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Application of a Spectral Analysis Technique for Dry Forest Cover Monitoring

The aim of this study is to apply spectral analysis techniques to characterize and analyze the current Pomac dry forest cover, located in the northern region of the Perú, using field radiometry and a spectral analysis model applied to satellite images with medium and high spatial resolution (Sentinel-2 and PeruSAT-1). For this purpose, multispectral images of the Pomac dry forest available from 2016 to 2022 were used, integrating dataset collected in field, such as spectral signatures, aerosols (AOT), and leaf chlorophyll content (LCC) into model development and validation. Among the spectral analysis techniques, we can mention Linear Spectral Decomposition (NFINDR algorithm) to obtain endmembers (pure spectra) from multispectral images and spectral classification based on spectral signatures (SAM, SID) to characterize dry forest cover; spectral indices have also been used to characterize the temporal behavior of dry forest species. Finally, spectral models such as PROSPECT and INFORM have been incorporated to simulate the spectral behavior of forest cover and compare these results with those obtained from satellite imagery and field measurements. The results obtained in this study provide a reliable scientific geospatial database for applications such as dry forest cover monitoring, spectral models, and automated multispectral image processing routines.

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