

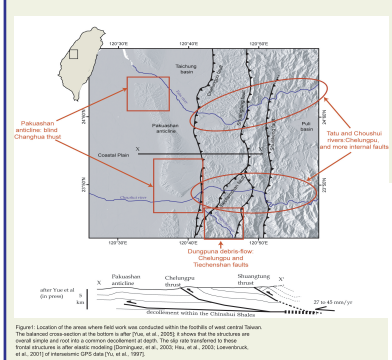


Kinematics of deformation and thermal evolution of the Taiwan orogen

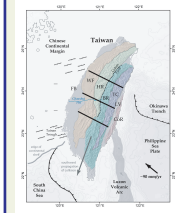
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This work also benefited from the collaboration with: Sylvain Bernard, Olivier Beyssac, Yu-Chang Chan, Bruno Goffe, Ken Farley, Manoj K. Jaiswal, Ashok K. Singhvi, Chien-Ying Wang

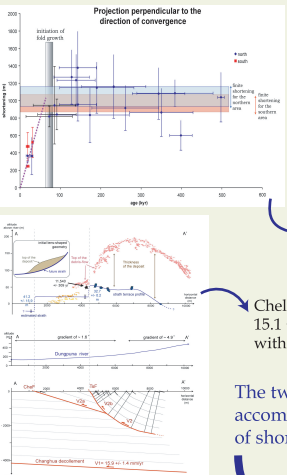
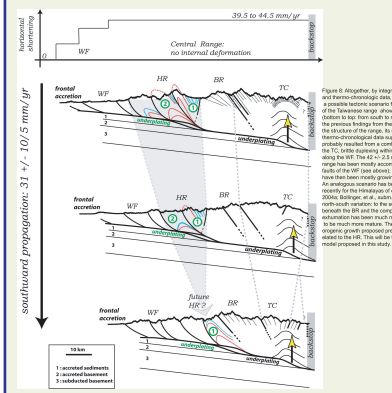
Kinematics of shortening across the Western Foothills



study area: West Central Taiwan
 Morphotectonic approach to infer slip rates on the major faults

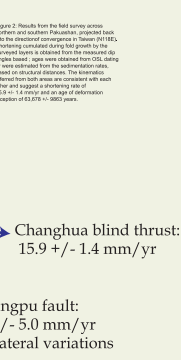
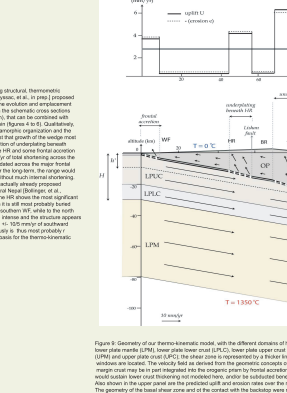


By combining the kinematics of deformation derived in this study as well as the wealth of recently produced data on the metamorphic history of the range (Beyssac et al, in prep):
new scenario of emplacement of the orogen



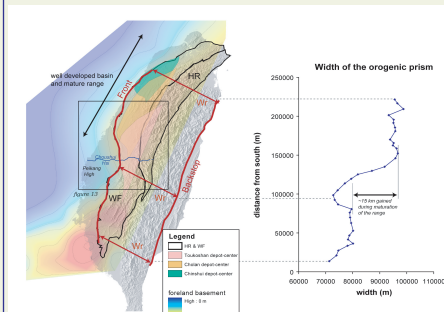
The two most frontal faults accommodate ~31 mm/yr of shortening.

with account on available constraints for the Shuangting fault: the active faults of the populated Western Foothills absorb most of the shortening across the Taiwanese range.



Southward propagation of sediment depot-centers: 31 +/- 10.5 mm/yr (useful to translate different transect across the range into time)

Transient widening of the range during topographic growth associated with transient high subsidence in the foreland basin

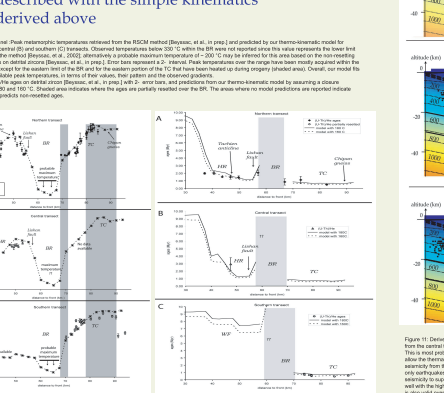


Southward migration of the load of the range over the basin and the changes in the width of the range: 39.5 to 44.5 mm/yr of long term shortening across the range.

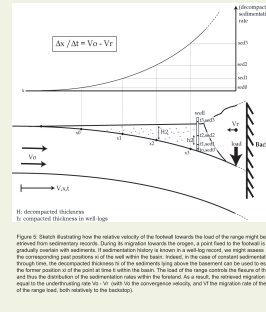
Little (if any) internal shortening within the range which contrasts with the predictions of the critical wedge model for Taiwan

Complete kinematic framework and evidence for crustal subduction

Thermo-kinematic modeling of mountain-building in Taiwan
 Model proposed
 Use of the f.e.m. code FEAP
 geometry of the LV suture zone and of the basal shear zone not assumed initially but rather adjusted to fit the constraints on the long term history of the range



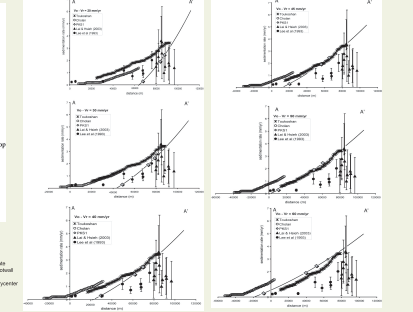
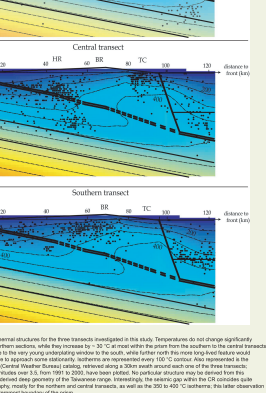
Long term shortening across the range, and southward propagation of orogenic growth



Southward migration of the load of the range over the basin and the changes in the width of the range: 39.5 to 44.5 mm/yr of long term shortening across the range.

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Complete kinematic framework and evidence for crustal subduction



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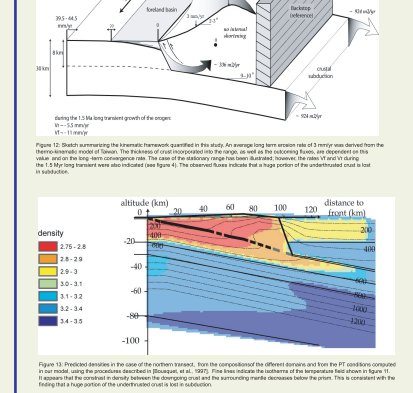


Figure 12: Sketch summarizing the kinematic framework... Figure 13: Model prediction of the evolution of the orogen... Figure 14: Detached first thermal structures... Figure 15: Detached first thermal structures...