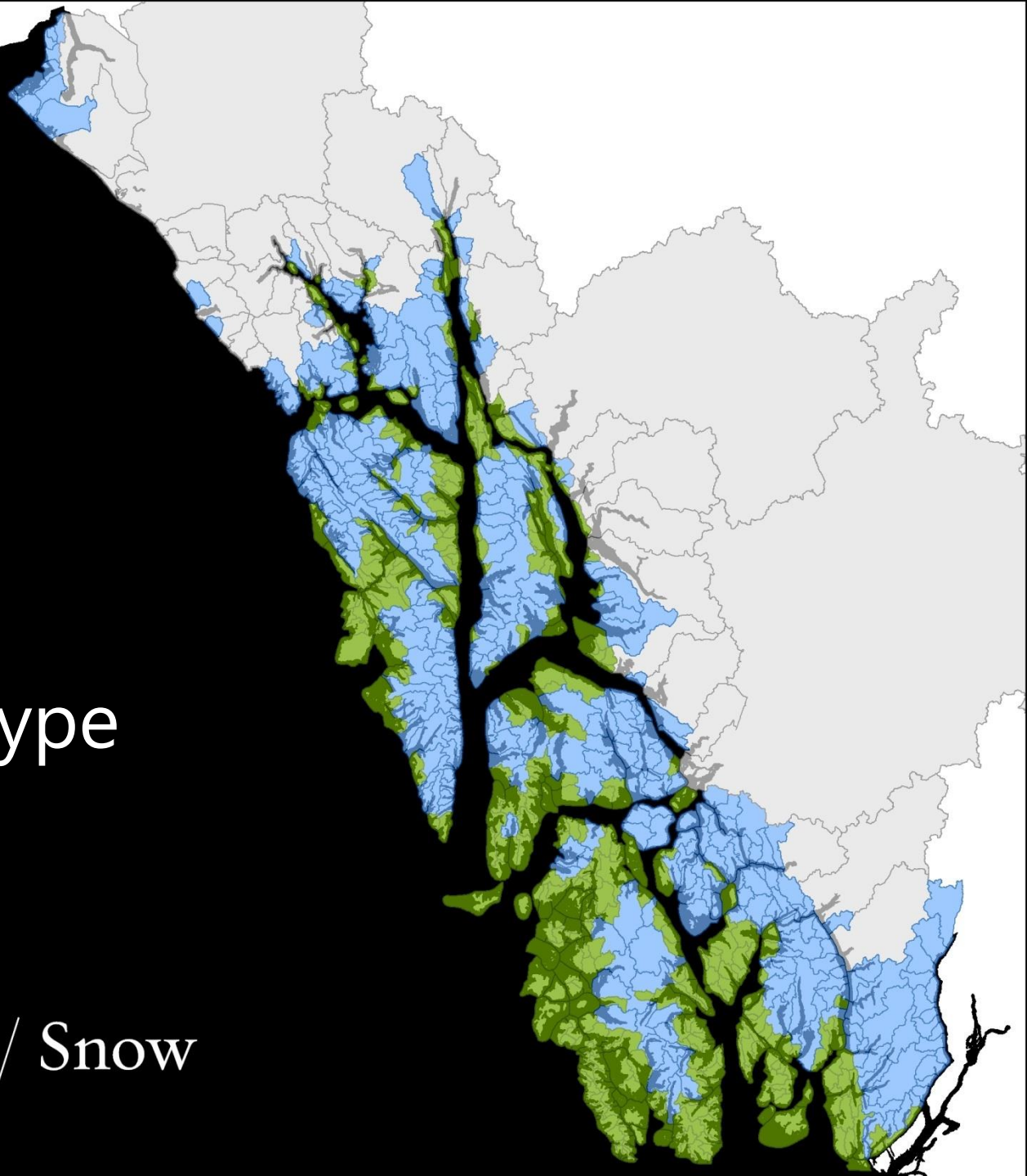
Snow



Glacial



Mixed Rain / Snow



# Wave Exposure Index

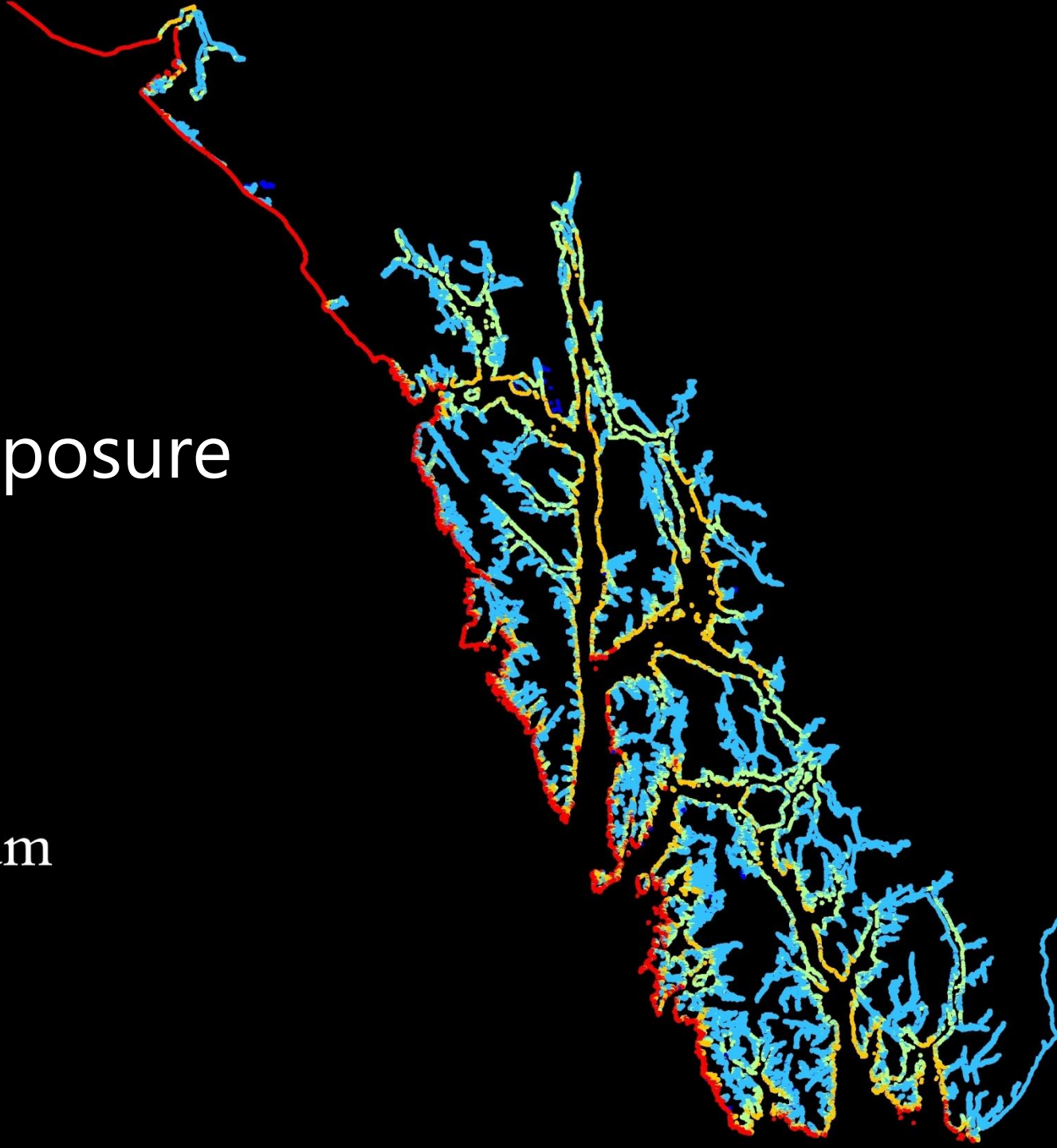
— Low

—

— Medium

—

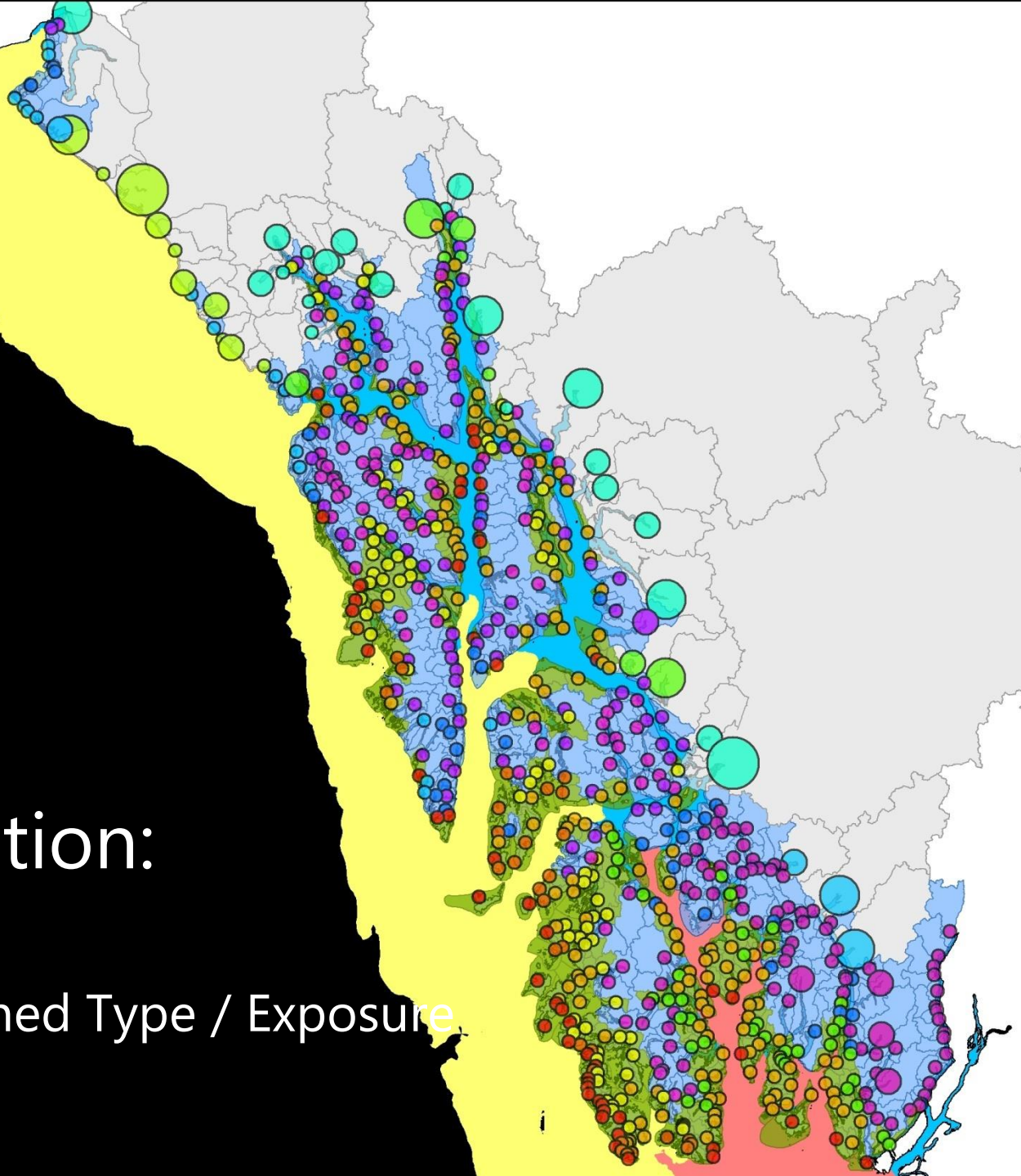
— High





Tier 2 Classification:

Ocean Basin + Watershed Type / Exposure



Tier 3

Ocean Basin

+

Watershed Type

+

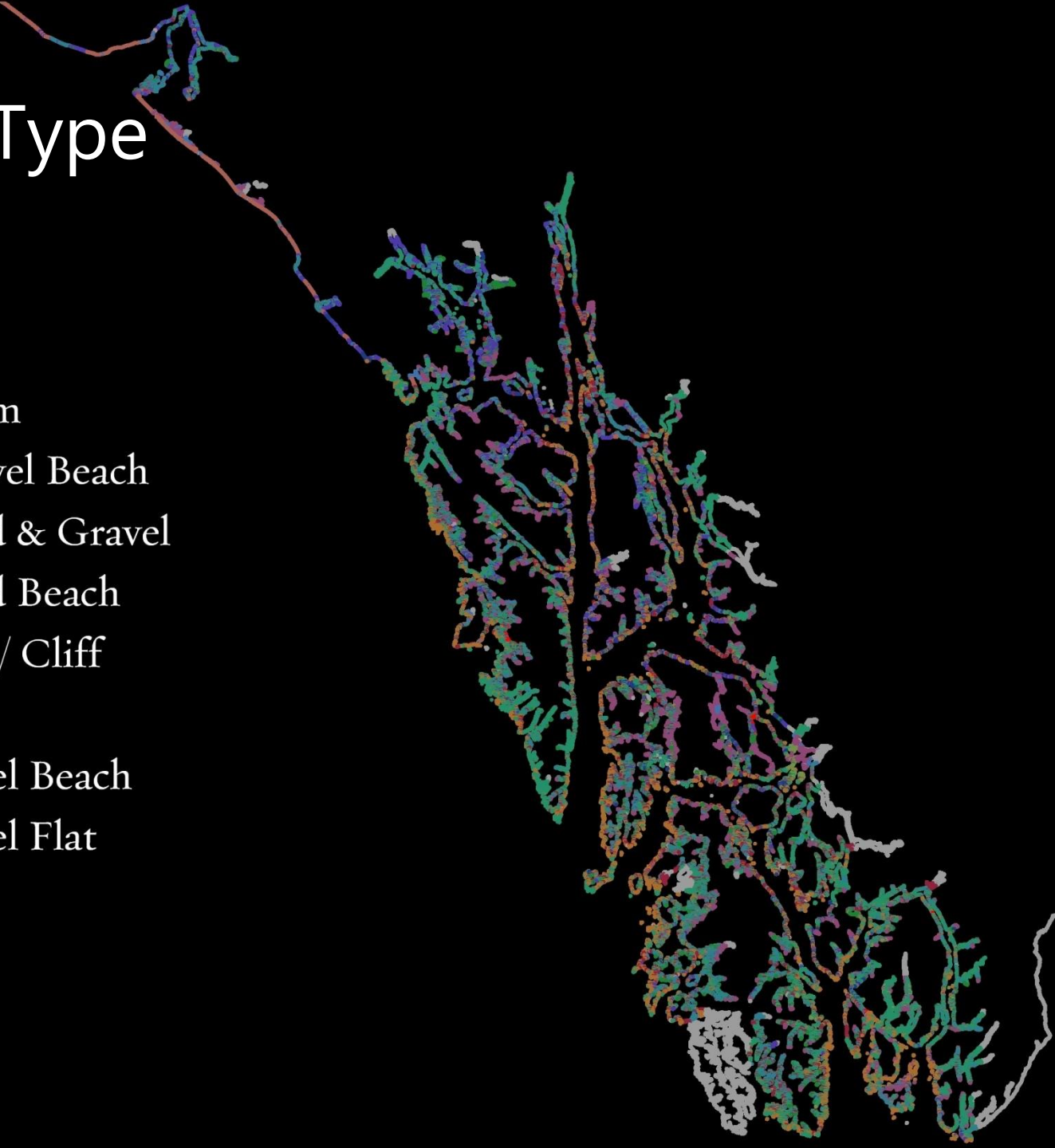
Shoreline Type

||

Estuarine Classification

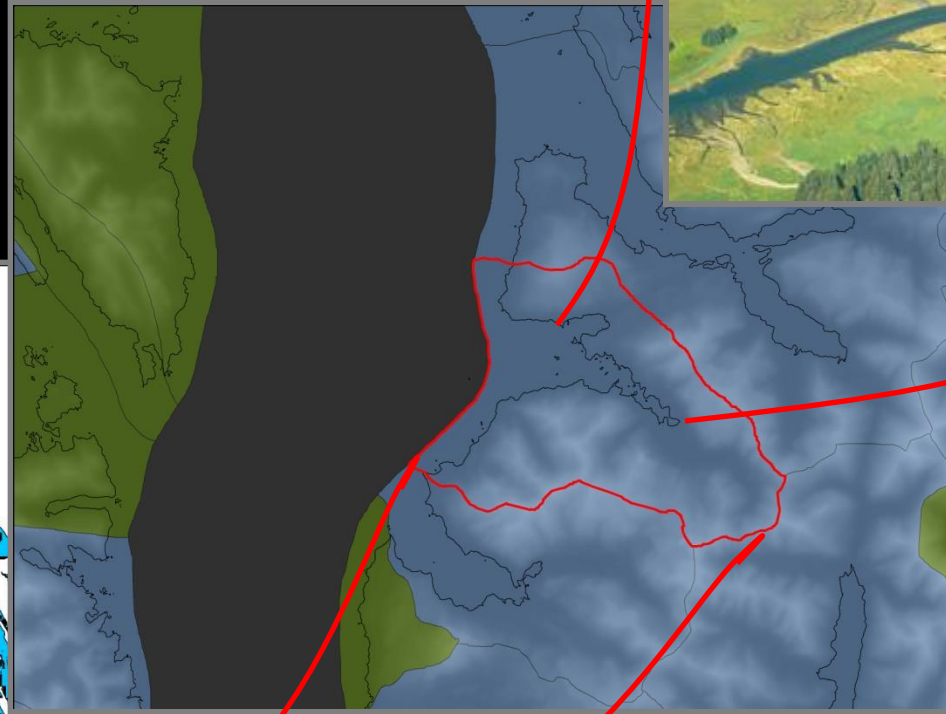
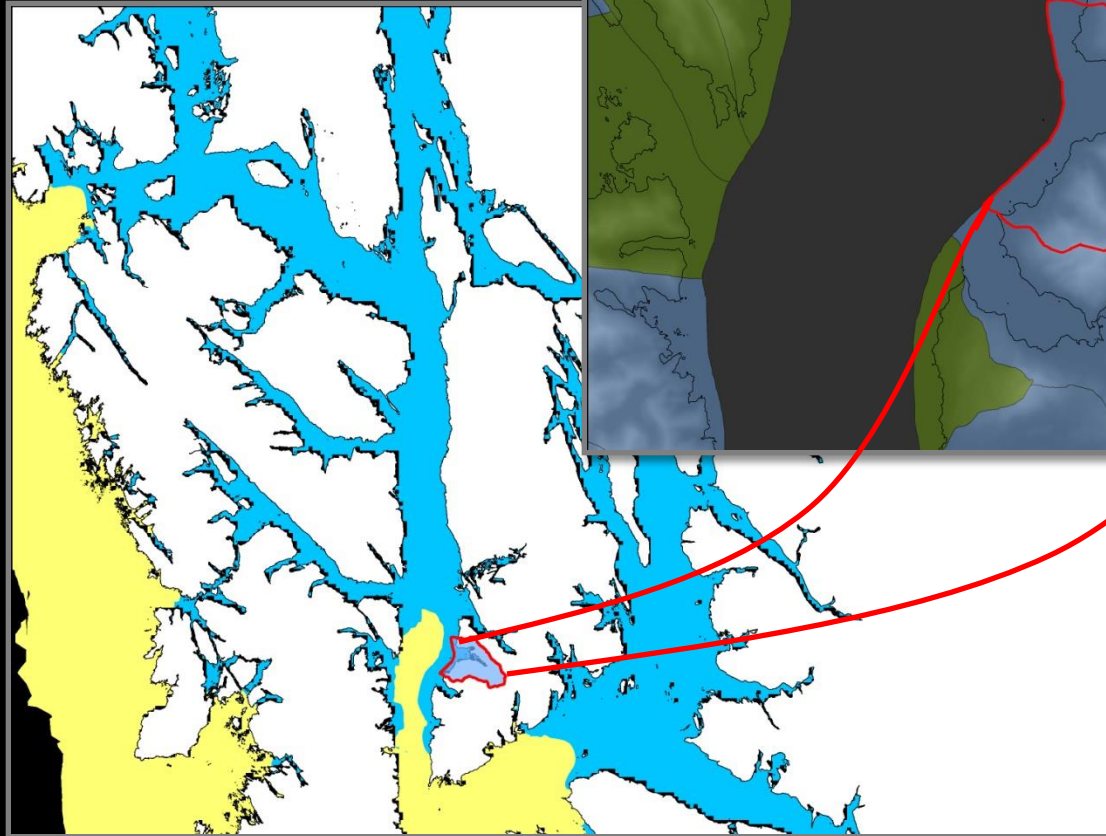
# Shoreline Type Examples

- Gravel Beach
- Rock Platform
- Rock w/ Gravel Beach
- Rock w/ Sand & Gravel
- Rock w/ Sand Beach
- Rocky Shore / Cliff
- Salt Marsh
- Sand & Gravel Beach
- Sand & Gravel Flat
- Sand Beach
- Tide Flat
- Man-made
- No Data





# An Example: Chaik Bay, Admiralty Island



Tier 3

Tier 2

Tier 1

# Acknowledgements

- Alaska Dept. of Fish and Game, Nongame Program
- Alaska Dept. of Natural Resources, Coastal Impact Assistance Program
- Minerals Management Service
- NOAA Fisheries
- Royal Caribbean Cruises Ltd., Ocean Fund
- Skaggs Foundation
- The Gordon and Betty Moore Foundation