

Spatial data mining application in forest fire assessment in tropical peat areas

ABSTRACT

Forest fires are considered a potential hazard that causes physical, biological, and environmental losses. Recent forest fires in tropical peat areas have created atmospheric haze and transboundary pollution. Identifying high fire hazard areas in tropical peat areas can help in forest fire management and reduce atmospheric haze pollution. With the advancement of computer technology, data mining techniques and tools can be used to assess areas with the potential for high hazard to forest fires. This work explores spatial data mining techniques for predicting occurrence of hotspots. The study area was conducted in Rokan Hilir district in Riau Province in Indonesia where peat fires occur during the dry season. The spatial dataset containing spread of hotspots, land cover, rivers, roads, city centers, and peatland was used with socio-economic factors and weather factors. The results showed that spatial decision trees for predicting hotspots had higher accuracy compared to those not using spatial data mining techniques. This study shows the potential of spatial data mining techniques in forest fire hazard assessment in tropical peat areas.

Keyword: Spatial data mining; Spatial decision tree; Hotspot; Forest fire