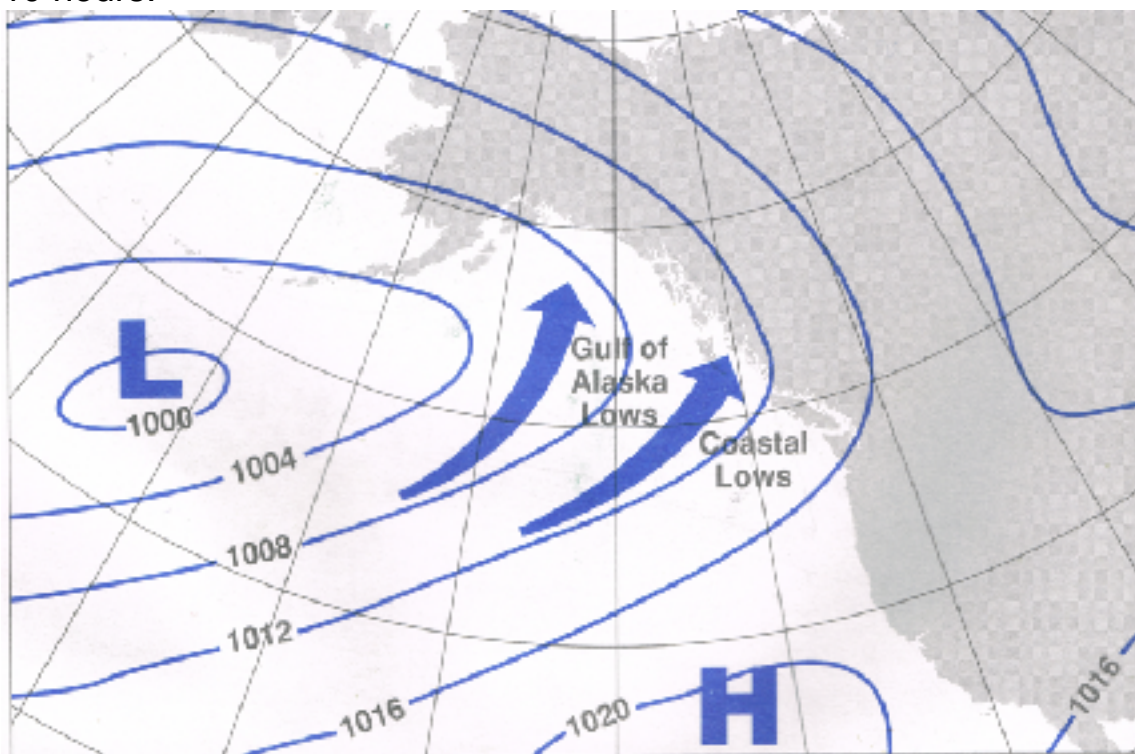


Winter Storms on the BC Coast

Marine hazards are predominantly caused by weather systems; they affect the coast and create strong winds, high seas and heavy rains.

From approximately early October to April, winter storms occur very frequently over the Pacific Northwest. An average of one storm every two days will affect the west coast each month. Winds typically rise to gale force and often storm force winds. Storm to hurricane force winds occur several times per winter on exposed locations.

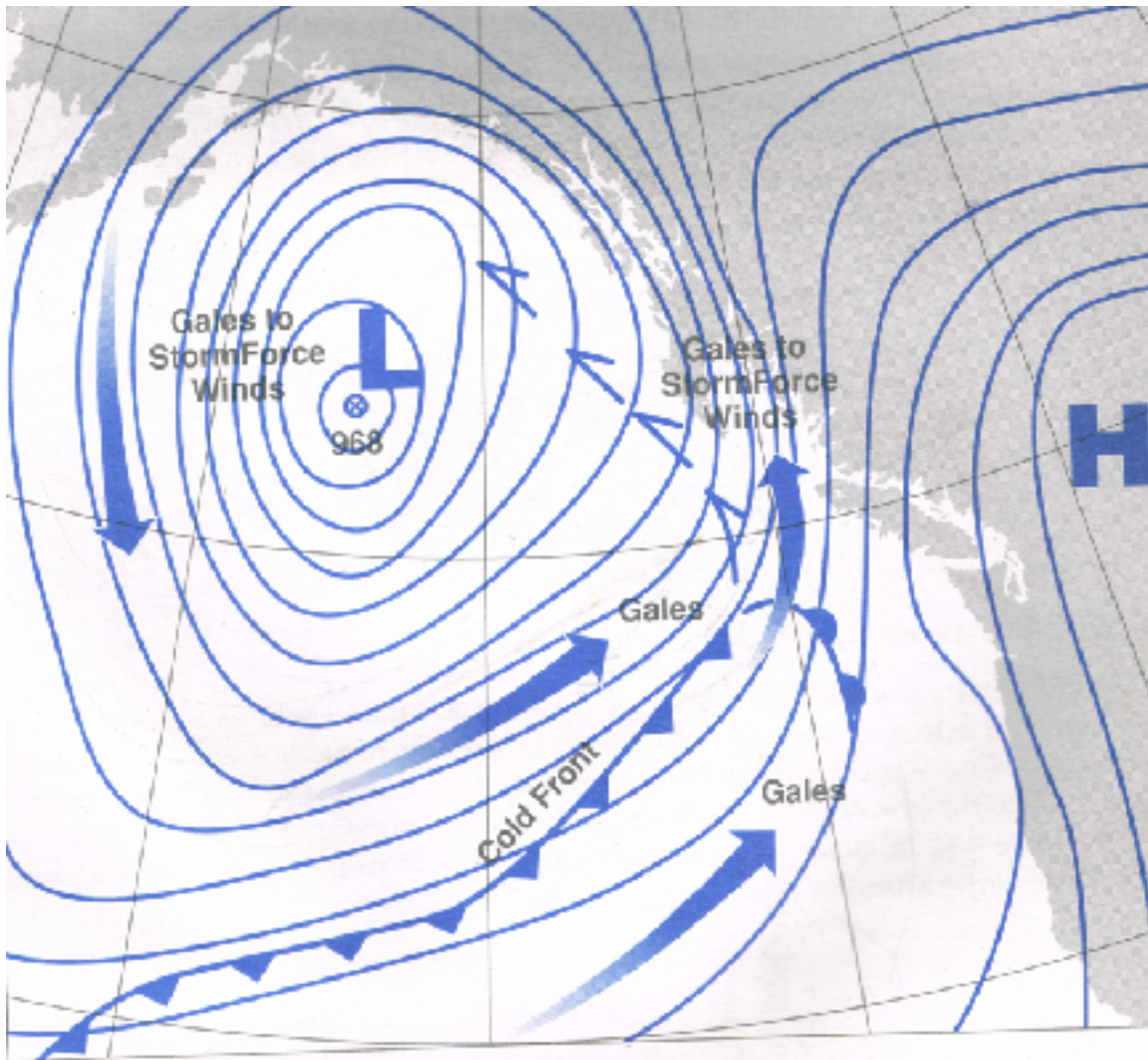
The transfer from the quiet days of summer to winter is often quite dramatic and happens right around the September Equinox. On Sept. 28th 1990 the West Dixon Entrance Buoy reported winds moving from light to 54 knots and seas built from 2.5 to 11.5 meters in 10 hours!



Principal winter storm tracks are superimposed on the January mean sea-level pressure pattern. (Pressure values in millibars)

Winter storms (lows) can regularly deepen below 970 millibars and move NE at speeds of 35 to 40 knots. The low often reaches it's lowest pressure point over the Gulf of Alaska. The front which extents southward from the centre of the low sweeps over the BC coast bringing with it SE Gale to Storm force winds, rains and heavy seas. Coastal Lows usually intensify very quickly just before they move over the BC coastal waters. See the 2nd diagram below.

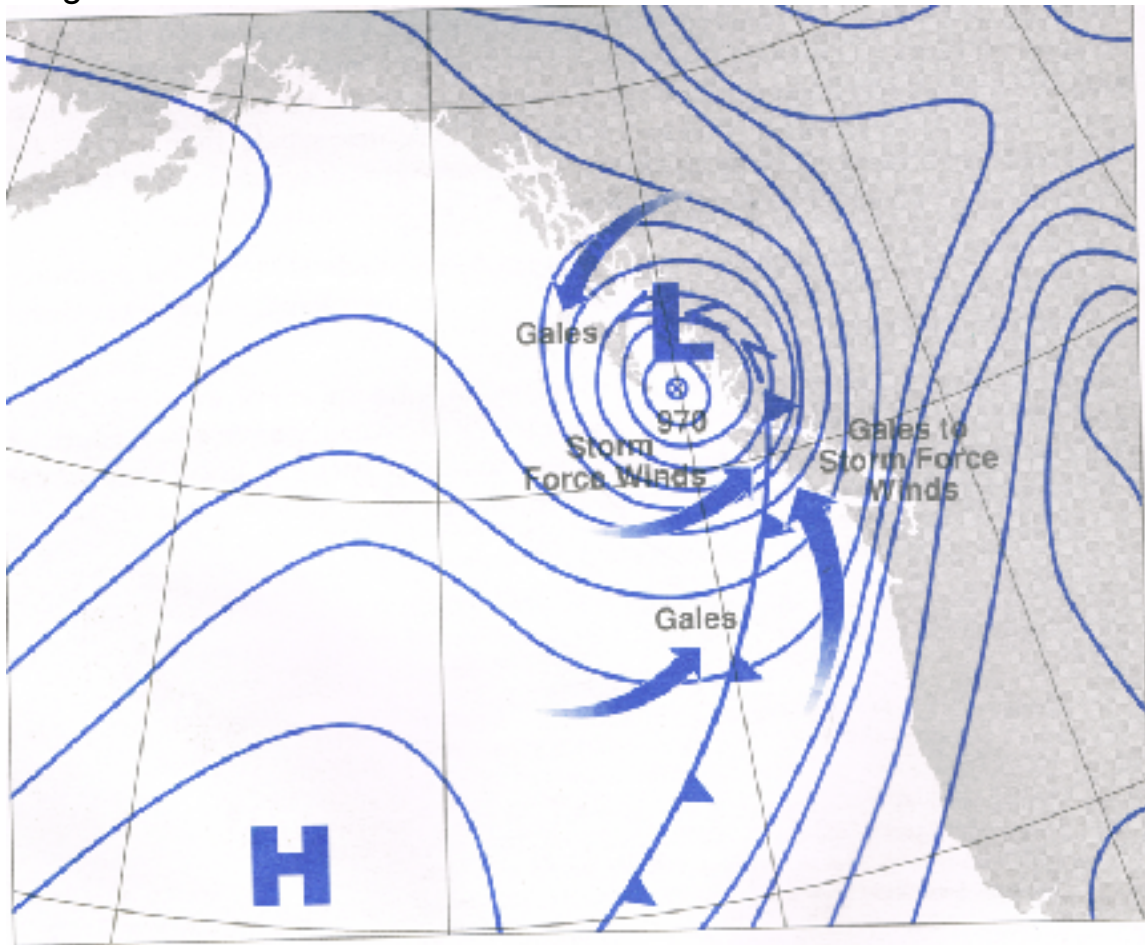
Diagram 1: Deep Winter Low



This sea-level pressure pattern indicates a Gulf of Alaska low with the associated frontal system approaching the B.C. coast. Gale-to-storm-force southeasterly winds are often found just ahead of the front with gale-to-storm-force northerlies just to the west of the low. (Pressure values in millibars)

Coastal Lows: The low intensifies as they quickly move over the BC coast and can change from weak lows to severe storms in as little as 9 hours dropped 3-4 millibars every hour just ahead of the low centre and begin to rapidly approach the BC coast. Strongest winds are E or SE just ahead of the front. Gusts from Gail to Storm force winds can be expected. Coastal lows often move through Queen Charlotte Sounds and over to Haida Gwaii. If the low takes a southern track hitting lower Vancouver Island it will bring heavy winds to the Juan de Fuca and increasing speed through the gap and push right through towards the Georgia Strait and Vancouver. Good time to go surfing in Sooke or more often Jordan River, Sombrio and Port Renfrew. The wake of the storm, in the NW side as it approaches will bring in cleaner waves with larger periods. (This is the space between the peaks).

Diagram 2 Coastal Low



A typical sea-level pressure pattern for a coastal low and associated frontal system, with the winds superimposed.

Friction Effects of Offshore winds/Storms

Every time a storm hits the BC coast there is a convergence of winds caused by the frictional effects of the storm hitting the coast. As a storm gets closer to the coast the mountain ranges of Vancouver Island and Haida Gwaii steer winds to the southeast and reduce their speed because of the friction effects. It is always less windy during a storm along a treed shoreline due to this effect.

As the coastal winds are backed into the SE they converge with the more southerly winds offshore and result in a band of stronger winds and higher seas away from the land. The location varies depending on the strength of the winds but generally 3 – 15NM offshore.

