**Legacy Radiocarbon Data, Bayesian Chronological Modeling, and the Evaluation of Alternative Historical Frameworks: A Case Study from the Southeastern United States**

*Supplemental Materials: Code to Reproduce Bayesian Models in OxCal v. 4.3*

The following code was used to produce the fourteen models considered in the article “Legacy Radiocarbon Data, Bayesian Chronological Modeling, and the Evaluation of Alternative Historical Frameworks: A Case Study from the Southeastern United States.” The parameters for each model are defined briefly in the captions, but are described in more detail in the text of the article itself. All code can be directly copied and pasted in Oxcal v. 4.3 to yield the model results presented in the article. All radiocarbon data used are built into the following code. Information and measurements associated with each radiocarbon determination can be found in Supplemental Table 1.

**Supplemental Code 1.** Model specifications: All determinations included; no charcoal outlier model applied; simple boundaries implemented; sequential phase model.

Plot()

{

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75);

R\_Date("Beta-94644", 1230, 50);

R\_Date("Beta-82594", 1150, 70);

R\_Date("GX-2825", 1345, 85);

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100);

Span("Late Woodland Span");

};

Boundary("End Late Woodland");

Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60);

R\_Date("UGA-14547", 860, 40);

R\_Date("UGA-14548", 790, 40);

R\_Date("Beta-94649", 980, 60);

R\_Date("Beta-98605", 1110, 60);

R\_Date("Beta-98606", 960, 60);

R\_Date("UGA-14545", 1040, 60);

R\_Date("UGA-14546", 1060, 60);

R\_Date("Beta-94647", 1150, 70);

R\_Date("Beta-41374", 970, 90);

R\_Date("Beta-53013", 1080, 70);

R\_Date("Beta-52428", 980, 90);

R\_Date("Beta-52429", 1220, 90);

R\_Date("UGA-55", 1022, 40);

R\_Date("UGA-14549", 980, 50);

R\_Date("UM-1675",970,105);

R\_Date("UGA-14550",790,180);

R\_Date("Beta-52427",1250,100);

Span("Woodstock Span");

};

Boundary("End Woodstock");

Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40);

R\_Date("Beta-145489", 1000, 40);

R\_Date("Beta-145490", 1080, 40);

R\_Date("UGA-70", 905, 50);

R\_Date("Beta-144162", 830, 40);

R\_Date("Beta-144163", 850, 40);

R\_Date("Beta-144164", 810, 40);

R\_Date("Beta-144811", 820, 40);

R\_Date("Beta-145491", 900, 40);

R\_Date("Beta-257893", 840, 40);

R\_Date("Beta-257895", 640, 40);

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40);

R\_Date("Beta-260069", 790, 40);

R\_Date("Beta-260070", 710, 40);

R\_Date("M-1064",850,150);

R\_Date("Beta-134792",760,60);

R\_Date("Beta-134793",920,70);

R\_Date("UGA-328",945,140);

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70);

R\_Date("UGA-143", 660, 70);

R\_Date("UGA-509", 890, 50);

R\_Date("UGA-215", 785, 55);

R\_Date("UGA-213", 670, 60);

R\_Date("UGA-510", 730, 60);

R\_Date("UGA-224", 670, 70);

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70);

R\_Date("Beta-41373", 930, 90);

R\_Date("UGA-504",1300,220);

R\_Date("M-1062",450,200);

R\_Date("M-1061",670,200);

R\_Date("M-1060",225,150);

R\_Date("M-402",725,200);

R\_Date("M-542",910,200);

Span("Wilbanks Span");

};

Boundary("End Wilbanks");

Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70);

R\_Date("UGA-591", 120, 65);

R\_Date("UGA-307", 540, 55);

R\_Date("UGA-208", 425, 55);

R\_Date("UGA-205", 500, 55);

R\_Date("UGA-210", 395, 65);

R\_Date("UGA-403", 535, 65);

R\_Date("UGA-56", 286, 45);

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 2.** Model specifications: All determinations included; no charcoal outlier model applied; simple boundaries implemented; contiguous phase model except for sequential boundaries between the Etowah and Wilbanks phases.

Plot()

{

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75);

R\_Date("Beta-94644", 1230, 50);

R\_Date("Beta-82594", 1150, 70);

R\_Date("GX-2825", 1345, 85);

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100);

Span("Late Woodland Span");

};

Boundary("Transition Late Woodland/Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60);

R\_Date("UGA-14547", 860, 40);

R\_Date("UGA-14548", 790, 40);

R\_Date("Beta-94649", 980, 60);

R\_Date("Beta-98605", 1110, 60);

R\_Date("Beta-98606", 960, 60);

R\_Date("UGA-14545", 1040, 60);

R\_Date("UGA-14546", 1060, 60);

R\_Date("Beta-94647", 1150, 70);

R\_Date("Beta-41374", 970, 90);

R\_Date("Beta-53013", 1080, 70);

R\_Date("Beta-52428", 980, 90);

R\_Date("Beta-52429", 1220, 90);

R\_Date("UGA-55", 1022, 40);

R\_Date("UGA-14549", 980, 50);

R\_Date("UM-1675",970,105);

R\_Date("UGA-14550",790,180);

R\_Date("Beta-52427",1250,100);

Span("Woodstock Span");

};

Boundary("Transition Woodstock/Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40);

R\_Date("Beta-145489", 1000, 40);

R\_Date("Beta-145490", 1080, 40);

R\_Date("UGA-70", 905, 50);

R\_Date("Beta-144162", 830, 40);

R\_Date("Beta-144163", 850, 40);

R\_Date("Beta-144164", 810, 40);

R\_Date("Beta-144811", 820, 40);

R\_Date("Beta-145491", 900, 40);

R\_Date("Beta-257893", 840, 40);

R\_Date("Beta-257895", 640, 40);

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40);

R\_Date("Beta-260069", 790, 40);

R\_Date("Beta-260070", 710, 40);

R\_Date("M-1064",850,150);

R\_Date("Beta-134792",760,60);

R\_Date("Beta-134793",920,70);

R\_Date("UGA-328",945,140);

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70);

R\_Date("UGA-143", 660, 70);

R\_Date("UGA-509", 890, 50);

R\_Date("UGA-215", 785, 55);

R\_Date("UGA-213", 670, 60);

R\_Date("UGA-510", 730, 60);

R\_Date("UGA-224", 670, 70);

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70);

R\_Date("Beta-41373", 930, 90);

R\_Date("UGA-504",1300,220);

R\_Date("M-1062",450,200);

R\_Date("M-1061",670,200);

R\_Date("M-1060",225,150);

R\_Date("M-402",725,200);

R\_Date("M-542",910,200);

Span("Wilbanks Span");

};

Boundary("Transition Wilbanks/Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70);

R\_Date("UGA-591", 120, 65);

R\_Date("UGA-307", 540, 55);

R\_Date("UGA-208", 425, 55);

R\_Date("UGA-205", 500, 55);

R\_Date("UGA-210", 395, 65);

R\_Date("UGA-403", 535, 65);

R\_Date("UGA-56", 286, 45);

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 3.** Model specifications: Determinations with error ranges greater than or equal to 150 years excluded; no charcoal outlier model applied; simple boundaries implemented; sequential phase model.

Plot()

{

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75);

R\_Date("Beta-94644", 1230, 50);

R\_Date("Beta-82594", 1150, 70);

R\_Date("GX-2825", 1345, 85);

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100);

Span("Late Woodland Span");

};

Boundary("End Late Woodland");

Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60);

R\_Date("UGA-14547", 860, 40);

R\_Date("UGA-14548", 790, 40);

R\_Date("Beta-94649", 980, 60);

R\_Date("Beta-98605", 1110, 60);

R\_Date("Beta-98606", 960, 60);

R\_Date("UGA-14545", 1040, 60);

R\_Date("UGA-14546", 1060, 60);

R\_Date("Beta-94647", 1150, 70);

R\_Date("Beta-41374", 970, 90);

R\_Date("Beta-53013", 1080, 70);

R\_Date("Beta-52428", 980, 90);

R\_Date("Beta-52429", 1220, 90);

R\_Date("UGA-55", 1022, 40);

R\_Date("UGA-14549", 980, 50);

R\_Date("UM-1675",970,105);

R\_Date("Beta-52427",1250,100);

Span("Woodstock Span");

};

Boundary("End Woodstock");

Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40);

R\_Date("Beta-145489", 1000, 40);

R\_Date("Beta-145490", 1080, 40);

R\_Date("UGA-70", 905, 50);

R\_Date("Beta-144162", 830, 40);

R\_Date("Beta-144163", 850, 40);

R\_Date("Beta-144164", 810, 40);

R\_Date("Beta-144811", 820, 40);

R\_Date("Beta-145491", 900, 40);

R\_Date("Beta-257893", 840, 40);

R\_Date("Beta-257895", 640, 40);

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40);

R\_Date("Beta-260069", 790, 40);

R\_Date("Beta-260070", 710, 40);

R\_Date("Beta-134792",760,60);

R\_Date("Beta-134793",920,70);

R\_Date("UGA-328",945,140);

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70);

R\_Date("UGA-143", 660, 70);

R\_Date("UGA-509", 890, 50);

R\_Date("UGA-215", 785, 55);

R\_Date("UGA-213", 670, 60);

R\_Date("UGA-510", 730, 60);

R\_Date("UGA-224", 670, 70);

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70);

R\_Date("Beta-41373", 930, 90);

Span("Wilbanks Span");

};

Boundary("End Wilbanks");

Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70);

R\_Date("UGA-591", 120, 65);

R\_Date("UGA-307", 540, 55);

R\_Date("UGA-208", 425, 55);

R\_Date("UGA-205", 500, 55);

R\_Date("UGA-210", 395, 65);

R\_Date("UGA-403", 535, 65);

R\_Date("UGA-56", 286, 45);

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 4.** Model specifications: Determinations with error ranges greater than or equal to 150 years excluded; no charcoal outlier model applied; simple boundaries implemented; contiguous phase model except for sequential boundaries between the Etowah and Wilbanks phases.

Plot()

{

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75);

R\_Date("Beta-94644", 1230, 50);

R\_Date("Beta-82594", 1150, 70);

R\_Date("GX-2825", 1345, 85);

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100);

Span("Late Woodland Span");

};

Boundary("Transition Late Woodland/Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60);

R\_Date("UGA-14547", 860, 40);

R\_Date("UGA-14548", 790, 40);

R\_Date("Beta-94649", 980, 60);

R\_Date("Beta-98605", 1110, 60);

R\_Date("Beta-98606", 960, 60);

R\_Date("UGA-14545", 1040, 60);

R\_Date("UGA-14546", 1060, 60);

R\_Date("Beta-94647", 1150, 70);

R\_Date("Beta-41374", 970, 90);

R\_Date("Beta-53013", 1080, 70);

R\_Date("Beta-52428", 980, 90);

R\_Date("Beta-52429", 1220, 90);

R\_Date("UGA-55", 1022, 40);

R\_Date("UGA-14549", 980, 50);

R\_Date("UM-1675",970,105);

R\_Date("Beta-52427",1250,100);

Span("Woodstock Span");

};

Boundary("Transition Woodstock/Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40);

R\_Date("Beta-145489", 1000, 40);

R\_Date("Beta-145490", 1080, 40);

R\_Date("UGA-70", 905, 50);

R\_Date("Beta-144162", 830, 40);

R\_Date("Beta-144163", 850, 40);

R\_Date("Beta-144164", 810, 40);

R\_Date("Beta-144811", 820, 40);

R\_Date("Beta-145491", 900, 40);

R\_Date("Beta-257893", 840, 40);

R\_Date("Beta-257895", 640, 40);

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40);

R\_Date("Beta-260069", 790, 40);

R\_Date("Beta-260070", 710, 40);

R\_Date("Beta-134792",760,60);

R\_Date("Beta-134793",920,70);

R\_Date("UGA-328",945,140);

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70);

R\_Date("UGA-143", 660, 70);

R\_Date("UGA-509", 890, 50);

R\_Date("UGA-215", 785, 55);

R\_Date("UGA-213", 670, 60);

R\_Date("UGA-510", 730, 60);

R\_Date("UGA-224", 670, 70);

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70);

R\_Date("Beta-41373", 930, 90);

Span("Wilbanks Span");

};

Boundary("Transition Wilbanks/Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70);

R\_Date("UGA-591", 120, 65);

R\_Date("UGA-307", 540, 55);

R\_Date("UGA-208", 425, 55);

R\_Date("UGA-205", 500, 55);

R\_Date("UGA-210", 395, 65);

R\_Date("UGA-403", 535, 65);

R\_Date("UGA-56", 286, 45);

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 5.** Model specifications: All determinations included; charcoal outlier model applied; simple boundaries implemented; sequential phase model.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Boundary("End Late Woodland");

Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14550",790,180);

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Boundary("End Woodstock");

Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1064",850,150)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-504",1300,220)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1062",450,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1061",670,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1060",225,150);

R\_Date("M-402",725,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-542",910,200)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Boundary("End Wilbanks");

Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 6.** Model specifications: All determinations included; charcoal outlier model applied; simple boundaries implemented; contiguous phase model except for sequential boundaries between the Etowah and Wilbanks phases.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Boundary("Transition Late Woodland/Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14550",790,180);

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Boundary("Transition Woodstock/Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1064",850,150)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-504",1300,220)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1062",450,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1061",670,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-1060",225,150);

R\_Date("M-402",725,200)

{

Outlier("Charcoal", 1);

};

R\_Date("M-542",910,200)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Boundary("Transition Wilbanks/Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 7.** Model specifications: Determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; simple boundaries implemented; sequential phase model.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Boundary("End Late Woodland");

Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Boundary("End Woodstock");

Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Boundary("End Wilbanks");

Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 8.** Model specifications: Determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; simple boundaries implemented; contiguous phase model except for sequential boundaries between the Etowah and Wilbanks phases.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Boundary("Transition Late Woodland/Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Boundary("Transition Woodstock/Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Boundary("End Etowah");

Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Boundary("Transition Wilbanks/Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Boundary("End Lamar");

};

};

**Supplemental Code 9.** Model specifications: Determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented; overlapping phase model.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Phase()

{

Sequence()

{

Sigma\_Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Sigma\_Boundary("End Late Woodland");

};

Sequence()

{

Sigma\_Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Sigma\_Boundary("End Woodstock");

};

Sequence()

{

Sigma\_Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Sigma\_Boundary("End Etowah");

};

Sequence()

{

Sigma\_Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Sigma\_Boundary("End Wilbanks");

};

Sequence()

{

Sigma\_Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Sigma\_Boundary("End Lamar");

};

};

};

**Supplemental Code 10.** Model specifications: Single-phase model for the Late Woodland phase; determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Sigma\_Boundary("Start Late Woodland");

Phase("Late Woodland")

{

R\_Date("UGA-2393", 1250, 75)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94644", 1230, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-82594", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("GX-2825", 1345, 85)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-228934",1290,100);

R\_Date("GX-2826",1195,100)

{

Outlier("Charcoal", 1);

};

Span("Late Woodland Span");

};

Sigma\_Boundary("End Late Woodland");

};

};

**Supplemental Code 11.** Model specifications: Single-phase model for the Woodstock phase; determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Sigma\_Boundary("Start Woodstock");

Phase("Woodstock")

{

R\_Date("UGA-5375", 1160, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14547", 860, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14548", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94649", 980, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98605", 1110, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-98606", 960, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14545", 1040, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14546", 1060, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-94647", 1150, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-53013", 1080, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52428", 980, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52429", 1220, 90)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-55", 1022, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-14549", 980, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UM-1675",970,105)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-52427",1250,100)

{

Outlier("Charcoal", 1);

};

Span("Woodstock Span");

};

Sigma\_Boundary("End Woodstock");

};

};

**Supplemental Code 12.** Model specifications: Single-phase model for the Etowah phase; determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Sigma\_Boundary("Start Etowah");

Phase("Etowah")

{

R\_Date("Beta-144161", 990, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145489", 1000, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145490", 1080, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-70", 905, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144162", 830, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144163", 850, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144164", 810, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-144811", 820, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-145491", 900, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257893", 840, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257895", 640, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-257894", 710, 40);

R\_Date("Beta-260068", 770, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260069", 790, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-260070", 710, 40)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134792",760,60)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-134793",920,70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-328",945,140)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41374", 970, 90)

{

Outlier("Charcoal", 1);

};

Span("Etowah Span");

};

Sigma\_Boundary("End Etowah");

};

};

**Supplemental Code 13.** Model specifications: Single-phase model for the Wilbanks phase; determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Sigma\_Boundary("Start Wilbanks");

Phase("Wilbanks")

{

R\_Date("UGA-142", 830, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-143", 660, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-509", 890, 50)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-215", 785, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-213", 670, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-510", 730, 60)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-224", 670, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-67942", 740, 70);

R\_Date("Beta-67943", 680, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("Beta-41373", 930, 90)

{

Outlier("Charcoal", 1);

};

Span("Wilbanks Span");

};

Sigma\_Boundary("End Wilbanks");

};

};

**Supplemental Code 14.** Model specifications: Single-phase model for the Lamar phase; determinations with error ranges greater than or equal to 150 years excluded; charcoal outlier model applied; sigma boundaries implemented.

Plot()

{

Outlier\_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");

Sequence()

{

Sigma\_Boundary("Start Lamar");

Phase("Lamar")

{

R\_Date("UGA-589", 280, 70)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-591", 120, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-307", 540, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-208", 425, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-205", 500, 55)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-210", 395, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-403", 535, 65)

{

Outlier("Charcoal", 1);

};

R\_Date("UGA-56", 286, 45)

{

Outlier("Charcoal", 1);

};

Span("Lamar Span");

};

Sigma\_Boundary("End Lamar");

};

};