Appendix A. OxCal code of the Inca occupation of Chamical

Plot()

{

Curve("IntCal13","IntCal13.14c");

Curve("SHCal13","SHCal13.14c");

Mix\_Curve("Mixed","IntCal13","SHCal13",U(0,100));

Sequence("Chamical")

{

Boundary("Start Inca occupation");

Phase("Inca occupation")

{

Span("Span Inca occupation");

Sequence()

{

Phase("Construction")

{

R\_Date("UGa-8801",410,25);

R\_Date("UGa-3457",450,30);

R\_Date("UGa-3458",450,25);

Span("Span Construction");

};

Phase("burnt cane above floor, unit 2-A")

{

R\_Date("UGa-8803",440,25);

R\_Date("UGa-3459",410,25);

R\_Date("UGa-8802",380,25);

};

};

};

Boundary("End Inca occupation");

R\_Date("UGa-3460",300,25);

};

Order("Order")

{

Date("AD 1463",AD(1463));

Date("=Start Inca occupation");

};

Difference("Difference", "AD 1463","Start Inca occupation");

};

Appendix B. OxCal code for the Inca phase model in Mendoza. Manually removed outliers are preceded by two forward slashes (//) and not processed by OxCal. This contains the same code for the independent site models, which were run separately before being incorporated into the Inca phase model.

Options()

{

Axis(400AD, 2000AD);

Curve= "ShCal13.14c";

PPP=50;

};

Plot()

{

Outlier\_Model("General",T(5),U(0,4),"t");

Sequence()

{

MCMC\_Sample("FinalGOM", 25, 100000)

{

};

Boundary("Start Inca Occupation");

Phase("Inca Occupation")

{

Sequence()

{

Boundary("Start Cienaga de Yalguaraz");

Phase("Cienaga de Yalguaraz")

{

// R\_Date("GIF-4607", 180, 80)

// {

// Outlier("General", 0.05);

// color="blue";

// };

R\_Date("UZ-2525/ETH-5318", 485, 60)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

R\_Date("UZ-2526/ETH-5319", 540, 55)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

C\_Date("UCTL-315", 1440, 60)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

C\_Date("UCTL-321", 1540, 40)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

R\_Date("GaK-7312", 390, 90)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

R\_Date("UZ-2527/ETH-5320", 420, 60)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

C\_Date("UCTL-322", 1520, 40)

{

Outlier("General", 0.05);

color="blue";

longitude=-69.366024;

latitude=-32.098715;

};

};

Boundary("End Cienaga de Yalguaraz");

};

Sequence()

{

Boundary("Start Tambillos");

Phase("Tambillos")

{

// C\_Date("UCTL-302", 1630, 40)

// {

// Outlier("General", 0.05);

// color="brown";

// };

R\_Date("Beta-26283", 410, 70)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

// C\_Date("UCTL-304", 1355, 70)

// {

// Outlier("General", 0.05);

// color="brown";

// longitude=-69.391240;

// latitude=-32.384097;

// };

R\_Date("I-16637", 290, 130)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

R\_Date("I-16908", 300, 80)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

// R\_Date("Beta-25221", 770, 50)

// {

// Outlier("General", 0.05);

// color="brown";

//longitude=-69.391240;

//latitude=-32.384097;

// };

R\_Date("I-16907", 310, 80)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

C\_Date("UCTL-306", 1510, 50)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

C\_Date("UCTL-303", 1510, 50)

{

Outlier("General", 0.05);

color="brown";

longitude=-69.391240;

latitude=-32.384097;

};

// C\_Date("UCTL-301", 1350, 60)

// {

// Outlier("General", 0.05);

// color="brown";

//longitude=-69.391240;

//latitude=-32.384097;

// };

};

Boundary("End Tambillos");

};

Sequence()

{

Boundary("Start Ranchillos");

Phase(Ranchillos)

{

// R\_Date("Beta-62946", 890, 80)

// {

// Outlier("General", 0.05);

// color="red";

// };

// R\_Date("I-17003", 220, 80)

// {

// Outlier("General", 0.05);

// color="red";

// };

// C\_Date("UCTL-317", 1620, 30)

// {

// Outlier("General", 0.05);

// color="red";

// };

// R\_Date("Beta-69934", 640, 50)

// {

// Outlier("General", 0.05);

// color="red";

//longitude=-69.467489;

//latitude=-32.604259;

// };

R\_Date("Beta-69933", 430, 50)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

R\_Date("I-17002", 290, 80)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

R\_Date("I-17004", 300, 80)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

C\_Date("UCTL-488", 1490, 50)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

C\_Date("UCTL-499", 1480, 50)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

C\_Date("UCTL-337", 1595, 45)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

C\_Date("UCTL-785", 1480, 50)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

C\_Date("UCTL-786", 1555, 45)

{

Outlier("General", 0.05);

color="red";

longitude=-69.467489;

latitude=-32.604259;

};

};

Boundary("End Ranchillos");

};

Sequence()

{

Boundary("Start Tambillitos");

Phase("Tambillitos")

{

R\_Date("Beta-88786", 540, 100)

{

Outlier("General", 0.05);

color="green";

longitude=-69.583170;

latitude=-32.750942;

};

C\_Date("UCTL-787", 1440, 60)

{

Outlier("General", 0.05);

color="green";

longitude=-69.583170;

latitude=-32.750942;

};

R\_Date("Beta-88787", 460, 80)

{

Outlier("General", 0.05);

color="green";

longitude=-69.583170;

latitude=-32.750942;

};

C\_Date("UCTL-323", 1555, 45)

{

Outlier("General", 0.05);

color="green";

longitude=-69.583170;

latitude=-32.750942;

};

};

Boundary("End Tambillitos");

};

Sequence()

{

Boundary("Start Agua Amarga");

Phase("Agua Amarga")

{

R\_Date("Beta-261727",450,50)

{

Outlier("General", 0.05);

color="violet";

longitude=-69.191472;

latitude=-33.471806;

};

C\_Date("UCTL 1725c",1432,55)

{

Outlier("General", 0.05);

color="violet";

longitude=-69.191472;

latitude=-33.471806;

};

// C\_Date("UCTL 1724c",1608,40)

// {

// Outlier("General", 0.05);

// color="violet";

// longitude=-69.191472;

// latitude=-33.471806;

// };

C\_Date("UCTL 1726c",1563,48)

{

Outlier("General", 0.05);

color="violet";

longitude=-69.191472;

latitude=-33.471806;

};

};

Boundary("End Agua Amarga");

};

R\_Combine("Aconcagua")

{

Outlier("General", 0.05);

color="black";

longitude=-70.033320;

latitude=-32.666234;

R\_Date("GX-19991 ", 370, 70);

R\_Date("Beta-88785", 480, 40);

};

R\_Date("Agua de la Cueva, AC-1563", 470, 80)

{

Outlier("General", 0.05);

color="purple";

longitude=-69.161730;

latitude=-32.616525;

};

R\_Date("Cerro Penitentes, Beta-98941", 550, 50)

{

Outlier("General", 0.05);

color="orange";

longitude=-69.873482;

latitude=-32.891032;

};

R\_Date("Potrero Las Colonias, AA-66564", 569, 38)

{

Outlier("General", 0.05);

color="grey";

longitude=-69.363465;

latitude=-32.606298;

};

R\_Date("Odisa, AA-90284", 529, 42)

{

Outlier("General", 0.05);

color="cyan";

longitude=-68.832025;

latitude=-32.862113;

};

};

Sum("Inca Occupation Sum");

Span("Inca Occupation Span");

Boundary("End Inca Occupation");

Before("Sites in ruins", 1595);

};

Date("1471",AD(1471) );

Difference("Start v. AD 1471","Start Inca Occupation","1471");

Order("Order")

{

XReference("=Start Cienaga de Yalguaraz");

XReference("=Start Tambillos");

XReference("=Start Ranchillos");

XReference("=Start Tambillitos");

XReference("=Start Agua Amarga");

XReference("=Aconcagua");

XReference("=Agua de la Cueva, AC-1563");

XReference("=Cerro Penitentes, Beta-98941");

XReference("=Potrero Las Colonias, AA-66564");

XReference("=Odisa, AA-90284");

};

};