

User's Manual for the ORGVOL.DLL of ORGANON 9.1

The ORGVOL.DLL and ORGVOL.LIB Microsoft compatible import files were created using the Lahey/Fujitsu FORTRAN 95 compiler. Two subroutines have been exposed for usage by other programs: VOLCAL and GET_ORGVOL_EDITION. Only the OSU volumes are calculated in ORGVOL.LIB.

SUBROUTINE

VOLCAL (VERSION, SPECIES, CFTD, CFSH, LOGLL, LOGML, LOGTD, LOGSH, LOGTA, DBH, HT, CR, VERROR, TERROR, VWARNING, TWARNING, IERROR, CFVOL, BFVOL)

DIMENSIONS VERROR (5), TERROR (4), VWARNING (5)

The following variables will include a classification describing whether each variable is strictly an "INPUT" variable (i.e., it is entered into the DLL and is not modified by the DLL), or strictly an "OUTPUT" variable (i.e., it is created with in the DLL and then outputted by the DLL).

Description of Variables

VERSION	INTEGER*4	Version of ORGANON to be used: 1 = Southwest Oregon, 2 = Northwest Oregon, 3 = Stand Management Cooperative, 4 = Red Alder Plantation. (INPUT variable)
SPECIES	INTEGER*4	Species code for the sample tree. (INPUT Variable)
CFTD	REAL*4	Top diameter inside bark (in inches) for cubic foot volume. (INPUT Variable)
CFSH	REAL*4	Stump height (in feet) for cubic foot volume. (INPUT Variable)
LOGLL	REAL*4	Log length (in whole feet) for Scribner board foot volume. If entered as a 0.0, then it will be reset to the ORGANON default of 32.0. (INPUT Variable)

LOGML	REAL*4	Minimum log length (in whole feet) for Scribner board foot volume. . If entered as a 0.0, then it will be reset to the ORGANON default of 8.0. (INPUT Variable)
LOGTD	REAL*4	Top diameter inside bark (in inches) for Scribner board foot volume.. If entered as a 0.0, then it will be reset to the ORGANON default of 6.0. (INPUT Variable)
LOGSH	REAL*4	Stump height (in feet) for Scribner board foot volume. . If entered as a 0.0, then it will be reset to the ORGANON default of 0.5. (INPUT Variable)
LOGTA	REAL*4	Trim allowance (in inches) for Scribner board foot volume. . If entered as a 0.0, then it will be reset to the ORGANON default of 8.0. (INPUT Variable)
DBH	REAL*4	DBH for the sample tree. (INPUT Variable)
HT	REAL*4	Total height for the sample tree. (INPUT Variable)
CR	REAL*4	Crown ratio for the sample tree. (INPUT Variable)
VEERROR(I)	INTEGER*4	If SERROR(I)=1 ($1 \leq I \leq 5$), then a volume specification error of type "I" has occurred (a value of 0 indicated no error). See the following tables for a description of the particular errors. (OUTPUT Variable)
TERROR(I)	INTEGER*4	If TERROR(I)=1 ($1 \leq I \leq 4$), then a tree level error of type "I" has occurred for the sample tree (a value of 0 indicated no error). See the following tables for a description of the particular errors. (OUTPUT Variable)

VWARNING(I)	INTEGER*4	If SWARNING(I)=1 ($1 \leq I \leq 5$), then a volume specification warning of type "I" has occurred (a value of 0 indicated no warning). See the following tables for a description of the particular warnings. (OUTPUT Variable)
TWARNING	INTEGER*4	If TWARNING=1, then a tree warning has occurred for the sample tree (a value of 0 indicated no warning). See the following tables for a description of the particular warnings. (OUTPUT Variable)
IERROR	INTEGER*4	If IERROR=1, then a stand or tree level error has occurred and the error must be corrected before proceeding. (OUTPUT Variable)
CFVOL	REAL*4	Calculated cubic foot volume for the sample tree. (OUTPUT Variable)
BFVOL	REAL*4	Calculated Scribner board foot volume for the sample tree. (OUTPUT Variable)

SUBROUTINE GET_ORGVOL_EDITION(EDITION)

Description of Variable

EDITION	REAL*4	Edition of the ORGVOL DLL (OUTPUT variable)
---------	--------	---

Descriptions of the VERROR(I) Array

I	Description of the Error
<hr/>	
1	CFSH > 4.5
2	LOGML > LOGLL
3	LOGTD > 0.0 but < 1.0
4	LOGSH > 4.5
5	LOGTA > 0.0 but < 1.0

Descriptions of the TERROR(I) Array

I	Description of the Error
1	Illegal species code
2	DBH \leq 0.0
3	HT \leq 4.5
4	CR $>$ 1.0 or CR $<$ 0.0

Descriptions of the VWARNING(I) Array

I	Description of the Warning
1	CFSH > 12.0
2	LOGLL < 8.0 or LOGLL > 40.0
3	LOGML < 8.0 or LOGML > 40.0
4	LOGTD > 12.0
5	LOGTA > 12.0

Descriptions of the TWARNING Array

I

Description of the Error

1

HT to DBH ratio is too large for the species

Example of Using the ORGVOL.DLL in LAHEY FORTRAN

The following example demonstrates how the VOLCAL subroutine in the ORGVOL.DLL can be used to calculate tree volumes. In this example, data is read in using the ORGRANON basic data input format, volumes calculated using VOLCAL subroutine and the ORGANON default values, and the resulting values written out to a file.

Example

```
C      PROGRAM TESTDLL
C
C      IMPLICIT NONE
C
C      INTEGER*4  L, LEN, I, J, LU20, LU30
C      INTEGER*4  NTREES, VERSION
C      INTEGER*4  POINT(1000), SPECIES(1000), USER(1000), VERROR(5),
1      TERROR(4), VWARNING(5), TWARNING
C      INTEGER*4  IERROR
C      REAL*4     DBH(1000), HT(1000), CR(1000), EXPAN(1000), RADGRO(1000)
C      REAL*4     CFTD, CFSH, LOGLL, LOGML, LOGTD, LOGSH, LOGTA, CFVOL, BFVOL
C      CHARACTER  DNAME*128
C      LOGICAL    HERE
C      DLL IMPORT VOLCAL
C      LU20=20
C      LU30=30
C
C      DETERMINE FILE NAME FOR RAW DATA FILE
C
C      10 WRITE(*,1000)
1000  FORMAT(' Enter tree file name [ NO extension (i.e., ',
1      'C:MYFILE) ]',/' ---> '\)
      READ(*,'(A128)') DNAME
      L = ICHAR(DNAME(1:1))
      IF ( L .EQ. 17 .OR. L .EQ. 27 ) GO TO 99
      LEN = LEN_TRIM(DNAME)
      IF ( LEN .GT. 124 ) LEN = 124
      INQUIRE(FILE=DNAME,EXIST=HERE)
      IF(.NOT. HERE) THEN
1100   WRITE(*,1100) DNAME
      FORMAT(
1      ' FILE DOES NOT EXIST!'/1X,A124/' Either re-enter',
2      ' a data file name (check DRIVE) or enter <CTRL-Q>'/
3      ' to restart ORGANON to enter or edit a new data file.')
      L=65
      GO TO 10
      ENDIF
C
C      READ TREE DATA
C
C      CALL READDATA (DNAME, POINT, SPECIES, USER, DBH, HT, CR, EXPAN, RADGRO,
1      NTREES)
C
C      CALL THE ORGVOL.DLL
C
C      DETERMINE FILE NAMES FOR OUTPUT FILES AND OPEN FILES
C
C      OPEN (LU20, FILE="ERRORS.OUT", STATUS="UNKNOWN")
C      OPEN (LU30, FILE="VOLUMES.OUT", STATUS="UNKNOWN")
C
C      SET VOLUME SPECIFICATIONS
C
C      CFTD=0.0
C      CFSH=0.0
C      LOGTD=6.0
C      LOGSH=0.5
C      LOGTA=8.0
C      LOGLL=32.0
```

```

LOGML=8.0
VERSION=1
DO I=1,NTREES
C
C     DETERMINE THE VOLUME OF EACH SAMPLE TREE
C
CALL VOLCAL (VERSION, SPECIES (I) , CFTD, CFSD, LOGLL, LOGML, LOGTD,
1     LOGSH, LOGTA, DBH (I) , HT (I) , CR (I) , VERROR, TERROR,
2     VWARNING, TWARNING, IERROR, CFVOL, BFVOL)
C
C     DETERMINE IF ERRORS WERE FOUND IN THE DATA
C     PRINT ERRORS FOUND
C
IF (IERROR .EQ. 1) THEN
  IF (I .EQ. 1) THEN
    WRITE (LU20, 1700)
1700    FORMAT (' VOLUME SPECIFICATION ERRORS')
  ENDIF
  DO J=1, 5
    WRITE (LU20, 1750) J, VERROR (J)
1750    FORMAT (I2, ', ', ', I1)
  ENDDO
  IF (I .EQ. 1) THEN
    WRITE (LU30, 1800)
1800    FORMAT (' VOLUME SPECIFICATION WARNINGS')
  ENDIF
  DO J=1, 5
    WRITE (LU20, 1850) J, VWARNING (J)
1850    FORMAT (I2, ', ', ', I1)
  ENDDO
  IF (I .EQ. 1) THEN
    WRITE (LU20, 1900)
1900    FORMAT (' TREE LEVEL ERRORS AND A WARNING')
  ENDIF
  WRITE (LU20, 1950) I, TERROR (1) , TERROR (2) , TERROR (3) , TERROR (4) ,
1
1950    TWARNING
    FORMAT (I4, ', ', ', 4 (I1, ', ', '), I1)
  ELSE
C
C     PRINT OUT TREE ATTRIBUTES AND VOLUMES IF NO ERRORS
C
IF (I .EQ. 1) THEN
  WRITE (LU30, 2000)
2000  FORMAT (' NUMBER SPECIES DBH HEIGHT CROWN RATIO CUBI'
1      'C FOOT VOL. BOARD FOOT VOL. ')
  ENDIF
  WRITE (LU30, 2050) I, SPECIES (I) , DBH (I) , HT (I) , CR (I) , CFVOL, BFVOL
2050  FORMAT (2X, I4, 5X, I3, 3X, F5.1, 1X, F5.1, 6X, F4.2, 8X, F12.6, 4X,
1      F12.6)
  ENDIF
ENDDO
99 CLOSE (LU20)
CLOSE (LU30)
STOP
END
C
C*****
SUBROUTINE READDATA (DNAME, POINT, SPECIES, USER, DBH, HT, CR, EXPAN,
1  RADGRO, NTREES)
IMPLICIT NONE
INTEGER*4 LU10, POINT (1000) , SPECIES (1000) , USER (1000) , NTREES
REAL*4 DBH (1000) , HT (1000) , CR (1000) , EXPAN (1000) , RADGRO (1000)

```

```
INTEGER*4 I
CHARACTER DNAME*128
LU10=10
OPEN (LU10, FILE=DNAME, STATUS="OLD")
I=1
10 READ (LU10, 1000, END=20) POINT (I), SPECIES (I), DBH (I), HT (I), CR (I),
1 EXPAN (I), RADGRO (I), USER (I)
1000 FORMAT (I3, 1X, I3, 1X, 2 (F5.1, 1X), F4.2, 1X, F6.2, 1X, F5.2, 1X, I2)
I=I+1
IF (I .LE. 1000) GO TO 10
20 NTREES=I-1
RETURN
END
```