Table S1. Land type mapping between GCAM and ELM. GCAM land types are mapped to ELM plant functional types (PFTs; Table S2) for calculating terrestrial feedbacks and to generic land types for generating ELM land cover change.

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| ELM PFT (ID) | GCAM land type | Generic land type |
| C4 grass PFT (14) | CornC4 | Cropland |
| Crop PFT (15) | FiberCrop | Cropland |
| Grass PFTs (12-14) | FodderGrass | Cropland |
| Crop PFT (15) | FodderHerb | Cropland |
| C4 grass PFT (14) | FodderHerbC4 | Cropland |
| All forest PFTs (1-8) | Forest | Forest |
| Crop PFT (15) | Fruits | Cropland |
| Broadleaf deciduous temperate forest PFT (7) | FruitsTree | Cropland |
| Grass PFTs (12-14) | Grassland | Grassland |
| Crop PFT (15) | Legumes | Cropland |
| Crop PFT (15) | MiscCrop | Cropland |
| C4 grass PFT (14) | MiscCropC4 | Cropland |
| Tropical forest PFTs (4,6) | MiscCropTree | Cropland |
| Crop PFT (15) | NutsSeeds | Cropland |
| Broadleaf deciduous temperate forest PFT (7) | NutsSeedsTree | Cropland |
| Crop PFT (15) | OilCrop | Cropland |
| Crop PFT (15) | OilCropTree | Cropland |
| Crop PFT (15) | OilPalmTree | Cropland |
| Crop PFT (15) | OtherArableLand | Cropland |
| Crop PFT (15) | OtherGrain | Cropland |
| C4 grass PFT (14) | OtherGrainC4 | Cropland |
| Grass PFTs (12-14) | Pasture | Pasture |
| Grass PFTs (12-14) | ProtectedGrassland | Grassland |
| Shrubland PFTs (9-11) | ProtectedShrubland | Shrubland |
| Grass PFTs (12-14) | ProtectedUnmanagedPasture | Pasture |
| All forest PFTs (1-8) | ProtectedUnmanagedForest | Forest |
| Crop PFT (15) | Rice | Cropland |
| Bare ground (0) | RockIceDesert | Barren |
| Crop PFT (15) | RootTuber | Cropland |
| Shrubland PFTs (9-11) | Shrubland | Shrubland |
| Crop PFT (15) | Soybean | Cropland |
| Crop PFT (15) | SugarCrop | Cropland |
| C4 grass PFT (14) | SugarCropC4 | Cropland |
| C3 arctic grass PFT (12) | Tundra | Tundra |
| All forest PFTs (1-8) | UnmanagedForest | Forest |
| Grass PFTs (12-14) | UnmanagedPasture | Pasture |
| Bare ground (0) | UrbanLand | Urban |
| Crop PFT (15) | Vegetables | Cropland |
| Crop PFT (15) | Wheat | Cropland |
| C4 grass PFT (14) | biomassGrass | Cropland |
| Tropical, broadleaf temperate, and broadleaf boreal forest PFTs (4-7) | biomassTree | Cropland |