

BOREAS TE-10 LEAF CHEMISTRY DATA

Summary:

The BOREAS TE-10 team collected several data sets in support of its efforts to characterize and interpret information on the reflectance, transmittance, gas exchange, chlorophyll content, carbon content, hydrogen content, and nitrogen content of boreal vegetation. This data set describes the relationship between sample location, age, chlorophyll content, and C-H-N concentrations at several sites in the SSA conducted during the growing seasons of 1994 and 1996.

A guide document which includes more information about this data set can be found at http://daac.ornl.gov/boreas/TE/te10lfch/comp/TE10_Leaf_Chem.txt.

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

Data Citation

Cite this data set as follows:

Middleton, E. M., and J. H. Sullivan. 1998. BOREAS TE-10 Leaf Chemistry 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/345](https://doi.org/10.3334/ORNLDAAC/345).

References:

Anderson, C.P., S.B. McLaughlin, and W.K. Roy. 1991. Foliar injury symptoms and pigment concentrations in red spruce saplings in the southern Appalachians. *Can. J. For. Res.* v21 n7: 1106-1110.

Chappelle, E.W. and M.S. Kim. 1992. Ratio analysis of reflectance spectra (RARS): an algorithm for the remote estimation of the concentration of chlorophyll a, chlorophyll b, and carotenoids in soybean leaves. *Remote Sens. Environ.* V39: 239-247.

Kharouk, V.I., E.M. Middleton, S.L. Spensor, B.N. Rock, and D.L. Williams. 1995. Aspen bark photosynthesis and its significance to remote sensing and carbon budget estimates in the boreal ecosystem. *Water, Air and Soil Pollution.* V82: 483-497.

Lichtenthaler, H.K. 1987. Chlorophylla and carotenoids: pigments of photosynthetic biomembranes. *Methods in Enzymology*, v148: 350-382.

Middleton, E.M., E.W. Chappelle, and A.DeLuca. 1995. Evaluating photosynthesis in Boreal forest species with fluorescence measurements. *IGARSS 1995*.

Middleton, E.M., J.H. Sullivan, B.D. Bovard, A.J. DeLuca, S.S.Chan, and T.A. Cannon. 1997. Seasonal variability in foliar characteristics and physiology for Boreal forest species at the five Saskatchewan tower sites during the 1994 Boreal Ecosystem-Atmosphere Study (BOREAS). *J. Geophys. Res.* 102 (D24): 28, 831-844.

Schneckenburger, H. and W. Schmidt. 1995. Time-resolved chlorophyll fluorescence of spruce needles after different light exposure. *Plant Physiol.* V148: 593-598.

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. Boreal Ecosystem-Atmosphere Study (BOREAS): an overview and early results from the 1994 field year. *Bulletin of the American Meteorological Society.* V76: 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* 102 (D24): 28,731-28,770.

Sullivan, J.H., B.D. Bovard, and E. M. Middleton, 1996. Variability in leaf-level CO₂ and water fluxes in *Pinus banksiana* and *Picea mariana* in Saskatchewan. *Tree Physiol.* V17: 553-561.

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/TE/te10lfch/comp/te10lfch.def>

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webmaster@daac.ornl.gov

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