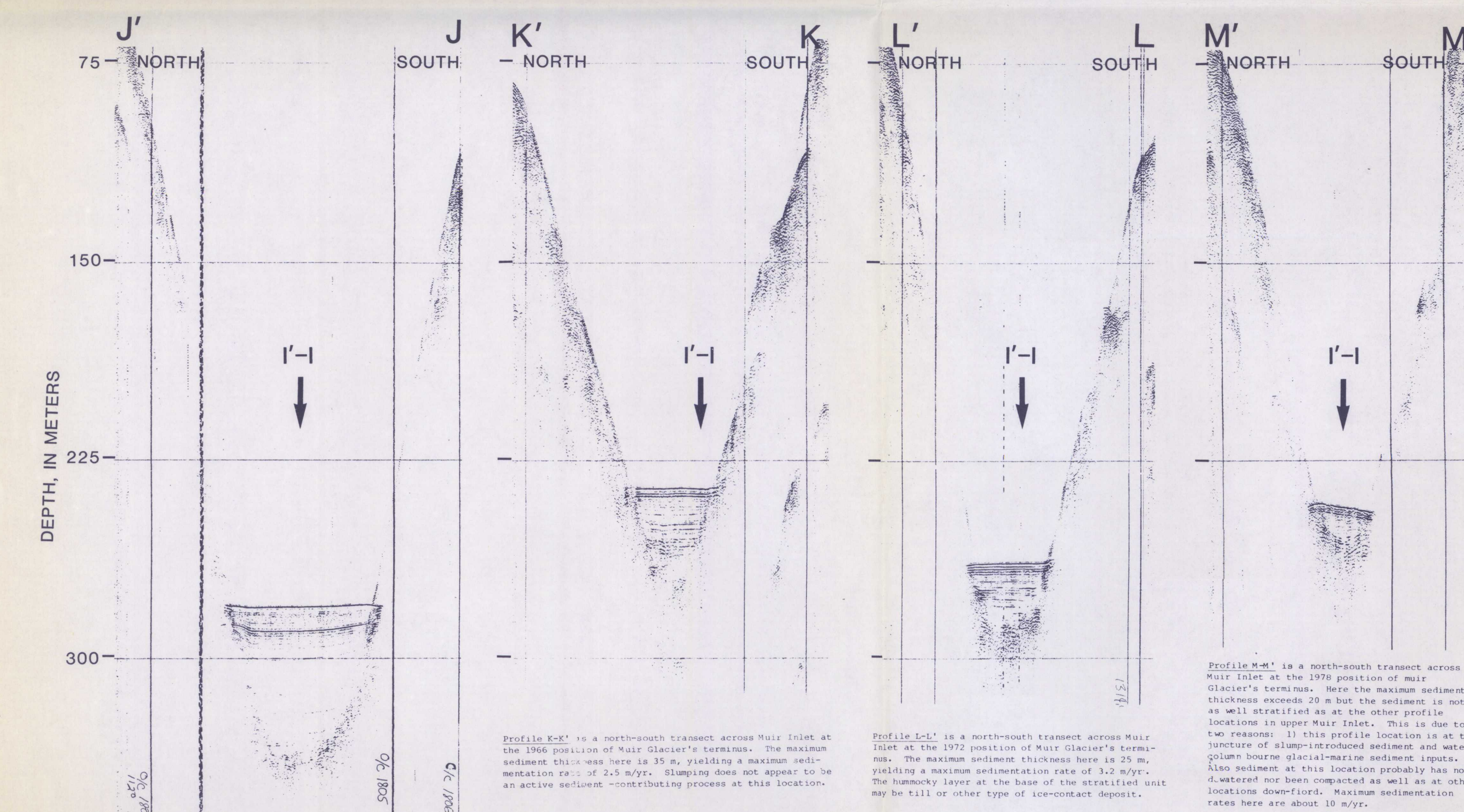
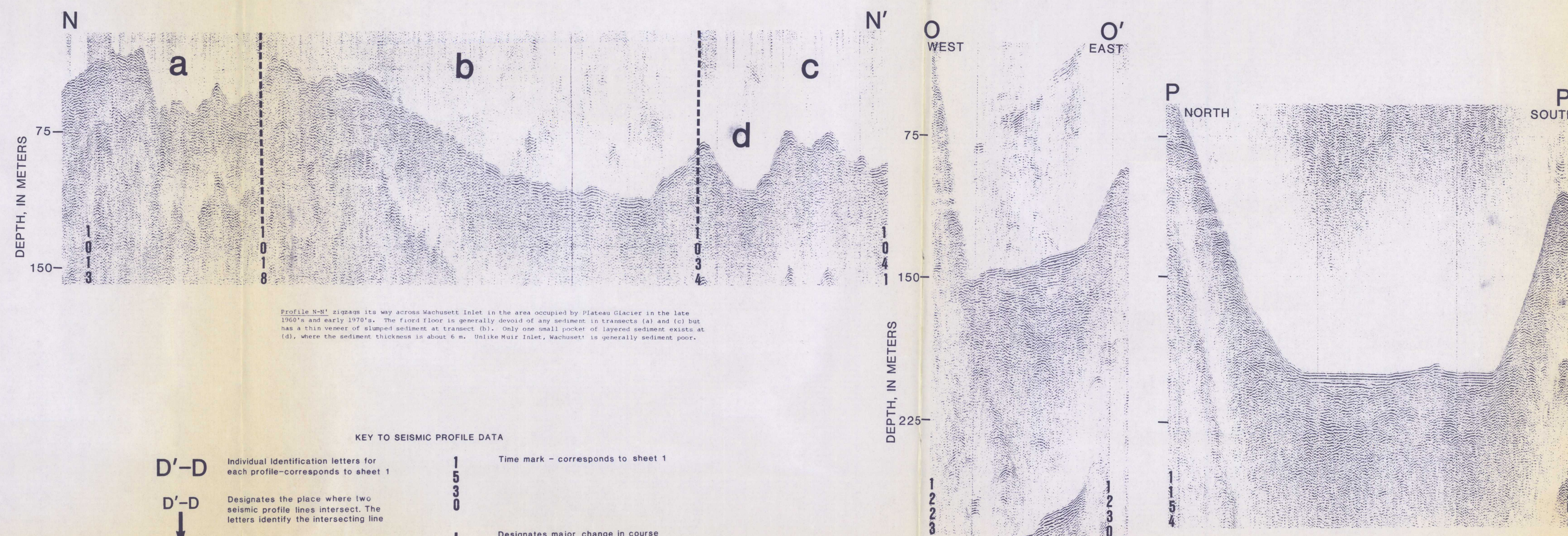


Profile I-I' is an east-west profile that runs down the center of Muir Inlet from Riggs Glacier to Muir Glacier. Riggs Glacier is perched high on the wall of the submarine part of Muir Inlet. In a normal situation, Riggs would be a classic example of a hanging glacier. At the base of the fiord wall is a 15-m-thick section of slumped sediment (e). A broad basin (b) with a maximum sediment thickness of over 60 m occupies much of the fiord floor. The 1963 Muir Glacier terminus position corresponds to the intersection with profile J-J' (1213). Here the basin has a maximum sedimentation rate of 1.5 m/yr. A large basin with sediment fill of less than 30 m extends on either side of Howe Point. The sediment fill in this basin sits 10-20 m higher than the well-laminated basins on either side. Sediment has slumped from the higher basin into both of the lower basins (c). Basin (d) with a maximum sediment thickness of 25 m occupies the location of Muir Glacier's terminus in the early 1970's. Maximum sedimentation rates are 3.5 m/yr. The intersection with line M-M' corresponds to Muir Glacier's terminus position in 1976. Here the sediment thickness is about 20 m. The maximum sedimentation rate here exceeds 9 m/yr. Slumped sediment (a) is accumulating at the base of the bedrock ridge that marked Muir Glacier's 1979 terminus position. Hummocky moraine perched on bedrock (f) marks the 1980 terminus position, the glacier's position at the date this seismic profile was made.



Profile J'-J is a north-south transect across Muir Inlet at the 1963 terminus position of Muir Glacier. Maximum sediment thickness exceeds 60 m, yielding a maximum sedimentation rate of 1.5 m/yr. The fiord walls appear to be completely bare of sediment, and the fiord fill shows no evidence of slumping. The hummocky layer at the base of the stratified unit may be a till or other ice-contact deposit.

Profile K-K' is a north-south transect across Muir Inlet at the 1979 terminus position of Muir Glacier's terminus. Here the maximum sediment thickness exceeds 20 m but the sediment is not as well stratified as at the other profile locations in upper Muir Inlet. This is due to the presence of thin layers of glacial-marine sediment and water-column borne glacial-marine sediment spouts. Also, sediment at this location probably has not slumped nor been compacted as well as at other locations down-fjord. Maximum sedimentation rates here are about 10 m/yr.



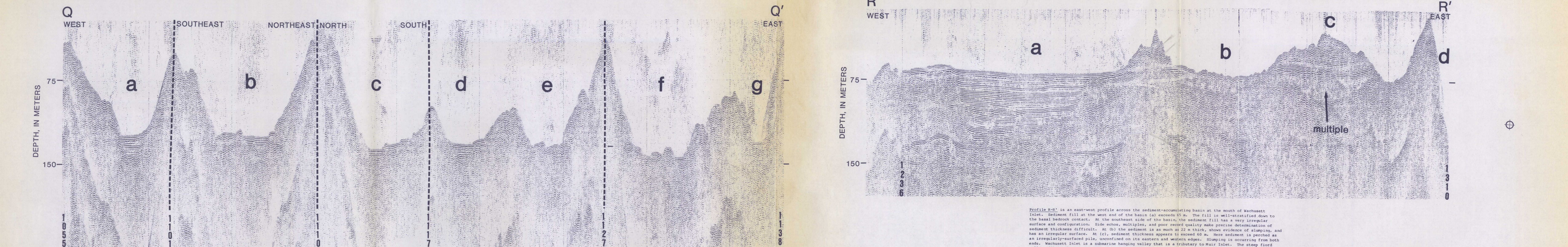
KEY TO SEISMIC PROFILE DATA

D'-D	Individual identification letters for each profile—corresponds to sheet 1	1 5 3 0	Time mark—corresponds to sheet 1
D'-D	Designates the place where two seismic profile lines intersect. The letters identify the intersecting line	1 5 3 0	Designates major change in course
a	Locates a feature described in the accompanying text	1 5 3 0	

Profile N-N' zigzags its way across Wachusett Inlet in the area occupied by Plateau Glacier in the late 1960's and early 1970's. The fiord floor is generally devoid of any sediment in transects (a) and (c) but has a thin veneer of slumped sediment at transect (b). Only one small pocket of layered sediment exists at (d), where the sediment thickness is about 6 m. Unlike Muir Inlet, Wachusett is generally sediment poor.

Profile O-O' is a fiord-wall to fiord-wall transect across Wachusett Inlet at the location where Plateau Glacier's terminus sat in the mid 1960's. Here sediment fill is much higher on the east (south) side of the basin and displays much evidence of slumping. The sediment morphology suggests that slumping from the east wall and also east-wall outwash input are the most important sediment sources at this location.

Profile P-P' is a fiord-wall to fiord-wall transect across Wachusett Inlet near the widest point of the fiord. This profile location corresponds to the position of Plateau Glacier's terminus in the mid-1960's. Maximum sediment thickness in the fiord is about 10 m. Localized slumping has occurred near the center of the fiord basin from a fiord floor topographic high. Slumping may also be occurring from the north wall of the fiord.



Profile Q-Q' zigzags its way five times across Wachusett Inlet in an area occupied by Plateau Glacier in the early 1960's. The five fiord transects cross seven sediment-accumulating areas each of which has a thin slump-influenced fill. The thickest, 24 m, at (a) has slumped sediment coming into the fiord on the south wall. Slumps emerging from the south wall of the fiord can also be seen in fills (b), (c), and (d). All of the sediment at (e) shows evidence of slumping. Maximum sediment thicknesses in each basin crossing are: (a) 24 m, (b) 10 m, (c) 8 m, (d) 12 m, (e) 5 m, and (f) 3 m.

Profile R-R' is an east-west profile across the sediment-accumulating basin at the mouth of Wachusett Inlet. Sediment fill at the west end of the basin (a) exceeds 50 m. The fill is well-stratified down to the basal bedrock contact. At the southeast side of the basin, the sediment fill has a very irregular surface and configuration. Side echoes, multiples, and poor record quality make precise determination of sediment thickness difficult. At (b) the sediment is as much as 22 m thick, shows evidence of slumping, and sediment thickness appears to exceed 60 m. Here sediment is perched as an irregularly-surfaced pile, unconfined on its western and eastern edges. Slumping is occurring from both ends. Wachusett Inlet is a submarine hanging valley that is a tributary to Muir Inlet. The steep fiord wall at (d) is the western side of the main fiord, Muir Inlet.

MAP OF MARINE GEOLOGY OF UPPER MUIR AND WACHUSETT INLETS, GLACIER BAY, ALASKA:
SEDIMENT DISTRIBUTION AND THICKNESS, BATHYMETRY, AND INTERPRETED SEISMIC PROFILES

by Bruce F. Molnia, Thomas J. Atwood, Paul R. Carlson, Austin Post, and Susan C. Vath
1984

THIS MAP IS PRELIMINARY AND HAS NOT BEEN REVIEWED FOR CONFORMITY WITH U.S. GEOLOGICAL SURVEY EDITORIAL STANDARDS AND STRATIGRAPHIC NOMENCLATURE