

Cenozoic deformation of central and south Vietnam

Rangin C., Huchon P., Le Pichon X., Bellon H., Lepvrier C., Roques D.,
Hoe N.D., Van Quynh P.

Département de Géotectonique (CNRS URA 1759), Université Pierre et Marie Curie, T.26 El, 4 place
Jussieu, 75252 Paris cedex 05, France; Laboratoire de Géologie (CNRS URA 1316), Ecole Normale
Supérieure, Collège de France, 24 rue Lhomond, 75231 Paris cedex 05, France; Département des
Sciences de la Terre, Laboratoire de Géochimie et Géochronologie, (CNRS URA 1278) Université de
Bretagne Occidentale, 6 avenue le Gorgeu, 29275 Brest cedex, France; Department of Geology, University
of Hanoi, Hanoi, Viet Nam; Department of Geography, University of Hanoi, Hanoi, Viet Nam

Abstract: The pre-Tertiary basement of central and south Vietnam is affected by pervasive strike-slip and normal faulting, which appears to control the shape of the present continental margin of eastern Indochina. Using remote sensing and field studies, we show the existence of two superposed strike-slip fault systems which were probably active during the Paleogene and early Neogene, respectively. The older system consists of large NW-SE left-lateral strike-slip faults, parallel to the Red River Fault, compatible with an E-W maximum shortening axis. In south Vietnam, conjugate N50°E right-lateral faults are also present, reactivating pre-existing Paleozoic and Mesozoic faults. The younger fault system consists of dominant N160°E to N-S right-lateral faults, compatible with a N10-30°E maximum shortening axis. These N-S-trending dextral strike-slip faults are parallel to the escarpment limiting the continental margin of Vietnam, south of Da Nang. Some of the N-S and N50°E faults have been reactivated locally as normal faults, especially during the uplift of central and south Vietnam, which was associated with voluminous late Neogene-Quaternary basaltic volcanism. These new field data show that eastern Indochina was affected by the collision of India with Eurasia, first through pervasive NW-SE left-lateral strike-slip faulting compatible with the extrusion of Indochina, and then through N160°E to N-S right-lateral faulting. Thus, a 90° rotation of the strain pattern occurred over Indochina as the collision proceeded and as the eastern syntaxis of the Himalayas migrated northward. We propose that the younger strain pattern is compatible with the existence of a large right-lateral sub-meridian shear zone over the eastern margin of Indochina as the South China Sea basin was opening. ?? 1995.

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Correspondence Address: Rangin, C.; Département de Géotectonique (CNRS URA 1759), Université
Pierre et Marie Curie, T.26 El, 4 place Jussieu, 75252 Paris cedex 05, France

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Authors with affiliations:

1. Rangin, C., D  partement de G  otectonique (CNRS URA 1759), Universit   Pierre et Marie Curie, T.26 El, 4 place Jussieu, 75252 Paris cedex 05, France
2. Huchon, P., Laboratoire de G  ologie (CNRS URA 1316), Ecole Normale Sup  rieure, Coll  ge de France, 24 rue Lhomond, 75231 Paris cedex 05, France
3. Le Pichon, X., Laboratoire de G  ologie (CNRS URA 1316), Ecole Normale Sup  rieure, Coll  ge de France, 24 rue Lhomond, 75231 Paris cedex 05, France
4. Bellon, H., D  partement des Sciences de la Terre, Laboratoire de G  ochimie et G  ochronologie, (CNRS URA 1278) Universit   de Bretagne Occidentale, 6 avenue le Gorgeu, 29275 Brest cedex, France
5. Lepvrier, C., D  partement de G  otectonique (CNRS URA 1759), Universit   Pierre et Marie Curie, T.26 El, 4 place Jussieu, 75252 Paris cedex 05, France
6. Roques, D., D  partement de G  otectonique (CNRS URA 1759), Universit   Pierre et Marie Curie, T.26 El, 4 place Jussieu, 75252 Paris cedex 05, France
7. Hoe, N.D., Department of Geology, University of Hanoi, Hanoi, Viet Nam
8. Van Quynh, P., Department of Geography, University of Hanoi, Hanoi, Viet Nam