

**Fig. 4.** Timing relationships between the main Phanerozoic tectono-thermal processes in the eastern Borborema Province, northeastern Brazil, compared to the onset of the cooling events identified by AFTA. Time constraints are compiled from Sial (1976), Long et al. (1986), Mizusaki (1989), Araripe and Feijó (1994), Feijó (1996), Oliveira (1993), Morais Neto (1999), Matos (1999, 2000), Hegarty et al. (2002), Lima Filho and Szatmari (2002), Souza et al. (2004), Jardim de Sá et al. (2004), and Almeida et al. (2005).

related to rifting, post-rift tectonics, regional denudation, intrusive and extrusive magmatic activity, and localized hydrothermal fluid flow effects associated with all of these mechanisms can potentially have affected the Brazilian margin and adjacent interior. The sampling strategy adopted was designed such that the dominant heating or cooling effects on the Borborema Plateau area could be directly measured as opposed to being assumed or

inferred from various basin models or crustal deformation schemes.

#### 4. Sampling details and background

Fission-track samples were collected along two regional transects across the Borborema Plateau (Figs. 5 and 6).

**Fig. 5.** Location of AFTA (Apatite Fission-Track Analysis) samples from Borborema Province, NE Brazil (sample numbers shown as 4 to 36; full sample reference number is RD57-4 to RD57-36; CE, RN, PB and PE means, respectively, Ceará, Rio Grande do Norte, Paraíba and Pernambuco States). Samples consist of igneous and metamorphic Precambrian rocks (see Table 1 for details). Keys: (1) Borborema Plateau; (2) Interior lowlands; (3) Coastal cuestas (mainly Barreiras Fm); (4) Early Cenozoic mesas (Serra do Martins Fm); (5) Cretaceous basins; (6) Early Cretaceous Tholeiitic Dike Swarm; (7) Cenozoic volcanics.