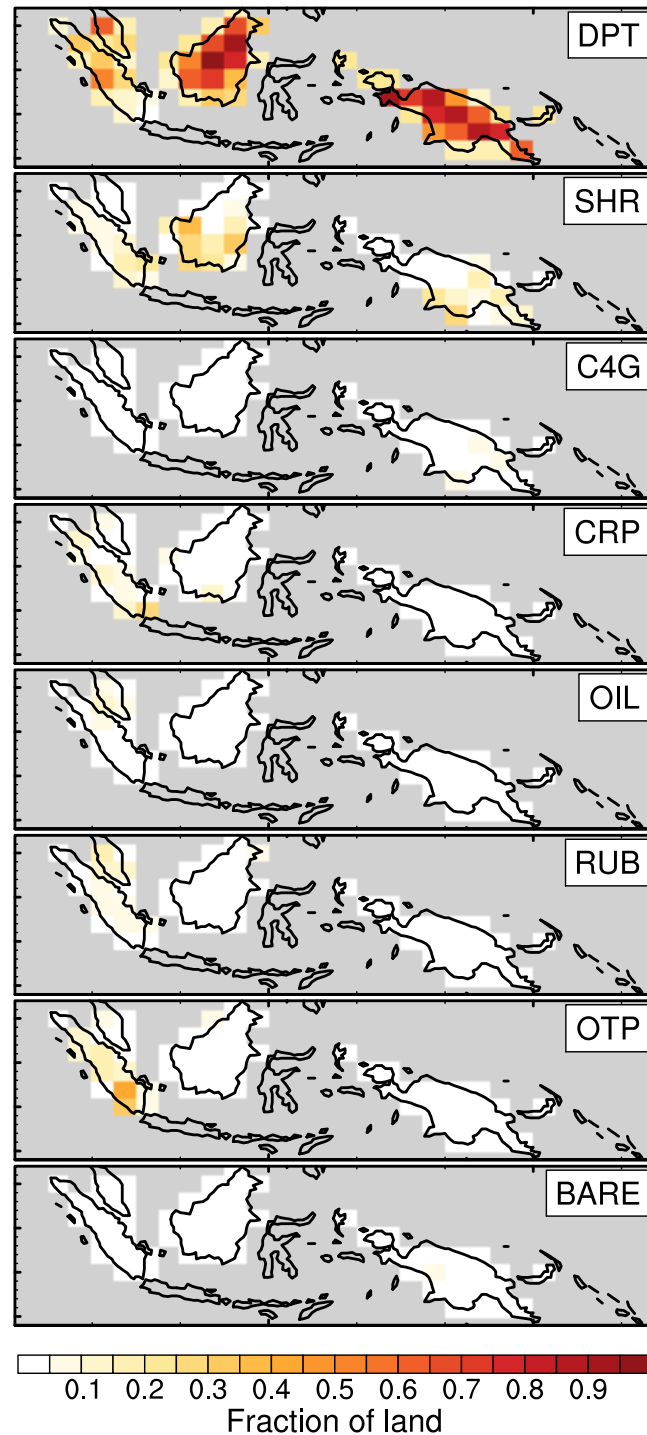
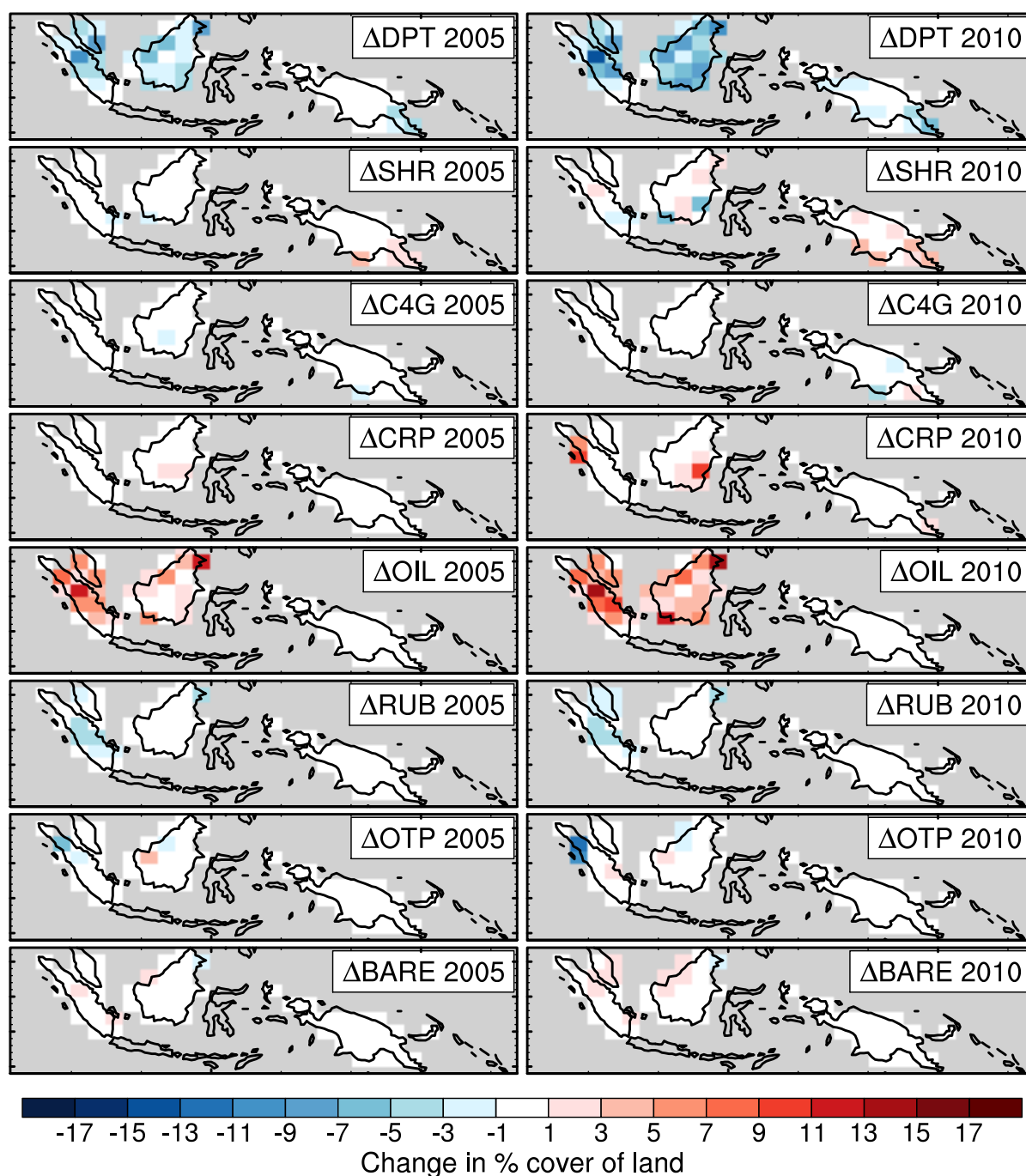


**Table S1.** Algorithm used to map Gunarso et al. (2013) land cover types to seven PFTs and bare land.

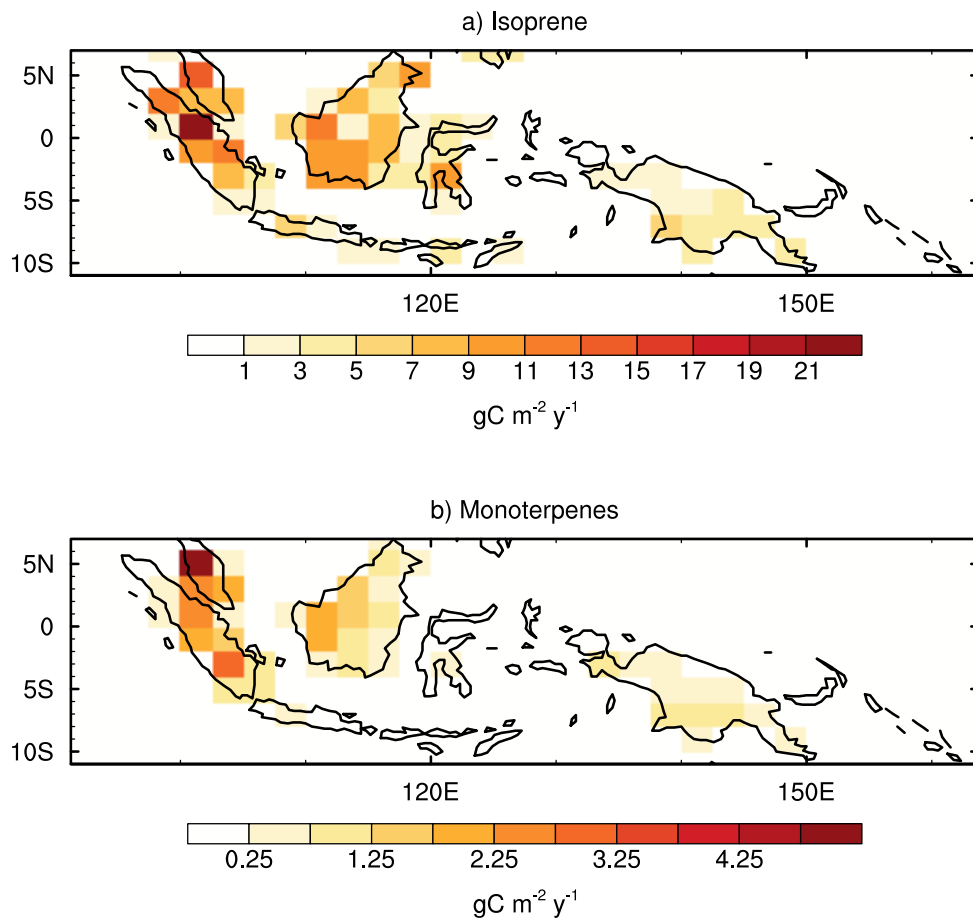
| <b>YIBs cover type</b> | <b>Gunarso et al. (2013) cover type(s)</b>  |
|------------------------|---|
| Shrubland              | Upland shrubland + swamp shrubland  |
| Crops                  | Rice fields + dry cultivated land   |
| C4-grassland           | Upland grassland + swamp grassland  |
| Dirt                   | Bare soil   |
| Oil palm plantations   | Oil palm plantations  |
| Rubber plantations     | Rubber plantations  |
| Other tree plantations | Timber plantation + mixed tree crops / agroforest   |
| Dipterocarp forest     | Undisturbed upland forest + undisturbed mangrove + undisturbed swamp forest + disturbed upland forest + disturbed mangrove + disturbed swamp forest |



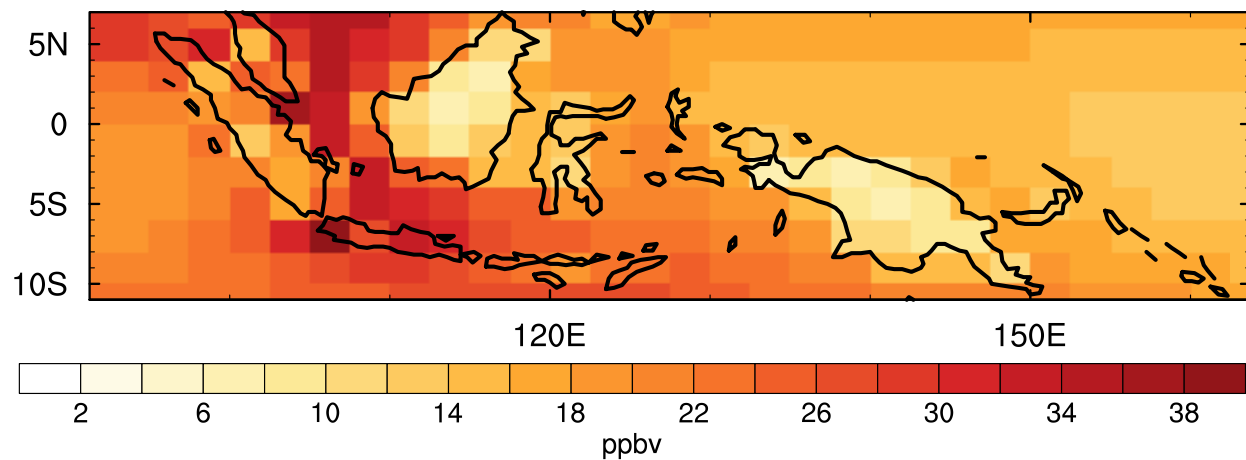
**Figure S1.** Land cover distribution for 1990 (shown only for the grid cells for which the applied land cover is derived from the classification of Gunarso et al. (2013); other grid cells are shown in gray). Cover types include dipterocarp evergreen broadleaf forest (DPT), shrubland (SHR), C4-grassland (C4G), crops (CRP), oil palm plantations (OIL), rubber plantations (RUB), other tree plantations (OTP), and bare land (BARE).



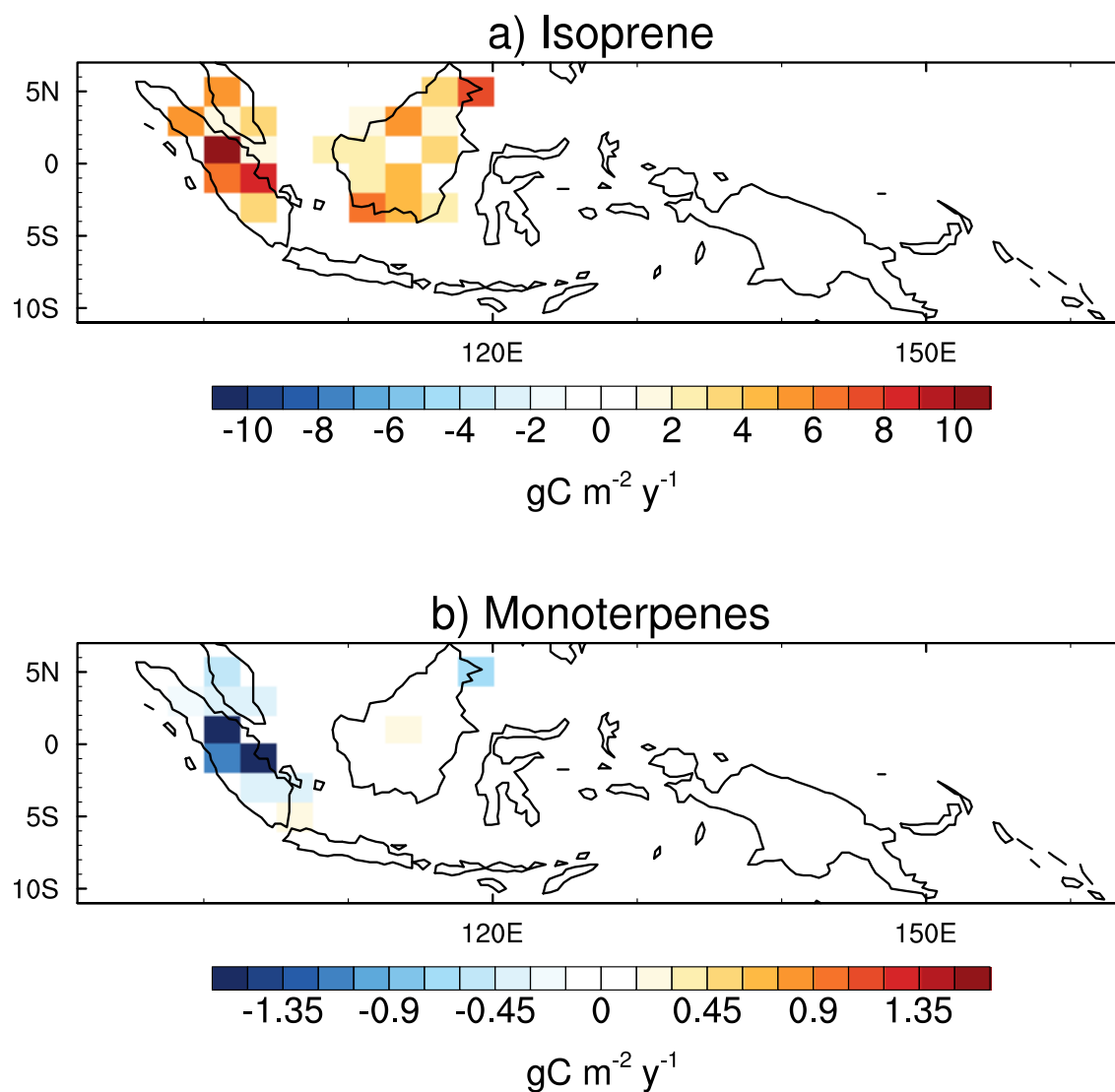
**Figure S2.** Regional land cover change for 2005 and 2010 relative to 1990 (shown only for the grid cells for which the applied land cover is derived from the classification of Gunarso et al. (2013); other grid cells are shown in gray). Cover types include dipterocarp evergreen broadleaf forest (DPT), shrubland (SHR), C4-grassland (C4G), crops (CRP), oil palm plantations (OIL), rubber plantations (RUB), other tree plantations (OTP), and bare land (BARE).



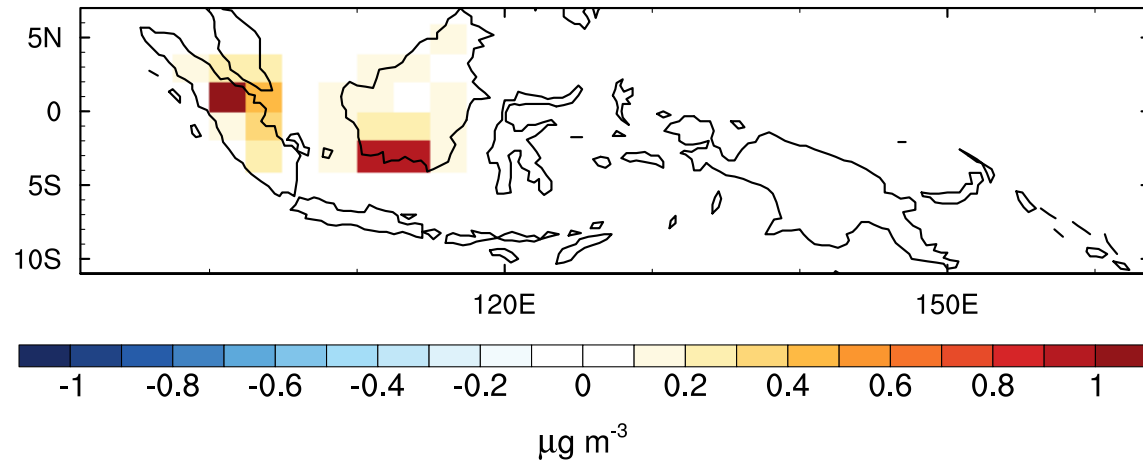
**Figure S3.** Annual emissions of a) isoprene and b) monoterpenes in 2010 in maritime Southeast Asia (simulation 2010land\_base).



**Figure S4.** Annual-mean surface ozone mixing ratio for 2010 (simulation 2010land\_base).



**Figure S5.** Change in annual emissions of a) isoprene and b) monoterpenes due to 1990–2010 maritime Southeast Asian land cover change (2010land\_base – 1990land\_base).



**Figure S6.** Change in annual-mean surface SOA concentration ( $\mu\text{g m}^{-3}$ ) due to 1990–2010 maritime Southeast Asian land cover change (2010land\_base minus 1990land\_base).

## **References**

Gunarso, P., Hartoyo, M.E., Agus, F., and Killeen, T.J.: Oil palm and land use change in Indonesia, Malaysia, and Papua New Guinea: Reports from the Technical Panels of the 2nd Greenhouse Gas Working Group of the Roundtable on Sustainable Palm Oil (RSPO), Roundtable on Sustainable Palm Oil, Kuala Lumpur, Malaysia, 2013.