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Using Satellite Images on Long-term Monitoring of the Pond Area in Taoyuan City

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Water conservation often played an important role in the history of early immigration in Taoyuan City. The ponds were built to save raindrops for irrigation to the farmlands and provide sufficient water resource for people's livelihoods. While this study investigates the historical, societal, cultural, and ecological aspects of ponds, it also depicts that ponds have formed the spatial contexts to record messages during different periods of time. The connection between ponds and other water bodies, such as reservoirs, ditches between fields and irrigation and drainage systems, is also a crucial link to the interaction with local residents. Therefore, in terms of humanity and ecology, ponds have their significant position. Nonetheless, the land use of ponds has also been changed along the way of human habitats and social development. Exploring the causes for the disappearance of ponds and finding the impacts of the phenomenon can be helpful for environment preservation, ecosystem conservation and even the adaptation to climate change.
Therefore, the mechanism of using satellite imagery on change detection analysis is to apply the 1.5-meter resolution satellite images based on a one-month regular monitoring for the development of economy and land management of the ponds in Taoyuan. Besides, this study also analyzed historical satellite image data in 1981,1991 to 2018 of 2,851 ponds.
The results showed 300 ponds that were no longer to be non-water body by 2018. The temporal and spatial variation can simulate the development of changes in the land use of ponds, which could be used as a reference for pond resource planning and ecological restoration in Taoyuan City in response to climate change.