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");

};

};

};