

Supplementary graphs:

Figure S1 A, B, C, D, E and F. Results of the Monte Carlo simulation tests between TRW and isotopes.

5 Random sub-samplings covering half of the populations were made, with these we recalculated the correlations in a loop of 5000 iterations, and then the frequency of the correlations. The distribution of the frequency values around the correlation values for each age class and for the two species are shown as histogram plots.

The red lines indicate the correlation factors of fig 1.

S1 A: Monte Carlo simulation for the correlations between TRW and $\delta^{13}\text{C}$ for the two species (Lade and Pine) and or the 7 age classes and total samples.

10 S1 B: as above, for the correlations between TRW and what? δD

S1 C: as above for the correlations between TRW and what? $\delta^{18}\text{O}$

S1 D: as above for the correlations between $\delta^{18}\text{O}$ and δD

S1 E: as above for the correlations between $\delta^{13}\text{C}$ and δD

S1 F: as above for the correlations between $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$

15

All the plots show a normal distribution around the observed R values, confirming the results shown in Fig 1.

Figure S2. Monte Carlo simulation to retrieve a minimal threshold value to be representative of the complete population

20 A second Monte Carlo simulation was run to study the influence of the population size on the correlation test, in order to establish the minimum threshold of sample number to be used.

We gradually decreased the population of random sub-samples used as indicated in the plots.

S2 A: Monte Carlo simulation for the correlation between TRW and oxygen isotope in the age class 50 for both species.

25 S2 B: Monte Carlo simulation for the correlation between TRW and oxygen isotope in the age class 25. The plots maintain a normal distribution only for population size of 30 and above.

S1 A

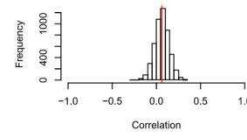
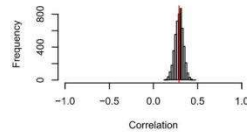
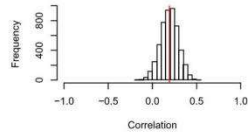
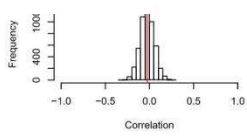
clas: 25

TRW vs $\delta^{13}C$ - n.pop = n/2

LADE age clas: 25

PICE age clas: 50

LADE age clas: 50

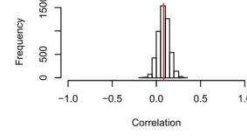
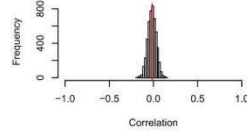
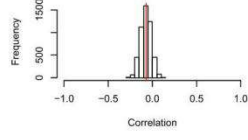
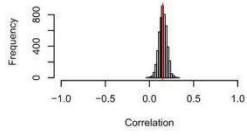


PICE age clas: 75

LADE age clas: 75

PICE age clas: 100

LADE age clas: 100

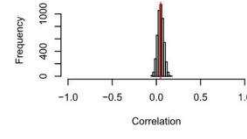
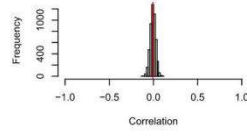
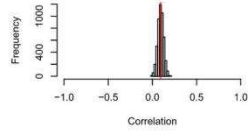
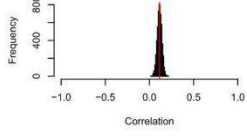


PICE age clas: 200

LADE age clas: 200

PICE age clas: 300

LADE age clas: 300

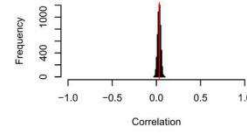
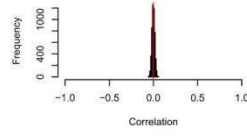
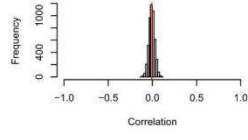
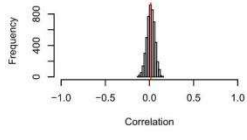


PICE age clas: > 300

LADE age clas: > 300

PICE age clas: tot

LADE age clas: tot



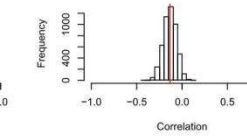
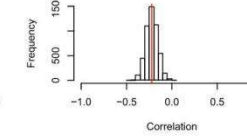
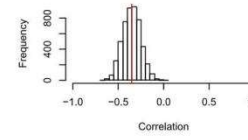
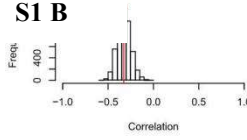
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TRW vs δD - n.pop = n/2

LADE age clas: 25

PICE age clas: 50

LADE age clas: 50

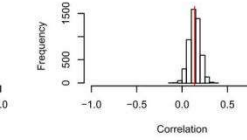
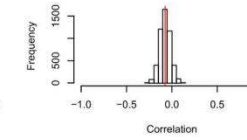
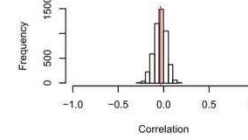
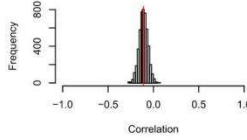


PICE age clas: 75

LADE age clas: 75

PICE age clas: 100

LADE age clas: 100

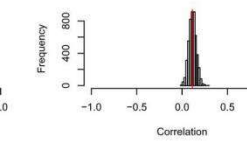
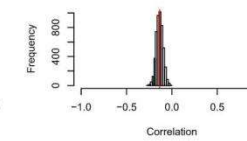
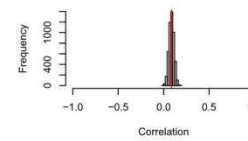
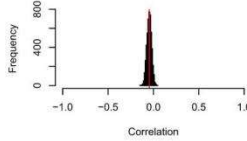


PICE age clas: 200

LADE age clas: 200

PICE age clas: 300

LADE age clas: 300

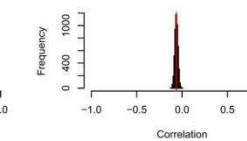
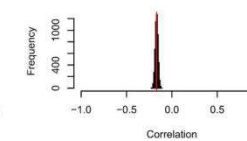
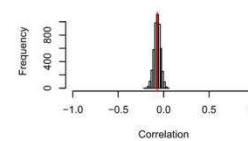
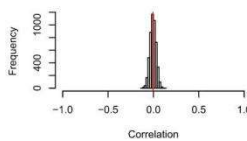


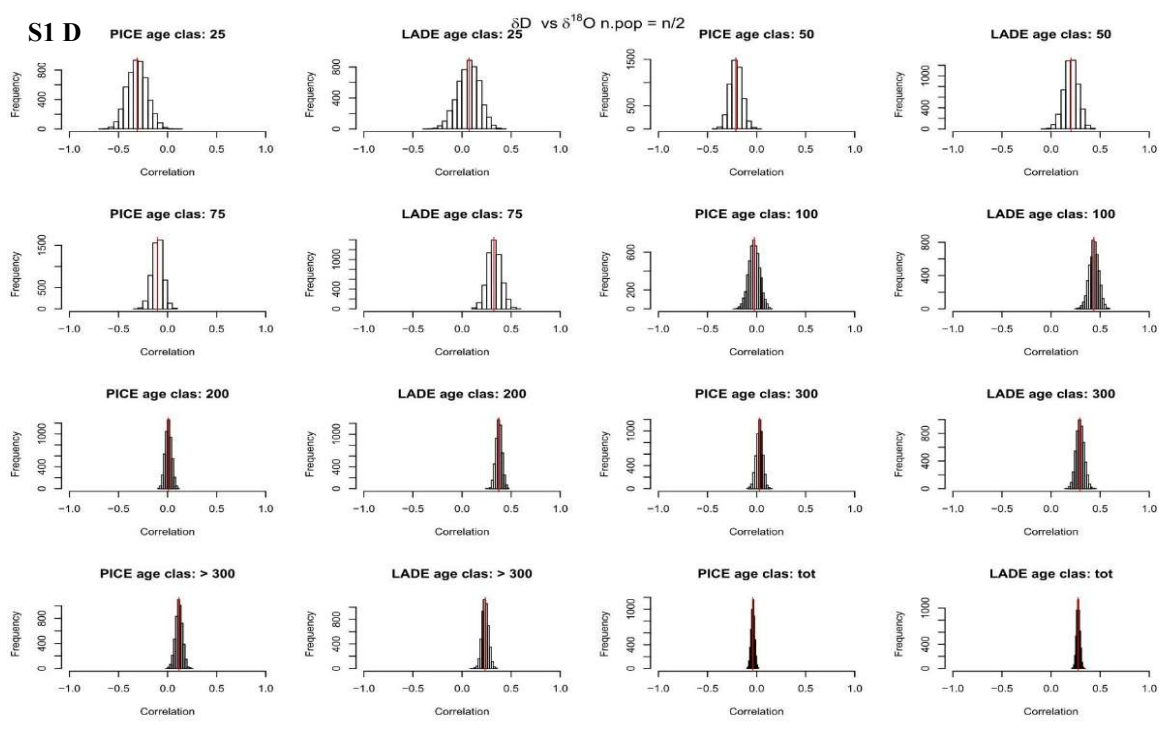
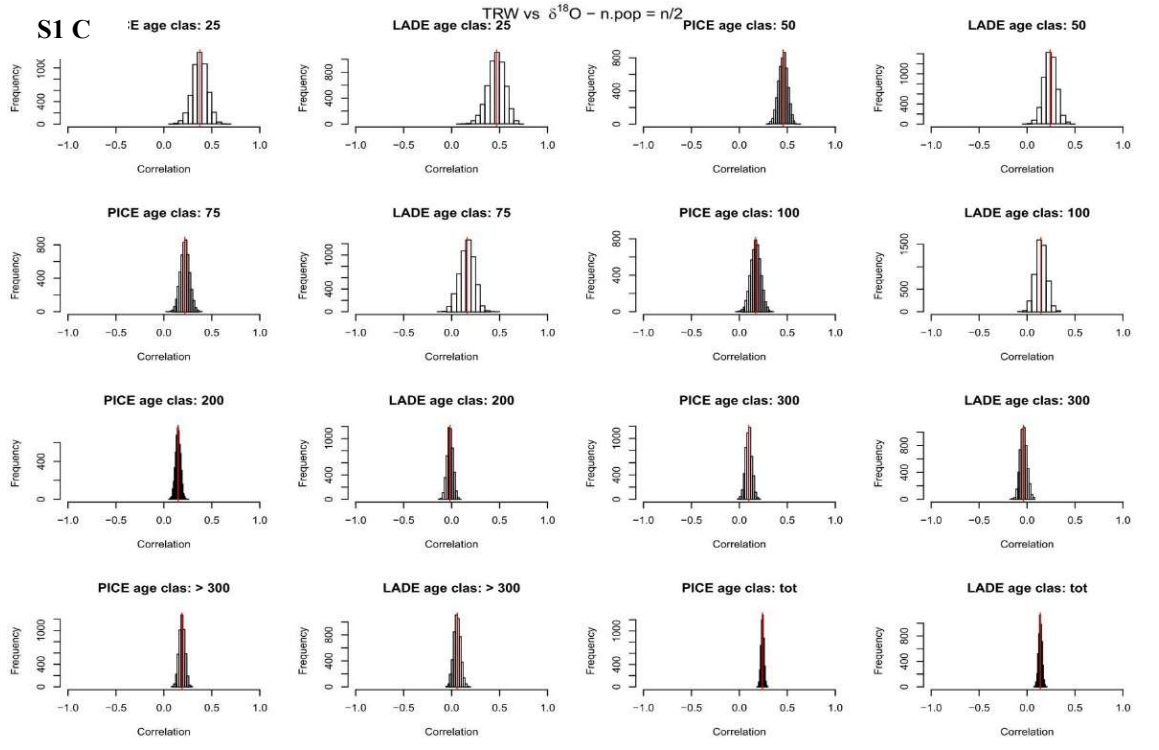
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LADE age clas: > 300

PICE age clas: tot

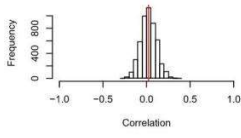
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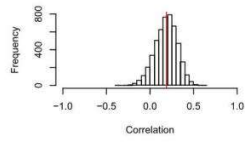


S1 E

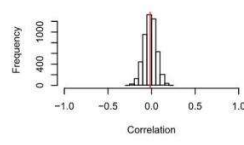
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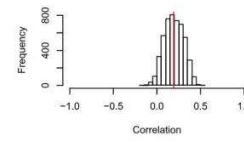
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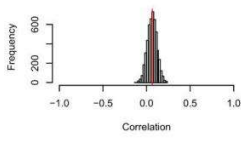
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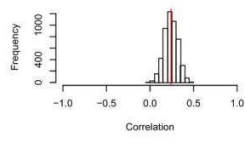
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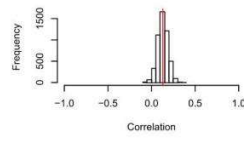
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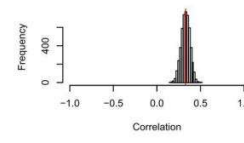
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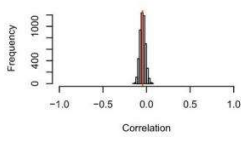
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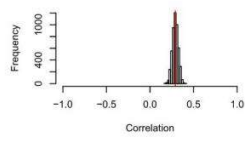
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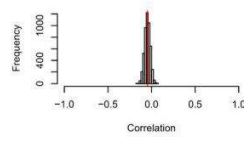
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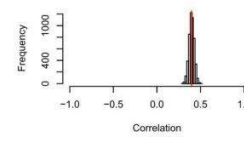
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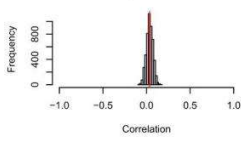
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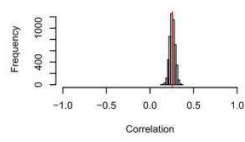
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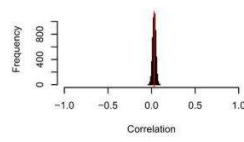
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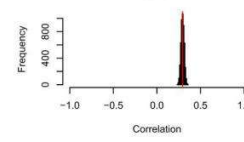
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PICE age clas: tot



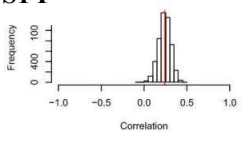
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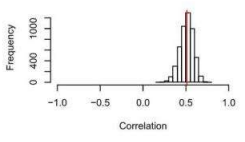
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S1 F

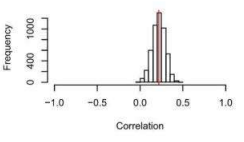
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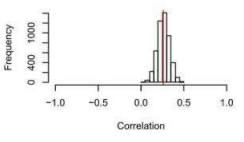
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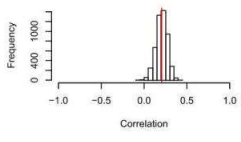
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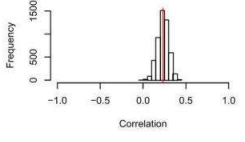
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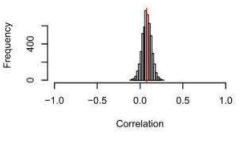
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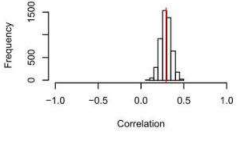
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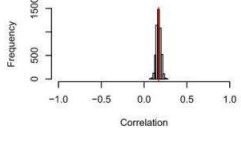
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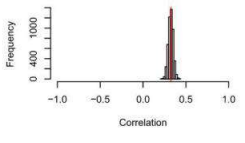
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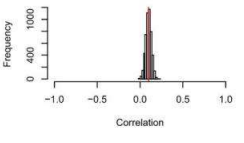
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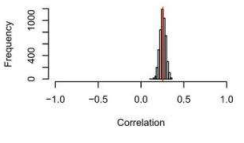
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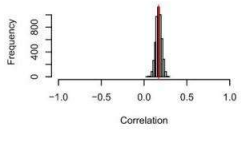
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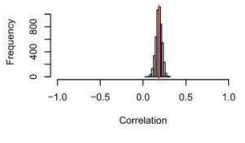
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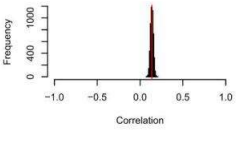
PICE age clas: > 300



LADE age clas: > 300



PICE age clas: tot



LADE age clas: tot

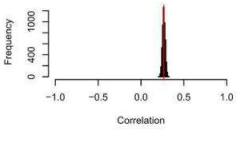


Figure S2

