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Dating shells and sediments from a Shellmound in Laguna Santa Catarina State, Brazil

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Shellmounds (or sambaquis) are found abundantly in Brazilian coast largely concentrated in mid to southern part. Their sizes vary from few to forty or fifty meters high. Of course, the presence of shells is essential they can be found non-fragmented in some cases, but in others they are found finely fragmented. In large sambaquis frequently human or animal skeletons mixed with religious features are also found. In the present work, we present the first results of dating of sambaquis from State of Santa Catarina, Brazil. There is no evidence in the literature about dating of sambaquis using TL technique.

In the present work samples have been collected from the base part of a shell mound of about 18 m of height in the state of Santa Catarina which is the next to the southernmost one. A PVC tube 3 cm diameter was introduced horizontally about 4 m inside. Also a second tube was introduced horizontally about 1.5 m above the first one. In both cases sediments mixed with non-fragmented shells with 2 cm diameter were obtained. To start with the shells were separated washed in a solution of H₂O₂. Enough amount of shells has been crushed and sieved retaining grains with size between 0.080 and 0.180 mm.

About 2400 mg were divided into 12 portions and irradiated with 300 to 2000 Gy gamma-ray for EPR measurements in the additive method. An accumulated or pale dose D_{ac} of about (15.23 ± 1.42) Gy were obtained. For TL measurements about 40 mg of sieved sample were annealed at 500 °C for one hour, then divided into 4 portions and irradiated with 10, 20, 30 and 40 Gy gamma-ray. After reading the heights of 350 °C peak they were plotted as function of radiation dose. Using this curve and the TL-value of natural sample it was obtained $D_{ac} = (17.8 \pm 1.8)$ Gy. The annual dose rate D_{an} was calculated by gamma spectroscopy method; adding the cosmic ray contribution an annual dose rate of $D_{an} = (1.577 \pm 0.14)$ mG/year was obtained. From $Age = D_{ac}/D_{an}$ we obtain: $Age = (11.207 \pm 1.42)$ year BP by TL and $Age = (9.658 \pm 1.200)$ year BP. Dating sediments by OSL method is underway and the result will be presented at the Conference. Archaeological and geological meaning of age obtained will be discussed.

The samples of sambaquis have been dated by TL method. The results found in this study are consistent with others studies conducted by archaeological methods.

MCKEEVER SWS. 1985. *Thermoluminescence of Solids*. Cambridge University Press, Cambridge, UK.