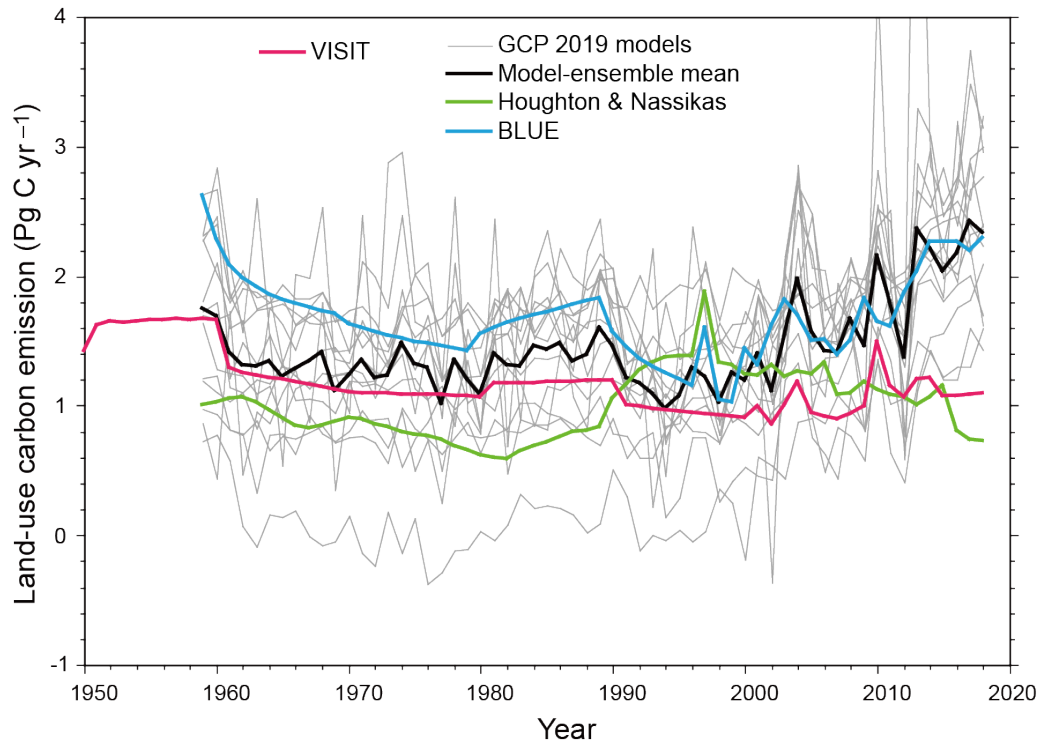


## Supplementary materials



**Fig. S1** Comparison of land-use change emissions between VISIT estimation and others used in the global CO<sub>2</sub> budget analysis (Friedlingstein et al. 2019). For keeping consistency with other model estimates, VISIT (offline version) was driven by historical climate data at spatial resolution of 0.5° × 0.5°