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| **Modelling Foliar Moisture in Forests and Woodlands of Eastern Australian using Satellite Data and Radiative Transfer methods** |
| To understand water availability of potential animal habitat, we modelled foliar moisture of forests and woodlands in temperate and arid south-eastern Australia using remote sensing. We inverted the ﻿PROSPECT and GEOSAIL Radiative Transfer Models (RTM) using Sentinel-2 satellite reflectance data of 20m ground resolution to retrieve foliar moisture content (FMC). A published RTM Look-Up-Table was used in the inversion and filtered by ecological criteria from 24 sites sampled during one warm season, along a moisture availability and canopy cover gradient. The merit function used between simulated and satellite spectra was the spectral angle, minimised. We found predictions of forest and woodland FMC had a Root Mean Square Error (RMSE) of 19.9% dry matter content, this was an improvement of similar models using coarser resolution reflectance data, particularly so in explained variance with an r2 = 0.62. Our analysis of predictions revealed some limitations of RTM parameters and of reflectance signals of sparse canopies. The results mean that we can accurately map foliar moisture at animal habitat scales, and that the estimates could be improved with a new forward stage of radiative-transfer modelling that includes ecosystem specific parameters. |