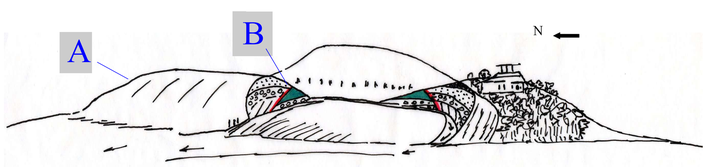
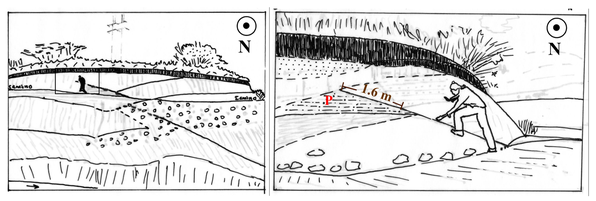
Flexural faults – pressure ridges - colluvial wedges - paleosoils – Stratigraphic and geochronogical evidence

2

Pressure ridge ¨La Oreja de Tuluá¨



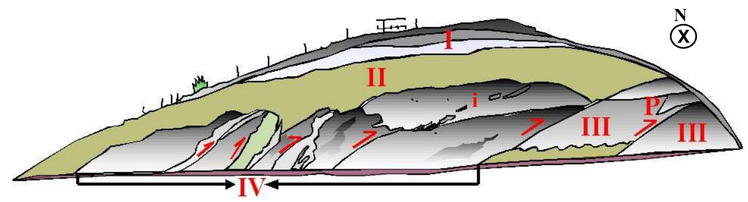
A Detail — Overthrusted paleosoil



Age at point P (right sketch) : ^{14}C 17.800 ± 660 ka BP

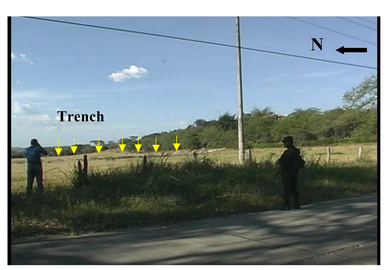
Net slip: 1.6 m

B Detail — East-vergent imbricated faults



I. Sands with reworked volcanic ashes
II. Clast-supported gravels (Quaternary)
III. Colluvial wedges
IV. La Paila Formation (Miocene)
P. paleosoil dated as ^{14}C 12.000 YBP
i. Injections

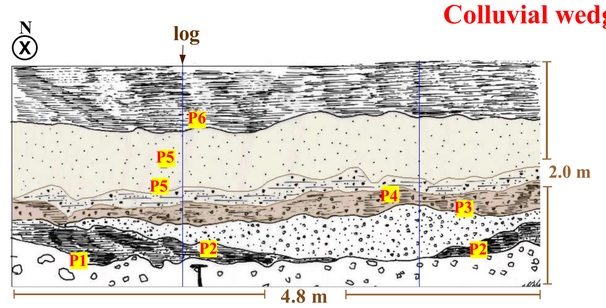
4



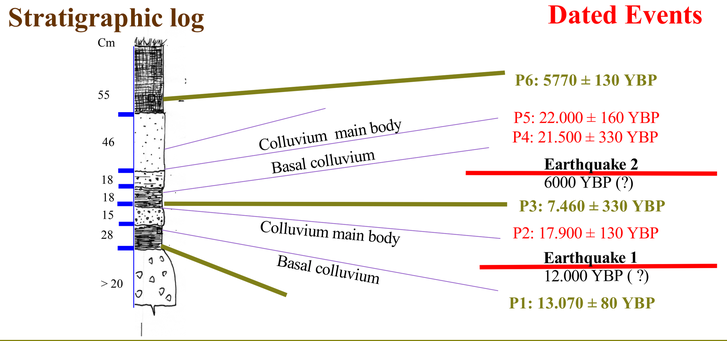
Pressure ridge ¨El Ahorcado¨

Trench in the colluvial wedge

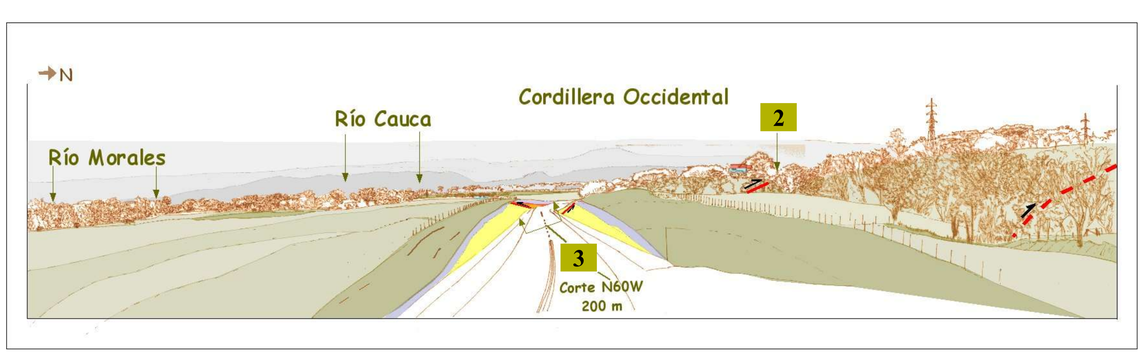
Colluvial wedge



Stratigraphic log — Dated Events



N-S trending pressure ridges bounded by thrust faults of opposed vergence



Further events are expected to occurr on the west vergent faults (low-angle blind faults), affecting the youngest Cauca river sediments toward the Occidental Cordillera. The east vergent faults are progressively cutting older and deeper geologic units toward the Central Cordillera.

Maximal magnitudes – recurrences.

- Recurrence interval: 6 ky
- Maximum magnitudes: equal or larger than 7
- Latest great earthquake happened at 6 ky BP

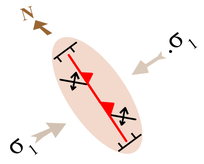
Conspicuous evidence of E-W maximum compression direction at the Buga–Tuluá latitude, where the ENE dextral system could be mechanically and kinematically related, is regionally supported regionaly by :

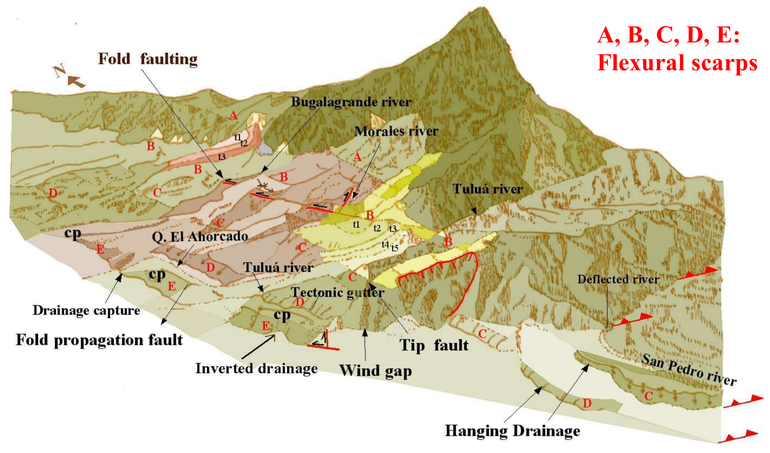
- Deflections in the trend of Tertiary units
- Trend of reverse faults
- Axial bearing of the anticlines

Active Structural Style

Cp: pressure ridges

t1, t2, t3, t4, t5: staircased terraces





References:

Marín, W., Romero, J. (1988). Proyecto Neotectónica del Sur Occidente Colombiano. Informe de Comisión. Ingeominas. Cali.

Meyer, Hj. & Mejía, J. (1997). On the Convergence Related Faulting in the North Andean Block; New Details from Regional Seismic Observations. IASPEI - International Association of Seismology and Phisics of the Earth´s Interior. 29th Assembly, Thessalonoki – Greece. Sessim S17: "Subduction Zones: Structures, Dynamics and Magmatism.

Nivia, A. (2001). Mapa Geológico del Valle del Cauca. Ingeominas.

Paris, G., Marín, W., Romero, J., Wagner, J.J. (1999). Evidencias de Actividad Neotectónica en el SurOccidente Colombiano. Memorias V Congreso Colombiano de Geología, Bucaramanga.

Trenkamp, R., Kellogg J.N., Freymueller, J.T., Mora, H.P. (2002). Wide Plate Margin Deformation, Southern Central America and northwestern South America, CASA GPS Observations Journal of South American Earth Sciences.15, 157 – 171 p.

Woodward-Clyde Consultants (1983). Seismic Hazard Evaluation Calima III Proyect. Consorcio Integral – Planes Ltda. Ingenieros Consultores 1ª parte. Corporación Autónoma Regional del Cauca (CVC). Colombia. P.116.

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