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Modelling carbon fluxes from New Zealand's pastoral agriculture

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Grasslands cover half of New Zealand's land area, with much of it consisting of pastoral agriculture systems of varying intensity. Carbon fluxes from grazed pasture are thus a crucial part of the national carbon budget. We have used Biome-BGCMuSo v6 to model national CO₂ fluxes from grasslands, calibrated with eddy covariance measurements at grazed farms at various sites around the country. We discuss the challenges of scaling up site measurements to the national level and modelling the diversity of New Zealand's pastoral sector. Model outputs will subsequently be used as a prior estimate of CO₂ fluxes in an atmospheric inversion to obtain a total carbon budget for New Zealand as part of the CarbonWatch-NZ project.