Should geophysicists use the gravity disturbance or the anomaly?

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ABSTRACT

The gravity anomaly is defined as the difference between the Earth's gravity on the geoid and the normal gravity on the reference ellipsoid. Because these quantities are not at the same point, the anomaly contains centrifugal accelerations and cannot be considered a harmonic function. The gravity disturbance is the difference between gravity and normal gravity at the same point. Consequently, the centrifugal effects can be neglected and the disturbance can be considered a harmonic function. This is the premise behind most potential-field data processing techniques (e.g., upward/downward continuation). Unlike the anomaly, the disturbance is due solely to the gravitational effects of geologic sources, making it the