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Erratum

Erratum to "How to calculate normal curvatures of sampled geological surfaces"☆ [Journal of Structural Geology 25 (2003) 277–289]

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The authors wish to correct three errors (A, B and C) to the paper originally published, as cited above.

(A) In Section 4.3, we erroneously state that Fischer and Wilkerson (2000) applied an approach for calculating principal curvatures based on second partial derivatives of the deflection (elevation). In fact, as is stated in their paper, Fischer and Wilkerson used T-Surf's gOcad® software for these calculations and they referenced Samson and Mallet (1997), which provides the mathematical details based upon differential geometry, the same mathematical basis that we utilized. Our critique of the second partial derivative approach in Section 4.3 and Figs. 8 and 9 is valid, but does not apply to the curvature analysis methods utilized in Fischer and Wilkerson (2000). We regret our error and hope that this erratum ameliorates any negative perceptions of the Fischer and Wilkerson paper created by the error.

(B) The principal curvatures as labeled in Fig. 5 (p. 281) should be changed. For the anticline, $k_1 > 0$ is perpendicular to the fold axis and $k_2 = 0$ is parallel; for the syncline, $k_2 < 0$ is perpendicular to the fold axis and $k_1 = 0$ is parallel; for the dome, $k_1 > 0$ and $k_2 > 0$; for the basin, $k_1 < 0$ and $k_2 < 0$; for the saddle interchange, k_1 and k_2.

(C) Eq. (12) on p. 282 should read as follows to be consistent with the subscript notation in the remainder of the publication:

$$M = \frac{1}{2}(k_1 + k_2) = \frac{\alpha_{xx}\cdot\beta_{yy} + \alpha_{yy}\cdot\beta_{xx} - 2\alpha_{xy}\cdot\beta_{xy}}{2\left(\alpha_{xx}\cdot\alpha_{yy} - \alpha_{xy}^2\right)}. \quad (12)$$

References

Fischer, M.P., Wilkerson, M.S., 2000. Predicting the orientation of joints from fold shape: results of pseudo-three-dimensional modeling and curvature analysis. Geology 28, 15–18.

Samson, P., Mallet, J.-L., 1997. Curvature analysis of triangulated surfaces in structural geology. Mathematical Geology 29, 391–412.

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