J Geol Geophys 2017, 6:5 (Suppl)
DOI: 10.4172/2381-8719-C1-0012

Decision fusion-multi sensor fusion of correlated observations

Abeer Mazher
Peking University, China

Over the past three decades, remote sensing technology has been successfully applied in diverse applications. The increasing availability and coverage of remote sensing data provides better opportunities to obtain more information from multi-sensor data than ever before. However, this also requires development of new and effective data analysis techniques to exploit the full potential of the multi-sensor data sets. In this regard, significant attention has been focused on multi-sensor decision fusion. In recent years, decision fusion techniques have been widely applied to combine information from different sensors data to achieve higher accuracy in information extraction than could be achieved by the use of single sensor data alone. So far, most decision fusion methods developed in remote sensing assume that multi-sensor classification results are independent and do not take into account conditional dependence (or correlation) between these classification results. However, some studies showed that there exists certain dependence (or correlation) between classification results of a study area from different sensor data. Thus, the assumption of conditional independence will bias the fusion results. There is a need to explore new and more effective decision fusion methods accounting for conditional dependence between multi-sensor classification results. Therefore, the correlation between classification results from different sensor data is first formulated followed by the novel Fusion of Correlated Probabilities (FCP) algorithm used as a decision fusion framework, which explicitly incorporates conditional dependence between two multi-sensor classification results. The Multi-sensor Fusion of Correlated Probabilities (MFCP) algorithm is the extended version of FCP by modifying the cross conditional dependence between three or more multi-sensor classifications. The MFCP method is adaptable to any type and any number of sensor data sets.

abeer.qau@gmail.com