Plot("punaluu-ahupuaa-christen.oxcal")

 {

 Curve("Atmospheric","intcal20.14c");

 Outlier\_Model("Christen", N(0,2), 0, "s");

 Sequence("Hawaii colonization")

 {

 Boundary("Start");

 Phase("Pre-colonization")

 {

 R\_Date("Beta-83313", 1120, 60)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Wk-15982", 993, 45)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Discovery (2022)");

 Phase("Post-colonization")

 {

 C\_Date("KOU CS-5a", 1099, 8);

 R\_Date("Wk-19312", 568, 38)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Wk-19313", 463, 31)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-135125", 440, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-42172", 865, 80)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-310824", 430, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-343212", 690, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-5613", 600, 110)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("NOSAMS-0809-26", 690, 35)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-339778", 570, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-208143", 580, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-101871", 720, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-101872", 670, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-260904", 580, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-138980", 440, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-150615", 730, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-233042", 440, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-150620", 420, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-251247", 450, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Wk-19311", 781, 38)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Wk-19310", 696, 35)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-135126", 640, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-260905", 400, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-45363", 1060, 80)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-28136", 840, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-28135", 650, 40)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("CAMS-25560", 1030, 60)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("CAMS-26396", 990, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("CAMS-25561", 680, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("SR-5081", 460, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("SR-5085", 650, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("SR-5080", 740, 50)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("SR-5082", 990, 130)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("End");

 };

 Phase("I. batatas")

 {

 Date("=Beta-208143");

 First("Ipomoea batatas");

 };

 Sequence("Punaluu Loʻi")

 {

 Date("=Discovery (2022)");

 Phase("Loʻi Infrastructural Construction")

 {

 Sequence("Trench 1 and 2")

 {

 Boundary("Trench 1/2 Start");

 R\_Date("Beta-602309", 800, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 1 Lower Loʻi Wall Construction");

 Sequence("Trench 2")

 {

 Phase()

 {

 R\_Date("Beta-605045", 580, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-302308", 540, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Trench 2 Surface Loʻi Wall Construction");

 };

 Boundary("Trench 1 Surface Loʻi Wall Construction");

 };

 Sequence("Trench 8")

 {

 R\_Date("Beta-602312", 630, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 8 Early Loʻi Wall Construction");

 R\_Date("Beta-411588", 150, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("STP 2 Loʻi Retaining Wall Construction");

 };

 Sequence("Trench 9")

 {

 Boundary("Trench 9 Start");

 R\_Date("Beta-602313", 600, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 9 Lower Loʻi Wall Construction");

 R\_Date("Beta-602311", 440, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 9 Upper Loʻi Wall Construction");

 };

 Sequence("Trench 3")

 {

 Boundary("Trench 3 Start");

 Phase("Trench 3 TPQ")

 {

 R\_Date("Beta-605047", 540, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-605044", 570, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Trench 3 Loʻi Retaining Wall Construction");

 };

 Sequence("Trench 7")

 {

 Boundary("Trench 7 Alluvial Loʻi Alignment");

 R\_Date("Beta-620796", 620, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-605046", 690, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-602310", 340, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 7 Surface Loʻi Wall Construction");

 };

 Sequence("Trench 4")

 {

 Boundary("Trench 4 Start");

 R\_Date("Beta-620794", 340, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 4 Surface Loʻi Wall Construction");

 };

 Sequence("Trench 6")

 {

 Boundary("Trench 6 Start");

 R\_Date("Beta-620795", 560, 30)

 {

 Outlier("Christen", 0.1);

 };

 Boundary("Trench 6 Surface Loʻi Wall Construction");

 };

 };

 C\_Date(1950, 1);

 };

 Phase("Hillslope Infrastructure Construction")

 {

 Sequence("Feature B-B")

 {

 Date("=Discovery (2022)");

 Boundary("Feature B-B Start");

 Phase("Feature B-B TPQ")

 {

 R\_Date("Beta-514259", 610, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature B-B Construction");

 Phase("Feature B-B TAQ")

 {

 Date("=Feature 33 Construction");

 };

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature 33")

 {

 Date("=Discovery (2022)");

 Boundary("Feature 33 Start");

 Phase("Feature 33 TPQ")

 {

 R\_Date("Beta-514258", 390, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature 33 Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature D")

 {

 Date("=Discovery (2022)");

 Boundary("Feature D Start");

 Phase("Feature D TPQ")

 {

 R\_Date("Beta-556928", 350, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature D Construction");

 Phase("Feature D TAQ")

 {

 Date("=Feature U Construction");

 Date("=-2927 Paving Construction");

 };

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("-2927 Paving")

 {

 Date("=Discovery (2022)");

 Boundary("-2927 Paving Start");

 Phase("-2927 Paving TPQ")

 {

 R\_Date("Beta-556929", 970, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-556930", 690, 30)

 {

 Outlier("Christen", 0.1);

 };

 Date("=Feature D Construction");

 };

 Boundary("-2927 Paving Construction");

 Phase("-2927 Paving TAQ")

 {

 R\_Date("Beta-548831", 340, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-548832", 380, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-548837", 260, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature H-D South")

 {

 Date("=Discovery (2022)");

 Boundary("Feature H-D South Start");

 Phase("Feature H-D South TPQ")

 {

 R\_Date("Beta-514256", 270, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-514257", 450, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature H-D South Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature H-D North")

 {

 Date("=Discovery (2022)");

 Boundary("Feature H-D North Start");

 Phase("Feature H-D North TPQ")

 {

 R\_Date("Beta-514260", 300, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature H-D North Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature J")

 {

 Date("=Discovery (2022)");

 Boundary("Feature J Start");

 Phase("Feature J TPQ")

 {

 R\_Date("Beta-411591", 310, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature J Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("N Heiau Wall")

 {

 Date("=Discovery (2022)");

 Boundary("N Heiau Wall Start");

 Phase("N Heiau Wall TPQ")

 {

 R\_Date("Beta-411589", 210, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("N Heiau Wall Construction");

 Phase("N Heiau Wall TAQ")

 {

 Date("=Feature T Construction");

 Date("=Feature U Construction");

 C\_Date("U-Th Date", 1783, 4);

 };

 Before("AD 1819")

 {

 C\_Date("Religious Disruption", 1819, 0.01);

 };

 };

 Sequence("Feature U")

 {

 Date("=Discovery (2022)");

 Boundary("Feature U Start");

 Phase("Feature U TPQ")

 {

 Sequence("Layer II/III (TP6)")

 {

 Phase("Layer III")

 {

 R\_Date("Beta-548836", 320, 30);

 };

 Phase("Layer II")

 {

 R\_Date("Beta-548833", 330, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-548834", 350, 30)

 {

 Outlier("Christen", 0.1);

 };

 R\_Date("Beta-548835", 330, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 };

 Date("=N Heiau Wall Construction");

 Date("=Feature D Construction");

 };

 Boundary("Feature U Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature T")

 {

 Date("=Discovery (2022)");

 Boundary("Feature T Start");

 Phase("Feature T TPQ")

 {

 R\_Date("Beta-556931", 160, 30)

 {

 Outlier("Christen", 0.1);

 };

 Date("=N Heiau Wall Construction");

 };

 Boundary("Feature T Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 Sequence("Feature O")

 {

 Date("=Discovery (2022)");

 Boundary("Feature O Start");

 Phase("Feature O TPQ")

 {

 R\_Date("Beta-411590", 110, 30)

 {

 Outlier("Christen", 0.1);

 };

 };

 Boundary("Feature O Construction");

 Before("AD 1848")

 {

 C\_Date(1848, 0.01);

 };

 };

 };

 Sequence("Depositional regime")

 {

 Boundary("Alluvium start");

 Phase("Alluvium")

 {

 Date("=Beta-602309");

 Date("=Beta-605045");

 Date("=Beta-620795");

 };

 Boundary("Regime change");

 Phase("Agriculture")

 {

 Date("=Beta-602308");

 Date("=Beta-602312");

 Date("=Beta-602311");

 Date("=Beta-605047");

 Date("=Beta-605044");

 Date("=Beta-620796");

 Date("=Beta-605046");

 Date("=Beta-602313");

 Date("=Beta-411588");

 Date("=Beta-602310");

 Date("=Beta-620794");

 };

 };

 MCMC\_Sample("punaluu-ahupuaa-christen-4.csv", 20, 200000)

 {

 Phase("Report")

 {

 Date("=Ipomoea batatas");

 Date("=Discovery (2022)");

 Date("=Regime change");

 Date("=Trench 1 Lower Loʻi Wall Construction");

 Date("=Trench 2 Surface Loʻi Wall Construction");

 Date("=Trench 1 Surface Loʻi Wall Construction");

 Date("=Trench 8 Early Loʻi Wall Construction");

 Date("=Trench 9 Lower Loʻi Wall Construction");

 Date("=Trench 9 Upper Loʻi Wall Construction");

 Date("=Trench 3 Loʻi Retaining Wall Construction");

 Date("=Trench 7 Alluvial Loʻi Alignment");

 Date("=Trench 7 Surface Loʻi Wall Construction");

 Date("=STP 2 Loʻi Retaining Wall Construction");

 Date("=Trench 4 Surface Loʻi Wall Construction");

 Date("=Trench 6 Surface Loʻi Wall Construction");

 Date("=Feature B-B Construction");

 Date("=Feature 33 Construction");

 Date("=Feature D Construction");

 Date("=Feature H-D South Construction");

 Date("=Feature H-D North Construction");

 Date("=Feature J Construction");

 Date("=N Heiau Wall Construction");

 Date("=Feature U Construction");

 Date("=Feature T Construction");

 Date("=Feature O Construction");

 };

 };

 };