

INTERNATIONAL SYMPOSIUM ON GLOBAL CHANGES
IN SOUTH AMERICA DURING THE QUATERNARY:
PAST - PRESENT - FUTURE

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ALLUVIAL FANS IN SOUTHEASTERN BRAZIL AS AN EVIDENCE
FOR EARLY HOLOCENE DRY CLIMATE PERIOD (1)

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The study area is located between Doce and Jequitinhonha hydrographic basin in the State of Minas Gerais (Fig. 1). A tropical rain forest (Mata Atlântica) constituted the original vegetation cover of the area.

Small alluvial fans, only some hundred meters long, have been frequently observed in the area. They are oriented perpendicularly to the valley axis, and their distal deposits fill up the valley floor sometime damming the main drainage and thus originating small lakes and swamps. They are today practically inactive despite almost complete deforestation. These fans have been previously studied by Mousinho de Meis & Monteiro (1979), who referred them as "rampas".

The deposit exhibits coarse sediments (boulder and gravel) and fine sands. Two depositional units, separated by organic clay with wood fragments, or organic paleosoils, may be found (Fig. 2). Radiocarbon ages of wood fragments and paleosoils were obtained from three different sites: Malacacheta, Poté and Padre Paraíso (Fig.1), which have been respectively $9,440 \pm 330$ years B.P. (Bondy 112), $8,710 \pm 300$ years B.P. 320

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(Bondy 251) and $9,230 \pm 420$ years B.P. (Bondy 232). These ages are consistent with 400 those obtained by Mousinho de Meis & Monteiro (op. cit.) in the Middle Doce river basin. The top of the deposits was dated through a charcoal sampled in Santa Maria do Suaçuí as $8,620 \pm 450$ years B.P. (Bondy 227). In the Middle Doce river basin, an organic bed covering the fan deposits was dated by Mousinho de Meis & Monteiro (op.cit) as $7,830 \pm 250$ year B.P.. Radiocarbon ages are not available for the lower depositional unit. It could perhaps be correlated with an intensive depositional event occurred around 14,000 years B.P. (Pflug, 1969) in the Doce river, which was also responsible for the daming of its tributaries, giving rise to large lakes in the middle basin area.

The formation of those alluvial fans occurred under very accelerated run-off and they cannot be formed in tropical humid conditions. It implies that the present rain forest in the area was fully developed only after 8,000 years B.P. On the other hand, an intensive run-off of weathering mantle is possible only by concentrated rainfalls, heavier than the present ones. These data allow us to identify a dry climate, characterized by heavy and concentrated rainfalls, between 9,000 and 8,000 years B.P. in southeastern Brazil.

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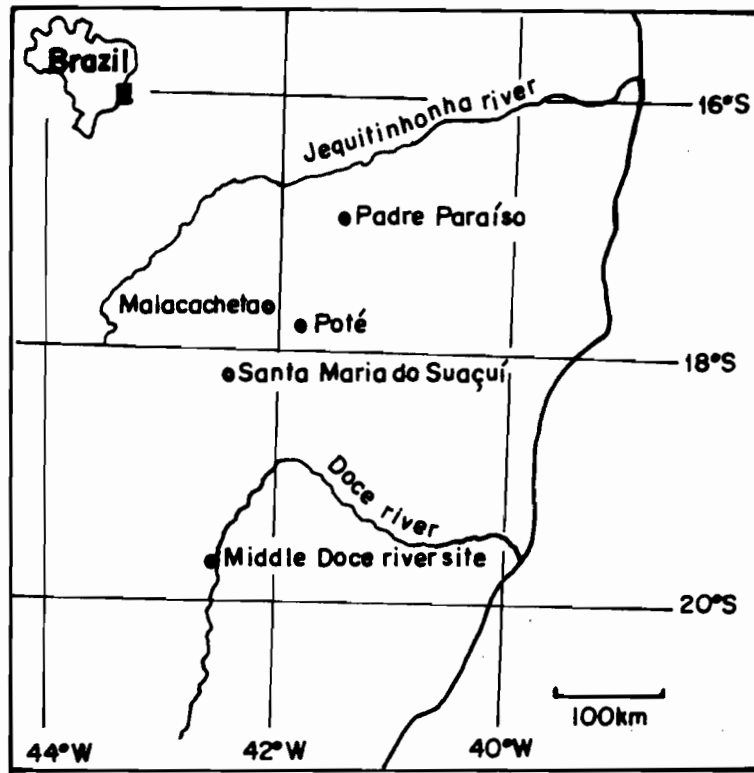


Fig. 1 - Locations of the studied sites.

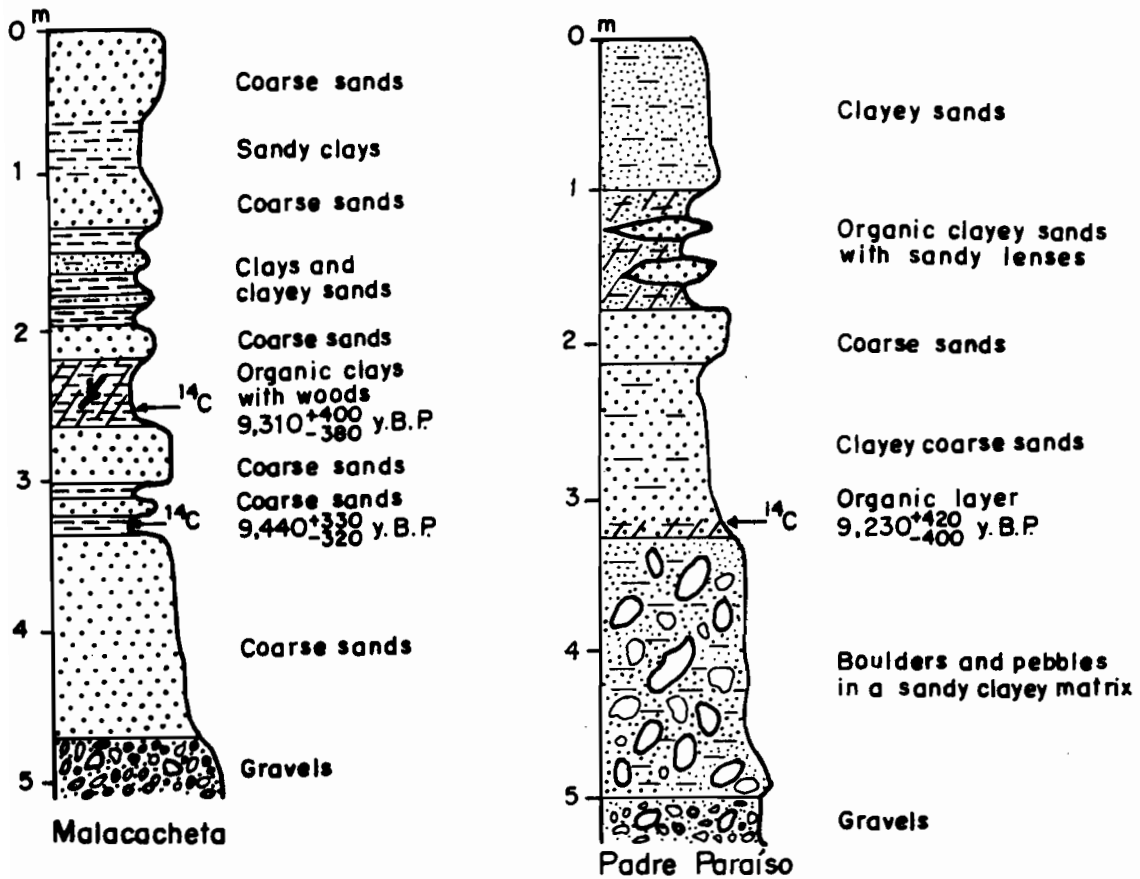


Fig. 2 - Two examples of alluvial fan depositional sequences.

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