IGCP 667 Project- Evolution of orogens through time and space: concepts from mapping visualization

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Orogens are classically thought to develop in a convergence context involving two or more plates of continental and/or oceanic nature. They are defined as deformed crustal areas with topographic building developing from either arc-continent subduction, continental collision or inverted rift basins. However, this definition does not take into account a genetic link of lateral transitions between oceanic domains and intracontinental rifts, while extension associated with scissor-shape opening is demonstrated in many oceanic-floored basins. Herein, we propose a new concept of orogenic evolution based on the former development of extensional margins subject to shortening: we consider accretion and supra-subduction along widely-opened oceanic basins, cordilleras which precede the final continental collision when the two opposite margins finally come into contact and inverted rifts in poorly-extended continental crust. In addition, the concept does include geodynamic processes prior to plate tectonics. As we go backward in time, the main elements are out of our reach due to lack of data, lack of understanding, or a strong erosion, which unroofed the upper levels of the orogen.

To do so, we elaborate a world map of past-to-modern orogens to re-explore mountain building concepts. Our work specifically points out similarities and differences of processes through time and along-strike diachronism within opening and closure of oceanic basins. This cores the interest of IGCP 667 project “World Map of the Orogens”.

Mots-Clés : orogen, subduction, collision, inverted rift, ophiolites, metamorphism, molassic basins, fold and thrust belt…

Merci de ne rien inscrire dans cette zone et ne pas modifier les marges des pieds de page et entêtes.