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Salinity and temperature control the biological, physical, and chemical processes of seawater (Emery and Uchupi, 1972). A study of the tidal and seasonal changes in salinity of the Sprague River tidal inlet was conducted in order to characterize the inlet. In the summer the Sprague River is nearly dry. Thus, precipitation and meltwater can dramatically increase the flow of the river. In the absence of significant fresh water flow, the height of the tide controls the salinity values observed. During low tide, less freshwater is needed to produce salinity changes than during high tide; therefore, smaller changes in tide height can affect salinity. Observations of high salinities, low temperatures and the absence of a salinity variation upstream during high tide indicate that the Sprague River inlet is tide-dominated. Low tide observations generally show salinity decrease upstream. High tide salinity only decreased upstream after exceptionally heavy precipitation increased the freshwater component of the Sprague River.