EXTENSION OF THE NORTH AMERICAN TEKTITE STREWN FIELD.

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1. INTRODUCTION

For a long time two major occurrences of North American tektites had been known. These were locations in Texas and in Georgia. The first tektites from Texas were reported in 1936 in Grimes Cty., TX, and, after a common place name, had been termed "bediasites" (1). The first tektite from Georgia came to the Smithsonian Institution in 1938, but the existence of an own sub-strewn field was not confirmed until 1959 (2). Numerous tektites were found since then at both locations (e.g. 3). The age of the North American tektites was found to be close to 34 Million years (e.g.,4). Examination of deep sea drill cores obtained in the DSDP program revealed the presence of microtektites (analogous to the Australasian and the Ivory Coast strewn fields) in cores retrieved from the Gulf of Mexico and the Caribbean Sea (5,6), which, on the basis of age and compositional data (7) were identified as being related to North American tektites. Thus the strewn field, which was previously comprised only of the Texas and Georgia locations, was expanded considerably. Two single specimens of normal (land) tektites had been reported from other locations: one from Martha's Vineyard, Massachusetts (8), and one from an unknown location on Cuba (9). Both finds had been viewed with doubt.

2. NEW TEKTITE LOCATIONS

The obvious discrepancy between the rather restricted tektite occurrences on land (with no microtektites) and the extended occurrences of microtektites in deep sea sediments (with no tektites) casted some doubts on the validity of an association between tektites and microtektites. Only recently these doubts had been put to a rest, because finally tektites and microtektites had been found together at two locations: on Gay's Cove, Barbados, West Indies (10), and at DSDP Site 612 on the continental slope off New Jersey (11). The new locations were far apart, and at least the DSDP 612 location is also far from previous sites, thus extending the North American strewn field once more. For some time the view persisted that the North American strewn field extends even well into the Pacific Ocean (6)because of some microtektite like crystalline (cpx) spherules found at DSDP sites, but more recently it was concluded (12) that they represent two distinct, narrowly spaced, events. The North American strewn field is therefore limited to the eastern and southern part of the North American continent (Fig. 1). The question remains if the Martha's Vineyard and Cuba samples are indigeneous or transported, and if there is a relation between the new localities.

3. DISCUSSION

Since age and isotopic data leave no doubt about the connection between tektite material from different locations in the North American strewn field it is interesting to look at the chemical data for evaluating trends. Fig. 2 gives the ranges of some major element abundances in all four groups of North American tektites. Although there are some similarities visible, there are also some striking differences, especially the low sodium, but high potassium abundances in tektites from DSDP 612. No general trend is visible. Sometimes Barbados tektites are similar to bediasites, sometimes to georgiaites. This is also found for trace elements (13). The most interesting case is the DSDP 612 site. Here not only tektites and microtektites, but also impact debris was found, and the tektites seem to be of Muong Nong type. All this indicates the

proximity of the source crater (13). The Cuban tektite was previously described as being very similar to bediasites (9). The new tektite findings in Barbados and new analyses of the Cuban tektite (14) make it plausible, however, that it really originated from Cuba. This is also indicated by its chemical behaviour: in a soda-potash diagram the Cuban tektite plots between the distinct fields occupied by bediasites and georgiaites, while the Barbados tektites show a spread over the whole area (14). The picture that emerges shows a source crater on the continental shelf at the US East Coast, and chemically different tektites in the eastern and southern parts of North America.

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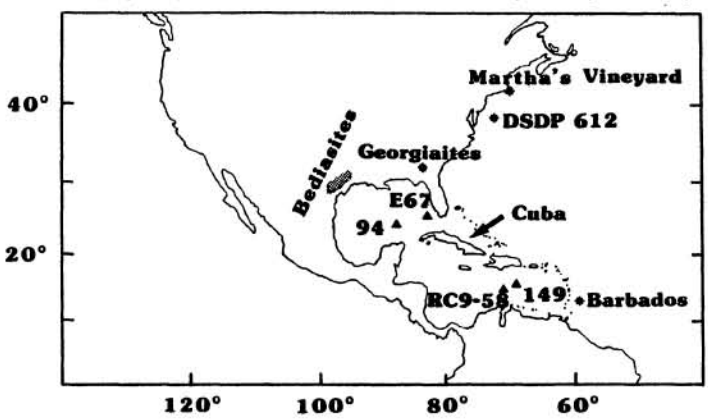

FIG. 1: Extension of the North American strewn field. Triangles: microtektites only.

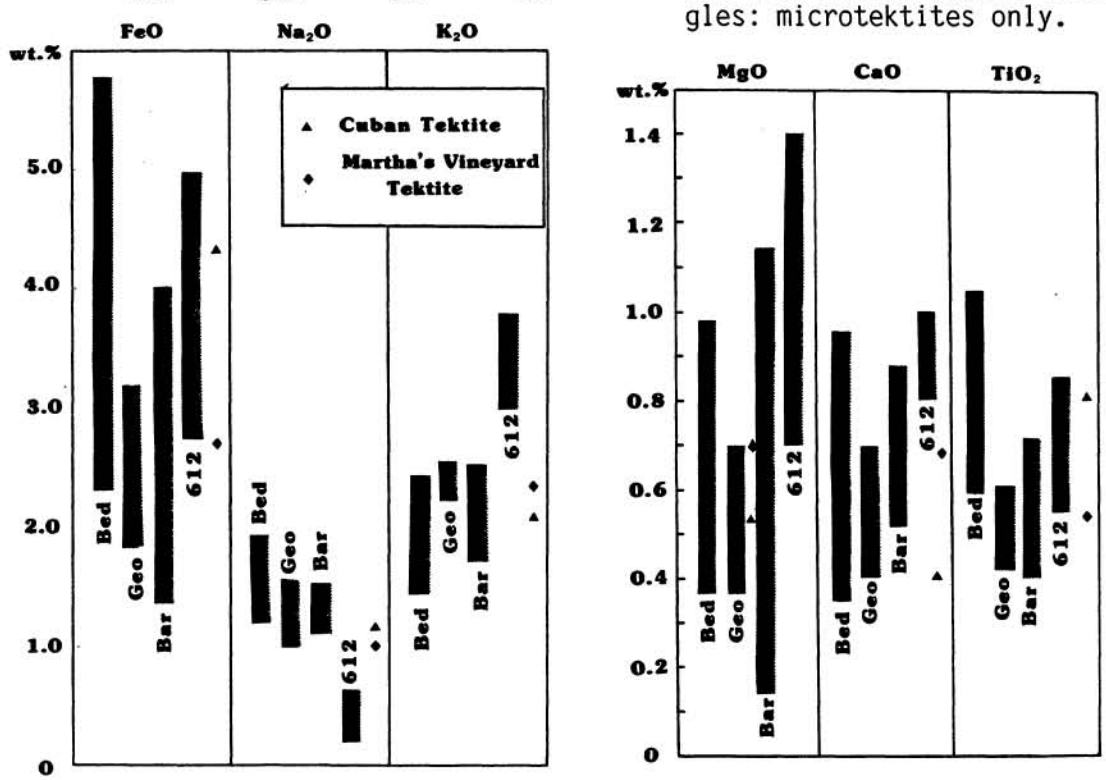

FIG.2a/b:Compositional ranges for different N.A.tektite groups + samples (14).