```fortran
1   C**AGDROP
2   C  Continuum Dynamics, Inc.
3   C  AGDISP Version 8.29 06/16/16
4   C
5         SUBROUTINE AGDROP(NNDROP)
6   !MS$ATTRIBUTES DLLEXPORT,STDCALL :: AGDROP
7   !MS$ATTRIBUTES REFERENCE :: NNDROP
8   C
9   C  AGDROP controls the solution for each drop equation set
10  C
11  C  NNDROP - Drop size number
12  C
13        CALL AGDROX(NNDROP)
14        RETURN
15        END
16  C**AGDROX
17        SUBROUTINE AGDROX(NNDROP)
18  C
19        CHARACTER*1 NUM(10)
20  C
21        DIMENSION XV(9,60)
22  C
23        INCLUDE 'AGCOMMON.INC'
24  C
25        DATA NUM / '0','1','2','3','4','5','6','7','8','9' /
26  C
27  C  Set for next drop diameter
28  C
29        IF (IDSB.EQ.1) THEN
30          I3=NNDROP/100+1
31          I2=(NNDROP-100*(I3-1))/10+1
32          I1=NNDROP-100*(I3-1)-10*(I2-1)+1
33          OPEN (16,FILE='dsb'//NUM(I3)//NUM(I2)//NUM(I1)//'.txt',
34       $       STATUS='unknown')
35          WRITE (16,1000) NNDROP,NNDRPT,NVAR,DMASSN(NNDROP)
36        ENDIF
37  C
```

Save for Trajectory

```fortran
38        NNDRP=NNDROP
39        NN=NNDROP
```

NNDROP is "sent" in, why set 2 variables = to it ?
NNDRP does not look to be used

XDTOT get modified in Agequ 173 if ISW(i) <0. Nonexistent deposits

```fortran
40        XDTOT=0.0
41        FDTOT=0.0
42        DIAM=DDIAMN(NN)
43        DCUT=AMAX1(DIAM*(1.0-VFRAC)**0.33333,2.0)
44        YMASS=DMASSN(NN)/NVAR
45        XO=XOS
46  C
```

These are set elsewhere
DDIAMN } Set in Aglims
DMASSN }

→ AGINIT Function boomfd and xosmx in nozzle object

```fortran
47        IF (LVTFLG.GT.0.AND.NVTRK.LT.8000000) THEN
48          NVTRK=NVTRK+1
49          IVTRK(NVTRK)=-1
50          RVTRK(1,NVTRK)=DIAM
51          RVTRK(2,NVTRK)=YMASS
52          RVTRK(3,NVTRK)=0.0
53          RVTRK(4,NVTRK)=0.0
54        ENDIF
55  C
```

Evaporation Tracking ?
LVTFLG default to 0 in Aglims
Cannot find any place where LVTFLG gets changed from 0

FDTOT gets modified Agequ line 191

```fortran
56        DO N=1,NVAR
57          ISW(N)=1
58          IVT(N)=LVTFLG
```

Always Ø?? See 314-317 Agequ - still = Ø

```fortran
59          DO K=1,9
60            XV(K,N)=XS(K,N)
61          ENDDO
62          XV(2,N)=XS(3,N)*STS+XS(2,N)*CTS
63          XV(3,N)=XS(3,N)*CTS-XS(2,N)*STS
```

CTS & STS Terrain Slope parameters
XS set by AGINIT

```fortran
64          EDOV(N)=DIAM
65          EDNV(N)=DIAM
66          CMASS(N)=1.0
67          IF (IIDIS.EQ.1) THEN
68            DO NR=1,NNDSR
69              NTDSR(NR,N)=ITDSR(NR)
70            ENDDO
71          ENDIF
72        ENDDO
```

Discrete Receptors?
IIDIS get set = -1 by Aginit
gets set to 1 by Agdrin

Will need to work to temporary var as these get reset each diam

```fortran
73        IF (NVOR.GT.0) THEN
74          DO N=1,NVOR
75            G2PI(N)=G2PIS(N)
76            YBAR(N)=ZBARS(N)*STS+YBARS(N)*CTS
77            ZBAR(N)=ZBARS(N)*CTS-YBARS(N)*STS
78            YBAL(N)=ZBALS(N)*STS+YBALS(N)*CTS
79            ZBAL(N)=ZBALS(N)*CTS-YBALS(N)*STS
80            GDKV(N)=1.0
81          ENDDO
82        ENDIF
```

NVOR Single or Biwing

ybals = -5.8
zbals = 5.8

All these have to be reset after each droplet size solution is complete

```fortran
83        IF (LMVEL.EQ.2) THEN
84          WHEL=CHW
85          YHEL=ZHELS*STS+YHELS*CTS
86          ZHEL=ZHELS*CTS-YHELS*STS
87        ENDIF
88        IF (NPRP.GT.0) THEN
89          DO N=1,NPRP
90            XPRP(N)=XPRPS
91            YPRP(N)=ZPRPS*STS+YPRPS(N)*CTS
92            ZPRP(N)=ZPRPS*CTS-YPRPS(N)*STS
93            RPRP(N)=RPRPS
94            VPRP(N)=VPRPS
95            CPXI(N)=CPXIS
96          ENDDO
97        ENDIF
98  C
```

NPRP = # Propellers

lines 56 - 97
done in RunData Object

```fortran
99  C  Set deposition and flux flags
100 C
101       TEMND=DMASSN(NN)*SWATH*CTS*CTS/AFRAC/NVAR/5.01326
102       DO N=1,NVAR
103         IDEPV(N)=1
104         CNDEP(N)=0.0
105         CSDEP(N)=1.0
106       ENDDO
```

Deposition

?

```fortran
107       TEMNF=DMASSN(NN)*SWATH*CTS*CTS/AFRAC/NVAR/5.01326
108       DO N=1,NVAR
109         DO NS=1,NSWTH
110           IFLXV(N,NS)=1
111           CNFLX(N,NS)=0.0
112           CSFLX(N,NS)=1.0
113         ENDDO
114       ENDDO
115       TOLD=0.0
116 C
117 C  Integrate the equations to maximum time
118 C
119       CALL AGEQN(XV)
```

NVAR = # Nozzles on boom
NSWTH = # spray swaths
Flux

For given diam, does not return here until all settled.

```fortran
120 C
121 C  Correct for mass conservation
122 C
123       XDSUM=0.0
124       DO N=2,NDEPS
125         XDSUM=XDSUM+0.5*DDEPR*(ZDEPS(N)+ZDEPS(N-1))
126       ENDDO
```

Aglims
Aglims

```fortran
127       IF (XDSUM.GT.0.0) THEN
128         TEM=SWATH*CTS*XDTOT/XDSUM
129         TEMN=1.90986E+07*TEM*FLOWN/DDIAMN(NN)**3
130         DO N=1,NDEPS
131           ZDEPN(N)=ZDEPN(N)+TEMN*ZDEPS(N)
132           ZDEPT(N)=ZDEPT(N)+TEM*ZDEPS(N)
133           ZDEPS(N)=0.0
134           ZDEPI(N)=ZDEPI(N)+TEM*ZDEPH(N)
135           ZDEPH(N)=0.0
136         ENDDO
137       ENDIF
138       FDSUM=0.0
139       DO N=2,NFLXR
140         FDSUM=FDSUM+0.5*DFLXR*(ZFLXR(N)+ZFLXR(N-1))
141       ENDDO
```

Aglims

```fortran
142       IF (FDSUM.GT.0.0) THEN
143         TEM=SWATH*CTS*FDTOT/FDSUM
144         DO N=1,NFLXR
145           ZFLXT(N)=ZFLXT(N)+TEM*ZFLXR(N)
146           ZFLXR(N)=0.0
147         ENDDO
148       ENDIF
149       IF (IDSB.EQ.1) CLOSE (16)
150 C
151       IF (LVTFLG.GT.0.AND.NNDROP.EQ.NDRP.AND.NVTRK.LT.8000000) THEN
152         NVTRK=NVTRK+1
153         IVTRK(NVTRK)=-2
154         RVTRK(1:4,NVTRK)=0.0
155 C         IF (LVTFLG.EQ.1) THEN
156 C           OPEN (18,FILE='SCIPUFFvapor.txt',STATUS='unknown')
157 C           VOLFAC=0.0001*DENF*FLOWN*UO*SWATH
158 C           WRITE (18,4000) NVOR,G2PIS,YBARS,ZBARS,CTS,STS,RLIM,XOS
159 C           WRITE (18,4000) NPRP,XPRPS,YPRPS,ZPRPS,RPRPS,VPRPS,CPXIS,CPUR
160 C           WRITE (18,5000) ZO,CCW,SCW,QQMX
161 C           WRITE (18,5000) GDKO,GDK,BSTAB
162 C           WRITE (18,5000) VOLFAC
163 C           WRITE (18,5000) XVTMAX,YVTMIN,YVTMAX,ZVTMAX,TVTMAX
164 C           DO N=1,NVTRK
165 C             IF (IVTRK(N).EQ.-1) THEN
166 C               WRITE (18,2000) IVTRK(N),RVTRK(1:4,N)
167 C             ELSE
168 C               WRITE (18,3000) IVTRK(N),RVTRK(1:4,N)
169 C             ENDIF
170 C           ENDDO
171 C           CLOSE (18)
172 C         ENDIF
173 C         CALL AGVAPOR(0,0.0,NVAPOR,IFLAG)
174       ENDIF
175 C
176       RETURN
177 1000  FORMAT(3I6,1P1E12.4)
178 C
179 C4000  FORMAT(I4,1P12E12.4)
180 C5000  FORMAT(1P5E12.4)
181       END
```