

## Modeling of net ecosystem exchange and its components for a humid grassland ecosystem

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[1] We measured the net ecosystem exchange (NEE) of a managed humid grassland in southwest Ireland from 2002 to 2004 with an eddy covariance (EC) system. In addition, a process-based biogeochemical model (PaSim) incorporating land management practices such as grazing and grass harvesting was used to simulate the carbon dynamics. The modeled NEE of 2.6, 2.7 and 3.4 t C ha<sup>-1</sup> (uptake) for 2002, 2003 and 2004 compares well with the measured NEE of 1.9, 2.6 and 2.9 t C ha<sup>-1</sup>. There is good agreement between the model output and the EC observations in the growing season but not so good in the winter period. The year-on-year increase in measured NEE is partly attributed to a circa 4% year-on-year increase in annual photosynthetic photon flux density ( $Q_{PPFD}$ ). The year of lowest NEE (2002) was associated with highest rainfall (1785 mm) and lowest  $Q_{PPFD}$ . In the wettest year, grass harvesting was delayed by a month, resulting in a reduced NEE. The management of grassland in regions of high rainfall is dependent on weather conditions. If wet conditions become more prevalent (e.g., as a result of climate change), grasslands in such regions may shift from intensive to extensive management.