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► To cite this version:

Jérémy Jacob, Jugurta Ghalem, François Thil, Brian Phouybanhdyt, Caroline Gauthier. ^{14}C dating of molecular biomarkers. Recent developments at LSCE and application to archaeological butters. IMOG 2023 - 31st International Meeting on Organic Geochemistry, Sep 2023, Montpellier, France. . hal-04213701

HAL Id: hal-04213701

<https://hal.science/hal-04213701>

Submitted on 21 Sep 2023

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¹⁴C DATING OF MOLECULAR BIOMARKERS

RECENT DEVELOPMENTS AT LSCE AND APPLICATION TO ARCHAEOLOGICAL BUTTERS



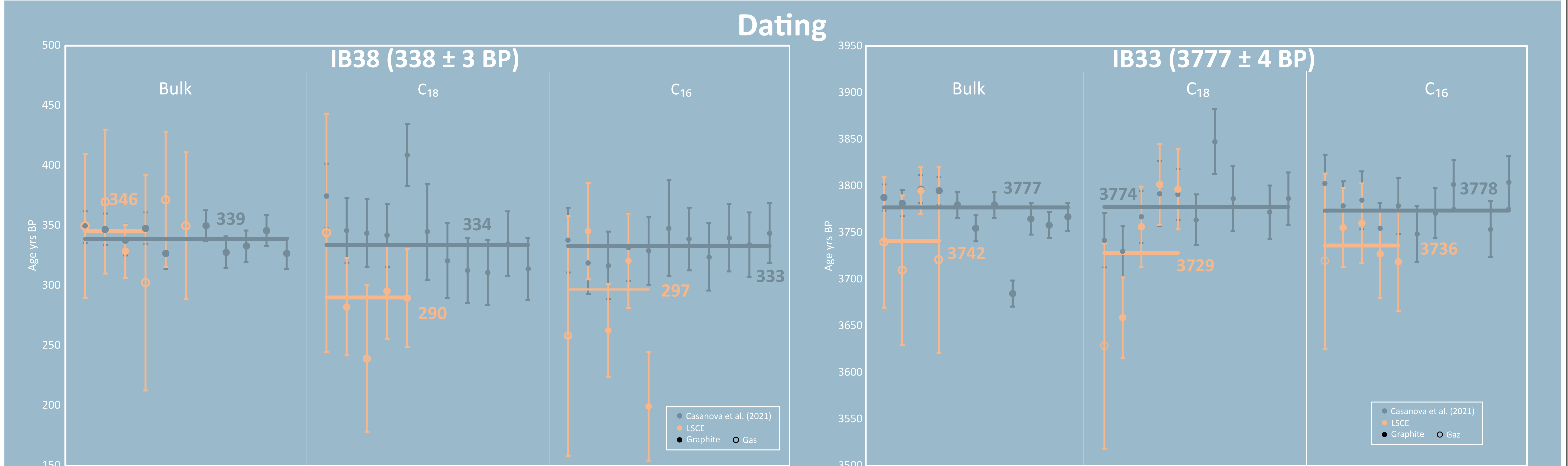
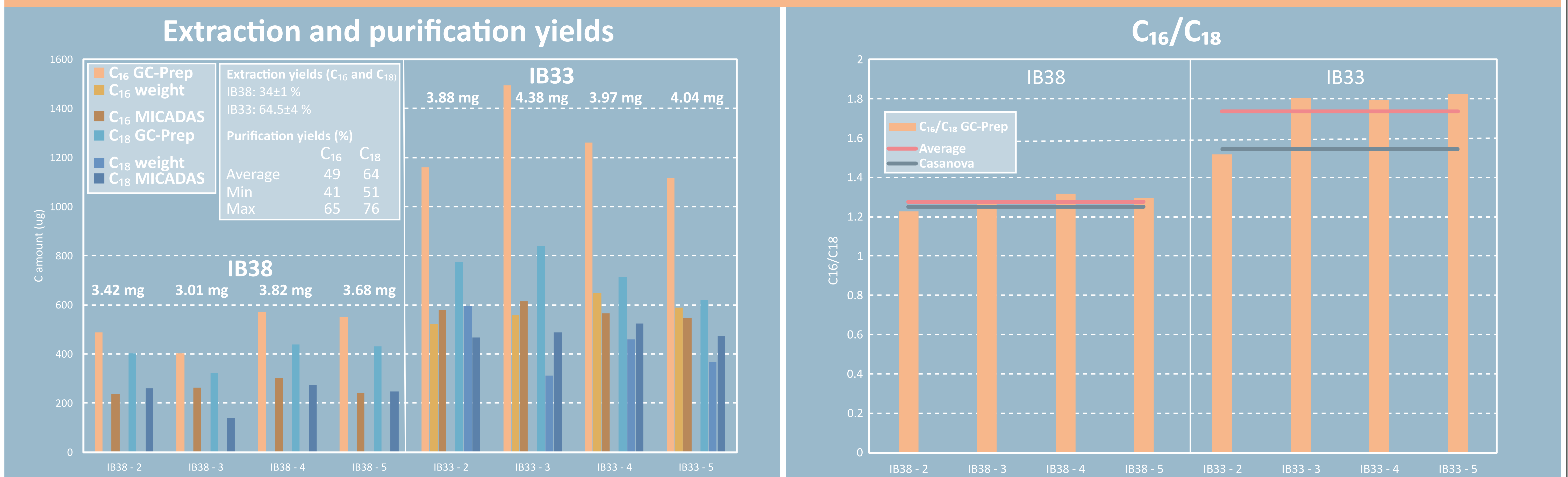
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Introduction	Materials	Methods
<ul style="list-style-type: none"> ● Compound-specific ¹⁴C dating -> Source control -> Reduction of contaminations ● Low amounts of C -> ECHO-MICADAS ● Applications : Archaeology, Carbon cycle, Palaeoenvironnements, Environnement, Forensics ● No standard ● Intercomparison exercise on standards Lead by Bristol University 	<ul style="list-style-type: none"> ● Two archaeological butters preserved in Irish peats: -> IB33 : 3777 ± 4 yrs BP -> IB38 : 338 ± 3 yrsBP ● A mix of these two butters in unknown proportions ● A present day butter ● Bulk and C₁₆ et C₁₈ fatty acids dating ● Only results for IB33 et IB38 are presented 	<ul style="list-style-type: none"> ● Extraction/esterification ->Casanova et al. (2018) ● Purification of C₁₆ and C₁₈ -> Casanova et al. (2018) ● Dating by ECHO-MICADAS <ul style="list-style-type: none"> ● C > 200µg -> graphitization ● C < 200 µg -> gas source

Results



Conclusions

- Agreement with previous results (~40 yrs). C₁₆ and C₁₈ younger than Casanova et al. (2021)
- Current developments:
 - Improvement of purification yields (achieved - oncolumn injection)
 - Estimation of contamination (estimated at 3 µgC (C₁₆) - 1 µgC (C₁₈) by GC-prep)

Casanova et al. (2021). Generation of two new radiocarbon standards for compound-specific radiocarbon analyses of fatty acids from bog butter finds. Radiocarbon, doi:10.1017/RDC.2021.15
Casanova et al. (2018). Practical considerations in high-precision compound-specific radiocarbon analyses: eliminating the effects of solvent and sample cross-contamination on accuracy and precision. Anal. Chem. 90, 11025-11032.