

Table S1B. Radiocarbon and luminescence ages from the Kalaloch sites. The calibrated age is the median probability calculated in CALIB 7.1 (Stuiver et al., 2019) which is based on IntCal13 (Reimer et al., 2013). As ages discussed in the text are based on different types of dating, i.e., radiocarbon and luminescence (OSL and IRSL), all ages are presented in units of ka (thousands of years before present). Only ages less than 30 ka are shown for the Kalaloch section.

Section name; depth (m)	Method	Lab Code	C-14 or OSL age (yr BP $\pm$ 1 $\sigma$ )	Calibrated age (ka, median and 95% range)	Reference
K1; 3.0	Radiometric C-14	Y-2313	16,700 $\pm$ 160	20.15 (19.74–20.55)	Stuiver, 1969
K2; 3.4	Radiometric C-14	Y2314	17,970 $\pm$ 300	21.70 (21.02–22.42)	Stuiver, 1969
K3; 4.6	Radiometric C-14	Y-2315	18,100 $\pm$ 250	21.92 (21.31–22.46)	Stuiver, 1969
K5; 8.9	AMS C-14	CURL-5575	20,400 $\pm$ 95	24.51 (24.22–24.92)	Ashworth (unpub.)
K5; 9.0	Radiometric C-14	Y-2422	21,450 $\pm$ 300	25.73 (25.15–26.32)	Stuiver, 1969
K5; 9.5	Radiometric C-14	Y-2423	24,300 $\pm$ 300	28.33 (27.78–28.90)	Stuiver, 1969
13.5	Radiometric C-14	Y-2536	34,100 $\pm$ 800	38.56 (36.58–40.33)	Heusser, 1972
15.0	Radiometric C-14	Y-2316	40,800 $\pm$ 1000	44.41 (42.89–46.10)	Stuiver, 1969
15.2	Radiometric C-14	Y-2317	39,800 $\pm$ 1200	43.71 (42.11–45.69)	Stuiver, 1969
15.6	Radiometric C-14	Y-2318	40,200 $\pm$ 1000	43.94 (42.55–45.58)	Stuiver, 1969
16.2	Radiometric C-15	Y-2319	39,000 $\pm$ 1200	43.10 (41.56–45.12)	Stuiver, 1969
16.5	Radiometric C-16	Y-2320	40,000 $\pm$ 1200	43.85 (42.23–45.85)	Stuiver, 1969
16.8	Radiometric C-17	Y-2321	42,700 $\pm$ 1600	46.33 (44.00–49.47)	Stuiver, 1969
17.5	Radiometric C-18	Y-2322	>47,000	–	Stuiver, 1969
18.0	Radiometric C-19	Y-2323	>47,000	–	Stuiver, 1969
28.0	IRSL	USU-906FELD	73,940 $\pm$ 16,900	–	Marshall, 2013
28.1	OSL	USU- 906EBG	77,620 $\pm$ 15,300	–	Marshall, 2013

Heusser, C.J., 1972, Palynology and phytogeographical significance of a late-Pleistocene refugium near Kalaloch, Washington: *Quaternary Research*: v.2(2), p. 189-201, [doi.org/10.1016/0033-5894\(72\)90038-5](https://doi.org/10.1016/0033-5894(72)90038-5).

Marshall, K.J., 2013, Expanded Late Pleistocene glacial chronology for Western Washington, U.S.A and the Wanaka-Hawea Basin, New Zealand, using luminescence dating of glaciofluvial outwash: [M.S. Thesis] Idaho State University, 144 p.

Reimer, P.J., Bard, E., Bayliss, A., Beck, J.W., Blackwell, P.G., Bronk Ramsey, C., Buck, C.E., Cheng, H., Edwards, R.L., Friedrich, M., Grootes, P.M., Guilderson, T.P., Hafliðason, H., Hajdas, I., Hatté, C., Heaton, T.J., Hogg, A.G., Hughen, K.A., Kaiser, K.F., Kromer, B., Manning, S.W., Niu, M., Reimer, R.W., Richards, D.A., Scott, E.M., Southon, J.R., Turney C.S.M., and van der Plicht, J., 2013, IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP: *Radiocarbon*, v.55(4), p. 1869-1887, [doi: 10.2458/azu\\_js\\_rc.55.16947](https://doi.org/10.2458/azu_js_rc.55.16947).

Stuiver, M., 1969, Yale natural radiocarbon measurements IX. *Radiocarbon* 11, 545-658.

Stuiver, M., Reimer, P.J., and Reimer, R.W., 2019, CALIB 7.1 [WWW program], <http://calib.org> (accessed October 2019).