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| **Exploring the effects and resilience of subtropical montane cloud forests to seasonal droughts and typhoon disturbances through multiple-scale analysis** |
| **Introduction/Aim:**  Montane cloud forests (MCFs) are unique ecosystems frequently immersed by fog and low-stratus clouds (FLS). Climate change and elevated temperatures may amplify seasonal drought and typhoon intensity in recent decades, but their long-term impacts on MCFs remain unclear.  **Methods:**  In this study, we conducted cross-scale assessment using 6-year (2016-2021) ground litterfall and 21 year (2001-2021) satellite greenness data (the Enhanced Vegetation Index [EVI] and the EVI anomaly change [ΔEVI%]), gross primary productivity anomaly change (ΔGPP%), and meteorological variables (the standardized precipitation index [SPI] and wind speed) to explore the impact of disturbance on vegetation and the overall resilience of MCFs.  **Results:**  Our findings revealed that positive correlations between vegetation damages (EVI and ΔEVI%), productivity losses (ΔGPP%), and drought/typhoon severities imply that amplification of these disturbances could pose a great risk to MCFs in the foreseeable future. We found that MCFs are more susceptible to chronic seasonal drought than to acute typhoons, indicating that high precipitation and frequent fog immersion may not effectively mitigate the effect of water deficit but instead make the ecosystem more susceptible to drought. Moreover, vegetation regrowth during the winter can be considered as a manifestation of ecological resilience in MCFs, enabling partially recovery from forest productivity losses caused by severe disturbance in the preceding summer. Conversely, the absence of severe disturbance during summer may trigger defoliation rather than regrowth in the subsequent winter. These phenomena highlight the capacity of MCFs for self-adjustment and resilience in response to summer perturbations. In the long-term, our results indicated an increase in vegetation resilience over two decades in MCFs, likely driven by rising temperatures and elevated carbon dioxide levels.  **Conclusion:**  The enhancement of resilience might be overshadowed by the potential intensified droughts and typhoons in the future, potentially causing severe damage and insufficient recovery times for MCFs, thus raising concerns about uncertainties regarding their sustained resilience. |

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