APPENDIX-A

PALEOSTRESS ANALYSIS

Win_Tensor

We applied Right Dihedron Method (RDM) implemented in Win_Tensor (v.5.8.8) (Delvaux and Sperner, 2003). RDM is a graphical method to determine the principal stress axes orientations in fault-slip analysis. The derived stress tensor resembles the beach-ball diagram generated by earthquake focal mechanisms. Fault-slip data are plotted on equal area projection. The orientation of compressional (P-quadrant) and extensional (T-quadrant) quadrants are defined for each of the fault-slip data according to the fault plane and striations attitudes. The orientation of σ_1 lies in the P-quadrant, while the orientation of σ_3 is constrained to the T-quadrant. An assumption in this technique that applies to the homogeneous fault-slip dataset is that the faults active in the same stress field have a common intersection of P- and T-quadrants. The stereonet is divided into four dihedra, which are created by the fault plane and intersecting auxiliary plane orthogonal to fault plane. The striation is the pole to auxiliary plane. Of the four dihedra, a pair of two opposed quadrants are compressional and the other pair of opposed quadrants are extensional. This process is repeated for all the fault-slip data. Finally, all the dihedra generated from the whole fault-slip dataset are superimposed on each other. This iteration process progressively narrows down the areas of compression and extension. The common, small area of stereonet for which all the quadrants of compression or extension intersect/superpose are the orientations of σ_1 and σ_3 axes, respectively.

The term "stress regime", which varies as a function of R has been defined by Delvaux et al. (1997) to express the type of stress tensor. Plunge of principal stress axes defines the three end-members of stress regime, viz., σ_1 vertical: extensional regime, σ_3 vertical: compressional regime, and σ_2 vertical: strike-slip regime (Delvaux et al., 1997; Giambiagi et al., 2016). In between these three end-members, the stress regime also varies as a function of R. These subsidiary types of stress regime are expressed numerically using stress index ($R^/$) by Delvaux et al. (1997). An extensional regime with vertical σ_1 and $R^/ = R$, can be sub-divided into radial extensive ($0.00 < R^/ < 0.25$), pure extensive ($0.25 < R^/ < 0.75$), transtensive (having both extensive and strike-slip shear) ($0.75 < R^/ < 1.25$). A strike-slip regime with vertical σ_2 and $R^/ = 2 - R$, can be sub-divided into pure strike-slip ($1.25 < R^{/} < 1.75$), transpressive (involve both strike-slip and compressive shear) ($1.75 < R^{/} < 2.25$). A compressive regime with σ_3 vertical and $R^{/} = 2 + R$, can be sub-divided into pure compressive ($2.25 < R^{/} < 2.75$) and radial compressive regime ($2.75 < R^{/} < 3.00$).

T-Tecto

The Classical RDM is in-built in T-Tecto studio X5 (Zalohar and Vrabec, 2007), which was used in this work. The working of this method has been described earlier in this section. Parameter D is similar to stress ratio (R) defined by Delvaux et al. (1997).

FaultKin

FaultKin (v.8.0) (Marrett and Allmendinger, 1990; Allmendinger et al., 2012) uses the Linked Bingham distribution statistics function to calculate the average orientation of contractional and extensional axes for the given fault-slip data.

SG2PS (Structural Geology to Post Script)

The fault-slip data were inverted in SG2PS (Sasvári and Baharev, 2014) using the methodology of Angelier (1990).

Using the aforementioned programmes, in order to reduce the divergence between the shear stress and measured slip on fault plane and to obtain the best-fit stress tensor solution, we adopted the minimization criterion. It represents a measure of quality of the derived paleostress tensor (Federico et al., 2014). So as to achieve this, the angular difference between the predicted and real slip called the 'misfit angle' was kept ≤ 20° (Tranos, 2017). All the fault-slip data with a misfit angle > 20° were discarded and the optimum solution was achieved (Delvaux and Sperner, 2003).