

BOREAS HYD-03 Canopy Density Data

Summary:

The BOREAS HYD-03 team collected several data sets related to the hydrology of forested areas. This data set contains measurements of canopy density (closure) from a variety of sites. Canopy density measurements were made during the FFC-W and FFC-T 1994 in both the SSA and NSA using a forest densiometer. This study was undertaken to predict spatial distributions of energy transfer, snow properties important to the hydrology, remote sensing signatures, and transmissivity of gases through the snow and their relation to forests in boreal ecosystems.

A text document which includes more information about this data set and other BOREAS HYD-03 Tree Measurements can be found at

http://daac.ornl.gov/boreas/HYD/h03candd/comp/HYD03_Tree_Meas.txt. Additional information on Parameter/Variable Names, Variable Description/Definition, Units of Measurement, and Data File Format is available in the companion file <http://daac.ornl.gov/boreas/HYD/h03candd/comp/h03candd.def>.

Data Citation:

Cite this data set as follows:

Hardy, J. P., and R. E. Davis. 1998. BOREAS HYD-03 Canopy Density 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/ORNLDAAAC/258](https://doi.org/10.3334/ORNLDAAAC/258).

Data Format:

This data set contains a single ASCII data file delimited by commas.

Variable Name	Description
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SITE_NAME	The identifier assigned to the site by BOREAS, in the
format SSS-TTT-CCCCC,	where SSS identifies the portion of the study area:
NSA, SSA, REG, TRN,	AND TTT identifies the cover type for the site, 999 if
unknown, and CCCCC	is the identifier for site, exactly what it means will
	vary with the site type.
SUB_SITE	The identifier assigned to the sub-site by BOREAS, in
the format GGGGG-IIIII,	where GGGGG is the group associated with the sub-site
instrument (e.g. HYD06	or STAFF), and IIIII is the identifier for sub-site,
often this will refer	

	to an instrument.
DATE_OBS	The date on which the data were collected, DD-MON-YYYY.
COVER_TYPE that exists at the	The dominant species, vegetation or type of land cover location.
NUM_OBS calculate given	Number of observations of the given sample used to measurements.
MEAN_CANOPY_DENSITY	The mean canopy density at the site.
CRTFCN_CODE are CPI (Checked by PI), ??? (CPI but	The BOREAS certification level of the data. Examples CGR (Certified by Group), PRE (Preliminary), and CPI- questionable).
REVISION_DATE referenced data base table	The most recent date when the information in the record was revised.

Data Access:

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

Data Archive Center Contact Information:

E-mail: uso@daac.ornl.gov
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References:

- Ganey, J.L., W.M. Block. 1994. A comparison of two techniques for measuring canopy closure, Western Jour. Appl. Forestry 9(1)21-23.
- Lemon, P.E. 1957. A new instrument for measuring forest overstory density. Journal of Forestry, 55(9)667-668.
- Lemon, P.E. 1956. A spherical densiometer for estimating forest overstory density. Forest Science, 2(4)314-320.
- Davis, R.E., C. Woodcock, and J.P. Hardy. 1996. Toward spatially distributed modeling of snow in the boreal forest. Eos Transactions, AGU 1995 Fall Meeting, Abstract, p. 218.

Davis, R.E., J.P. Hardy, W. Ni, C. Woodcock, C.J. McKenzie, R. Jordan, and X. Li. 1997. Variation of snow ablation in the boreal forest: A sensitivity study on the effects of conifer canopy. *Journal of Geophysical Research*. 102(D24):29389-29396.

Hardy, J.P., R.E. Davis, and G.C. Winston. 1995. Evolution of factors affecting gas transmissivity of snow in the boreal forest. In: *Biogeochemistry of Seasonally Snow-Covered Catchments* (ed. by K. Tonnessen, M.W. Williams, and M. Tranter) (Proc. Boulder Symp., July 1995). IAHS publication no. 228, p. 51-60.

Hardy, J.P., R.E. Davis, and R. Jordan. 1996. Snow melt modeling in the boreal forest. *Eos Transactions, AGU 1996 Fall Meeting*, abstract, p. 196.

Hardy, J.P., R.E. Davis, R. Jordan, X. Li, C. Woodcock, W. Ni, and J.C. McKenzie. 1997. Snow ablation modeling at the stand scale in a boreal jack pine forest. *Journal of Geophysical Research*. 102(D24): 29397-29406.

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.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, F.E. Guertin. 1997. BOREAS in 1997: Experiment overview, scientific results, and future directions. *Journal of Geophysical Research*. 102(D24):28731-28770.

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.

Winston, G.C., B.B. Stephens, E.T. Sundquist, J.P. Hardy, and R.E. Davis. 1995. Seasonal variability in gas transport through snow in a boreal forest. In: *Biogeochemistry of Seasonally Snow-Covered Catchments* (ed. by K. Tonnessen, M.W. Williams, and M. Tranter) (Proc. Boulder Symp., July 1995). IAHS publication no. 228, p. 61-70.

