

Dating the First Millennium AD Glacial History of Adams Inlet, Glacier Bay National Park and Preserve, Southeast Alaska

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Dendrochronology

The science of analyzing and dating annual growth rings in trees based on pattern matching



Figure 1. Dendrochronological principle of crossdating which allows the crossover and linking of many cores that span similar years, creating a continuous annual record longer than a single cone could provide. This is done by sampling trees that are still living and matching the ring patterns with rees that have recently died. Then those trees are matched with trees that have been dead for a even longer principal of the same been dead for a even longer principal of the same been dead for a even longer principal of time.



Methods

Core tree with an increment
borer

Inset the spoon and turn the borer 180 degrees counterclockwise
Pull the spoon out of the increment borer
Place core in to straw, label the core and seal ends of the straw
Remove the increment borer from the tree

Acknowledgements

I would like to thank the Glacier Bay National Park and Preserve for allowing me to collect samples from this area. I would also like to thank The College of Wooster Geology Department and The National Science Foundation for funding my research. Lastly, I would like to thank Dr. Wiles for his advising and Lauren Vargo for her help with fieldwork.

References

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east view of Muir Inlet in 1941 showing Id Riggs glaciers that filled the area (Field,

Another picture of the same location of Muir Inlet in 2004 (Molnia, 2004)



Figure 2. The location of Adams Inlet in GBPP and all the samples collected for this study

Fieldwork for this study took place during the summer of 2012 in Adams Inlet located on the east arm, Muir Inlet of Glacier Bay National Park and Preserve The inlet is bordered to the south by the Beartrack Mountains and to the north by the Takhign Mountains. The land terminating glacier, Casement Glacier drains into the inlet. The glacial history of Adams Inlet is closely tied to the damming of Muir Inlet. Glaciolacustrine sediments and radiocarbon dated record two damming events at 2500-2000 (Glacial Lake Muir) and 1700-900 years BP (glacial Lake Adams









Sparse proxy climate records show evidence for cooling during the first millennium AD

Little is know about glacial activity in Pacific North America during the first millennium AD, an important period due to its association with the Medieval Warm Period. Several glaciers in Alaska were advancing as early as ca. 200 AD but most glaciers studied were advancing between ca 400 and 700 AD. First millennium AD glacier advances are supported by independent proxy climate records that show regional cooling ca 400 to 700 AD. Geochemical proxies in lake sediments suggest pronounced cooling in southern Alaska centered on 600 AD.

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