

It is well-known that when inverting two-dimensional (2D) electrical resistivity data, a major source of errors is the presence of noise and in particular noise spikes. The popular median filter is often applied to the removal of single spikes. However, when the signal is highly corrupted with successive spikes, the median filter performance is poor. This paper deals with the use of the signal dependent rank-order mean filter for the detection and removal of noise spikes from highly corrupted 2D electrical resistivity imaging data. In addition to its computational simplicity, this filter is shown to be extremely robust, even in the presence of very strong noise, especially when it is applied recursively. The signal dependent rank-order mean filter was tested on 2D synthetic resistivity data contaminated by near-surface inhomogeneities and the results confirmed efficient removal of the disturbances normally associated with near-surface inhomogeneities. The signal dependent rank-order mean filter was also applied to field data and demonstrated its ability to significantly improve the accuracy of the inversion process and to produce good visual results in the inverted electrical sections