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Title: Multi-source remote sensing for the monitoring of wetland biophysical and water quality parameters at spatially explicite scales.

Abstract:

Wetlands have declined at about 90% of their global coverage. Especially, a loss of 75% of inland natural wetlands since 1900 might be linked to agriculture development and urban extension. Interdisciplinary approaches using derived data from remote sensing can help understand the distribution of vegetation species by imaging the edaphic conditions in wetlands from space. Hence, the increasing availability of time series imageries offers new possibilities for managers to better define adaptive strategies involving wetlands as nature based solutions. Among them, temporary wetlands are small, shallow water bodies that may appear in various landscapes. They dry up seasonally, annually and/or unpredictably, being therefore particularly sensitive to climate change. These hotspots of biodiversity are usually difficult to monitor with satellite remote sensing because of their small extent, hydroperiods, vegetation cover and because of the cloud cover especially in boreal latitudes. Multispectral drone data can be used to develop tools for the monitoring of their biophysical parameters, to better understand their ecological functions in diverse landscapes. These functions might help the improvement of lake water quality when these wetlands are located upstream in the watershed area. We suggest that they might help decrease lake water browning. This phenomena has been measured in the boreal area since the 1990 with field data but our recent results show that it can be monitor from local to regional scales using time series of SENTINEL 2 and drone data. A combination of the tools we developed could help future decision making for more sustainable and integrated watershed managements in diverse landscapes at different latitudes.