



ALASKA OCEANOGRAPHIC CIRCULATION DIAGRAMS AND GRAPHICS (divided into 9 coastal subareas; compiled by John Whitney, NOAA SSC for Alaska)

Each of the following diagrams is a pdf file which depicts the general ocean circulation and/or tidal currents in their respective areas. These cartoons provide a general guide to the zero wind movement of the water in these areas, and should not be used to provide detailed current circulation information upon which response decisions can be made. Please contact the NOAA Scientific Support Coordinator (907-271-3593, john.whitney@noaa.gov) for detailed circulation information in specific areas.

Click on a title below to open the corresponding graphic. Click in the center of the graphic to return to this index page.

North Slope

- North Slope Offshore
- Chukchi Sea
- Chukchi & Beaufort Seas

Northwest Arctic

- Chukchi Sea
- Chukchi & Beaufort Seas
- NE Bering Sea & SW Chukchi Sea

Western Alaska

- Eastern Bering Sea
- NE Bering Sea & SW Chukchi Sea
- Bering Sea

Bristol Bay

- Eastern Bering Sea

Bering Sea

Aleutian Islands

Aleutians & Bering Sea

Bering Sea

Kodiak Island

NW Gulf of Alaska

Gulf of AK -1

Gulf of AK - 2

Cook Inlet

Lower Cook Inlet

Cook Inlet Tidal Heights

Maximum Tidal Currents

Tidal Current Variations

Maximum Tidal Excursions

Middle Cook Inlet Circulation

Flood Tide Rip Zones

Ebb Tide Rip Zones

Prince William Sound

Gulf of AK – 1

Kayak Island Eddies

Gulf of AK- 2

Southeast Alaska

Gulf of AK – 1

SE Alaska – General

Sitka Sound

Sitka Eddy

Max. Flood – North SE AK

Max. Flood – Central SE AK

Max. Flood – South SE SK

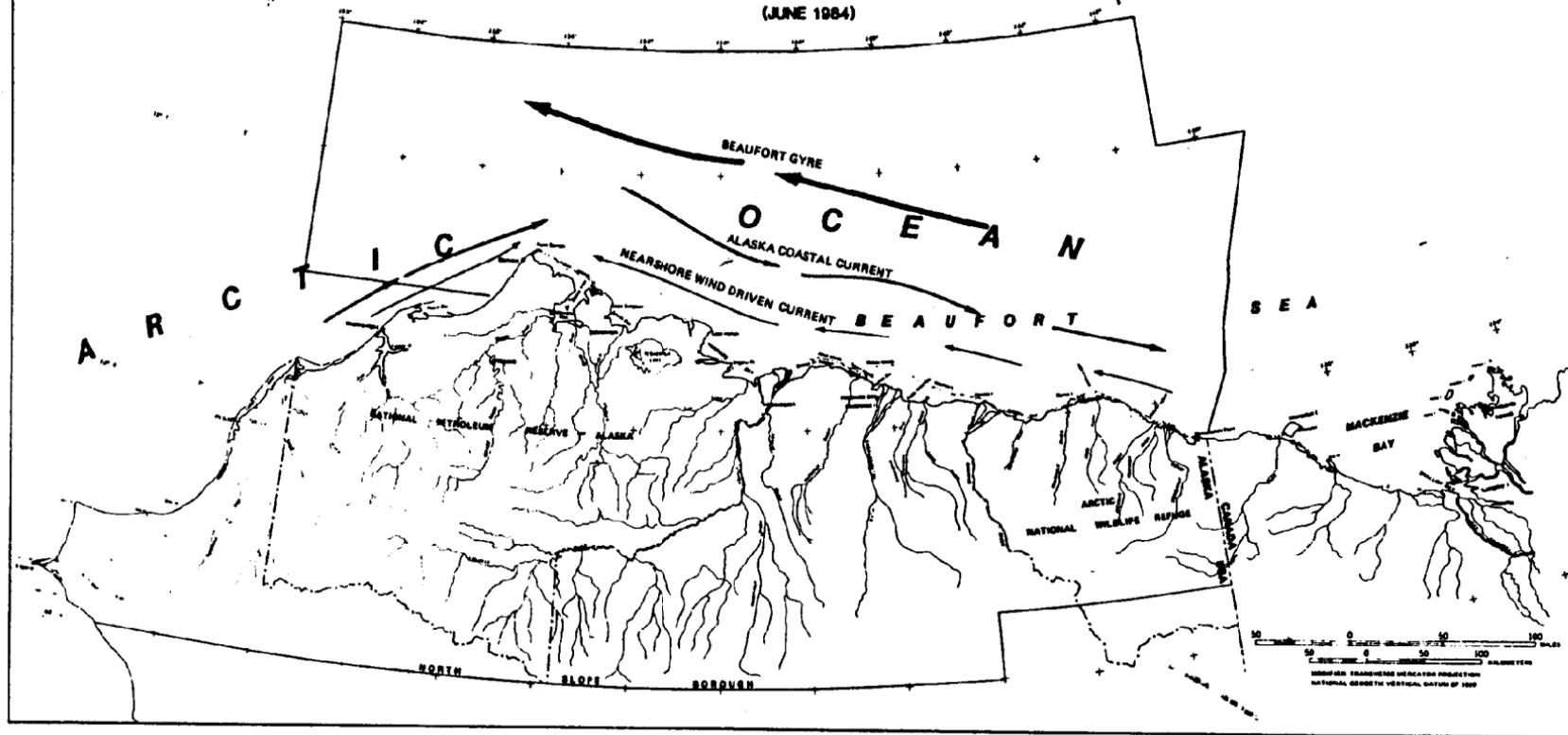
Max. Ebb – North SE AK

Max. Ebb – Central SE AK

Max. Ebb – South SE AK

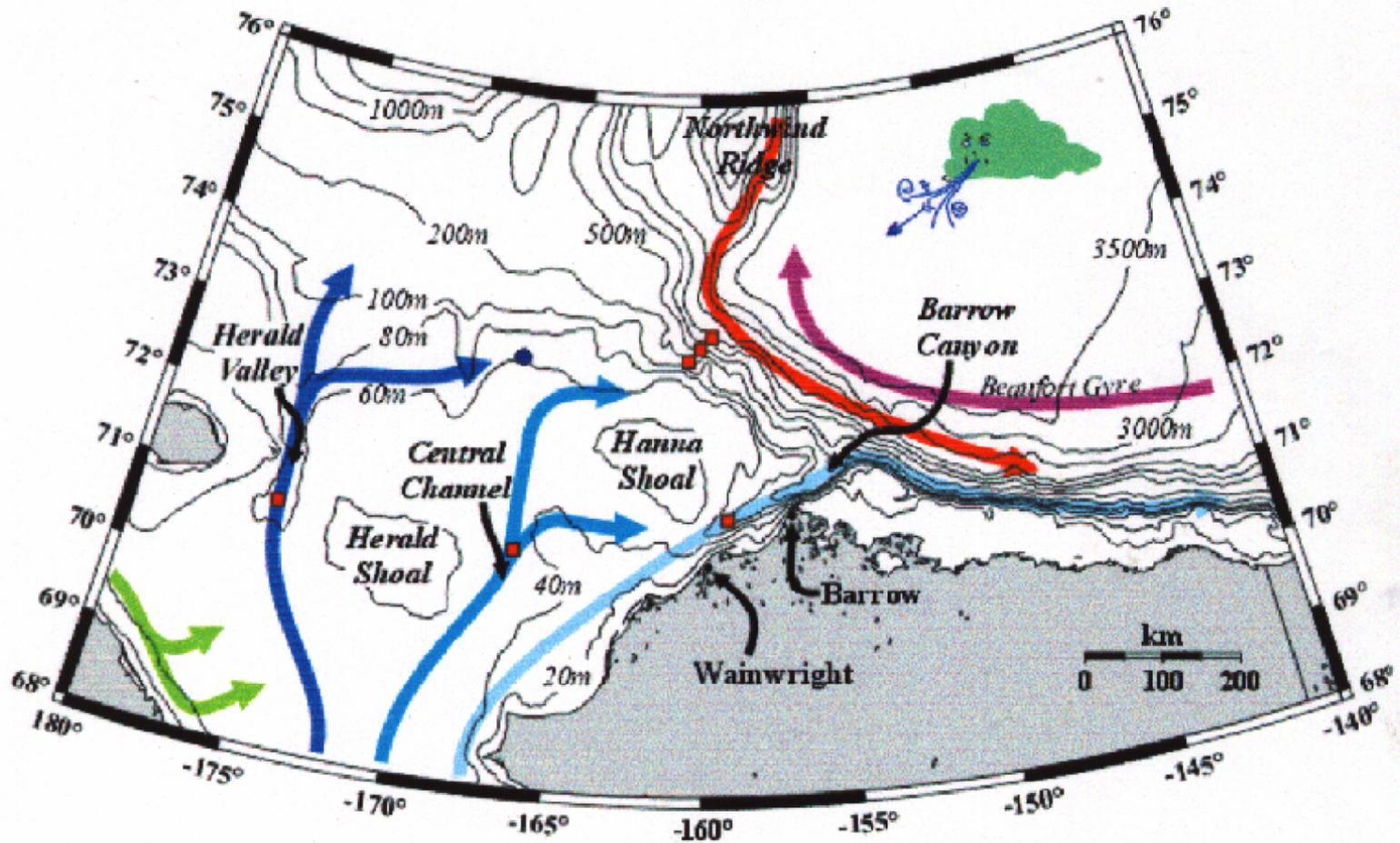


MINERALS MANAGEMENT SERVICE
ALASKA OCS REGION
DIAPIR FIELD LEASE OFFERING
(JUNE 1984)

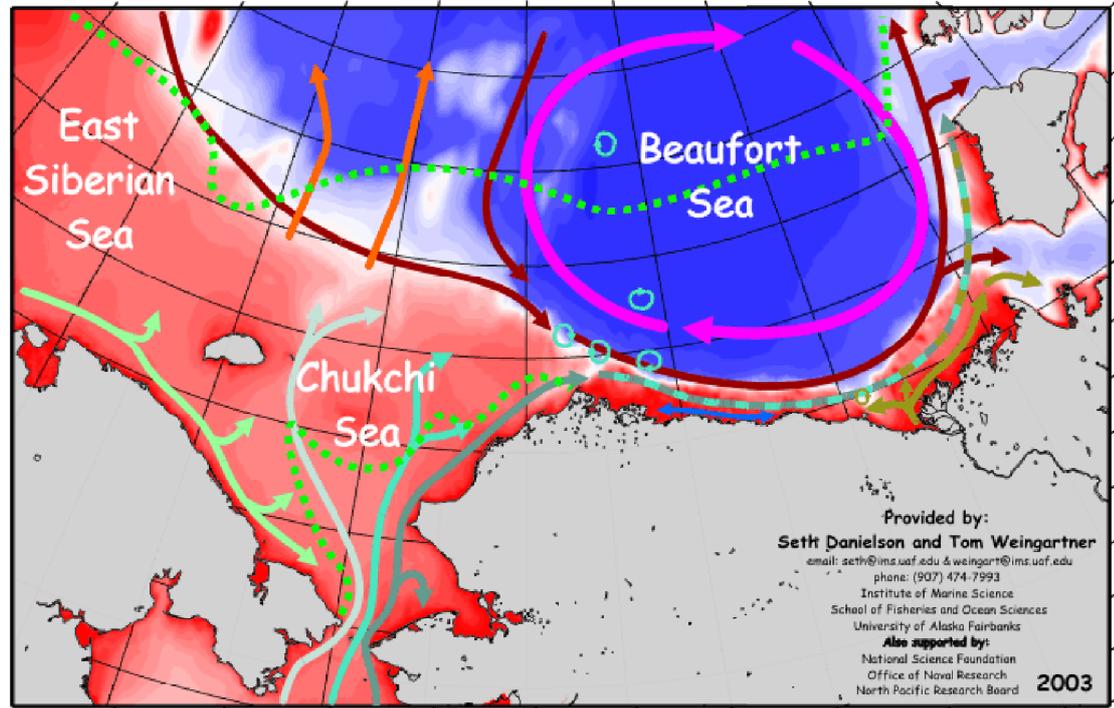
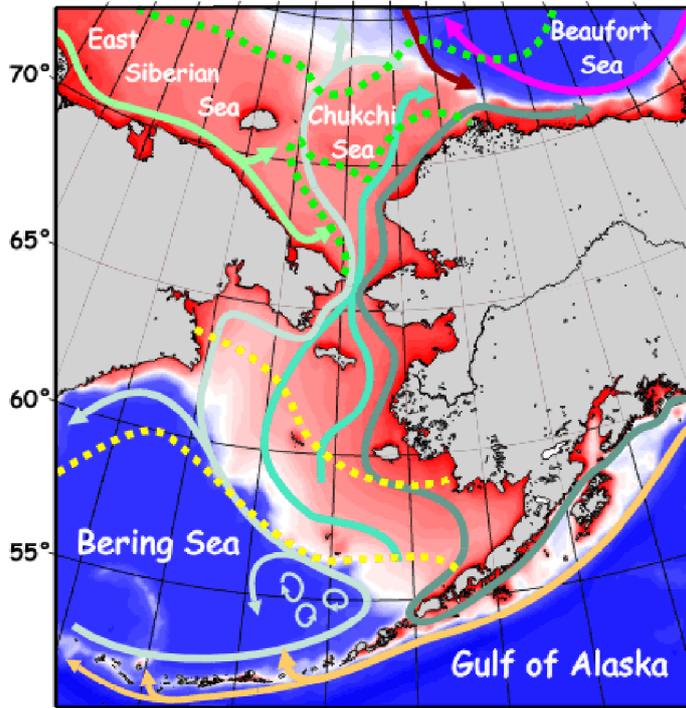


Generalized Arctic Ocean Currents, affecting the Alaska North Slope Coastline.

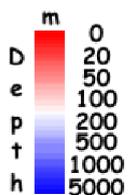
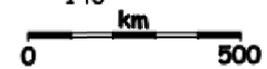
Diapir Field Environmental Impact Statement, Minerals Management Service, Alaska OCS Region, 1983.



Oceanic Circulation of Alaska's Bering, Chukchi and Beaufort Seas

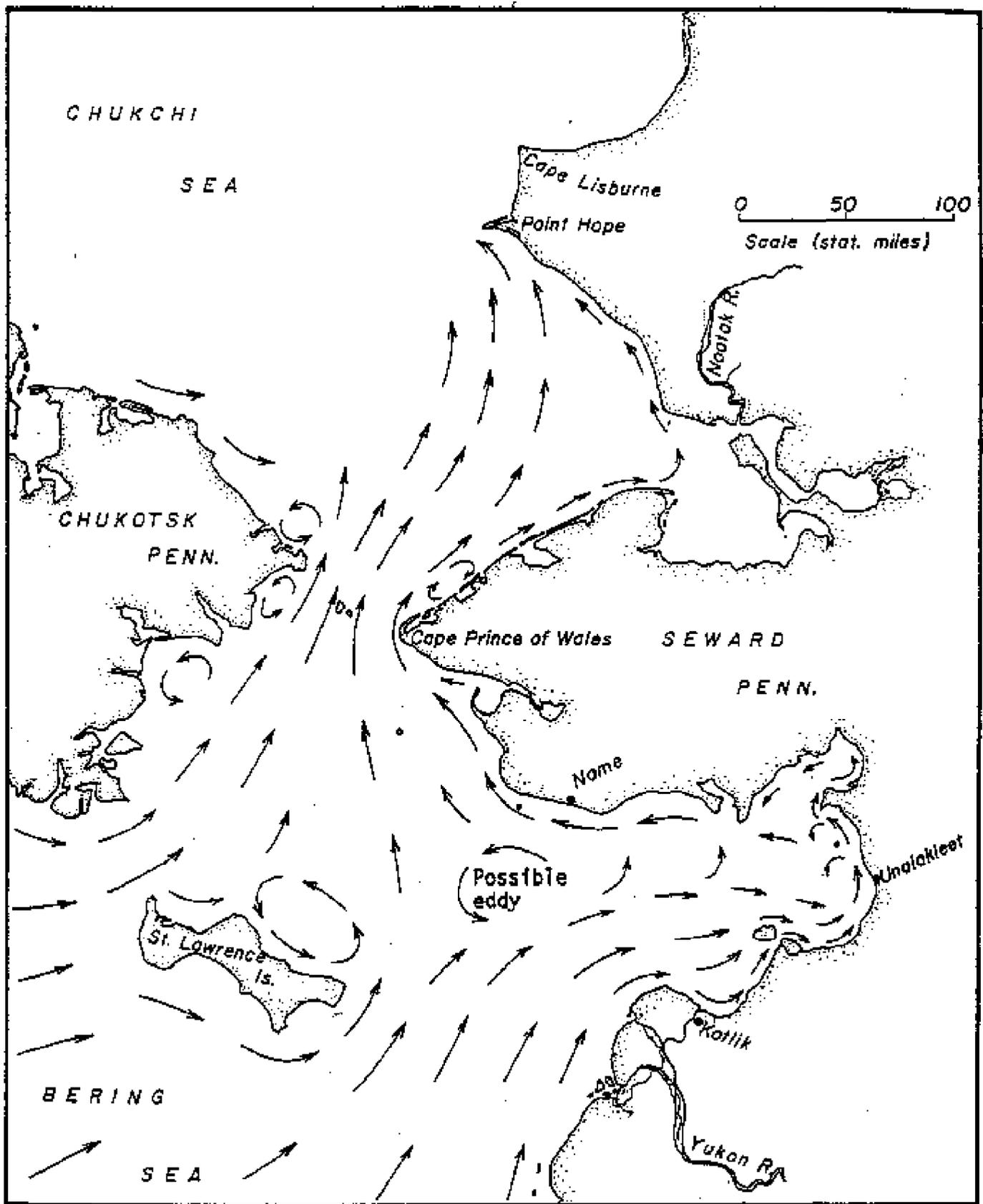


Provided by:
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 2003



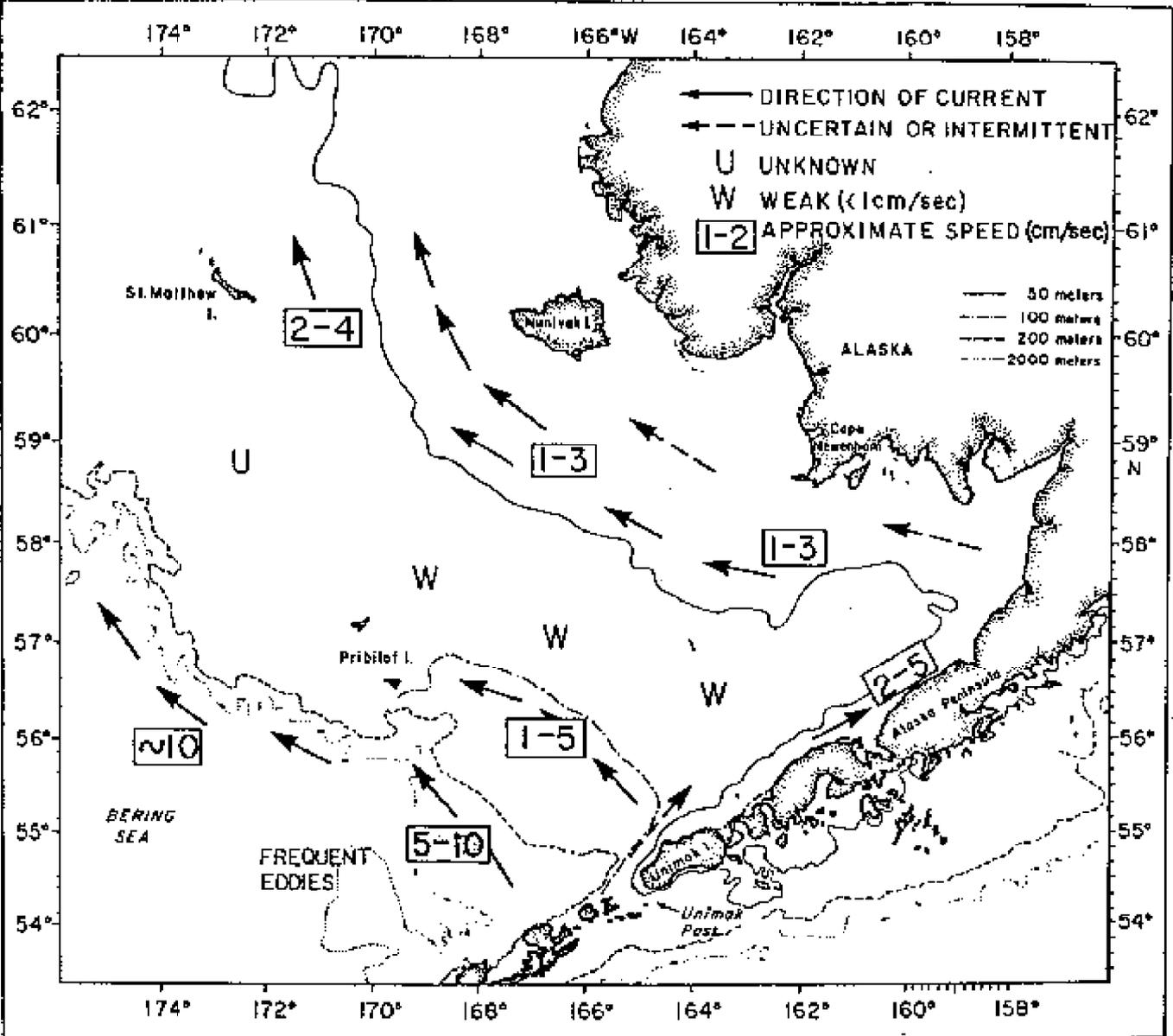
- Aleutian North Slope, Bering Slope & Anadyr Waters
- Atlantic & Intermediate Water
- Transpolar Drift
- Alaskan Stream
- - - September Ice Maximum & Minimum Extent
- - - March Ice Maximum & Minimum Extent
- Beaufort Gyre
- Mackenzie Shelf Water
- Siberian Coastal Current
- Alaska Coastal Water
- Bering Shelf Water
- Beaufort Nearshore Circulation



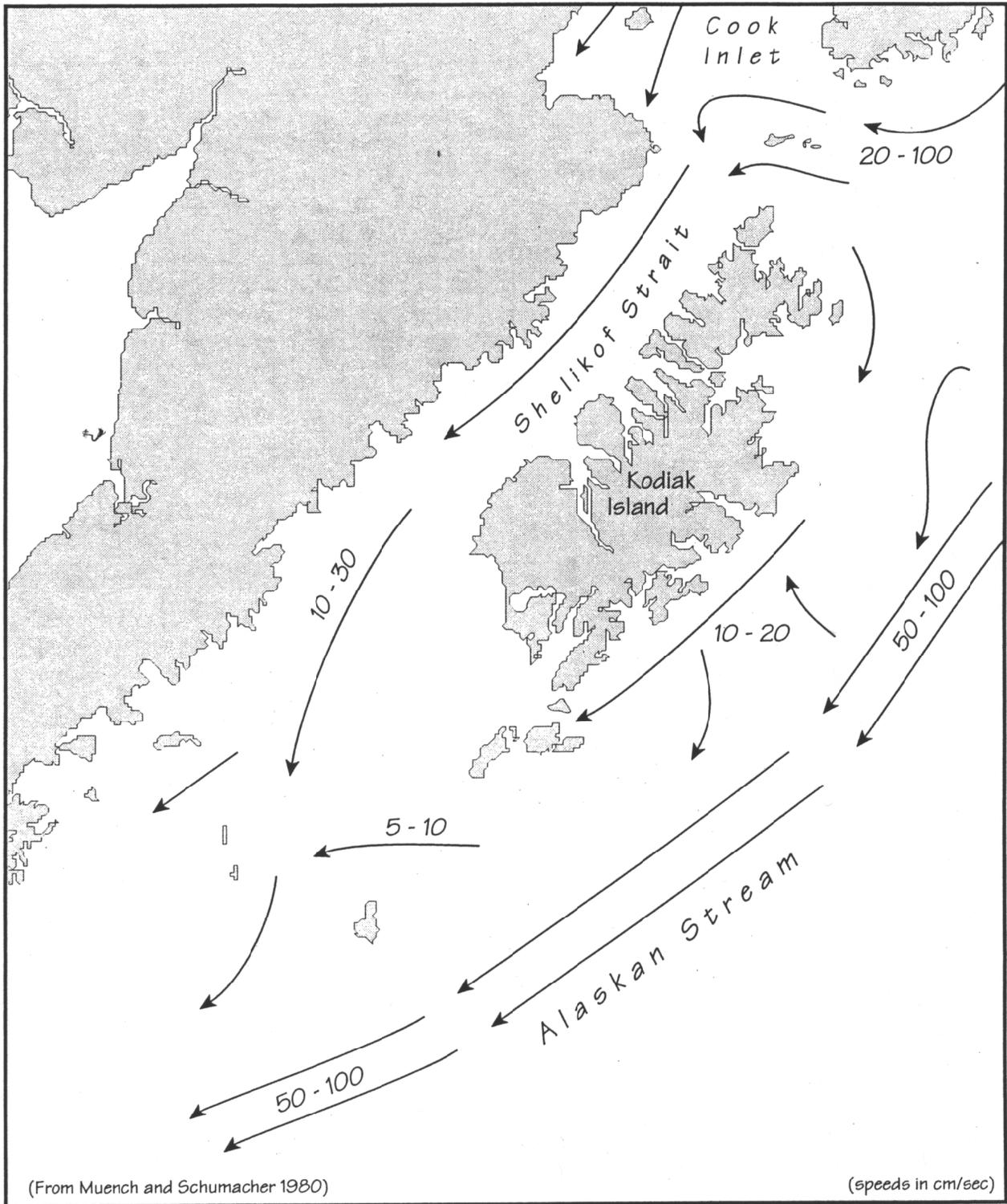


Surface circulation in the NE Bering Sea and SE Chukchi Sea during the summer and fall (open water) season.

Burbank, D.C., 1979, Drift Bottle Trajectories and Circulation in the NE Bering Sea and Se Chukchi Sea, Habitat Section, ADFG, 52p.

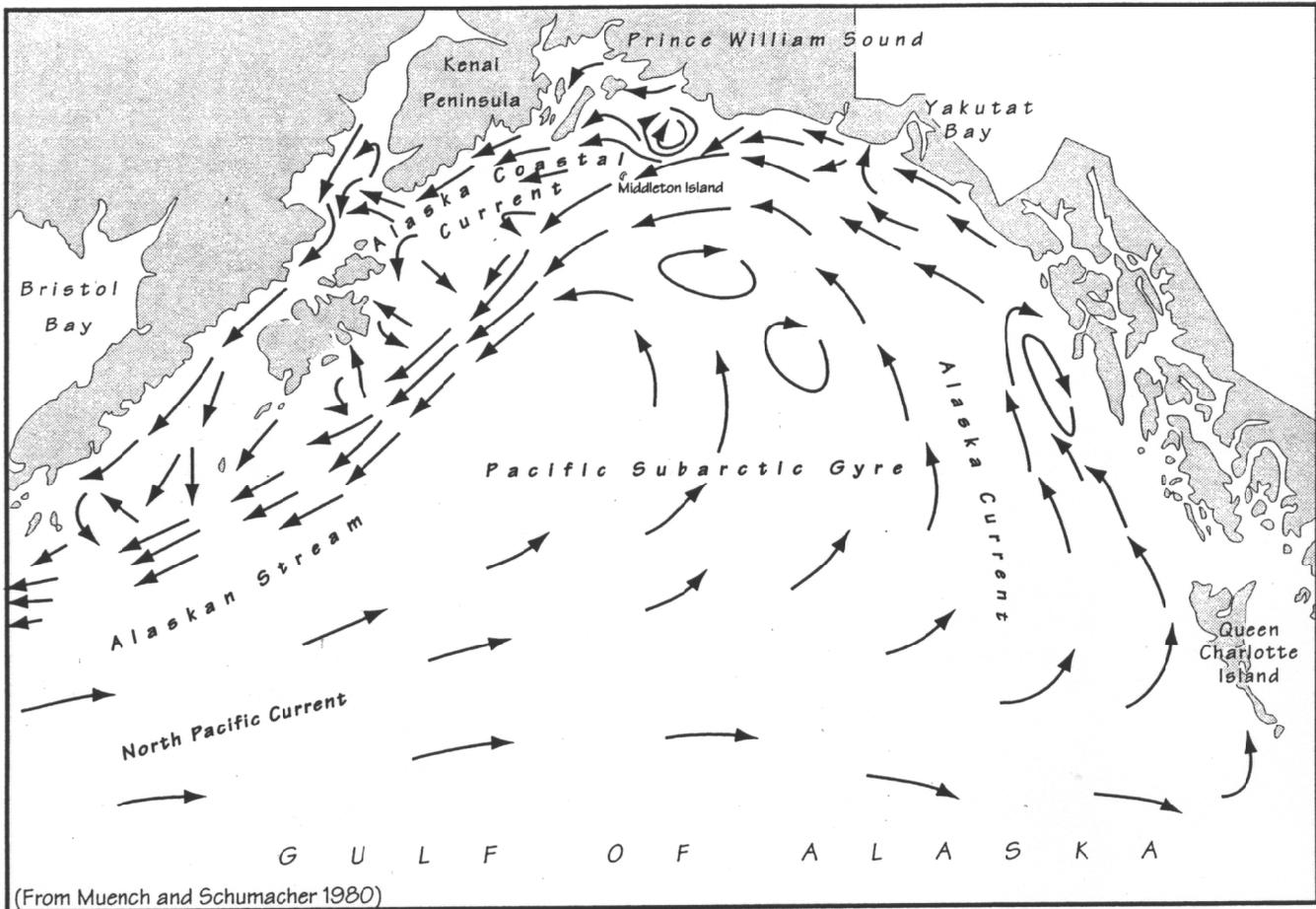


Estimated mean surface circulation for the summer in the eastern Bering Sea.



Net Circulation in the Northwest Gulf of Alaska

Muench, R.D. and J.D. Schumacher; 1980, Physical oceanographic and meteorological conditions in the Northwest Gulf of Alaska, NOAA Technical Memorandum ERL PMEL-22; Seattle: Pacific Marine Environmental Laboratory, National Oceanic and Atmospheric Administration.

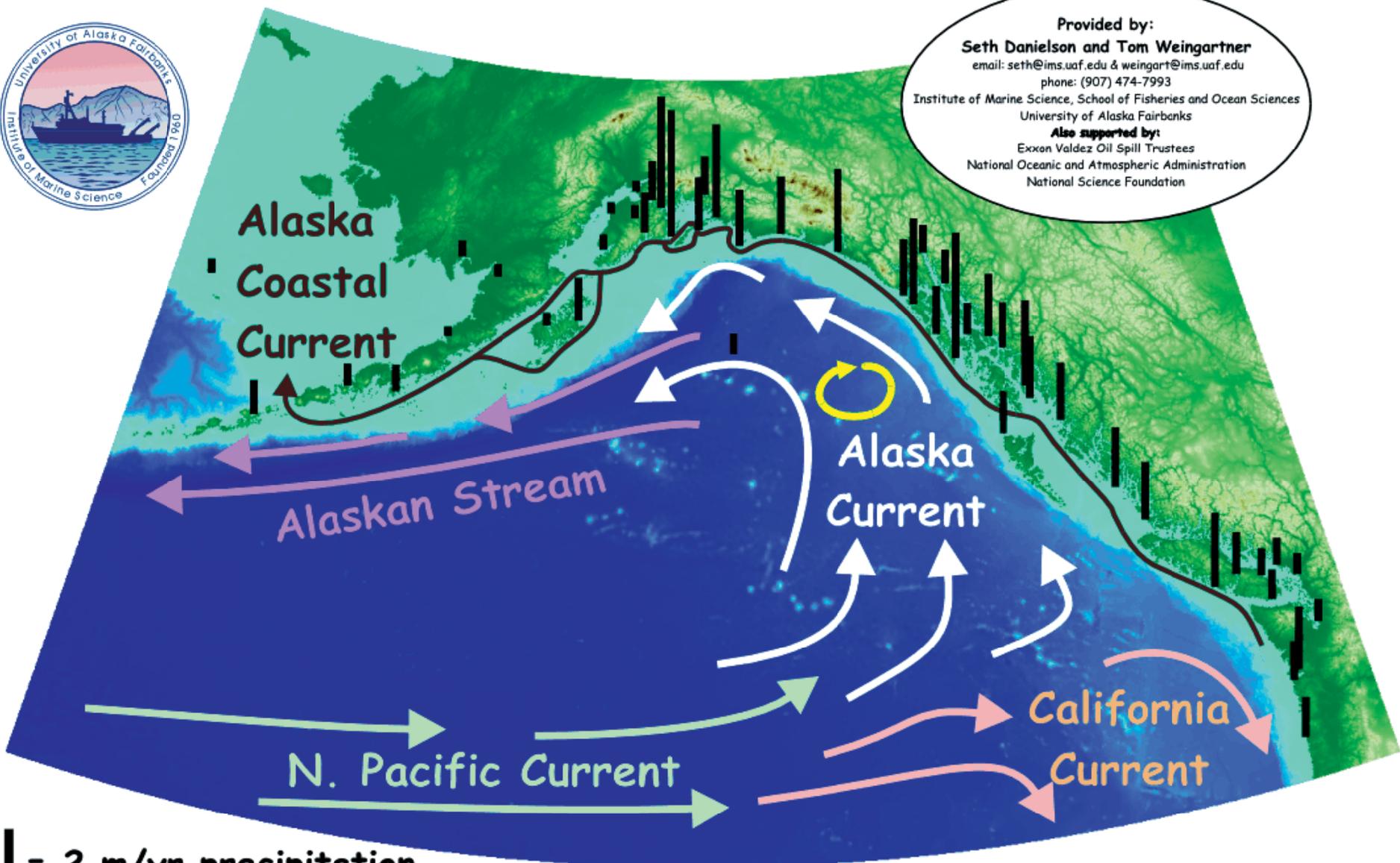


Net surface currents in the Gulf of Alaska

Muench, R.D. and J.D. Schumacher; 1980, Physical oceanographic and meteorological conditions in the Northwest Gulf of Alaska, NOAA Technical Memorandum ERL PMEL-22; Seattle: Pacific Marine Environmental Laboratory, National Oceanic and Atmospheric Administration.



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University of Alaska Fairbanks
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Exxon Valdez Oil Spill Trustees
National Oceanic and Atmospheric Administration
National Science Foundation



Alaska
Coastal
Current

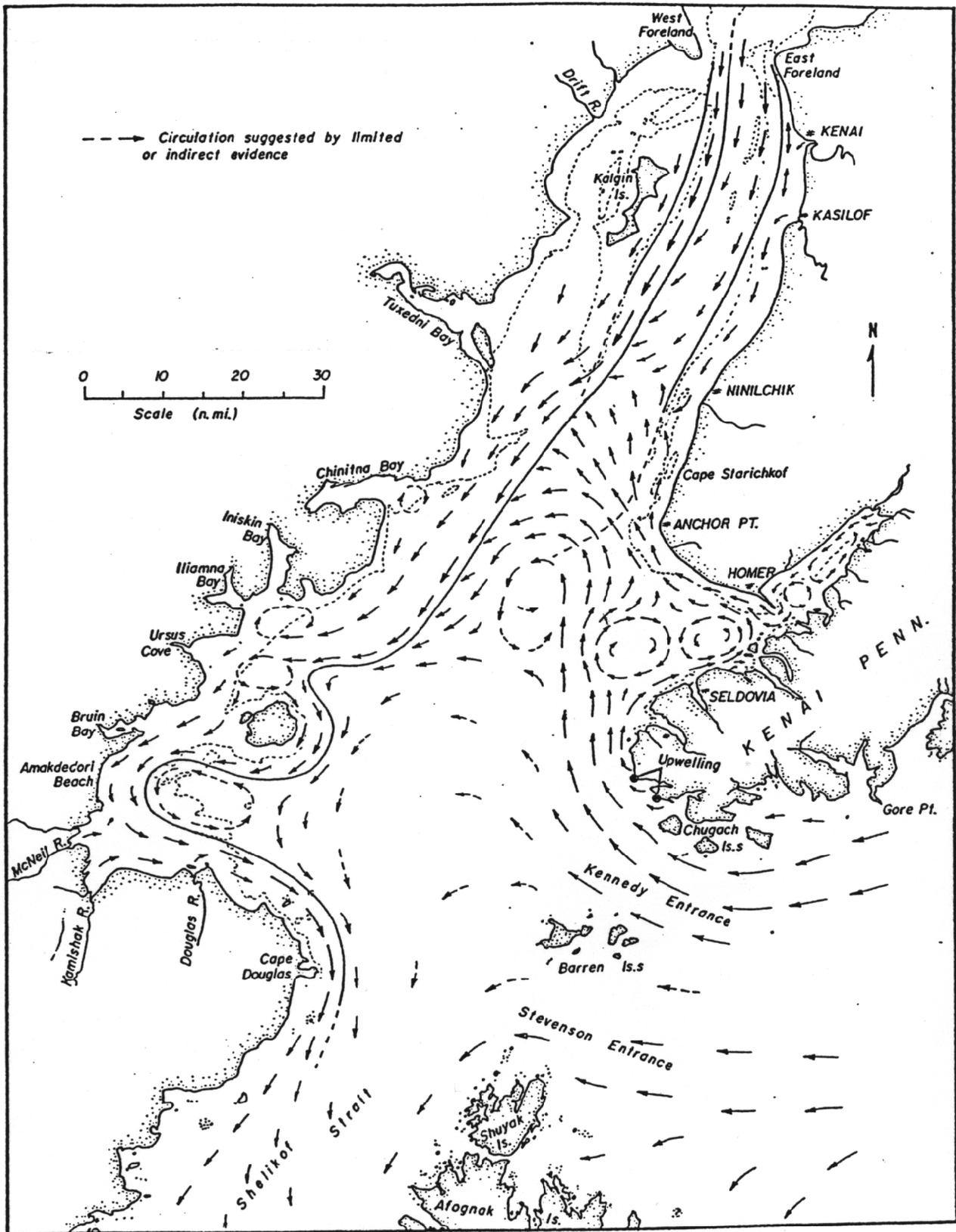
Alaskan Stream

Alaska
Current

California
Current

N. Pacific Current

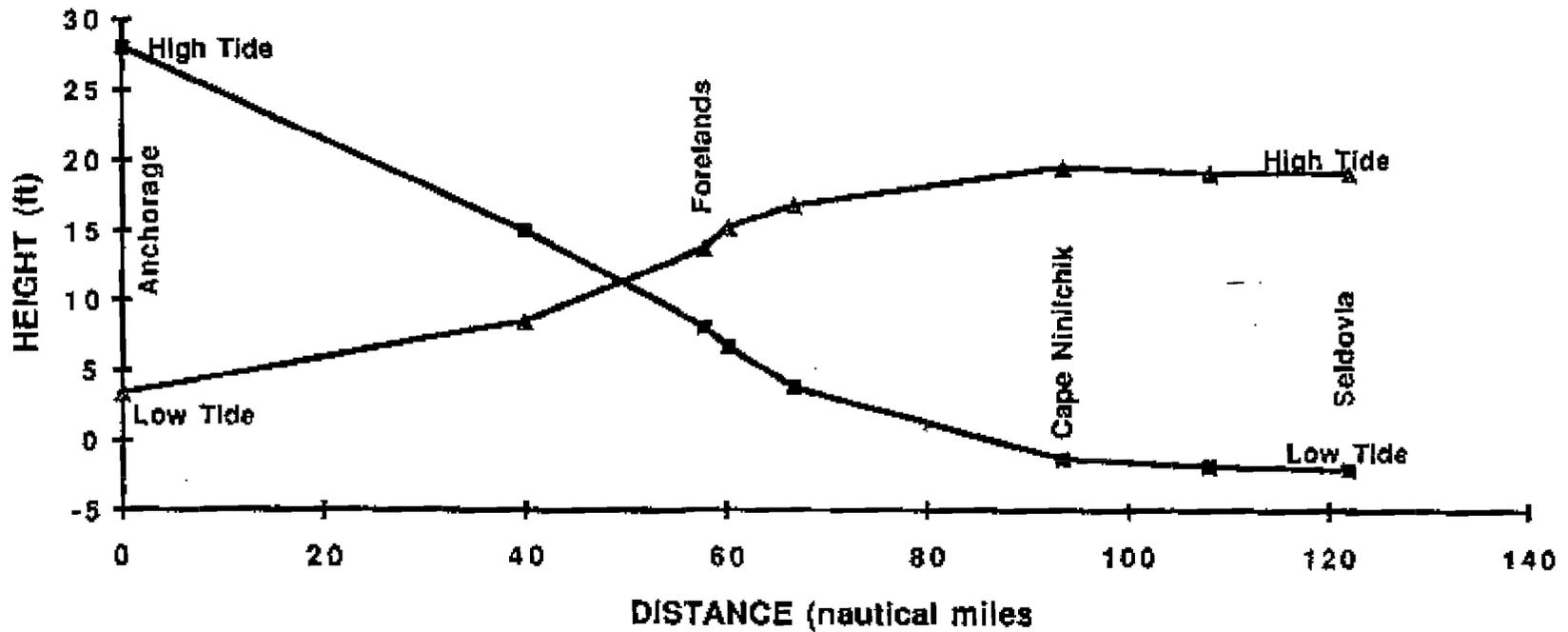
1 = 2 m/yr precipitation

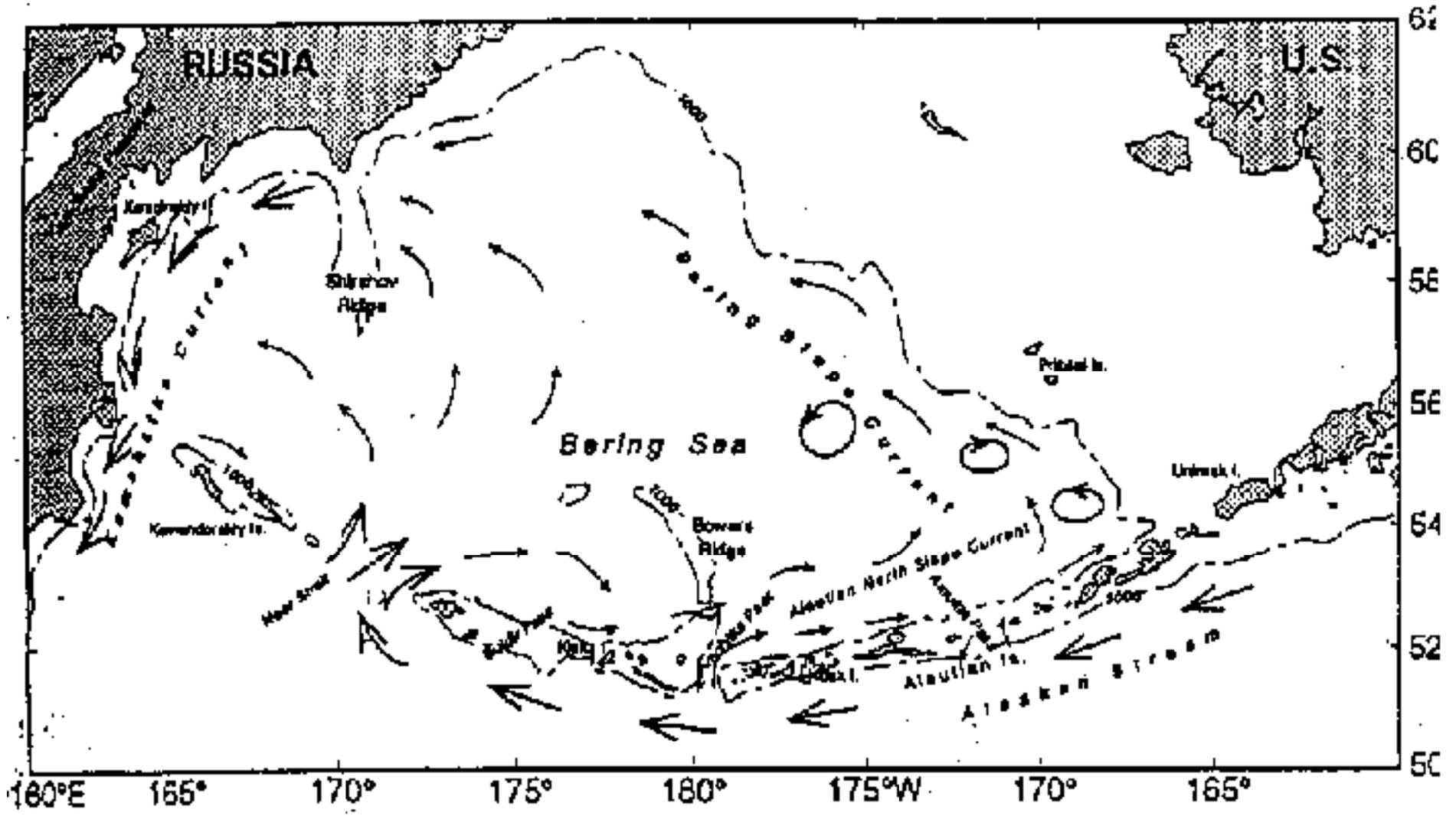


Net surface circulation in Lower Cook Inlet, based primarily on data collected during the spring and summer seasons.

Burbank, D.C., 1977, Circulation studies in Kachemak Bay and lower Cook Inlet, Vol III of Environmental Studies of Kachemak Bay and Lower Cook Inlet, ed. by L.L. Trasky, et al., Marine Coastal Habitat Management Report, Alaska Dept of Fish and Game, Anchorage, AK.

INSTANTANEOUS TIDAL HEIGHTS (north to south FOR COOK INLET

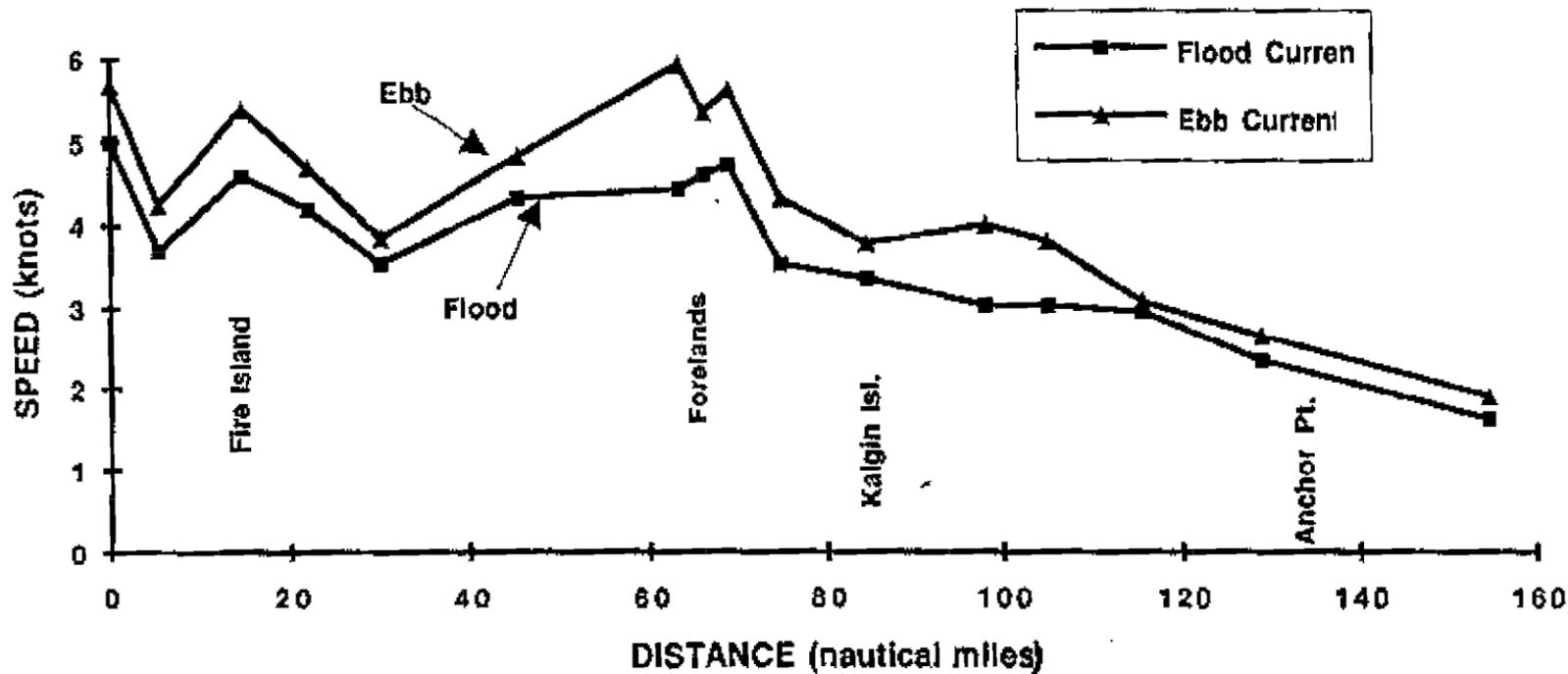




Aleutians and Bering Sea

Reed and Stabeno, 1999

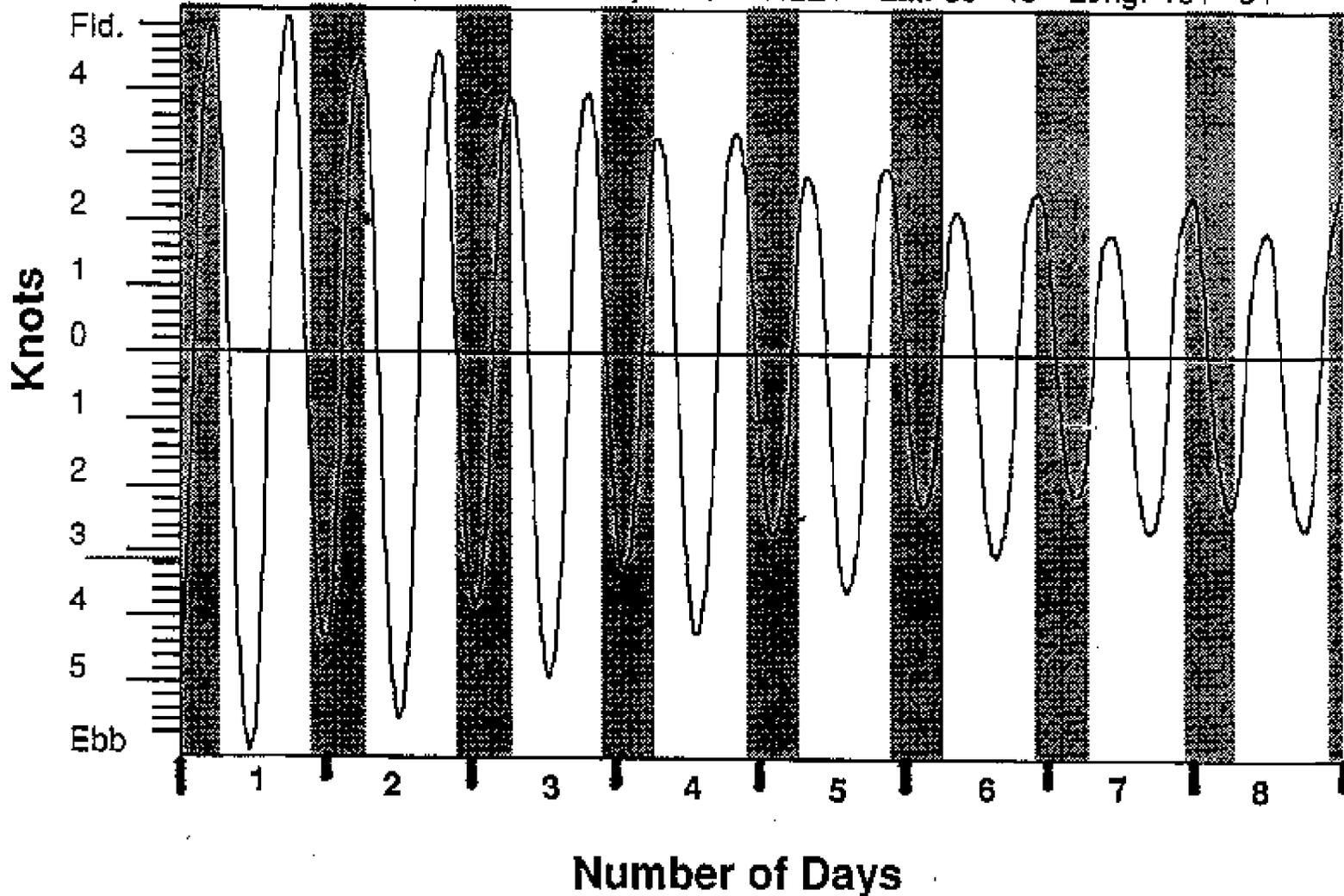
AVERAGE MAXIMUM TIDAL CURRENTS (north to south) FOR COOK INLET



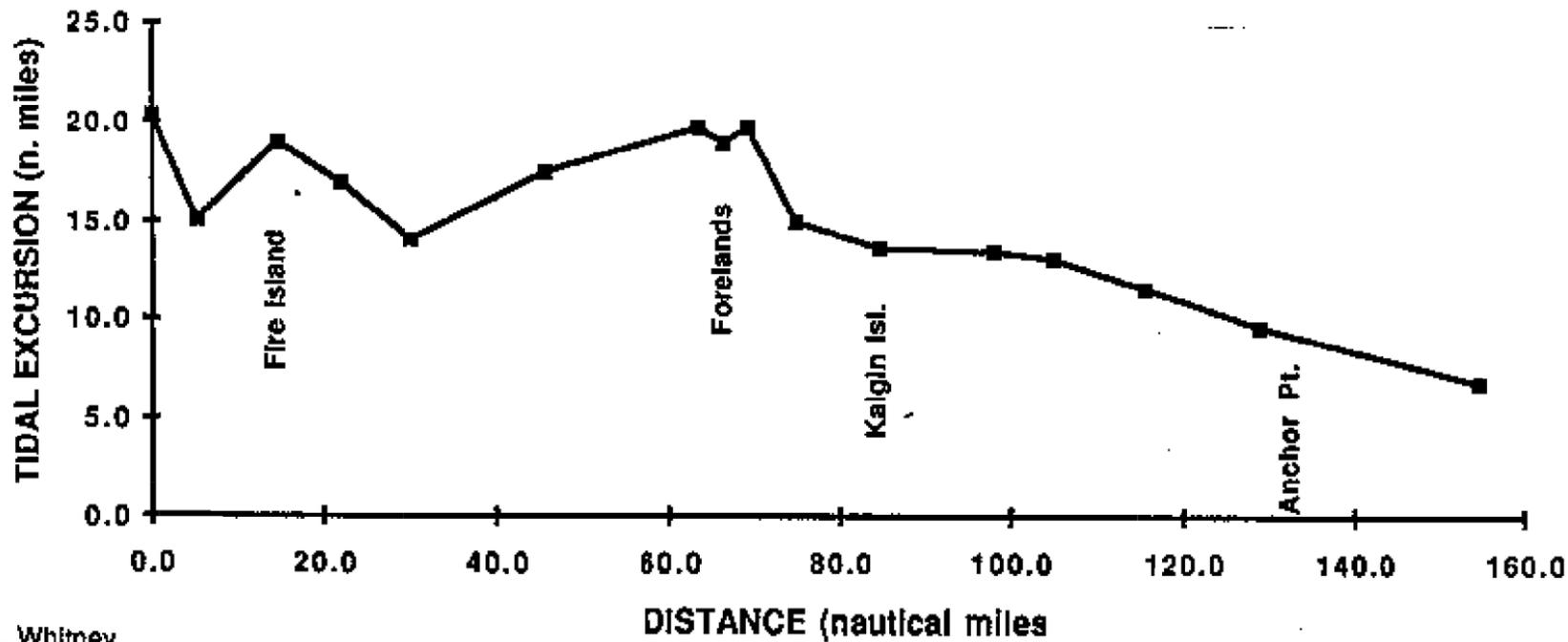
COOK INLET TIDAL VARIATIONS

(Spring to Neap)

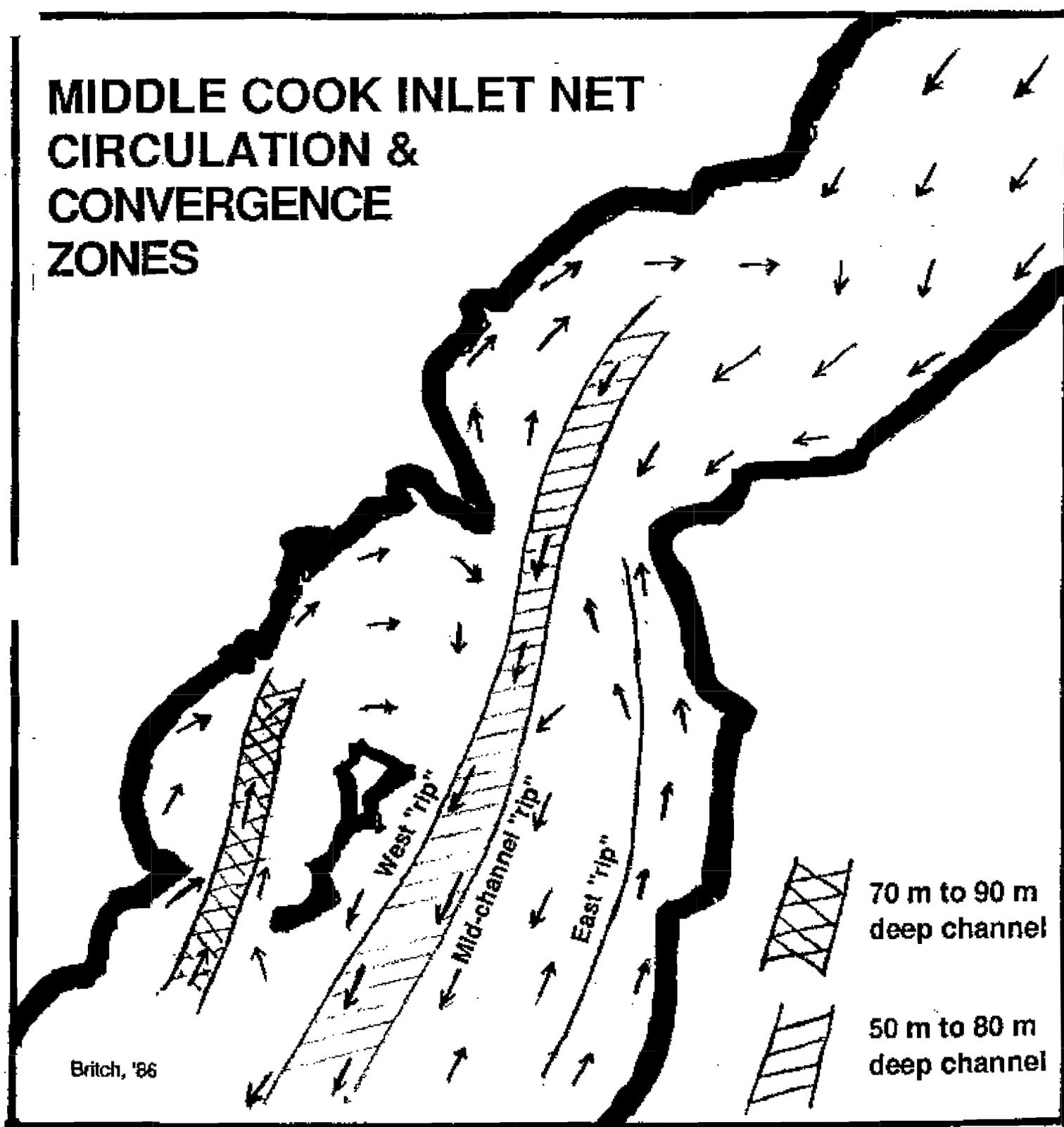
West Foreland, 4 nmi. east of, COOK INLET Lat: 60° 43' Long: 151° 34'



AVERAGE MAXIMUM TIDAL EXCURSIONS (north to south) FOR COOK INLET



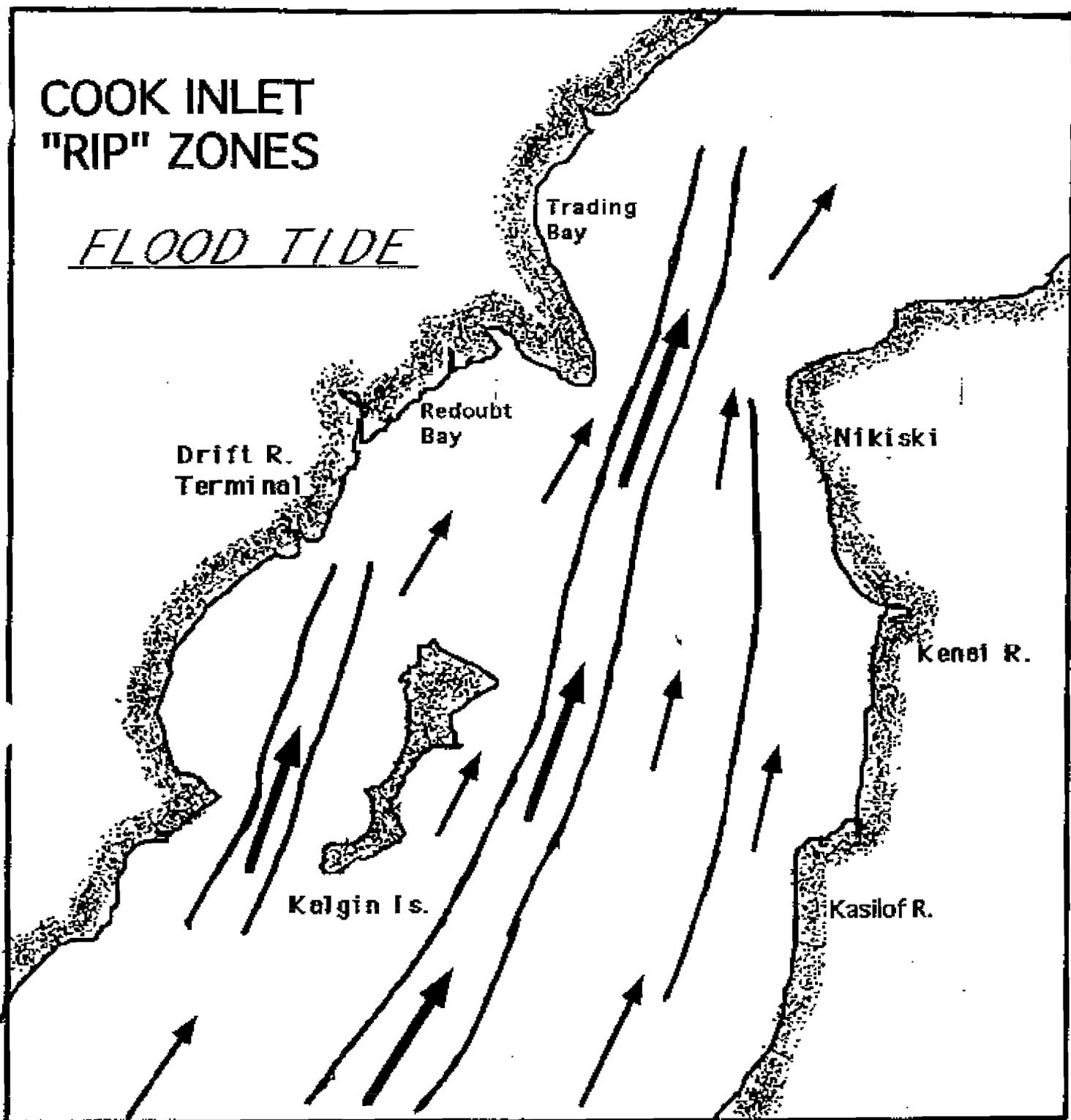
MIDDLE COOK INLET NET CIRCULATION & CONVERGENCE ZONES



Whitney, J.W., What the Actual Movement of Oil in Cook Inlet Tells us - about the Circulation in Cook Inlet, in Proceedings: Cook Inlet Oceanography Workshop, Ed. Mark Johnson and Steve Okkonen, OCS Study MMS 2000-043. November 9, 1999, Kenai, AK.

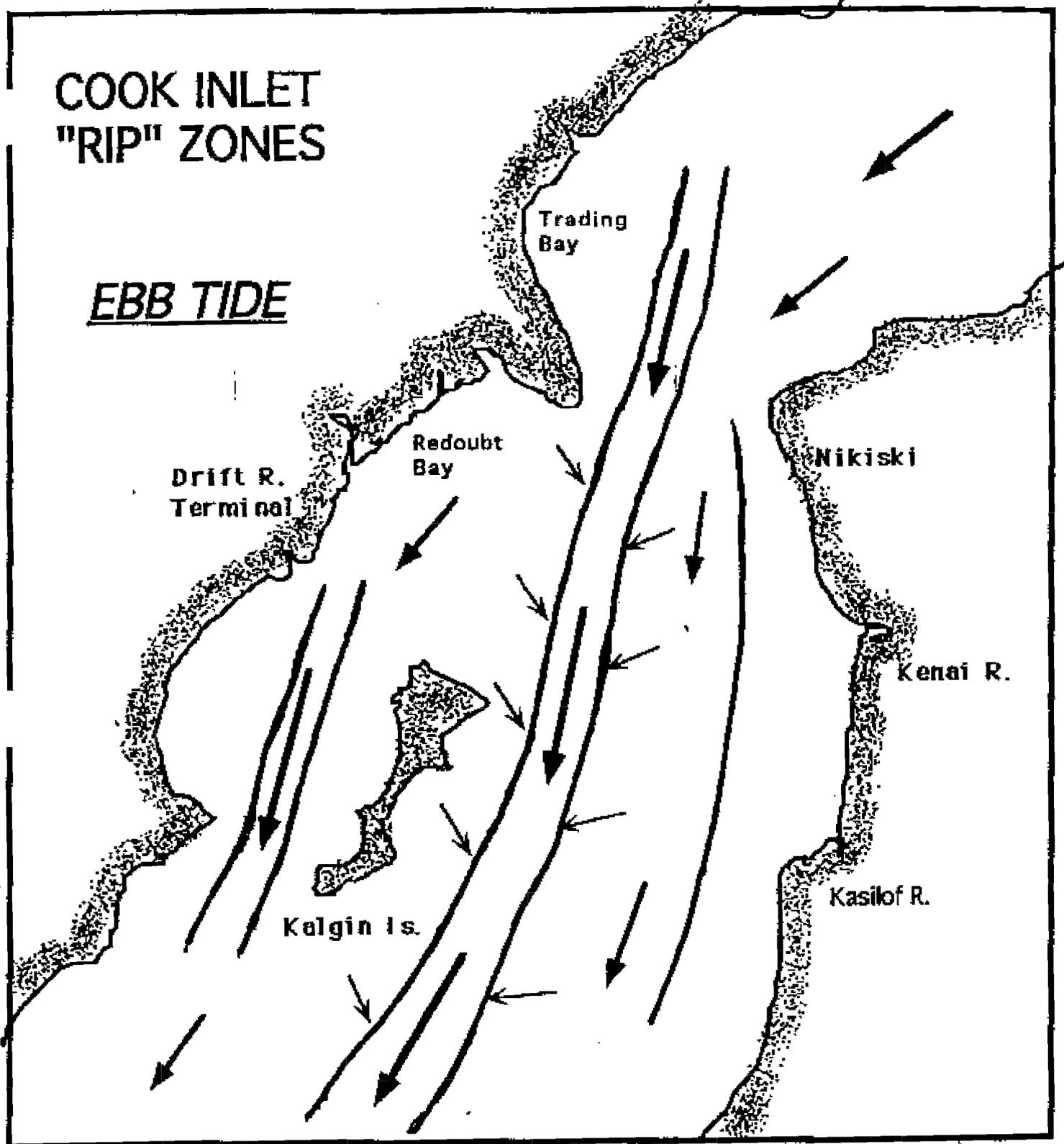
COOK INLET "RIP" ZONES

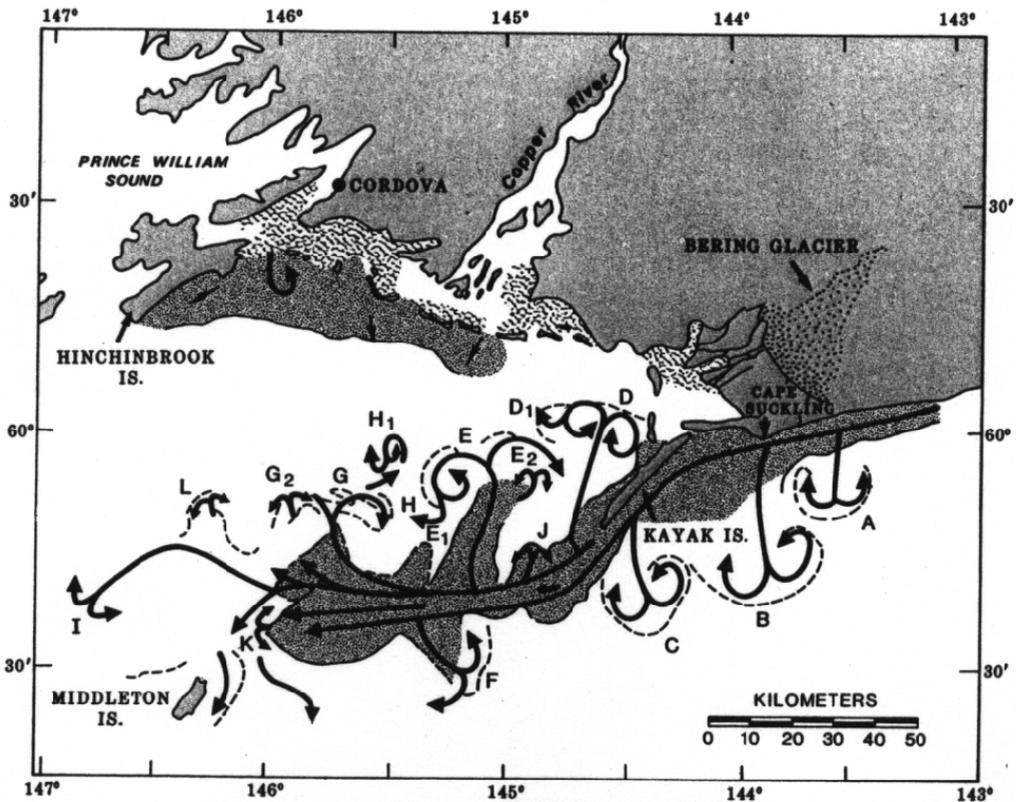
FLOOD TIDE



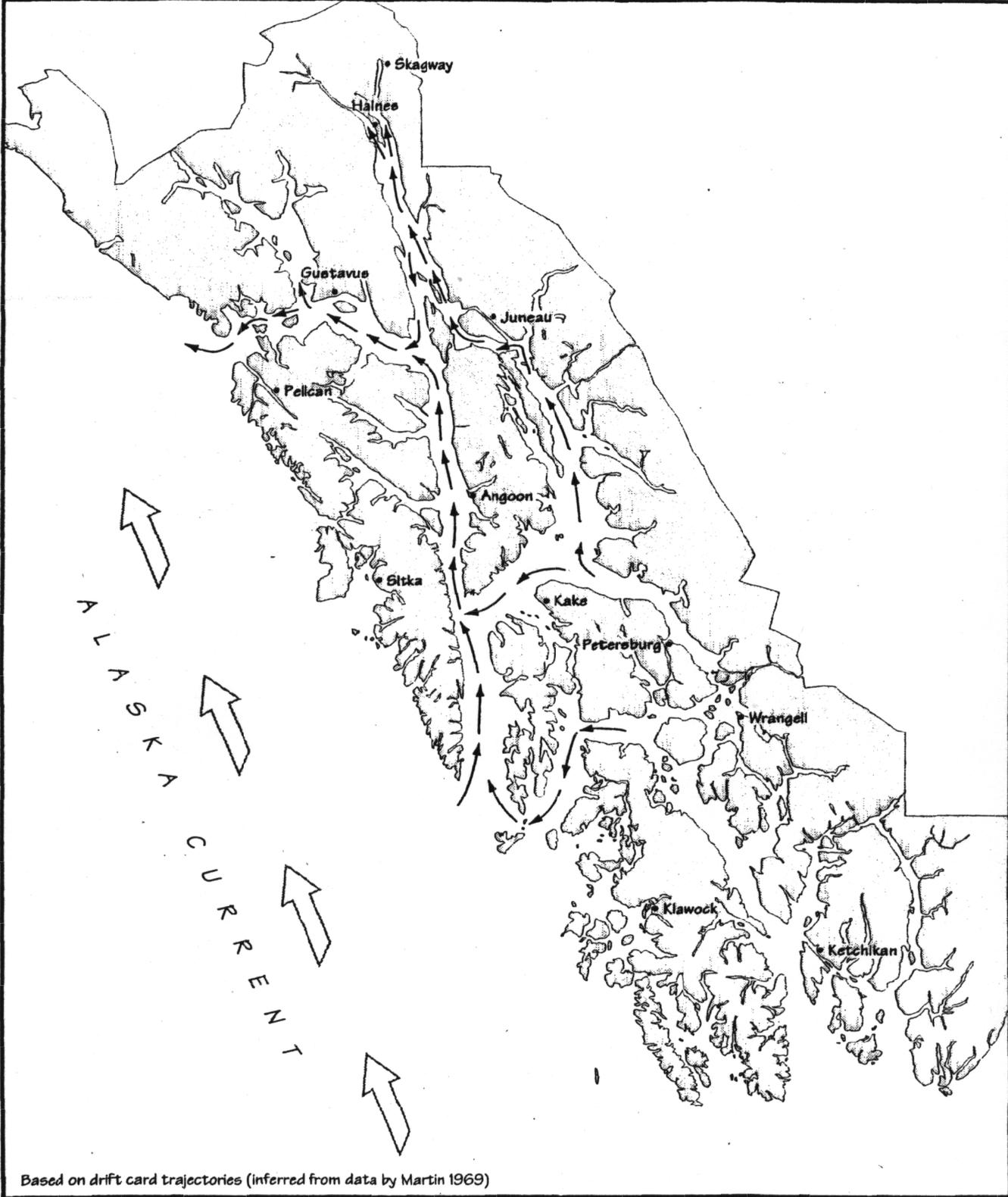
COOK INLET "RIP" ZONES

EBB TIDE



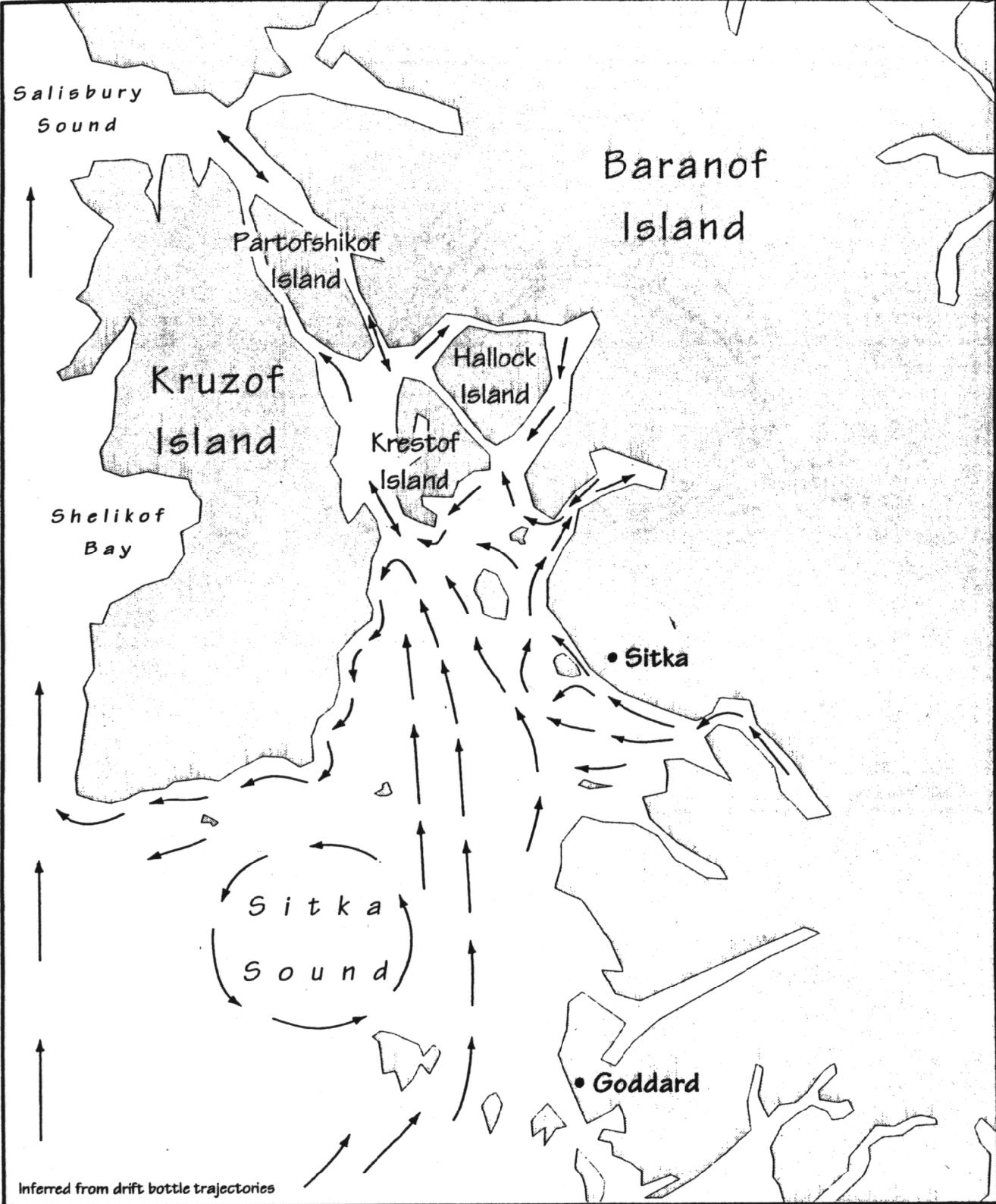


Analysis of surface flow around Kayak Island, showing multiple dipole eddies.

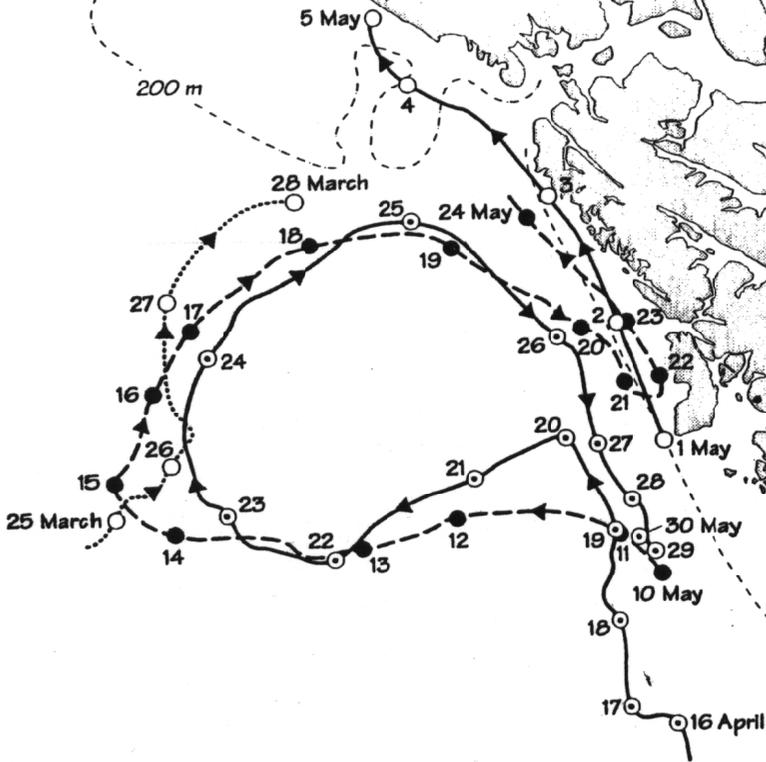


Based on drift card trajectories (inferred from data by Martin 1969)

Generalized surface currents in northern SE Alaska



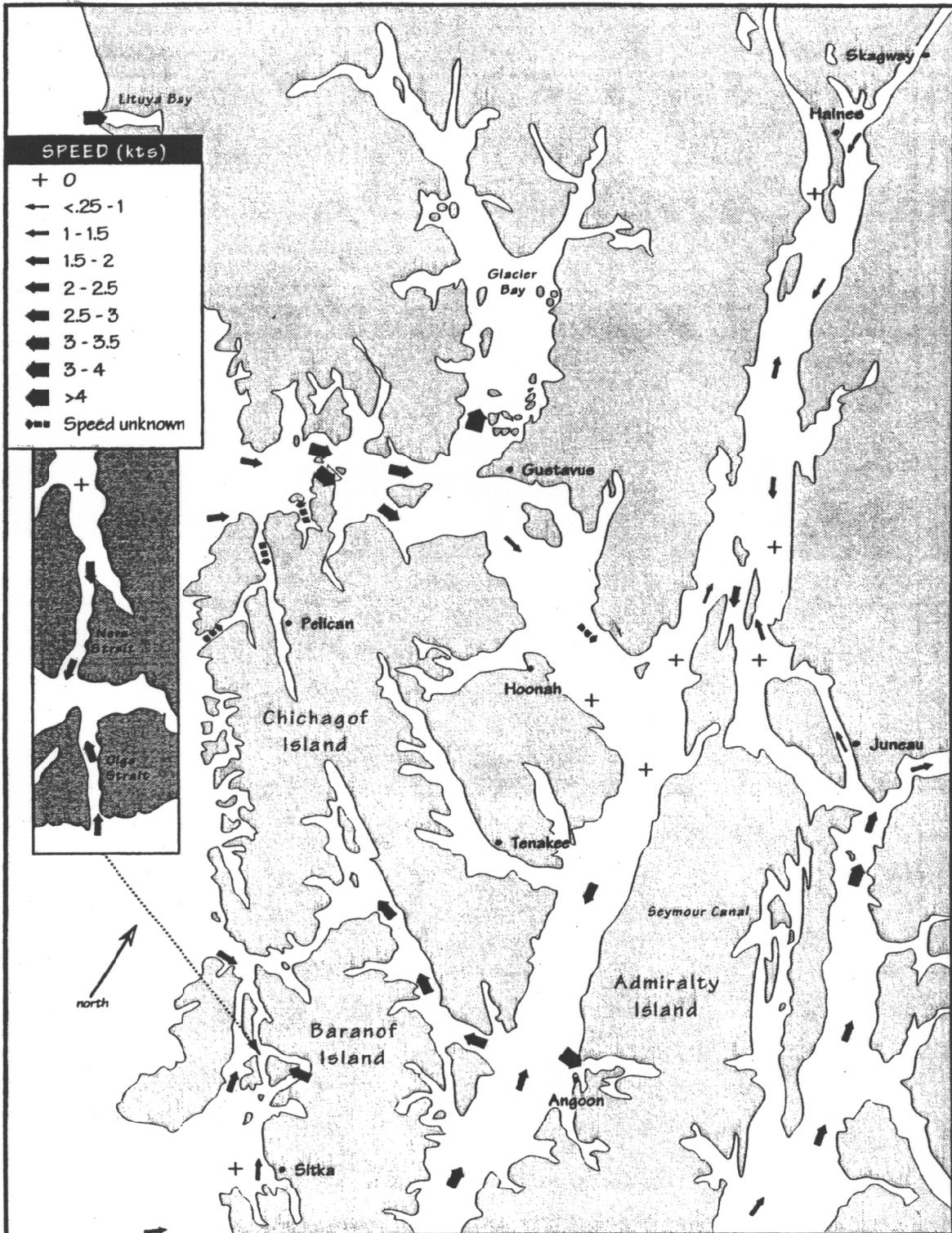
Net Circulation in Sitka Sound



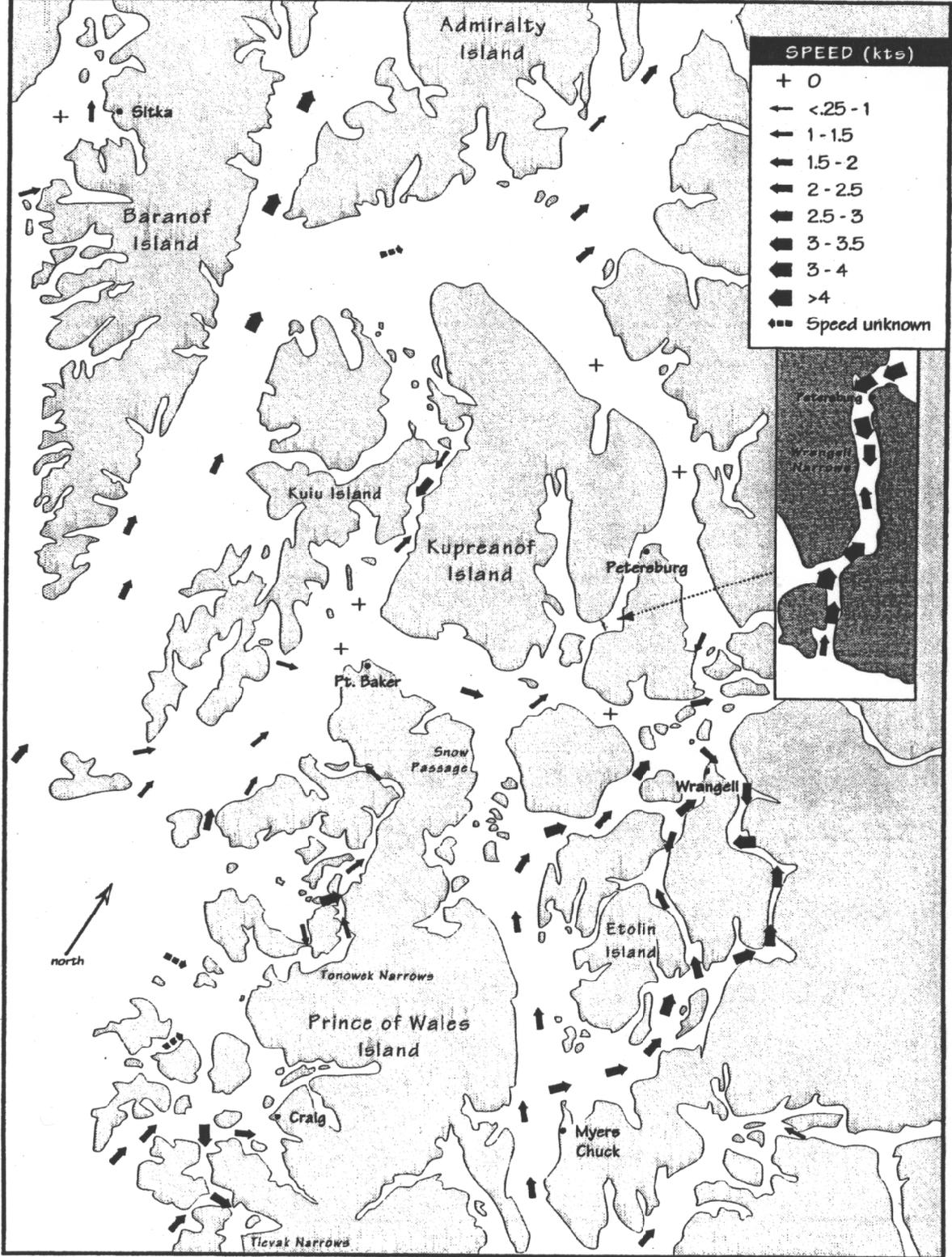
(from Tabata 1982)

Trajectories of Norpax satellite-tracked drifting buoys in the vicinity of Sitka Eddy (1977)

Tabata, S., 1982, The anticyclonic, baroclinic eddy off Sitka, Alaska, in the Northeast Pacific Ocean, *Journal of Physical Oceanography* 12, 1260-1282.

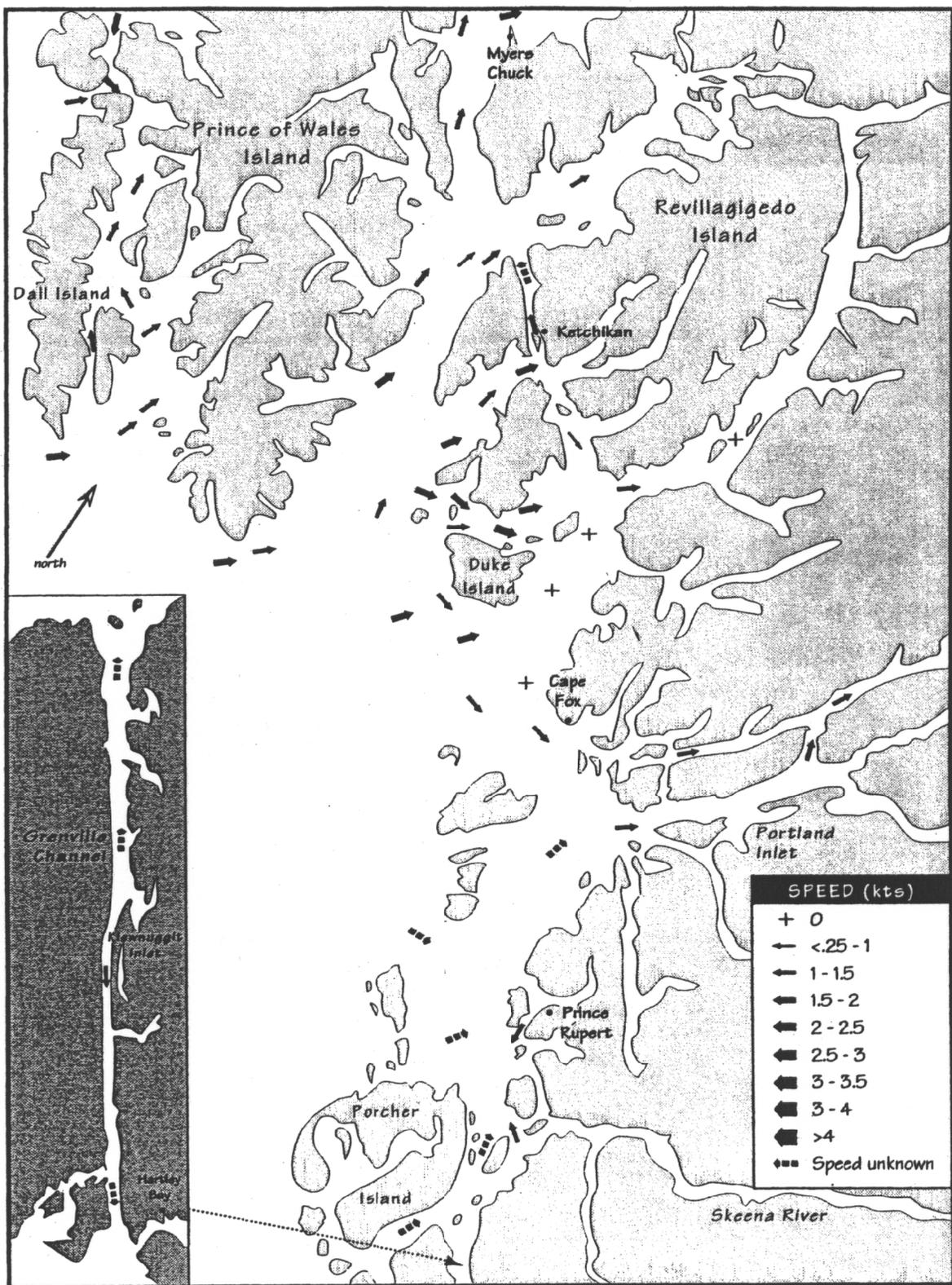


Typical maximum flood tide currents - northern SE AK



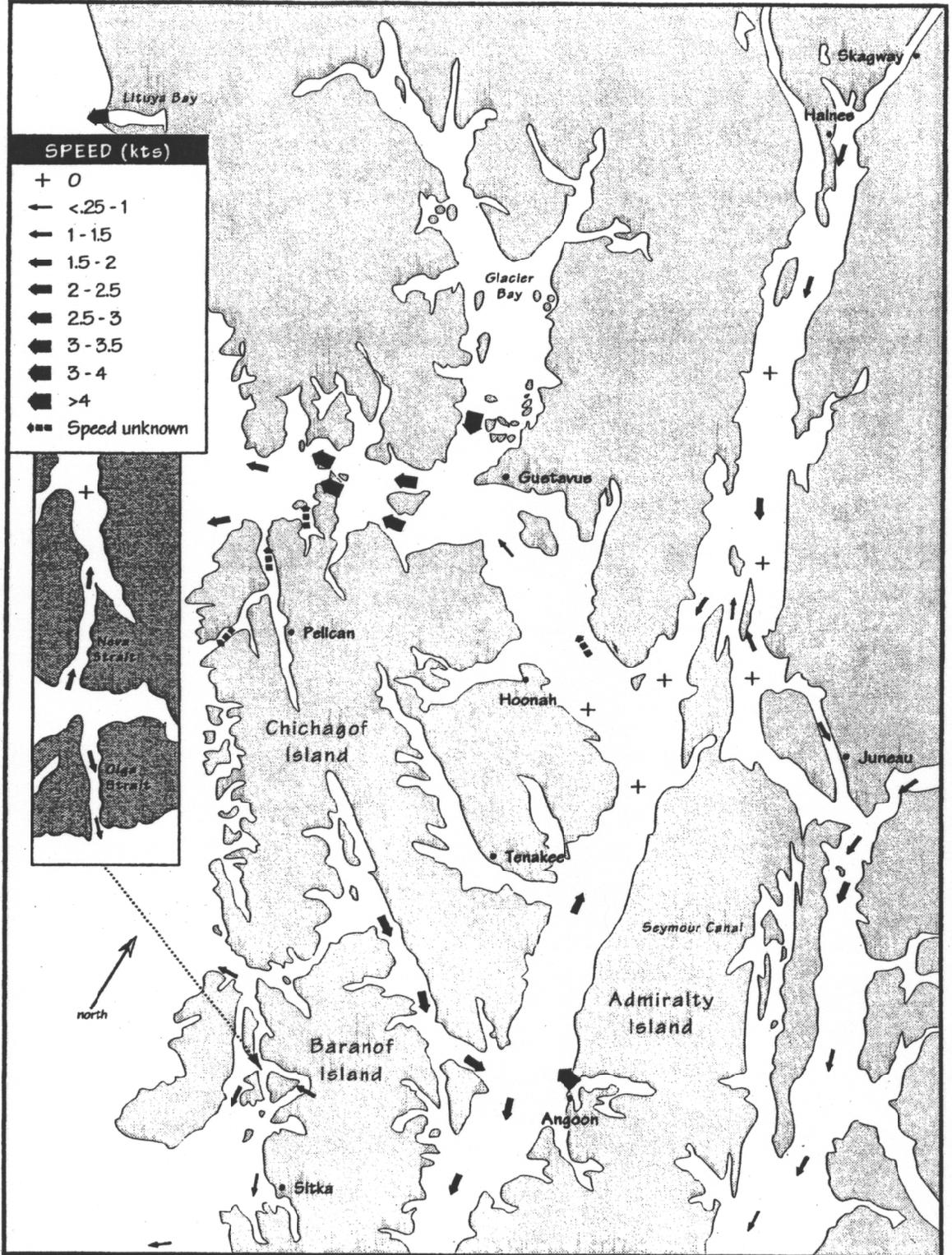
Typical maximum flood tidal currents - central SE AK

Washburne, R., 1989, Southeast Alaska Current Atlas, Weatherly Press, Bellevue, WA., 206-881-5212.

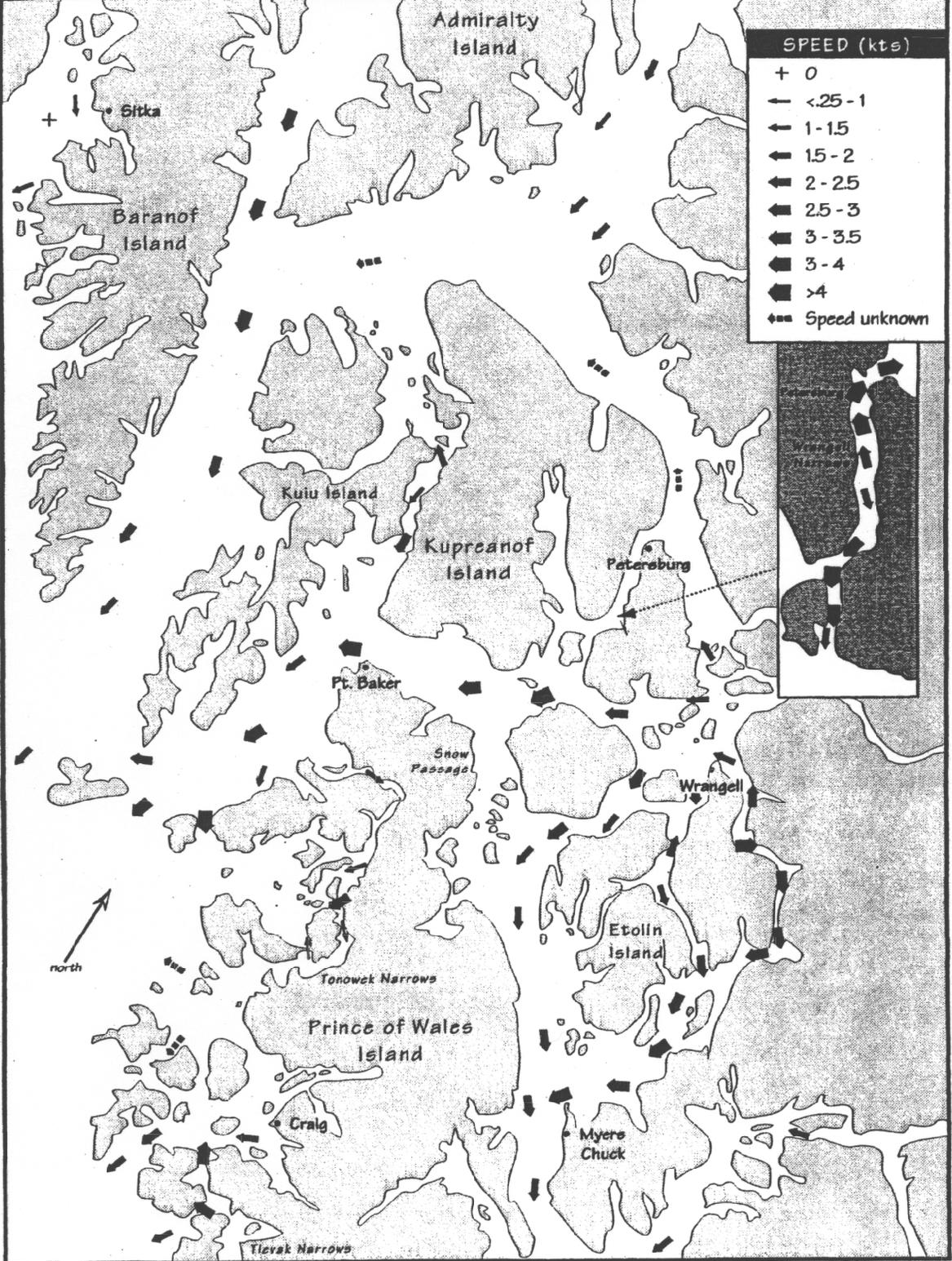


Typical maximum flood tidal currents - southern SE AK

Washburne, R., 1989, Southeast Alaska Current Atlas, Weatherly Press, Bellevue, WA., 206-881-5212.

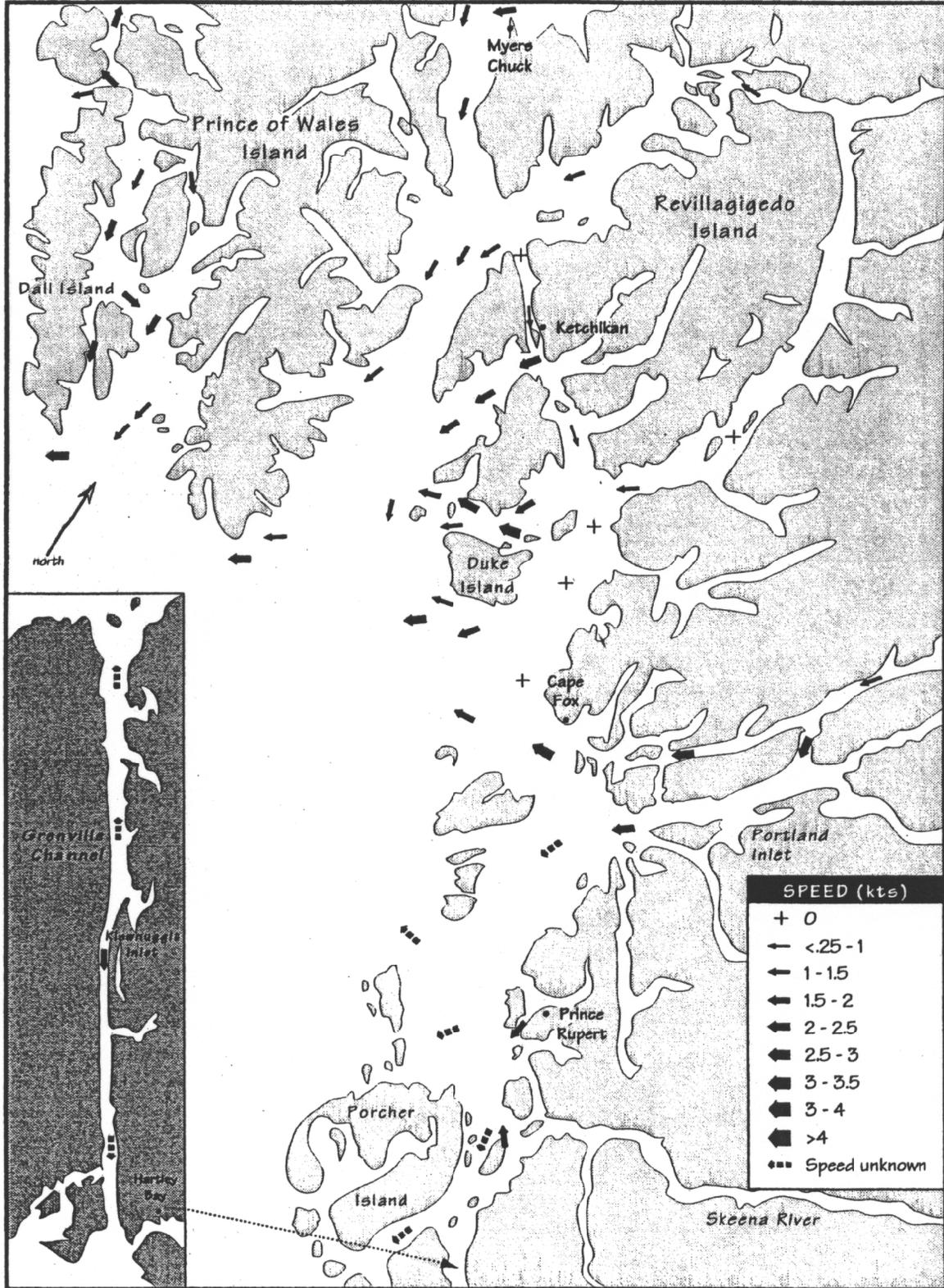


Typical maximum ebb tidal currents - northern SE AK



Typical maximum ebb tidal currents - central SE AK

Washburne, R., 1989, Southeast Alaska Current Atlas, Weatherly Press, Bellevue, WA., 206-881-5212.



Typical maximum ebb tidal currents - southern SE AK