Luminescence Dating of Hither Hills and Montauk Point sedimentary deposits

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Determining the precise chronology of eastern Long Island's formation during the last ice age remains challenging. The till outwash till sequence has been attributed to glaciations as early as the Illinoian and Sangamonian, before being capped by a Wisconsinan moraine (Fuller, 1914), or alternatively, to multiple lobes during the Wisconsin glaciation (Les Sirkin, 1991). The objective of our study is to contribute to understanding the paleoenvironment of Long Island during the Wisconsin Glaciation through mapping the glacial movement, the accumulation and ablation throughout the glaciation from the dates of the sediment through Luminescence Dating.

Optically Stimulated Luminescence Dating (OSL) obtains an age range of the deposited sediments by dividing the stored radiation inside a grain (Equivalent Dose or De) by the annual rate of radiation of the sediment (Dose Rate or Dr) to obtain the age of deposition.

To refine the chronology, we conducted three field expeditions to collect sediment samples at Hither Hills and Montauk point. The samples were collected on the Prospect Hill recessional moraine (Les Sirkin, 1995), which forms the south fork. The samples were collected from outwash sands and clays above and below two tills, with both tills present on Montauk Point and one till present on Hither Hills. The sediment samples were collected using opaque PVC tubes and /metal tubes to prevent light exposure, ensuring suitability for OSL dating (Aitken, 1998s).

OSL allows determination of the last time mineral grains were exposed to light, - the burial age (Aitken 1998). At the Stony Brook Luminescence Dating Research Laboratory the samples were prepared following standard laboratory procedures (Wintle 1997), and preliminary age results have been obtained and will be presented and discussed at the symposium.

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