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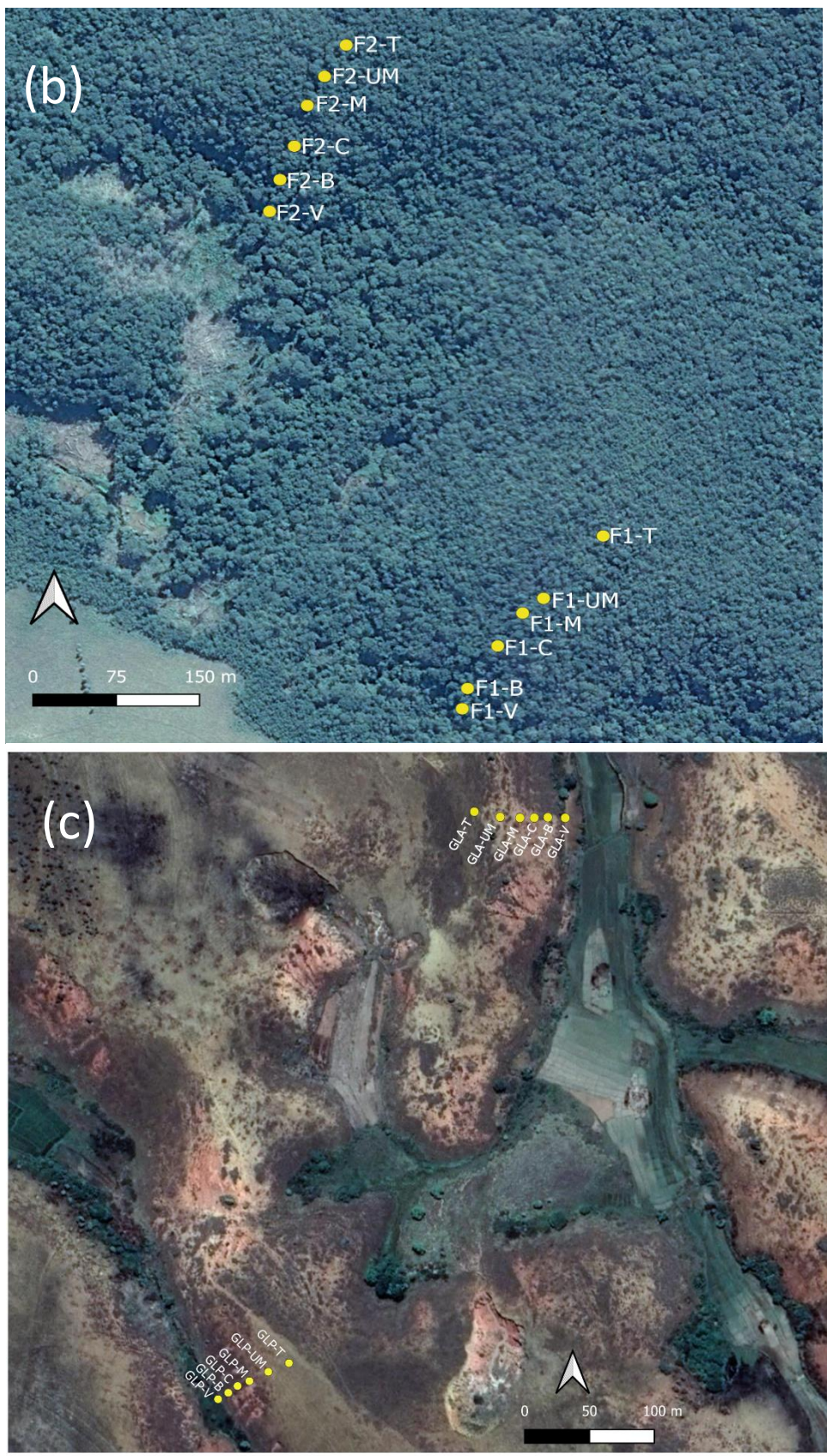
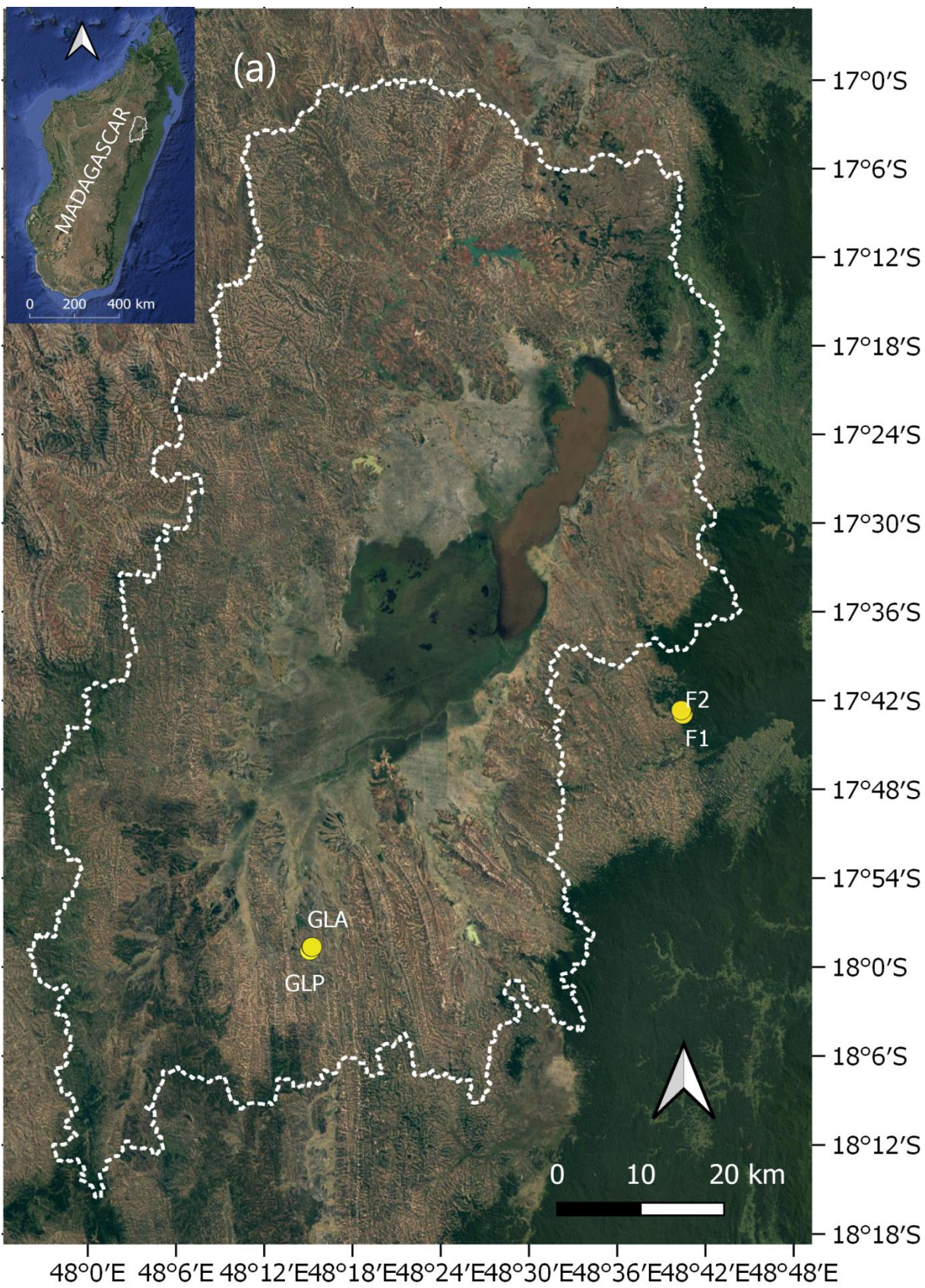
Central highlands of Madagascar: forested before human arrival (ca 2000BP)?

- Madagascar is an island characterized by highly distinct landscape.
- History of forest cover in the central highlands of Madagascar is a matter of debate.
- Large difference between isotope ratio ($\delta^{13}\text{C}$) of organic carbon (OC) of C4 and C3 plants can be used to understand the vegetation change in this (sub)tropical region.

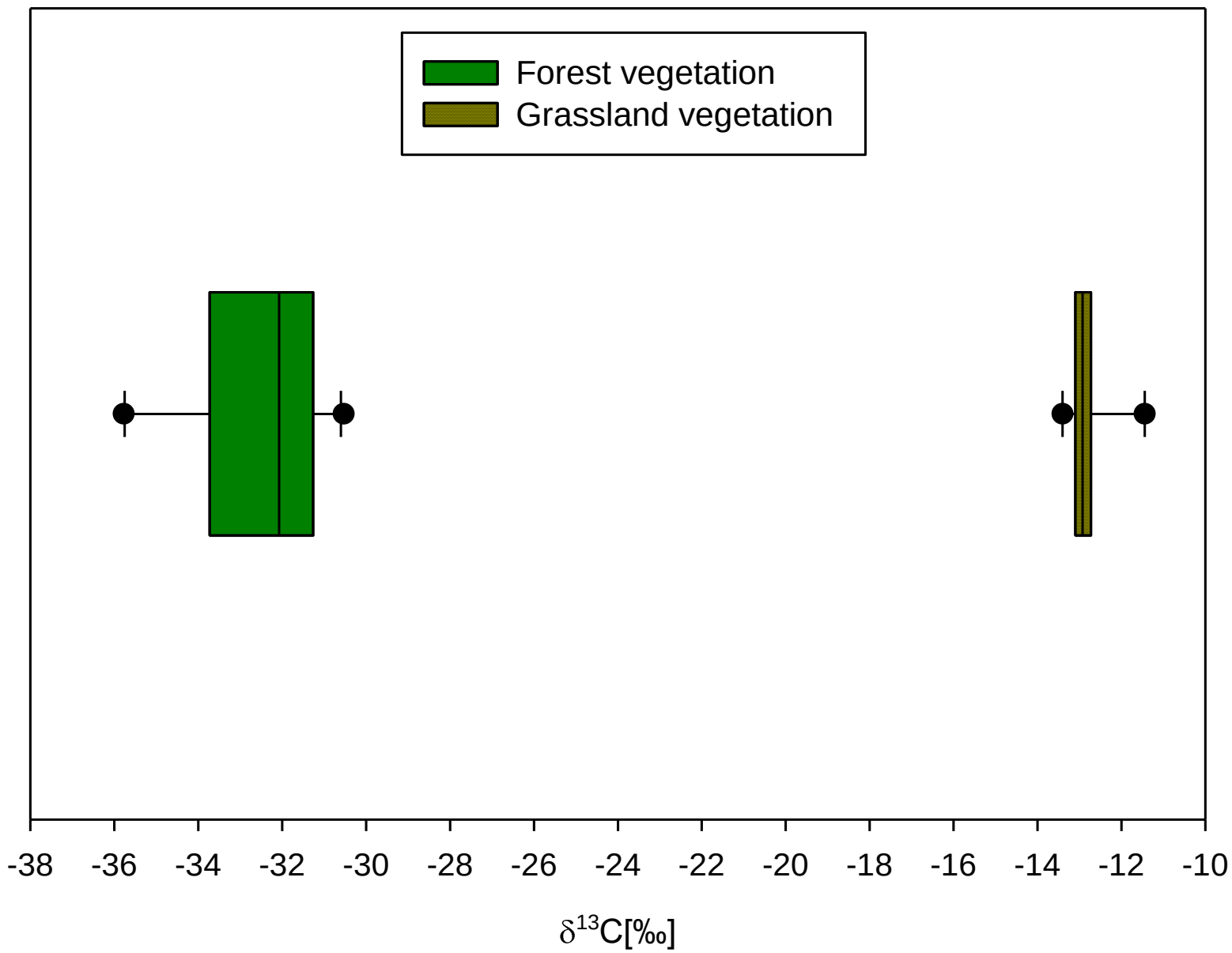


$$\delta^{13}\text{C} = \left(\frac{\left(\frac{^{13}\text{C}}{^{12}\text{C}} \right)_{\text{sample}}}{\left(\frac{^{13}\text{C}}{^{12}\text{C}} \right)_{\text{standard}}} - 1 \right) \times 1000$$

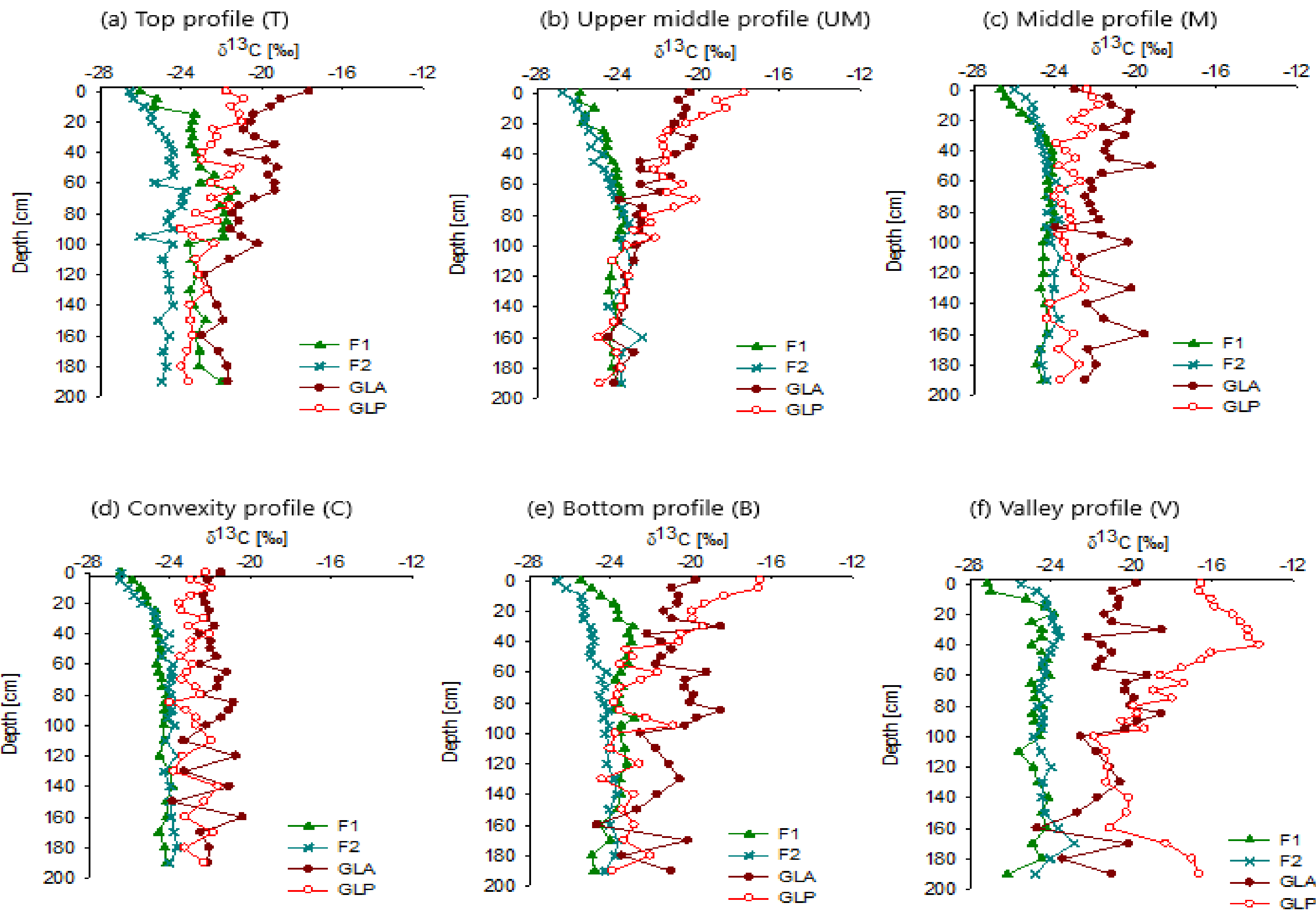
Soil and vegetation samples were collected in Lake Alaotra region along 4 hillslope transects



1- $\delta^{13}\text{C}$ –OC of aboveground vegetation (leaves)



2- Soil under grasses are more depleted in ^{13}C than would be expected of soils under C4 vegetation. At deeper soil layers, $\delta^{13}\text{C}$ values of grasslands and forest become similar



3-Soils under grasslands are at the surface on average 2000 years old and still predominantly C3 plants

