

**Supplementary material for:**  
**ARE FIRE-MEDIATED FEEDBACKS BURNING OUT OF CONTROL?**  
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Description of model applied in Figure 1.

Based on the analysis of Veenendaal et al. (2016) effects of fire frequency and time of year of burning on the woody plant canopy crown cover vegetative response are simulated according to

$$\zeta_w^{0.4} = \beta_0 + \beta_1 f + s(\theta_t) \quad , \quad (S1)$$

where  $\zeta_w$  is the estimated average canopy crown cover in a plot exposed to a fire frequency  $f$  (per annum) within fire trial,  $\beta_0$  is an intercept term equal to the predicted canopy crown cover in the absence of fire ( $\zeta_0$ ) raised to the power of 0.4,  $\beta_1$  is a slope parameter describing the effect of  $f$  on the fractional cover and  $s$  is a non-parametric smoother (centred on zero) with  $\theta$  taken here as (Southern Hemisphere) month of burning (Jan = 1, Feb = 2 etc).

Taking best fit estimates for  $f$  and  $s$  from Table 1 of Veenendaal et al. (2016), reference to Figure 1a in the main text shows the predicted canopy covers according to Eqn. S1 for  $\zeta_0 = 0.3, 0.5$  and  $0.7$  and with  $f$  and  $s$  varying as per the  $y$  and  $x$  axes accordingly.

In order to simulate changes in fractional axylale cover ( $\phi_A$ ) in relation to  $\zeta_w$  (Figure 1b in main text) we first took the fitted relationship as shown in Fig. 7a of Veenendaal et al. (2016), *viz.*:

$$\phi_A = 1 - \exp[-3.76 \exp(-5.011 \zeta_w)] \quad , \quad (S2a)$$

to which some arbitrary noise was added according to

$$\phi_A^* = \sin[\sin^{-1}(2\phi_A \delta)] \quad , \quad (S2b)$$

with  $\phi_A^*$  being the generated axylale fractional cover as used in the simulations with  $\delta$  being random noise as generated from a random sampling of a standardised *Beta* distribution (i.e., varying from 0 to 1) with shape parameters as defined in Evans et al. (2000) at  $\nu = 2$  and  $\omega = 7$ .

## References

- Evans, M., Hastings, N., and Peacock, B.: Statistical Distributions, 221 pp., Wiley, 2000.
- Veenendaal, E. M., Torello-Raventos, M., Miranda, H. S., Sato, N., Oliveras, I., Langevelde, F. van, Smit, I. P. J., Asner, G. P., and Lloyd, J.: Fire effects on tropical woody vegetation structure have been exaggerated, *New Phytol.*, (submitted)