Fast carbon turnover after logging in the semi-arid Chaco forest (Argentina)

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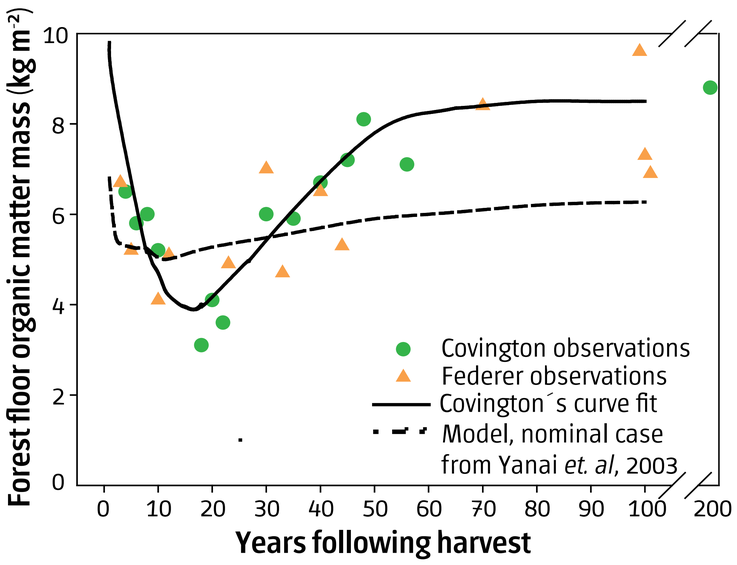
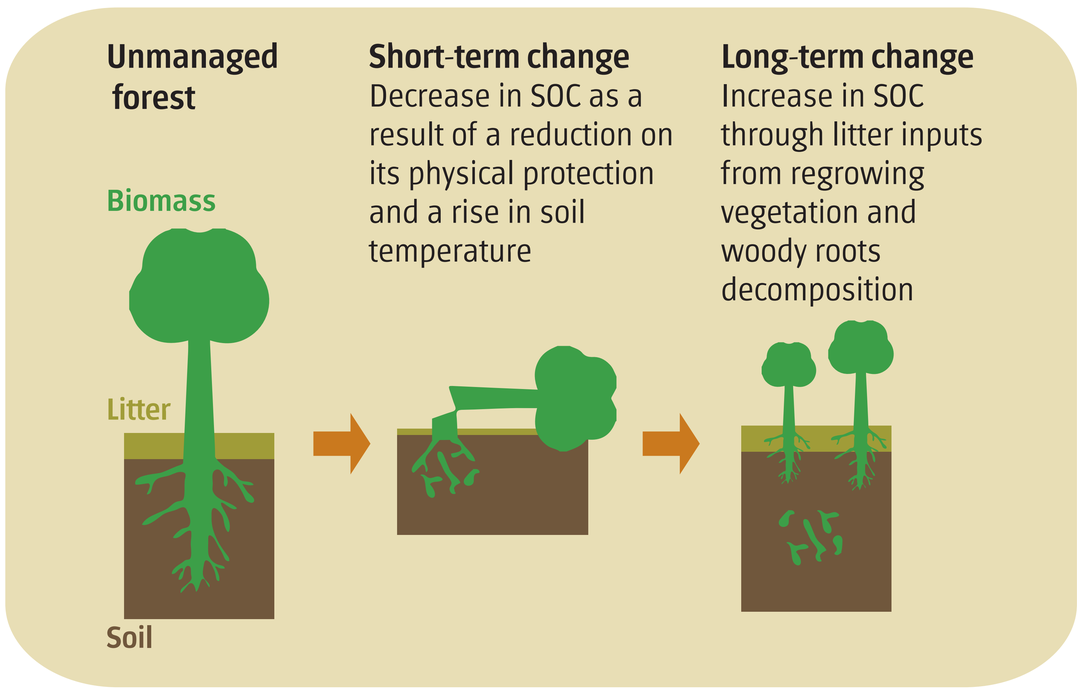
How does forest logging affect soil organic carbon (SOC)?

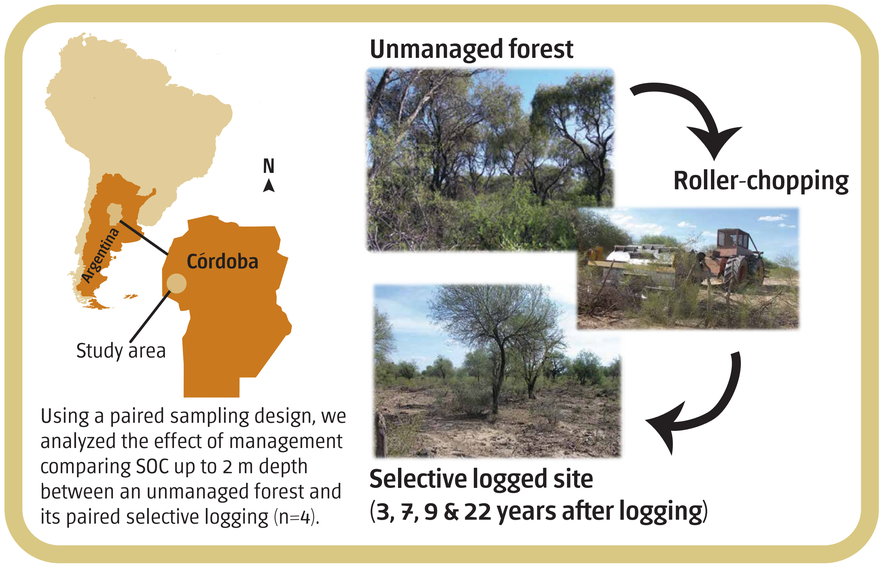
Previous works showed consistent trends of SOC change after logging

SOC decrease in the first years, and then it is restored to initial or even higher values





Study area



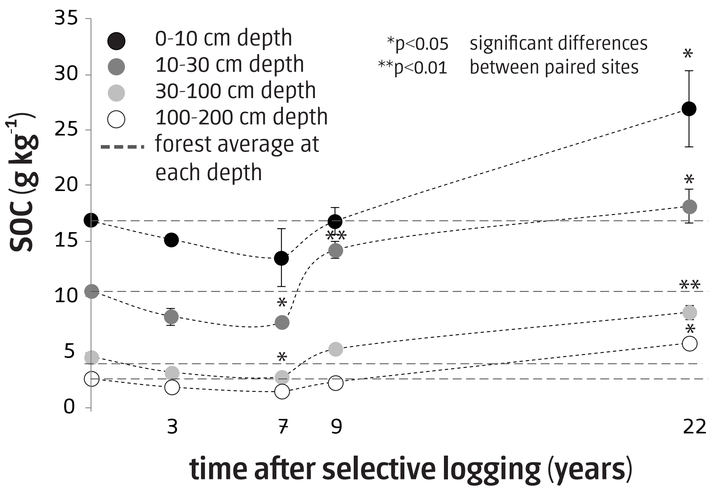
Using a paired sampling design, we analyzed the effect of management comparing SOC up to 2 m depth between an unmanaged forest and its paired selective logging (n=4).

Results

SOC was similar between all unmanaged forests.

SOC differed under logging sites, showing differences between years after logged and with their paired forest, not only at surface but also at depth.

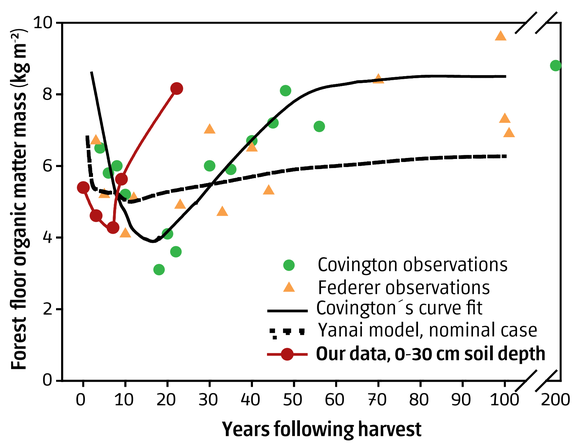
A decrease on SOC stocks during the first years was followed by an increase during following years, reaching maximum values after 22 years of logged.



Conclusions

Our results showed a decrease in SOC during the first years after logged with a recovery in the following years, supporting the trend proposed by previous works. However, in the semiarid Chaco forest , these changes seems to be surprisingly faster than expected, overreaching unmanaged forest SOC values in the first 20 years.

Although these results need to be replicated including sites on a broader range of times after logging, the actual rates of C change found after disturbance were surprisingly fast, affecting not only surface SOC but also C stored at depth.



This research was supported by CONICET (PIP 6196/05 & PIP 1532/06), Ministerio de Ciencia y Técnica de la Provincia de Córdoba (Argentina), FONCYT (PICT 365), SECyT (UNC) and IAI CRN 2015 and SGP-CRA2015 (which were supported by US National Science Foundation Grants GEO-0452325 and GEO-1138881).