

大兴安岭植被生物量的ALOS PALSAR估算

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ALOS PALSAR estimation of vegetation biomass in Daxing' anling region.

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摘要

利用野外实测调查数据,系统分析了ALOS PALSAR L波段HH (L-HH) 极化数据与大兴安岭地区森林各成分参数的关系,并采用简单线性模型、指数模型和加入地理因子模型建立森林生物量的估算模型进行最优反演.结果表明:后向散射系数与树木地上部分总生物量相关性最大,其次是干生物量,L-HH数据可以用来反演正确的树木地上部分总生物量.3种模型中,加入地理因子模型降低了植被生物量估算的误差,精度达0.851,反演结果与实际相符.在41.5° 入射角L-HH极化数据下,大兴安岭塔河林业局和阿木尔林业局的森林生物量饱和点在15.4 kg · m⁻².

关键词: 森林生物量 后向散射系数 地理因子 ALOS PALSAR 大兴安岭

Abstract:

Based on field survey data, the correlations between the ALOS PALSAR L-band HH (L-HH) polarization data and the parameters of forest components in Daxing' anling region were systematically analyzed, and by adopting forest biomass estimation models, including simple linear model, exponential model, and model with terrain factors, optimal inversion was conducted. The results showed that backscattering coefficient had the greatest correlation with total forest biomass, and secondly, with trunk biomass, suggesting that the L-HH data could be used to estimate the total forest aboveground biomass. Among the three models adopted, the model with terrain factors could greatly reduce the biomass estimation error, with the accuracy reached 0.851, and the inversion result coincided best with the actual situation. It was forecasted that under the 41.5° incidence angle L-HH polarization, the vegetation biomass saturation point within the Tahe and Amuer forest bureaus of Daxing' anling was at about 15.4 kg · m⁻².

Key words: forest biomass backscattering coefficient geographical factor ALOS PALSAR Daxing' anling

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