

Table: Comparison between multiple regression model comparison. The data with bold font refers to the model using in the MS.

Time range (counts)	Intercept		$\delta^{18}\text{O}$		$\delta^{13}\text{C}$		Residual	Statistics
	Value	$1\sigma$ error	Value	$1\sigma$ error	Value	$1\sigma$ error		
Instrumental weighting (factor= $1/\sigma^2$ ) for $^{234}\text{U}$								
0-309 (66)	874	192	-61	10	57	17	62.4	0.65
0-362 (81)	888	172	-61	9.3	57	14	67.3	0.65
0-590 (110)	898	147	-60	8.0	58	12	78.7	0.65
No weighting								
<b>0-309 (66)</b>	<b>1219</b>	<b>189</b>	<b>-44</b>	<b>10</b>	<b>86</b>	<b>16</b>	<b>60.5</b>	<b>0.61</b>
0-362 (81)	1411	163	-32	8.7	79	16	62.8	0.54
0-590 (110)	1658	151	-20	8.2	108	14	70.9	0.52

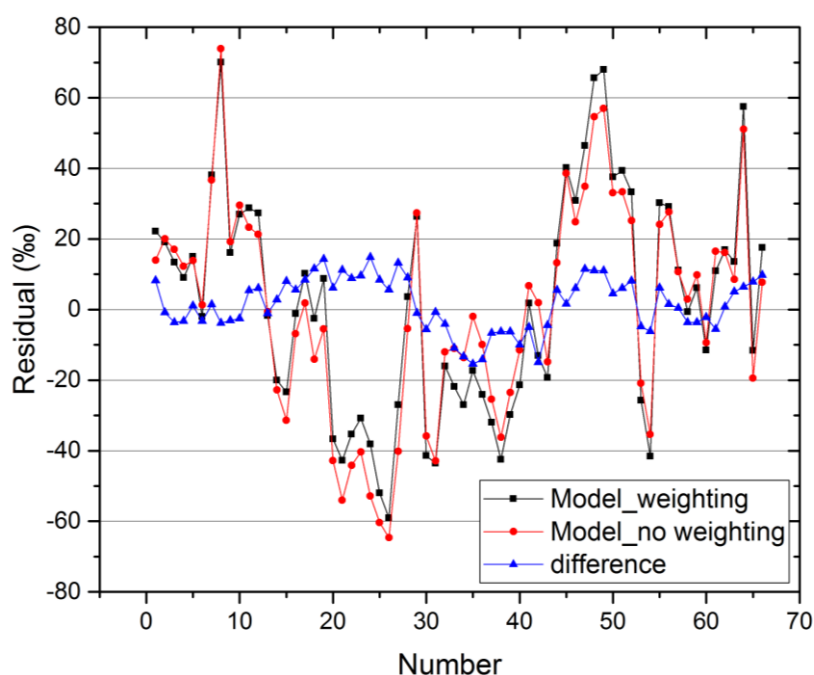


Figure: plots of residual generated from the regression analysis with and without weighting method over the past 309 ka BP period. The blue plot shows the difference of the residuals between two models, which is quite small relative to the variance of the residual.

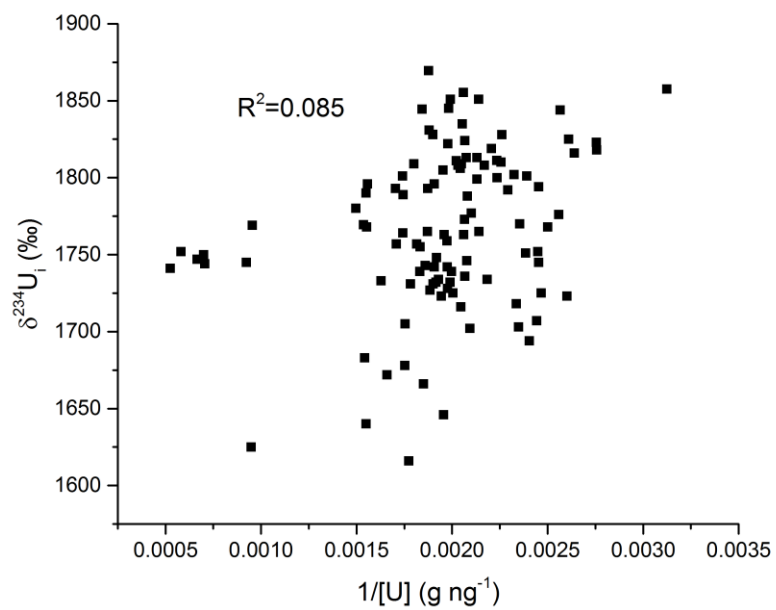
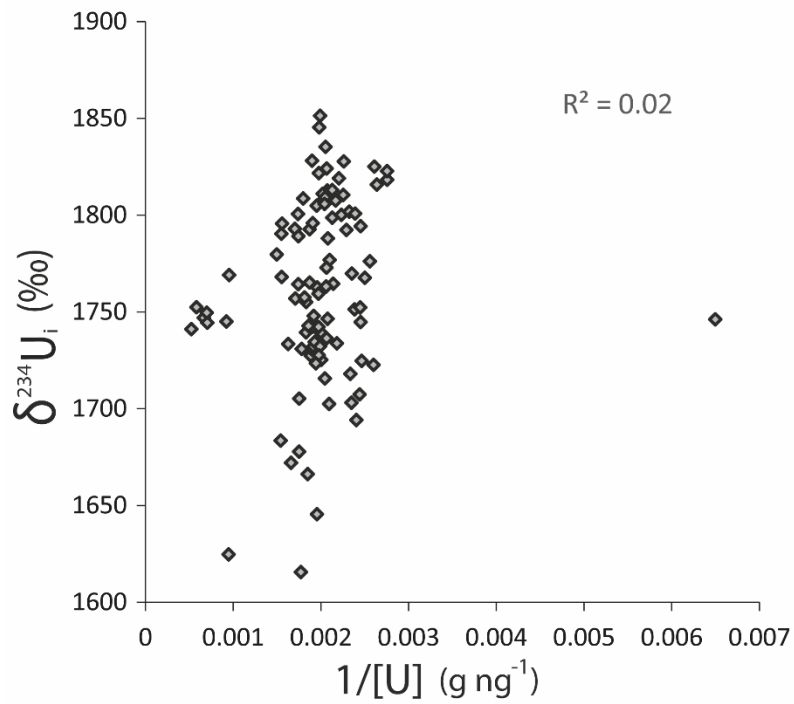


Figure: scatter plots of  $\delta^{234}\text{U}_i$  versus the reciprocal U concentration. The lower plot removed the outlier in the upper one, which still shows an insignificant correlation relationship.