

ADAS Error and Blacklist Files Formats and Guidance

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Blacklist File (blacklist.sfc)

The blacklist file is intended to be used to filter out stations with chronic instrument quality or siting problems that make the observations unrepresentative for the scale or feature being analyzed. When used for an individual case study, the blacklist file can be used to manually edit the data for outliers you want to exclude from the analysis. The blacklist file that is provided is only an example. It should be edited for your local station network and analysis needs. You may also find that the need for blacklisting a certain site or variable varies with season or time of day. The current version of ADAS uses a blacklist file only for the surface data.

Sample Lines:

```
TIPT      1
3
CLAR      2
1, 3
```

Format:

List of specific observations to be set to “Bad” quality flag before any processing or quality control checking. List is by station name, with a two-line descriptor for each station. Generally the wind components (variables 4 and 5) should be set together. There is not a set number of lines for this file, reading stops when end of file is reached. Format for each station follows:

Line 1: Station name (1-5 characters), number of bad observations (i5)

Line 2: Variable number(s) to set to “bad quality” according to the following table (read as free format, integers separate by commas or spaces)

1	Pressure
2	Temperature
3	Humidity Variable
4	u wind component
5	v wind component

Background Error File

The error in the analysis background (first-guess) fields is specified in the background error file. The error is specified as a function of height above ground level (AGL). In this way, the near-surface errors can be more accurately modeled across the domain (rather than using pressure or MSL height levels). You may need to convert from error statistics that are commonly reported in pressure levels or as height AGL (suggestion: use a standard atmosphere to convert to heights and estimate AGL from that). Often it is necessary to increase the value of the expected error from that reported by the model developers in order to account for the representativeness error that is introduced by using, for example, a synoptic model to estimate a mesoscale wind field. This effect is magnified in areas of complex terrain. In general the error of the background field will be dependent on the length of the forecast being used, with the error generally increasing with time. The file provided (ruc3herr.adastab) is only an example and has been tuned for the needs of a specific case study (it does not represent the actual error of the RUC 3-hour forecast). The number and the height levels of the specified errors may be changed from those provided in the sample as long as there are two or more points that can be used for interpolation and the heights are monotonically increasing from zero (linear in height).

Sample Lines:

```
RUC 3-hour forecast
  AGL  press  Temp  RH   winds
    0.   3.0   3.0  30.   5.0  5.0
   100.  3.0   3.0  30.   5.0  5.0
   500.  2.5   3.0  20.   5.0  5.0
  1000.  2.5   3.0  20.   5.0  5.0
```

Format:

Line 1: Descriptor for model and time (unused by ADAS)

Line 2: Header for subsequent lines (for ease of editing)

Line 3: AGL height (m), Forecast Errors: Pressure (mb), Temp (°C), Relative Humidity (percent 0.-100.), u and v wind components (ms-1) (free format, real numbers)

Observation Error Files

The expected error of the observed data is specified in the observation error file. Each data type or source has its own error file. This allows the user to specify different errors for different surface networks, for example. Some users have found it useful to break-up their networks into separate "source names" to account for special error characteristics within a network (such as may be encountered with mountain top vs. valley sensors). The observation error files that are provided are only examples and should be tuned for your own observing networks. The errors that are specified need to include the instrument error, any round-off imprecision in reporting or archiving, and the representativeness error in the observation.

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Note about tuning: The statistical analysis technique relies on the relative size of the observation errors among the different types and the background error. A low error assigned to a particular type will result in a higher weight to observations of that type relative to observation types with higher weight. The relationship of the errors to the background error is also considered, so that an analysis using a larger error assigned to the background, or smaller error to the observations, will show greater fidelity to the observations.

Note about quality control: The quality control threshold is determined by the expected error of the observation (specified in the observation error file) combined with the expected error in the background (specified in the background error file) multiplied by a multiplier defined in the observation error file -- the real number in the third line of that file. If you want to force all data to be accepted, then make that multiplier very large.

Sample Lines, Single Level Data:

```
SA
Surface Aviation Obs
2.
  pres  temp  RH   u    v
  1.22  1.11  5.   1.0  1.0
```

Format:

Line 1: Data Source Name (1-8 characters)

Line 2: Data Source Name (spelled out, for reading by humans)

Line 3: Quality Control Multiplier (real, free format)

Line 4: Header for Error Values (for ease of editing by humans)

Line 5: Pressure Error (mb), Temperature (°C), Relative Humidity (0.-100. percent), u and v wind components (ms^{-1}) (free format, real numbers)

Sample Lines, Multiple-level Data:

```
NWS RAOB
U.S. NWS Radiosonde Observation
2.
  AGL  press  temp  RH   winds
  111.  0.6    1.2   5.   2.0  2.0
  540.  0.6    1.2   5.   2.0  2.0
  988.  0.6    1.2   5.   2.0  2.0
```

Format:

Line 1: Data source name (1-8 characters)

Line 2: Data source name (spelled out, for reading by humans)

Line 3: Quality control multiplier (real, free format)

Line 4: Header for error values (for ease of editing by humans)

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Line 5-on: Standard Errors: Pressure (mb), Temperature (°C), Relative Humidity (0.-100. percent), u and v wind components (ms^{-1}) (free format, real numbers)
There is no set number of levels. The program will count the levels and end reading at the end of file.

Sample Lines, Radar Data:

```
88D-AII
88D NWS/DoD Network Radar - Archive-II
4.
PsRH   Vrad   SpWidth
  0.1   1.0   2.
```

Format:

Line 1: Data source name (0-8 characters)
Line 2: Data source name (spelled out, for reading by humans)
Line 3: Quality control multiplier (real, free format)
Line 4: Header for error values (for ease of editing)
Line 5: Standard Errors: Relative Humidity (derived from reflectivity) (0.-1.0), radial velocity (ms^{-1}), spectrum width (ms^{-1}) (free format, real numbers)

Sample Lines, Radar Retrieved Data:

```
88D-RET
Retrieved data from WSR-88D network radar
3.
  AGL  press temp   RH   winds
 111.  0.6  1.5    5.  1.5  1.5
 540.  0.6  1.5    5.  1.5  1.5
 988.  0.6  1.5    5.  1.5  1.5
```

Format:

Line 1: Data source name (1-8 characters)
Line 2: Data source name (spelled out, for reading by humans)
Line 3: Quality control multiplier (real, free format)
Line 4: Header for error values (for ease of editing by humans)
Line 5-on: Standard Errors: Pressure (mb), Temperature (°C), Relative Humidity (0.-100. percent), u and v wind components (ms^{-1}) (free format, real numbers)
There is no set number of levels. The program will count the levels and end reading at the end of file.