

Figure E-7: North Pacific Current and Precipitation Patterns

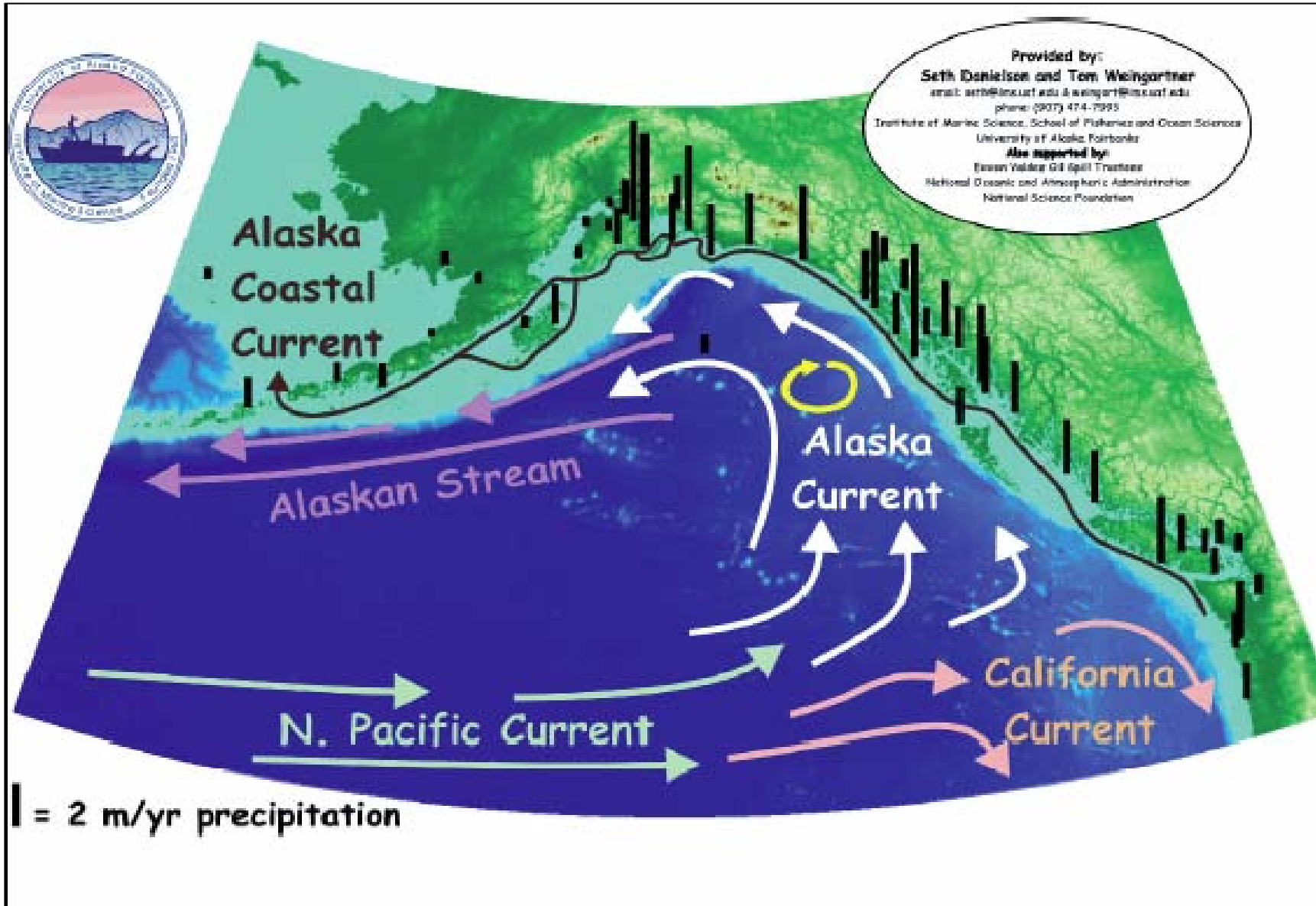
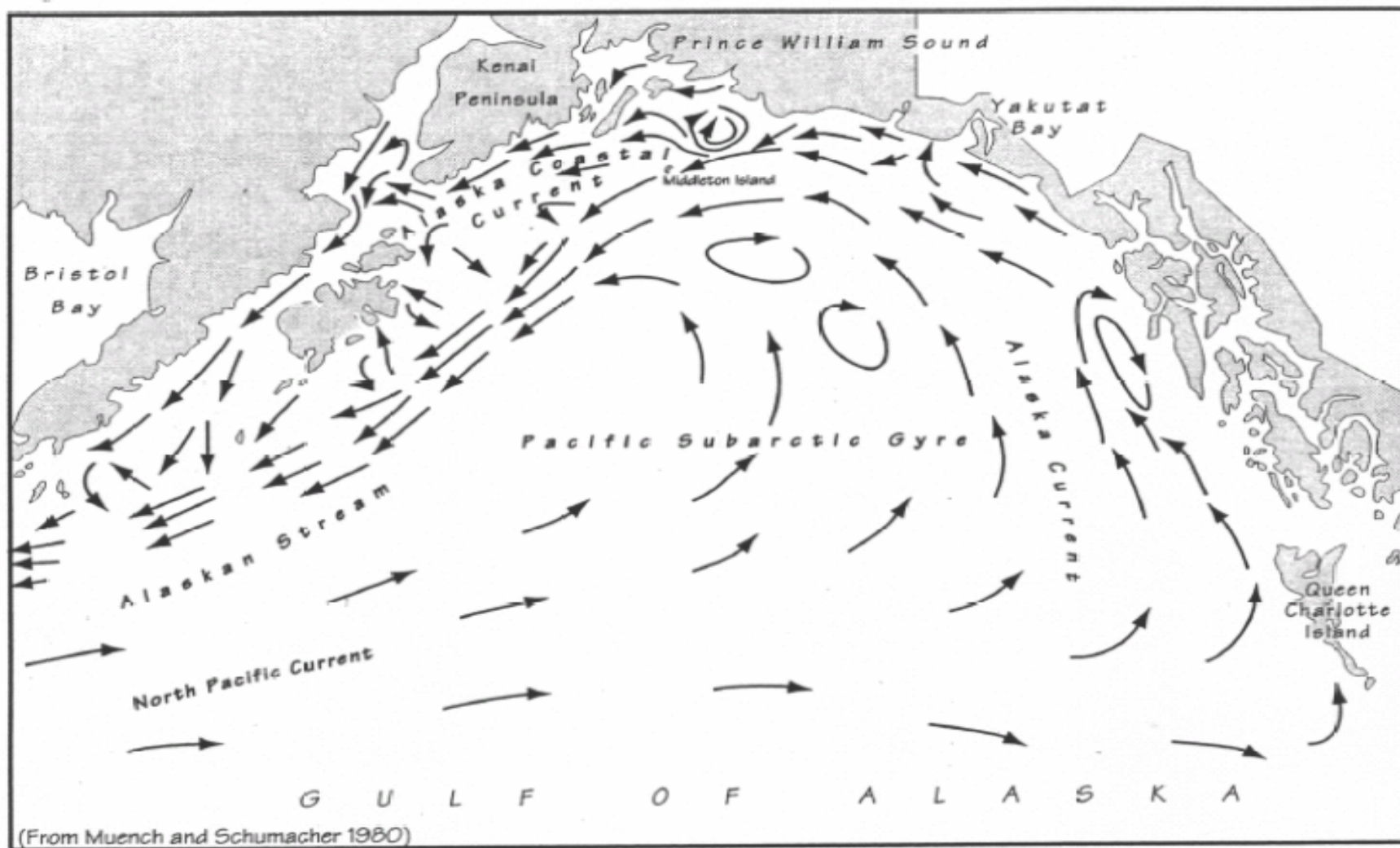


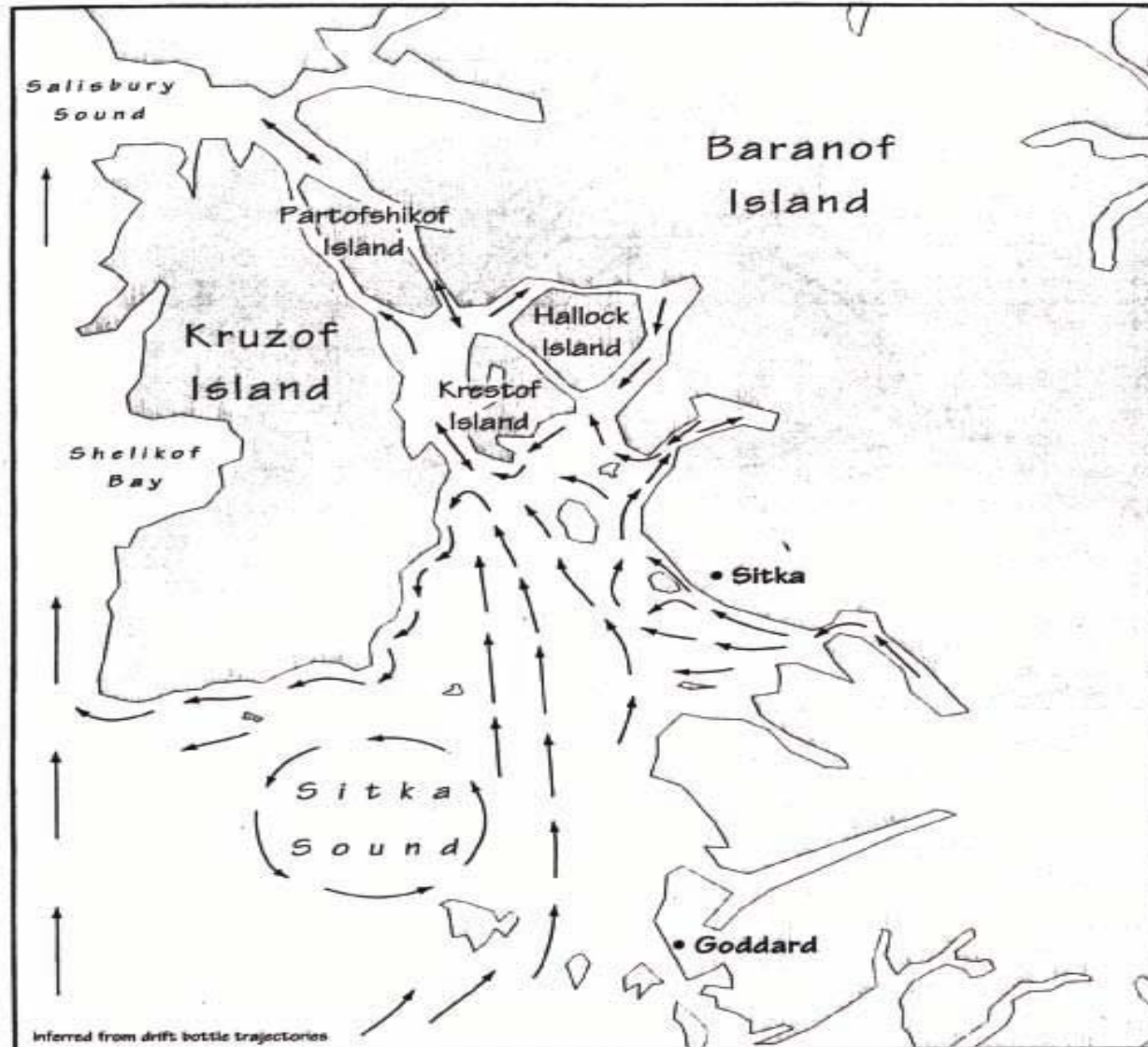
Figure E-8: Net Surface Currents – Gulf of Alaska



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.

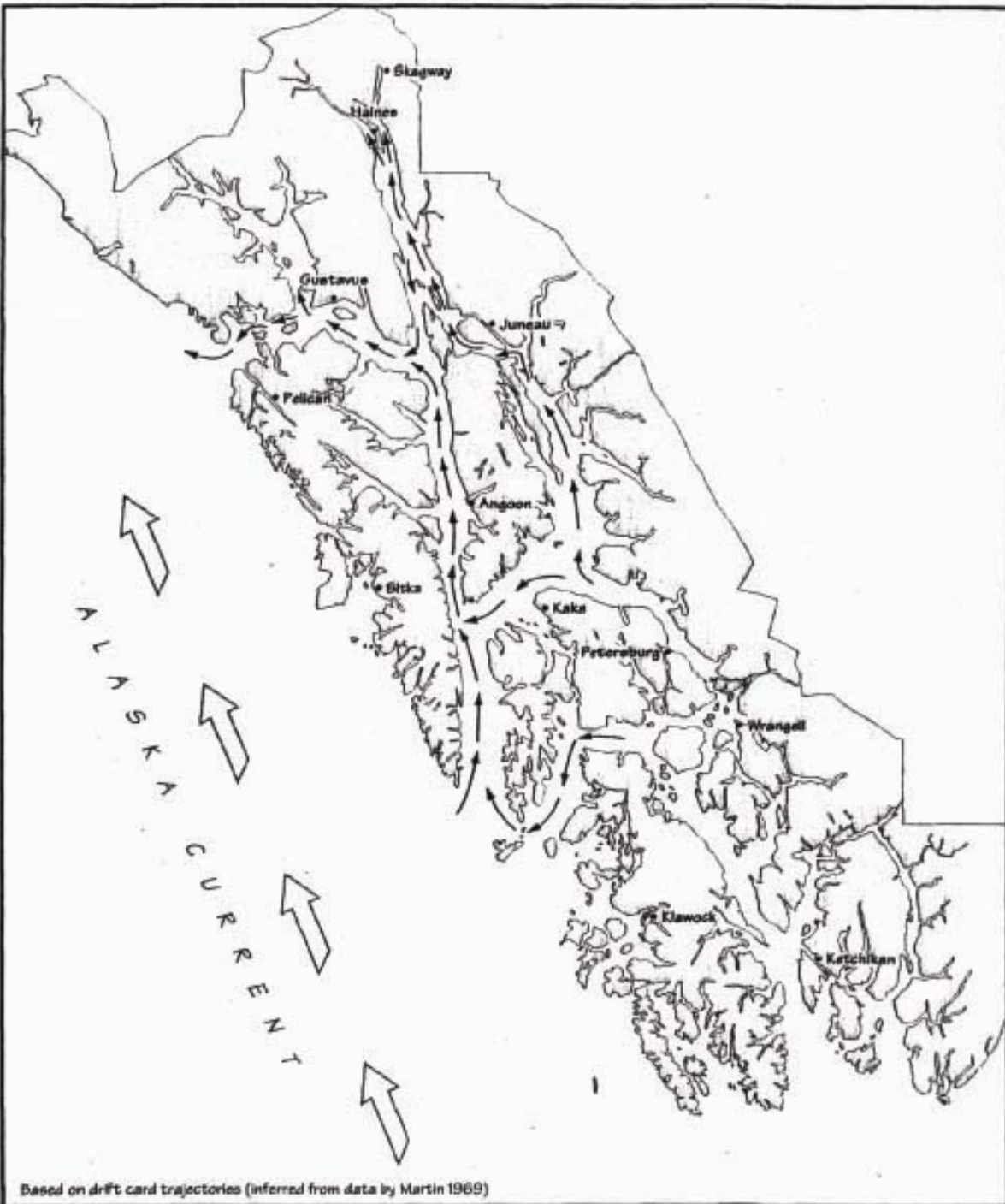
Figure E-10: Net Circulation in Sitka Sound



Net Circulation in Sitka Sound

Sundberg, K.A., 1981, Marine Biology and Circulation Investigations in Sitka Sound, Alaska, ADFG, Habitat Section, Anchorage, AK.

Figure E-11: Surface Currents in Northern Part of Southeast Alaska



Generalized surface currents in northern SE Alaska

Martin, J., 1969, Sea Surface Current Studies in SE Alaska, Spring and Summer 1967, U.S. Fish and Wildlife Service, Auke Bay Alaska.

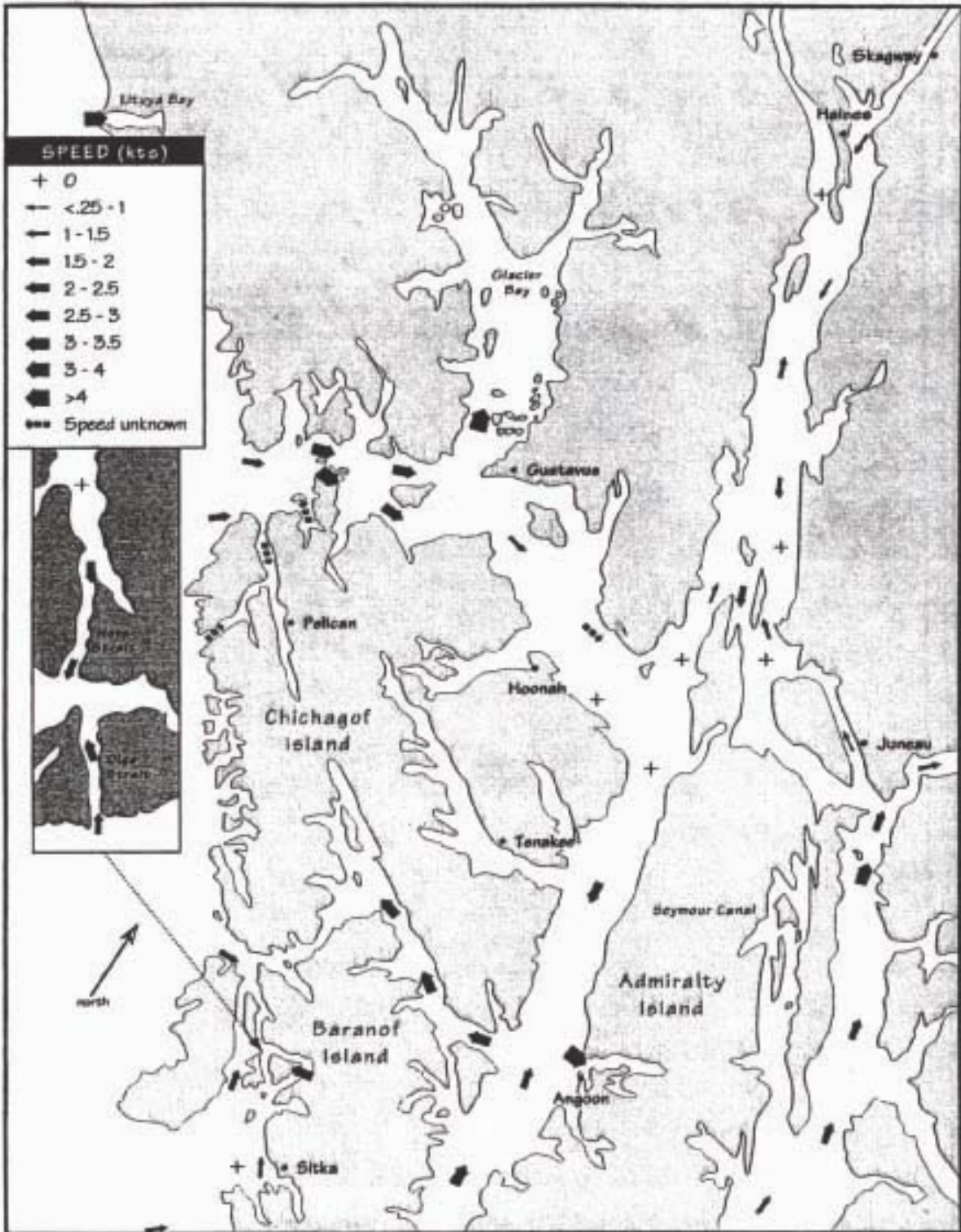
Tidal currents vary considerably throughout the Southeast Subarea. During the spring and summer, freshwater runoff is at its highest. Drastically reduced fresh water runoff in the winter probably produces surface-water intrusion in some estuaries and fjords, which during the summer likely show a net surface outflow.

In southern Chatham Strait between Christian Sound and Frederick Sound, surface water generally circulates northward and southward dependent upon changes in local winds and runoff. In northern Chatham Strait surface circulation is generally north, followed by a westward flow through Icy Strait. Within Lynn Canal surface circulation tends to be northward on the eastern side and southward on the western side, discharging into Icy Strait. (See Figures E-10, E-11, and E-14)

A semi-diurnal tidal flushing takes place throughout Southeast Alaska, and many areas can experience tidal extremes as low as a minus four feet at a low tide to plus twenty feet on the high tidal cycle. Typical tidal heights on the outer, western coasts generally range from 8 to 15 feet, while the inner regions experience tidal heights in the 10 to 25 foot range. The spring high tide levels can be achieved in the northern and southern ends of Southeast Alaska within fifteen minutes of each other. As the incoming tide rushes through the passages, channels and fjords, the inner coastlines will experience high tide levels of 18 to 19 feet or higher. This tidal advance occurs reasonably simultaneously throughout all of Southeast Alaska.

Swift flowing tides, and even standing waves in a few locations, can create navigational problems for some smaller vessels and present even greater challenges for spill response teams acting to contain and recover a fuel spill. The tidal currents vary considerable throughout the Southeast Subarea. The figures below by R. Washburne, 1989, and presented from the "*Southeastern Alaska Oceanographic Conditions*" by John Whitney, NOAA, September, 2001, show the general flow patterns of flood tides and ebb tides in Southeast Alaska. (See Figures E-11 through E-16.)

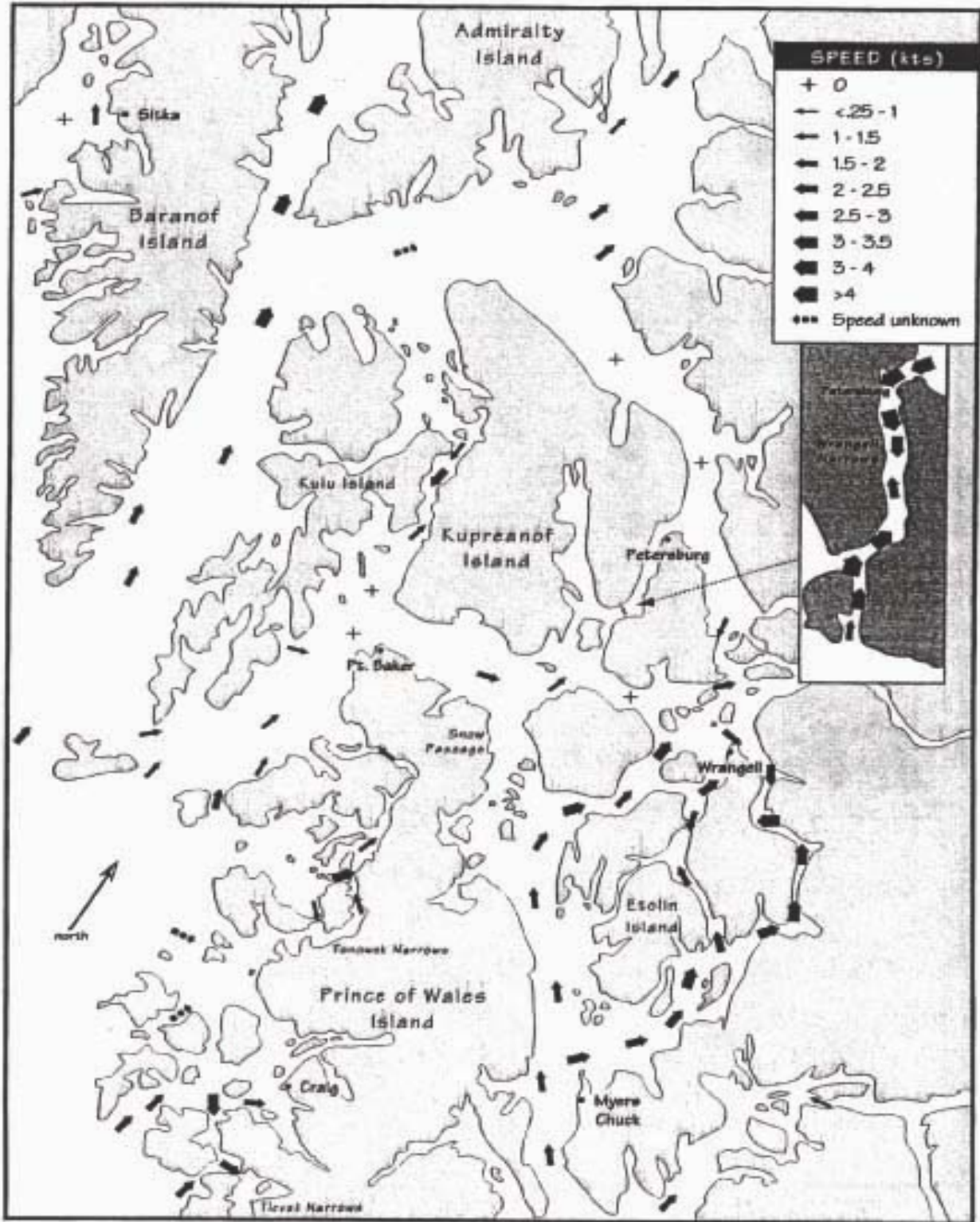
Figure E-12: Flood Tide Currents for northern Southeast Alaska



Typical maximum flood tide currents - northern SE AK

Washburne, R., 1969, Southeast Alaska Current Atlas, Weatherly Press, Bellevue, WA., 206-881-5212.

Figure E-13: Flood Tide Currents for central Southeast Alaska



Typical maximum flood tidal currents - central SE AK

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