Locating the edges of anomalous bodies provides a fundamental tool in the geologic interpretation of potential field data. This paper compares the effectiveness of the commonly used edge detection methods such as the total horizontal gradient, analytic signal, tilt angle, theta map and their modified versions in terms of their accuracy on the determination of edges of source bodies. This paper also introduces an edge detector method for the enhancement of potential field anomalies, which is based on the logistic function of the total horizontal gradient. The new method is tested on synthetic data calculated using 3 models, and also on real magnetic and gravity data from Vietnam. The effectiveness of the method is evaluated by comparing the results with those of other popular methods. These results demonstrate that the method is a useful tool for the qualitative interpretation of potential field data.