



Abstract

Mapping Wetland Characteristics Using Temporally Dense Sentinel-2 Data in Poyang Lake [†]

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[†] Presented at the 5th International Electronic Conference on Water Sciences, 16–30 November 2020; Available online: <https://ecws-5.sciforum.net/>.

Abstract: The landscape dynamics of a wetland are critical for understanding lake ecosystem health and sustainability. This paper characterizes the spatiotemporal dynamics of the different wetland plant communities in the Poyang Lake during 2017–2018 to reveal the spatial distribution pattern of different wetland landscapes. Time-series Sentinel-2 images were used to investigate the spatial-temporal image features variation for different wetland plant communities in the growing season. NDVI, IRECI, backscattering coefficients, and scatter mechanisms were generated from the Sentinel-2 to study the spectral and structure information of the wetland plant communities. SVM and Random Forest were used to classify the time-series Sentinel-2 images. The results showed that NDVI and IRECI were the main factors to decide the accuracy of the map. Additionally, backscatter coefficients, VH polarization and spatial-temporal scatter mechanisms are a good supplement to improve the classification accuracy. Carex and miscanthus are the main plant communities in the Poyang Lake wetland. The landscape of the wetland vegetation partially changed during 2017–2018 because of the high dynamic hydrological changes. The Zizania community is increasing greatly with the decreasing water level. Furthermore, the water level decreasing plays an important role in the acceleration of the swampiness of the Lake wetland.



Citation: Yin, X.; Zhang, L. Mapping Wetland Characteristics Using Temporally Dense Sentinel-2 Data in Poyang Lake. *Environ. Sci. Proc.* **2021**, *7*, 1. <https://doi.org/10.3390/ECWS-5-08027>

Academic Editor: Richard C. Smardon

Published: 12 November 2020

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Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ECWS-5-08027/s1>.

Funding: This work was supported by Natural Science Foundation of Jiangxi, China (Grant No. 20161BAB213074), National Natural Science Foundation of China (Grant No. 41701514) and Key Laboratory of Poyang Lake Wetland and Watershed Research (Jiangxi Normal University), Ministry of Education (Grant.PK2017005).

Conflicts of Interest: The authors declare no conflict of interest.