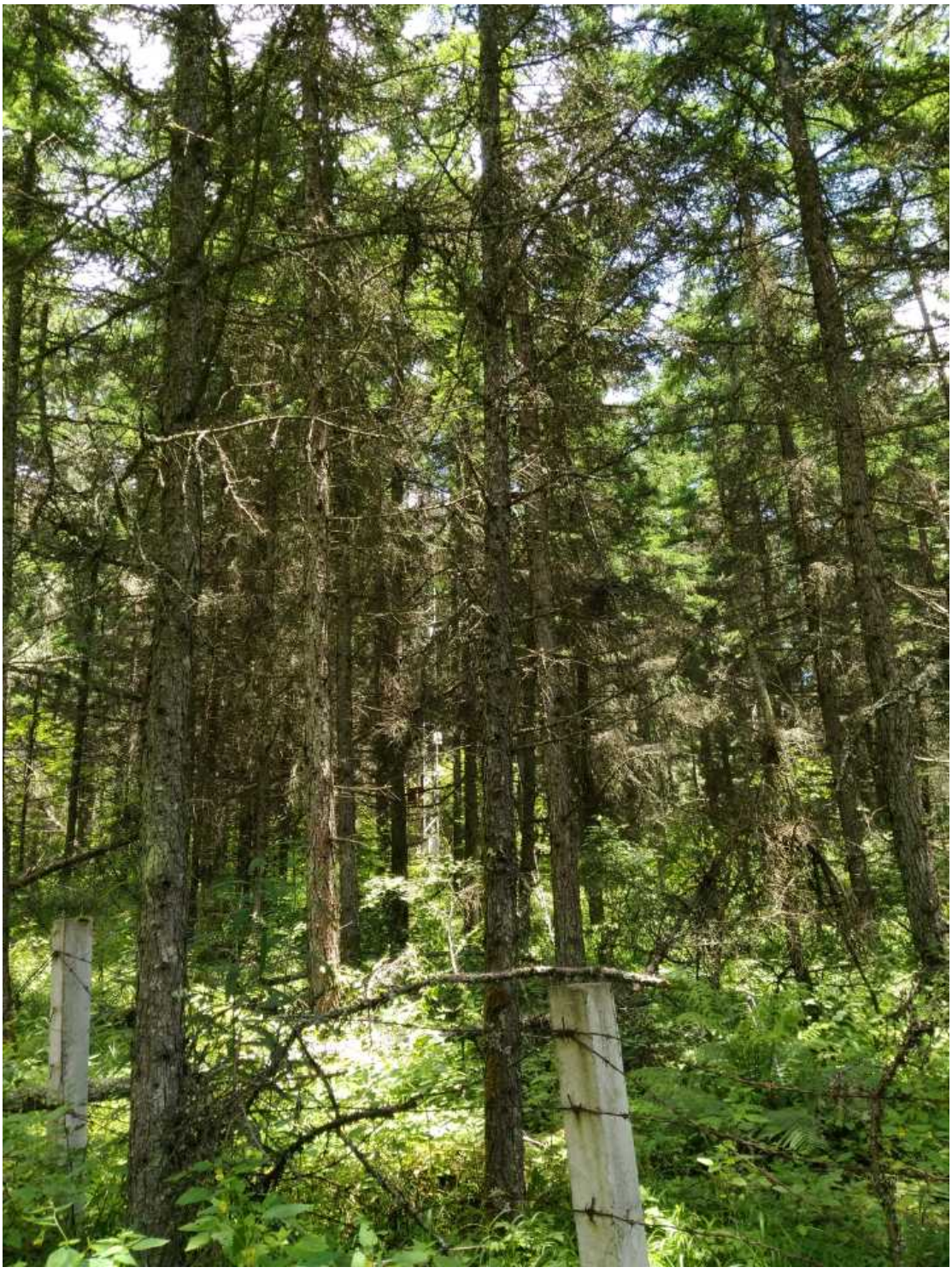

Figure S1. Some photos of *L. principis-rupprechtii* forest and flux tower in this region.

Table S1. The regression model of biomass, volume, and height of *L. principis-rupprechtii*.

Contents	Regression equation	Correlation coefficient	Samples (*n*)
Stem	$\ln W_S = 0.99794 \ln(D^2H) - 4.29251$	0.99312	91
Bark	$\ln W_{BA} = 0.80398 \ln(D^2H) - 4.53535$	0.98872	91
Branch	$\ln W_B = 2.04597 \ln D - 2.55078$	0.97720	91
Leaf	$\ln W_L = 1.90488 \ln D - 3.44704$	0.97436	91
Root	$\ln W_R = 2.18625 \ln D - 3.46236$	0.98725	91
Volume	$\ln V_S = 0.95076 \ln(D^2H) - 10.01703$	0.99715	91
Height	$\frac{1}{H} = \frac{1.90568}{D^{1.90809}} + 0.06897$	0.86281	91

D, Diameter at breast height (cm); H, Height of tree (m); W_S, Dry weight of stem (kg); W_{BA}, Dry weight of bark (kg); W_B, Dry weight of branch (kg); W_L, Dry weight of leaf (kg); W_R, Dry weight of roots (kg); V_S, Stem volume (m^3).

Table S2. The regression model of shrub biomass in the *L. principis-rupprechtii* forest.

Shrubs	Organs	Regression equation	Correlation coefficient	Samples (n)
E. phellomanus	Stem	$B_s = 62451 + 31894(D^2H) - 0.849(D^2H)^2$	0.918	55
	Leaf	$\mathbf{\ln B_l = 6.128 - \frac{0.874}{CW}}$	0.938	55
	Bark	$\ln B_b = 4.584 + 0.482\ln(D^2H)$	0.915	55
	Root	$\ln B_r = 4.159 + 1.638\ln D$	0.928	55
L. hispida	Stem	$\ln B_s = 3.254 + 0.748\ln(D^2H)$	0.917	48
	Leaf	$\ln B_l = 4.258 + 2.786\ln(CW)$	0.958	48
	Bark	$B_b = 5.847 + 1.487(D^2H) + 0.058(D^2H)^2$	0.978	48
	Root	$\mathbf{B_r = 278.248 - \frac{418.598}{D}}$	0.924	48
L. glauca	Stem	$\ln B_s = 1.981 + 1.127\ln(D^2H)$	0.945	78
	Leaf	$\ln B_l = 1.127 + 1.584CW$	0.948	78
	Bark	$\ln B_b = 2.148 + 0.548\ln(D^2H)$	0.911	78
	Root	$B_r = -104.682D^3 + 791.258D^2 - 1538.174D + 1102.026$	0.945	78
R. pungens	Stem	$\ln B_s = 4.125 + 0.684\ln(D^2H)$	0.955	62
	Leaf	$\mathbf{\ln B_l = 6.845 - \frac{2.548}{CW}}$	0.947	62
	Bark	$\ln B_b = 1.547 + 0.689\ln(D^2H)$	0.901	62
	Root	$B_r = 68.547D^3 - 231.125D^2 + 317.215D - 79.548$	0.964	62

D, Basal stem diameter (cm); H, Height of shrub (cm); CW, crown width (m); B_s, Dry weight of stem (g); B_b, Dry weight of bark (g); B_l, Dry weight of leaf (g); B_r, Dry weight of roots (g).

Table S3. CWD characteristics of different decay classes in forest system.

Type	Character	Decay Class				
		Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ
Snags	Leaves	Present	Absent	Absent	Absent	As logs
	Bark	Tight	Loose	Partly present	Absent	
	Crown, branch, and twig	All present	Only branches present	Only large branch stub present	Absent	
	Bole	Recently dead	Standing, firm	Standing, decayed	Heavily decayed, soft and block structure	

	Indirect measure	Cambium still fresh, died less than 1 year	Cambium decayed, knife blade penetrates a few millimeters	Knife blade penetrates less than 2 cm	Knife blade penetrates 2 ~5 cm	Knife blade penetrates all the way
	Structure integrity	Sound	Sapwood slightly rotting, heartwood sound	Sapwood missing, heartwood mostly sound	Heartwood decayed	Soft
	Leaves	Present	Absent	Absent	Absent	Absent
	Branches	All twig present	Larger twig present	Larger branches present	Branch stubs present	Absent
	Bark	Present	Present	Often present	Often absent	Absent
	Bole shape	Round	Round	Round	Round to oval	Oval to flat
Logs	Wood consistency	Solid	Solid	Semisolid	Partly soft	Fragmented to powdery
	Color of wood	Original color	Original color	Original color to faded	Original color to faded	Heavily faded
	Position of log on ground	Elevated on support point	Elevated on support point	Near or on ground	All of log on ground	All of log on ground
	Invaded by roots	No	No	Sapwood area	Throughout	Throughout
	Indirect measure	Cambium still fresh, died less than 1 year	Cambium decayed, knife blade penetrates a few millimeters	Knife blade penetrates less than 2 cm	Knife blade penetrates 2 ~5 cm	Knife blade penetrates all the way
Stumps	Indirect measure	Cambium still fresh, died less than 1 year	Cambium decayed, knife blade penetrates a few millimeters	Knife blade penetrates less than 2 cm	Knife blade penetrates 2 ~5 cm	Knife blade penetrates all the way

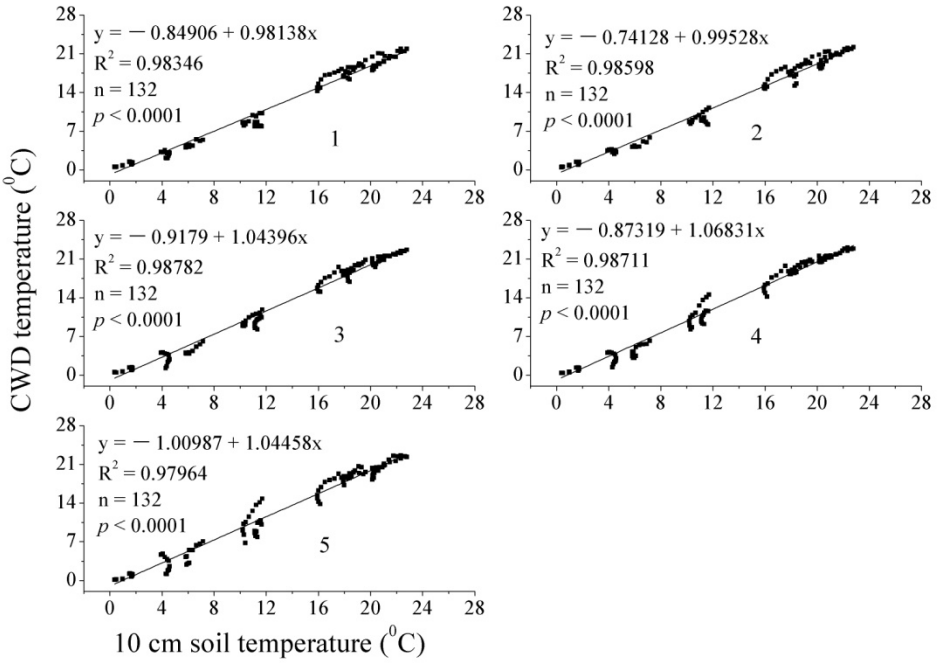

Figure S2. The relationship between temperature of different CWD. Decay classes and 10 cm soil temperature.

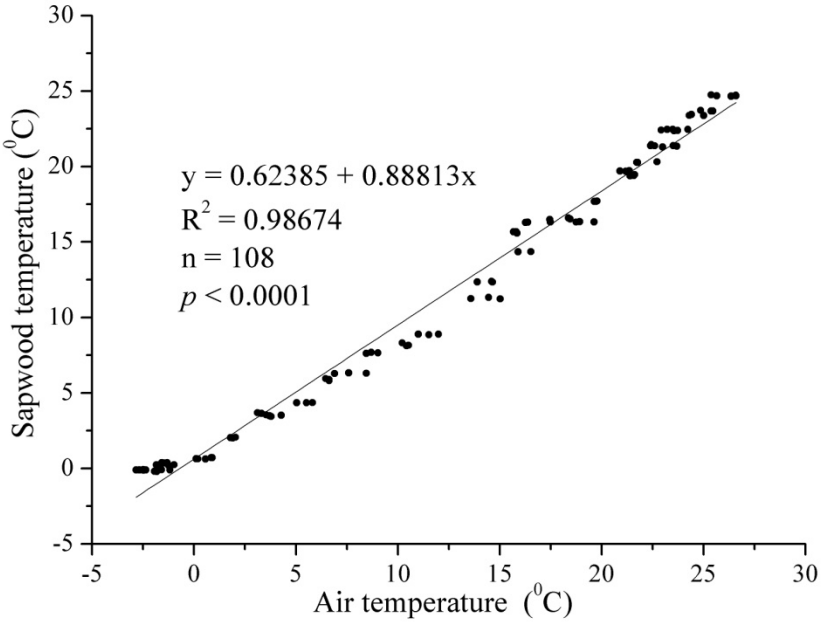

Figure S3. The relationship between air temperature and stem temperature.

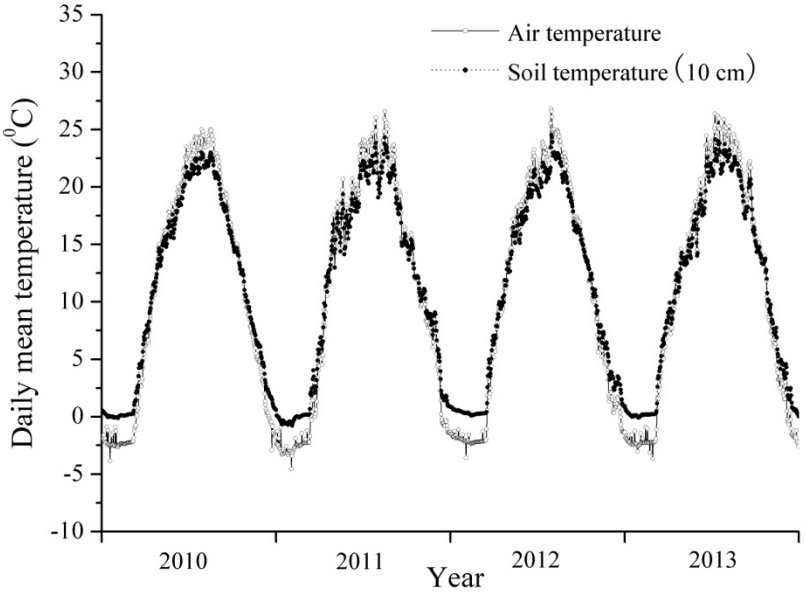

Figure S4. Daily mean air temperature and 10 cm soil temperature in the *L. principis-rupprechtii* forest during 2010–2013.

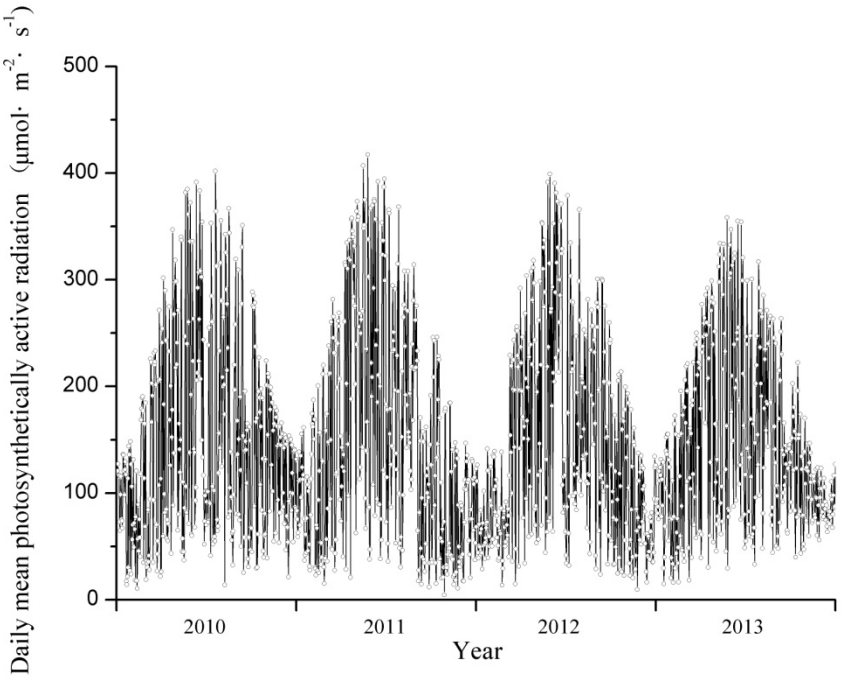

Figure S5. Daily mean photosynthetically active radiation in the *L. principis-rupprechtii* forest during 2010–2013.

Table S4. Average carbon content ratio of litterfall and various organs of trees, shrubs, and herbs in the *L. principis-rupprechtii* forest (%).

Items	Organs				
	Leaf	Stem	Root	Bark	Branch
L. principis-rupprechtii	46.15 (1.82)	47.52 (0.91)	40.65 (0.89)	48.19 (1.05)	50.32 (1.08)
E. phellomanus	42.15 (1.24)	38.89 (1.44)	43.55 (0.88)	38.11 (1.43)	
L. hispida	47.25 (1.32)	50.12 (1.57)	46.25 (1.27)	46.55 (0.89)	
L. glauca	42.88 (1.11)	46.38 (0.98)	43.58 (1.44)	41.08 (1.05)	
R. loropetalus	41.58 (2.31)	45.58 (1.04)	42.87 (1.12)	40.11 (1.28)	
C. leucochlora	43.21 (1.15)	42.17 (0.81)	48.37 (1.04)		
D. sylvatica	41.58 (1.62)	40.88 (1.81)	46.87 (1.18)		
L. christinae	44.58 (1.14)	40.18 (1.69)	29.81 (1.24)		
T. minus	42.15 (1.21)	43.14 (0.72)	44.58 (1.65)		
A. aureopunctata	41.84 (2.17)	43.55 (1.05)	49.34 (1.41)		
D. nipponica	40.68 (1.36)	38.37 (1.14)	26.88 (1.67)		
R. cordifolia	41.62 (1.65)	38.64 (1.33)	38.52 (0.84)		
S. tangutica	43.78 (2.33)	39.42 (1.68)	35.74 (1.72)		
D. laeta	44.38 (1.54)	38.64 (2.55)	23.71 (1.83)		
Litterfall			46.85 (2.75)		

Note: standard error is provided in brackets.

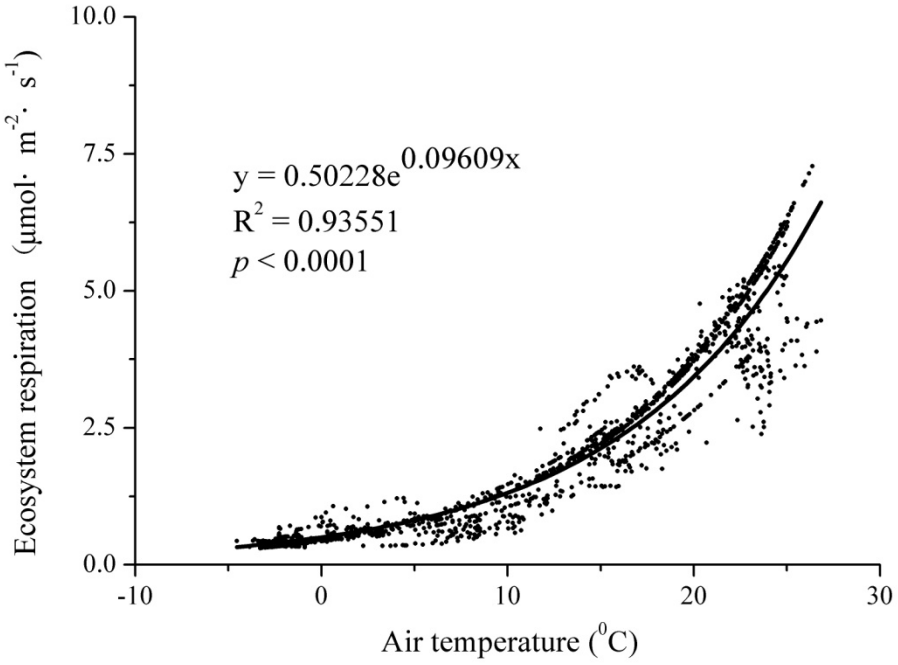

Figure S6. The relationship between ecosystem respiration based on eddy covariance measurement and air temperature. Data shown are daily means during 2010–2013.