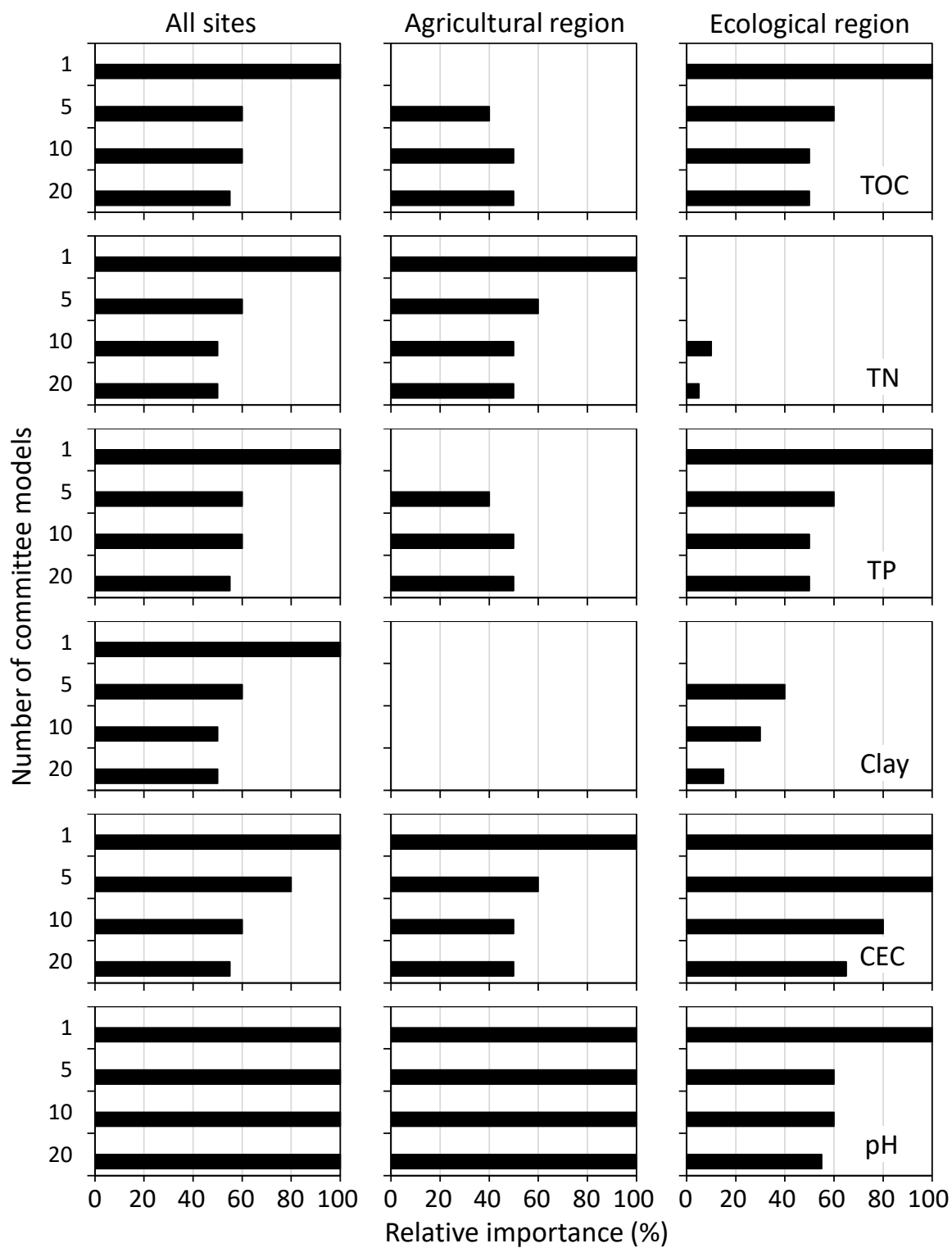
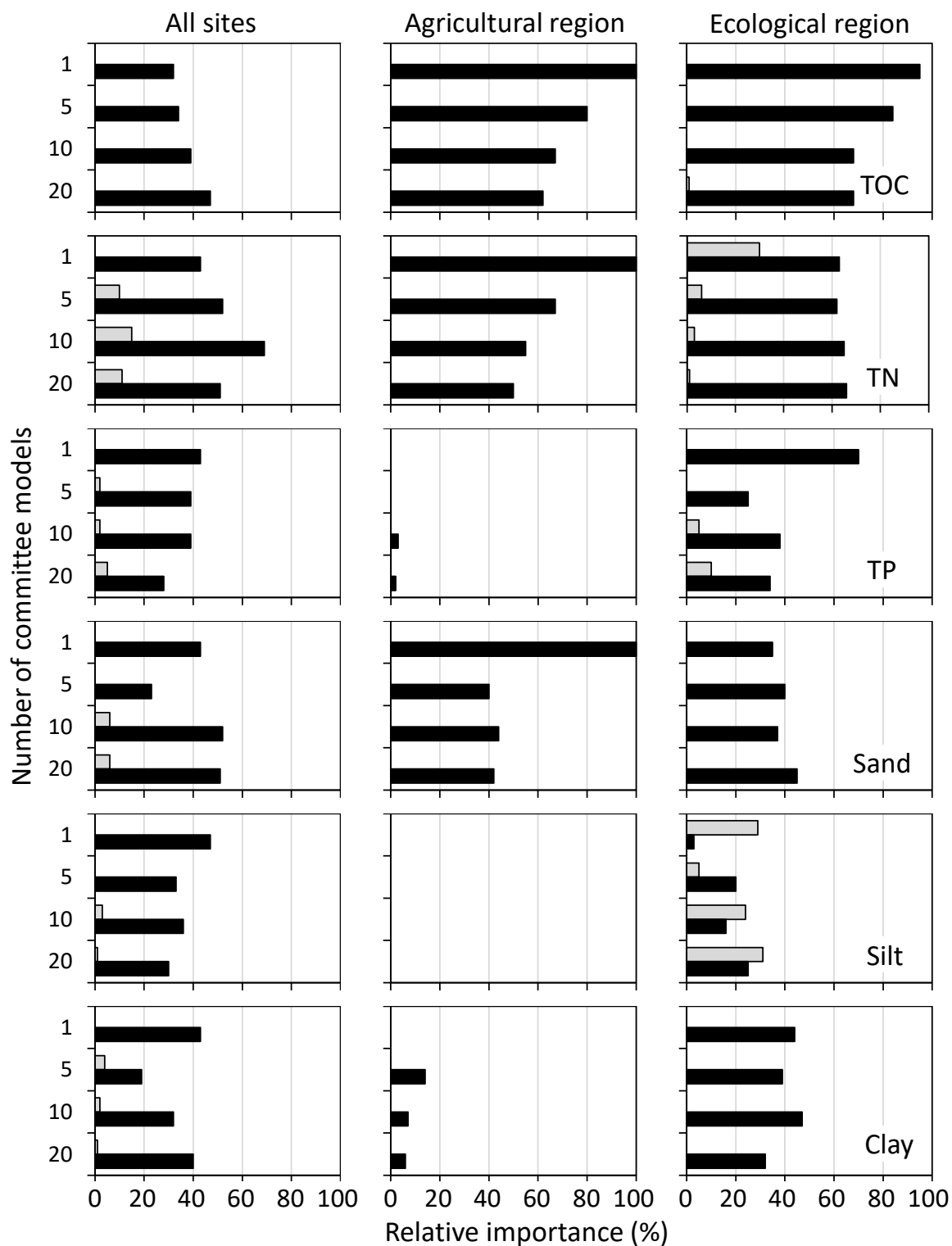
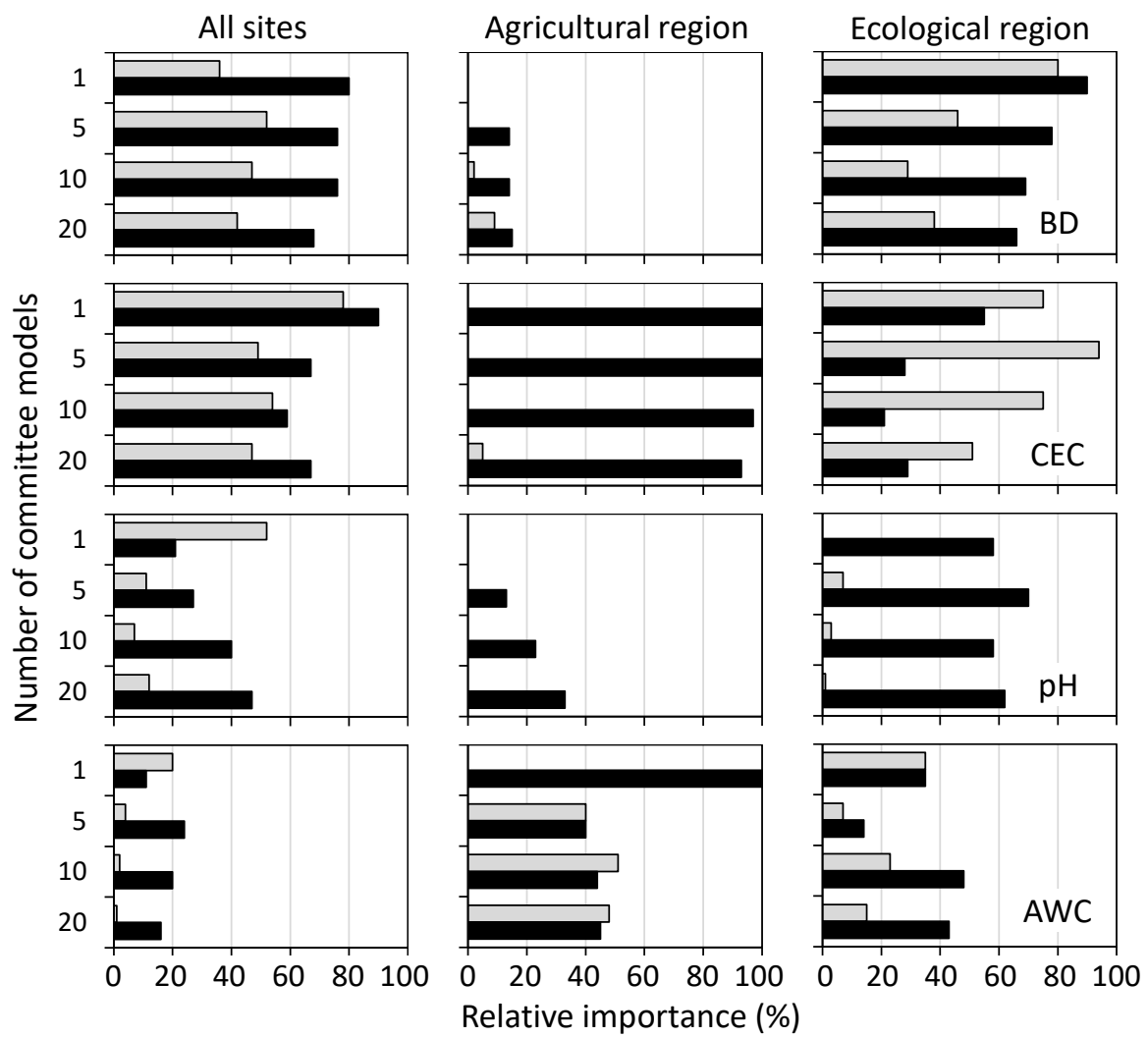
Supplementary Table 1. Definition of land use classes in the data set (469 sites), based on the Australian Land Use and Management Classification.

Broad land use	Detailed land use	Definition	n
Conservation and natural environments	Biodiversity	Area managed for biodiversity	1
	Defence land - natural areas	Stock reserves under intermittent use or unused	1
	Habitat/species management area	Protected area managed mainly for conservation through management intervention	10
	Managed resource protection	Protected area managed mainly for the sustainable use of natural ecosystems	3
	National park	Protected area managed mainly for ecosystem conservation and recreation	171
	Natural feature protection	Protected area managed for conservation of specific natural features	21
	Other conserved area	Land under forms of other nature conservation protection	18
	Other minimal use	Area of land that are largely unused	7
	Rehabilitation	Land under rehabilitation that has been restored to a near natural state	3
	Residual native cover	Land under native cover, mainly unused or used for non-production or environmental purposes	60
	Stock route	Stock reserves under intermittent use or unused	1
	Strict nature reserves	Protected area managed mainly for science	4
	Surface water supply	Area managed as a catchment for water supply	1
	Traditional indigenous uses	Crown land managed primarily for traditional indigenous purposes	6
	Wilderness area	Protected area managed mainly for wilderness protection	2
Production from dryland agriculture and plantations	Cropping	Land that is under cropping	16
	Environmental forest plantation	Area managed for environmental and indirect production uses	12
	Grazing modified pastures	Pasture, both annual and perennial, for grazing	45
	Native/exotic pasture mosaic	Pastures followed by extensive active modification or replacement of native vegetation	3
	No defined use	Land cleared of intact native vegetation where the proposed land use is not known	1
	Plantation forests	Land on which plantations of trees or shrubs	1
	Seasonal horticulture	Crop plants living for less than two years that are intensively cultivated	3
Production from irrigated agriculture and plantations	Irrigated cropping	Land that is under irrigated cropping	3
	Irrigated grapes	Irrigated grapes	2
	Irrigated sugar	Irrigated sugar	5
	Irrigated vine fruits	Irrigated vine fruits	1
Production from relatively natural environments	Grazing native vegetation	Land under native vegetation, used for grazing by domestic stock	45
	Production native forests	Commercial production from native forests	23

Source: ABARES 2016, The Australian Land Use and Management Classification Version 8, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 3.0.

Supplementary Figure 1. Relative importance of soil properties as the predictors of NH_4^+ concentrations (mg N kg^{-1}). The importance of the predictors is based on the usage of each variable in the rule conditions (grey bars) and in the Cubist model (black bars).

Supplementary Figure 2. Relative importance of soil properties as the predictors of NO_3^- concentrations (mg N kg^{-1}). The importance of the predictors is based on the usage of each variable in the rule conditions (grey bars) and in the Cubist model (black bars).

Supplementary Figure 2. Continued.