



**HAL**  
open science

## Pointer years in modern *Picea glauca* from the Giddings' collection (AD 1600-1941)

Juliette Taïeb, Claire Alix, Glenn Patrick Juday, Michelle Elliott, Christophe Petit

### ► To cite this version:

Juliette Taïeb, Claire Alix, Glenn Patrick Juday, Michelle Elliott, Christophe Petit. Pointer years in modern *Picea glauca* from the Giddings' collection (AD 1600-1941): A tool for cross-dating and identifying extreme weather events in northwestern Alaska. Workshop PACE – Prehistoric Adaptation to Cold Environment, Jan 2019, Nice, France. halshs-03958893

**HAL Id: halshs-03958893**

**<https://shs.hal.science/halshs-03958893>**

Submitted on 26 Jan 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

07 novembre 2018

Résumé

Workshop PACE – Prehistoric adaptation to Cold Environment

**Pointer years in modern *Picea glauca* from the Giddings' collection (AD 1600-1941) : A tool for cross-dating and identifying extreme weather events in northwestern Alaska**

TAÏEB Juliette<sup>1</sup>, ALIX Claire<sup>2</sup>, JUDAY Glenn P.<sup>3</sup>, ELLIOT Michelle<sup>1</sup>, PETIT Christophe<sup>1</sup>

<sup>1</sup>UMR 7041 ArScan – Archéologies environnementales, CNRS/Univ. Paris 1 Panthéon-Sorbonne

<sup>2</sup>UMR 8096 Archéologie des Amériques, CNRS/Univ. Paris 1 Panthéon-Sorbonne

<sup>3</sup>School of Natural Resources and Extension, University of Alaska Fairbanks

At the beginning of the second millennium AD, northwestern Alaska is the scene of significant climate and cultural changes. It is during this period of climatic instability of the transition from Medieval Climate Anomaly to Little Ice Age (AD 1000-1350), that appears the Thule culture, direct ancestor of the today's Inuit people (Mason 2017).

The exceptional preservation of wood remains and the unique collection of dendrochronological samples collected during the 1940's by archaeologist and tree-ring pioneer J.-L. Giddings make the northwest of Alaska a suitable area for dendro-archaeological studies. In a region where the climatic and chronological framework still needs considerable refinement, dendrochronology allows a multi-scalar analysis to provide an annual resolution of climatic events and by extension cultural phenomenon.

Our study is focusing on the identification of pointer years, which are benchmarks for cross-dating and identifying extreme climate events (Lebourgeois et Merian 2012). In this poster, we analyze a series of growth ring measurements of modern *Picea glauca* [Moench] Voss from the 400+ cores of the Giddings collection collected in the 1940's along the Kobuk River and nearby areas (Giddings 1941; Nash 2000) and present their potential for dendro-archaeological research in the region.

Our preliminary results show the presence of several pointer years that could be correlated to identified climatic events, many of which are volcanic eruptions (D'Arrigo et Jacoby 1999; D'Arrigo *et al.* 2013; Jacoby *et al.* 1999; Oswalt 1957). Recognizing these extreme climate events makes it possible to discuss their potential immediate impact on the subsistence economy of people in northwestern Alaska.

## **Bibliographie**

D'Arrigo, R. D., et G. C. Jacoby. 1999. « Northern North American tree-ring evidence for regional temperature changes after major volcanic events ». *Climatic Change* 41: 1-15

D'Arrigo, R. D., Wilson, R. et K. J., Anchukaitis. 2013. « Volcanic Cooling Signal in Tree Ring Temperature Records for the Past Millennium ». *Journal of Geophysical Research: Atmospheres* 118 (16): 9000-9010

Giddings, J.-L. 1941. *Dendrochronology in Northern Alaska*. Laboratory of Tree-Ring Research Bulletin 1. University of Arizona Bulletin, 7 (4)

Jacoby, G. C., K. Workman, et R. D. D'Arrigo. 1999. « 1783 Laki eruption, tree rings and catastrophe for northwestern Inuit ». *Quaternary Science Review* 18: 1365-71

Lebourgeois, F, et P. Merian. 2012. *Principes et méthodes de la dendrochronologie*. LERFOB, AgroParisTech, Centre de Nancy

Mason, O. K. 2017. « Emergence of Inuit Identity : Thule and Late Prehistoric ». In *Out of the Cold: Archaeology on the Arctic Rim of North America*, par O. K. Mason et T. M. Friesen, SAA Press. SAA Contemporary Perspectives

Nash, S. 2000. « James Louis Giddings' archaeological tree-ring dating in the American Arctic: A forgotten legacy ». *Arctic Anthropology* 37: 60-78

Oswalt, W. H. 1957. « Volcanic Activity and Alaskan Spruce Growth in A.D. 1783 ». *Science, New Series* 126 (3279): 928-29