**Supplemental Online Material**

Description of model algorithms:

1. DayCENT model

$N_2O$ emission from nitrification ($F_{nt}$, g N m$^{-2}$ day$^{-1}$):

$$F_{nt} = k_1 R_{nt} \tag{S1}$$

$$R_{nt} = Net_m k_2 + k_{max} C_{NH_4^+} f_{nt}(T_s) f_{nt}(WFPS)\ f_{nt}(pH) \tag{S2}$$

$$f_{nt}(T_s) = exp(-0.03(T_s - T_{opt})^2) \tag{S3}$$

$$f_{nt}(WFPS) = \left(\frac{WFPS-b}{a-b}\right)^{\frac{d(b-a)}{a-c}} \left(\frac{WFPS-c}{a-c}\right) \tag{S4}$$

$$f_{nt}(pH) = 0.56 + arctan(0.45(-5 + pH)pi)/pi \tag{S5}$$

where $R_{nt}$ is the rate of nitrification (g N m$^{-2}$ day$^{-1}$); $k_1$ is the fraction of nitrified N lost as $N_2O$ flux; $Net_m$ is the daily net N mineralization from soil organic matter (kg N m$^{-2}$ day$^{-1}$); $k_2$ is the fraction of net mineralization that is assumed to be nitrified each day; $C_{NH_4^+}$ is soil ammonium content (g N m$^{-2}$); $k_{max}$ is the maximum fraction of ammonium nitrified and is set to 0.10 day$^{-1}$; $f_{nt}(T_s)$, $f_{nt}(WFPS)$ and $f_{nt}(pH)$ are the effect of soil temperature, water and soil pH on nitrification, respectively; $T_s$ and $WFPS$ are soil temperature (℃) and soil water–filled pore space (%); $T_{opt}$ is soil optimal temperature for nitrification and is set to 25℃; Parameter a, b, c, d are 0.55, 1.70, –0.007, 3.22 respectively for sandy soil, and 0.60, 1.27, 0.0012, 2.84 respectively for medium–textured soil (Parton et al., 1996, 2001);

$N_2O$ emission from denitrification ($F_{dn}$, g N m$^{-2}$ day$^{-1}$):

$$F_{dn} = D_{ttl}/(1 + R_{N_2/N_2O}) \tag{S6}$$

$$D_{ttl} = \min(f_{dn}(NO_3^-), f_{dn}(CO_2)) f_{dn}(WFPS) \tag{S7}$$

$$R_{N_2/N_2O} = f_r(R_{NC}) f_r(WFPS) \tag{S8}$$

$$f_{dn}(NO_3^-) = 1.15(C_{NO_3^-})^{0.57} \tag{S9}$$

$$f_{dn}(CO_2) = 0.1(CO_2)^{1.3} \tag{S10}$$

$$f_{dn}(WFPS) = 0.5atan(0.6pi(0.1WFPS - \alpha))/pi \tag{S11}$$

$$f_r(R_{NC}) = max(0.16k_1, k_1 e^{-0.8R_{NC}}) \tag{S12}$$

$$R_{NC} = C_{NO_3^-}/CO_2 \tag{S13}$$

$$k_1 = max(1.7, 38.4 - 350Diff_{FC}) \tag{S14}$$

$$Diff_{FC} = \alpha WFPS + \beta \tag{S15}$$

$$f_r(CO_2) = 13 + 30.78\, atan(0.07(CO_2 - 13)pi)/pi \tag{S16}$$

$$f_r(WFPS) = 1.4/13^{(17/(13^{2.2WFPS}))} \tag{S17}$$

where $D_{ttl}$ is total nitrogen gas ($N_2O$ and $N_2$) (g N ha$^{-1}$ day$^{-1}$) from denitrification; $R_{N_2/N_2O}$ is the ratio of $N_2$ and $N_2O$;

$f_{dn}(NO_3^-)$ and $f_{dn}(CO_2)$ are, respectively, the maximum total N gas fluxes (g N ha$^{-1}$ day$^{-1}$) for a given soil nitrate level and respiration rate; $f_{dn}(WFPS)$ is the effect of WFPS on denitirfication rate; $f_r(R_{NC})$ is used to estimate the ratio of $N_2/N_2O$ based on the ratio ($R_{NC}$) of soil nitrate content and soil respiration; $f_r(WFPS)$ are the effect of soil nitrate and soil respiration and WFPS on the ratio of $N_2$ and $N_2O$; $CO_2$ is soil respiration rate (kg C ha$^{-1}$ day$^{-1}$); $k_1$ is a parameter controlling the maximum value of the $N_2/N_2O$ ratio function; $Diff_{FC}$ is a gas diffusion coefficient (Parton et al., 1996); Parameter $\alpha$, $\beta$ are –0.375, 0.233, respectively for sandy soil, and –0.464, 0.145, respectively, for medium–textured soil (Del Grosso et al., 2000; Parton et al., 1996, 2001).

## 2. DNDC model

$N_2O$ emission from nitrification ($F_{nt}$, g N m$^{-3}$ day$^{-1}$):

$$F_{nt} = 0.0006 R_{nt} f_{nt}(T_s) WFPS \tag{S18}$$

$$R_{nt} = R_{nt,max} C_{NH_4^+} B_n pH \tag{S19}$$

$$R_g = R_{g,\max}(DOC/(1 + DOC) + f_{nt}(M_s)/(1 + f_{nt}(M_s))) \tag{S20}$$

$$R_d = R_{d,\max} B_n/(5 + DOC)/(1 + f_{nt}(M_s)) \tag{S21}$$

$$R_b = (R_g - R_d) B_n f_{nt}(T_s) f_{nt}(M_s) \tag{S22}$$

$$f_{nt}(T_s) = ((60 - T_s)/25.78)^{3.503} e^{(3.503(T_s - 34.22)/25.78} \tag{S23}$$

$$f_{nt}(M_s) = \begin{cases} 1.01 - 0.21 WFPS & WFPS > 0.05 \\ 0 & WFPS \leq 0.05 \end{cases} \tag{S24}$$

where $R_{nt}$ and $R_{nt,max}$ are relative and maximum nitrification rate (l h$^{-1}$), respectively; $B_n$ is biomass of nitrifier (kg C ha$^{-1}$); $R_g$ is relative growth rate of nitrifier; $R_{g,\max}$is maximum growth rate of nitrifier (4.87 l day$^{-1}$, Blagodatsky and Richter, 1998); $DOC$ is concentration of dissolved organic C (kg C ha$^{-1}$); $R_d$ is relative death rate of nitrifier; $R_{d,\max}$ is maximum death rate of nitrifier (1.44 l day$^{-1}$, Blagodatsky and Richter, 1998); $R_b$ is net increase in nitrifiers biomass; $pH$ is soil pH; $f_{nt}(T_s)$ and $f_{nt}(M_s)$ are the factors of soil temperature and soil moisture, respectively.

$N_2O$ emission from denitrification ($F_{dn}$, g N m$^{-3}$ day$^{-1}$):

$$\mu_{NO_x} = \mu_{NO_x,m} DOC/(K_c + DOC) C_{NO_x}/(K_n + C_{NO_x}) \tag{S25}$$

$$\mu_{g,t} = f_{dn}(T_s)(\mu_{NO_3} f_{pH1} + \mu_{NO_2} f_{pH2} + \mu_{NO} f_{pH2} + \mu_{N_2O} f_{pH3}) \tag{S26}$$

$$F_{dn} = V_{diff}(C_{N_2O} + R_{N_2O,p} - R_{N_2O,c}) \tag{S27}$$

$$V_{diff} = D_m AFPS(1 - ANVF) F_{clay} 2^{T_s/20} \tag{S28}$$

$$F_{clay} = 0.13 - 0.079 C_{clay} \tag{S29}$$

$$f_{dn}(T_s) = 2^{(T_s - 22.5)/10} \tag{S30}$$

$$f_{pH1} = 1 - 1/(1 + e^{(pH - 4.25)/0.5}) \tag{S31}$$

$$f_{pH2} = 1 - 1/(1 + e^{(pH - 5.25)/1.0}) \tag{S32}$$

$$f_{pH3} = 1 - 1/(1 + e^{(pH-6.25)/1.5}) \tag{S33}$$

$$R_g = R_{g,t}B_d \tag{S34}$$

$$R_d = M_cY_cB_d \tag{S35}$$

$$R_c = (R_{g,t}/Y_c + M_c)B_d \tag{S36}$$

$$R_{NO_x} = (\mu_{NO_x}/Y_{NO_x} + M_{NO_x}C_{NO_x}/C_N)B_d \tag{S37}$$

where $\mu_{NO_x}$ and $\mu_{NO_x,m}$ are the relative and maximum growth rate of $NO_x$ denitrifier (l $h^{-1}$), respectively; $C_{NO_x}$ is the concentration of $NO_x$ (kg N $m^{-3}$); $DOC$ is soluble C concentration (kg C $m^{-3}$); $K_c$ and $K_n$ are respectively half–saturation value of soluble carbon and N oxides (0.017 kg C $m^{-3}$ and 0.083 kg N $m^{-3}$, Shan and Coulman, 1978); $\mu_{g,t}$is the relative growth rate of total denitrifier (l $h^{-1}$); $\mu_{NO_3}$, $\mu_{NO_2}$, $\mu_{NO}$ and $\mu_{N_2O}$ are relative growth rate of $NO_3^-$, $NO_2^-$, $NO$ and $N_2O$ denitrifiers (l $h^{-1}$), respectively; $f_{pH1}$, $f_{pH2}$ and $f_{pH3}$ are pH factors for $NO_3^-$, $NO_2^-$, $NO$ and $N_2O$ denitrifiers, respectively; $V_{diff}$ is the gas diffusion factor of $N_2O$ (%); $C_{N_2O}$, $R_{N_2O,p}$ and $R_{N_2O,c}$ are initial concentration (g N $m^{-3}$), production and consumption rate (g N $m^{-3}$ $day^{-1}$) of $N_2O$, respectively; $D_m$ is maximum diffusion rate in air ($m^2$ $h^{-1}$); AFPS is air–filled porosity (%); ANVF is volumetric fraction of anaerobic microsites; $F_{clay}$ is clay factor; $C_{clay}$ is clay fraction in soil; $R_g$ is the growth rate of total denitrifier (l $h^{-1}$); $B_d$ is denitrifier biomass (kg C $m^{-3}$); $R_d$ is denitrifier death rate (l $h^{-1}$); $M_c$ is maintenance coefficient on carbon (0.0076 kg N $kg^{-1}$ $h^{-1}$, Van Verseveld et al., 1977); $Y_c$ is maximum growth rate of denitrifier on soluble carbon (0.503 kg C $kg^{-1}$ C, Van Verseveld et al., 1977); $R_c$ is consumption rate of soluble carbon (kg C $m^{-3}$ $h^{-1}$). $Y_{NO_x}$ is maximum  growth rate on N oxides (kg N $kg^{-1}$ C); $M_{NO_x}$ maintainance coefficient on N oxides (kg N $kg^{-1}$ C); $C_N$ $is$ the concentration of all $NO_x$ (kg N $m^{-3}$).

## 3. DLEM model

$N_2O$ emission from nitrification ($F_{nt}$, g N $m^{-3}$ $day^{-1}$):

$$F_{nt} = 0.001R_{nt}(10^{0.026vwc/\emptyset-1.66})/(1 + 10^{0.026vwc/\emptyset-1.66}) \tag{S38}$$

$$R_{nt} = \min(R_{pnt}, C_{NH_4^+}) \tag{S39}$$

$$R_{pnt} = V_{nt,max}C_{NH_4^+}/\left(C_{NH_4^+} + Km_{nt}\right)f_{nt}(T_s)f_{nt}(vwc) \tag{S40}$$

$$f_{nt}(T_s) = Q_{10,nt}{}^{((T_s-T_{opt,nt})/10)} \tag{S41}$$

$$f_{nt}(vwc) = \begin{cases} 1.17\,vwc/vwc_{fc} + 0.165 & vwc < vwc_{fc} \\ 1 - 0.1\,vwc/vwc_{fc} & vwc \geq vwc_{fc} \end{cases} \tag{S42}$$

where $R_{nt}$ is the rate of nitrification (g N $m^{-3}$ $day^{-1}$); $vwc$ and $\emptyset$  are soil volumetric water content and porosity, respectively; $R_{pnt}$ is the potential nitrification rate (g N $m^{-3}$ $day^{-1}$); $C_{NH_4^+}$ is soil ammonium content(g N $m^{-3}$); $V_{nt,max}$ is potential nitrification rate without limitation (g N $m^{-3}$ $day^{-1}$); $f_{nt}(T_s)$ and $f_{nt}(vwc)$ are respectively the effect of soil temperature and water on nitrification; $vwc_{fc}$ is the volumetric water content at field capacity; $Q_{10,nt}$ is the temperature sensitivy of nitrification, which is set to 2; $T_{opt,nt}$ is the optimum temperature for nitrification, which is set to 20℃ (Tian et al., 2010).

$N_2O$ emission from denitrification ($F_{dn}$, g N m$^{-3}$ day$^{-1}$):

$$F_{dn} = R_{dn}(10^{0.026vwc/\emptyset-1.66})/(1+10^{0.026vwc/\emptyset-1.66}) \tag{S43}$$

$$R_{dn} = \min(R_{pdn}, C_{NO_3^-}) \tag{S44}$$

$$R_{pdn} = V_{dn,max}C_{NO_3^-}/\left(C_{NO_3^-}+Km_{dn}\right)f_{dn}(T_s)f_{dn}(vwc) \tag{S45}$$

$$f_{dn}(T_s) = {Q_{10,dn}}^{((T_s-T_{opt,dn})/10)} \tag{S46}$$

$$f_{dn}(vwc) = \begin{cases} 0.0 & vwc < vwc_{fc} \\ vwc/vwc_{fc} & vwc \geq vwc_{fc} \end{cases} \tag{S47}$$

where $R_{dn}$ is the actual rate of denitrificaiton (g N m$^{-3}$ day$^{-1}$); $R_{pdn}$ is the potential rate of denitrification (g N m$^{-3}$ day$^{-1}$); $C_{NO_3^-}$ is soil nitrate content (g N m$^{-3}$); $V_{dn,max}$ is the potential rate of denitrification without limitation (g N m$^{-3}$ day$^{-1}$); $f_{dn}(T_s)$ and $f_{dn}(vwc)$ are respectively the effect of soil temperature and water on denitrification; $Q_{10,dn}$ is the temperature sensitivity of denitrification, which is set to 3; $T_{opt,dn}$ is the optimum temperature for denitrification, which is set to 25℃ (Tian et al., 2010).

## 4. DyN model

$N_2O$ emission from nitrification ($F_{nt}$, g N m$^{-2}$ day$^{-1}$):

$$F_{nt} = r_{nt}R_{nt}f_{st,diff}\ (1-C_w) \tag{S48}$$

$$R_{nt} = F_{max}f_{st,nt}C_{NH_4^+,aerobic} \tag{S49}$$

$$f_{st,diff} = min(1, exp(308.56(1/71.02 - 1/(T_s+46.02))) \tag{S50}$$

$$f_{st,nt} = pow((70-T_s)/(70-38), 12)ex\,p(12\,(T_s-38)/(70-38)) \tag{S51}$$

where $R_{nt}$ is the rate of nitrification (kg N m$^{-3}$ day$^{-1}$); $r_{nt}$ is the ratio of $N_2O$ production from nitrification; $f_{st,diff}$ is the effect of soil temperature on diffusion of $N_2O$ from soil into air; $C_w$ is soil water content; $F_{max}$ is the maximum fraction of ammonium nitrified; $f_{st,nt}$ is temperature factor for nitrification; $C_{NH_4^+,aerobic}$ is soil ammonium content (mg N kg$^{-1}$) in aerobic microsites of soil layer (Xu et al., 2008).

$N_2O$ emission from denitrification ($F_{dn}$, g N m$^{-3}$ day$^{-1}$):

$$F_{dn} = r_{dn}f_{st,dn}N_2f_{st,diff}\ (1-C_w) \tag{S52}$$

$$N_2 = DN_{max}f_{st,dn}NO_2^-/(NO_2^-+K_n) \tag{S53}$$

$$NO_2^- = DN_{max}f_{st,dn}NO_3^-/\ (NO_3^-+K_n) \tag{S54}$$

$$DN_{max} = LCA/(LCA+K_c) \tag{S55}$$

$$f_{st,dn} = exp(1, exp(308.56(1/68.02 - 1/(T_s+46.02))) \tag{S56}$$

where $N_2$ is the rate of transformation of nitrite to $N_2$ (g N m$^{-3}$ day$^{-1}$); $r_{dn}$ is the ratio of $N_2O$ production from denitrification; $f_{st,dn}$ is temperature factor for denitrification; $DN_{max}$ is the maximum rate of denitrification (g N m$^{-3}$ day$^{-1}$); $NO_2^-$ is the transformation of nitrate to nitrite (g N m$^{-3}$ day$^{-1}$); $NO_3^-$ is the availability of nitrate (g N m$^{-3}$ day$^{-1}$); $LCA$ is labile carbon availability (kg C m$^{-3}$); $K_c$ and $K_n$ are Michaelis–Menten constant (half–saturation values) for labile C and N oxides, which are set to 0.017 kg C m$^{-3}$ and 0.083 kg N m$^{-3}$, respectively (Li et al., 1992).

## 5. NOE model

N$_2$O emission from nitrification ($F_{nt}$, kg N ha$^{-1}$ day$^{-1}$):

$$F_{nt} = \begin{cases} zR_{nt} WFPS < 0.62 \\ r_{max} zR_{nt} 0.62 \leq WFPS \leq 0.80 \\ 0 WFPS > 0.80 \end{cases} \tag{S57}$$

$$R_{nt} = R_w f_{NH_4^+} f_{st} \tag{S58}$$

$$R_w = aC_w + b \tag{S59}$$

$$f_{NH_4^+} = C_{NH_4^+} / \left( C_{NH_4^+} + Km_1 \right) \tag{S60}$$

$$f_{st} = \begin{cases} exp[(T_s - 11)\, ln(89) - 9\, ln(2.1)] & st < 11℃ \\ exp[(T_s - 20)\, ln(2.1)/10] & st \geq 11℃ \end{cases} \tag{S61}$$

where $R_{nt}$ is the actual nitrification rate (kg N ha$^{-1}$ day$^{-1}$); $R_w$, $f_{NH_4^+}$ and $f_{st}$ are response functions to soil water content, ammonium content and soil temperature, respectively; $C_w$ is soil gravimetric water content (%); $C_{NH_4^+}$ and $st$ are soil ammonium concentration (mg N kg$^{-1}$ soil) and soil temperature (℃), respectively; Parameter $Km_1$ is half saturation coefficient and set to 10 mg N L$^{-1}$; $z$ and $r_{max}$ are the fractions of nitrogen emitted during nitrification and denitrification. $a$ and $b$ are the slope and intercept, respectively, of the linear relationship between soil nitrification rate and soil gravimetric water content.

N$_2$O emission from denitrification ($F_{dn}$, kg N ha$^{-1}$ day$^{-1}$):

$$F_{dn} = r_{max} R_{dn} \tag{S62}$$

$$R_{dn} = R_{pdn} f_{N0_3^-} f_{WFPS} f_{st} \tag{S63}$$

$$f_{N0_3^-} = C_{N0_3^-} / \left( C_{N0_3^-} + Km_2 \right) \tag{S64}$$

$$f_{WFPS} = \begin{cases} 0 & WFPS < 0.62 \\ ((WFPS - 0.62)/0.38)^{1.74} & WFPS \geq 0.62 \end{cases} \tag{S65}$$

where $R_{dn}$ and $R_{pdn}$ are soil actual and potential denitrification rate (kg N ha$^{-1}$ day$^{-1}$), respectively; $f_{N0_3^-}$, $f_{WFPS}$ and $f_{st}$ are response factors to soil nitrate content, water–filled pore space and temperature, respectively; $C_{N0_3^-}$ is soil nitrate concentration (mg N kg$^{-1}$ soil); $Km_2$ is half saturation coefficient and is set to 22 mg N kg$^{-1}$ soil (Heault et al., 2005).

## 6. NGAS model

N$_2$O emission from nitrification ($F_{nt}$, g N ha$^{-1}$ day$^{-1}$):

$$F_{nt} = N_{H_2O} N_{pH} N_{st} (K_{mx} + N_{mx} N_{NH_4^+}) \tag{S66}$$

$$N_{H_2O} = \left( \frac{WFPS - b}{a - b} \right)^{\frac{d(b-a)}{a-c}} \left( \frac{WFPS - c}{a - c} \right) \tag{S67}$$

$$N_{pH} = 0.56 + arctan(0.45(-5 + pH)pi)/pi \tag{S68}$$

$$N_{st} = -0.06 + 0.13e^{(0.07T_s)} \tag{S69}$$

$$N_{NH_4^+} = 1 - e^{(-0.0105C_{NH_4^+})} \tag{S70}$$

where $N_{H_2O}$, $N_{pH}$, $N_{st}$ and $N_{NH_4^+}$ arethe effect of soil water, pH, temperature and soil ammonium content on nitrification, respectively; $K_{mx}$ is the N turnover coefficient (g N ha$^{-1}$ day$^{-1}$) of a specific soil; $N_{mx}$ is the maximum nitification $N_2O$ flux (g N ha$^{-1}$ day$^{-1}$); Parameter a, b, c, d are 0.55, 1.70, –0.007, 3.22 respectively for sandy soil, and 0.60, 1.27, 0.0012, 2.84 respectively for medium–textured soil (Parton et al., 1996).

$N_2O$ emission from denitrification ($F_{dn}$, g N ha$^{-1}$ day$^{-1}$):

$$F_{dn} = D_{ttl}/(1 + R_{N_2/N_2O}) \tag{S71}$$

$$D_{ttl} = \min(f_{dn}(NO_3^-), f_{dn}(CO_2))f_{dn}(WFPS) \tag{S72}$$

$$R_{N_2/N_2O} = \min(f_r(NO_3^-), f_r(CO_2))f_r(WFPS) \tag{S73}$$

$$f_{dn}(NO_3^-) = 11000 + 40000atan(0.002(C_{N0_3^-} - 180)pi)/pi \tag{S74}$$

$$f_{dn}(CO_2) = 24000/(1 + 200/e^{(0.35CO_2)}) \tag{S75}$$

$$f_{dn}(WFPS) = a/b^{(c/(b^{dWFPS}))} \tag{S76}$$

$$f_r(NO_3^-) = 1 - 25\big(0.5 + atan(0.01(C_{N0_3^-} - 190)pi)/pi\big) \tag{S77}$$

$$f_r(CO_2) = 13 + 30.78\,atan(0.07(CO_2 - 13)pi)/pi \tag{S78}$$

$$f_r(WFPS) = 1.4/13^{(17/(13^{2.2WFPS}))} \tag{S79}$$

where $D_{ttl}$ is total nitrogen gas ($N_2O$ and $N_2$) flux (g N ha$^{-1}$ day$^{-1}$) from denitrification; $R_{N_2/N_2O}$ is the ratio of $N_2$ and $N_2O$ of total denitrification gas fluxes; $f_{dn}(NO_3^-)$ and $f_{dn}(CO_2)$ are the maximum total N gas fluxes (g N ha$^{-1}$ day$^{-1}$) for a given soil nitrate level and respiration rate, respectively; $f_{dn}(WFPS)$ is the effect of WFPS on denitirfication rate; $f_r(NO_3^-)$, $f_r(CO_2)$and $f_r(WFPS)$ are the effect of soil nitrate, soil respiration and WFPS on the ratio of $N_2$ and $N_2O$; $CO_2$ is the soil respiration rate (kg C ha$^{-1}$ day$^{-1}$) (Parton et al., 1996); Parameter a, b, c, d are 1.56, 12.0, 16.0, 2.01 respectively for sandy soil, 4.82, 14.0, 16.0, 1.39, respectively for medium–textured soil, and 60.0, 18.0, 22.0, 1.03, respectively for loam soil (Parton et al., 1996).

**Table S1.** Inversed values of primary parameters for different models.

| Models | Parameters | Value | Range | Literature |
|---|---|---|---|---|
| NOE | $R_{pdn}$ (kg N ha$^{-1}$ day$^{-1}$) | 4.514 | 1.0–16.9 | Henault and Germon, 2000; Henault et al., 2001, 2005; Garrido et al., 2002. |
| | $r_{max}$ | 0.562 | 0.09–0.6 | |
| | z | 0.009 | 0.0006–0.01 | |
| | a | 0.052 | 0.019–0.059 | |
| | b | –0.085 | –0.4 – –0.1 | |

| | | | | |
|---|---|---|---|---|
| NGAS | Kmx (g N ha$^{-1}$ day$^{-1}$) | 17.874 | 3.8–28.6 | Parton et al., 1988, 1996. |
| | Nmx (g N ha$^{-1}$ day$^{-1}$) | 16.645 | 15.9–30.0 | |
| DLEM | $V_{nt,max}$ (g N m$^{-3}$ day$^{-1}$) | 0.10 | 0–0.109 | Kim et al., 1997; Garcia–Ruiz et al., 1998; Starry et al., 2005; |
| | $V_{dnt,max}$ (g N m$^{-3}$ day$^{-1}$) | 0.050 | 0–2.18 | |
| | $Km_{nt}$ (g N m$^{-3}$) | 0.676 | 0.21–1.11 | |
| | $Km_{dn}$ (g N m$^{-3}$) | 1.625 | 0.18–6.5 | |
| DyN | $F_{max}$ (day$^{-1}$) | 0.05 | 0.01–0.1 | Ingwersen et al.,1999; Groffman et al., 2000; Breuer et al., 2002; Khalil et al., 2004; Well and Flessa, 2008. |
| | $r_{nt}$ (day$^{-1}$) | 0.002 | < 0.001–0.002 | |
| | $r_{dn}$ (day$^{-1}$) | 0.024 | 0.002–0.47 | |
| DayCENT | $F_{max}$ (day$^{-1}$) | 0.10 | 0.01–0.1 | Groffman et al., 2000; Parton et al., 2001. |
| | $K_1$ | 0.02 | 0.05–0.12 | |
| | $K_2$ | 0.21 | 0.05–0.25 | |
| DNDC | $R_{nt,max}$ (l day$^{-1}$) | 0.108 | 0.05–0.12 | Blogadatsky et al., 1998. Hartel and Alexander, 1987; Hosen et al., 2000. |
| | $R_{g,max}$ (l day$^{-1}$) | 4.873 | 3.5–5.9 | |
| | $R_{d,max}$ (l day$^{-1}$) | 1.300 | 1.2–1.6 | |
| | $D_{max}$ (m$^2$ h$^{-1}$) | 0.052 | 0.006–0.055 | |