

BOREAS RSS-04 1994 SOUTHERN STUDY AREA JACK PINE LAI & FPAR DATA

Summary:

The RSS-04 team collected several data sets related to leaf, plant, and stand physical, optical, and chemical properties. This data set contains leaf area indices and FPAR measurements which were taken at the three conifer sites in the BOREAS SSA during August 1993 and at the jack pine tower flux and a subset of auxiliary sites during July and August 1994. The measurements were made with LAI-2000 and Ceptometer instruments. The measurements were taken for the purpose of model parameterization and to test empirical relationships that were hypothesized between biophysical parameters and remotely sensed data.

A guide document which includes more information about this data set can be found at http://daac.ornl.gov/boreas/RSS/r04laifd/comp/RSS04_LAI_FPAR.txt.

ORNL DAAC maintains information on the entire [BOREAS Project](#).

Data Citation

Cite this data set as follows (citation revised on JULY 17, 2003):

Plummer, S. E., and P. J. Curran. 1998. BOREAS RSS-04 1994 Southern Study Area Jack Pine LAI & FPAR Data. Data set. Available on-line [<http://www.daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. [doi:10.3334/ORNLDAAC/293](https://doi.org/10.3334/ORNLDAAC/293).

References:

Campbell, G.S. 1986. Extinction coefficients for radiation in plant canopies calculated using an ellipsoidal inclination angle distribution. *Agric For Meteorol* 36, 317-321.

Chen, J.M., P.M. Rich, S.T. Gower, J.M. Norman, and S.E. Plummer. 1997. Leaf area index of boreal forests: Theory, techniques and measurements. *JGR*, 102 (D24), 29,429-29,443.

Gower, S.T. and J.M. Norman. 1990. Rapid estimation of leaf area index in conifer and broad-leaf plantations. *Ecology*, 72, 1896-1900

Lang, A.R.G. 1987. Simplified estimate of leaf area index from transmittance of the sun's beam. *Agric. For. Meteorology*, 41, 179-186.

Norman, J.M. 1988. Crop canopy photosynthesis and conductance from leaf measurements. Workshop prepared for LI-COR, Inc., Lincoln, NE.

Norman, J. M. and G.S. Campbell. 1989. Canopy structure. In: Plant Physiological Ecology: Field methods and instrumentation. (eds. R. W. Pearcy, J. Ehleringer, H. A. Mooney, and P. W. Rundel). Chapman and Hall, London and New York. 301-325.

North, P.R. and S.E. Plummer. 1994. Estimation of conifer bi-directional reflectance using a Monte Carlo method. IGARSS'94, IEEE, Piscataway, NJ, Vol. I, 114-116.

North, P.R. 1995. A three-dimensional forest light interaction model using a Monte-Carlo method. IEEE Trans. Geosci. and Rem. Sens., 34, 946-956.

Plummer, S.E. and N. Lucas. 1993. Report of the BOREAS Intensive Field Campaign 1993. Remote Sensing Applications Development Unit, Report No. 93/5.

Sellers, P. and F. Hall. 1994. Boreal Ecosystem-Atmosphere Study: Experiment Plan. Version 1994-3.0, NASA BOREAS Report (EXPLAN 94).

Sellers, P. and F. Hall. 1996. Boreal Ecosystem-Atmosphere Study: Experiment Plan. Version 1996-2.0, NASA BOREAS Report (EXPLAN 96).

Sellers, P., F. Hall, and K.F. Huemmrich. 1996. Boreal Ecosystem-Atmosphere Study: 1994 Operations. NASA BOREAS Report (OPS DOC 94).

Sellers, P., F. Hall, and K.F. Huemmrich. 1997. Boreal Ecosystem-Atmosphere Study: 1996 Operations. NASA BOREAS Report (OPS DOC 96).

Sellers, P., F. Hall, H. Margolis, B. Kelly, D. Baldocchi, G. den Hartog, J. Cihlar, M.G. Ryan, B. Goodison, P. Crill, K.J. Ranson, D. Lettenmaier, and D.E. Wickland. 1995. The boreal ecosystem-atmosphere study (BOREAS): an overview and early results from the 1994 field year. Bulletin of the American Meteorological Society. 76(9):1549-1577.

Sellers, P.J., F.G. Hall, R.D. Kelly, A. Black, D. Baldocchi, J. Berry, M. Ryan, K.J. Ranson, P.M. Crill, D.P. Lettenmaier, H. Margolis, J. Cihlar, J. Newcomer, D. Fitzjarrald, P.G. Jarvis, S.T. Gower, D. Halliwell, D. Williams, B. Goodison, D.E. Wickland, and F.E. Guertin. (1997). "BOREAS in 1997: Experiment Overview, Scientific Results and Future Directions", Journal of Geophysical Research (JGR), BOREAS Special Issue, 102(D24), Dec. 1997, pp. 28731-28770.

Walker, G.K., R.E. Blackshaw, and J. Dekker. 1988. Leaf area and competition for light between plant species using direct transmission. Weed Technology, 2, 159-165.

Welles, J.M. 1990. Some indirect methods of estimating canopy structure. In: Instrumentation for Studying Vegetation Canopies for Remote Sensing in Optical and Thermal Infrared Regions. Remote Sensing Reviews 5(1) (eds. N. S. Goel and J. M. Norman). Harwood Academic Publishers, London and New York.

Welles, J.M. and J.M. Norman. 1991. Instrument for indirect measurement of canopy architecture. Agronomy Journal, 83: 818-825.

Data Format:

For information on Parameter/Variable Names, Variable Description/Definition, Units of Measurement, and Data File Format see this companion file
<http://daac.ornl.gov/boreas/RSS/r04laifd/comp/r04laifd.def>

Document Information:

27-Oct-1998

Document Review Date:

27-Oct-1998

Document Curator:

webmaster@daac.ornl.gov

Document URL:

<http://daac.ornl.gov>