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Kappa系数在干旱预测模型精度评价中的应用——以关中平原的干旱预测为例

Title: Application of Kappa coefficient to accuracy assessments of drought forecasting model:a case study of Guanzhong Plain

作者: 许文宁[1]; 王鹏新[1]; 韩萍[2]; 严泰来[1]; 张树誉[3]

1. 中国农业大学信息与电气工程学院, 北京 100083;
2. 中国农业大学理学院, 北京 100094;
3. 陕西省农业遥感信息中心, 陕西西安 710015

Author(s): XU Wen-ning[1]; WANG Peng-xin[1]; HAN Ping[2]; YAN Tai-lai[1]; ZHANG Shu-yu[3]

1. College of Information and Electrical Engineering, China Agricultural University, Beijing 100083, China;
2. College of Science, ChinaAgricultural University, Beijing 100094, China;
3. Remote Sensing Information Center for Agriculture of Shaanxi Province, Xi，an 710015, China

关键词: 精度评价; Kappa系数; 误差矩阵; 干旱预测

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摘要: Kappa系数较多地用在评价遥感影像分类精度中。通过对分类影像和参考影像逐个像元统计,并建立误差矩阵,可以较准确地验证遥感影像分类的精度。将Kappa系数引入到关中平原地区加权马尔可夫和自回归移动平均两种干旱预测模型的精度评价中,基于标准降水化指数和条件温度植被指数两种干旱指标,对干旱监测数据和模型预测数据建立误差矩阵,得到了错估误差、漏估误差、总体精度和Kappa系数。综合应用4种评价指标分析模型的预测结果表明,错估误差和漏估误差能够验证预测模型的局部适用性,总体精度在一定范围内不能够直接反映模型的预测精度,Kappa系数可以较精确地评价不同时空间尺度的干旱预测模型精度。当参与预测的样本数目增加到一定程度时,Kappa系数和总体精度基本相等,可以更准确地评价模型预测精度。

Abstract: Kappa coefficient is widely used to assess the accuracy of classification on remote sensing images.The assessment is generally done through statistics of error matrix among the classification types on the images.In this paper,Kappa coefficient was used to assess accuracy of drought forecast for Guanzhong Plain,using an approach to integrate the coefficient with the weighted Markov model and the ARIMA model.Commission error,omission error,overall accuracy and Kappa coefficient based on SPI and VTCI were obtained by establishing error matrix between original data and forecast data.Above all,commission error and omission error could show the local applicability of the two models,overall accuracy could not figure the truly accuracy of the models at different spatial and temporal scales but Kappa coefficient could.However,when the number of the forecasting samples increased to a certain extent,overall accuracy could be the same as Kappa coefficient,it could be used to assess drought forecasting accuracy.

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