



DECIPHERING SUBDUCTION FROM EXHUMATION IN THE BLUESCHISTS OF THE ÎLE DE GROIX (HERCYNIAN BELT OF BRITTANY, W FRANCE)

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Whereas it is generally accepted that HP metamorphic rocks were created in subduction zones their process of exhumation remain a matter of considerable debate. One important piece of evidence concerns the structural and kinematic information that can be collected from the structural study of HP rocks and their tectonic environment. We here attempt such a study on the example of the Ile de Groix (Hercynian Belt; Brittany; Western France) which displays two opposite senses of shear top to SE and NW, respectively. Since two decades they have been interpreted in different ways: from two superposed events –i.e. one related to subduction (SE shear) and the other to backthrusting (NW shear) – to synchronous deformations related to bulk pure shear during exhumation. We here re-examine this problem under two complementary aspects: 1) putting emphasis on the relationships between shearing and metamorphism and 2) mapping the domains where either both senses of shear or only NW shearing are represented. Both deformations are extremely intense as demonstrated by the presence of sheath folds. The SE shearing is synchronous with an increase in pressure up to the PT conditions of the Gln+ Ep + Grt + Lws paragenesis. The NW shearing is associated with boudinage and tensile cracks and related veins containing greenschist facies parageneses (Qz+Ab+Chl paragenesis). For these reasons, we interpret the first event of shearing to the SE as due to progressive burial into a north dipping subduction zone. The second event of shearing toward the NW is obviously related to exhumation. However, this could be accommodated by NW directed backthrusting plus erosion or

by a NW dipping extensional detachment at regional scale. As in the frame of the Hercynian Belt of Southern Brittany, it doesn't exist any evidence of a major backthrust we conclude that the NW shearing corresponds to an extensional detachment.