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Benefits of living life on the edge: "Enhanced growth and foraging opportunities for juvenile salmon inhabiting the margins of the Sitka Eddy"

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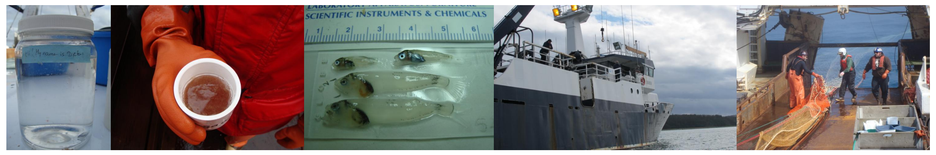

Background

Salmon stocks from Alaska, British Columbia, and the Pacific Northwest use the Gulf of Alaska as a migratory corridor which creates potential for inter- and intraspecific competition during periods of high density or spatial overlap. Juvenile pink (*Oncorhynchus gorbuscha*), chum (*O. keta*), and sockeye (*O. nerka*) salmon migrating through the coastal Gulf of Alaska (GOA) during 2010 were distributed throughout the Sitka eddy during the month of July. This study is a basic investigation into how these often large, prominent, and dynamic oceanographic features may influence the health and ultimately the survival of salmon during early ocean residence. Short-term growth rate, energetic condition, and prey quality were contrasted with geographic position of fish within the eddy as measured by seas surface height.

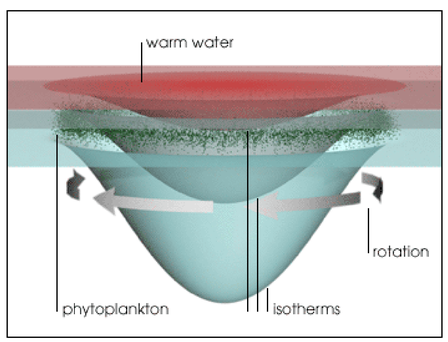

Figure 1. Schematic of Haida Eddy (R. Simmon, NASA)

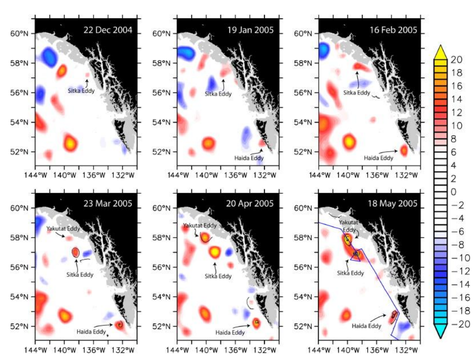

Figure 2. Trajectory of Haida, Sitka, and Yakutat Eddys (W. Crawford, DFO)

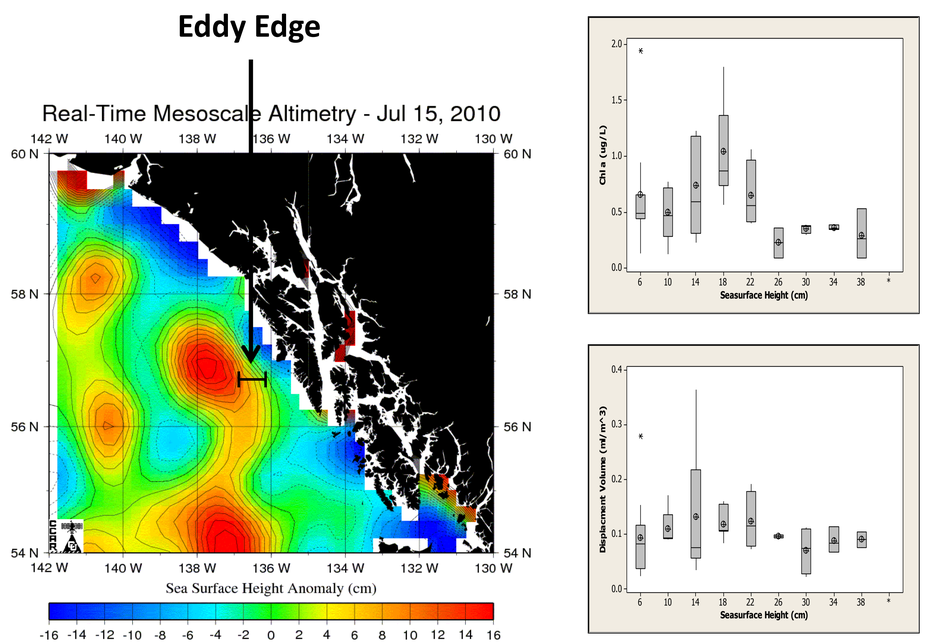

Figure 3. Plankton and chlorophyll values relative to sea surface height

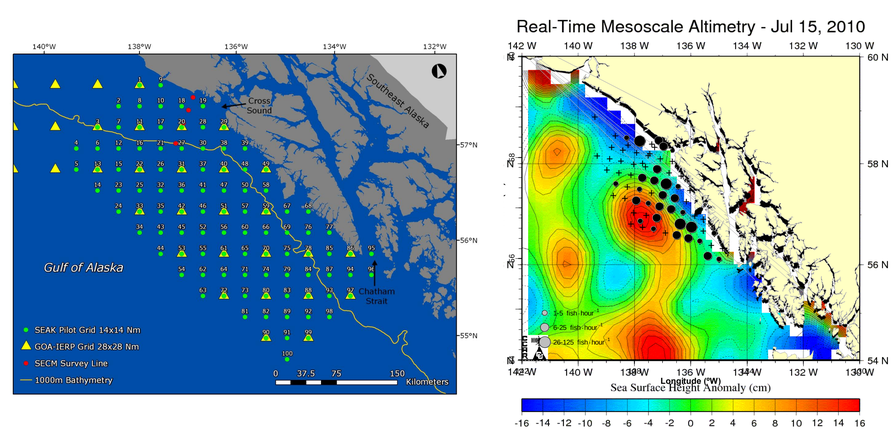

Figure 4. Sampling grid and age-0 sockeye salmon CPUE (fish·30min trawl^{-1})

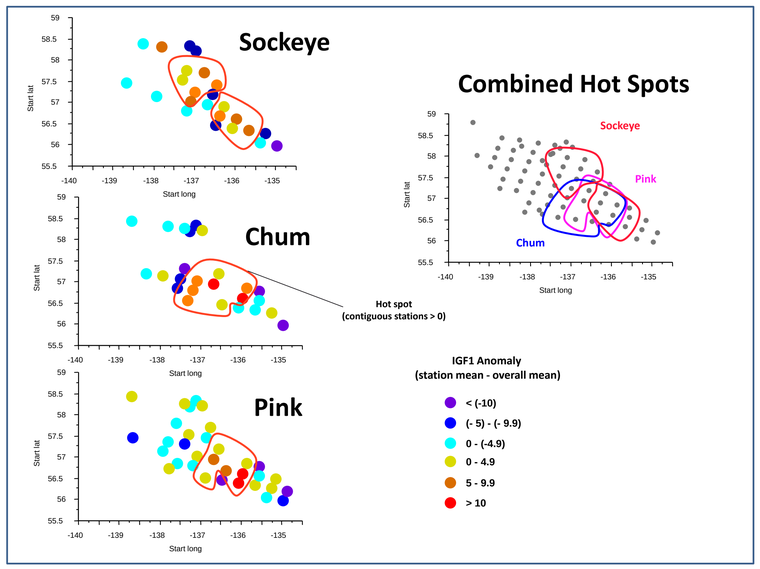

Figure 5. IGF-1 anomalies for juvenile pink, chum, and sockeye salmon

Results

✓Fish located along the eddy perimeter displayed the highest levels of Insulin-like growth factor

✓The position, timing, and strength of the Sitka eddy combined with juvenile salmon outmigration timing may positively affect growth through enhanced foraging opportunities

✓Eddy affect could mitigate increased competition in years of high abundance and increase survival for certain stocks

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