



## **Water conservation and agricultural development in the Southern Amazon**

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Crop expansion and cattle ranching have long been pointed out as major drivers of deforestation in the southern Brazilian Amazon, thus leading to dramatic impacts on natural ecosystems. Nonetheless, in order to face with restrictive environmental laws established to contain deforestation, farmers had to adopt more intensive agricultural practices and diversify their activities for more than a decade. This evolution led to a decoupling between soy production and deforestation accompanied by a strong decrease in deforestation rates. However, it also raised other environmental issues especially related to water conservation. Indeed, the adoption of intensive agricultural practices implied an increased use of agrochemicals, the multiplication of irrigation systems and the development of fish farming activities. It resulted in the proliferation of small water bodies whose cumulative impacts on hydrological functioning could be significant. In this study, we analyzed Sentinel 2 time series collected in 2017 to produce land cover maps of Northern Mato Grosso, an area named “Território Portal da Amazônia”, and discuss the challenges of agricultural development in respect to water conservation issues. We especially focused our study on: 1) the detection of small water reservoirs including farm dams and excavated tanks, and (2) the estimation of degradation levels in Permanent Protected Areas (PPAs), i.e. riparian forests whose deforestation is legally forbidden. Our results confirm the potential of Sentinel 2 images to map small water bodies and forest degradation at high spatial resolution and then allow us to discuss the future challenges towards land use sustainability in the Southern Amazon.