



## **Long-term sediment yield from small catchment in southern Brazil affected by land use and soil management changes.**

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Soil erosion and sediment yield are the main cause of soil degradation in Brazil. Despite this, there is a lack of information about the effects of the soil management on the hydrology and sediment yield at catchment scale. This study aimed to investigate the long-term relationship between the land use and sediment yield in a small catchment with significant changes in soil management, and its impacts on soil erosion and sediment yield. To account the anthropogenic and climatic effects on sediment yield were monitored precipitation, stream flow and suspended sediment concentration during thirteen years (2002 and 2014) at 10 minutes interval and the changes that occurred each year in the land use and soil management. Despite the influence of climate on the sediment yield, the results clearly show three distinct periods affected by the land use and soil management changes during this this period. In the first four years (2002-2004) the predominant land use was the tobacco with traditional soil management, where the soils are plough every year and without winter cover crop. In this period the sediment yield reached the order of 160 t.ha<sup>-1</sup>.y<sup>-1</sup>. In the period of 2005-2009, a soil conservation program introduced the adoption of minimum tillage in the catchment and the sediment yield decrease to 70 t.ha<sup>-1</sup>.y<sup>-1</sup>. In the last period (2010-2014) there was a partial return to the traditional soil management practices with an increase trend in sediment yield. However, there was also an increase in reforestation areas with positive effect in reducing erosion and sediment yield. The magnitude order of sediment yield in this period was 100 t.ha<sup>-1</sup>.y<sup>-1</sup>. The long term sediment yield data was able to demonstrate the impact of the improved management practices in reducing soil erosion and sediment yield. The results allowed a good understanding of the changing sediment dynamics and soil erosion at catchment scale.