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TRANSPRESSIVE EVOLUTION OF A COLLISIONAL SUTURE ZONE IN SE-BRAZIL.

Hans D. EBERT & Yociteru HASUI
(Inst. of Earth Sciences, Univ. State São Paulo-UNESP, Rio Claro-SP, Brazil)

The Precambrian Rio Paraíba do Sul shear belt consists of an expressive anastomosing net of NE-SW-trending ductile transcurrent shear zones extending over 1000 km along the coast in Southeastern Brazil. It dissects granulitic, gneissic-migmatitic and granitoid terrains as well as metavolcano-sedimentary sequences, affected by greenschist to upper amphibolite facies metamorphism. This belt coincide with ancient suture zones, marked by gravimetric anomalies, that join two Archean crustal blocks (Vitória at East and São Paulo at West).

The analysis of geometric, kinematic and strain elements, related to these strike-slip structures, outline two main structural domains:

(a) The internal portions of the sigmoidal segments, with evidences of lower strain and mainly coaxial deformation. They exhibit open en-echélon folds and preserve the older features of an intense progressive, non-coaxial, inhomogeneous, ductile shearing, like sub-horizontal foliations and stretching lineations, attributed to westward oblique overthrusting of continental blocks.

(b) Steep zones of high shear strain along principal Y=D zones, commonly articulated with synthetic P zones that constitute compressional strike-slip duplexes. They show dextral inflexion, rotation and shearing of the pre-existent structures and fabrics and at least 200 km of total horizontal displacement. Typical structures are subhorizontal stretching lineations, subparallel isoclinal folds, crenulations, reverse to oblique thrusts and flower structures. These features, indicate simultaneous shortening across the shear belt, and appoint out to a non-plane, inhomogeneous, transpressive regime, with regional oblate strain ellipsoids in the general compression field. Early transtensional structures have been obliquely compressed between the strike-slip shear zones during the progressive rotation.

These domains reflect regional strain partitioning during the transpressive event and reveal the importance of the interaction between regional coaxial and non-coaxial deformations in the development of this belt. The intricate litho-structural framework is the result of differential movements and accommodations between the crustal blocks during a long period. This processes have been arised from the earlier tangential tectonics, that, after strong crustal shortening and thickening, evolved to the transpressive event along the lateral to oblique ramps of the strong splited suture zones.

As the wide distributed upright folds, associated to the NE-SW trending sub-horizontal lineations, are generally related to the transpressional event, it should be more proper to apply the term transpressive shear belt instead of the usually adopted term fold-belt.

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The Rio das Velhas Fold-and-Thrust belt, Minas Gerais, Brazil.

Benjamim Bley de BRITO NEVES (Inst.Geol.Univ.S.Paulo,Brazil)

The statement of the eastern limit (as well as the occidental) of the S.Francisco Craton has been a very interesting puzzle, in terms of the original definition of continental cratons.

The Araçuai fold belt occur bordering the S.Francisco craton was originated through process of continental extension Mid to Late Proterozoic in age. During both extensional and the fusion processes older rocks of Archean and Early Proterozoic were deeply affected, and they are today cropping out as regenerated participants of the infrastructure of the fold belt, very far from the craton (as thrust sheets, uplifted windows, etc.).

Eventhough the extensional processes have been vigorous, important part of the Araçuai supracrustals are overlying sialic basement, and just some local occurrence of oceanic materials has been reported with Sm/Nd age around 880Ma.

The collisional phenomena of orogeny were intensive (end of the Proterozoic) with generalized tectonic transport toward the craton-from East to West -. Only in the central part of the craton it is still possible to observe some underformed cratonic covers, with in situ primary structures.

From this central part toward the eastern board, the gradation of the tectonic deformation exihibit several stages, up to core complexes, at granulitic facies, near the coast of Brazil.

The Rio das Velhas Fold-and-thrust belt is proposed to nominate the eastern part of the continental nucleous, that worked out as externides for the Araçuai fold belt. Ductile deformation and allocthonism of the cover sequence may be widely observed in contrast with the apparent authochtonism of the gneissic-migmatitic basement.

The usual limit utilized to discriminate the S.Francisco Craton at this eastern part is just a thrust fault along a lithological contact . But, this formal and disputable limit should be modified, as we are here proposing, under the lights of the original (H.Stille) concept for continental cratons.

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Northwestern Caribbean (Cuba-Bahamas) Late Cretaceous-Eocene cinorogenic basinal formation

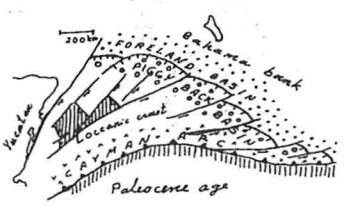
M. ITURRALDE-VINENT (Museo Nac. Historia Natural, Capitolio, La Habana, Cuba, 10200)

Since the Latest Campanian till Late Eocene a continental-arc collision orogen formed in the northwest Caribbean.

The former Bahamian continental margin slope evolved into a foreland basin. Deep water carbonate deposition started already by Maastrichtian time and became contaminated with arc-derived clastic material, but the larger amount of allochthonous clastics deposition took place during Paleocene to Late Eocene time. Olistostromic deposits are the main type of sediments, along with some calcareous flysch deposits. Those olistostromic formations are younger northeastward but in the same direction they ultimatelly wedge out and dominate the carbonate deposition already forming in the Bahamas platform.

Since Late Campanian time sedimentary deposition started in a piggy-back tectonic environment onto the extinct Cretaceous volcanic arc. Deposits were accumulated in a highly variable relief. Grauwakes and shallow water calcareous bank deposits dominated.

Structurally the piggy-back and foreland basins are very different, as the first is slightly deformed while the last is strongly dislocated. These differences are determined by the position of the basins: the foreland in front of a series of northward thrust sheets; the piggy-back basin onto the thrusting terrane.



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The Stratigraphy and Structure in the Semitau Area: Evidence for Compressional Tectonics in the Late Oligocene - Early Miocene.

Prihardjo SANYOTO (Geol.Dept., ANU., Canberra, Australia)

The Melawi Basin lies between the continental basement of the Schwaner Zone in the south and the Semitau High to the north. The area under investigation is located in Sintang Area, in the West Kalimantan Province, Indonesia.

The Tertiary Melawi Basin overlies the Cretaceous deformed sequences, and contains thick fluviatile to shallow marine sediments. The Tertiary stratigraphy of the Melawi Basin can be divided into four units, in ascending order, the Ingar Formation, the Suwang Group , the Melawi Group , and the Kapuas Group. The Ingar Formation consists of interbedded sandstone and mudstone, the Suwang Group consists of Dangkan Sandstone and Silat Shale, the Melawi Group consists of Payak Formation and Tebidah Formation, and the Kapuas Group consists of Sekayam Sandstone, Alat Sandstone, and Tutop Sandstone.

The present study of the stratigraphy and structural evolution of the area, suggest that the Melawi Basin formed after deposition of the Kapuas Group as structural basin, and was controlled by N-S compresional tectonic during Late Oligocene to Early Miocene.

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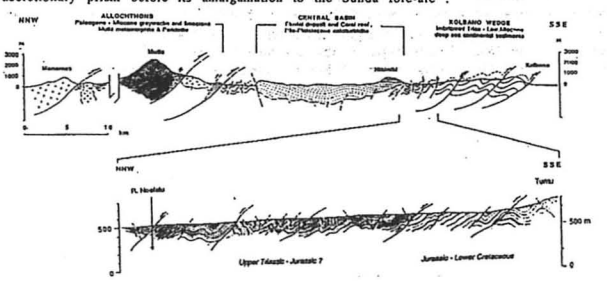
The N-S Transect of West Timor: Tectonic and Stratigraphic investigations

Agus H. HARSOLUMAKSO (Dept. Geol., Inst. Tech. Bandung, Indonesia ; Michel VILLENEUVE (Inst. Géodyn.,C.N.R.S., Valbonne, France)

Timor is thought to have been formed by the Late Cenozoic collision between nortwestern margin of the Australian continent with the Banda island-arc subduction complex. In general, Timor can be stratigraphically devided into three units. Firstly, the sequences of Permo-Triassic sediments of Australian continental facies which are developed mostly in the central-northern part, and then the Upper Miocene sediments in the southern part of the region. Secondly, the distinct series which are considered as the allochthonous unit, consisting of metamorphic, ophiolitic and basic rocks with their Upper Cretaceous sedimentary cover and tertiary subsequence series. And finally, the post orgenic unit consists of Pleistocene to Recent clastic sediments and coral reef terraces. Based on our present studies, particularly the different types of deformation, we are able to reconstitute a more detailed stratigraphic sequences in spite of numerous imbrications. This interpretation was also done through sedimentological analyses using the dated fossiliferous reference levels in order to obtain the entire stratigraphic sequences from the Permo-Triassic to the Upper Miocene pre-orogenic sediments.

This study likewise proposes a reconstitution of the australian passive margin's accretionary prism before its amalgamation to the Sunda fore-arc .



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Deformation of the Pleistocene Ashigara group, the deposits of the collision zone between Izu peninsula and Honshu Arc.

Isamu IMANAGA(Kanagawa Pref. Mus., Japan)

Ashigara Group is located in the north of Hakone volcano on the Philippine sea plate or in the south of Tanzawa mountains on the North-American plate. The group is mostly made of conglomerates, and is subdivided into four formations, the Hinata formation, the Seto formation, the Hata formation and the Shiozawa formation in assending order. The thickness of the strata is estimated over 5,000m. The group is sedimented in a channel between the Izu Block and the Honshu Arc.

The group shows a dome like anticlinal structure plunging to the northwest. The dip angles become steeper to the northwest or the northeast of the distributed area.

The northern end of the Ashigara group is cut by the Kannawa reverse fault running from east to west. The Tanzawa group of Miocene thrusted up to the Ashigara group. The deformation of the group which caused the dome like folded structure is considered to be formed by both the movement of the Philippine sea plate to the northwest and wedging between the Izu Block and Honshu Arc.

Quartz diorite mass, many sheets and dikes are intruded in the group. And most of dikes and sheets are thinner than 6m. They were intruded during the sedimentaiton and were supposed to be dislocated by the folding movement.

Hata formation and Hinata formation, mainly composed of the alternations of siltstone and sandstone were squeezed and folded during the deformation of the Ashigara group.