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No 40310

RIVER TERRACES AS RECORDERS OF ISOSTATIC REBOUND IN THE CHAMPLAIN BASIN, NORTHWESTERN VERMONT.

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In recent years, river terraces have been used as indicators of neotectonic tilting. They remain practically unstudied in glacio-isostatically rebounded terrains. River terraces in the Champlain Basin, Vermont, grade to former levels of glacial Lake Vermont and the post-glacial Champlain Sea, or to the main stem rivers flowing into those bodies of water. It appears that the Champlain Lowland was glacio-isostatically depressed when these water bodies existed 13- 10.5 ¹⁴C ky ago; today their shorelines form a maximum tilt plane rising about 1 m/km to the NNW (Chapman, 1937).

We are surveying river terraces in northwestern Vermont in order to develop a relative terrace chronology so that the timing and magnitude of the regional tilt can be determined with greater precision and accuracy. Our initial work along the north-flowing Huntington River shows that at least seven flights of terraces are preserved in some locations.

AMS dates from an alluvial fan deposited over an abandoned meander on one of the highest continuous terraces indicate that this terrace is > 8000 ¹⁴C ky old (CAMS #20963, #20901). Preliminary results suggest that the present down-valley gradient of this high terrace is 0.002, significantly lower than today's river gradient of 0.005. These data could be explained in various ways: 1) the terrace gradient has lessened due to isostatic rebound; 2) river gradient has steepened due to changes in stream dynamics or baselevel lowering. Ongoing field work may allow us to identify which of these explanations is most reasonable.

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