

# ADAS ASCII Input Data Formats

Revised 27 February 2001

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## Sounding (.snd)

Concatenation of multiple rawinsonde sites, with data for each station listed as a header (in one line) followed by data in increasing height order. The header is strictly formatted (see below), and the data lines are read using free format input.

### Header:

```
72357          79    35.2300      -97.4600      362.    OUN
```

### Header Variables:

WMO station number (can be fabricated for non-network soundings)

Number of vertical levels in this sounding

Latitude (North)

Longitude (East)

Station Elevation (m)

Station Name (can be fabricated for special soundings)

### Sample Header Generating Code:

```
      write (lunit,860) istnm,nlevs,slat,slon,selev,stn
860    format (i12,i12,f11.4,f15.4,f15.0,5x,a3)
```

### Data Lines:

```
362.00  979.00    9.60    7.20    60.00    3.00
```

### Data Variables and Units:

Height (m MSL)

Pressure (mb)

Temperature (°C)

Dew Point Temperature (°C)

Wind Direction (degrees with respect to true north)

Wind Speed (ms<sup>-1</sup>)

### Sample Formatting Code:

```
DO 650 level = 1,nlevs
      write(lunit,'(6f10.2)')
      :      hgt(level),pr(level),t(level),td(level),
      :      dir(level),spd(level)
650 CONTINUE
```

### Profilers (.pro)

Concatenation of multiple wind profiler sounding sites, with data for each listed as a header (in one line) and then data in increasing height order. The header is strictly formatted (see below), and the data lines are read using free format input.

#### Header:

```
10          43      36.0719      -99.2175      588.      VCI
```

#### Header Variables:

Profiler number (can be fabricated for non-network profilers)  
Number of vertical levels  
Latitude (North)  
Longitude (East)  
Station Elevation (m)  
Station Name (can be fabricated for special non-network profilers)

#### Sample Header Generating Code:

```
      write (lunit,860) iprf,nlevs,slat,slon,selev,stn
860   format(i12,i12,f11.4,f15.4,f15.0,5x,a5)
```

#### Data Lines:

```
1148.00      120.000      6.20000
```

#### Data Variables and Units:

Height (m MSL)  
Wind Direction (degrees with respect to true north)  
Wind Speed ( $\text{ms}^{-1}$ )

#### Sample Generating Code:

```
DO 150 level = 1,nlevs
      write(lunit,870) hgt(level),dir(level),spd(level)
870   format(f12.2,f12.3,f12.5)
150 CONTINUE
```

Note about data type: Due to the restrictions of the sounding format, all soundings in the .snd file are assigned a data type of "NWS RAOB". If you would like to ingest soundings and assign them different types, use a different file extension and modify the source code in prepua.f (or

prepua.f90). Note where the file extension is checked and make appropriate changes. Future versions of ADAS may make this easier on the user.

### Surface Data (.lso)

Concatenation of multiple surface observing sites (for example METAR, SAO, automated observing stations, “mobile mesonet” stations), with data for each station listed as a header (in one line) followed by numeric data, then clouds levels, with each cloud level on its own line. The first line of the file contains the file header.

#### File Header (First Line of File):

```
5-MAY-1995 18:00:00.00      83      0      54      176      176      176      137      176      259      400
```

#### File Header Variables:

Date (DD-MMM-YYYY format)

UTC Time (HH:MM:SS.SS format)

Number of mesonet stations

Number of mesonet stations possible

Number of SAOs in analysis grid

Number of SAO's possible

Total number of surface stations in analysis grid

Total number of surface stations in .lso file

Total number of surface stations possible

Most of these counts are artifacts from LAPS. CAPS once used LAPS for initializing ARPS and we retained the data format in order to use archived data from field experiments. Because the location and size of the “analysis grid” can change with any ADAS run, the only number that is actually used in ADAS is the total number of stations in the file. Also ADAS allows for any number of surface station types, not just SAO (surface aviation observations, now METAR) and mesonet. The rest of the counts may be used for your own monitoring purposes or may be set to dummy values.

#### File Header Sample Generating Code.

```

      write(lunit,800) ctime,                ! data date and time
&      nmeso,                               ! # of mesonet stations
&      nmesord,                             ! total # mesonet stations possible
&      nsaog,                               ! # of saos in the analysis grid
&      nsaord,                             ! total # of saos possible in laps grid
&      nsao,                               ! # of saos in the file
&      nsaord,                             ! total # of saos possible in the box
&      nobsg,                               ! # of obs in the analysis grid
&      (nmesord+nsaord),                   ! total # of obs psbl in the analysis grid
&      nobsb,                               ! # of obs in the file
&      maxsta                              ! total # of obs possible in the box
800  format(1x,a23,1x,10(1x,i4))

```

#### Station Header Variables

```
DFW      32.90      -97.03      182. SA      1200
```

Station Header Variables:

Station Name (can be fabricated for special sites)  
Latitude (North)  
Longitude (East)  
Station Elevation (m)  
Data Type Designator  
Data Time UTC (HHMM)  
Weather (Using SAO or METAR weather format)

The data type designator indicates the type or network of the station and must correspond to a datatype in an ADAS data error table file – (see the ./data/adas/\*.adastab files) and the corresponding adastab file must be read-in at execution time (specified in adas.input).  
At the present time Weather is not used in ADAS, but a new version of the cloud code will include that information.

Data Lines:

```
60.0  54.0  50.    7. -100. -100. -99.9 1020.0 1020.7  
      2 2286.0 1371.6  1.0 20.000 -99.9 -99  
      SCT 1371.6  
      OVC 2286.0
```

Data Variables and Units:

Line One:

Temperature (F)  
Dew Point Temperature (F)  
Wind Direction (degrees from true north)  
Wind Speed (kts)  
Gust Direction (degrees from true north)  
Gust Speed (kts)  
Station Pressure (mb)  
Mean Sea-Level Pressure (mb)  
Altimeter Setting (mb)

Line Two:

Number of Cloud Layer Data lines (CLR is one cloud layer line)  
Ceiling Hgt (m)  
Lowest Cloud (m)  
Total Cloud Cover (fraction 0.0-1.0)  
Visibility (mi)  
Solar Radiation (W/m2)  
3-hr coded pressure change (example: 608)  
Missing Data are indicated by -99.

Cloud data Lines:

Cloud Amount (“ CLR”, “ SCT”, “-SCT”, “ BKN”, “-BKN”, “ OVC”, “-OVC”, “ X”, or “-X”)  
Cloud Height (m)

### Data Header and Variables, Sample Generating Code:

```
DO 100 k=1,nobsb
    write(lunit,801) stn(k),slat(k),slon(k),selv(k),
    &                obstype(k),obstime(k),wx(k)
801  format(1x,a4,2(f7.2,1x),f5.0,1x,a8,1x,i4.4,1x,a8)
c
    write(lunit,803) t(k),td(k),dd(k),ff(k),ddg(k),ffg(k),pstn(k),
    &                pmsl(k),alt(k)
803  format(4x,2(f6.1,1x),4(f5.0,1x),3(f6.1,1x))
c
    write(lunit,805) kcloud(k),ceil(k),lowcld(k),cover(k),
    &                vis(k),rad(k),idp3(k)
805  format(4x,i2,2(1x,f7.1),1x,f5.1,1x,f7.3,1x,f6.1,1x,i4)
c
c..... Write the cloud data if we have any.
c
    IF (kcloud(k) .gt. 0) THEN
        DO 75 ii=1,kcloud(k)
            write(lunit,807)
            :      emv(ii,k),amt(ii,k),cldhgt(ii,k)
807      format(5x,a1,1x,a4,1x,f7.1)
            75      CONTINUE !ii
        END IF
c
100 CONTINUE
```

### Other Single-Level Data (e.g. MDCRS aircraft data)

Single-level data other than surface data are read using a file containing a concatenation of all observations (generally of a similar data type), there is no file header line, the count is obtained when the reading subroutine finds the end-of-file. Comment Lines may be interspersed beginning with a blank character, a “#” or a “!”.

#### Data ID and Location Line:

Character String (8 Char) Station or Observation Identifier  
Integer number Station ID (Optional)  
Date String YYYYMMDD  
Time String HHMM  
Observation Latitude (degrees North)  
Observation Longitude (degrees East)  
Height (m MSL)  
Height (m AGL) (Optional)  
Observation Type (8 characters for ADAS, e.g. “MDCRS ”)  
Number of Observation Lines to Follow for this observation

#### Data Line (For MDCRS Aircraft Observation Type):

Format (MDCRS)

Temperature (degrees C)  
Dew Point Temperature (degrees C)  
Wind Direction (degrees True North)  
Wind Speed ( $\text{ms}^{-1}$ )

Sample Data:

```
XXXXXXXXX 00000000 19990601_153600 42.7167 -84.9517 9448 -999.00 MDCRS 1  
MDCRS -39.8 -999.0 267 28.3
```

Sample Generating Code:

```
      write(iunit,800) obs_id, obs_num, date_str, time_str,  
      :      obs_lat, obs_lon, hgt_msl, hgt_agl, obs_type, num_lines  
  
800  format(a8,1x,i8,1x,a8,1x,a6,1x,f8.4,1x,f9.4,1x,f6.0,1x,f7.2,  
      :      1x,a8,1x,i2)  
  
      write(iunit,801) fmt, obs_t, obs_td, obs_wdir, obs_wspd  
801  format(2x,a6,1x,f6.1,1x,f6.1,1x,f3.0,1x,f5.1)
```

Other formats may be defined by following the pattern set for MDCRS by editing the input lines in the subroutine prepsnglobs in the file prepsng.f