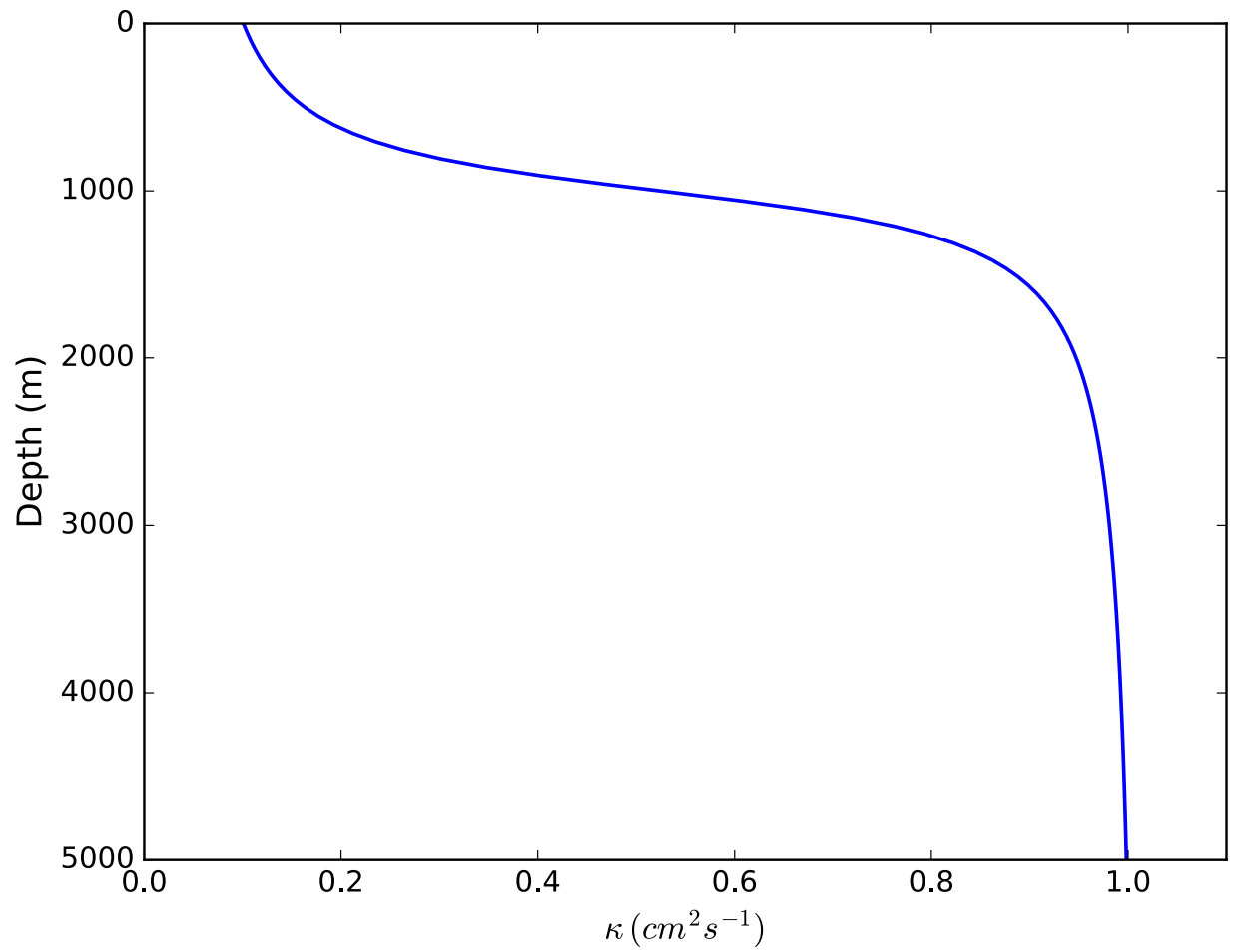


## Supplementary Material



**Figure S1.** Depth-dependent profile of the diapycnal diffusivity ( $\kappa$ ) that was used in the ocean component, POP1, of the CCSM3 model.

Mapping between the 9 mega-biome mid-Pliocene vegetation of Salzmann et al. 2008 to CLM4 Plant Functional Types (PFTs) that we have used to initialize the vegetation distribution in our mid-Pliocene simulations.

Mega Biome	One or more PFTs to which we map	Fractional projection on each PFT
1	5, 7	0.8, 0.2
2	2, 6, 8	0.5, 0.4, 0.1
3	15, 1	0.8, 0.2
4	15, 1	0.8, 0.2
5	1	1.0
6	8, 14	0.8, 0.2
7	3, 12, 4	0.7, 0.25, 0.05
8	13	1.0
9	13	1.0