Explanation of the quality flags for the DMSP SSIES-3 data

Some (but not all) of the SSIES-3 data parameters here have quality flags attached to them. The meaning of these flags are as follows:

1 (good) - We have high confidence in the reliability of this data value

2 (fair) - We are moderately confident in the reliability of this data value, but there might be some systematic errors the user may want to look for on a case by case basis

3 (caution) - We are cautious about using this data value, there are likely some systematic errors here, but the user should examine these and may be able to overcome any problems

4 (bad) - We have no confidence in this data value and it should not be used under any circumstances

5 (undetermined) - For some reason (probably missing data from another instrument) we cannot determine the quality of this value automatically. We urge the user to examine this more closely. If there are other values of similar magnitude nearby that are flagged as good or fair, then this data point may be usable. But if there are other values of this magnitude nearby that flagged caution or bad, then this data point should be discarded. And if the magnitude of this value is outside the range of other nearby values then it should be discarded.

6 (good) - same as 1 but only used for F17 Vy and Vz quality flags

7 (fair) - same as 2 but only used for F17 Vy and Vz quality flags

8 (caution) - same as 3 but only used for F17 Vy and Vz quality flags

9 (caution) - data where sunlight has leaked into the RPA or IDM producing unwanted photoelectrons that contaminate the signal and distort the offset of the flow values. We recommend that you do not use these data

data parameter	**parameter's quality flag variable name**
Vx (ion flow in spacecraft velocity direction)	**vxqual**
Vy (ion flow crosstrack horizontal direction)	**vyqual**
Vz (ion flow crosstrack vertical direction)	**vzqual**
Ti (ion temperature)	**tempqual**
Ni (ion density from RPA) *Note: this is the total ion density based on the RPA measurements, but we consider the total ion density from the scintillation meter (***ductdens** *below) to be slightly more reliable*	**densqual**
Fractional H+ plasma	**frachqual**
Fractional He+ plasma	**frachequal**
Fractional O+ plasma	**fracoqual**
RPA quality	**rpaqual**

Note: this flag denotes the overall quality of the RPA fit, but the user should rely more on the quality flag for the given parameter	
IDM quality *Note: this flag denotes the overall quality of the IDM data for this second. At this point the values of vyqual, vzqual, and idmqual are all the same for each second.*	**idmqual**
RPA info *Note that this is not a quality flag, but a flag denoting whether this second of data is from a sweep up in voltage (1) or a sweep down in voltage (2). It can be useful for interpretation in cases of hysteresis in the data.*	**rpainfo**

The following data parameters from SSIES-3 do not have quality flags associated with them at this time. (This may change in future versions.)

ductdens (the total ion density from the scintillation meter)
dmdens (the total ion density from the IDM)
te (electron temperature)

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