NPP Boreal Forest: Siberian Scots Pine Forests, Russia, 1968-1974, R1

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Revision Date: July 15, 2013

Summary:

This data set contains two files (comma-separated-value format). One file provides components of net primary productivity, standing biomass, age and stand structure, and litterfall data for 11 stands of Scots pine (*Pinus sylvestris*) in the Tomsk Region of Russia (approx. 58 N 83 E). The second file contains data for the same types of variables for three stands of Scots pine in the Irkutsk Region of Siberia (approx. 53 N 103 E).

Field measurements were made in 0.3-0.4 ha forest plots between 1968 and 1974. The forest plots range in age from 25 to 122 years old. Tree biomass was determined from volume and density measurements and selective harvest. Understory and ground cover was harvested in 0.25m^2 plots. Root mass has determined from harvested trees and soil monoliths. Wood increment was measured from annual rings. Root production was based on species-specific turnover rates. Leaf litterfall was measured in 0.5-1.0 m^2 traps, and branch litterfall was estimated from 4.0 m^2 plots.

Revision Notes: The NPP data file has been split into two files, one for the Tomask forests and one for the Irkutsk forests. The data files have been revised to rearrange columns, add a total ANPP column, and correct previously reported data, where needed. Please see the Data Set Revisions section of this document for detailed information.

The Net Primary Productivity (NPP) data collection contains field measurements of biomass, estimated NPP, and climate data for terrestrial grassland, tropical forest, temperate forest, boreal forest, and tundra sites worldwide. Data were compiled from the published literature for intensively studied and well-documented individual field sites and from a number of previously compiled multi-site, multi-biome data sets of georeferenced NPP estimates. The principal compilation effort (Olson et al., 2001) was sponsored by the NASA Terrestrial Ecology Program. For more information, please visit the NPP web site at http://daac.ornl.gov/NPP/npp_home.html.

Data Citation:

Cite this data set as follows:

Krankina, O.N. 2013. NPP Boreal Forest: Siberian Scots Pine Forests, Russia, 1968-1974 R[evision]1. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA doi:10.3334/ORNLDAAC/467

This data set was originally published as:

Krankina, O.N. 1999. NPP Boreal Forest: Siberian Scots Pine Forests, Russia, 1968-1974. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA

Table of Contents:

1. Data Set Overview:

Project: Net Primary Productivity (NPP)

Forest biophysical data from 11 stands of Scots pine (*Pinus sylvestris*) in the Tomsk Region of Russia (approx. 58 N 83 E) and from three stands of Scots pine in the Irkutsk Region of Siberia (approx. 53 N 103 E) have been compiled. Scots pine represent one of the main dominant tree species in Siberian forests, growing in stands of relatively high density and productivity.

The data reported previously in Gabeev (1990) were gathered from stands studied under the former USSR International Biological Programme in Tomsk Region, Western Siberia. Above-ground measurements were obtained using standard allometric forestry methods, and below-ground data were originally reported in considerable detail by size class and depth. Data reported previously by Buzykin (1978) are from a study of carbon and nutrient cycling in the forests of the Angara River basin, Irkutsk Region, near Lake Baikal. Here, Scots pine is the dominant tree species on about 26% of the forested area. The three study sites represent the three most common site conditions found in this area.

Trees were measured by standard allometric methods on 0.3-0.4 ha plots. Understory biomass was determined from twenty 0.25 m^2 subplots in each plot for three successive years. Data on litterfall are mean values, 1968-1974, and were originally reported separately for needles, bark, branches, cones and other litter. Below-ground biomass was determined by excavation of entire root systems, and root turnover was estimated for different size classes. Both authors have published extensively in the Russian literature.

Components of net primary productivity (NPP) and above- and below-ground standing biomass are available for each stand of *P. sylvestris*. The range of above-ground biomass was 5,000-32,700 g/m^2 (25-163 tC/ha, assuming mean carbon content of 50% for wood and 45% for foliage); below-ground coarse roots ranged between 974 and 6,430 g/m^2 (5-32 tC/ha at 50% carbon content). Above-ground NPP (tree ANPP + understory ANPP) averaged 905 g (438 gC)/m^2/year and 802 g (390 gC)/m^2/year for the Tomsk and Irkutsk studies, respectively; the corresponding mean figures for total NPP (tree ANPP + understory ANPP + BNPP) were 1,018 g (489 gC)/m^2/year and 1,732 g (808 gC)/m^2/year, respectively. NPP estimates from other sources (e.g., Olson et al., 2012a; b) may vary because different calculation methods were used (Table 1).

Table 1. ANPP, BNPP, and TNPP values reported by various published data sources

File Name or Description	Data Source(s)	Sub-Site	ANPP	BNPP	TNPP
			gC/m^2/yr		
ssp1_npp_r1.csv	Gabeev (1990)[1,2,3]	Tomsk (ssp1a)	245.25	31.05	294.3
		Tomsk (ssp1b)	339.3	58.5	413.1
		Tomsk (ssp1c)	326.3	40.05	384.8
		Tomsk (ssp1d)	229.4	17.1	267.2
		Tomsk (ssp1e)	417.25	56.7	506.35
		Tomsk (ssp1f)	523.15	70.2	635.2
		Tomsk (ssp1g)	403.05	39.6	485.85
		Tomsk (ssp1h)	479.25	62.55	542.7
		Tomsk (ssp1i)	674.7	86.85	811.05
		Tomsk (ssp1j)	600.55	73.35	724.3
		Tomsk (ssp1k)	260.3	23.85	315.2
ssp2_npp_r1.csv	Buzykin (1978)[1,2,3]	Irkutsk (ssp2a)	388.2	480.1	888
		Irkutsk (ssp2b)	329.75	495	847.7
		Irkutsk (ssp2c)	352.65	279	640.65
GPPDI_Class	Olson et al. (2012a)	Class A 133 (MI 120) (Tomsk ssp1a)	245	-999	410
		Class A 133 (MI 121) (Tomsk ssp1b)	339	-999	524
		Class A 133 (MI 122) Tomsk (ssp1c)	326	-999	508
		Class A 133 (MI 123) (Tomsk ssp1d)	229	-999	391
		Class A 133 (MI 124) (Tomsk ssp1e)	417	-999	619
		Class A 133 (MI			

A_NPP_162_R2.csv	based on Gabeev (1990)[4]	125) (Tomsk ssp1f)	523	-999	747
		Class A 133 (MI 126) Tomsk (ssp1g)	403	-999	602
		Class A 133 (MI 127) (Tomsk ssp1h)	479	-999	694
		Class A 133 (MI 128) (Tomsk ssp1i)	675	-999	931
		Class A 133 (MI 129) (Tomsk ssp1j)	601	-999	841
		Class A 133 (MI 130) (Tomsk ssp1k)	260	-999	429
GPPDI_Class A_NPP_162_R2.csv	Olson et al. (2012a) based on Buzykin (1978)[4]	Class A 124 (MI 110) (Irkutsk ssp2a)	388	480	911
		Class A 124 (MI 111) (Irkutsk ssp2b)	330	495	865
		Class A 124 (MI 112) (Irkutsk ssp2c)	353	279	649
EMDI_Class A_NPP_81_R2.csv	Olson et al. (2012b) based on Gabeev (1990)[4]	Class A 133 (average of eleven Tomsk forest sites)	409	51	599
	Olson et al. (2012b) based on Buzykin (1978)[4]	Class A 124 (average of three Irkutsk forest sites)	357	418	808
borfornpp1_r1.csv	Gower et al. (2001; 2012) based on Gabeev (1990)[4]	Class I Tomsk (a verge of eleven forest sites)	439	51	490
	Gower et al. (2001; 2012) based on Buzykin (1978)[4]	Class I Irkutsk (ssp2a)	432	480	912
		Class I Irkutsk (ssp2b)	370	495	865
		Class I Irkutsk (ssp2c)	370	279	649
borfornpp2_r1.csv	Gower et al. (2001; 2012) based on Gabeev (1990)[4,5]	Class I I Tomsk (ssp1a)	245	NA	NA
		Class I I Tomsk (ssp1b)	339	NA	NA
		Class I I Tomsk (ssp1c)	326	NA	NA
		Class I I Tomsk (ssp1d)	229	NA	NA
		Class I I Tomsk (ssp1e)	417	NA	NA
		Class I I Tomsk (ssp1f)	523	NA	NA
		Class I I Tomsk (ssp1g)	403	NA	NA
		Class I I Tomsk (ssp1h)	479	NA	NA
		Class I I Tomsk (ssp1i)	675	NA	NA
		Class I I Tomsk (ssp1j)	601	NA	NA
		Class I I Tomsk (ssp1k)	260	NA	NA

Notes: NA = Not available. MI = Measurement identification number.

The differences in NPP values reported in this table are mainly due to differences in calculation methods, as explained in these notes. Please consult

original references for details.

Please see the Data Set Revisions section of this document for detailed information on the revised data sets (R1, R2, etc.).

[1] For this table, NPP data from the original data source were converted from grams of dry weight per meter square per year to grams of carbon per meter square per year using a conversion factor of 0.45 for foliage and roots and 0.5 for woody components. Original source in Russian translated by O.N. Krankina.

[2] ANPP values are tree totals (wood + foliage) and do not include understory ANPP.

[3] TNPP estimates include tree ANPP + understory ANPP + BNPP.

[4] Original source in Russian. Data computed and compiled by O.N. Krankina.

[5] ANPP values are tree totals (wood + foliage) and do not include understory ANPP.

2. Data Description:

This data set contains two files (comma-separated-value format). One file provides components of net primary productivity, standing biomass, age and stand structure, and litterfall data for 11 stands of Scots pine (*Pinus sylvestris*) in the Tomsk Region of Russia (approx. 58 N 83 E). The second file contains the same type of variable data for three stands of Scots pine in the Irkutsk Region of Siberia (approx. 53 N 103 E). Field measurements were made between 1968 and 1974 using methods adopted by the Russian participants of the International Biological Programme (IBP).

Spatial Coverage

Site: Siberian Scots Pine

Site Boundaries: (All latitude and longitude given in decimal degrees)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Elevation (m)
Siberia	83	103	58	53	NA

Site Information

Scots pine (*P. sylvestris*) is naturally distributed from Scotland to eastern Siberia, and between the boreal and temperate zones as far south as Spain. It is the dominant tree species at both Siberian study sites and is an important boreal species in Siberia; *P. sylvestris* is the dominant tree on 26% of all the Siberian boreal forests. The Scots pine stands have high density and productivity. The common causes of disturbance in *P. sylvestris* forests are fire, ice and snow, and pathogenic fungi.

This data set contains forest stand data from 14 plots located in two study areas: Tomsk Region, Western Siberia (Gabeev, 1990) and Angara River basin, in the Irkutsk Region, near Lake Baikal (Buzykin, 1978) (Table 2). The two study areas are referred to as Tomsk and Irkutsk, respectively. The geographic coordinates provided above are approximate. The data was published in the Russian literature; the manuscripts provided good descriptions of the methods used but the description of climate were vague. The climate of both sites is continental and is representative for the southern boreal region.

Table 2. Study site locations

SITE	NUMBER OF STANDS	STAND AGE (years)	MAP (mm)	LATITUDE	LONGITUDE
Tomsk Region, Western Siberia	11	25 - 122	501.2	58 N	83 E
Irkutsk Region, near Lake Baikal (Angara River basin)	3	70 - 95	NA	53 N	103 E

MAP = Mean annual precipitation. NA = Not available.

Spatial Resolution

The study plots were 0.3-0.4 ha in size. Understory biomass was determined from 0.25 m^2 subplots in each plot. Leaf litterfall was collected in litter traps 0.5 to 1.0 m^2 in size. Branch litterfall was estimated from 4.0 m^2 plots.

Temporal Coverage

Biomass measurements were made over three successive years. Litterfall was collected from 1968 through 1974.

Temporal Resolution

Litterfall data are the average of 3-7 years. Other information not available.

Data File Information

Table 3. Data files in this data set archive

FILE NAME	TEMPORAL COVERAGE	FILE CONTENTS
ssp1_npp_r1.csv	1968/01/01-1974/12/31	Components of net primary productivity, standing biomass, age and forest structure, and litterfall data for eleven stands of Scots pines in the Tomsk Region of Russia
ssp2_npp_r1.csv		Components of net primary productivity, standing biomass, age and forest structure, and litterfall data for three stands of Scots pines in the Irkutsk Region of Siberia

NPP Data. NPP estimates for the Siberian Scots pines stands are provided in two comma-separated-value (.csv) files (Table 3). Missing values are indicated by "-999.9" or "N/A" (not available) in the case of text fields.

All NPP estimates are based on plant dry matter accumulation, expressed as g/m^2/year (dry matter weight) and gC/m^2/year (carbon equivalent). Biomass allocation is reported as g/m^2 and t/ha (dry matter weight) and gC/m^2 and tC/ha (carbon equivalent). To convert dry mass to carbon content, wood and root biomass was multiplied by 0.50, and foliage, understory, and litterfall biomass was multiplied by 0.45.

Sample NPP Data Record

```
,,TREES...
,Stand, ANPP,ANPP,ANP, ANP, ANPP ...
,age,wood,wood,foliage,foliage,tree_total ...
Units,yr,g/m2/y,gC/m2/y,g/m2/y,gC/m2/y,gC/m2/y
...
Tomsk (ssp1a),25,360,180,145,65.25,245.25
...
Tomsk (ssp1b),49,594,297,94,42.3,339.3
...
Tomsk (ssp1c),70,523,261.5,144,64.8,326.3
...
```

Table 4. Row headings in column 1 in NPP files

Row Heading in Column 1	Definition	Units
Units	Unit of measure	Text
Notes	Equations used in calculation of data values	Text
Tomsk (ssp1_npp_r1.csv)	Stands in the Tomsk Region of Western Siberia (with sub-site identification)	Text
Irkutsk (ssp2_npp_r1.csv)	Stands in the Irkutsk Region, near Lake Baikal in the Angara River basin area of Siberia (with sub-site identification)	Text

Table 5. Column headings and parameter definitions in NPP files

COLUMN HEADING	PARAMETER	DEFINITION	UNITS
	Stand age (yr)	Age of stand in years	numeric
TREES	ANPP (wood)	Annual above-ground NPP of wood component of trees	g/m^2/y gC/m^2/yr
	ANPP (foliage)	Annual above-ground NPP of leaf (needle) component of trees	g/m^2/yr gC/m^2/yr
	ANPP (tree_total)	Total annual above-ground NPP of trees	gC/m^2/yr
UNDERSTORY	ANPP	Annual above-ground NPP of understory	g/m^2/yr gC/m^2/yr

ALL	BNPP	Annual below-ground NPP of trees and understory	$g/m^2/yr$ $gC/m^2/yr$
ALL	TNPP	Total annual NPP (trees + understory + roots)	$gC/m^2/yr$
	AGBiomass (wood)	Above-ground biomass of tree wood component	t/ha tC/ha
	AGBiomass (foliage)	Above-ground biomass of tree leaf (needle) component	t/ha tC/ha
	AGBiomass (total	Total above-ground biomass (trees + foliage)	t/ha tC/ha
	BGBiomass (total)	Total below-ground biomass	tC/ha gC/m^2
	Ground cover	Ground cover biomass	NA
	Dead wood	Dead wood biomass	NA
	litter	Litter biomass (average of 3-7 years)	tC/ha gC/m2
	trees/ha	Stand density	trees/ha
	Basal_area	Basal area of stand	m2/ha
	growingstock	Tree volume	m3/ha
	Site Class	Site Class I fication[1]	text
	Litterfall	Annual leaf plus branch litterfall rate (average of 3-7 years)	$g/m^2/yr$ $gC/m^2/yr$
	Needle litterfall	Annual leaf litterfall rate (average of 3-7 years)	$g/m^2/yr$
	Litterfall nitrogen	Annual concentration of nitrogen in litterfall (average of 3-7 years)	$g/m^2/yr$
	Understory comments	Dominant species or note about species richness	text
	References	Primary data source	text

3. Data Application and Derivation:

The accumulation of biomass, or NPP, is the net gain of carbon by photosynthesis that remains after plant respiration. While there are many fates for this carbon, this data set accounts for above- and below-ground growth. NPP was estimated using methods adopted by the Russian participants of the International Biological Programme (IBP).

The biomass dynamics data for the Siberian Scots Pine site are provided for comparison with models and estimation of NPP.

4. Quality Assessment:

Annual total NPP for a few of the Siberian Scots Pine study sites was within the ranges of mature stands of *P. banksiana* and *P. contorta* found within the cool, sometimes dry climates of North America (i.e., 200-300 $gC/m^2/yr$) whereas total NPP for many of the other Siberian study sites was higher (315-888 g $C/m^2/yr$). The lower NPP values were found in the youngest (25 years) and oldest (122 years) stands whereas the higher values were found in stands 31 to 95 years of age. The values for the more productive stands approached values for 50-year-old *P. sylvestris* in Great Britain (Cousens, 1974) but were lower than total NPP for *P. sylvestris* at Jadraas, Sweden (Linder and Agren, 2011). Gower et al. (1994) found that peak NPP values are reached at >60 years for naturally regenerated *P. contorta* stands, after which there is a gradual decline.

Annual litterfall rates in the Siberian Scots Pine study sites were well below annual values found in a 68-year-old *P. sylvestris* forest in Russia (Basov, 1987) but higher than annual leaf fall in a 100-year-old *P. contorta* forest in the Rocky Mountains, USA (Fahey, 1983).

Sources of Error

Information not available.

5. Data Acquisition Materials and Methods:

NPP was estimated using methods adopted by the Russian participants of the International Biological Programme (IBP). The three plots at Irkutsk range in size from 0.3 to 0.4 ha. Tree stem biomass was determined from volume and density measurements. Components of the crown (small and large branches, foliage of current year and older foliage, and cones) for each species were measured on three to six medium-size trees that were destructively sampled. The mass of groundcover/understory was measured on 20 0.25-m^2 subplots in each plot. Coarse root mass was determined by excavating root systems of sampled trees, and fine root mass was estimated from soil monoliths. Roots were separated into five diameter classes ranging from <0.5 mm to >5 mm. Wood increment was calculated from measurement of annual rings at different heights along the stem. The production of branches was calculated as a sum of current year shoots and increment of older branches. The production of roots was calculated for each size class from species-specific turnover rates (Orlov, 1967). Leaf litterfall was measured in 10 litter traps (0.5-1.0 m^2), and branch litterfall was estimated from two 4.0 m^2 plots. Litterfall data reported in this data set are the average for 3-7 years. Tree mortality was determined by plot remeasurements 9 years after the plots were set up.

The methods used to estimate biomass and NPP at Tomsk plots were similar to those described for Irkutsk, except root production was estimated as a constant proportion of fine root mass plus the roots removed by tree mortality based on unavailable references. The understory production was estimated as a non-site-specific fraction of understory species biomass (Gabeev, 1990).

All NPP estimates are based on plant dry matter accumulation, expressed as g/m^2/year (dry matter weight) and gC/m^2/year (carbon equivalent). Biomass allocation is reported as g/m^2 and t/ha (dry matter weight) and gC/m^2 and tC/ha (carbon equivalent). To convert dry mass to carbon content, wood and root biomass was multiplied by 0.50, and foliage, understory, and litterfall biomass was multiplied by 0.45.

6. Data Access:

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Data Archive Center:

Contact for Data Center Access Information:
E-mail: uso@daac.ornl.gov
Telephone: +1 (865) 241-3952

7. References:

Alexeyev, V.A., and R.A. Birdsey. 1994. Carbon in Ecosystems of Forests and Peatlands of Russia. Sukachev Institute for Forest Research, Siberian Division of the Russian Academy of Sciences, Krasnoyarsk/ North Eastern Forest Experiment Station, USDA Forest Service.

Bazilevich, N. I. 1993. Biological Productivity of Ecosystems of Northern Eurasia. Nauka Publishers, Moscow (in Russian).

Buzykin, A. I. 1978. Productivity of Pine Forests. Nauka Publishers, Moscow (in Russian).

Gabeev, V. N. 1990. Ecology and Productivity of Pine Forests. Nauka Publishers, Novosibirsk, Russia (in Russian).

Olson, R.J., K.R. Johnson, D.L. Zheng, and J.M.O. Scurlock. 2001. Global and Regional Ecosystem Modeling: Databases of Model Drivers and Validation Measurements. ORNL Technical Memorandum TM-2001/196. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA

Additional Sources of Information:

Basov, V.G. 1987. Litter dynamics in pine biogeocenoses in the steppe zone. Sov. J. Ecol. 18: 288-293.

Cousens, J. 1974. An Introduction to Woodland Ecology. Oliver and Boyd, Edinburgh, UK.

Fahey, T.J. 1983. Nutrient dynamics of aboveground detritus in lodgepole pine ecosystems, southeastern Wyoming. Ecol. Monogr. 53: 51-72.

Gower, S.T., H.L. Gholz, K. Nakane, and V.C. Baldwin. 1994. Production and carbon allocation patterns in pine forests, 115-135. IN: H.L. Gholz (ed). Environmental Constraints on the Structure and Productivity of Pine Forest Ecosystems: A Comparative Analysis. Ecological bulletins, 43. 198 pp. København : Munksgaard.

Gower, S.T., O. Krankina, R.J. Olson, M. Apps, S. Linder, and C. Wang. 2001. Net primary production and carbon allocation patterns of boreal forest ecosystems. Ecological Applications. 11:1395-1411.

Gower, S.T., O. Krankina, R.J. Olson, M. Apps, S. Linder, and C. Wang. 2012. NPP Boreal Forest: Consistent Worldwide Site Estimates, 1965-1995, R[evision]1. Data set. Available on-line [http://daac.ornl.gov] from the Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA doi:10.3334/ORNLDAAC/611

Linder, S., and G. I. Agren. 2011. NPP Boreal Forest: Jadraas, Sweden, 1973-1983, R[evision]1. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA doi:10.3334/ORNLDAAC/202

Olson, R.J., J.M.O. Scurlock, S.D. Prince, D.L. Zheng, and K.R. Johnson (eds.). 2012a. NPP Multi-Biome: Global Primary Production Data Initiative Products, R2. Data set. Available on-line [http://daac.ornl.gov] from the Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA doi:10.3334/ORNLDAAC/617

Olson, R.J., J.M.O. Scurlock, S.D. Prince, D.L. Zheng, and K.R. Johnson (eds.). 2012b. NPP Multi-Biome: NPP and Driver Data for Ecosystem Model-Data Intercomparison, R2. Data set. Available on-line [http://daac.ornl.gov] from the Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA doi:10.3334/ORNLDAAC/615

Orlov, A. Y. 1967. Method of measurement of root mass in forest soil. Lesovedenije 1: 64-70 (in Russian).

8. Data Set Revisions:

Revision Summary:

The NPP data file, **ssp_xls.bin**, has been converted to text common-separated-value (.csv) format and split into two files, one for the Tomask Scots pine forest plots (**ssp1_npp_r1.csv**) and one for the Irkutsk Scots pine forest plots (**ssp2_npp_r1.csv**). The data files have been revised to rearrange columns, add columns of data, add sub-site identifications, and correct some previously reported data, where needed.

In the NPP data file, **spp1_npp _r1.txt** (Tomsk), the column for stand age was moved from column AF to column B and a column for All ANPP (tree wood + tree foliage + understory) was added. In the NPP data file, **spp2_npp _r1.txt** (Irkutsk), the column for stand age was moved from column AF to column B, a column for All ANPP (tree wood + tree foliage + understory) was added, and previous under estimates of understory ANPP and total NPP were revised.

All other values in the data files are consistent with published sources.

Data File Changes:

Understory ANPP estimates in **ssp2_npp _r1.txt** have been corrected to agree with values in Table 4 of Gower et al. (2001) and Gower et al. (2012).

	Understory ANPP			
Site (and Sub-site)	**Uncorrected in spp_xls.bin**	**Corrected in ssp2_npp_r1.csv**	**Uncorrected in spp_xls.bin**	**Corrected in ssp2_npp_r1.csv**
	$g/m^2/yr$		$gC/m^2/yr$	
Irkutsk (ssp2a)	44	97	19.8	43
Irkutsk (ssp2b)	51	90	22.95	40
Irkutsk (ssp2c)	20	38	9	17

ALL ANPP estimates have been added and total NPP values have been revised in **ssp2_npp _r1.txt** to agree with values in Table 4 of Gower et al. (2001) and Gower et al. (2012).

	ALL ANPP (tree ANPP + understory ANPP)		**ALL TNPP (tree ANPP + understory ANPP + ALL BNPP)**	
Site (and Sub-site)	**Uncorrected in spp_xls.bin**	**Corrected in ssp2_npp_r1.csv**	**Uncorrected in spp_xls.bin**	**Corrected in ssp2_npp_r1.csv**
	$gC/m^2/yr$		$gC/m^2/yr$	
Irkutsk (ssp2a)	NR	431.2	888	911.3
Irkutsk (ssp2b)	NR	369.75	847.7	864.75
Irkutsk (ssp2c)	NR	369.65	640.65	648.65

NR = Not Reported.

The data values in **ssp1_npp_r1.csv** and **ssp2_npp_r1.csv** are now correct.

Data User Action: If you downloaded the referenced data set from the ORNL DAAC on-line archive before July 15, 2013, you should download it again from the ORNL DAAC.

Revision History:

Original Citation

Krankina, O.N. 1999. NPP Boreal Forest: Siberian Scots Pine Forests, Russia, 1968-1974. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA