|  |  |  |
| --- | --- | --- |
|  | **Characteristics of Lelièvre and Oldenburg’s (2009) method** | **Characteristics of our method** |
| **Interpretation model consists of a user-specified grid of M juxtaposed prisms in the horizontal and vertical directions** | Yes | No |
| **Interpretation model consists of a user-specified set of a few dipoles** | No | Yes |
| **A large-scale forward model** | Yes | No |
| **Inversion method for estimating the magnetization vector of geological bodies** | Yes | Yes |
| **The Cartesian and Spherical formulations for estimating the magnetization vector** | Yes | Yes |
| **An underdetermined optimization approach** | Yes | No |
| **An overdetermined optimization approach** | No | Yes |
| **High degree of nonuniqueness (Ill-posed inverse problem)** | Yes | No |
| **The use of Tikhonov regularization to transform an ill-posed inverse problem into a well-posed one** | Yes | No |
| **The use of unorthodox procedure to reduce the nonuniqueness (e.g., removing padding cells)** | Yes | No |
| **A plethora of control parameters the prior information)** | Yes | No |
| **Inversion method that recovers the 3D magnetization vector distribution** | Yes | No |
| **Inversion method that presumes the shape of the geologic bodies** | No | Yes |
| **Inversion method that recovers a single magnetization direction per anomaly** | No | Yes |