

Modelling Medieval Masonry Construction: taxa-specific and habitat-contingent Bayesian techniques for the interpretation of radiocarbon data from Mortar-Entrapped Relict Limekiln Fuels

Mark Thacker; University of Stirling; mark.thacker@stir.ac.uk

Electronic Supplementary Material 3 (ESM3) - Case Studies – CS1-CS6 + CS4*

Contents - Dataset Simulation & Resultant Date Ranges

Section	Dataset & Model	Page
3.1	CS1; Castle Fincharn; dataset age range	1
3.2	CS1; Castle Fincharn; Combine	2
3.3	CS1; Castle Fincharn; exponential prior/no outlier model	4
3.4	CS1; Castle Fincharn; exponential prior/ modified Charcoal Outlier Model	9
3.5	CS1; Castle Fincharn; exponential prior/default Charcoal Outlier Model	14
3.6	CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model	20
3.7	CS2; Aros Castle NW block; dataset age range	26
3.8	CS2; Aros Castle NW block; Combine	27
3.9	CS2; Aros Castle NW block; exponential prior/no outlier model	29
3.10	CS2; Aros Castle NW block; exponential prior/ modified Charcoal Outlier Model	34

3.11	CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model	39
3.12	CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model	44
3.13	CS3; Castle Roy; dataset age range	49
3.14	CS3; Castle Roy; Combine	50
3.15	CS3; Castle Roy; exponential prior/no outlier model	52
3.16	CS3; Castle Roy; exponential prior/ modified Charcoal Outlier Model	57
3.17	CS3; Castle Roy; exponential prior/default Charcoal Outlier Model	62
3.18	CS3; Castle Roy; uniform prior/default Charcoal Outlier Model	67
3.19	CS4; Lochindorb Castle; dataset age range	72
3.20	CS4; Lochindorb Castle; Combine	73
3.21	CS4; Lochindorb Castle; exponential prior/no outlier model	74
3.22	CS4; Lochindorb Castle; exponential prior/ modified Charcoal Outlier Model	79
3.23	CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model	84
3.24	CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model	89
3.25	CS5; Achanduin Castle; dataset age range	94
3.26	CS5; Achanduin Castle; Combine	95

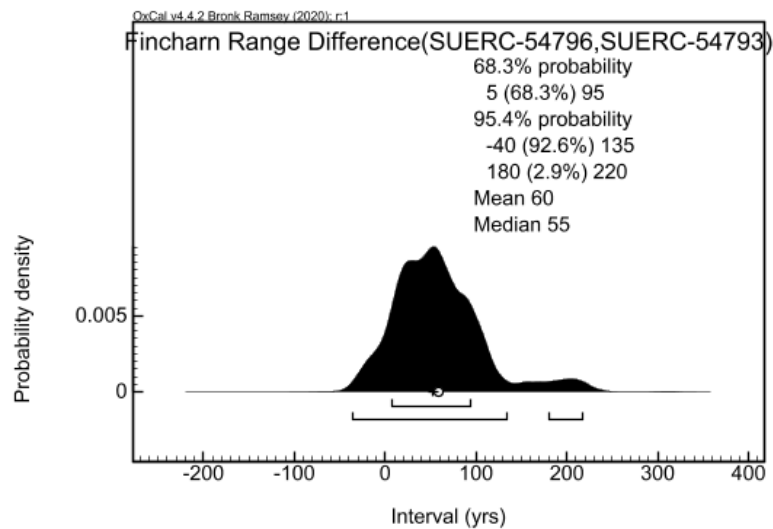
3.27	CS5; Achanduin Castle; exponential prior/no outlier model	96
3.28	CS5; Achanduin Castle; exponential prior/ modified Charcoal Outlier Model	101
3.29	CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model	105
3.30	CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model	110
3.31	CS6; Lismore Cathedral nave; dataset age range	115
3.32	CS6; Lismore Cathedral nave; Combine	117
3.33	CS6; Lismore Cathedral nave; exponential prior/no outlier model	119
3.34	CS6; Lismore Cathedral nave; exponential prior/ modified Charcoal Outlier Model	124
3.35	CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model	128
3.36	CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model	133
3.37	CS4*; Lochindorb Castle; dataset age range	138
3.38	CS4*; Lochindorb Castle; Combine	139
3.39	CS4*; Lochindorb Castle; exponential prior/no outlier model	141
3.40	CS4*; Lochindorb Castle; exponential prior/ modified Charcoal Outlier Model	146
3.41	CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model	151
3.42	CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model	156

(*Reduced Dataset manually excluding early determination SUERC-75752)

3.1.1 – CS1; Castle Fincharn; dataset age range; model script

```
Options()  
{  
  Resolution=1 year;  
  kIterations=20000;  
};  
Plot()  
{  
  Phase("Fincharn Castle Primary Phase")  
  {  
    R_Date("SUERC-54796", 744, 36);  
    R_Date("SUERC-54793", 837, 36);  
    Difference("Fincharn Range", "SUERC-54796", "SUERC-54793");  
  };  
};
```

3.1.2 – CS1; Castle Fincharn; dataset age range; distribution plot



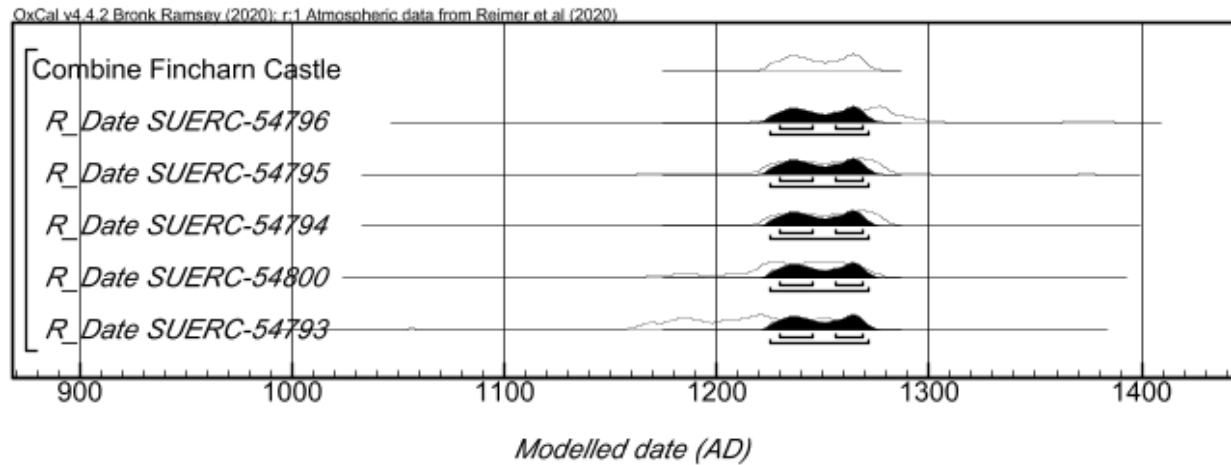
3.2.1 – CS1; Castle Fincharn; Combine model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Combine("Fincharn Castle")
  {
    R_Date("SUERC-54796", 744, 36);
    R_Date("SUERC-54795", 777, 36);
    R_Date("SUERC-54794", 777, 36);
    R_Date("SUERC-54800", 808, 36);
    R_Date("SUERC-54793", 837, 36);
  };
};
```

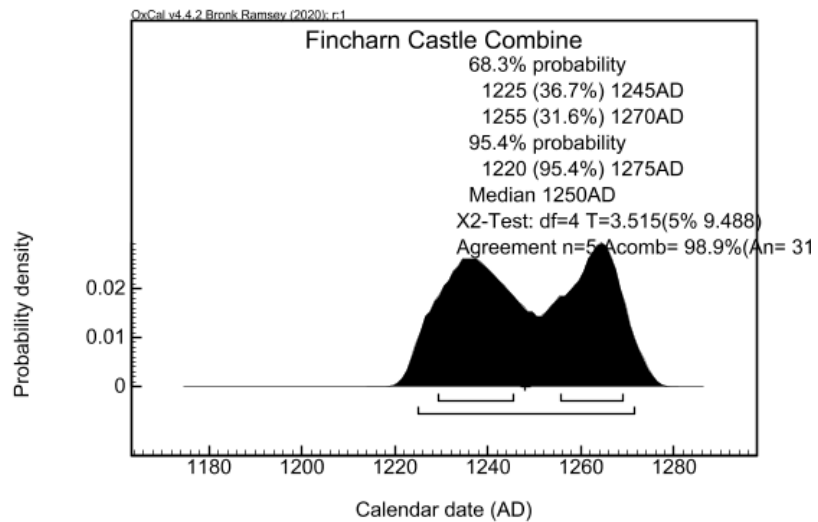
3.2.2 – CS1; Castle Fincharn; Combine model; results table

Name: Castle Fincharn Combined	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Fincharn Castle	1229	1269	68.268949	1225	1271	95.449974							98.9				
R_Date SUERC-54796	1231	1290	68.268949	1222	1376	95.449974	1229	1269	68.268949	1225	1271	95.449974		71			
R_Date SUERC-54795	1228	1276	68.268949	1182	1288	95.449973	1229	1269	68.268949	1225	1271	95.449974		111.8			
R_Date SUERC-54794	1228	1276	68.268949	1182	1288	95.449973	1229	1269	68.268949	1225	1271	95.449974		111.8			
R_Date SUERC-54800	1220	1266	68.268949	1175	1278	95.449974	1229	1269	68.268949	1225	1271	95.449974		119.4			
R_Date SUERC-54793	1177	1261	68.268949	1053	1274	95.449973	1229	1269	68.268949	1225	1271	95.449974		92.1			

3.2.3 – CS1; Castle Fincham; Combine model; multiple plot



3.2.4 – CS1; Castle Fincham; Combine model; distribution plot



3.3.1 – CS1; Castle Fincharn; exponential prior/no outlier model; model script

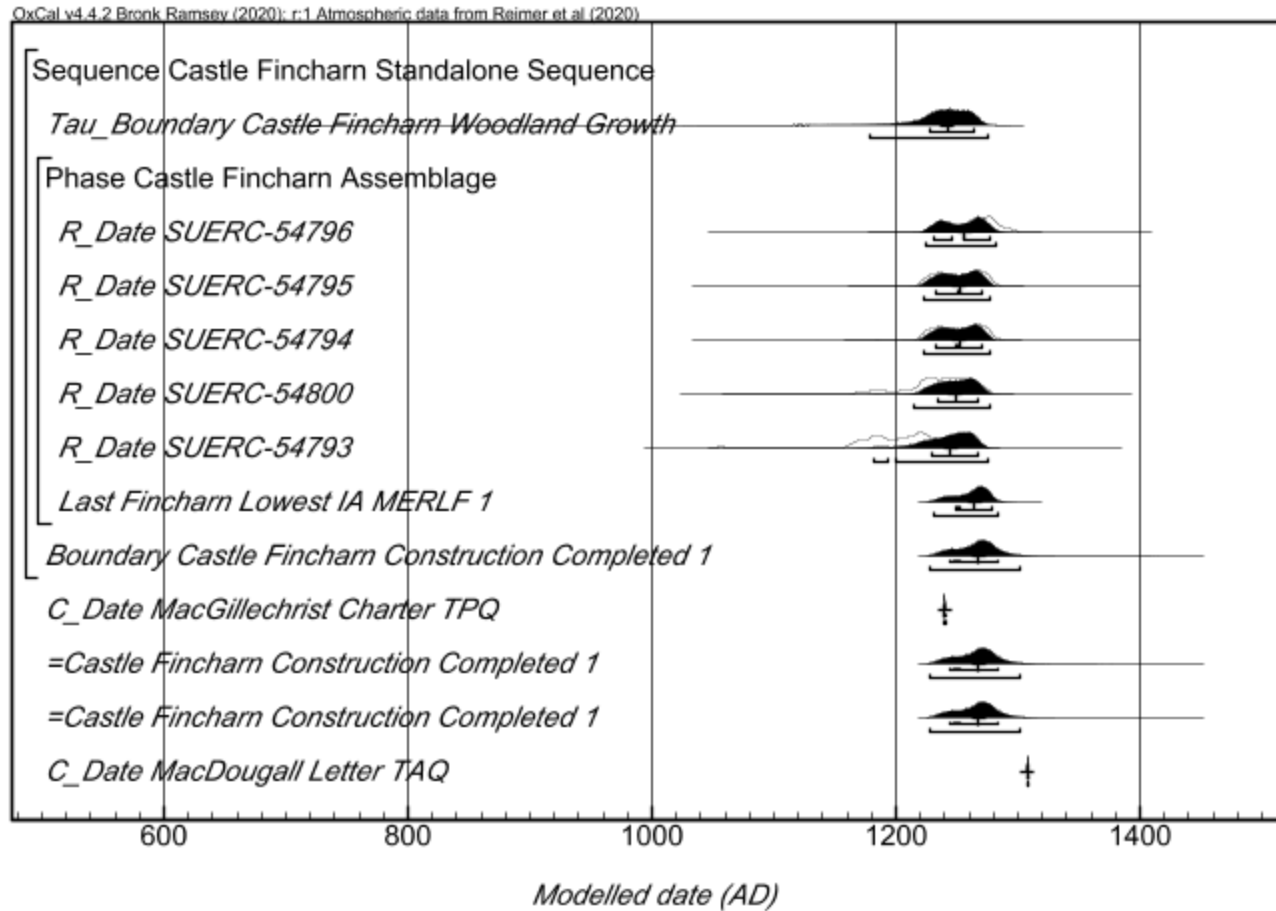
```
Options()
{
  Resolution=1 year;
  kIterations=20,000;
};
Plot()
{
  Sequence("Castle Fincharn Standalone Sequence")
  {
    Tau_Boundary("Castle Fincharn Woodland Growth");
    Phase("Castle Fincharn Assemblage")
    {
      R_Date("SUERC-54796", 744, 36)
      {
      };
      R_Date("SUERC-54795", 777, 36)
      {
      };
      R_Date("SUERC-54794", 777, 36)
      {
      };
      R_Date("SUERC-54800", 808, 36)
      {
      };
      R_Date("SUERC-54793", 837, 36)
      {
      };
      Last("Fincharn Lowest IA MERLF 1");
    };
    Boundary("Castle Fincharn Construction Completed 1");
  };
  Order("MacGillechrist Charter Probability")
  {
    C_Date("MacGillechrist Charter TPQ", 1240, 0.05);
  }
}
```

```
Date("=Castle Fincharn Construction Completed 1");  
};  
Order("MacDougall Probability Model")  
{  
  Date("=Castle Fincharn Construction Completed 1");  
  C_Date("MacDougall Letter TAQ", 1308, 0.05);  
};  
};
```

3.3.2 – CS1; Castle Fincharn; exponential prior/no outlier model; results table

Name: Castle Fincharn Tau	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 81.1 Aoverall 82.2				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Sequence Castle Fincharn Standalone Sequence																			
Tau_Boundary Castle Fincharn Woodland Growth								1227	1264	68.26895	1178	1275	95.44997	1241					97
Phase Castle Fincharn Assemblage																			
R_Date SUERC-54796	1231	1290	68.26895	1222	1376	95.44997	1271	1231	1276	68.26895	1224	1281	95.44997	1256		88.1			99.4
R_Date SUERC-54795	1228	1276	68.26895	1182	1288	95.44997	1251	1233	1271	68.26895	1222	1277	95.44997	1251		108.3			99.5
R_Date SUERC-54794	1228	1276	68.26895	1182	1288	95.44997	1251	1233	1271	68.26895	1222	1277	95.44997	1251		108.2			99.4
R_Date SUERC-54800	1220	1266	68.26895	1175	1278	95.44997	1238	1234	1267	68.26895	1215	1277	95.44997	1248		114.2			99.5
R_Date SUERC-54793	1177	1261	68.26895	1053	1274	95.44997	1216	1229	1267	68.26895	1182	1275	95.44997	1245		101.3			99.3
Last Fincharn Lowest IA MERLF 1								1248	1279	68.26895	1230	1283	95.44997	1264					99.3
Boundary Castle Fincharn Construction Completed 1								1244	1284	68.26895	1228	1301	95.44997	1268					98.1
Order MacGillechrist Charter Probability																			
C_Date MacGillechrist Charter TPQ				1239	1240	95.44997	1240	1239	1240	68.26895	1239	1240	95.44997	1240		70.5			100
=Castle Fincharn Construction Completed 1								1244	1284	68.26895	1228	1301	95.44997	1268					98.1
Order MacDougall Probability Model																			
=Castle Fincharn Construction Completed 1								1244	1284	68.26895	1228	1301	95.44997	1268					98.1
C_Date MacDougall Letter TAQ				1307	1308	95.44997	1308	1307	1308	68.26895	1307	1308	95.44997	1308		70.7			100

3.3.3 – CS1; Castle Fincham; exponential prior/no outlier model; multiple plot



3.3.4 – CS1; Castle Fincharn; exponential prior/no outlier model; End Boundary TPQ probability table

Order: Castle Fincharn TPQ Probability	MacGillechrist Charter TPQ	Castle Fincharn Construction Completed 1
MacGillechrist Charter TPQ	0	0.9203
Castle Fincharn Construction Completed 1	0.07973	0

3.3.5 – CS1; Castle Fincharn; exponential prior/no outlier model; End Boundary TAQ probability table

Order: Castle Fincharn TAQ Probability	Castle Fincharn Construction Completed 1	MacDougall Letter TAQ
Castle Fincharn Construction Completed 1	0	0.9728
MacDougall Letter TAQ	0.027219	0

3.3.6 – CS1; Castle Fincharn; exponential prior/no outlier model; Last distribution TPQ probability table

Order: Castle Fincharn Last TPQ Probability	Crown Charter Potential TPQ	Fincharn Lowest IA MERLF 1
Crown Charter Potential TPQ	0	0.8991
Fincharn Lowest IA MERLF 1	0.10091	0

3.3.7 – CS1; Castle Fincharn; exponential prior/no outlier model; Last distribution TAQ probability table

Order: Fincharn Tau Last TAQ Probability	Fincharn Lowest IA MERLF 1	MacDougall Letter Potential TAQ
Fincharn Lowest IA MERLF 1	0	0.9999
MacDougall Letter Potential TAQ	0.000136	0

3.4.1 CS1; Castle Fincharn; exponential prior/modified Charcoal Outlier Model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20,000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,1.3),"t");
  Sequence("Castle Fincharn Standalone Sequence")
  {
    Tau_Boundary("Castle Fincharn Woodland Growth");
    Phase("Castle Fincharn Assemblage")
    {
      R_Date("SUERC-54796", 744, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54795", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54794", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54800", 808, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54793", 837, 36)
      {
        Outlier("Charcoal", 1);
      };
      Last("Fincharn Lowest IA MERLF 2");
    };
  };
};
```

```

Boundary("Castle Fincharn Construction Completed 2");
};
Order("MacGillechrist Charter Probability")
{
  C_Date("Crown Charter Potential TPQ", 1240, 0.05);
  Date("=Castle Fincharn Construction Completed 2");
};
Order("MacDougall Probability Model")
{
  Date("=Castle Fincharn Construction Completed 2");
  C_Date("MacDougall Letter Potential TAQ", 1308, 0.05);
};
};

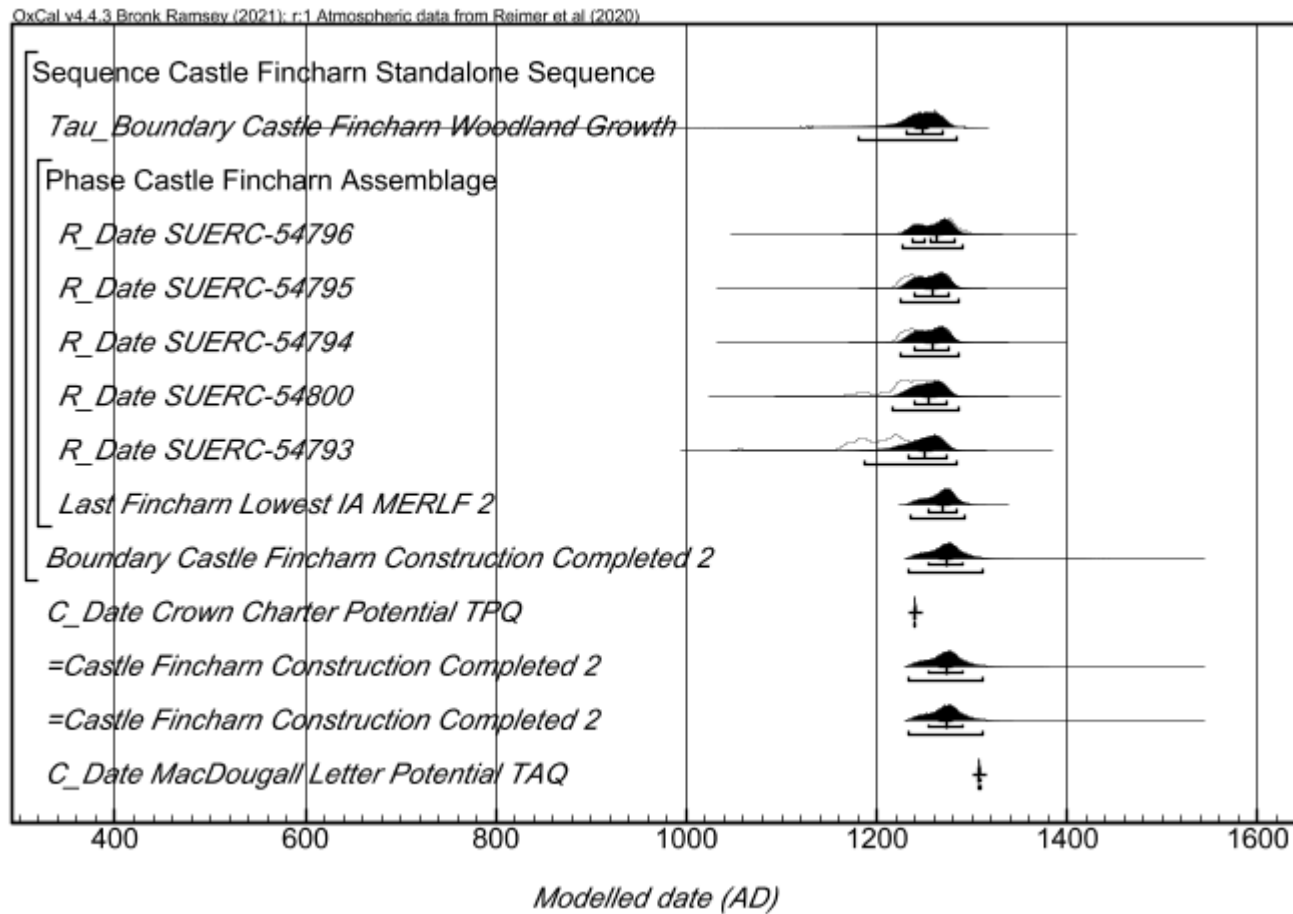
```

3.4.2 CS1; Castle Fincharn; exponential prior/modified Charcoal Outlier Model; results table

Name: Fincharn TmodC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 83.4 Aoverall 84.2				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-6	0	68.268949	-23	0	95.449974	-3					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.73					99.9
U(0,1.3)	-5.96E-18	1.3	68.268949	-5.96E-18	1.3	95.449974	0.6565	-2.49E-18	0.8372	68.268949	-2.49E-18	1.2155	95.449974	0.6019		100			99.8
Sequence Castle Fincharn Standalone Sequence																			
Tau_Boundary Castle Fincharn Woodland Growth								1232	1270	68.268949	1180	1284	95.449974	1247					96.9
Phase Castle Fincharn Assemblage																			
R_Date SUERC- 54796	1231	1290	68.268949	1222	1376	95.449974	1271	1237	1280	68.268949	1227	1289	95.449974	1262		90.4			99.1

R_Date SUERC-54795	1228	1276	68.268949	1182	1288	95.449973	1251	1239	1275	68.268949	1225	1284	95.449974	1257		107.8			99.3
R_Date SUERC-54794	1228	1276	68.268949	1182	1288	95.449973	1251	1239	1275	68.268949	1225	1285	95.449974	1257		107.7			99.3
R_Date SUERC-54800	1220	1266	68.268949	1175	1278	95.449974	1238	1238	1273	68.268949	1216	1286	95.449974	1254		114			98.8
R_Date SUERC-54793	1177	1261	68.268949	1053	1274	95.449973	1216	1232	1272	68.268949	1187	1283	95.449974	1250		102.6			99.1
Last Fincharn Lowest IA MERLF 2								1254	1284	68.268949	1234	1293	95.449974	1269					99
Boundary Castle Fincharn Construction Completed 2								1254	1289	68.268949	1233	1311	95.449974	1273					97
Order MacGillechrist Charter Probability																			
C_Date Crown Charter Potential TPQ				1239	1240	95.449974	1240	1239	1240	68.268949	1239	1240	95.449974	1240		70.8			100
=Castle Fincharn Construction Completed 2								1254	1289	68.268949	1233	1311	95.449974	1273					97
Order MacDougall Probability Model																			
=Castle Fincharn Construction Completed 2								1254	1289	68.268949	1233	1311	95.449974	1273					97
C_Date MacDougall Letter Potential TAQ				1307	1308	95.449974	1308	1307	1308	68.268949	1307	1308	95.449974	1308		70.8			100

3.4.3 CS1; Castle Fincham; exponential prior/modified Charcoal Outlier Model; multiple plot



3.4.4 CS1; Castle Fincharn; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ probability table

Order: Fincharn TmodC TPQ Probability	Crown Charter Potential TPQ	Castle Fincharn Construction Completed 2
Crown Charter Potential TPQ	0	0.9644
Castle Fincharn Construction Completed 2	0.03562	0

3.4.5 CS1; Castle Fincharn; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ probability table

Order: Fincharn TmodC TAQ Probability	Castle Fincharn Construction Completed 2	MacDougall Letter Potential TAQ
Castle Fincharn Construction Completed 2	0	0.9535
MacDougall Letter Potential TAQ	0.04647	0

3.4.6 CS1; Castle Fincharn; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ probability table

Order: Fincharn TmodC Last TPQ Probability	Crown Charter Potential TPQ	Fincharn Lowest IA MERLF 2
Crown Charter Potential TPQ	0	0.9521
Fincharn Lowest IA MERLF 2	0.04788	0

3.4.7 CS1; Castle Fincharn; exponential Prior/modified Charcoal Outlier Model; Last distribution TAQ probability table

Order: Fincharn TmodC Last TAQ Probability	Fincharn Lowest IA MERLF 2	MacDougall Letter Potential TAQ
Fincharn Lowest IA MERLF 2	0	0.9979
MacDougall Letter Potential TAQ	0.002078	0

3.5.1 CS1; Castle Fincham; exponential prior/default Charcoal Outlier Model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20,000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Castle Fincham Standalone Sequence")
  {
    Tau_Boundary("Castle Fincham Woodland Growth");
    Phase("Castle Fincham Assemblage")
    {
      R_Date("SUERC-54796", 744, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54795", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54794", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54800", 808, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54793", 837, 36)
      {
        Outlier("Charcoal", 1);
      };
    }
    Last("Fincham Lowest IA MERLF 3");
  }
}
```

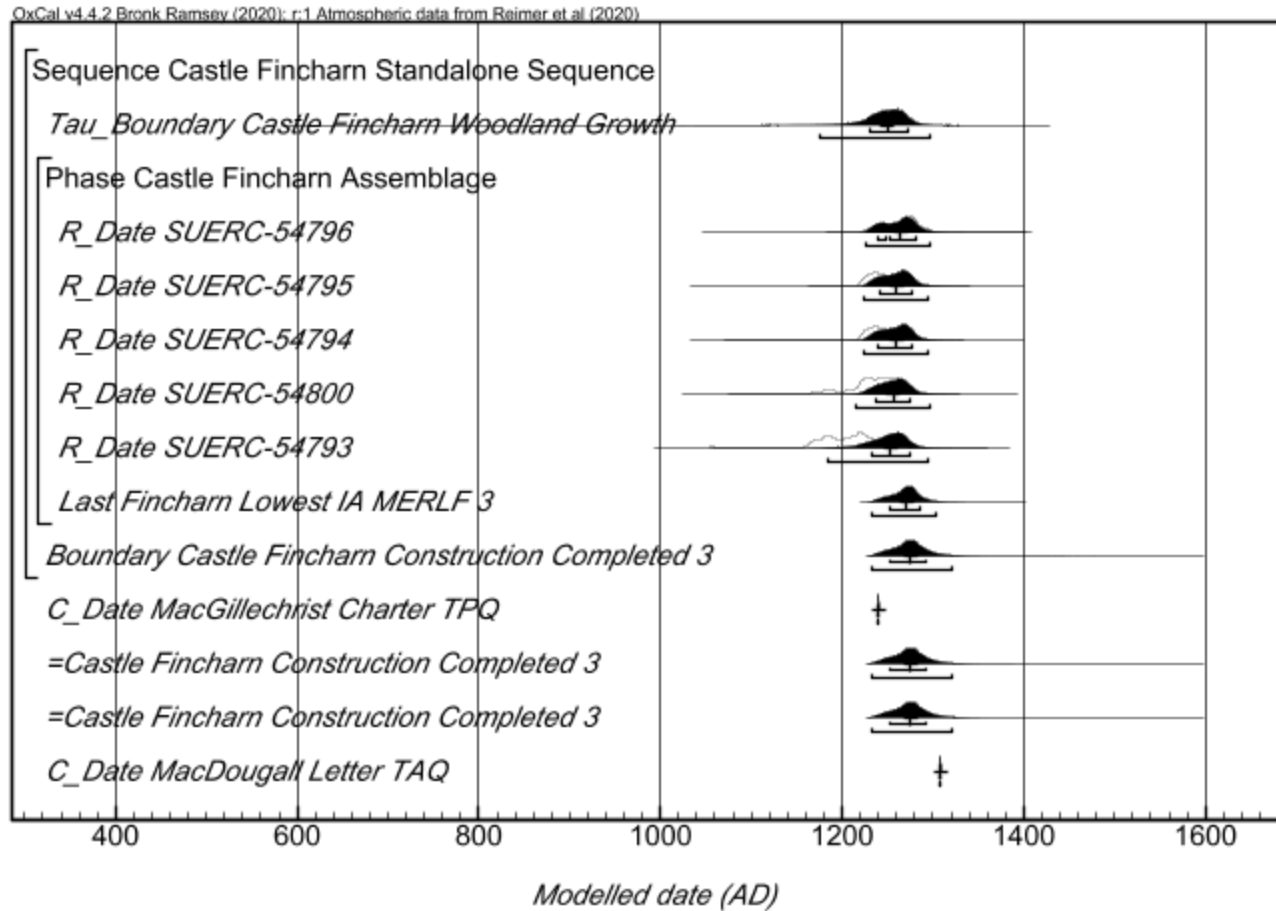
```
};  
Boundary("Castle Fincharn Construction Completed 3");  
};  
Order("MacGillechrist Charter Probability")  
{  
  C_Date("MacGillechrist Charter TPQ", 1240, 0.05);  
  Date("=Castle Fincharn Construction Completed 3");  
};  
Order("MacDougall Probability Model")  
{  
  Date("=Castle Fincharn Construction Completed 3");  
  C_Date("MacDougall Letter TAQ", 1308, 0.05);  
};  
};
```

3.5.2 CS1; Castle Fincharn; exponential Prior/default Charcoal Outlier Model; results table

Name: Castle Fincharn TandC	Unmod elled (BC/AD)							Modelle d (BC/AD)							Indices Amode l 83.1 Aoveral l 83.9				
	from	to	%	from	to	%	media n	from	to	%	from	to	%	media n	Acomb	A	L	P	C
Outlier_Model Charcoal								-8	1	68.2689 5	-39	1	95.4499 7	-4					100
Exp(1,-10,0)	-1.24	- 0.05	68.2689 5	-3.19	- 0.05	95.4499 7	-0.74							-0.71					99. 9
U(0,3)	2.21E- 17	3	68.2689 5	2.21E- 17	3	95.4499 7	1.515	3.60E-17	0.98 1	68.2689 5	3.60E- 17	1.59 6	95.4499 7	0.702		100			99. 5
Sequence Castle Fincharn Standalone Sequence																			
Tau_Boundary Castle Fincharn Woodland Growth								1231	1272	68.2689 5	1176	1296	95.4499 7	1249					96. 1
Phase Castle Fincharn Assemblage																			
R_Date SUERC-54796	1231	129 0	68.2689 5	1222	137 6	95.4499 7	1271	1239	1281	68.2689 5	1226	1296	95.4499 7	1264		91.1			99. 2
R_Date SUERC-54795	1228	127 6	68.2689 5	1182	128 8	95.4499 7	1251	1241	1277	68.2689 5	1223	1294	95.4499 7	1260		107. 2			99. 1
R_Date SUERC-54794	1228	127 6	68.2689 5	1182	128 8	95.4499 7	1251	1240	1277	68.2689 5	1223	1293	95.4499 7	1260		107. 2			98. 9
R_Date SUERC-54800	1220	126 6	68.2689 5	1175	127 8	95.4499 7	1238	1237	1275	68.2689 5	1214	1297	95.4499 7	1256		113. 3			99
R_Date SUERC-54793	1177	126 1	68.2689 5	1053	127 4	95.4499 7	1216	1232	1275	68.2689 5	1184	1293	95.4499 7	1252		102. 9			98. 9
Last Fincharn Lowest IA MERLF 3								1253	1286	68.2689 5	1233	1303	95.4499 7	1270					98. 3
Boundary Castle Fincharn Construction Completed 3								1253	1292	68.2689 5	1232	1320	95.4499 7	1274					95. 5
Order MacGillechrist Charter Probability																			

C_Date MacGillechrist Charter TPQ				1239	124 0	95.4499 7	1240	1239	1240	68.2689 5	1239	1240	95.4499 7	1240		70.6			100
=Castle Fincharn Construction Completed 3								1253	1292	68.2689 5	1232	1320	95.4499 7	1274					95. 5
Order MacDougall Probability Model																			
=Castle Fincharn Construction Completed 3								1253	1292	68.2689 5	1232	1320	95.4499 7	1274					95. 5
C_Date MacDougall Letter TAQ				1307	130 8	95.4499 7	1308	1307	1308	68.2689 5	1307	1308	95.4499 7	1308		70.6			100

3.5.3 CS1; Castle Fincham; exponential Prior/default Charcoal Outlier Model; multiple plot



3.5.4 CS1; Castle Fincharn; exponential Prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Castle Fincharn TPQ Probability	MacGillechrist Charter TPQ	Castle Fincharn Construction Completed 3
MacGillechrist Charter TPQ	0	0.9679
Castle Fincharn Construction Completed 3	0.03211	0

3.5.5 CS1; Castle Fincharn; exponential Prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Castle Fincharn TAQ Probability	Castle Fincharn Construction Completed 3	MacDougall Letter TAQ
Castle Fincharn Construction Completed 3	0	0.9241
MacDougall Letter TAQ	0.07585	0

3.5.6 CS1; Castle Fincharn; exponential Prior/default Charcoal Outlier Model; Last distribution TPQ probability table

Order: Fincharn TandC Last TPQ Probability	Crown Charter Potential TPQ	Fincharn Lowest IA MERLF 3
Crown Charter Potential TPQ	0	0.9564
Fincharn Lowest IA MERLF 3	0.04356	0

3.5.7 CS1; Castle Fincharn; exponential Prior/default Charcoal Outlier Model; Last distribution TAQ probability table

Order: Fincharn TandC Last TAQ Probability	Fincharn Lowest IA MERLF 3	MacDougall Letter Potential TAQ
Fincharn Lowest IA MERLF 3	0	0.9701
MacDougall Letter Potential TAQ	0.029913	0

3.6.1 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20,000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Castle Fincharn Standalone Sequence")
  {
    Boundary("Castle Fincharn Woodland Growth");
    Phase("Castle Fincharn Assemblage")
    {
      R_Date("SUERC-54796", 744, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54795", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54794", 777, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54800", 808, 36)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-54793", 837, 36)
      {
        Outlier("Charcoal", 1);
      };
      Last("Fincharn Lowest IA MERLF 4");
    };
    Boundary("Castle Fincharn Construction Completed 4");
  };
  Order("MacGillechrist Charter Probability")
  {
    C_Date("MacGillechrist Charter TPQ", 1240, 0.05);
    Date("=Castle Fincharn Construction Completed 4");
  };
  Order("MacDougall Probability Model")
}
```

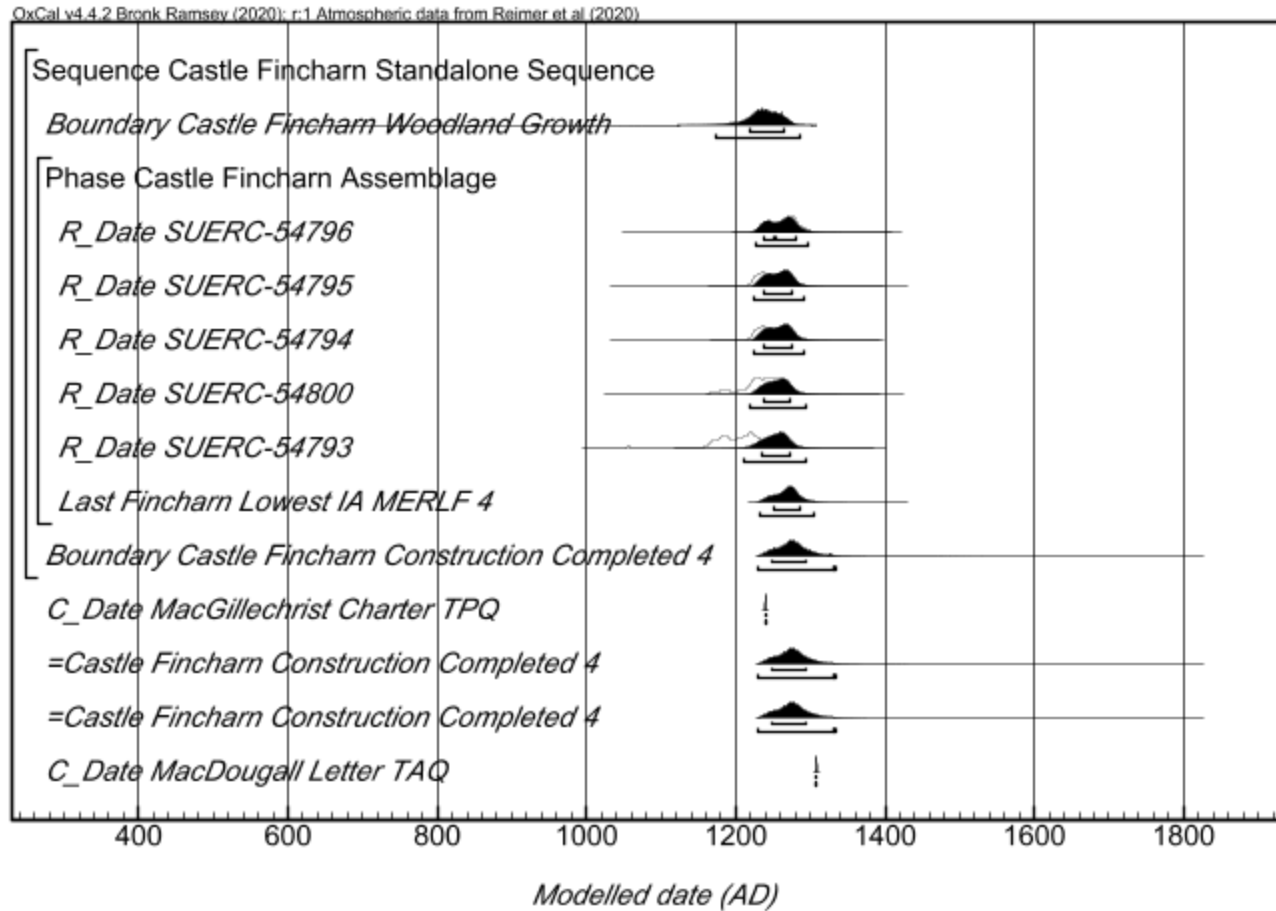
```
{  
  Date("=Castle Fincharn Construction Completed 4");  
  C_Date("MacDougall Letter TAQ", 1308, 0.05);  
};  
};
```

3.6.2 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; results table

Name: Castle Fincharn Char	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 83.1 Aoverall 83.9				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal							-8	1	68.26895	-40	1	95.44997					100
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997											99.8
U(0,3)	2.21E-17	3	68.26895	2.21E-17	3	95.44997	3.60E-17	0.981	68.26895	3.60E-17	1.635	95.44997		100			99.5
Sequence Castle Fincharn Standalone Sequence																	
Boundary Castle Fincharn Woodland Growth							1220	1264	68.26895	1172	1286	95.44997					95.4
Phase Castle Fincharn Assemblage																	
R_Date SUERC-54796	1231	1290	68.26895	1222	1376	95.44997	1236	1280	68.26895	1226	1296	95.44997		88.2			99.4
R_Date SUERC-54795	1228	1276	68.26895	1182	1288	95.44997	1238	1275	68.26895	1224	1292	95.44997		107.5			99.3
R_Date SUERC-54794	1228	1276	68.26895	1182	1288	95.44997	1238	1275	68.26895	1224	1292	95.44997		107.4			99.3
R_Date SUERC-54800	1220	1266	68.26895	1175	1278	95.44997	1237	1273	68.26895	1220	1293	95.44997		116			99.3
R_Date SUERC-54793	1177	1261	68.26895	1053	1274	95.44997	1236	1273	68.26895	1209	1295	95.44997		103.1			99.2
Last Fincharn Lowest IA MERLF 4							1251	1285	68.26895	1232	1303	95.44997					99
Boundary Castle Fincharn Construction Completed 4							1249	1294	68.26895	1230	1334	95.44997					95.3
Order MacGillechrist Charter Probability																	
C_Date MacGillechrist Charter TPQ				1239	1240	95.44997	1239	1240	68.26895	1239	1240	95.44997		70.5			100
=Castle Fincharn Construction Completed 4							1249	1294	68.26895	1230	1334	95.44997					95.3
Order MacDougall Probability Model																	
=Castle Fincharn Construction Completed 4							1249	1294	68.26895	1230	1334	95.44997					95.3

C_Date MacDougall Letter TAQ				1307	1308	95.44997	1307	1308	68.26895	1307	1308	95.44997		70.9			100
---------------------------------	--	--	--	------	------	----------	------	------	----------	------	------	----------	--	------	--	--	-----

3.6.3 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; multiple plot



3.6.4 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Castle Fincharn TPQ Probability	MacGillechrist Charter TPQ	Castle Fincharn Construction Completed 4
MacGillechrist Charter TPQ	0	0.9648
Castle Fincharn Construction Completed 4	0.03524	0

3.6.5 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Castle Fincharn TAQ Probability	Castle Fincharn Construction Completed 4	MacDougall Letter TAQ
Castle Fincharn Construction Completed 4	0	0.8916
MacDougall Letter TAQ	0.1084	0

3.6.6 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; Last distribution TPQ probability table

Order: Fincharn Char Last TPQ Probability	Crown Charter Potential TPQ	Fincharn Lowest IA MERLF 4
Crown Charter Potential TPQ	0	0.9547
Fincharn Lowest IA MERLF 4	0.04535	0

3.6.7 CS1; Castle Fincharn; uniform prior/default Charcoal Outlier Model; Last distribution TAQ probability table

Order: Fincharn Char Last TAQ Probability	Fincharn Lowest IA MERLF 4	MacDougall Letter Potential TAQ
Fincharn Lowest IA MERLF 4	0	0.9783
MacDougall Letter Potential TAQ	0.021659	0

3.7.1 – CS2; Aros Castle NW block; dataset age range; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Phase("Aros Castle NW Block")
  {
    R_Date("SUERC-62566", 607, 34);
    R_Date("SUERC-62567", 804, 34);
    Difference("Aros Range", "SUERC-62566", "SUERC-62567");
  };
};
```

3.7.2 – CS2; Aros Castle NW block; dataset age range; results table

Name: Aros Dataset Age Range	Unmodelled (BC/AD)					
	from	to	%	from	to	%
Phase Aros Castle NW Block						
R_Date SUERC-62566	1306	1396	68.268949	1299	1406	95.449973
R_Date SUERC-62567	1222	1265	68.268949	1177	1278	95.449973
Difference Aros Range	65	148	68.268949	36	188	95.449974

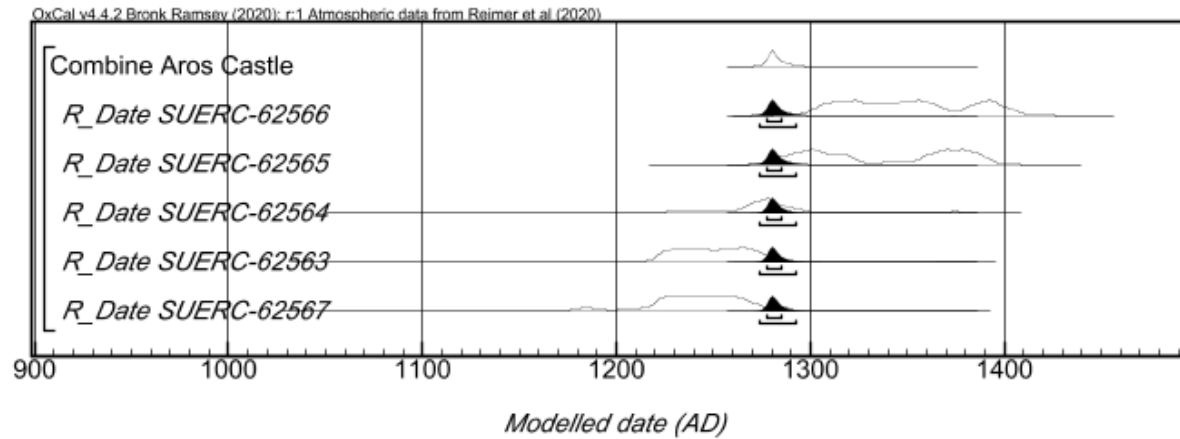
3.8.1 – CS2; Aros Castle NW block; Combine model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Combine("Aros Castle")
  {
    R_Date("SUERC-62566", 607, 34);
    R_Date("SUERC-62565", 657, 34);
    R_Date("SUERC-62564", 736, 34);
    R_Date("SUERC-62563", 787, 34);
    R_Date("SUERC-62567", 804, 34);
  };
};
```

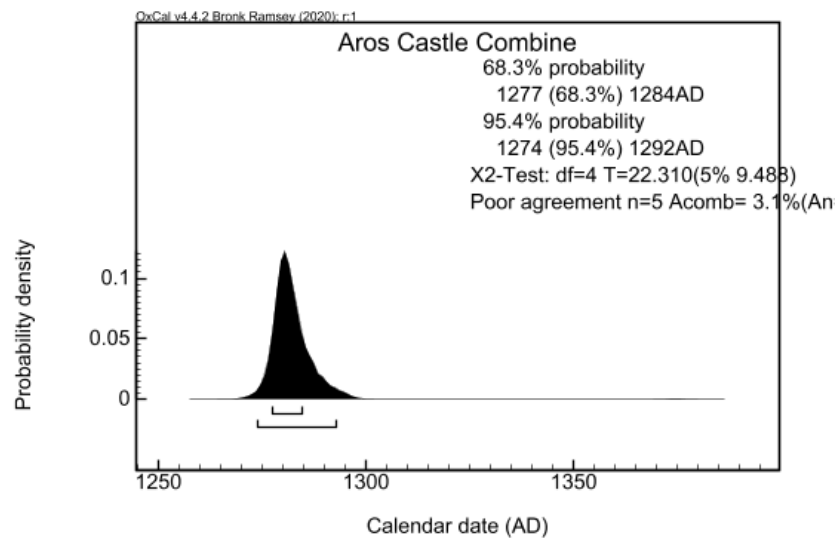
3.8.2 – CS2; Aros Castle NW block; Combine model; results table

Name: Aros Combined	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Aros Castle	1277	1284	68.268949	1274	1292	95.449974							3.1				
R_Date SUERC- 62566	1306	1396	68.268949	1299	1406	95.449973	1277	1284	68.268949	1274	1292	95.449974		3.2			
R_Date SUERC- 62565	1288	1388	68.26895	1279	1395	95.449974	1277	1284	68.268949	1274	1292	95.449974		45.2			
R_Date SUERC- 62564	1235	1296	68.268949	1224	1377	95.449974	1277	1284	68.268949	1274	1292	95.449974		146.3			
R_Date SUERC- 62563	1227	1270	68.26895	1180	1282	95.449974	1277	1284	68.268949	1274	1292	95.449974		21.6			
R_Date SUERC- 62567	1222	1265	68.268949	1177	1278	95.449973	1277	1284	68.268949	1274	1292	95.449974		9.2			

3.8.3 – CS2; Aros Castle NW block; Combine model; multiple plot



3.8.4 – CS2; Aros Castle NW block; Combine model; distribution plot



3.9.1 – CS2; Aros Castle NW block; exponential prior/no outlier model; model script

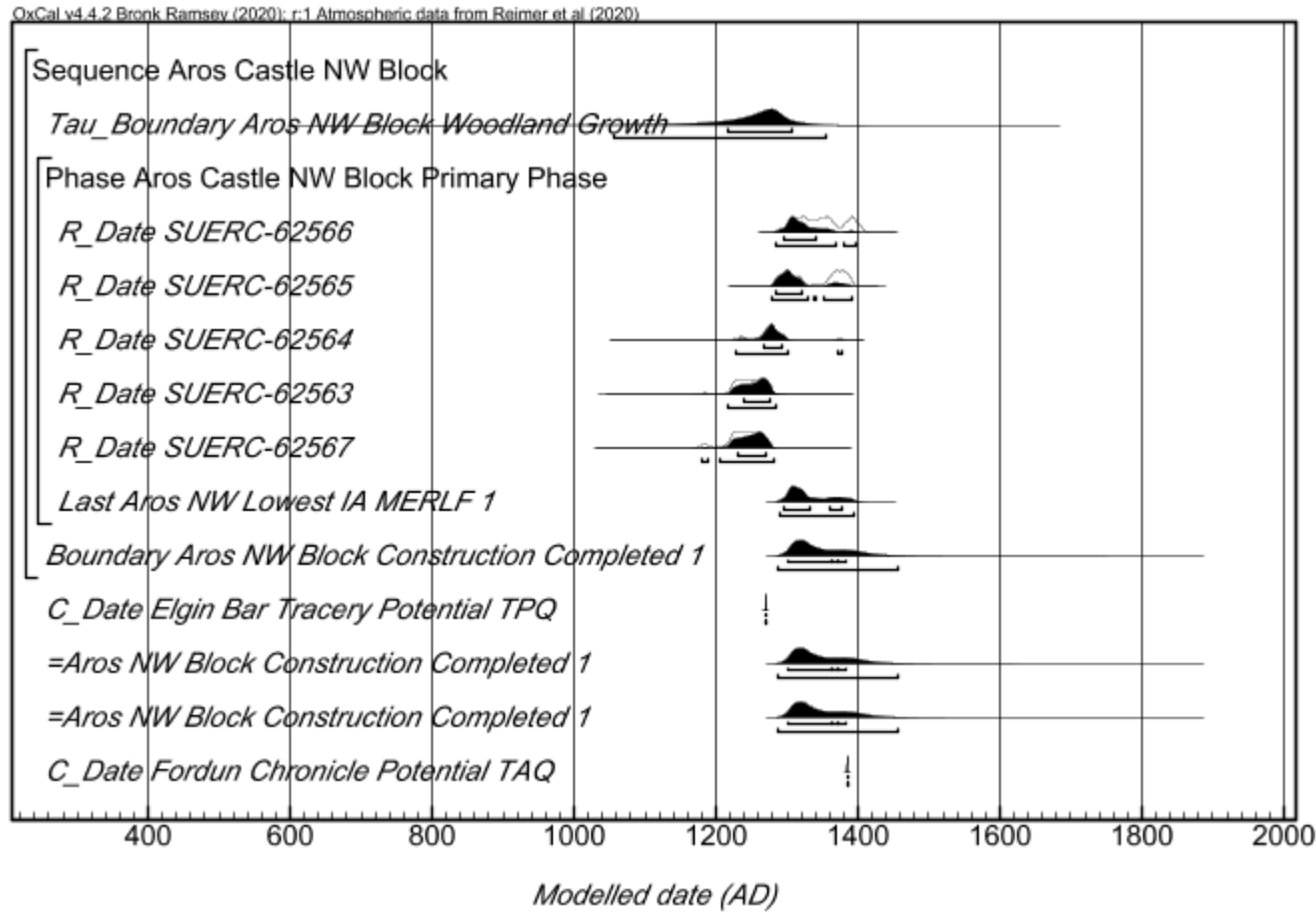
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Sequence("Aros Castle NW Block")
  {
    Tau_Boundary("Aros NW Block Woodland Growth");
    Phase(" Aros Castle NW Block Primary Phase ")
    {
      R_Date("SUERC-62566", 607, 34)
      {
      };
      R_Date("SUERC-62565", 657, 34)
      {
      };
      R_Date("SUERC-62564", 736, 34)
      {
      };
      R_Date("SUERC-62563", 787, 34)
      {
      };
      R_Date("SUERC-62567", 804, 34)
      {
      };
      Last("Aros NW Lowest IA MERLF 1");
    };
    Boundary("Aros NW Block Construction Completed 1");
  };
  Order("Post Elgin Bar Tracery Probability 1")
}
```

```
{  
  C_Date("Elgin Bar Tracery Potential TPQ", 1270, 0.05);  
  Date("=Aros NW Block Construction Completed 1");  
};  
Order("Pre Fordun Chronicle Probability 1")  
{  
  Date("=Aros NW Block Construction Completed 1");  
  C_Date("Fordun Chronicle Potential TAQ", 1385, 0.05);  
};  
};
```

3.9.2 – CS2; Aros Castle NW block; exponential prior/no outlier model; results table

Name: Aros NW Block Tau	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 77.7 Aoverall 78				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Sequence Aros Castle NW Block																	
Tau_Boundary Aros NW Block Woodland Growth							1217	1306	68.268949	1056	1355	95.449974					99.8
Phase Aros Castle NW Block Primary Phase																	
R_Date SUERC-62566	1306	1396	68.268949	1299	1406	95.449973	1295	1340	68.268949	1284	1396	95.449973		94			100
R_Date SUERC-62565	1288	1388	68.26895	1279	1395	95.449974	1283	1320	68.268949	1277	1391	95.449973		99			100
R_Date SUERC-62564	1235	1296	68.268949	1224	1377	95.449974	1266	1294	68.268949	1227	1376	95.449974		106.1			100
R_Date SUERC-62563	1227	1270	68.26895	1180	1282	95.449974	1238	1276	68.268949	1217	1283	95.449974		101.4			100
R_Date SUERC-62567	1222	1265	68.268949	1177	1278	95.449973	1231	1271	68.268949	1181	1280	95.449974		103.3			100
Last Aros NW Lowest IA MERLF 1							1296	1377	68.268949	1291	1393	95.449974					99.9
Boundary Aros NW Block Construction Completed 1							1301	1384	68.268949	1287	1455	95.449974					99.7
Order Post Elgin Bar Tracery Probability 1																	
C_Date Elgin Bar Tracery Potential TPQ				1269	1270	95.449974	1269	1270	68.268949	1269	1270	95.449974		70.7			100
=Aros NW Block Construction Completed 1							1301	1384	68.268949	1287	1455	95.449974					99.7
Order Pre Fordun Chronicle Probability 1																	
=Aros NW Block Construction Completed 1							1301	1384	68.268949	1287	1455	95.449974					99.7
C_Date Fordun Chronicle Potential TAQ				1384	1385	95.449974	1384	1385	68.268949	1384	1385	95.449974		70.8			100

3.9.3 – CS2; Aros Castle NW block; exponential Prior/no outlier model; multiple plot



3.9.4 – CS2; Aros Castle NW block; exponential prior/no outlier model; End Boundary TPQ probability table

Order	Elgin Bar Tracery Potential TPQ	Aros NW Block Construction Completed 1
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Block Construction Completed 1	0	0

3.9.5 – CS2; Aros Castle NW block; exponential prior/no outlier model; End Boundary TAQ probability table

Order	Aros NW Block Construction Completed 1	Fordun Chronicle Potential TAQ
Aros NW Block Construction Completed 1	0	0.7619
Fordun Chronicle Potential TAQ	0.23812	0

3.9.6 – CS2; Aros Castle NW block; exponential prior/no outlier model; Last distribution TPQ probability table

Order: Aros Tau Last TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Lowest IA MERLF 1
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Lowest IA MERLF 1	0	0

3.9.7 – CS2; Aros Castle NW block; exponential Prior/no outlier model; Last distribution TPQ probability table

Order: Aros Tau Last TAQ Probability	Aros NW Lowest IA MERLF 1	Fordun Chronicle Potential TAQ
Aros NW Lowest IA MERLF 1	0	0.9286
Fordun Chronicle Potential TAQ	0.07144	0

3.10.1 CS2; Aros Castle; Exponential Prior/modified Charcoal Outlier Model; model script

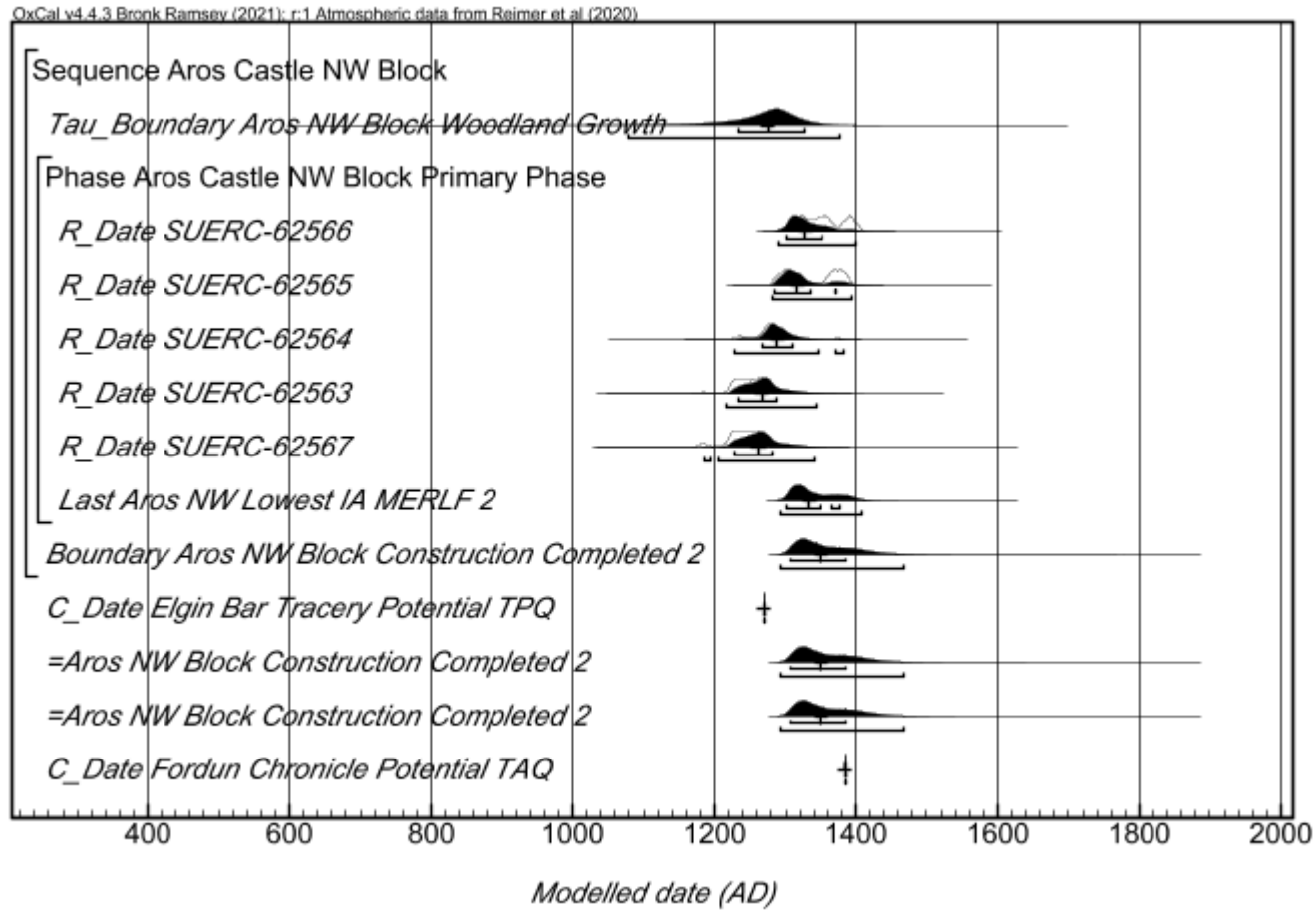
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,1.7),"t");
  Sequence("Aros Castle NW Block")
  {
    Tau_Boundary("Aros NW Block Woodland Growth");
    Phase(" Aros Castle NW Block Primary Phase ")
    {
      R_Date("SUERC-62566", 607, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62565", 657, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62564", 736, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62563", 787, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62567", 804, 34)
      {
        Outlier("Charcoal", 1);
      };
    }
  }
  Last("Aros NW Lowest IA MERLF 2");
}
```

```
};  
Boundary("Aros NW Block Construction Completed 2");  
};  
Order("Post Elgin Bar Tracery Probability 2")  
{  
  C_Date("Elgin Bar Tracery Potential TPQ", 1270, 0.05);  
  Date("=Aros NW Block Construction Completed 2");  
};  
Order("Pre Fordun Chronicle Probability 2")  
{  
  Date("=Aros NW Block Construction Completed 2");  
  C_Date("Fordun Chronicle Potential TAQ", 1385, 0.05);  
};  
};
```

3.10.2 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; results table

Name: Aros TmodC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 79.6 Aoverall 79.8				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-15	5	68.268949	-65	5	95.449974	-5					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.75					100
U(0,1.7)	-3.47E-18	1.7	68.268949	-3.47E-18	1.7	95.449974	0.8585	0.5899	1.7	68.268949	0.0102	1.7	95.449974	0.9078		100			99.9
Sequence Aros Castle NW Block																			
Tau_Boundary Aros NW Block Woodland Growth								1230	1330	68.268949	1075	1380	95.449974	1275					99.7
Phase Aros Castle NW Block Primary Phase																			
R_Date SUERC-62566	1305	1400	68.268949	1295	1410	95.449973	1350	1295	1355	68.268949	1285	1400	95.449974	1325		95.2			99.9
R_Date SUERC-62565	1285	1390	68.26895	1275	1400	95.449974	1340	1285	1375	68.268949	1280	1395	95.449974	1315		98.8			99.9
R_Date SUERC-62564	1235	1300	68.268949	1220	1380	95.449974	1275	1265	1310	68.268949	1225	1385	95.449974	1285		106.7			99.9
R_Date SUERC-62563	1225	1275	68.26895	1180	1285	95.449974	1245	1230	1290	68.268949	1215	1345	95.449974	1265		101.6			99.9
R_Date SUERC-62567	1220	1265	68.268949	1175	1280	95.449973	1240	1225	1285	68.268949	1180	1340	95.449974	1260		103.6			99.9
Last Aros NW Lowest IA MERLF 2								1300	1380	68.268949	1290	1410	95.449974	1335					99.9
Boundary Aros NW Block Construction Completed 2								1305	1390	68.268949	1290	1470	95.449974	1350					99.6
Order Post Elgin Bar Tracery Probability 2																			
C_Date Elgin Bar Tracery Potential TPQ				1265	1270	95.449974	1270	1265	1270	68.268949	1265	1270	95.449974	1270		70.7			100
=Aros NW Block Construction Completed 2								1305	1390	68.268949	1290	1470	95.449974	1350					99.6
Order Pre Fordun Chronicle Probability 2																			
=Aros NW Block Construction Completed 2								1305	1390	68.268949	1290	1470	95.449974	1350					99.6
C_Date Fordun Chronicle Potential TAQ				1380	1385	95.449974	1385	1380	1385	68.268949	1380	1385	95.449974	1385		70.7			100

3.10.3 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; multiple plot



3.10.4 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ probability table

Order: Aros TmodC TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Block Construction Completed 2
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Block Construction Completed 2	0	0

3.10.5 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ probability table

Order: Aros TmodC TAQ Probability	Aros NW Block Construction Completed 2	Fordun Chronicle Potential TAQ
Aros NW Block Construction Completed 2	0	0.7142
Fordun Chronicle Potential TAQ	0.28577	0

3.10.6 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ probability table

Order: Aros TmodC Last TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Lowest IA MERLF 2
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Lowest IA MERLF 2	0	0

3.10.7 CS2; Aros Castle NW block; exponential prior/modified Charcoal Outlier Model; Last distribution TAQ probability table

Order: Aros TmodC TAQ Probability	Aros NW Lowest IA MERLF 2	Fordun Chronicle Potential TAQ
Aros NW Lowest IA MERLF 2	0	0.863
Fordun Chronicle Potential TAQ	0.13696	0

3.11.1 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; model script

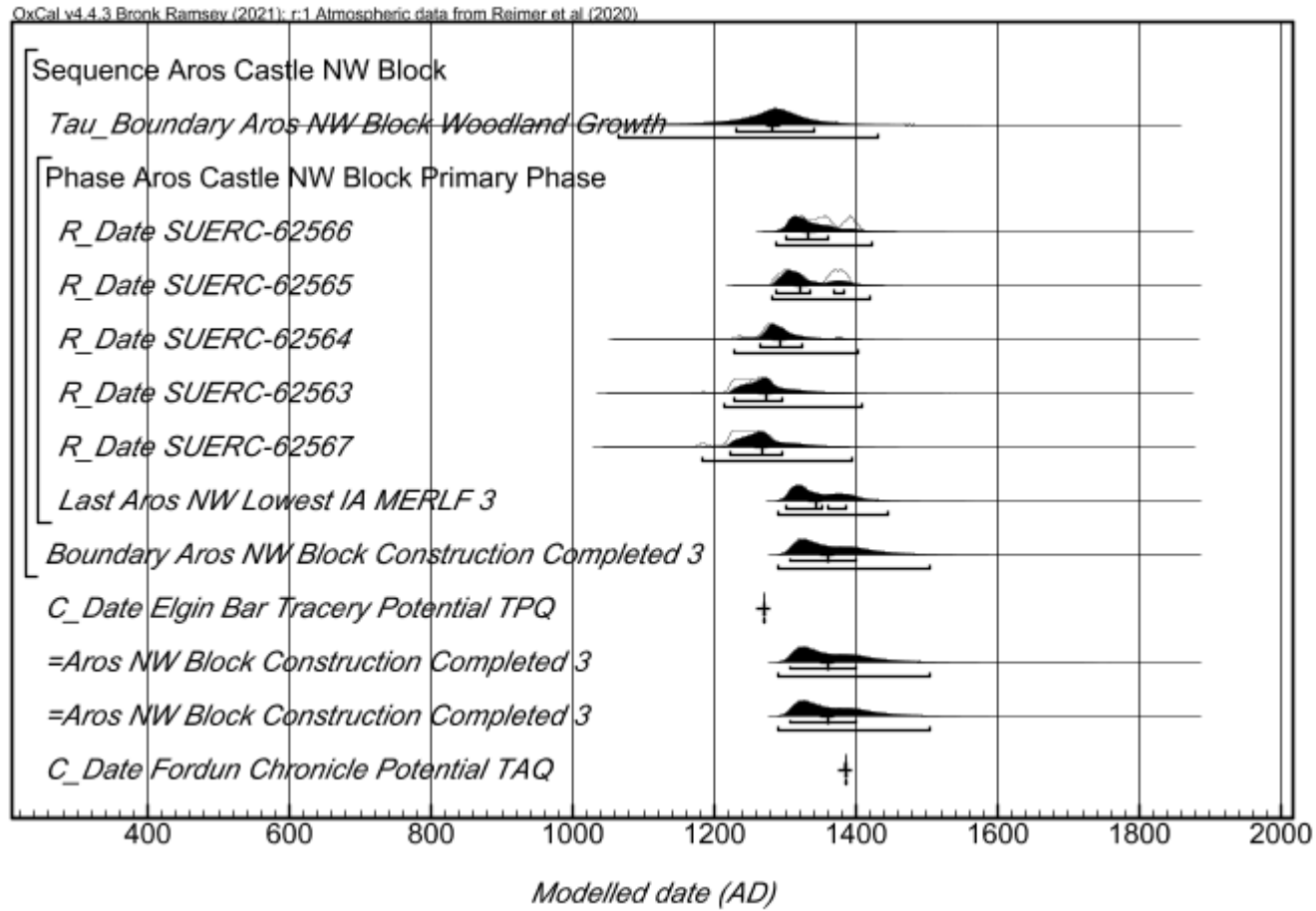
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Aros Castle NW Block")
  {
    Tau_Boundary("Aros NW Block Woodland Growth");
    Phase(" Aros Castle NW Block Primary Phase ")
    {
      R_Date("SUERC-62566", 607, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62565", 657, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62564", 736, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62563", 787, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62567", 804, 34)
      {
        Outlier("Charcoal", 1);
      };
    }
  }
  Last("Aros NW Lowest IA MERLF 3");
}
```

```
};  
Boundary("Aros NW Block Construction Completed 3");  
};  
Order("Post Elgin Bar Tracery Probability 3")  
{  
  C_Date("Elgin Bar Tracery Potential TPQ", 1270, 0.05);  
  Date("=Aros NW Block Construction Completed 3");  
};  
Order("Pre Fordun Chronicle Probability 3")  
{  
  Date("=Aros NW Block Construction Completed 3");  
  C_Date("Fordun Chronicle Potential TAQ", 1385, 0.05);  
};  
};
```

3.11.2 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; results table

Name: Aros TandC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 79.7 Aoverall 79.8				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-23	1	68.268949	-119	1	95.449974	-8					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.73					100
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	1.515	0.24	1.767	68.268949	3.60E-17	2.082	95.449974	1.095		100			99.6
Sequence Aros Castle NW Block																			
Tau_Boundary Aros NW Block Woodland Growth								1230	1339	68.268949	1065	1429	95.449974	1282					99.6
Phase Aros Castle NW Block Primary Phase																			
R_Date SUERC-62566	1306	1396	68.268949	1299	1406	95.449973	1348	1300	1361	68.268949	1286	1422	95.449974	1333		96.2			99.9
R_Date SUERC-62565	1288	1388	68.26895	1279	1395	95.449974	1340	1286	1382	68.268949	1280	1419	95.449974	1321		98.8			99.8
R_Date SUERC-62564	1235	1296	68.268949	1224	1377	95.449974	1275	1265	1323	68.268949	1228	1402	95.449974	1292		106.1			99.9
R_Date SUERC-62563	1227	1270	68.26895	1180	1282	95.449974	1247	1228	1297	68.268949	1214	1407	95.449974	1272		101.6			99.9
R_Date SUERC-62567	1222	1265	68.268949	1177	1278	95.449973	1241	1223	1296	68.268949	1182	1395	95.449974	1267		103.5			99.9
Last Aros NW Lowest IA MERLF 3								1302	1387	68.26895	1289	1445	95.449974	1342					99.8
Boundary Aros NW Block Construction Completed 3								1307	1398	68.268949	1290	1505	95.449974	1360					99.5
Order Post Elgin Bar Tracery Probability 3																			
C_Date Elgin Bar Tracery Potential TPQ				1269	1270	95.449974	1270	1269	1270	68.268949	1269	1270	95.449974	1270		70.7			100
=Aros NW Block Construction Completed 3								1307	1398	68.268949	1290	1505	95.449974	1360					99.5
Order Pre Fordun Chronicle Probability 3																			
=Aros NW Block Construction Completed 3								1307	1398	68.268949	1290	1505	95.449974	1360					99.5
C_Date Fordun Chronicle Potential TAQ				1384	1385	95.449974	1385	1384	1385	68.268949	1384	1385	95.449974	1385		70.6			100

3.11.3 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; multiple plot



3.11.4 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Aros TandC TPQ probability	Elgin Bar Tracery Potential TPQ	Aros NW Block Construction Completed 3
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Block Construction Completed 3	0	0

3.11.5 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Aros TandC TAQ Probability	Aros NW Block Construction Completed 3	Fordun Chronicle Potential TAQ
Aros NW Block Construction Completed 3	0	0.6446
Fordun Chronicle Potential TAQ	0.3554	0

3.11.6 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; Last distribution TPQ probability table

Order: Aros TandC Last TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Lowest IA MERLF 3
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Lowest IA MERLF 3	0	0

3.11.7 CS2; Aros Castle NW block; exponential prior/default Charcoal Outlier Model; Last distribution TAQ probability table

Order: Aros TandC Last TAQ Probability	Aros NW Lowest IA MERLF 3	Fordun Chronicle Potential TAQ
Aros NW Lowest IA MERLF 3	0	0.7858
Fordun Chronicle Potential TAQ	0.21423	0

3.12.1 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; model script

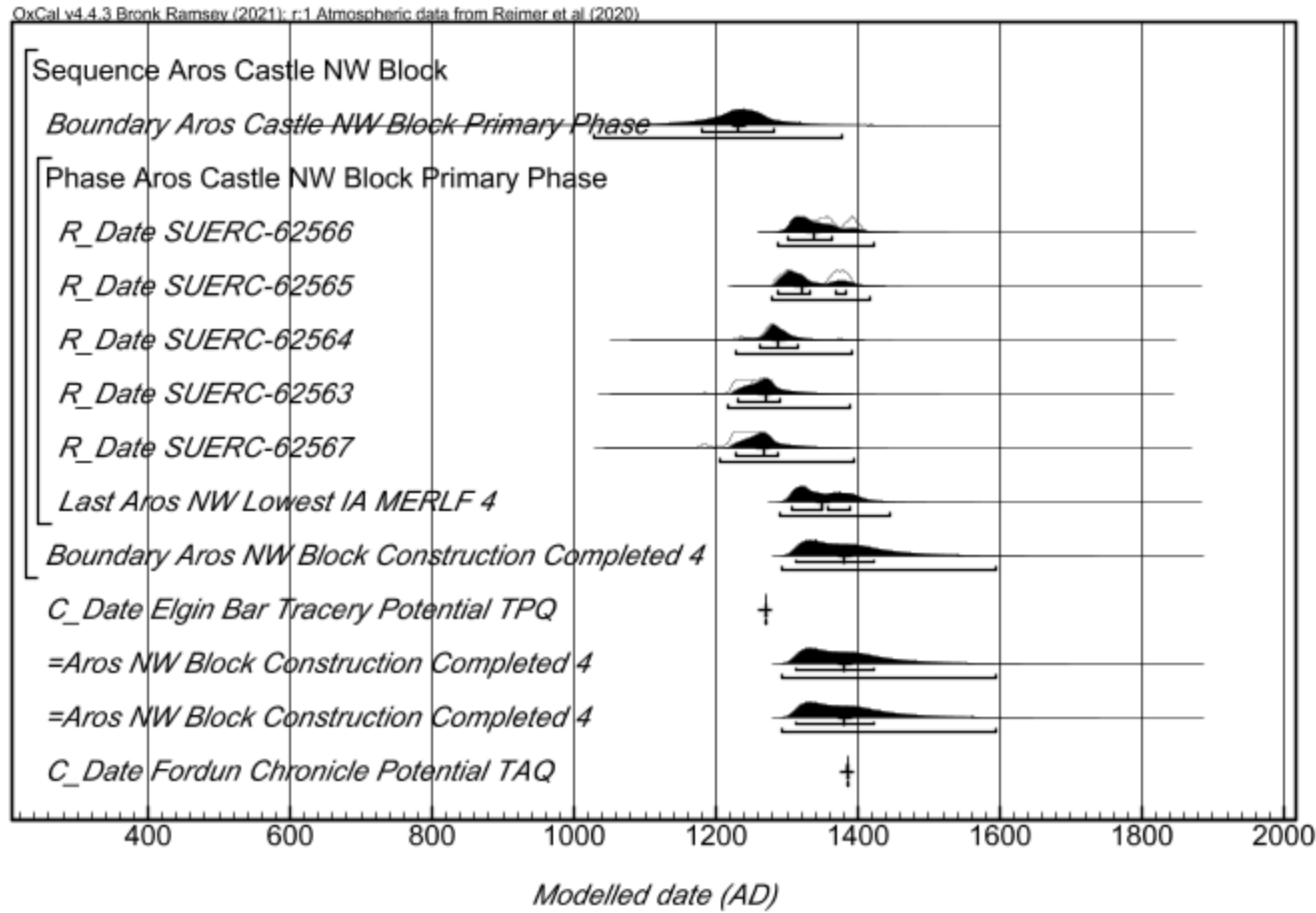
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Aros Castle NW Block")
  {
    Boundary("Aros Castle NW Block Primary Phase");
    Phase(" Aros Castle NW Block Primary Phase ")
    {
      R_Date("SUERC-62566", 607, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62565", 657, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62564", 736, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62563", 787, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62567", 804, 34)
      {
        Outlier("Charcoal", 1);
      };
    }
  }
}
```

```
};  
Last("Aros NW Lowest IA MERLF 4");  
};  
Boundary("Aros NW Block Construction Completed 4");  
};  
Order("Post Elgin Bar Tracery Probability 4")  
{  
  C_Date("Elgin Bar Tracery Potential TPQ", 1270, 0.05);  
  Date("=Aros NW Block Construction Completed 4");  
};  
Order("Pre Fordun Chronicle Probability 4")  
{  
  Date("=Aros NW Block Construction Completed 4");  
  C_Date("Fordun Chronicle Potential TAQ", 1385, 0.05);  
};  
};
```

3.12.2 CS2; Aros Castle NW block; uniform Prior/default Charcoal Outlier Model; results table

Name: Aros Char	Unmodelled (BC/AD)							Modelled (BC/AD)								Indices Amodel 81.3 Aoverall 181.3				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C	
Outlier_Model Charcoal								-18	1	68.268949	-107	1	95.449974	-7					100	
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.73					100	
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	1.515	3.60E-17	1.431	68.268949	3.60E-17	2.034	95.449974	0.99		100			99.7	
Sequence Aros Castle NW Block																				
Boundary Aros Castle NW Block Primary Phase								1179	1282	68.268949	1028	1378	95.449974	1231					98.4	
Phase Aros Castle NW Block Primary Phase																				
R_Date SUERC-62566	1306	1396	68.268949	1299	1406	95.449973	1348	1302	1363	68.268949	1287	1421	95.449974	1336		98			99.2	
R_Date SUERC-62565	1288	1388	68.26895	1279	1395	95.449974	1340	1286	1384	68.268949	1279	1415	95.449974	1320		98.3			99.4	
R_Date SUERC-62564	1235	1296	68.268949	1224	1377	95.449974	1275	1262	1315	68.268949	1227	1390	95.449974	1287		106.5			99.9	
R_Date SUERC-62563	1227	1270	68.26895	1180	1282	95.449974	1247	1232	1290	68.268949	1217	1389	95.449974	1270		103			99.7	
R_Date SUERC-62567	1222	1265	68.268949	1177	1278	95.449973	1241	1227	1288	68.268949	1204	1394	95.449974	1266		105.4			99.6	
Last Aros NW Lowest IA MERLF 4								1305	1389	68.26895	1291	1445	95.449974	1350					98.4	
Boundary Aros NW Block Construction Completed 4								1311	1422	68.268949	1293	1594	95.449974	1381					97.5	
Order Post Elgin Bar Tracery Probability 4																				
C_Date Elgin Bar Tracery Potential TPQ				1269	1270	95.449974	1270	1269	1270	68.268949	1269	1270	95.449974	1270		70.7			100	
=Aros NW Block Construction Completed 4								1311	1422	68.268949	1293	1594	95.449974	1381					97.5	
Order Pre Fordun Chronicle Probability 4																				
=Aros NW Block Construction Completed 4								1311	1422	68.268949	1293	1594	95.449974	1381					97.5	
C_Date Fordun Chronicle Potential TAQ				1384	1385	95.449974	1385	1384	1385	68.268949	1384	1385	95.449974	1385		70.7			100	

3.12.3 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; multiple plot



3.12.4 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; End Boundary TPQ probability

Order: Aros Char TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Block Construction Completed 4
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Block Construction Completed 4	0	0

3.12.5 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; End Boundary TAQ probability

Order: Aros Char TAQ Probability	Aros NW Block Construction Completed 4	Fordun Chronicle Potential TAQ
Aros NW Block Construction Completed 4	0	0.5202
Fordun Chronicle Potential TAQ	0.4798	0

3.12.6 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; Last distribution TPQ probability

Order: Aros Char Last TPQ Probability	Elgin Bar Tracery Potential TPQ	Aros NW Lowest IA MERLF 4
Elgin Bar Tracery Potential TPQ	0	1
Aros NW Lowest IA MERLF 4	0	0

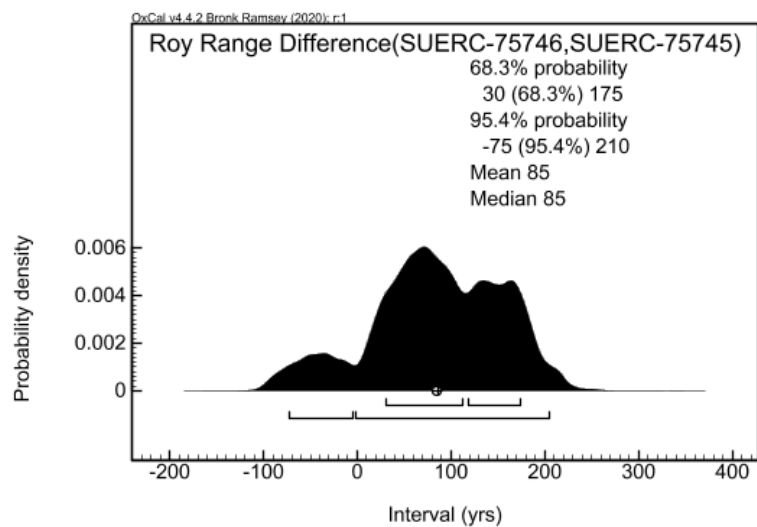
3.12.7 CS2; Aros Castle NW block; uniform prior/default Charcoal Outlier Model; Last distribution TAQ probability

Order: Aros Char Last TAQ Probability	Aros NW Lowest IA MERLF 4	Fordun Chronicle Potential TAQ
Aros NW Lowest IA MERLF 4	0	0.756
Fordun Chronicle Potential TAQ	0.24398	0

3.13.1 CS3; Castle Roy; dataset age range; model script

```
Options(  
{  
  Resolution=1 year;  
  kIterations=20000;  
});  
Plot()  
{  
  Phase("Castle Roy")  
  {  
    R_Date("SUERC-75746", 878, 31);  
    R_Date("SUERC-75745", 985, 31);  
    Difference("Roy Range", "SUERC-75746", "SUERC-75745");  
  };  
};
```

3.13.2 CS3; Castle Roy; dataset age range; distribution plot



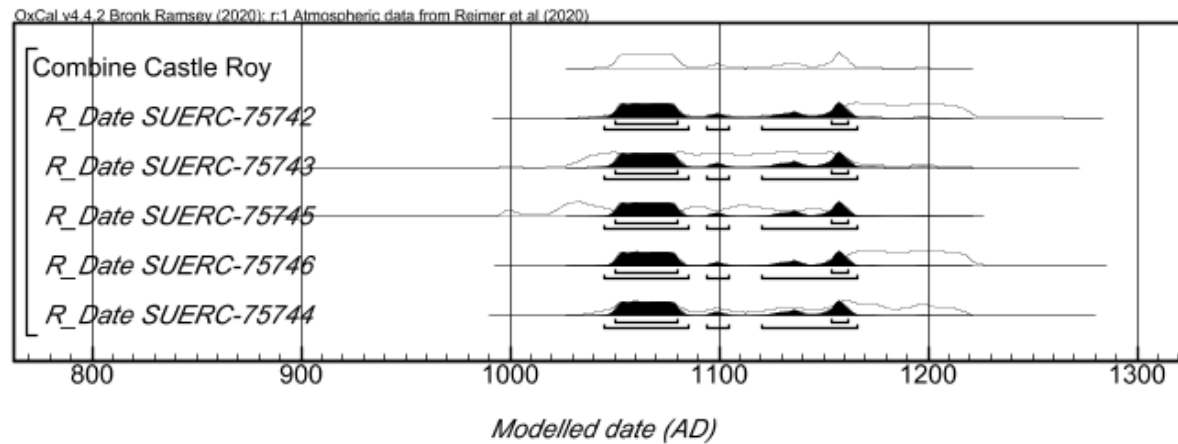
3.14.1 CS3; Castle Roy; Combine; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Combine("Castle Roy")
  {
    R_Date("SUERC-75742", 887, 31);
    R_Date("SUERC-75743", 939, 31);
    R_Date("SUERC-75745", 985, 31);
    R_Date("SUERC-75746", 878, 31);
    R_Date("SUERC-75744", 905, 31);
  };
};
```

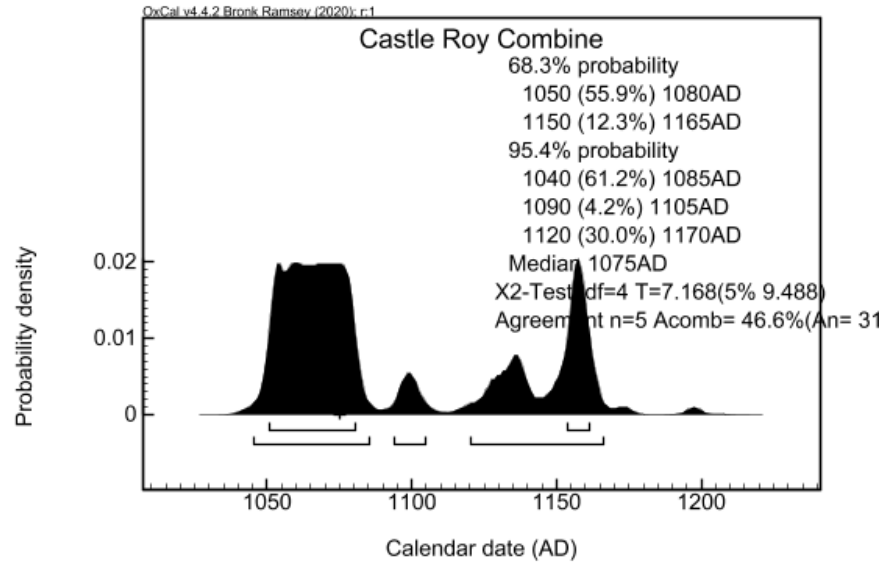
3.14.2 CS3; Castle Roy; Combine; results table

Name: Castle Roy Combined	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Combine Castle Roy	1050	1165	68.268949	1040	1170	95.449974	1075								46.6				
R_Date SUERC-75742	1050	1220	68.268949	1040	1225	95.449973	1170	1050	1165	68.268949	1040	1170	95.449974	1075		73.8			
R_Date SUERC-75743	1040	1160	68.26895	1025	1200	95.449974	1100	1050	1165	68.268949	1040	1170	95.449974	1075		101.8			
R_Date SUERC-75745	1020	1150	68.268949	990	1160	95.449973	1090	1050	1165	68.268949	1040	1170	95.449974	1075		39.3			
R_Date SUERC-75746	1055	1220	68.268949	1045	1260	95.449974	1180	1050	1165	68.268949	1040	1170	95.449974	1075		51.5			
R_Date SUERC-75744	1045	1215	68.268949	1040	1220	95.449973	1135	1050	1165	68.268949	1040	1170	95.449974	1075		119			

3.14.3 CS3; Castle Roy; Combine; multiple plot



3.14.4 CS3; Castle Roy; Combine; distribution plot



3.15.1 CS3; Castle Roy; exponential prior/no outlier model; model script

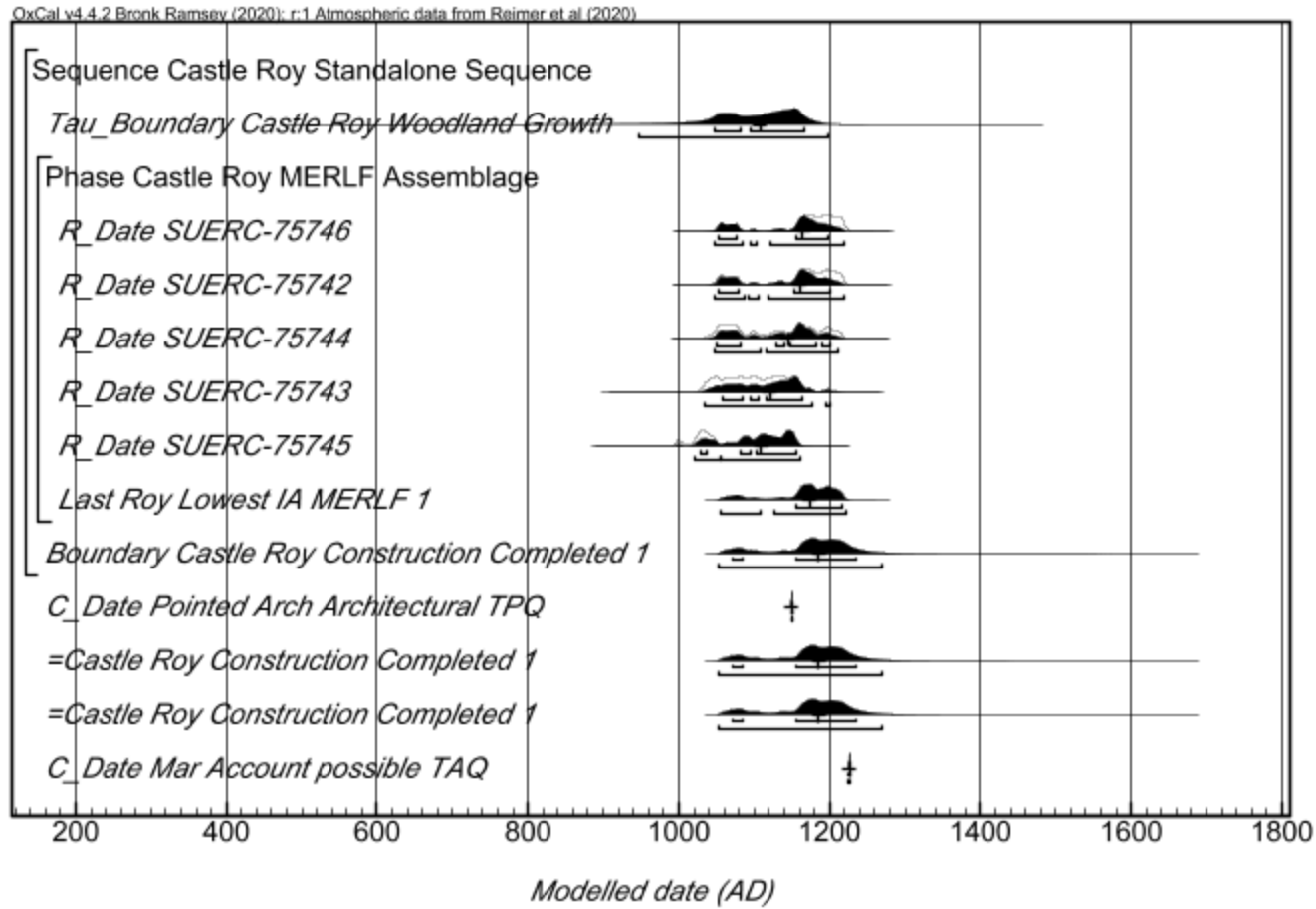
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Sequence("Castle Roy Standalone Sequence")
  {
    Tau_Boundary("Castle Roy Woodland Growth");
    Phase("Castle Roy MERLF Assemblage")
    {
      R_Date("SUERC-75746", 878, 31)
      {
      };
      R_Date("SUERC-75742", 887, 31)
      {
      };
      R_Date("SUERC-75744", 905, 31)
      {
      };
      R_Date("SUERC-75743", 939, 31)
      {
      };
      R_Date("SUERC-75745", 985, 31)
      {
      };
      Last("Roy Lowest IA MERLF 1");
    };
    Boundary("Castle Roy Construction Completed 1");
  };
  Order("Gothic Arch Probability")
}
```

```
{  
  C_Date("Pointed Arch Architectural TPQ", 1150, 0.05);  
  Date("=Castle Roy Construction Completed 1");  
};  
Order("James of Mar Probability")  
{  
  Date("=Castle Roy Construction Completed 1");  
  C_Date("Mar Account possible TAQ", 1226, 0.05);  
};  
};
```

3.15.2 CS3; Castle Roy; exponential prior/no outlier model; results table

Name: Castle Roy Tau	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 73.2 Aoverall 71.9				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Sequence Castle Roy Standalone Sequence																			
Tau_Boundary Castle Roy Woodland Growth								1049	1166	68.26895	947	1198	95.44997	1107					99.7
Phase Castle Roy MERLF Assemblage																			
R_Date SUERC-75746	1055	1219	68.26895	1045	1256	95.44997	1179	1053	1199	68.26895	1047	1220	95.44997	1164		91.5			99.9
R_Date SUERC-75742	1053	1217	68.26895	1043	1223	95.44997	1170	1053	1200	68.26895	1047	1218	95.44997	1160		97.7			99.9
R_Date SUERC-75744	1048	1211	68.26895	1041	1217	95.44997	1135	1051	1200	68.26895	1046	1212	95.44997	1144		104.1			99.9
R_Date SUERC-75743	1041	1156	68.26895	1029	1198	95.44997	1102	1058	1163	68.26895	1034	1199	95.44997	1120		98.5			99.9
R_Date SUERC-75745	1022	1150	68.26895	994	1157	95.44997	1088	1030	1156	68.26895	1020	1161	95.44997	1109		91			99.9
Last Roy Lowest IA MERLF 1								1156	1217	68.26895	1054	1221	95.44997	1174					99.9
Boundary Castle Roy Construction Completed 1								1072	1235	68.26895	1054	1270	95.44997	1186					99.6
Order Gothic Arch Probability																			
C_Date Pointed Arch Architectural TPQ				1149	1150	95.44997	1150	1149	1150	68.26895	1149	1150	95.44997	1150		70.7			100
=Castle Roy Construction Completed 1								1072	1235	68.26895	1054	1270	95.44997	1186					99.6
Order James of Mar Probability																			
=Castle Roy Construction Completed 1								1072	1235	68.26895	1054	1270	95.44997	1186					99.6
C_Date Mar Account possible TAQ				1225	1226	95.44997	1226	1225	1226	68.26895	1225	1226	95.44997	1226		70.8			100

3.15.3 CS3; Castle Roy; exponential prior/no outlier model; multiple plot



3.15.4 CS3; Castle Roy; exponential prior/no outlier model; End Boundary TPQ probability table

Order: Castle Roy Tau TPQ Probability	Pointed Arch Architectural TPQ	Castle Roy Construction Completed 1
Pointed Arch Architectural TPQ	0	0.7682
Castle Roy Construction Completed 1	0.23177	0

3.15.5 CS3; Castle Roy; exponential prior /no outlier model; End Boundary TAQ probability table

Order: Castle Roy Tau TAQ Probability	Castle Roy Construction Completed 1	Mar Account possible TAQ
Castle Roy Construction Completed 1	0	0.8457
Mar Account possible TAQ	0.15429	0

3.15.6 CS3; Castle Roy; exponential prior /no outlier model; Last distribution TPQ probability table

Order: Roy Tau Last TPQ Probability	Pointed Arch Architectural Potential TPQ	Roy Lowest IA MERLF 1
Pointed Arch Architectural Potential TPQ	0	0.7384
Roy Lowest IA MERLF 1	0.2616	0

3.15.7 CS3; Castle Roy; exponential prior /no outlier model; Last distribution TAQ probability table

Order: Roy Tau Last TAQ Probability	Roy Lowest IA MERLF 1	Mar Account Potential TAQ
Roy Lowest IA MERLF 1	0	0.9924
Mar Account Potential TAQ	0.007631	0

3.16.1 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; model script

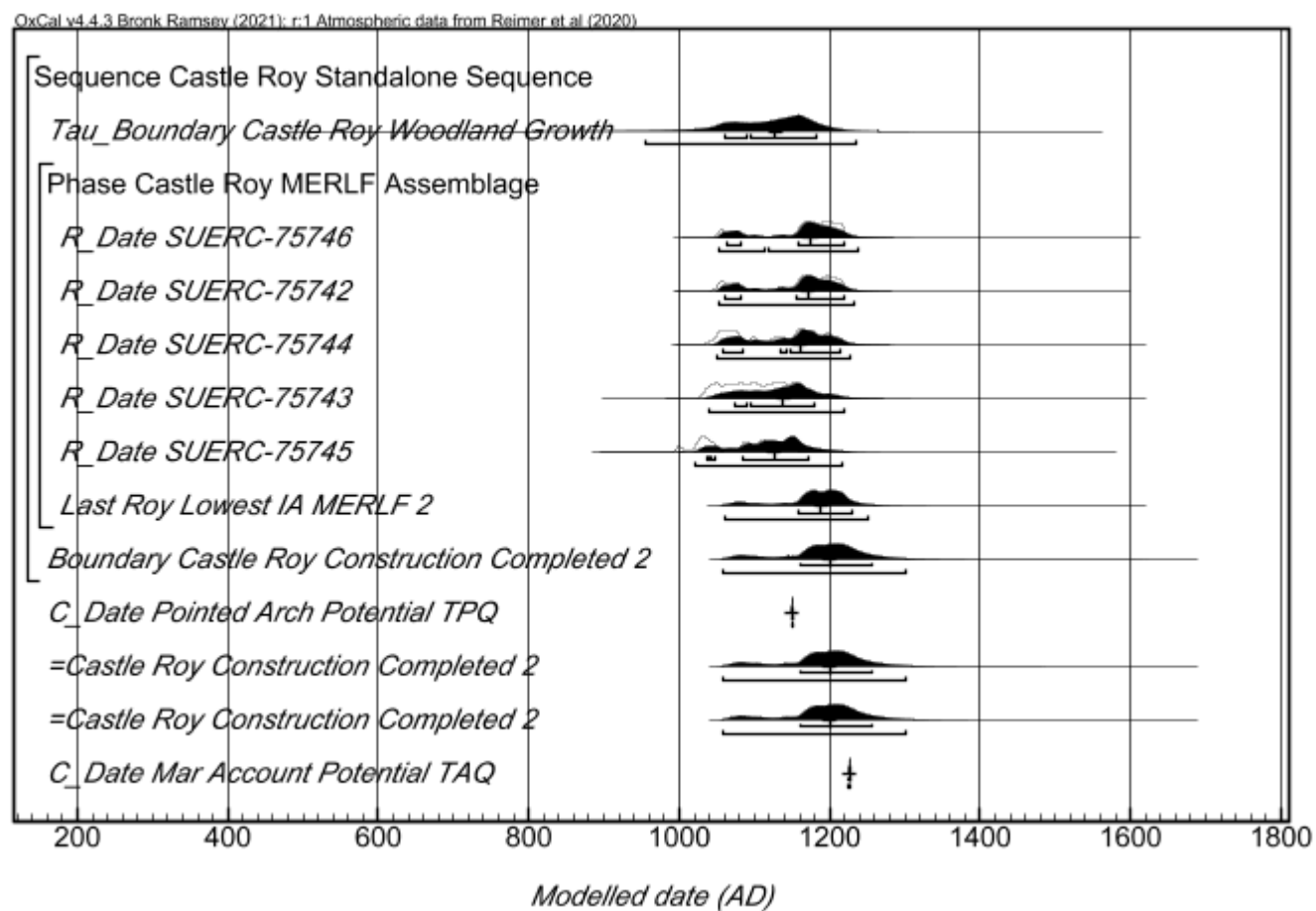
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,2),"t");
  Sequence("Castle Roy Standalone Sequence")
  {
    Tau_Boundary("Castle Roy Woodland Growth");
    Phase("Castle Roy MERLF Assemblage")
    {
      R_Date("SUERC-75746", 878, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75742", 887, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75744", 905, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75743", 939, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75745", 985, 31)
      {
        Outlier("Charcoal", 1);
      };
      Last("Roy Lowest IA MERLF 2");
    };
  };
};
```

```
Boundary("Castle Roy Construction Completed 2");
};
Order("Gothic Arch Probability")
{
  C_Date("Pointed Arch Potential TPQ", 1150, 0.05);
  Date("=Castle Roy Construction Completed 2");
};
Order("James of Mar Probability")
{
  Date("=Castle Roy Construction Completed 2");
  C_Date("Mar Account Potential TAQ", 1226, 0.05);
};
};
```

3.16.2 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; main results table

Name: Roy TmodC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 75.5 Aoverall 74.6				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-14	1	68.268949	-78	1	95.449974	-6					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.73					100
U(0,2)	1.99E-17	2	68.268949	1.99E-17	2	95.449974	1	2.69E-17	1.242	68.268949	2.69E-17	1.83	95.449974	0.912		100			100
Sequence Castle Roy Standalone Sequence																			
Tau_Boundary Castle Roy Woodland Growth								1060	1183	68.268949	954	1235	95.449974	1127					99.7
Phase Castle Roy MERLF Assemblage																			
R_Date SUERC-75746	1055	1219	68.268949	1045	1256	95.449974	1179	1064	1220	68.268949	1052	1238	95.449974	1174		93.6			99.9
R_Date SUERC-75742	1053	1217	68.268949	1043	1223	95.449973	1170	1060	1218	68.26895	1052	1233	95.449974	1170		98.5			99.9
R_Date SUERC-75744	1048	1211	68.268949	1041	1217	95.449973	1135	1059	1213	68.26895	1050	1228	95.449974	1160		102.8			99.9
R_Date SUERC-75743	1041	1156	68.26895	1029	1198	95.449974	1102	1073	1179	68.268949	1041	1218	95.449974	1138		99			99.9
R_Date SUERC-75745	1022	1150	68.268949	994	1157	95.449973	1088	1036	1170	68.268949	1022	1217	95.449974	1126		93.2			99.9
Last Roy Lowest IA MERLF 2								1159	1229	68.268949	1061	1252	95.449974	1187					99.9
Boundary Castle Roy Construction Completed 2								1160	1255	68.268949	1059	1300	95.449974	1200					99.5
Order Gothic Arch Probability																			
C_Date Pointed Arch Potential TPQ				1149	1150	95.449974	1150	1149	1150	68.268949	1149	1150	95.449974	1150		70.6			100
=Castle Roy Construction Completed 2								1160	1255	68.268949	1059	1300	95.449974	1200					99.5
Order James of Mar Probability																			
=Castle Roy Construction Completed 2								1160	1255	68.268949	1059	1300	95.449974	1200					99.5
C_Date Mar Account Potential TAQ				1225	1226	95.449974	1226	1225	1226	68.268949	1225	1226	95.449974	1226		70.7			100

3.16.3 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; multiple plot



3.16.4 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ probability table

Order: Roy TmodC TPQ Probability	Pointed Arch Potential TPQ	Castle Roy Construction Completed 2
Pointed Arch Potential TPQ	0	0.8241
Castle Roy Construction Completed 2	0.17594	0

3.16.5 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ probability table

Order: Roy TmodC TAQ Probability	Castle Roy Construction Completed 2	Mar Account Potential TAQ
Castle Roy Construction Completed 2	0	0.7338
Mar Account Potential TAQ	0.26623	0

3.16.6 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ probability table

Order: Roy TmodC Last TPQ Probability	Pointed Arch Potential TPQ	Roy Lowest IA MERLF 2
Pointed Arch Potential TPQ	0	0.8028
Roy Lowest IA MERLF 2	0.19725	0

3.16.7 CS3; Castle Roy; exponential prior/modified Charcoal Outlier Model; Last distribution TAQ probability table

Order: Roy Last TAQ Probability	Roy Lowest IA MERLF 2	Mar Account Potential TAQ
Roy Lowest IA MERLF 2	0	0.8922
Mar Account Potential TAQ	0.10785	0

3.17.1 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; model script

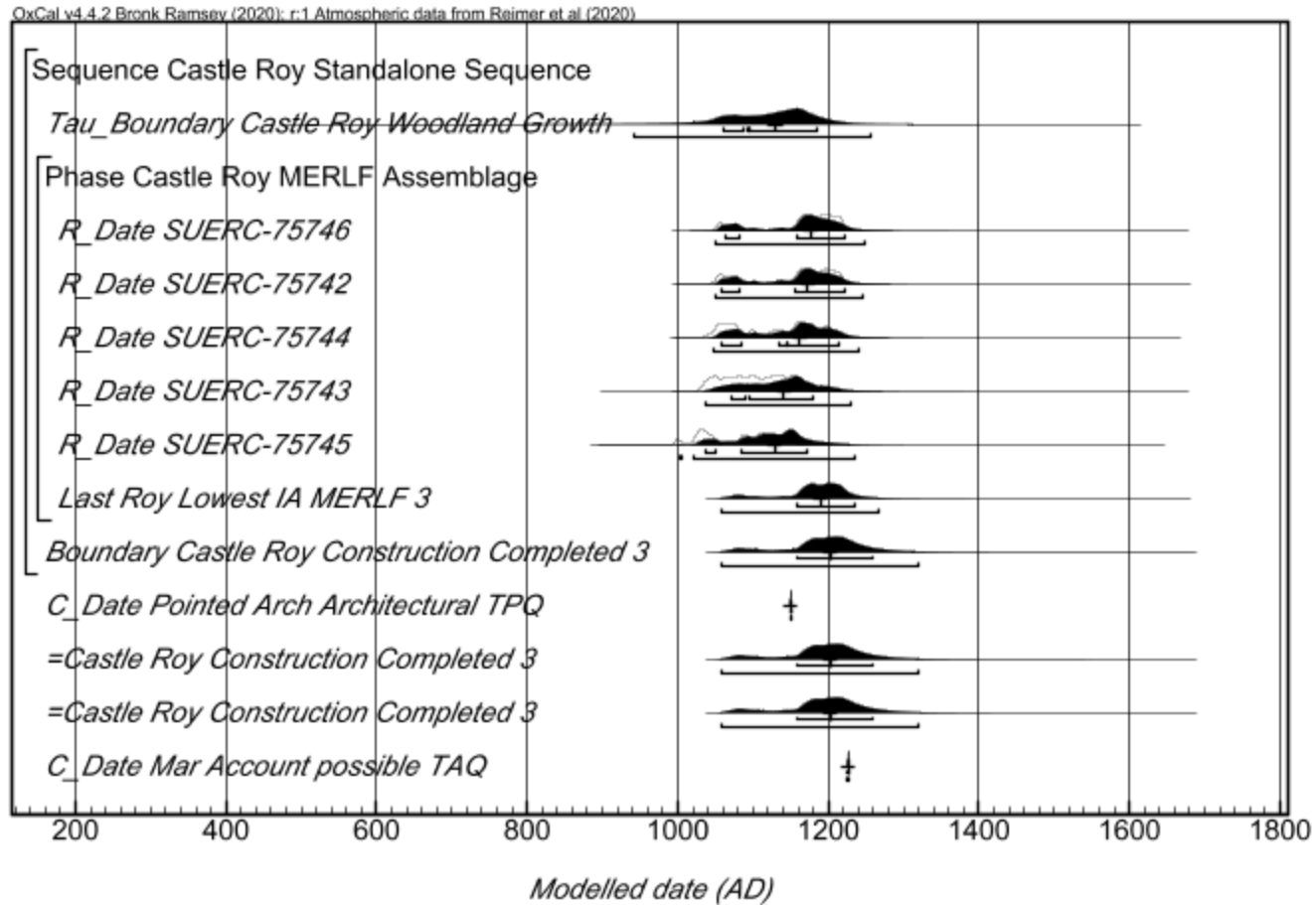
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Castle Roy Standalone Sequence")
  {
    Tau_Boundary("Castle Roy Woodland Growth");
    Phase("Castle Roy MERLF Assemblage")
    {
      R_Date("SUERC-75746", 878, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75742", 887, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75744", 905, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75743", 939, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75745", 985, 31)
      {
```

```
    Outlier("Charcoal", 1);  
};  
    Last("Roy Lowest IA MERLF 3");  
};  
    Boundary("Castle Roy Construction Completed 3");  
};  
    Order("Gothic Arch Probability")  
    {  
        C_Date("Pointed Arch Architectural TPQ", 1150, 0.05);  
        Date("=Castle Roy Construction Completed 3");  
    };  
    Order("James of Mar Probability")  
    {  
        Date("=Castle Roy Construction Completed 3");  
        C_Date("Mar Account possible TAQ", 1226, 0.05);  
    };  
};
```

3.17.2 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; main results table

Name: Castle Roy TandC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 75.7 Aoverall 74.8				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-17	1	68.26895	-103	1	95.44997	-6					100
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997	-0.74							-0.72					100
U(0,3)	2.21E-17	3	68.26895	2.21E-17	3	95.44997	1.515	3.60E-17	1.314	68.26895	3.60E-17	2.01	95.44997	0.957		100			99.9
Sequence Castle Roy Standalone Sequence																			
Tau_Boundary Castle Roy Woodland Growth								1060	1184	68.26895	941	1255	95.44997	1129					99.6
Phase Castle Roy MERLF Assemblage																			
R_Date SUERC-75746	1055	1219	68.26895	1045	1256	95.44997	1179	1062	1221	68.26895	1051	1247	95.44997	1176		93.8			99.9
R_Date SUERC-75742	1053	1217	68.26895	1043	1223	95.44997	1170	1058	1220	68.26895	1050	1245	95.44997	1172		98.5			99.9
R_Date SUERC-75744	1048	1211	68.26895	1041	1217	95.44997	1135	1059	1214	68.26895	1047	1240	95.44997	1162		102.6			99.9
R_Date SUERC-75743	1041	1156	68.26895	1029	1198	95.44997	1102	1072	1180	68.26895	1037	1231	95.44997	1140		99.1			99.9
R_Date SUERC-75745	1022	1150	68.26895	994	1157	95.44997	1088	1036	1172	68.26895	1001	1235	95.44997	1128		93.5			99.9
Last Roy Lowest IA MERLF 3								1157	1234	68.26895	1058	1267	95.44997	1189					99.9
Boundary Castle Roy Construction Completed 3								1159	1260	68.26895	1058	1319	95.44997	1202					99.6
Order Gothic Arch Probability																			
C_Date Pointed Arch Architectural TPQ				1149	1150	95.44997	1150	1149	1150	68.26895	1149	1150	95.44997	1150		70.7			100
=Castle Roy Construction Completed 3								1159	1260	68.26895	1058	1319	95.44997	1202					99.6
Order James of Mar Probability																			
=Castle Roy Construction Completed 3								1159	1260	68.26895	1058	1319	95.44997	1202					99.6
C_Date Mar Account possible TAQ				1225	1226	95.44997	1226	1225	1226	68.26895	1225	1226	95.44997	1226		70.7			100

3.17.3 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; multiple plot



3.17.4 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Castle Roy TPQ Probability TandC	Pointed Arch Architectural TPQ	Castle Roy Construction Completed 3
Pointed Arch Architectural TPQ	0	0.8308
Castle Roy Construction Completed 3	0.16923	0

3.17.5 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Castle Roy TAQ Probability TandC	Castle Roy Construction Completed 3	Mar Account possible TAQ
Castle Roy Construction Completed 3	0	0.7067
Mar Account possible TAQ	0.2933	0

3.17.6 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; Last distribution TPQ probability table

Order: Roy TandC Last TPQ Probability	Pointed Arch Potential TPQ	Roy Lowest IA MERLF 3
Pointed Arch Potential TPQ	0	0.81
Roy Lowest IA MERLF 3	0.19	0

3.17.7 CS3; Castle Roy; exponential prior/default Charcoal Outlier Model; Last distribution TAQ probability table

Order: Roy TandC Last TAQ Probability	Roy Lowest IA MERLF 3	Mar Account Potential TAQ
Roy Lowest IA MERLF 3	0	0.8618
Mar Account Potential TAQ	0.13819	0

3.18.1 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; model script

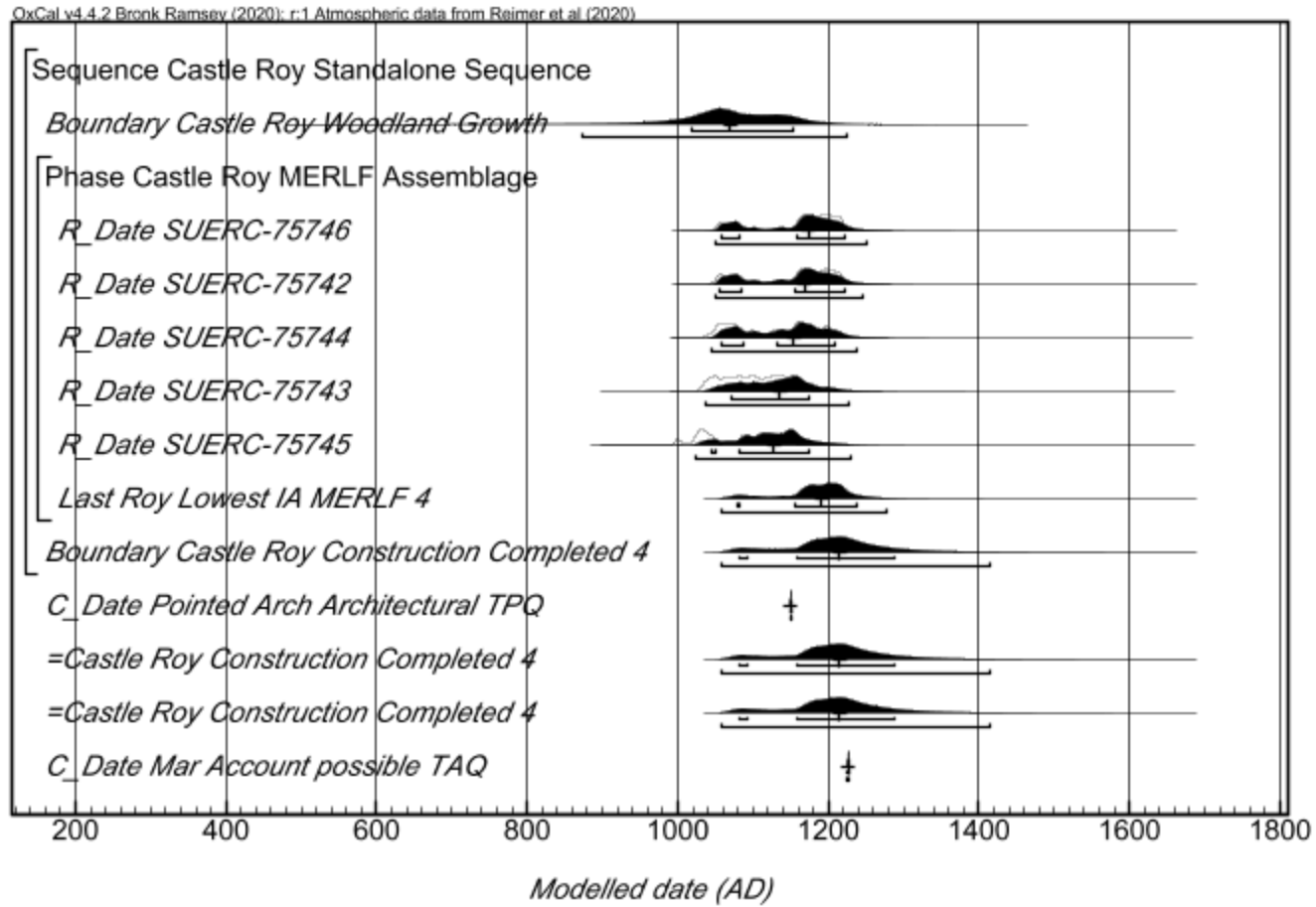
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Castle Roy Standalone Sequence")
  {
    Boundary("Castle Roy Woodland Growth");
    Phase("Castle Roy MERLF Assemblage")
    {
      R_Date("SUERC-75746", 878, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75742", 887, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75744", 905, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75743", 939, 31)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75745", 985, 31)
      {
        Outlier("Charcoal", 1);
      };
    }
  }
};
```

```
Last("Roy Lowest IA MERLF 4");
};
Boundary("Castle Roy Construction Completed 4");
};
Order("Gothic Arch Probability")
{
  C_Date("Pointed Arch Architectural TPQ", 1150, 0.05);
  Date("=Castle Roy Construction Completed 4");
};
Order("James of Mar Probability")
{
  Date("=Castle Roy Construction Completed 4");
  C_Date("Mar Account possible TAQ", 1226, 0.05);
};
};
```

3.18.2 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; main results table

Name: Castle Roy Char	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 74 Aoverall 73.3				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-16	1	68.26895	-101	1	95.44997	-6					100
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997	-0.74							-0.72					100
U(0,3)	2.21E-17	3	68.26895	2.21E-17	3	95.44997	1.515	3.60E-17	1.308	68.26895	3.60E-17	2.004	95.44997	0.951		100			99.9
Sequence Castle Roy Standalone Sequence																			
Boundary Castle Roy Woodland Growth								1019	1154	68.26895	872	1224	95.44997	1069					98.4
Phase Castle Roy MERLF Assemblage																			
R_Date SUERC-75746	1055	1219	68.26895	1045	1256	95.44997	1179	1057	1221	68.26895	1050	1251	95.44997	1174		90.8			99.7
R_Date SUERC-75742	1053	1217	68.26895	1043	1223	95.44997	1170	1056	1220	68.26895	1049	1246	95.44997	1168		95.3			99.8
R_Date SUERC-75744	1048	1211	68.26895	1041	1217	95.44997	1135	1057	1209	68.26895	1046	1239	95.44997	1154		101.9			99.9
R_Date SUERC-75743	1041	1156	68.26895	1029	1198	95.44997	1102	1072	1174	68.26895	1037	1227	95.44997	1135		101			99.7
R_Date SUERC-75745	1022	1150	68.26895	994	1157	95.44997	1088	1044	1173	68.26895	1023	1230	95.44997	1127		93.3			99.5
Last Roy Lowest IA MERLF 4								1080	1238	68.26895	1058	1276	95.44997	1191					99.4
Boundary Castle Roy Construction Completed 4								1082	1289	68.26895	1057	1414	95.44997	1214					98.5
Order Gothic Arch Probability																			
C_Date Pointed Arch Architectural TPQ				1149	1150	95.44997	1150	1149	1150	68.26895	1149	1150	95.44997	1150		70.8			100
=Castle Roy Construction Completed 4								1082	1289	68.26895	1057	1414	95.44997	1214					98.5
Order James of Mar Probability																			
=Castle Roy Construction Completed 4								1082	1289	68.26895	1057	1414	95.44997	1214					98.5
C_Date Mar Account possible TAQ				1225	1226	95.44997	1226	1225	1226	68.26895	1225	1226	95.44997	1226		70.8			100

3.18.3 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; multiple plot



3.18.4 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Castle Roy TPQ Probability Char	Pointed Arch Architectural TPQ	Castle Roy Construction Completed 4
Pointed Arch Architectural TPQ	0	0.8396
Castle Roy Construction Completed 4	0.16041	0

3.18.5 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Castle Roy TAQ Probability Char	Castle Roy Construction Completed 4	Mar Account possible TAQ
Castle Roy Construction Completed 4	0	0.583
Mar Account possible TAQ	0.417	0

3.18.6 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; Last TPQ probability table

Order: Roy Char Last TPQ Probability	Pointed Arch Potential TPQ	Roy Lowest IA MERLF 4
Pointed Arch Potential TPQ	0	0.8015
Roy Lowest IA MERLF 4	0.19851	0

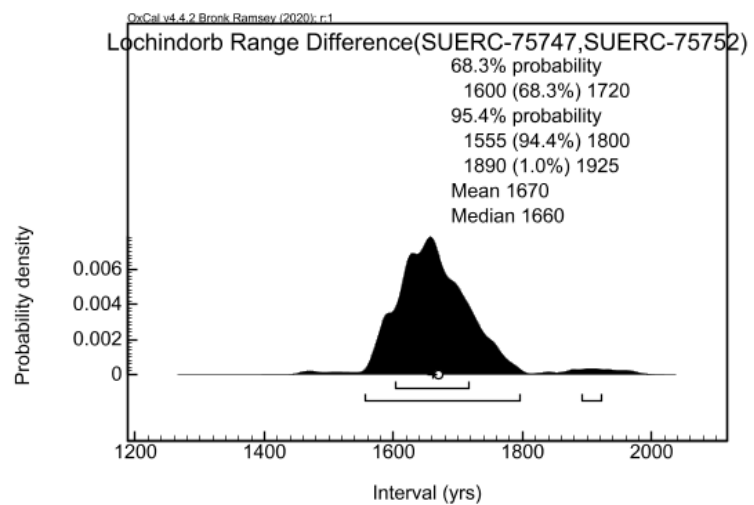
3.18.7 CS3; Castle Roy; uniform prior/default Charcoal Outlier Model; Last TAQ probability table

Order: Roy Char Last TAQ Probability	Roy Lowest IA MERLF 4	Mar Account Potential TAQ
Roy Lowest IA MERLF 4	0	0.8446
Mar Account Potential TAQ	0.15535	0

3.19.1 CS4; Lochindorb Castle; dataset age range; model script

```
Options()  
{  
  Resolution=1 year;  
  kIterations=20000;  
};  
Plot()  
{  
  Phase("Lochindorb Castle Phase 1 ")  
  {  
    R_Date("SUERC-75747", 835, 31);  
    R_Date("SUERC-75752", 2368, 31);  
    Difference("Lochindorb Range", "SUERC-75747", "SUERC-75752");  
  };  
};
```

3.19.2 CS4; Lochindorb Castle; dataset age range; distribution plot



3.20.1 CS4; Lochindorb Castle; Combine; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Combine("Lochindorb Castle Phase 1")
  {
    R_Date("SUERC-75747", 835, 31);
    R_Date("SUERC-75751", 862, 31);
    R_Date("SUERC-75753", 932, 31);
    R_Date("SUERC-75754", 940, 31);
    R_Date("SUERC-75752", 2368, 31);
  };
};
```

3.20.2 CS4; Lochindorb Castle; Combine; results table **failed**

Name: Lochindorb Castle Full Dataset Combined	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Lochindorb Castle Phase 1																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974											
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974											
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973											
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974											
R_Date SUERC-75752	-477	-394	68.26895	-714	-389	95.449973											

3.21.1 CS4; Lochindorb Castle; exponential prior/no outlier model; model script

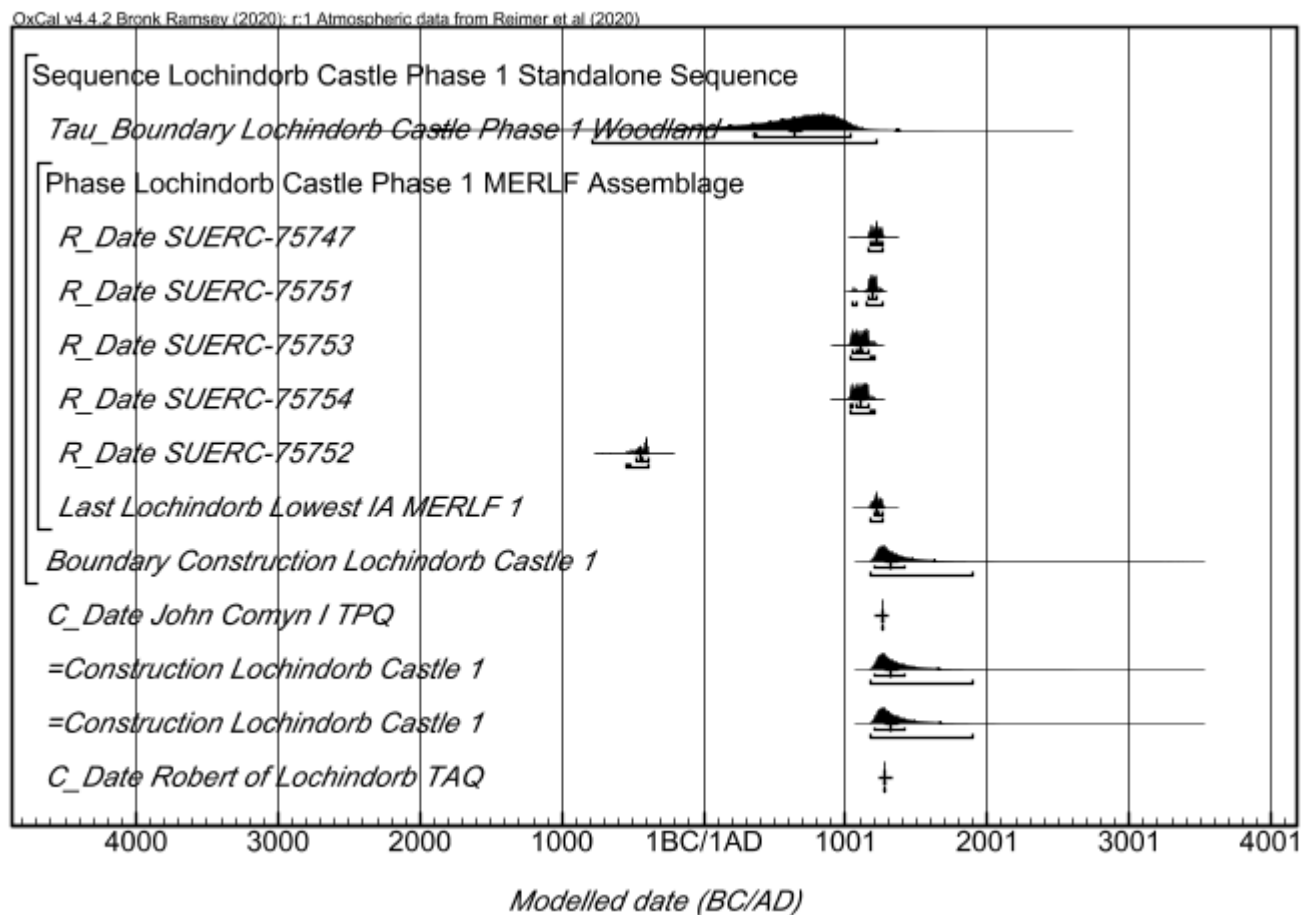
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
      };
      R_Date("SUERC-75751", 862, 31)
      {
      };
      R_Date("SUERC-75753", 932, 31)
      {
      };
      R_Date("SUERC-75754", 940, 31)
      {
      };
      R_Date("SUERC-75752", 2368, 31)
      {
      };
      Last("Lochindorb Lowest IA MERLF 1");
    };
    Boundary("Construction Lochindorb Castle 1");
  };
  Order("John Comyn I Probability")
  {
    C_Date("John Comyn I TPQ", 1258, 0.05);
```

```
Date("=Construction Lochindorb Castle 1");  
};  
Order("Robert of Lochindorb Probability")  
{  
  Date("=Construction Lochindorb Castle 1");  
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);  
};  
};
```

3.21.2 CS4; Lochindorb Castle; exponential prior/no outlier model; results table

Name: Lochindorb Full Dataset Tau	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 78.1 Aoverall 78.1				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Tau_Boundary Lochindorb Castle Phase 1 Woodland							356	1037	68.26895	-788	1217	95.449974					99.1
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1177	1257	68.26895	1163	1266	95.449974		99.4			99.9
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1166	1219	68.268949	1051	1262	95.449973		102			100
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1046	1160	68.268949	1032	1202	95.449974		99.3			99.9
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1043	1158	68.268949	1029	1199	95.449973		99.7			99.9
R_Date SUERC-75752	-477	-394	68.26895	-714	-389	95.449973	-473	-393	68.268949	-540	-389	95.449973		103.7			99.9
Last Lochindorb Lowest IA MERLF 1							1200	1260	68.268949	1175	1267	95.449974					100
Boundary Construction Lochindorb Castle 1							1200	1418	68.268949	1171	1893	95.449974					99.4
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.449974	1257	1258	68.268949	1257	1258	95.449974		70.8			100
=Construction Lochindorb Castle 1							1200	1418	68.268949	1171	1893	95.449974					99.4
Order Robert of Lochindorb Probability																	
=Construction Lochindorb Castle 1							1200	1418	68.268949	1171	1893	95.449974					99.4
C_Date Robert of Lochindorb TAQ				1278	1279	95.449974	1278	1279	68.268949	1278	1279	95.449974		70.7			100

3.21.3 CS4; Lochindorb Castle; exponential prior/no outlier model; multiple plot



3.21.4 CS4; Lochindorb Castle; exponential prior/no outlier model; End Boundary TPQ Probability

Order: Lochindorb Full dataset TPQ Probability Tau	John Comyn I TPQ	Construction Lochindorb Castle 1
John Comyn I TPQ	0	0.7716
Construction Lochindorb Castle 1	0.22837	0

3.21.5 CS4; Lochindorb Castle; exponential prior/no outlier model; End Boundary TAQ Probability

Order: Lochindorb Full Dataset TAQ Probability Tau	Construction Lochindorb Castle 1	Robert of Lochindorb TAQ
Construction Lochindorb Castle 1	0	0.3314
Robert of Lochindorb TAQ	0.6686	0

3.21.6 CS4; Lochindorb Castle; exponential prior/no outlier model; Last distribution TPQ Probability

Order: Lochindorb Tau Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Lowest IA MERLF 1
John Comyn Potential TPQ	0	0.0789
Lochindorb Lowest IA MERLF 1	0.9211	0

3.21.7 CS4; Lochindorb Castle; exponential prior/no outlier model; Last distribution TAQ Probability

Order: Lochindorb Tau Last TAQ Probability	Lochindorb Lowest IA MERLF 1	Robert of Lochindorb Potential TAQ
Lochindorb Lowest IA MERLF 1	0	0.9999
Robert of Lochindorb Potential TAQ	0.000087	0

3.22.1 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; model script

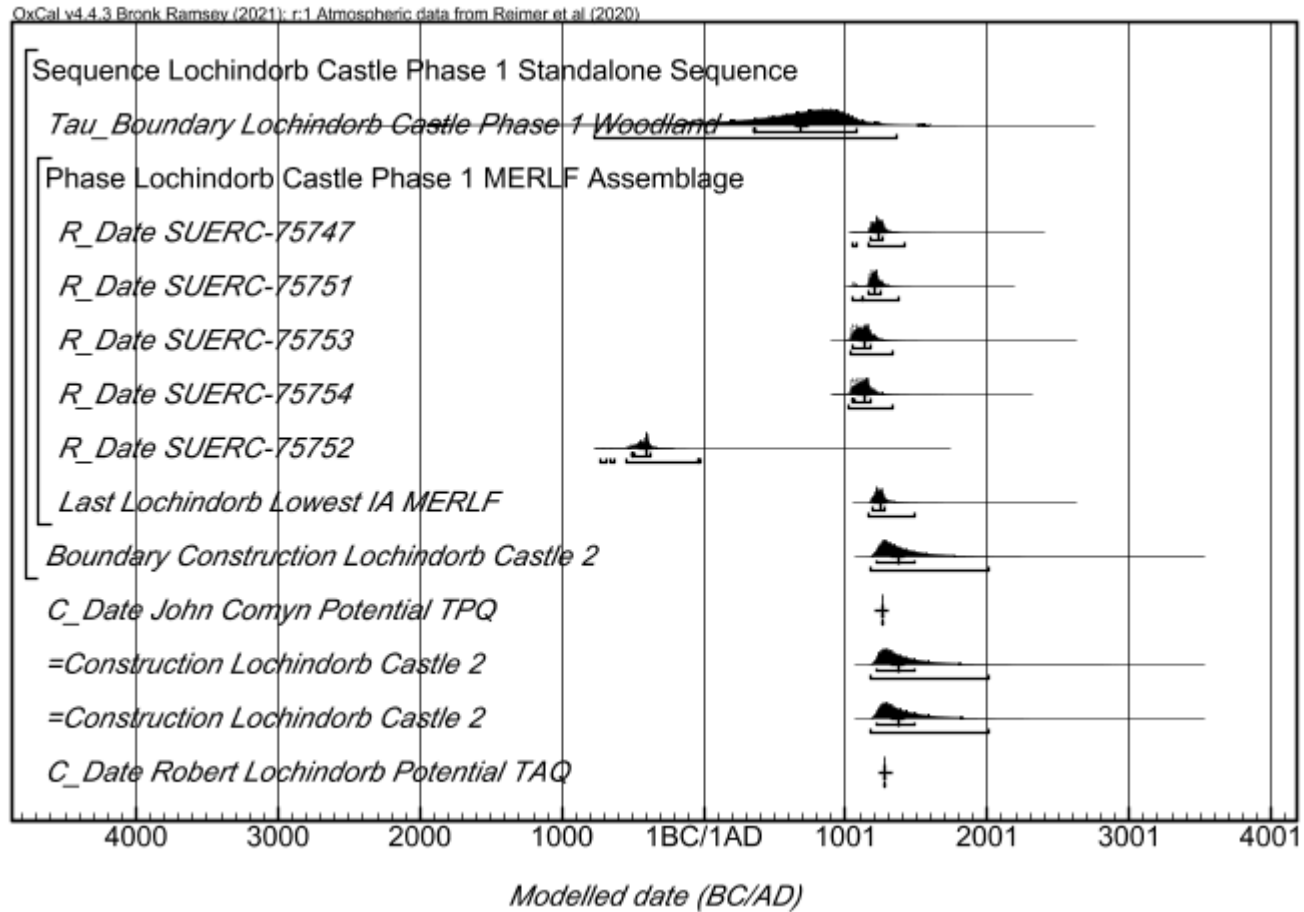
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,2.5),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75752", 2368, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      Last("Lochindorb Lowest IA MERLF");
    };
  };
};
```

```
Boundary("Construction Lochindorb Castle 2");  
};  
Order("John Comyn I Probability")  
{  
  C_Date("John Comyn Potential TPQ", 1258, 0.05);  
  Date("=Construction Lochindorb Castle 2");  
};  
Order("Robert of Lochindorb Probability")  
{  
  Date("=Construction Lochindorb Castle 2");  
  C_Date("Robert Lochindorb Potential TAQ", 1279, 0.05);  
};  
};
```

3.22.2 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; results table

Name: Lochindorb TmodC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 79.4 Aoverall 79.4				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal 1								-29	1	68.268949	-223	1	95.449974	-9					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.73					100
U(0,2.5)	4.99E-18	2.5	68.268949	4.99E-18	2.5	95.449974	1.2625	1.89E-17	1.5625	68.268949	1.89E-17	2.5	95.449973	1.135		100			97.3
Sequence Lochindorb Castle Phase 1 Standalone Sequence																			
Tau_Boundary Lochindorb Castle Phase 1 Woodland								355	1084	68.268949	-774	1357	95.449974	686					98.8
Phase Lochindorb Castle Phase 1 MERLF Assemblage																			
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1219	1182	1268	68.268949	1057	1418	95.449973	1235		99.5			99.3
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1192	1166	1253	68.268949	1052	1378	95.449974	1211		101.7			99.2
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1104	1054	1176	68.268949	1030	1329	95.449974	1136		99.5			99.2
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1102	1049	1171	68.26895	1028	1327	95.449974	1132		99.8			99.1
R_Date SUERC-75752	-477	-394	68.26895	-714	-389	95.449973	-444	-504	-370	68.268949	-729	-26	95.449974	-410		103.6			99.3
Last Lochindorb Lowest IA MERLF								1190	1276	68.268949	1165	1483	95.449974	1246					99.3
Boundary Construction Lochindorb Castle 2								1213	1483	68.268949	1178	2003	95.449974	1369					99.2
Order John Comyn I Probability																			
C_Date John Comyn Potential TPQ				1257	1258	95.449974	1258	1257	1258	68.268949	1257	1258	95.449974	1258		70.7			100
=Construction Lochindorb Castle 2								1213	1483	68.268949	1178	2003	95.449974	1369					99.2
Order Robert of Lochindorb Probability																			
=Construction Lochindorb Castle 2								1213	1483	68.268949	1178	2003	95.449974	1369					99.2
C_Date Robert Lochindorb Potential TAQ				1278	1279	95.449974	1279	1278	1279	68.268949	1278	1279	95.449974	1279		70.7			100

3.22.3 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; multiple plot



3.22.4 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ Probability

Order: Lochindorb TmodC TPQ Probability	John Comyn Potential TPQ	Construction Lochindorb Castle 2
John Comyn Potential TPQ	0	0.8644
Construction Lochindorb Castle 2	0.13559	0

3.22.5 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ Probability

Order: Lochindorb TmodC TAQ Probability	Construction Lochindorb Castle 2	Robert Lochindorb Potential TAQ
Construction Lochindorb Castle 2	0	0.21397
Robert Lochindorb Potential TAQ	0.786	0

3.22.6 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ Probability

Order: Lochindorb TmodC Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Lowest IA MERLF 2
John Comyn Potential TPQ	0	0.3895
Lochindorb Lowest IA MERLF 2	0.6105	0

3.22.7 CS4; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; Last distribution TAQ Probability

Order: Lochindorn TmodC Last TAQ Probability	Lochindorb Lowest IA MERLF 2	Robert Lochindorb Potential TAQ
Lochindorb Lowest IA MERLF 2	0	0.7495
Robert Lochindorb Potential TAQ	0.25049	0

3.23.1 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; model script

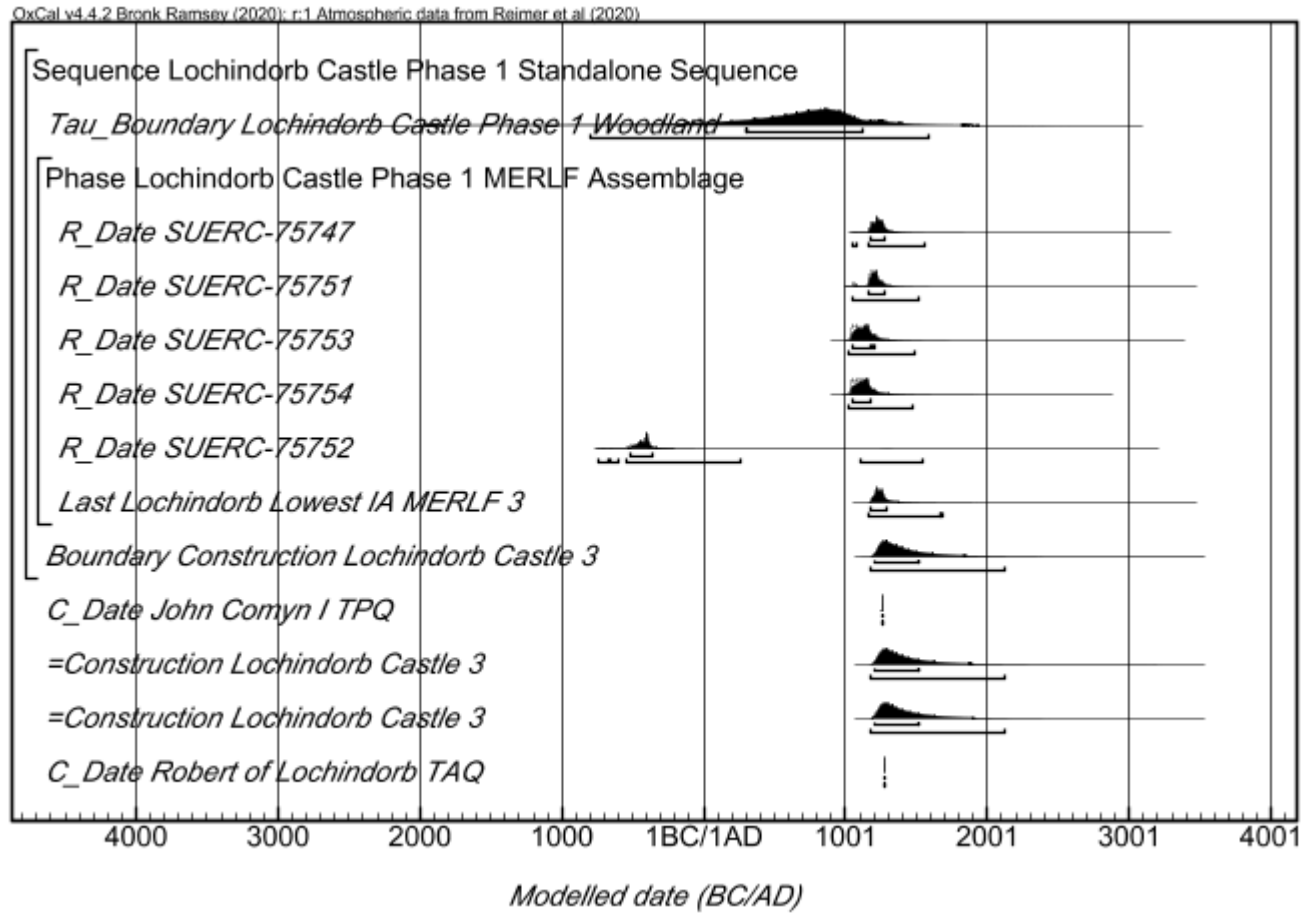
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75752", 2368, 31)
      {
        Outlier("Charcoal 1", 1);
      };
    }
  }
};
```

```
Last("Lochindorb Lowest IA MERLF 3");  
};  
Boundary("Construction Lochindorb Castle 3");  
};  
Order("John Comyn I Probability")  
{  
  C_Date("John Comyn I TPQ", 1258, 0.05);  
  Date("=Construction Lochindorb Castle 3");  
};  
Order("Robert of Lochindorb Probability")  
{  
  Date("=Construction Lochindorb Castle 3");  
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);  
};  
};
```

3.23.2 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; results table

Name: Lochindorb Castle Full Dataset TandC	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 79.3 Aoverall 79.3				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal 1 Exp(1,-10,0)	-1.24	- 0.05	68.268949	-3.19	- 0.05	95.449974	-46	1	68.268949	-457	1	95.449974					100 99.9
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	3.60E-17	1.761	68.268949	3.60E-17	2.811	95.449974		100			95.9
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Tau_Boundary Lochindorb Castle Phase 1 Woodland							297	1122	68.268949	-801	1589	95.449974					97.9
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1178	1276	68.268949	1055	1562	95.449974		99.5			99.6
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1163	1269	68.268949	1050	1519	95.449974		101.5			99.6
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1047	1201	68.268949	1028	1484	95.449974		99.6			99.5
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1044	1180	68.268949	1026	1477	95.449974		99.8			99.6
R_Date SUERC-75752	-477	-394	68.26895	-714	-389	95.449973	-512	-359	68.268949	-735	1537	95.449974		103.5			99.5
Last Lochindorb Lowest IA MERLF 3							1183	1290	68.268949	1162	1682	95.449974					99.6
Boundary Construction Lochindorb Castle 3							1212	1518	68.268949	1178	2122	95.449974					99.4
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.449974	1257	1258	68.268949	1257	1258	95.449974		70.7			100
=Construction Lochindorb Castle 3							1212	1518	68.268949	1178	2122	95.449974					99.4
Order Robert of Lochindorb Probability																	
=Construction Lochindorb Castle 3							1212	1518	68.268949	1178	2122	95.449974					99.4
C_Date Robert of Lochindorb TAQ				1278	1279	95.449974	1278	1279	68.268949	1278	1279	95.449974		70.7			100

3.23.3 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; multiple plot



3.23.4 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; End Boundary TPQ Probability

Order: Lochindorb Full Dataset TandC TPQ Probability	John Comyn I TPQ	Construction Lochindorb Castle 3
John Comyn I TPQ	0	0.8782
Construction Lochindorb Castle 3	0.12183	0

3.23.5 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; End Boundary TAQ Probability

Order: Lochindorb Full Dataset TandC TAQ Probability	Construction Lochindorb Castle 3	Robert of Lochindorb TAQ
Construction Lochindorb Castle 3	0	0.19356
Robert of Lochindorb TAQ	0.8064	0

3.23.6 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; Last distribution TPQ Probability

Order: Lochindorb TandC Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Lowest IA MERLF 3
John Comyn Potential TPQ	0	0.4565
Lochindorb Lowest IA MERLF 3	0.5435	0

3.23.7 CS4; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; Last distribution TAQ Probability

Order: Lochindorb TandC Last TAQ Probability	Lochindorb Lowest IA MERLF 3	Robert Lochindorb Potential TAQ
Lochindorb Lowest IA MERLF 3	0	0.6697
Robert Lochindorb Potential TAQ	0.3303	0

3.24.1 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; model script

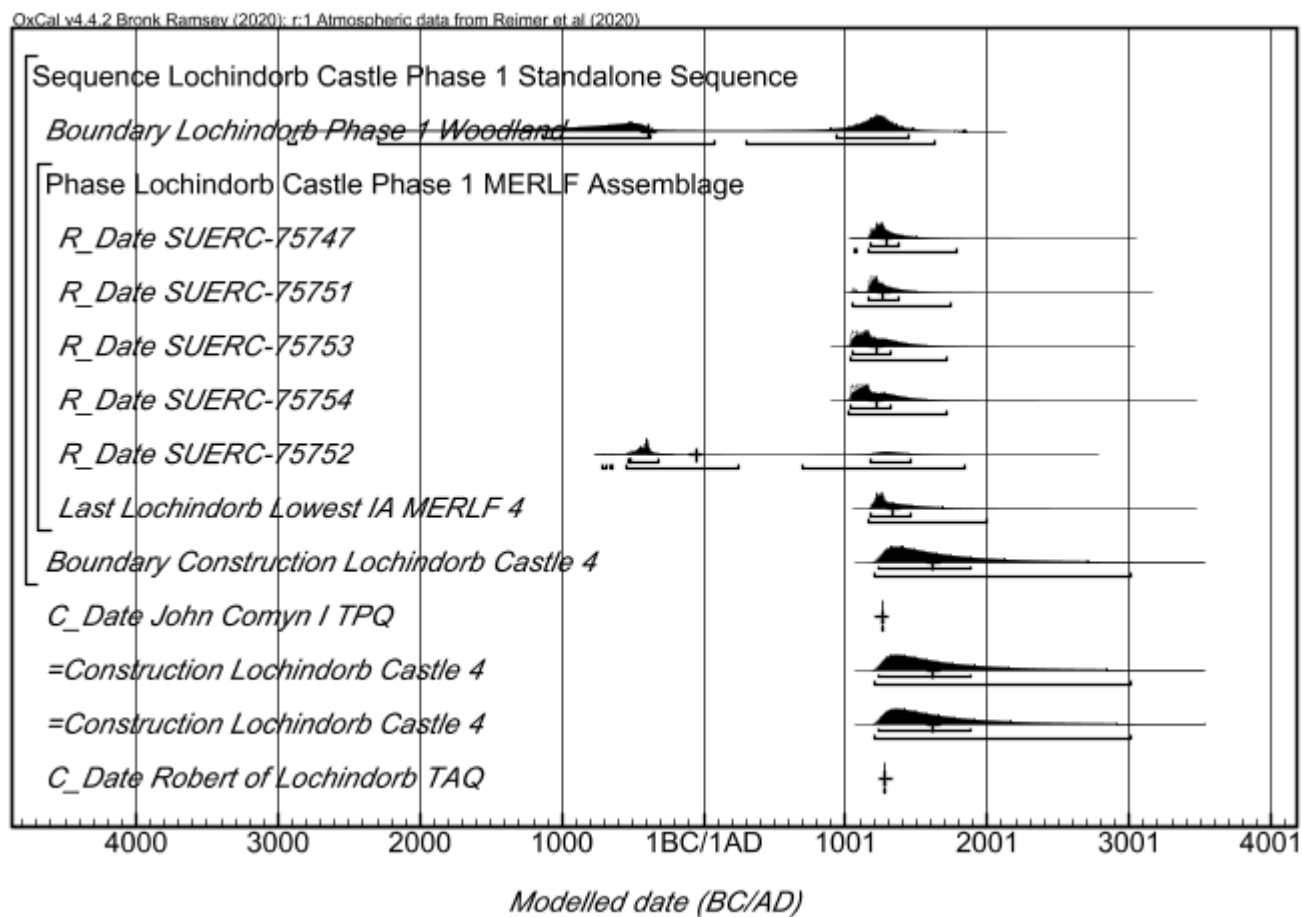
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Boundary("Lochindorb Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75752", 2368, 31)
      {
        Outlier("Charcoal 1", 1);
      };
    }
  }
}
```

```
Last("Lochindorb Lowest IA MERLF 4");  
};  
Boundary("Construction Lochindorb Castle 4");  
};  
Order("John Comyn I Probability")  
{  
  C_Date("John Comyn I TPQ", 1258, 0.05);  
  Date("=Construction Lochindorb Castle 4");  
};  
Order("Robert of Lochindorb Probability")  
{  
  Date("=Construction Lochindorb Castle 4");  
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);  
};  
};
```

3.24.2 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; results table

Name: Lochindorb Castle Full dataset Char	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 79.5 Aoverall 79.5				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal 1							-222	1	68.268949	-1990	1	95.449973					99.8
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											99.9
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	3.60E-17	3	68.26895	3.60E-17	3	95.449973		100			98.1
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Boundary Lochindorb Phase 1 Woodland							-1133	1450	68.268949	-2929	1625	95.449974					98.8
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1176	1372	68.268949	1067	1782	95.449974		99.6			99.7
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1162	1381	68.268949	1051	1735	95.449974		100.4			99.7
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1045	1325	68.268949	1030	1707	95.449974		100			99.5
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1042	1322	68.268949	1028	1715	95.449974		100			99.5
R_Date SUERC-75752	-477	-394	68.26895	-714	-389	95.449973	-535	1463	68.268949	-720	1844	95.449973		104.5			99.3
Last Lochindorb Lowest IA MERLF 4							1183	1463	68.268949	1165	1988	95.449974					99.6
Boundary Construction Lochindorb Castle 4							1238	1885	68.268949	1201	3008	95.449974					99.8
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.449974	1257	1258	68.268949	1257	1258	95.449974		70.7			100
=Construction Lochindorb Castle 4							1238	1885	68.268949	1201	3008	95.449974					99.8
Order Robert of Lochindorb Probability																	
=Construction Lochindorb Castle 4							1238	1885	68.268949	1201	3008	95.449974					99.8
C_Date Robert of Lochindorb TAQ				1278	1279	95.449974	1278	1279	68.268949	1278	1279	95.449974		70.7			100

3.24.3 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; multiple plot



3.24.4 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; End Boundary TPQ Probability

Order: Lochindorb Full dataset TPQ Probability Char	John Comyn I TPQ	Construction Lochindorb Castle 4
John Comyn I TPQ	0	0.9746
Construction Lochindorb Castle 4	0.025392	0

3.24.5 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; End Boundary TAQ Probability

Order: Lochindorb Full Dataset TAQ Probability Char	Construction Lochindorb Castle 4	Robert of Lochindorb TAQ
Construction Lochindorb Castle 4	0	0.04701
Robert of Lochindorb TAQ	0.953	0

3.24.6 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; Last distribution TPQ Probability

Order: Lochindorb Full Char Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Lowest IA MERLF 4
John Comyn Potential TPQ	0	0.7093
Lochindorb Lowest IA MERLF 4	0.29073	0

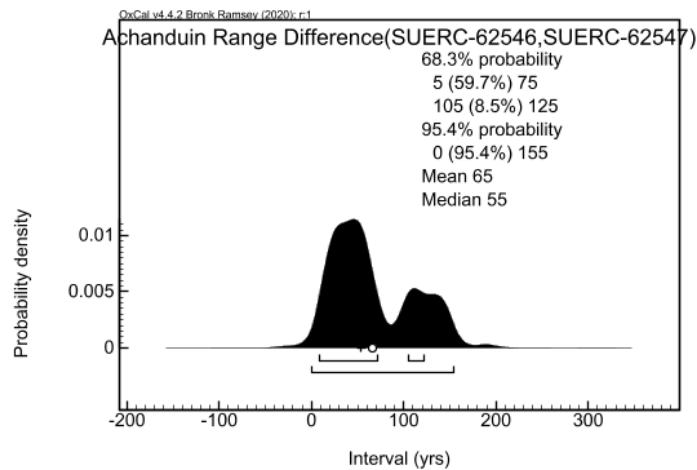
3.24.7 CS4; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; Last distribution TAQ Probability

Order: Lochindorb Char Last TAQ Probability	Lochindorb Lowest IA MERLF 4	Robert Lochindorb Potential TAQ
Lochindorb Lowest IA MERLF 4	0	0.3767
Robert Lochindorb Potential TAQ	0.6233	0

3.25.1 CS5; Achanduin Castle; dataset age range; model script

```
Options()  
{  
  Resolution=1 year;  
  kIterations=20000;  
};  
Plot()  
{  
  Phase("Achanduin Castle")  
  {  
    R_Date("SUERC-62546", 698, 34);  
    R_Date("SUERC-62547", 785, 34);  
    Difference("Achanduin Range", "SUERC-62546", "SUERC-62547");  
  };  
};
```

3.25.2 CS5; Achanduin Castle; dataset age range; distribution plot



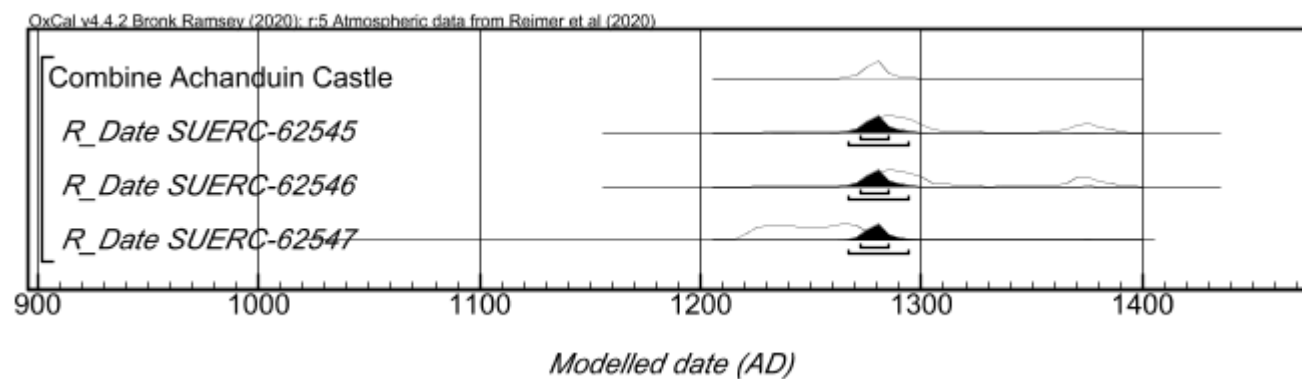
3.26.1 CS5; Achanduin Castle; Combine; model script

```
()
{
  Combine("Achanduin Castle")
  {
    R_Date("SUERC-62545", 701, 34);
    R_Date("SUERC-62546", 698, 34);
    R_Date("SUERC-62547", 785, 34);
  };
};
```

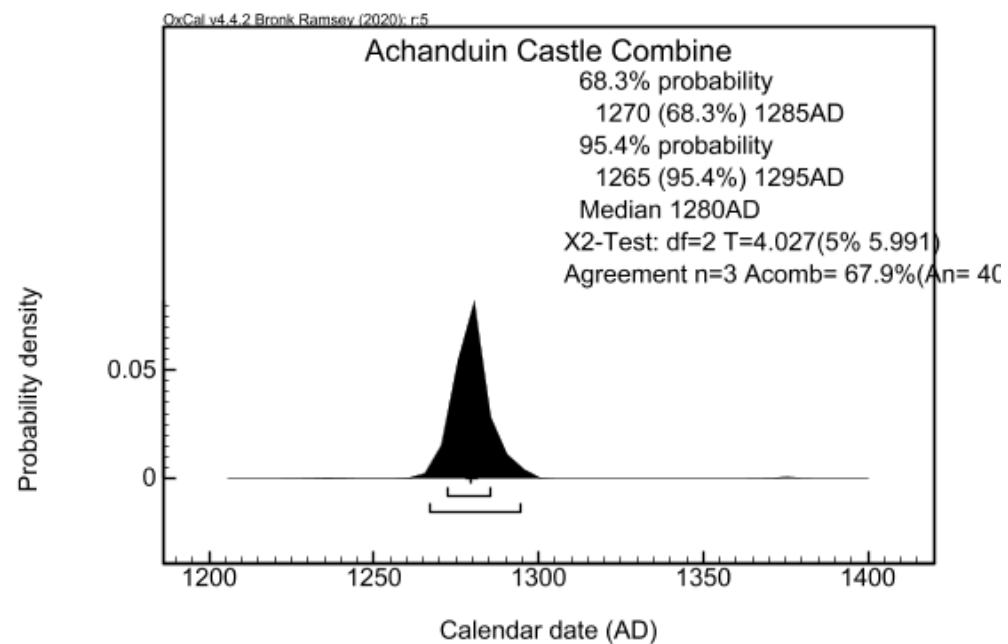
3.26.2 CS5; Achanduin Castle; Combine; results table

Name: Achanduin Castle Combined	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Achanduin Castle	1272	1285	68.268949	1267	1294	95.449974							67.9				
R_Date SUERC-62545	1275	1378	68.268949	1265	1390	95.449973	1272	1285	68.268949	1267	1294	95.449974		113.7			
R_Date SUERC-62546	1276	1379	68.268949	1266	1390	95.449974	1272	1285	68.268949	1267	1294	95.449974		107.6			
R_Date SUERC-62547	1228	1271	68.268949	1182	1284	95.449974	1272	1285	68.268949	1267	1294	95.449974		41.8			

3.26.3 CS5; Achanduin Castle; Combine; multiple plot



3.26.4 CS5; Achanduin Castle; Combine; distribution plot



3.27.1 CS5; Achanduin Castle; exponential prior/no outlier model; model script

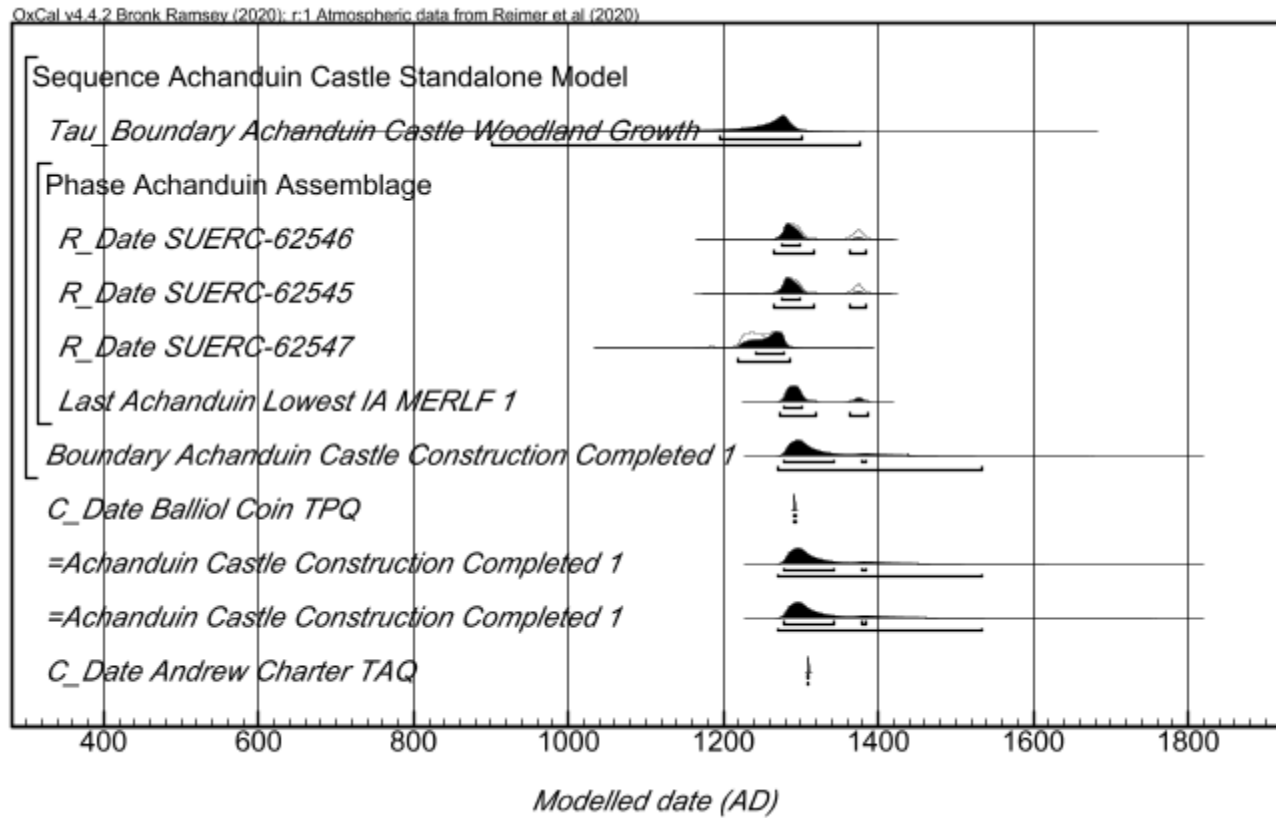
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Sequence("Achanduin Castle Standalone Model")
  {
    Tau_Boundary("Achanduin Castle Woodland Growth");
    Phase("Achanduin Assemblage")
    {
      R_Date("SUERC-62546", 698, 34)
      {
      };
      R_Date("SUERC-62545", 701, 34)
      {
      };
      R_Date("SUERC-62547", 785, 34)
      {
      };
      Last("Achanduin Lowest IA MERLF 1");
    };
    Boundary("Achanduin Castle Construction Completed 1");
  };
  Order("Post Balliol Coin Probability")
  {
    C_Date("Balliol Coin TPQ", 1292, 0.05);
    Date("=Achanduin Castle Construction Completed 1");
  };
  Order("Pre 1304 Charter Probability")
  {
    Date("=Achanduin Castle Construction Completed 1");
    C_Date("Andrew Charter TAQ", 1310, 0.05);
  };
}
```

};
};

3.27.2 CS5; Achanduin Castle; exponential prior/no outlier model; main results table

Name: Achanduin Castle Tau	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 82.8 Aoverall 82.2				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Sequence Achanduin Castle Standalone Model																	
Tau_Boundary Achanduin Castle Woodland Growth							1195	1300	68.26895	900	1375	95.44997					99.8
Phase Achanduin Assemblage																	
R_Date SUERC-62546	1276	1378	68.26895	1267	1389	95.44997	1276	1298	68.26895	1266	1383	95.44997		114.2			100
R_Date SUERC-62545	1276	1378	68.26895	1265	1389	95.44997	1276	1298	68.26895	1264	1383	95.44997		114.7			100
R_Date SUERC-62547	1227	1272	68.26895	1181	1283	95.44997	1242	1279	68.26895	1219	1285	95.44997		98.7			100
Last Achanduin Lowest IA MERLF 1							1279	1302	68.26895	1273	1385	95.44997					100
Boundary Achanduin Castle Construction Completed 1							1277	1383	68.26895	1270	1533	95.44997					99.8
Order Post Balliol Coin Probability																	
C_Date Balliol Coin TPQ				1291	1292	95.44997	1291	1292	68.26895	1291	1292	95.44997		70.6			100
=Achanduin Castle Construction Completed 1							1277	1383	68.26895	1270	1533	95.44997					99.8
Order Pre 1304 Charter Probability																	
=Achanduin Castle Construction Completed 1							1277	1383	68.26895	1270	1533	95.44997					99.8
C_Date Andrew Charter TAQ				1309	1310	95.44997	1309	1310	68.26895	1309	1310	95.44997		70.8			100

3.27.3 CS5; Achanduin Castle; exponential prior/no outlier model; multiple plot



3.27.4 CS5; Achanduin Castle; exponential prior/no outlier model; End Boundary TPQ probability table

Order: Achanduin Castle TPQ Probability Tau	Balliol Coin TPQ	Achanduin Castle Construction Completed 1
Balliol Coin TPQ	0	0.8139
Achanduin Castle Construction Completed 1	0.18608	0

3.27.5 CS5; Achanduin Castle; exponential prior/no outlier model; End Boundary TAQ probability table

Order: Achanduin Castle TAQ Probability Tau	Achanduin Castle Construction Completed 1	Andrew Charter TAQ
Achanduin Castle Construction Completed 1	0	0.4834
Andrew Charter TAQ	0.5166	0

3.27.6 CS5; Achanduin Castle; exponential prior/no outlier model; Last TPQ probability table

Order: Achanduin Tau Last TPQ Probability	Balliol Coin Potential TPQ	Achanduin Lowest IA MERLF 1
Balliol Coin Potential TPQ	0	0.5535
Achanduin Lowest IA MERLF 1	0.4465	0

3.27.7 CS5; Achanduin Castle; exponential prior/no outlier model; Last TAQ probability table

Order: Achanduin Tau Last TAQ Probability	Achanduin Lowest IA MERLF 1	Bishops Charter Potential TAQ
Achanduin Lowest IA MERLF 1	0	0.8078
Bishops Charter Potential TAQ	0.19223	0

3.28.1 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier Model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,1.7),"t");
  Sequence("Achanduin Castle Standalone Model")
  {
    Tau_Boundary("Achanduin Castle Woodland Growth");
    Phase("Achanduin Assemblage")
    {
      R_Date("SUERC-62546", 698, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62545", 701, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62547", 785, 34)
      {
        Outlier("Charcoal", 1);
      };
      Last("Achanduin Lowest IA MERLF 2");
    };
    Boundary("Achanduin Castle Construction Completed 2");
  };
  Order("Post Balliol Coin Probability")
  {
    C_Date("Balliol Coin Potential TPQ", 1292, 0.05);
    Date("=Achanduin Castle Construction Completed 2");
  };
};
```

```

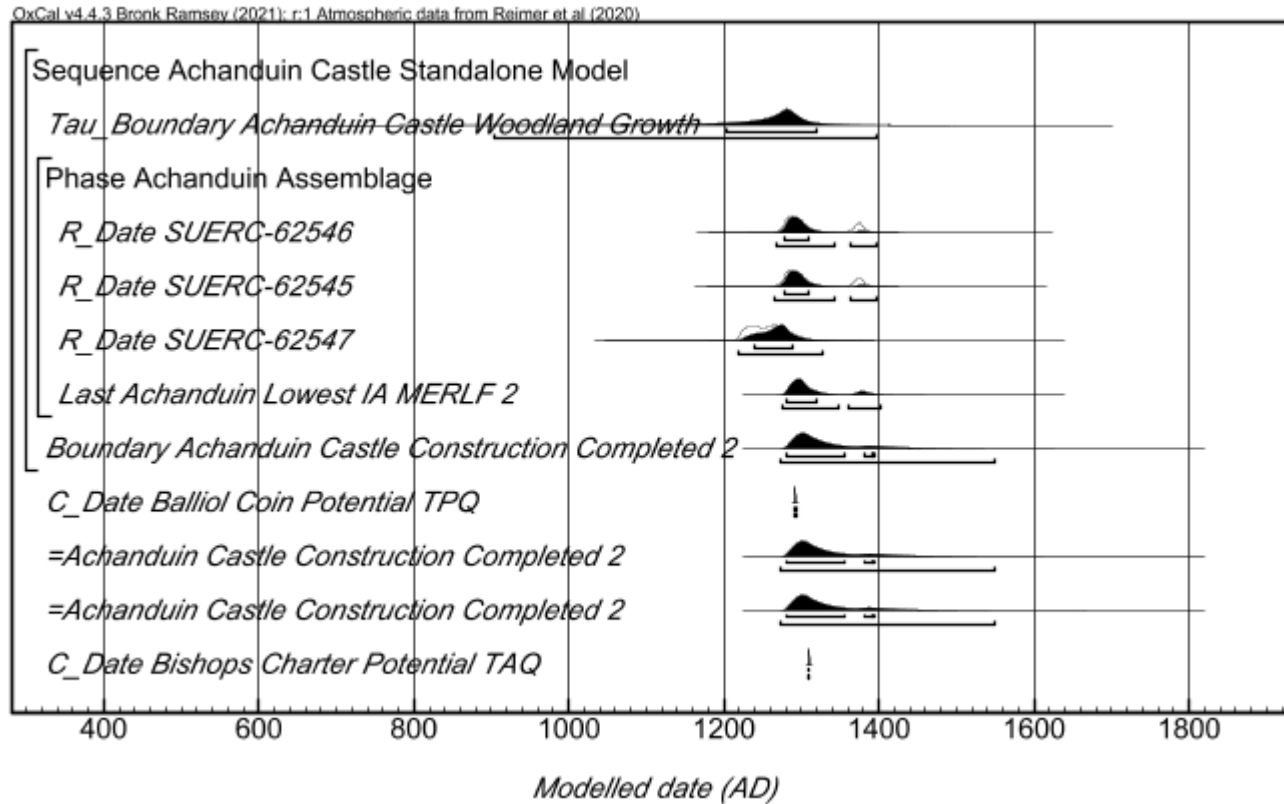
Order("Pre 1304 Charter Probability")
{
  Date("=Achanduin Castle Construction Completed 2");
  C_Date("Bishops Charter Potential TAQ", 1310, 0.05);
};
};

```

3.28.2 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier Model; results table

Name: Achanduin TmodC	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 84 Aoverall 83.6				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal							-10	0	68.268949	-50	0	95.449974					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											100
U(0,1.7)	-3.47E-18	1.7	68.268949	-3.47E-18	1.7	95.449974	3.47E-18	1.105	68.268949	3.47E-18	1.5963	95.449974		100			100
Sequence Achanduin Castle Standalone Model																	
Tau_Boundary Achanduin Castle Woodland Growth							1204	1320	68.268949	903	1395	95.449974					99.8
Phase Achanduin Assemblage																	
R_Date SUERC-62546	1276	1378	68.26895	1267	1389	95.449974	1277	1309	68.268949	1267	1396	95.449973		113.1			99.9
R_Date SUERC-62545	1276	1378	68.268949	1265	1389	95.449974	1277	1308	68.268949	1266	1397	95.449973		113.4			99.9
R_Date SUERC-62547	1227	1272	68.268949	1181	1283	95.449974	1240	1288	68.268949	1219	1326	95.449974		100.2			99.9
Last Achanduin Lowest IA MERLF 2							1280	1318	68.268949	1274	1401	95.449974					99.9
Boundary Achanduin Castle Construction Completed 2							1281	1394	68.268949	1273	1550	95.449974					99.7
Order Post Balliol Coin Probability																	
C_Date Balliol Coin Potential TPQ				1291	1292	95.449974	1291	1292	68.268949	1291	1292	95.449974		70.8			100
=Achanduin Castle Construction Completed 2							1281	1394	68.268949	1273	1550	95.449974					99.7
Order Pre 1304 Charter Probability																	
=Achanduin Castle Construction Completed 2							1281	1394	68.268949	1273	1550	95.449974					99.7
C_Date Bishops Charter Potential TAQ				1309	1310	95.449974	1309	1310	68.268949	1309	1310	95.449974		70.7			100

3.28.3 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier Model; multiple plot



3.28.4 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier; End Boundary TPQ probability table

Order: Achanduin TmodC TPQ Probability	Balliol Coin Potential TPQ	Achanduin Castle Construction Completed 2
Balliol Coin Potential TPQ	0	0.9059
Achanduin Castle Construction Completed 2	0.09409	0

3.28.5 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier; End Boundary TAQ probability table

Order: Achanduin TmodC TAQ probability	Achanduin Castle Construction Completed 2	Bishops Charter Potential TAQ
Achanduin Castle Construction Completed 2	0	0.3524
Bishops Charter Potential TAQ	0.6476	0

3.28.6 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier; Last distribution TPQ probability table

Order: Achanduin TmodC Last TPQ Probability	Balliol Coin Potential TPQ	Achanduin Lowest IA MERLF 2
Balliol Coin Potential TPQ	0	0.776
Achanduin Lowest IA MERLF 2	0.22396	0

3.28.7 CS5; Achanduin Castle; exponential prior/modified Charcoal Outlier; Last distribution TAQ probability table

Order: Achanduin TmodC Last TAQ Probability	Achanduin Lowest IA MERLF 2	Bishops Charter Potential TAQ
Achanduin Lowest IA MERLF 2	0	0.6322
Bishops Charter Potential TAQ	0.3678	0

3.29.1 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model; model script

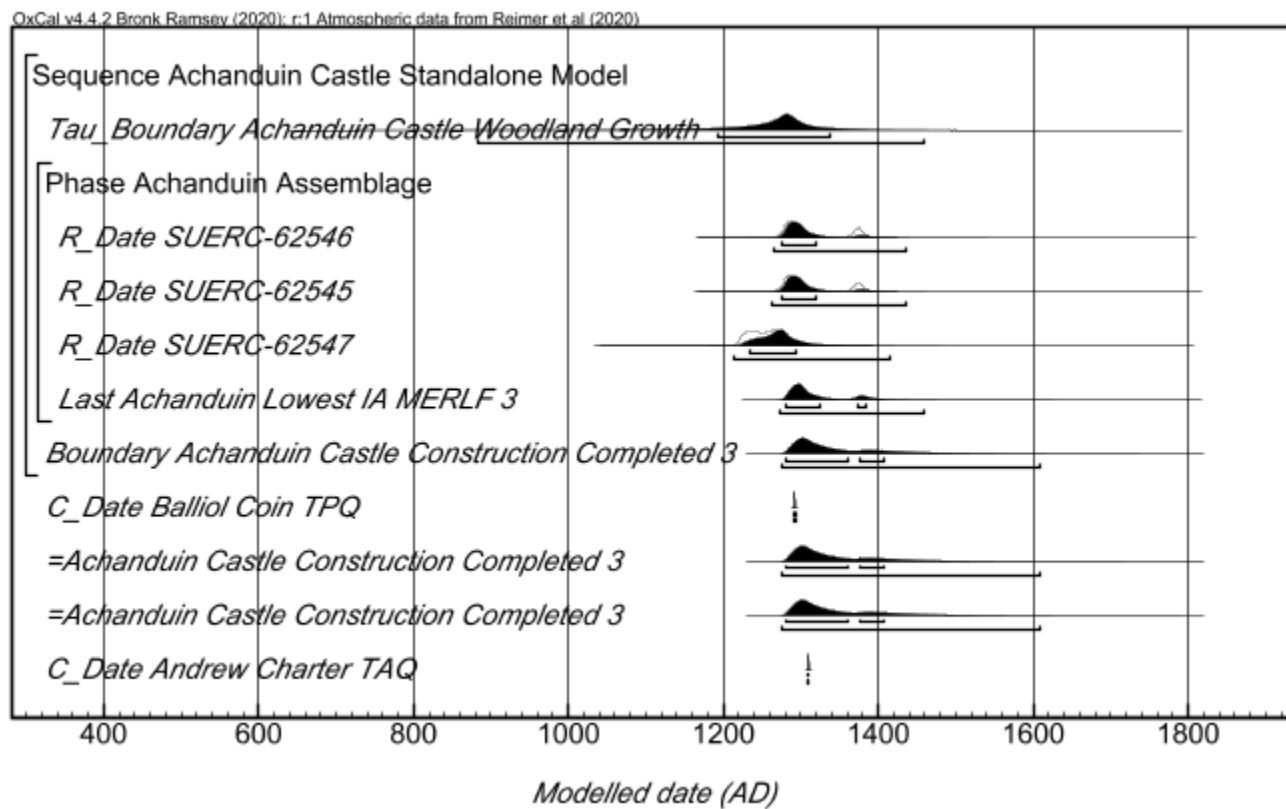
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Achanduin Castle Standalone Model")
  {
    Tau_Boundary("Achanduin Castle Woodland Growth");
    Phase("Achanduin Assemblage")
    {
      R_Date("SUERC-62546", 698, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62545", 701, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62547", 785, 34)
      {
        Outlier("Charcoal", 1);
      };
      Last("Achanduin Lowest IA MERLF 3");
    };
    Boundary("Achanduin Castle Construction Completed 3");
  };
  Order("Post Balliol Coin Probability")
  {
    C_Date("Balliol Coin TPQ", 1292, 0.05);
    Date("=Achanduin Castle Construction Completed 3");
  };
};
```

```
Order("Pre 1304 Charter Probability")
{
  Date("=Achanduin Castle Construction Completed 3");
  C_Date("Andrew Charter TAQ", 1310, 0.05);
};
};
```

3.29.2 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model; results table

Name: Achanduin Castle TandC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 83.1 Aoverall 82.7				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-18	1	68.26895	-122	1	95.44997	-6					100
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997	-0.74							-0.7					100
U(0,3)	2.21E-17	3	68.26895	2.21E-17	3	95.44997	1.515	3.60E-17	1.338	68.26895	3.60E-17	2.169	95.44997	0.969		100			99.8
Sequence Achanduin Castle Standalone Model																			
Tau_Boundary Achanduin Castle Woodland Growth								1193	1337	68.26895	884	1459	95.44997	1270					99.7
Phase Achanduin Assemblage																			
R_Date SUERC-62546	1276	1378	68.26895	1267	1389	95.44997	1294	1275	1320	68.26895	1265	1435	95.44997	1299		111.7			99.9
R_Date SUERC-62545	1276	1378	68.26895	1265	1389	95.44997	1293	1275	1318	68.26895	1264	1436	95.44997	1299		111.8			99.9
R_Date SUERC-62547	1227	1272	68.26895	1181	1283	95.44997	1248	1235	1293	68.26895	1212	1414	95.44997	1272		100.4			99.9
Last Achanduin Lowest IA MERLF 3								1280	1383	68.26895	1273	1458	95.44997	1307					99.9
Boundary Achanduin Castle Construction Completed 3								1281	1407	68.26895	1274	1609	95.44997	1335					99.6
Order Post Balliol Coin Probability																			
C_Date Balliol Coin TPQ				1291	1292	95.44997	1292	1291	1292	68.26895	1291	1292	95.44997	1292		70.7			100
=Achanduin Castle Construction Completed 3								1281	1407	68.26895	1274	1609	95.44997	1335					99.6
Order Pre 1304 Charter Probability																			
=Achanduin Castle Construction Completed 3								1281	1407	68.26895	1274	1609	95.44997	1335					99.6
C_Date Andrew Charter TAQ				1309	1310	95.44997	1310	1309	1310	68.26895	1309	1310	95.44997	1310		70.7			100

3.29.3 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model; multiple plot



3.29.4 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Achanduin Castle TPQ probability TandC	Balliol Coin TPQ	Achanduin Castle Construction Completed 3
Balliol Coin TPQ	0	0.9238
Achanduin Castle Construction Completed 3	0.07617	0

3.29.5 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Achanduin Castle TAQ probability TandC	Achanduin Castle Construction Completed 3	Andrew Charter TAQ
Achanduin Castle Construction Completed 3	0	0.29607
Andrew Charter TAQ	0.7039	0

3.29.6 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier; Last distribution TPQ probability table

Order: Achanduin TandC Last TPQ Probability	Balliol Coin Potential TPQ	Achanduin Lowest IA MERLF 3
Balliol Coin Potential TPQ	0	0.8124
Achanduin Lowest IA MERLF 3	0.1876	0

3.29.7 CS5; Achanduin Castle; exponential prior/default Charcoal Outlier; Last distribution TAQ probability table

Order: Achanduin TandC Last TAQ Probability	Achanduin Lowest IA MERLF 3	Bishops Charter TAQ
Achanduin Lowest IA MERLF 3	0	0.5351
Bishops Charter TAQ	0.4649	0

3.30.1 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; model script

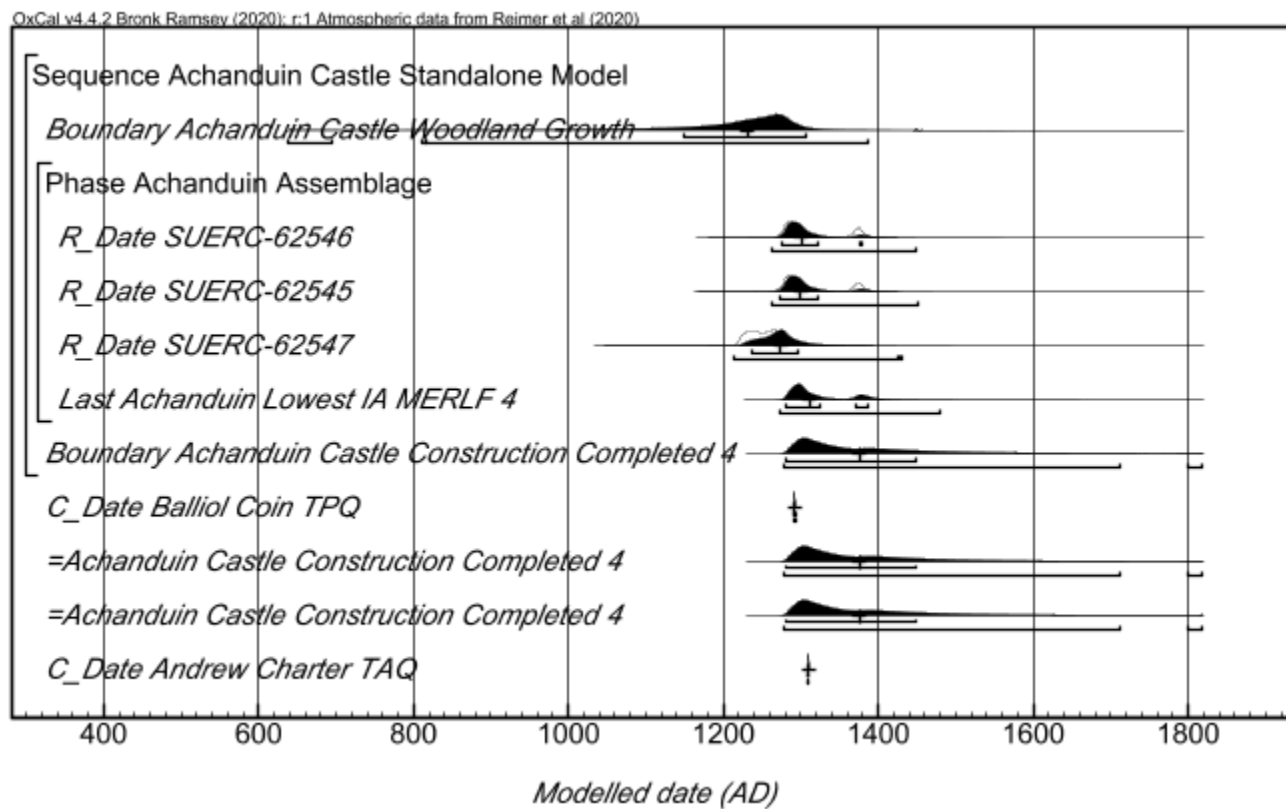
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Achanduin Castle Standalone Model")
  {
    Boundary("Achanduin Castle Woodland Growth");
    Phase("Achanduin Assemblage")
    {
      R_Date("SUERC-62546", 698, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62545", 701, 34)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-62547", 785, 34)
      {
        Outlier("Charcoal", 1);
      };
      Last("Achanduin Lowest IA MERLF 4");
    };
    Boundary("Achanduin Castle Construction Completed 4");
  };
  Order("Post Balliol Coin Probability")
  {
    C_Date("Balliol Coin TPQ", 1292, 0.05);
    Date("=Achanduin Castle Construction Completed 4");
  };
}
```

```
};  
Order("Pre 1304 Charter Probability")  
{  
  Date("=Achanduin Castle Construction Completed 4");  
  C_Date("Andrew Charter TAQ", 1310, 0.05);  
};  
};
```

3.30.2 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; results table

Name: Achanduin Castle Char	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 81.7 Aoverall 81.5				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-19	1	68.26895	-136	1	95.44997	-7					100
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997	-0.74							-0.7					100
U(0,3)	2.21E-17	3	68.26895	2.21E-17	3	95.44997	1.515	3.60E-17	1.395	68.26895	3.60E-17	2.223	95.44997	1.002		100			99.7
Sequence Achanduin Castle Standalone Model																			
Boundary Achanduin Castle Woodland Growth								1149	1306	68.26895	639	1386	95.44997	1231					99
Phase Achanduin Assemblage																			
R_Date SUERC-62546	1276	1378	68.26895	1267	1389	95.44997	1294	1275	1378	68.26895	1263	1448	95.44997	1300		109.8			99.9
R_Date SUERC-62545	1276	1378	68.26895	1265	1389	95.44997	1293	1274	1322	68.26895	1261	1451	95.44997	1299		110			99.9
R_Date SUERC-62547	1227	1272	68.26895	1181	1283	95.44997	1248	1235	1296	68.26895	1212	1430	95.44997	1274		100.3			99.7
Last Achanduin Lowest IA MERLF 4								1280	1386	68.26895	1272	1480	95.44997	1310					99.6
Boundary Achanduin Castle Construction Completed 4								1282	1449	68.26895	1277	1818	95.44997	1376					98.9
Order Post Balliol Coin Probability																			
C_Date Balliol Coin TPQ				1291	1292	95.44997	1292	1291	1292	68.26895	1291	1292	95.44997	1292		70.7			100
=Achanduin Castle Construction Completed 4								1282	1449	68.26895	1277	1818	95.44997	1376					98.9
Order Pre 1304 Charter Probability																			
=Achanduin Castle Construction Completed 4								1282	1449	68.26895	1277	1818	95.44997	1376					98.9
C_Date Andrew Charter TAQ				1309	1310	95.44997	1310	1309	1310	68.26895	1309	1310	95.44997	1310		70.7			100

3.30.3 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; multiple plot



3.30.4 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; End Boundary TPQ probability table

Order: Achanduin Castle TPQ probability Char	Balliol Coin TPQ	Achanduin Castle Construction Completed 4
Balliol Coin TPQ	0	0.9513
Achanduin Castle Construction Completed 4	0.04869	0

3.30.5 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; End Boundary TAQ probability table

Order: Achanduin Castle TAQ probability Char	Achanduin Castle Construction Completed 4	Andrew Charter TAQ
Achanduin Castle Construction Completed 4	0	0.19196
Andrew Charter TAQ	0.808	0

3.30.6 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; Last distribution TPQ probability table

Order: Achanduin Char Last TPQ Probability	Balliol Coin Potential TPQ	Achanduin Lowest IA MERLF 4
Balliol Coin Potential TPQ	0	0.826
Achanduin Lowest IA MERLF 4	0.17398	0

3.30.7 CS5; Achanduin Castle; uniform prior/default Charcoal Outlier Model; Last distribution TAQ probability table

Order: Achanduin Char Last TAQ Probability	Achanduin Lowest IA MERLF 4	Bishops Charter Potential TAQ
Achanduin Lowest IA MERLF 4	0	0.5022
Bishops Charter Potential TAQ	0.4978	0

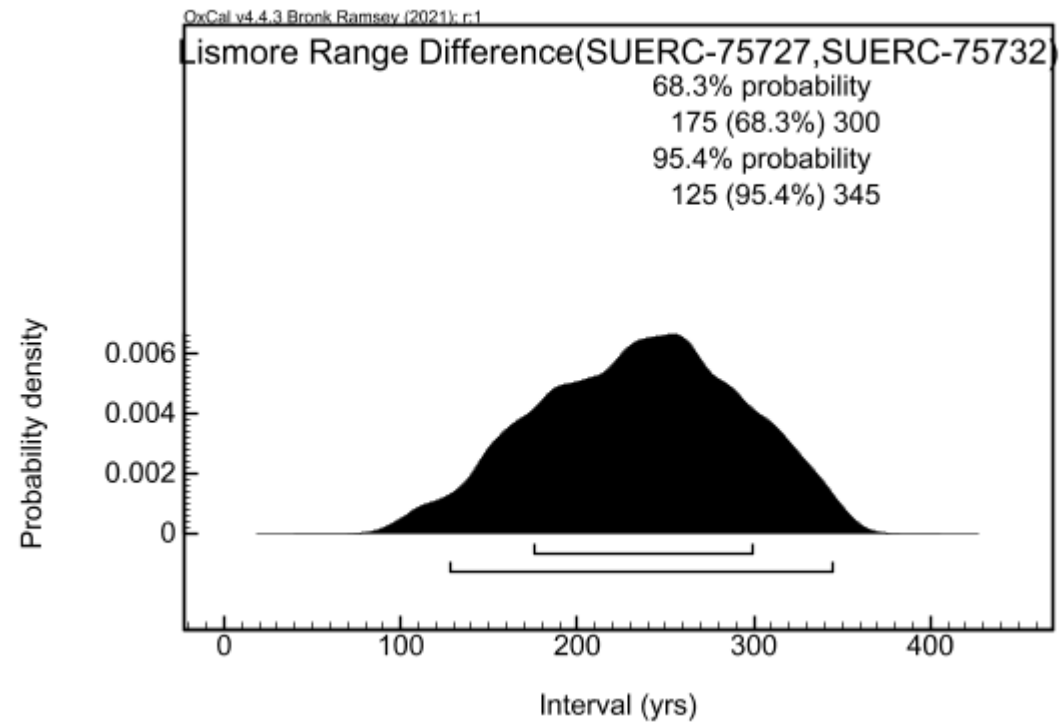
3.31.1 CS6; Lismore Cathedral nave; dataset age range; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Phase("Lismore Cathedral")
  {
    R_Date("SUERC-75727", 616, 30);
    R_Date("SUERC-75732", 921, 30);
    Difference("Lismore Range", "SUERC-75727", "SUERC-75732");
  };
};
```

3.31.2 CS6; Lismore Cathedral nave; dataset age range; results table (rounded out to 5 years)

Name: Lismore Cathedral Age Range	Unmodelled (BC/AD)					
	from	to	%	from	to	%
Phase Lismore Cathedral						
R_Date SUERC-75727	1300	1400	68.26895	1295	1405	95.449974
R_Date SUERC-75732	1045	1165	68.268949	1035	1210	95.449974
Difference Lismore Range	175	300	68.268949	125	345	95.449974

3.31.3 CS6; Lismore Cathedral nave; dataset age range; distribution plot



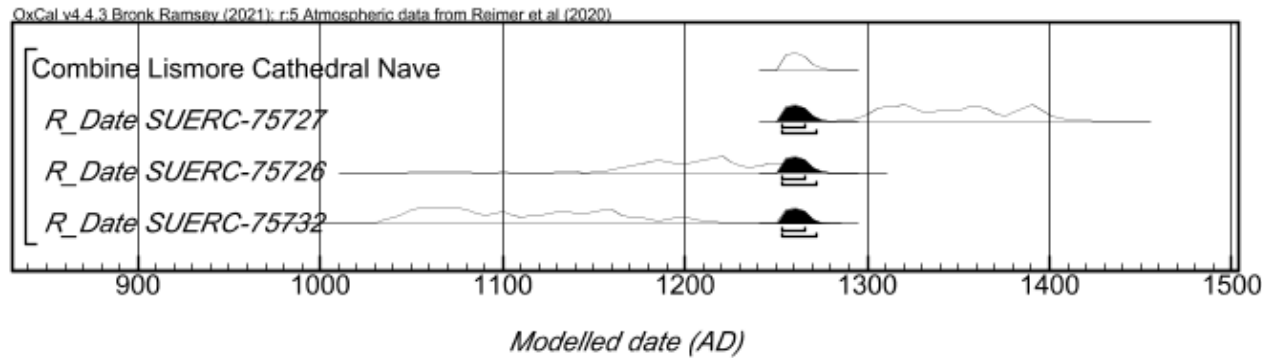
3.32.1 CS6; Lismore Cathedral nave; Combine model; model script

```
Plot()
{
  Combine("Lismore Cathedral Nave")
  {
    R_Date("SUERC-75727", 616, 30);
    R_Date("SUERC-75726", 843, 30);
    R_Date("SUERC-75732", 921, 30);
  };
};
```

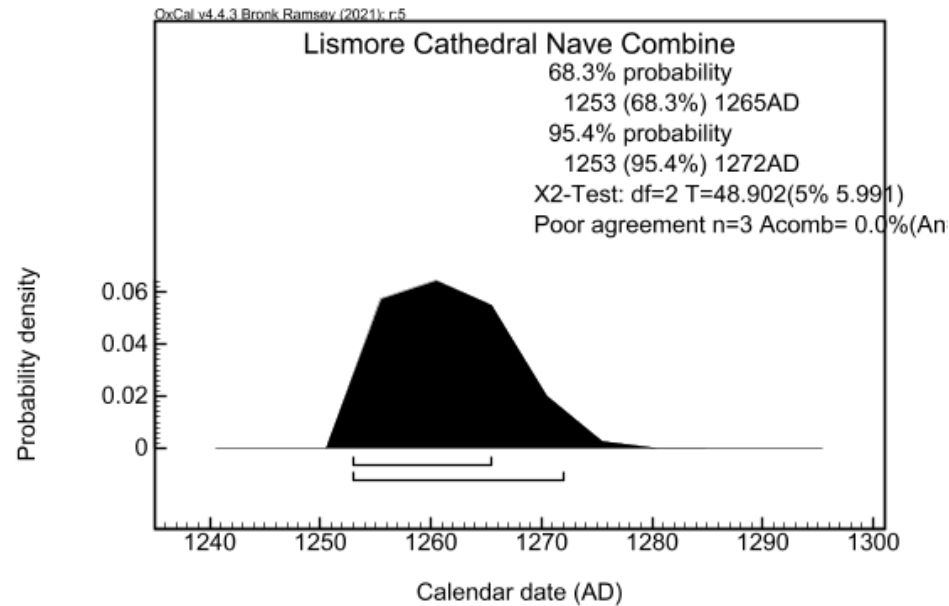
3.32.2 CS6; Lismore Cathedral nave; Combine model; results table

Name: Lismore Nave Combined 2020	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Lismore Cathedral Nave	1253	1265	68.268949	1253	1272	95.449974											
R_Date SUERC-75727	1304	1395	68.268949	1299	1400	95.449974	1253	1265	68.268949	1253	1272	95.449974					
R_Date SUERC-75726	1174	1255	68.268949	1160	1267	95.449974	1253	1265	68.268949	1253	1272	95.449974		54.6			
R_Date SUERC-75732	1045	1165	68.268948	1035	1208	95.449974	1253	1265	68.268949	1253	1272	95.449974		0.1			

3.32.3 CS6; Lismore Cathedral nave; Combine model; multiple plot



3.32.4 CS6; Lismore Cathedral nave; Combine model; distribution plot



3.33.1 CS6; Lismore Cathedral nave; exponential prior/no outlier model; model script

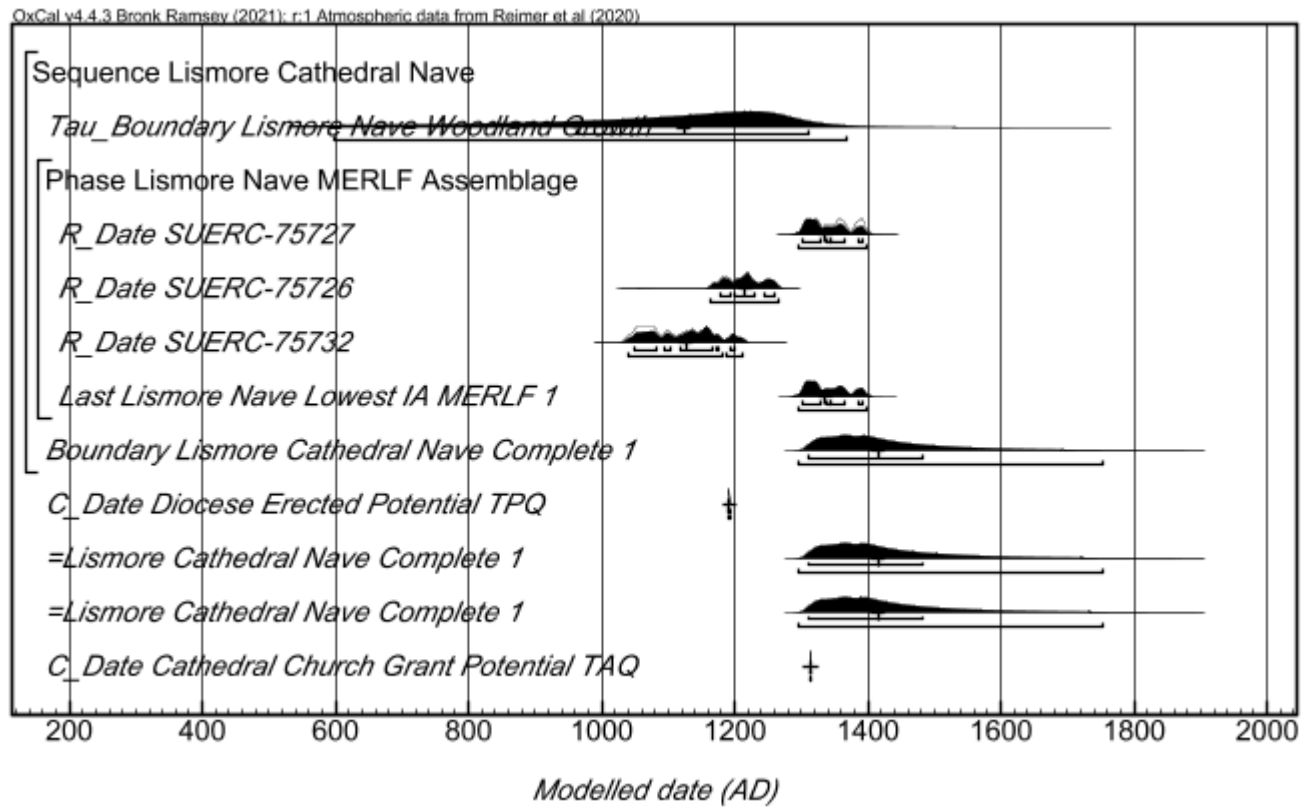
```
Options()  
{  
  Resolution=1 year;  
  kIterations=20000;  
};  
Plot()  
{  
  Sequence("Lismore Cathedral Nave")  
  {  
    Tau_Boundary("Lismore Nave Woodland Growth");  
    Phase("Lismore Nave MERLF Assemblage")  
    {  
      R_Date("SUERC-75727", 616, 30)  
      {  
      };  
      R_Date("SUERC-75726", 843, 30)  
      {  
      };  
      R_Date("SUERC-75732", 921, 30)  
      {  
      };  
      Last("Lismore Nave Lowest IA MERLF 1");  
    };  
    Boundary("Lismore Cathedral Nave Complete 1");  
  };  
  Order("Post Diocese Probability")  
  {  
    C_Date("Diocese Erected Potential TPQ", 1192, 0.05);  
    Date("=Lismore Cathedral Nave Complete 1");  
  };  
  Order("Pre Documentary Probability")  
  {  
    Date("=Lismore Cathedral Nave Complete 1");  
    C_Date("Cathedral Church Grant Potential TAQ", 1314, 0.05);
```

};
};

3.33.2 CS6; Lismore Cathedral nave; exponential prior/no outlier model; results table

Name: Lismore Nave Tau 2020	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 72.3 Aoverall 72.2				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Sequence Lismore Cathedral Nave																			
Tau_Boundary Lismore Nave Woodland Growth								961	1312	68.268949	598	1368	95.449974	1123					99.8
Phase Lismore Nave MERLF Assemblage																			
R_Date SUERC-75727	1303	1395	68.26895	1299	1401	95.449974	1348	1301	1392	68.268949	1295	1399	95.449974	1336		100.2			100
R_Date SUERC-75726	1175	1256	68.268949	1160	1266	95.449974	1210	1177	1260	68.26895	1163	1266	95.449974	1215		100.1			100
R_Date SUERC-75732	1045	1165	68.268949	1035	1208	95.449974	1109	1048	1200	68.268949	1039	1212	95.449973	1126		96.4			100
Last Lismore Nave Lowest IA MERLF 1								1301	1392	68.268949	1295	1399	95.449974	1336					100
Boundary Lismore Cathedral Nave Complete 1								1310	1481	68.268949	1297	1752	95.449974	1415					99.8
Order Post Diocese Probability																			
C_Date Diocese Erected Potential TPQ				1191	1192	95.449974	1192	1191	1192	68.268949	1191	1192	95.449974	1192		70.7			100
=Lismore Cathedral Nave Complete 1								1310	1481	68.268949	1297	1752	95.449974	1415					99.8
Order Pre Documentary Probability																			
=Lismore Cathedral Nave Complete 1								1310	1481	68.268949	1297	1752	95.449974	1415					99.8
C_Date Cathedral Church Grant Potential TAQ				1313	1314	95.449974	1314	1313	1314	68.268949	1313	1314	95.449974	1314		70.7			100

3.33.3 CS6; Lismore Cathedral nave; exponential prior/no outlier model; multiple plot



3.33.4 CS6; Lismore Cathedral nave; exponential prior/no outlier model; End Boundary TPQ Probability

Order: Lismore Nave Tau TPQ Probability	Diocese Erected Potential TPQ	Lismore Cathedral Nave Complete 1
Diocese Erected Potential TPQ	0	1
Lismore Cathedral Nave Complete 1	0	0

3.33.5 CS6; Lismore Cathedral nave; exponential prior/no outlier model; End Boundary TAQ Probability

Order: Lismore Nave Tau EB TAQ Probability	Lismore Cathedral Nave Complete 1	Cathedral Church Grant Potential TAQ
Lismore Cathedral Nave Complete 1	0	0.026619
Cathedral Church Grant Potential TAQ	0.9734	0

3.33.6 CS6; Lismore Cathedral nave; exponential prior/no outlier model; Last distribution TPQ Probability

Order: Lismore Nave Tau Last TPQ Probability	Diocese Erected Potential TPQ	Lismore Nave Lowest IA MERLF 1
Diocese Erected Potential TPQ	0	1
Lismore Nave Lowest IA MERLF 1	0	0

3.33.7 CS6; Lismore Cathedral nave; exponential prior/no outlier model; Last distribution TAQ Probability

Order: Lismore Nave Tau Last TAQ Probability	Lismore Nave Lowest IA MERLF 1	Cathedral Church Grant Potential TAQ
Lismore Nave Lowest IA MERLF 1	0	0.2352
Cathedral Church Grant Potential TAQ	0.7648	0

3.34.1 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; model script

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,2.5),"t");
  Sequence("Lismore Cathedral Nave")
  {
    Tau_Boundary("Lismore Nave Woodland Growth");
    Phase("Lismore Nave MERLF Assemblage")
    {
      R_Date("SUERC-75727", 616, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75726", 843, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75732", 921, 30)
      {
        Outlier("Charcoal", 1);
      };
      Last("Lismore Nave Lowest IA MERLF 2");
    };
    Boundary("Lismore Cathedral Nave Complete 2");
  };
  Order("Post Diocese Probability")
  {
    C_Date("Diocese Erected Potential TPQ", 1192, 0.05);
    Date("=Lismore Cathedral Nave Complete 2");
  };
};
```

```

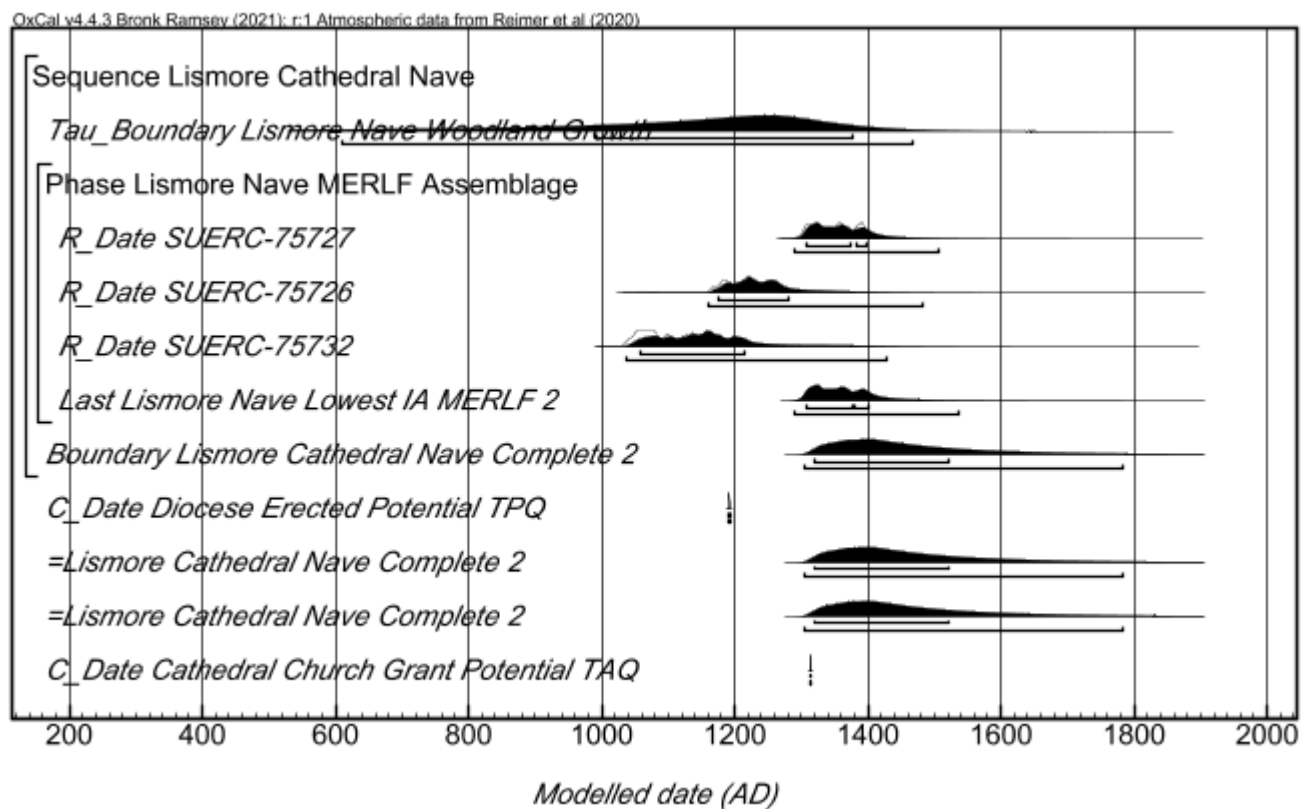
Order("Pre Documentary Probability")
{
  Date("=Lismore Cathedral Nave Complete 2");
  C_Date("Cathedral Church Grant Potential TAQ", 1314, 0.05);
};
};

```

3.34.2 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; results table

Name: Lismore Nave TmodC	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 74.4 Aoverall 74.4				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal							-40	1	68.268949	-249	1	95.449974					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											100
U(0,2.5)	4.99E-18	2.5	68.268949	4.99E-18	2.5	95.449974	0.15	2.26	68.268949	1.89E-17	2.3525	95.449974		100			99.4
Sequence Lismore Cathedral Nave																	
Tau_Boundary Lismore Nave Woodland Growth							993	1377	68.268949	608	1467	95.449974					99.7
Phase Lismore Nave MERLF Assemblage																	
R_Date SUERC-75727	1303	1395	68.26895	1299	1401	95.449974	1307	1399	68.268949	1289	1506	95.449974		100.3			99.9
R_Date SUERC-75726	1175	1256	68.268949	1160	1266	95.449974	1176	1280	68.268949	1159	1481	95.449974		100.2			99.9
R_Date SUERC-75732	1045	1165	68.268949	1035	1208	95.449974	1059	1214	68.268949	1035	1427	95.449974		96.6			99.8
Last Lismore Nave Lowest IA MERLF 2							1306	1400	68.268949	1288	1537	95.449974					99.8
Boundary Lismore Cathedral Nave Complete 2							1321	1522	68.268949	1305	1784	95.449974					99.8
Order Post Diocese Probability																	
C_Date Diocese Erected Potential TPQ				1191	1192	95.449974	1191	1192	68.268949	1191	1192	95.449974		70.7			100
=Lismore Cathedral Nave Complete 2							1321	1522	68.268949	1305	1784	95.449974					99.8
Order Pre Documentary Probability																	
=Lismore Cathedral Nave Complete 2							1321	1522	68.268949	1305	1784	95.449974					99.8
C_Date Cathedral Church Grant Potential TAQ				1313	1314	95.449974	1313	1314	68.268949	1313	1314	95.449974		70.7			100

3.34.3 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; multiple plot



3.34.4 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ probability

Order: Lismore Nave TmodC TPQ Probability	Diocese Erected Potential TPQ	Lismore Cathedral Nave Complete 2
Diocese Erected Potential TPQ	0	1
Lismore Cathedral Nave Complete 2	0	0

3.34.5 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ probability

Order: Lismore Nave TmodC TAQ Probability	Lismore Cathedral Nave Complete 2	Cathedral Church Grant Potential TAQ
Lismore Cathedral Nave Complete 2	0	0.010161
Cathedral Church Grant Potential TAQ	0.9898	0

3.34.6 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ probability

Order: Lismore Nave TmodC Last TPQ Probability	Diocese Erected Potential TPQ	Lismore Nave Lowest IA MERLF 2
Diocese Erected Potential TPQ	0	1
Lismore Nave Lowest IA MERLF 2	0	0

3.34.7 CS6; Lismore Cathedral nave; exponential prior/modified Charcoal Outlier Model; Last distribution TAQ probability

Order: Lismore Nave TmodC Last Probability	Lismore Nave Lowest IA MERLF 2	Cathedral Church Grant Potential TAQ
Lismore Nave Lowest IA MERLF 2	0	0.09205
Cathedral Church Grant Potential TAQ	0.9079	0

3.35.1 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; model script

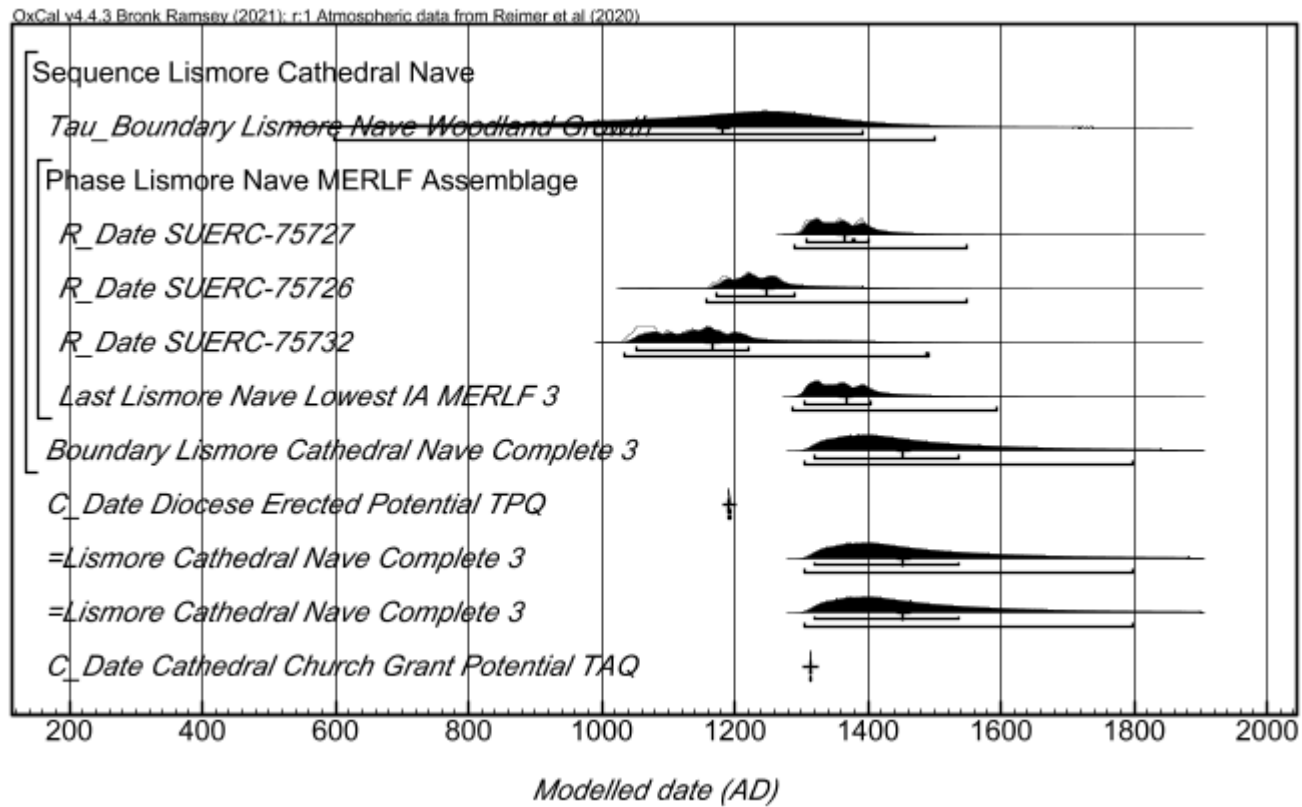
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lismore Cathedral Nave")
  {
    Tau_Boundary("Lismore Nave Woodland Growth");
    Phase("Lismore Nave MERLF Assemblage")
    {
      R_Date("SUERC-75727", 616, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75726", 843, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75732", 921, 30)
      {
        Outlier("Charcoal", 1);
      };
      Last("Lismore Nave Lowest IA MERLF 3");
    };
    Boundary("Lismore Cathedral Nave Complete 3");
  };
  Order("Post Diocese Probability")
  {
    C_Date("Diocese Erected Potential TPQ", 1192, 0.05);
    Date("=Lismore Cathedral Nave Complete 3");
  };
};
```

```
Order("Pre Documentary Probability")
{
  Date("=Lismore Cathedral Nave Complete 3");
  C_Date("Cathedral Church Grant Potential TAQ", 1314, 0.05);
};
};
```

3.35.2 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; results table

Name: Lismore Nave TandC	Unmodelled (BC/AD)							Modelled (BC/AD)							Indices Amodel 74.4 Aoverall 74.4				
	from	to	%	from	to	%	median	from	to	%	from	to	%	median	Acomb	A	L	P	C
Outlier_Model Charcoal								-52	1	68.268949	-307	1	95.449974	-15					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974	-0.74							-0.72					100
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	1.515	3.60E-17	2.292	68.268949	3.60E-17	2.595	95.449974	1.377		100			99.7
Sequence Lismore Cathedral Nave																			
Tau_Boundary Lismore Nave Woodland Growth								988	1391	68.268949	598	1500	95.449974	1182					99.7
Phase Lismore Nave MERLF Assemblage																			
R_Date SUERC-75727	1303	1395	68.26895	1299	1401	95.449974	1348	1307	1400	68.268949	1289	1547	95.449974	1365		100.3			99.9
R_Date SUERC-75726	1175	1256	68.268949	1160	1266	95.449974	1210	1171	1290	68.268949	1158	1549	95.449974	1248		100.2			99.8
R_Date SUERC-75732	1045	1165	68.268949	1035	1208	95.449974	1109	1053	1220	68.268949	1035	1491	95.449974	1166		96.7			99.8
Last Lismore Nave Lowest IA MERLF 3								1306	1402	68.268949	1288	1594	95.449974	1367					99.8
Boundary Lismore Cathedral Nave Complete 3								1320	1536	68.268949	1306	1796	95.449974	1452					99.8
Order Post Diocese Probability																			
C_Date Diocese Erected Potential TPQ				1191	1192	95.449974	1192	1191	1192	68.268949	1191	1192	95.449974	1192		70.7			100
=Lismore Cathedral Nave Complete 3								1320	1536	68.268949	1306	1796	95.449974	1452					99.8
Order Pre Documentary Probability																			
=Lismore Cathedral Nave Complete 3								1320	1536	68.268949	1306	1796	95.449974	1452					99.8
C_Date Cathedral Church Grant Potential TAQ				1313	1314	95.449974	1314	1313	1314	68.268949	1313	1314	95.449974	1314		70.6			100

3.35.3 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; multiple plot



3.35.4 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; End Boundary TPQ Probability

Order: Lismore Nave TandC EB TPQ Probability	Diocese Erected Potential TPQ	Lismore Cathedral Nave Complete 3
Diocese Erected Potential TPQ	0	1
Lismore Cathedral Nave Complete 3	0	0

3.35.5 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; End Boundary TAQ Probability

Order: Lismore Nave TandC EB TAQ Probability	Lismore Cathedral Nave Complete 3	Cathedral Church Grant Potential TAQ
Lismore Cathedral Nave Complete 3	0	0.009448
Cathedral Church Grant Potential TAQ	0.9906	0

3.35.6 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; Last distribution TPQ Probability

Order: Lismore Nave TandC Last TPQ Probability	Diocese Erected Potential TPQ	Lismore Nave Lowest IA MERLF 3
Diocese Erected Potential TPQ	0	1
Lismore Nave Lowest IA MERLF 3	0	0

3.35.7 CS6; Lismore Cathedral nave; exponential prior/default Charcoal Outlier Model; Last distribution TAQ Probability

Order: Lismore Nave TandC Last TAQ Probability	Lismore Nave Lowest IA MERLF 3	Cathedral Church Grant Potential TAQ
Lismore Nave Lowest IA MERLF 3	0	0.08738
Cathedral Church Grant Potential TAQ	0.9126	0

3.36.1 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; model script

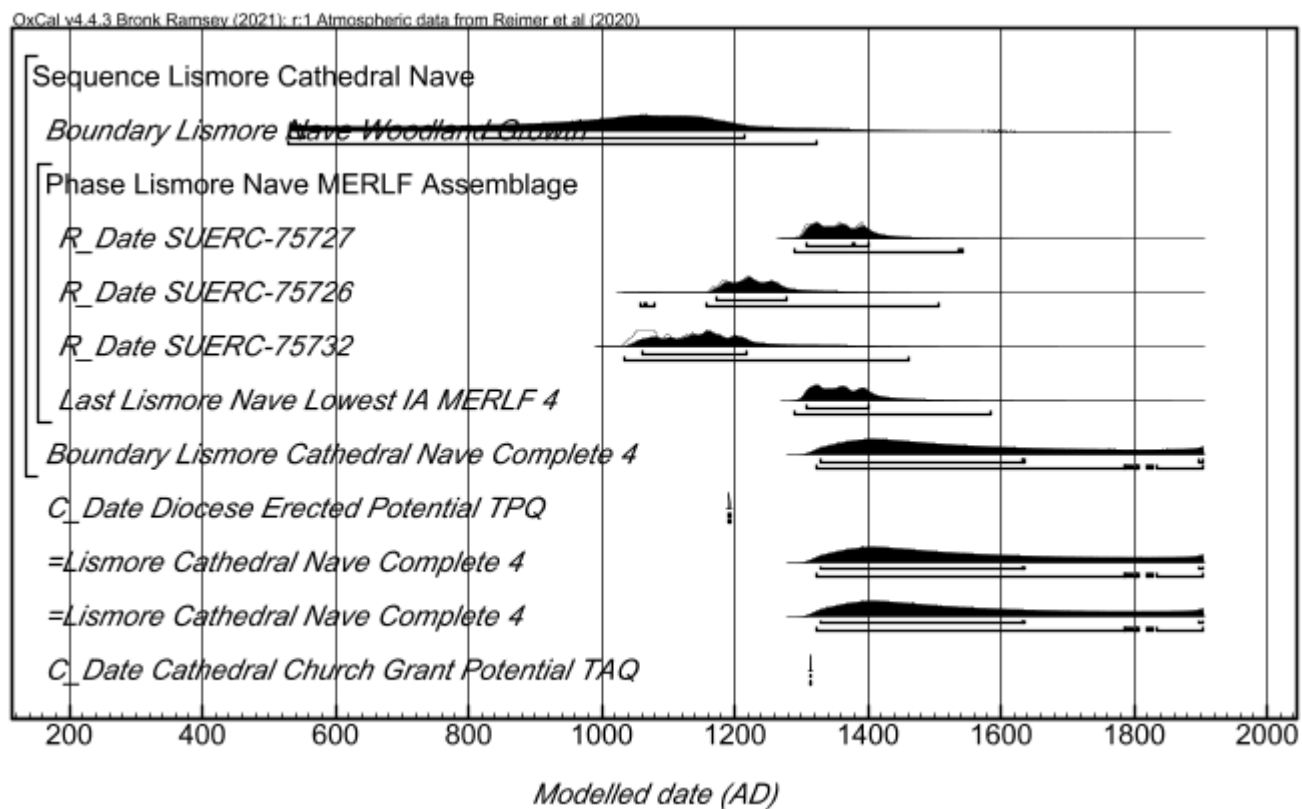
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lismore Cathedral Nave")
  {
    Boundary("Lismore Nave Woodland Growth");
    Phase("Lismore Nave MERLF Assemblage")
    {
      R_Date("SUERC-75727", 616, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75726", 843, 30)
      {
        Outlier("Charcoal", 1);
      };
      R_Date("SUERC-75732", 921, 30)
      {
        Outlier("Charcoal", 1);
      };
      Last("Lismore Nave Lowest IA MERLF 4");
    };
    Boundary("Lismore Cathedral Nave Complete 4");
  };
  Order("Post Diocese Probability")
  {
    C_Date("Diocese Erected Potential TPQ", 1192, 0.05);
    Date("=Lismore Cathedral Nave Complete 4");
  };
};
```

```
Order("Pre Documentary Probability")
{
  Date("=Lismore Cathedral Nave Complete 4");
  C_Date("Cathedral Church Grant Potential TAQ", 1314, 0.05);
};
};
```

3.36.2 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; results table

Name: Lismore Nave Char 2020	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 74.3 Aoverall 74.3				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal							-43	1	68.268949	-284	1	95.449974					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											100
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	3.60E-17	2.133	68.268949	3.60E-17	2.52	95.449974		100			99.6
Sequence Lismore Cathedral Nave																	
Boundary Lismore Nave Woodland Growth							530	1216	68.268949	530	1324	95.449974					97.4
Phase Lismore Nave MERLF Assemblage																	
R_Date SUERC-75727	1303	1395	68.26895	1299	1401	95.449974	1307	1401	68.268949	1289	1542	95.449974		100.3			99.9
R_Date SUERC-75726	1175	1256	68.268949	1160	1266	95.449974	1173	1276	68.268949	1058	1505	95.449974		100.7			99.9
R_Date SUERC-75732	1045	1165	68.268949	1035	1208	95.449974	1061	1218	68.268949	1035	1460	95.449974		95.8			99.7
Last Lismore Nave Lowest IA MERLF 4							1307	1401	68.268949	1288	1584	95.449974					99.9
Boundary Lismore Cathedral Nave Complete 4							1328	1904	68.268949	1321	1904	95.449973					97.4
Order Post Diocese Probability																	
C_Date Diocese Erected Potential TPQ				1191	1192	95.449974	1191	1192	68.268949	1191	1192	95.449974		70.7			100
=Lismore Cathedral Nave Complete 4							1328	1904	68.268949	1321	1904	95.449973					97.4
Order Pre Documentary Probability																	
=Lismore Cathedral Nave Complete 4							1328	1904	68.268949	1321	1904	95.449973					97.4
C_Date Cathedral Church Grant Potential TAQ				1313	1314	95.449974	1313	1314	68.268949	1313	1314	95.449974		70.7			100

3.36.3 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; multiple plot



3.36.4 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; End Boundary TPQ Probability

Order: Lismore Nave Char EB TPQ Probability	Diocese Erected Potential TPQ	Lismore Cathedral Nave Complete 4
Diocese Erected Potential TPQ	0	1
Lismore Cathedral Nave Complete 4	0	0

3.36.5 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; End Boundary TAQ Probability

Order: Lismore Nave Char End Boundary TAQ Probability	Lismore Cathedral Nave Complete 4	Cathedral Church Grant Potential TAQ
Lismore Cathedral Nave Complete 4	0	0.004709
Cathedral Church Grant Potential TAQ	0.9953	0

3.36.6 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; Last distribution TPQ Probability

Order: Lismore Nave Char Last TPQ Probability	Diocese Erected Potential TPQ	Lismore Nave Lowest IA MERLF 4
Diocese Erected Potential TPQ	0	1
Lismore Nave Lowest IA MERLF 4	0	0

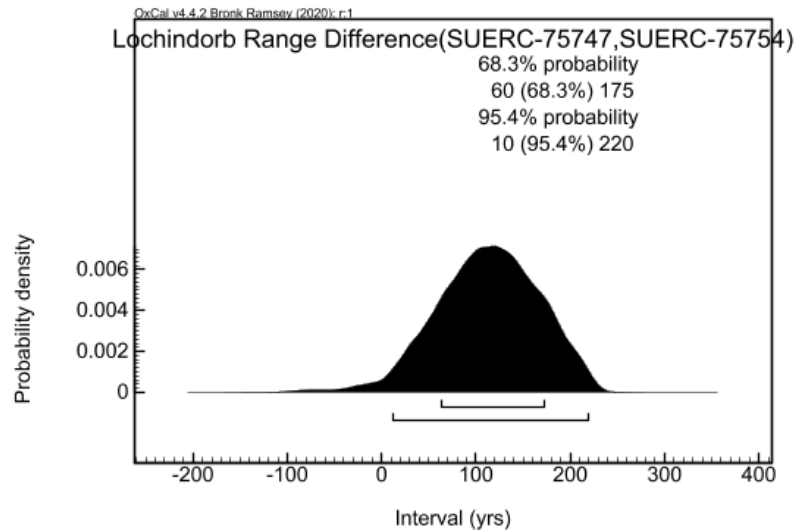
3.36.7 CS6; Lismore Cathedral nave; uniform prior/default Charcoal Outlier Model; Last distribution TAQ Probability

Order: Lismore Nave Char Last TAQ Probability	Lismore Nave Lowest IA MERLF 4	Cathedral Church Grant Potential TAQ
Lismore Nave Lowest IA MERLF 4	0	0.08449
Cathedral Church Grant Potential TAQ	0.9155	0

3.37.1 CS4*; Lochindorb Castle; dataset age range; model script (*Reduced Dataset excluding SUERC-75752)

```
Options()  
{  
  Resolution=1 year;  
  kIterations=20000;  
};  
Plot()  
{  
  Phase("Lochindorb Castle Phase 1 Partial Set ")  
  {  
    R_Date("SUERC-75747", 835, 31);  
    R_Date("SUERC-75754", 940, 31);  
    Difference("Lochindorb Range", "SUERC-75747", "SUERC-75754");  
  };  
};
```

3.37.2 CS4*; Lochindorb Castle; dataset age range; distribution plot (*Reduced Dataset excluding SUERC-75752)



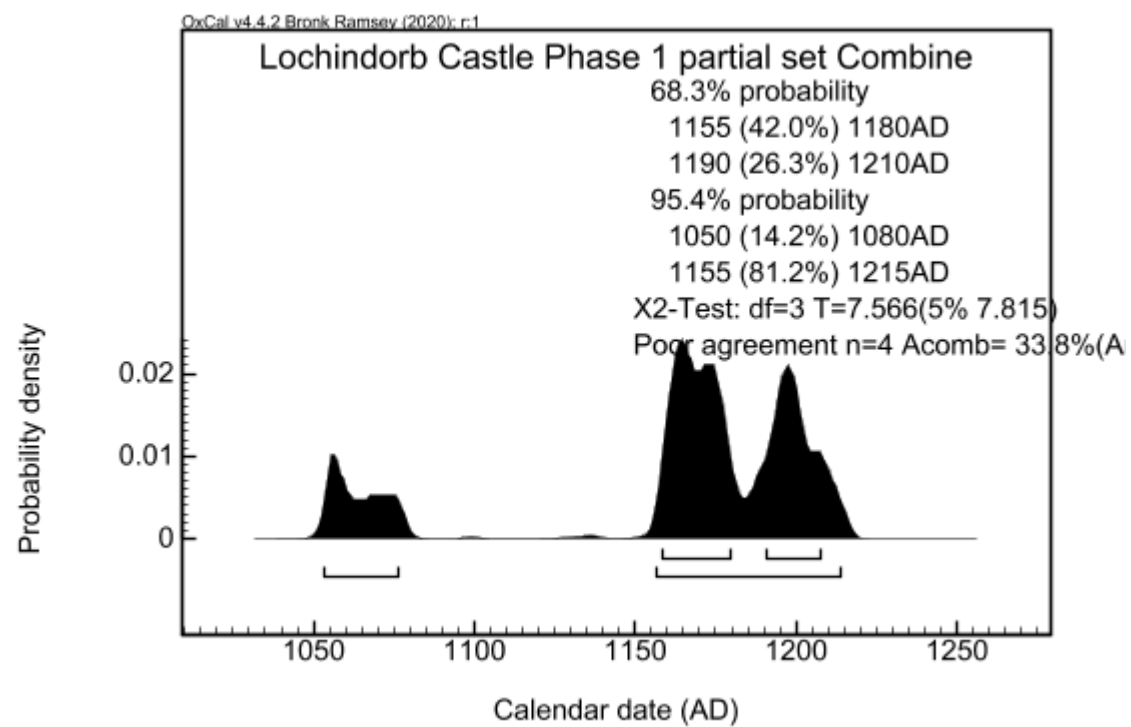
3.38.1 CS4*; Lochindorb Castle; Combine; model script (*Reduced Dataset excluding SUERC-75752)

```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Combine("Lochindorb Castle Phase 1 partial set")
  {
    R_Date("SUERC-75747", 835, 31);
    R_Date("SUERC-75751", 862, 31);
    R_Date("SUERC-75753", 932, 31);
    R_Date("SUERC-75754", 940, 31);
  };
};
```

3.38.2 CS4*; Lochindorb Castle; Combine; results table (*Reduced Dataset excluding SUERC-75752)

Name: Reduced Lochindorb Combined	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Combine Lochindorb Castle Phase 1 partial set	1155	1210	68.26895	1050	1215	95.449974							33.8				
R_Date SUERC-75747	1175	1265	68.268949	1160	1270	95.449974	1155	1210	68.26895	1050	1215	95.449974		55			
R_Date SUERC-75751	1165	1220	68.268949	1050	1265	95.449974	1155	1210	68.26895	1050	1215	95.449974		98.6			
R_Date SUERC-75753	1040	1160	68.268949	1030	1205	95.449973	1155	1210	68.26895	1050	1215	95.449974		53.3			
R_Date SUERC-75754	1040	1160	68.268949	1025	1200	95.449974	1155	1210	68.26895	1050	1215	95.449974		39.5			

3.38.3 CS4*; Lochindorb Castle; Combine; distribution plot (*Reduced Dataset excluding SUERC-75752)



3.39.1 CS4*; Lochindorb Castle; exponential prior/no outlier model; model script (*Reduced Dataset excluding SUERC-75752)

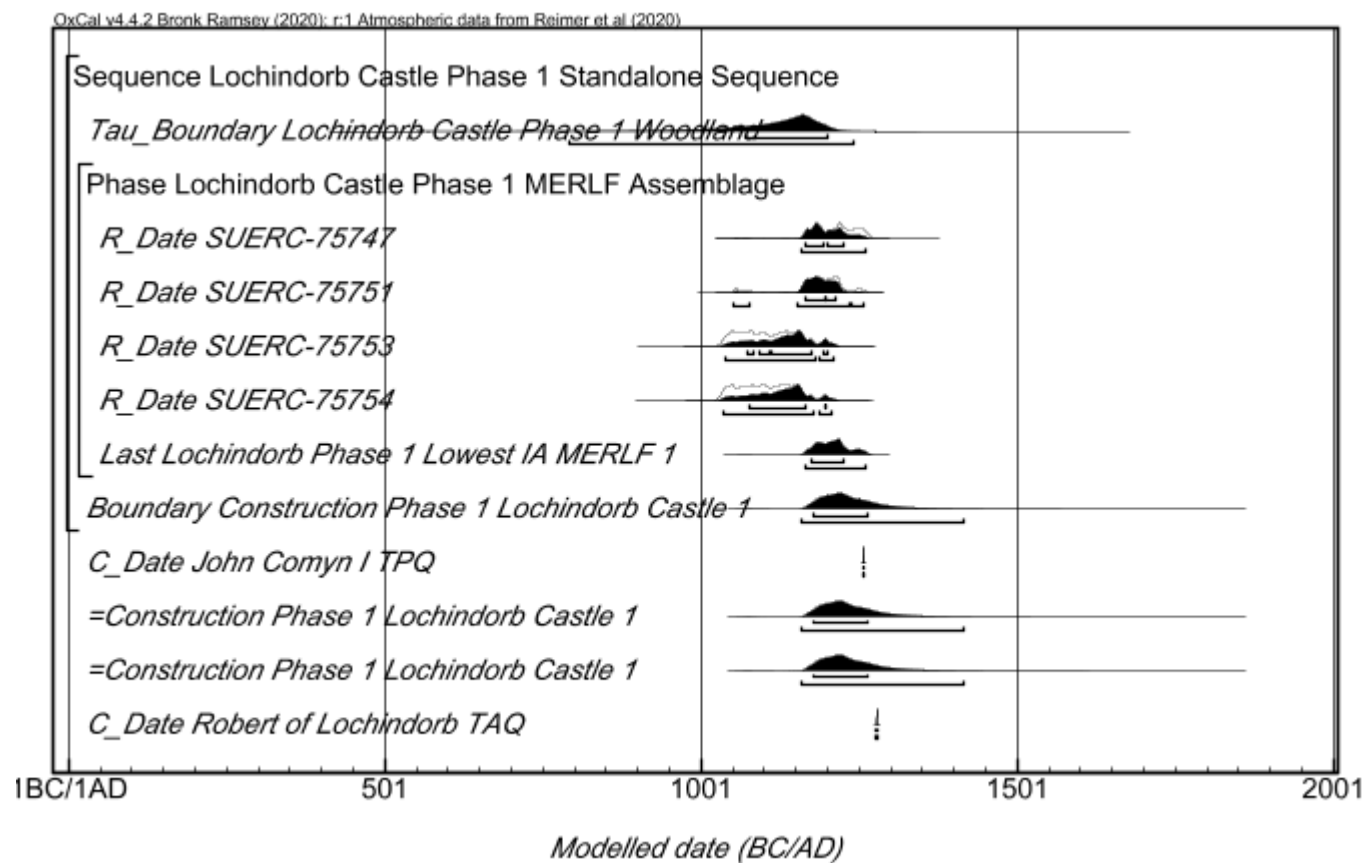
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
      };
      R_Date("SUERC-75751", 862, 31)
      {
      };
      R_Date("SUERC-75753", 932, 31)
      {
      };
      R_Date("SUERC-75754", 940, 31)
      {
      };
      Last("Lochindorb Phase 1 Lowest IA MERLF 1");
    };
    Boundary("Construction Phase 1 Lochindorb Castle 1");
  };
  Order("John Comyn I Probability")
  {
    C_Date("John Comyn I TPQ", 1258, 0.05);
    Date("=Construction Phase 1 Lochindorb Castle 1");
  };
};
```

```
Order("Robert of Lochindorb Probability")
{
  Date("=Construction Phase 1 Lochindorb Castle 1");
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);
};
};
```

3.39.2 CS4*; Lochindorb Castle; exponential prior/no outlier model; results table (*Reduced Dataset excluding SUERC-75752)

Name: Reduced Lochindorb Tau	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 71.3 Aoverall 70.8				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Tau_Boundary Lochindorb Castle Phase 1 Woodland							1071	1201	68.26895	792	1243	95.44997					99.8
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.26895	1164	1268	95.44997	1165	1225	68.26895	1159	1262	95.44997		93.5			100
R_Date SUERC-75751	1165	1220	68.26895	1051	1263	95.44997	1165	1213	68.26895	1053	1257	95.44997		108.8			100
R_Date SUERC-75753	1045	1159	68.26895	1031	1201	95.44997	1073	1201	68.26895	1040	1210	95.44997		91.2			100
R_Date SUERC-75754	1040	1156	68.26895	1028	1198	95.44997	1078	1198	68.26895	1035	1207	95.44997		92.6			100
Last Lochindorb Phase 1 Lowest IA MERLF 1							1176	1227	68.26895	1165	1261	95.44997					100
Boundary Construction Phase 1 Lochindorb Castle 1							1179	1265	68.26895	1160	1416	95.44997					99.7
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.44997	1257	1258	68.26895	1257	1258	95.44997		70.7			100
=Construction Phase 1 Lochindorb Castle 1							1179	1265	68.26895	1160	1416	95.44997					99.7
Order Robert of Lochindorb Probability																	
=Construction Phase 1 Lochindorb Castle 1							1179	1265	68.26895	1160	1416	95.44997					99.7
C_Date Robert of Lochindorb TAQ				1278	1279	95.44997	1278	1279	68.26895	1278	1279	95.44997		70.7			100

3.39.3 CS4; Lochindorb Castle; exponential prior/no outlier model; multiple plot (*Reduced Dataset excluding SUERC-75752)



3.39.4 CS4*; Lochindorb Castle; exponential prior/no outlier model; End Boundary TPQ Probability (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Tau End Boundary TPQ Probability	John Comyn I TPQ	Construction Phase 1 Lochindorb Castle 1
John Comyn I TPQ	0	0.29407
Construction Phase 1 Lochindorb Castle 1	0.7059	0

3.39.5 CS4*; Lochindorb Castle; exponential prior/no outlier model; End Boundary TAQ Probability (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Tau End Boundary TAQ Probability	Construction Phase 1 Lochindorb Castle 1	Robert of Lochindorb TAQ
Construction Phase 1 Lochindorb Castle 1	0	0.8061
Robert of Lochindorb TAQ	0.19388	0

3.39.6 CS4*; Lochindorb Castle; exponential prior/no outlier model; Last distribution TPQ Probability (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Tau TPQ Probability	John Comyn Potential TPQ	Lochindorb Phase 1 Lowest IA MERLF 1
John Comyn Potential TPQ	0	0.03416
Lochindorb Phase 1 Lowest IA MERLF 1	0.9658	0

3.39.7 CS4*; Lochindorb Castle; exponential prior/no outlier model; Last distribution TAQ Probability (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Tau Last TAQ Probability	Lochindorb Phase 1 Lowest IA MERLF 1	Robert Lochindorb Potential TAQ
Lochindorb Phase 1 Lowest IA MERLF 1	0	1
Robert Lochindorb Potential TAQ	0.000031	0

3.40.1 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; model script (*Reduced Dataset excluding SUERC-75752)

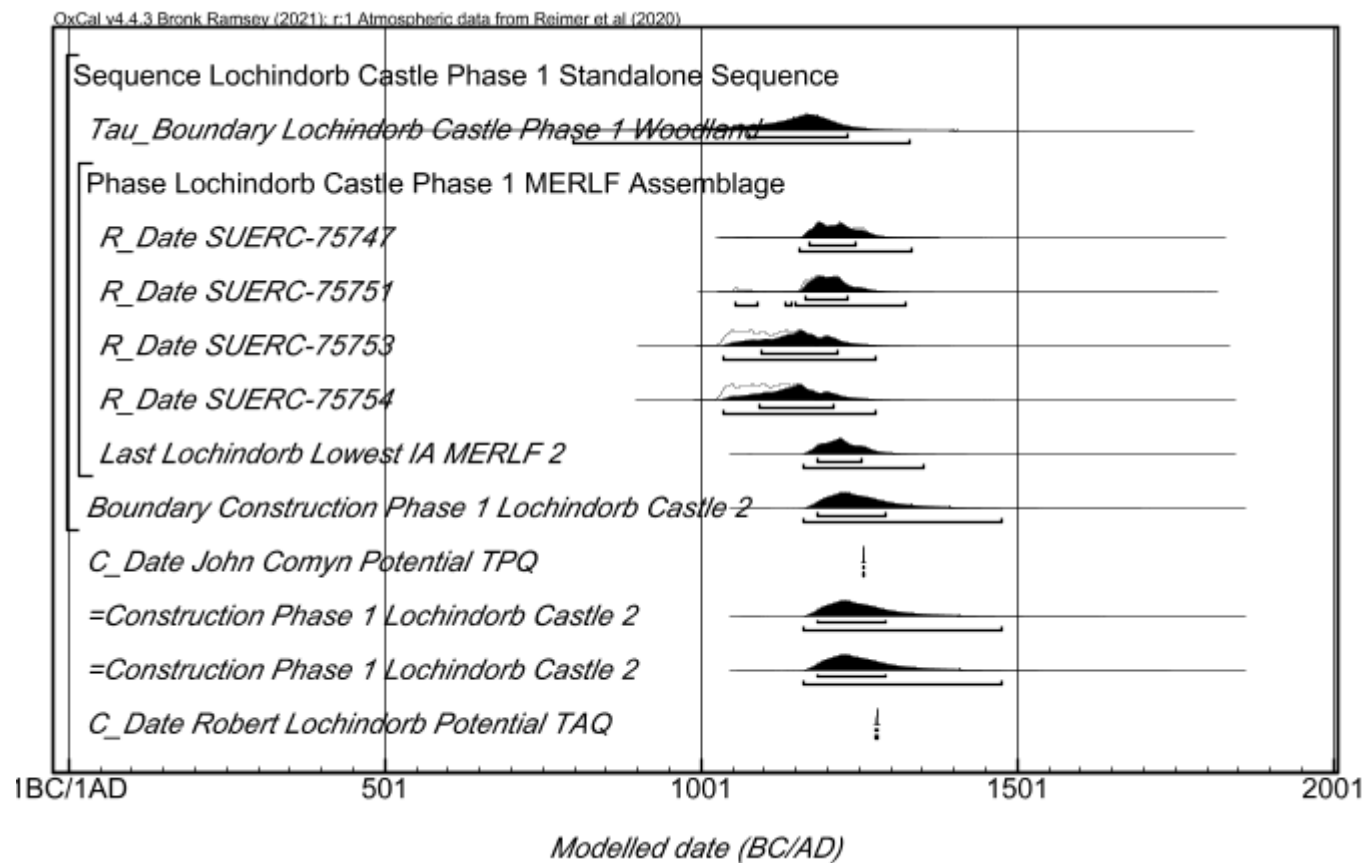
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,2.5),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      Last("Lochindorb Lowest IA MERLF 2");
    };
    Boundary("Construction Phase 1 Lochindorb Castle 2");
  };
};
```

```
Order("John Comyn I Probability")
{
  C_Date("John Comyn Potential TPQ", 1258, 0.05);
  Date("=Construction Phase 1 Lochindorb Castle 2");
};
Order("Robert of Lochindorb Probability")
{
  Date("=Construction Phase 1 Lochindorb Castle 2");
  C_Date("Robert Lochindorb Potential TAQ", 1279, 0.05);
};
};
```

3.40.2 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; results table (*Reduced Dataset excluding SUERC-75752)

Name: Reduced Lochindorb Phase 1 TmodC	Unmodelled (BC/AD)						Modelled (BC/AD)							Indices Amodel 74.4 Aoverall 74.2				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C	
Outlier_Model Charcoal 1							-22	1	68.26895	-138	1	95.44997					100	
Exp(1,-10,0)	-1.24	-0.05	68.26895	-3.19	-0.05	95.44997											100	
U(0,2.5)	4.99E-18	2.5	68.26895	4.99E-18	2.5	95.44997	0.0325	1.6125	68.26895	1.89E-17	2.1575	95.44997		100			99.9	
Sequence Lochindorb Castle Phase 1 Standalone Sequence																		
Tau_Boundary Lochindorb Castle Phase 1 Woodland							1077	1231	68.26895	798	1331	95.44997					99.7	
Phase Lochindorb Castle Phase 1 MERLF Assemblage																		
R_Date SUERC-75747	1179	1260	68.26895	1164	1268	95.44997	1173	1245	68.26895	1158	1335	95.44997		95.1			99.9	
R_Date SUERC-75751	1165	1220	68.26895	1051	1263	95.44997	1167	1231	68.26895	1054	1325	95.44997		107.9			99.9	
R_Date SUERC-75753	1045	1159	68.26895	1031	1201	95.44997	1097	1216	68.26895	1037	1277	95.44997		93.3			99.9	
R_Date SUERC-75754	1040	1156	68.26895	1028	1198	95.44997	1093	1211	68.26895	1035	1277	95.44997		94.8			99.8	
Last Lochindorb Lowest IA MERLF 2							1183	1255	68.26895	1162	1352	95.44997					99.9	
Boundary Construction Phase 1 Lochindorb Castle 2							1186	1291	68.26895	1164	1476	95.44997					99.5	
Order John Comyn I Probability																		
C_Date John Comyn Potential TPQ				1257	1258	95.44997	1257	1258	68.26895	1257	1258	95.44997		70.8			100	
=Construction Phase 1 Lochindorb Castle 2							1186	1291	68.26895	1164	1476	95.44997					99.5	
Order Robert of Lochindorb Probability																		
=Construction Phase 1 Lochindorb Castle 2							1186	1291	68.26895	1164	1476	95.44997					99.5	
C_Date Robert Lochindorb Potential TAQ				1278	1279	95.44997	1278	1279	68.26895	1278	1279	95.44997		70.7			100	

3.40.3 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; multiple plot (*Reduced Dataset excluding SUERC-75752)



3.40.4 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; End Boundary TPQ Probability
(*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TmodC TPQ Probability	John Comyn Potential TPQ	Construction Phase 1 Lochindorb Castle 2
John Comyn Potential TPQ	0	0.4444
Construction Phase 1 Lochindorb Castle 2	0.5556	0

3.40.5 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; End Boundary TAQ Probability
(*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TmodC TAQ Probability	Construction Phase 1 Lochindorb Castle 2	Robert Lochindorb Potential TAQ
Construction Phase 1 Lochindorb Castle 2	0	0.677
Robert Lochindorb Potential TAQ	0.323	0

3.40.6 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; Last distribution TPQ Probability
(*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TmodC Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Lowest IA MERLF 2
John Comyn Potential TPQ	0	0.21511
Lochindorb Lowest IA MERLF 2	0.7849	0

3.40.7 CS4*; Lochindorb Castle; exponential prior/modified Charcoal Outlier Model; Last distribution TAQ Probability
(*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TmodC Last TAQ Probability	Lochindorb Lowest IA MERLF 2	Robert Lochindorb Potential TAQ
Lochindorb Lowest IA MERLF 2	0	0.8818
Robert Lochindorb Potential TAQ	0.11817	0

3.41.1 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; model script (*Reduced Dataset excluding SUERC-75752)

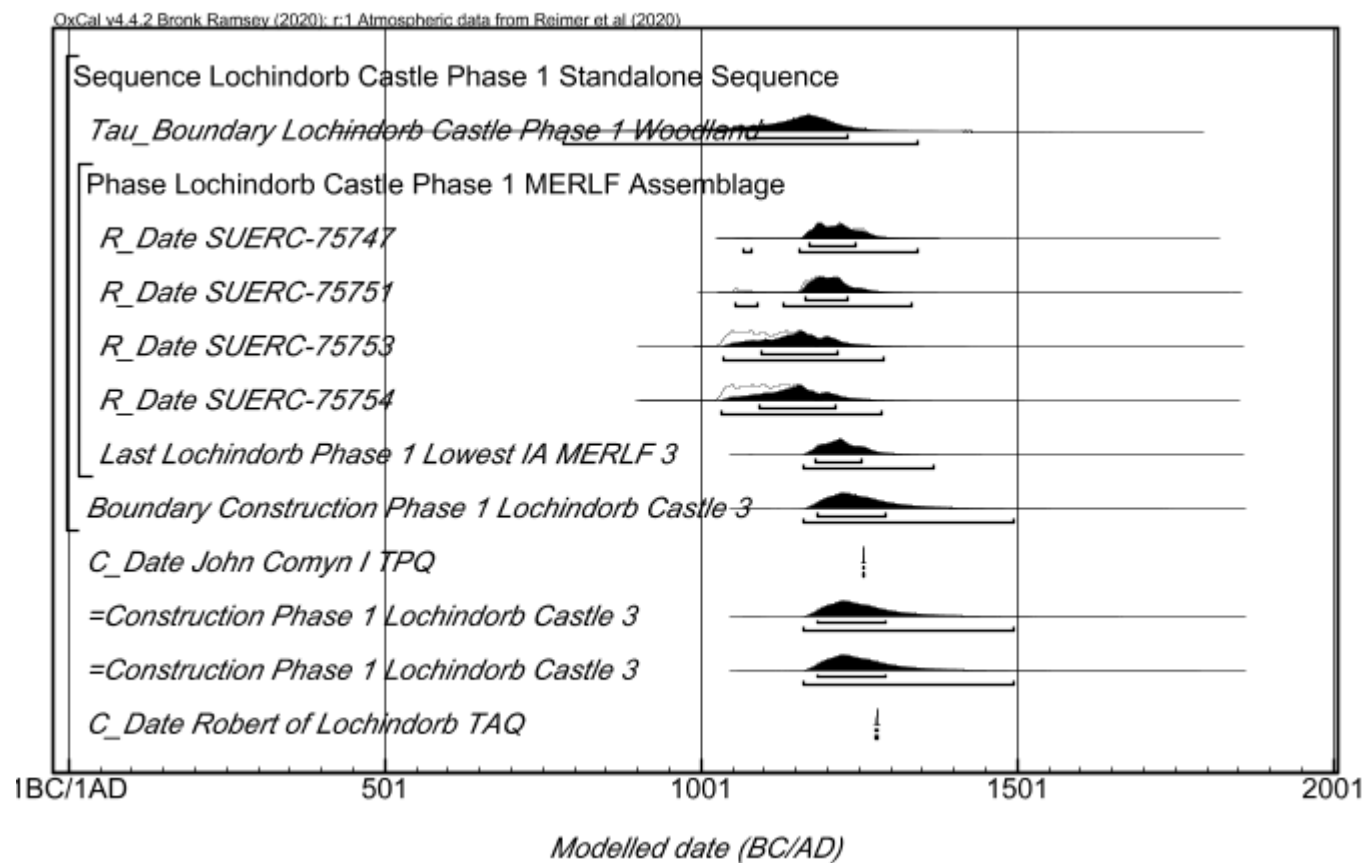
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Tau_Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      Last("Lochindorb Phase 1 Lowest IA MERLF 3");
    };
    Boundary("Construction Phase 1 Lochindorb Castle 3");
  };
};
```

```
Order("John Comyn I Probability")
{
  C_Date("John Comyn I TPQ", 1258, 0.05);
  Date("=Construction Phase 1 Lochindorb Castle 3");
};
Order("Robert of Lochindorb Probability")
{
  Date("=Construction Phase 1 Lochindorb Castle 3");
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);
};
};
```

3.41.2 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; results table (*Reduced Dataset excluding SUERC-75752)

Name: Reduced Lochindorb Phase 1 TandC	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 74.4 Aoverall 74.2				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal 1							-23	1	68.268949	-152	1	95.449974					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											100
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	3.60E-17	1.611	68.268949	3.60E-17	2.22	95.449974		100			99.9
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Tau_Boundary Lochindorb Castle Phase 1 Woodland							1074	1232	68.268949	784	1342	95.449974					99.7
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1173	1244	68.268949	1068	1342	95.449973		95.1			99.9
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1166	1232	68.268949	1054	1334	95.449973		107.7			99.9
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1097	1217	68.268949	1036	1288	95.449974		93.4			99.9
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1093	1212	68.268949	1034	1287	95.449974		94.8			99.9
Last Lochindorb Phase 1 Lowest IA MERLF 3							1183	1256	68.268949	1162	1369	95.449974					99.9
Boundary Construction Phase 1 Lochindorb Castle 3							1185	1294	68.268949	1164	1496	95.449974					99.6
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.449974	1257	1258	68.268949	1257	1258	95.449974		70.7			100
=Construction Phase 1 Lochindorb Castle 3							1185	1294	68.268949	1164	1496	95.449974					99.6
Order Robert of Lochindorb Probability																	
=Construction Phase 1 Lochindorb Castle 3							1185	1294	68.268949	1164	1496	95.449974					99.6
C_Date Robert of Lochindorb TAQ				1278	1279	95.449974	1278	1279	68.268949	1278	1279	95.449974		70.8			100

3.41.3 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; multiple plot (*Reduced Dataset excluding SUERC-75752)



3.41.4 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; End Boundary TPQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TandC TPQ Probability	John Comyn I TPQ	Construction Phase 1 Lochindorb Castle 3
John Comyn I TPQ	0	0.4521
Construction Phase 1 Lochindorb Castle 3	0.5479	0

3.41.5 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; End Boundary TAQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TAQ Probability	Construction Phase 1 Lochindorb Castle 3	Robert of Lochindorb TAQ
Construction Phase 1 Lochindorb Castle 3	0	0.6681
Robert of Lochindorb TAQ	0.3319	0

3.41.6 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; Last distribution TPQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TandC Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Phase 1 Lowest IA MERLF 3
John Comyn Potential TPQ	0	0.2266
Lochindorb Phase 1 Lowest IA MERLF 3	0.7734	0

3.41.7 CS4*; Lochindorb Castle; exponential prior/default Charcoal Outlier Model; Last distribution TAQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 TandC Last TAQ Probability	Lochindorb Phase 1 Lowest IA MERLF 3	Robert Lochindorb Potential TAQ
Lochindorb Phase 1 Lowest IA MERLF 3	0	0.8702
Robert Lochindorb Potential TAQ	0.12983	0

3.42.1 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; model script (*Reduced Dataset excluding SUERC-75752)

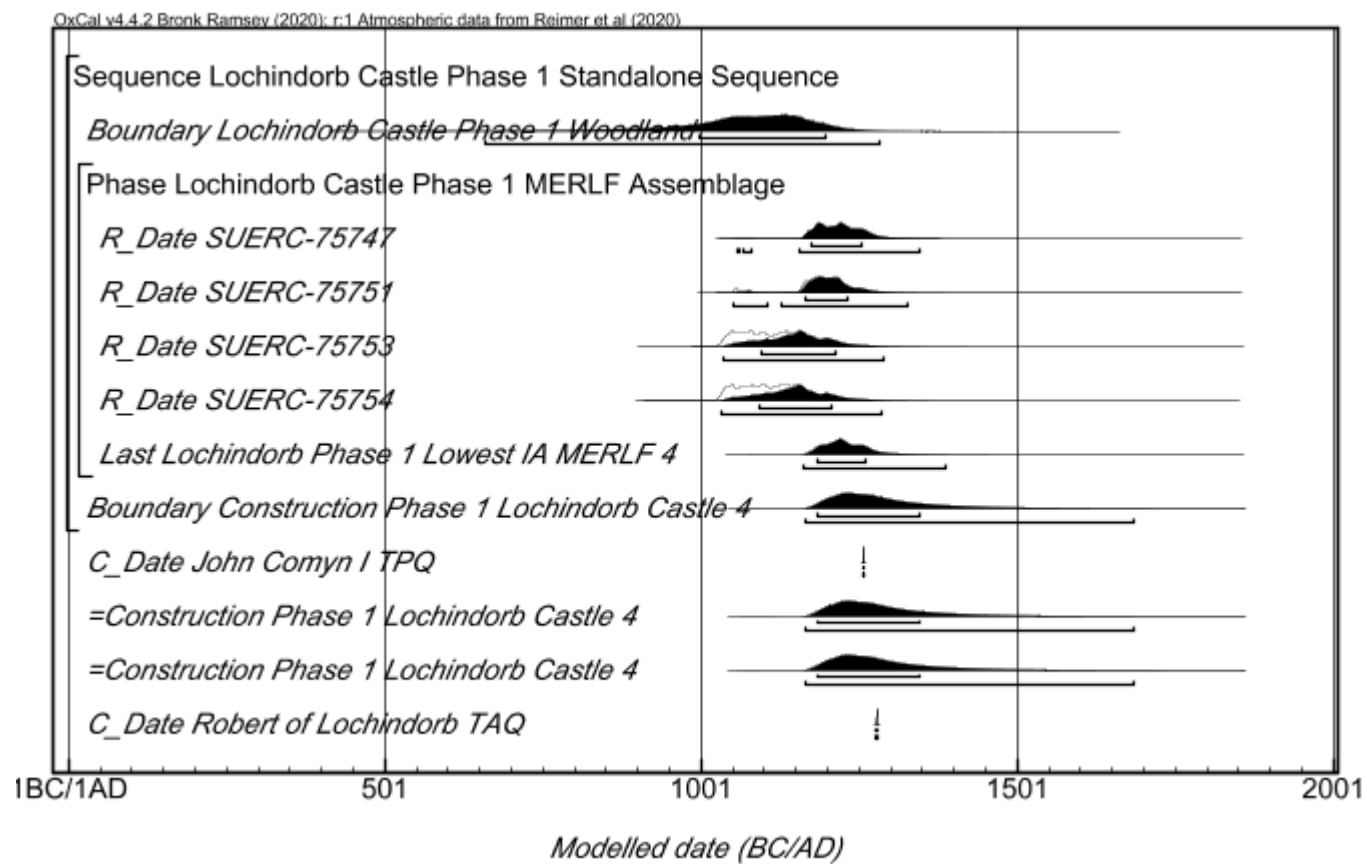
```
Options()
{
  Resolution=1 year;
  kIterations=20000;
};
Plot()
{
  Outlier_Model("Charcoal 1",Exp(1,-10,0),U(0,3),"t");
  Sequence("Lochindorb Castle Phase 1 Standalone Sequence")
  {
    Boundary("Lochindorb Castle Phase 1 Woodland");
    Phase("Lochindorb Castle Phase 1 MERLF Assemblage")
    {
      R_Date("SUERC-75747", 835, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75751", 862, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75753", 932, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      R_Date("SUERC-75754", 940, 31)
      {
        Outlier("Charcoal 1", 1);
      };
      Last("Lochindorb Phase 1 Lowest IA MERLF 4");
    };
    Boundary("Construction Phase 1 Lochindorb Castle 4");
  };
};
```

```
Order("John Comyn I Probability")
{
  C_Date("John Comyn I TPQ", 1258, 0.05);
  Date("=Construction Phase 1 Lochindorb Castle 4");
};
Order("Robert of Lochindorb Probability")
{
  Date("=Construction Phase 1 Lochindorb Castle 4");
  C_Date("Robert of Lochindorb TAQ", 1279, 0.05);
};
};
```

3.42.2 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; results table (*Reduced Dataset excluding SUERC-75752)

Name: Reduced Lochindorb Phase 1 Char	Unmodelled (BC/AD)						Modelled (BC/AD)						Indices Amodel 74.9 Aoverall 74.5				
	from	to	%	from	to	%	from	to	%	from	to	%	Acomb	A	L	P	C
Outlier_Model Charcoal 1							-24	1	68.268949	-152	1	95.449974					100
Exp(1,-10,0)	-1.24	-0.05	68.268949	-3.19	-0.05	95.449974											100
U(0,3)	2.21E-17	3	68.268949	2.21E-17	3	95.449974	3.60E-17	1.566	68.268949	3.60E-17	2.22	95.449974		100			99.9
Sequence Lochindorb Castle Phase 1 Standalone Sequence																	
Boundary Lochindorb Castle Phase 1 Woodland							999	1196	68.268949	660	1282	95.449974					98.2
Phase Lochindorb Castle Phase 1 MERLF Assemblage																	
R_Date SUERC-75747	1179	1260	68.268949	1164	1268	95.449974	1177	1254	68.268949	1057	1345	95.449973		95.3			99.5
R_Date SUERC-75751	1165	1220	68.268949	1051	1263	95.449974	1165	1234	68.268949	1053	1328	95.449973		105.1			99.9
R_Date SUERC-75753	1045	1159	68.268949	1031	1201	95.449973	1095	1214	68.268949	1036	1288	95.449974		95.3			99.5
R_Date SUERC-75754	1040	1156	68.268949	1028	1198	95.449974	1092	1208	68.268949	1034	1286	95.449974		96.1			99.4
Last Lochindorb Phase 1 Lowest IA MERLF 4							1186	1261	68.268949	1161	1386	95.449974					99.5
Boundary Construction Phase 1 Lochindorb Castle 4							1185	1345	68.268949	1165	1686	95.449974					98.3
Order John Comyn I Probability																	
C_Date John Comyn I TPQ				1257	1258	95.449974	1257	1258	68.268949	1257	1258	95.449974		70.8			100
=Construction Phase 1 Lochindorb Castle 4							1185	1345	68.268949	1165	1686	95.449974					98.3
Order Robert of Lochindorb Probability																	
=Construction Phase 1 Lochindorb Castle 4							1185	1345	68.268949	1165	1686	95.449974					98.3
C_Date Robert of Lochindorb TAQ				1278	1279	95.449974	1278	1279	68.268949	1278	1279	95.449974		70.7			100

3.42.3 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; multiple plot (*Reduced Dataset excluding SUERC-75752)



3.42.4 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; End Boundary TPQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Char TPQ Probability	John Comyn I TPQ	Construction Phase 1 Lochindorb Castle 4
John Comyn I TPQ	0	0.609
Construction Phase 1 Lochindorb Castle 4	0.391	0

3.42.5 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; End Boundary TAQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Char TAQ Probability	Construction Phase 1 Lochindorb Castle 4	Robert of Lochindorb TAQ
Construction Phase 1 Lochindorb Castle 4	0	0.5002
Robert of Lochindorb TAQ	0.4999	0

3.42.6 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; Last distribution TPQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: Reduced Lochindorb Phase 1 Char Last TPQ Probability	John Comyn Potential TPQ	Lochindorb Phase 1 Lowest IA MERLF 4
John Comyn Potential TPQ	0	0.25524
Lochindorb Phase 1 Lowest IA MERLF 4	0.7448	0

3.42.7 CS4*; Lochindorb Castle; uniform prior/default Charcoal Outlier Model; Last distribution TAQ Probability
 (*Reduced Dataset excluding SUERC-75752)

Order: reduced Lochindorb Phase 1 Char Last TAQ Probability	Lochindorb Phase 1 Lowest IA MERLF 4	Robert Lochindorb Potential TAQ
Lochindorb Phase 1 Lowest IA MERLF 4	0	0.8533
Robert Lochindorb Potential TAQ	0.14666	0