International Geological Congress, 31.
Abstracts Volume (CD-ROM) Rio de Janeiro, 2000

CONTINENTAL SUBDUCTION AND INVERTED METAMORPHIC PATTERN: SOUTHOFSÃOFRANCISCOCRATON,SEBRAZIL

1CAMPOS NETO, M.C.; 2CABY, R., 1JANASI, V.A. and 1GARCIA, M.G.M.
1Instituto de Geociências, USP, São Paulo, Brazil; 2Laboratoire de Tectonophysique,UM-II,Montpellier,France.

The Neoproterozoic III nappe system exposed south of the São Francisco craton has a flat geometry of spoon-like structures displaced eastward. It represents a thick-skinned structure that underwent a minimum of 300 km in magnitude of aggregate transport accounting for deeper crustal levels progressively exposed in the western nappes. The uppermost allochthon derived from a high-temperature magmatic arc is underlained by high-pressure metasediments recording an active margin provenance. The lower allochthons are made up of medium-pressure units from passive continental margin. An inverted metamorphic pattern is supported by the high-pressure nappes. Lower temperatures (650ºC) were attained under high-pressures (12-14 kbar) related to the decompression stage of eclogite conditions (660ºC-17.5 kbar). Upwards the temperature in Ky-granulites increases to 700ºC (15 kbar) and up to 950ºC in a near-isobaric heating path. This sialic crust underwent a low thermal gradient (11ºC/Km) achieved in an ocean closure through west-dipping subduction to at least to 60?5 km deep. The upper nappe underwent a compressed geothermal pattern (50ºC/km). This steeper thermal gradient could be related to a lithospheric extension resulting from astenospheric mantle upwelling and basic magma underplating. These processes were in the origin of the widespread crustal magmatism occurred in a short-lived metamorphic peak at 625?5 Ma. Though nearly contemporaneous the "cold"-subduction scenario depicted by the Ky-granulite beneath the hot crust of the magmatic arc argues for initial different tectonic environments for both terranes. This scenario begined around 630 Ma and ended shortly before 612 Ma, resulting in a mean coolingrateof15ºC/Ma.