

M. DiSanti's comments for 10 July 2015 review of the Unidentified Cometary Emissions dataset, for PDS/SBN

I. collection\_description.dat: Under "Parameters," (1) "data" should be plural; (2) "Universal Time" is really "UT Date" (Is UT really not known to better than 1 day?).

II. Format 1 = two tables (one for observations, one for data, with corresponding xlm files) that cannot be paired with one another.

e.g., borrelly\_observations (7 columns):

(1) Universal Time is UT Date. Even if this cannot be specified to better than one day, approximate geometric parameters should still be listed (Delta, R, Delta-dot, R-dot). (Besides Borrelly, tables for Ikeya-Zhang and 21P/Giacobini-Zinner also have only UT Date but not Time.)

(2) Why is signal-to-noise included here? It seems more appropriate to be given for each specific feature (i.e., as a column in borrelly\_data, and corresponding "\_data" table for other comets for which 'format 1' was used – besides Borrelly, these are Whipple-Fedtko-Tevzadze, Hyakutake A'Hearn, Hyakutake Morrison, Hale-Bopp, deVico, Bradfield).

borrelly\_data (5 columns):

(1) Is lambda (field 1) **observed** wavelength? Tying this back to lambda in the comet's rest frame depends on Delta-dot (comet's geocentric radial velocity), especially given the 2-decimal accuracy as listed. This applies to any comet for which the (spectral) resolution of the instrument could distinguish "rest" from "observed" wavelengths, or in particular when comparing with rest frequencies from laboratory spectra.

(2) Why are there fields for both Relative Intensity and Brightness? Unless the former is expressed relative to a specific feature (as was done with Swift-Tuttle). Particularly when Brightness field is null -- units such as Rayleighs ==  $1.E6 \text{ photons/s/cm}^2$  would make sense, as this would correspond to line flux, as in  $\text{W/m}^2$  (or  $\text{erg/s/cm}^2$ ). Of course in that case a separate "Flux" field would then be redundant. Maybe the number of fields should be reduced by one? Alternatively B in Rayleighs and line flux in  $\text{W/m}^2$  would also be ok.

(3) Equivalent Width is ok, but as stated above S/N would also be appropriate here.

III. Format 2 = one table (e.g., as with giacobinizinner.tab, 12 columns).

(1) UT: In the .xml file, "Time Coordinates" lists "1985-09-16Z" (What is the "Z" for? Presumably a flag for UT date versus Time.). Again, field 4 is UT Date, not Universal Time as stated in the .xml file. Both UT Date and Time are given for some data (e.g., Swift-Tuttle), but not for others (e.g., 21P/G-Z). Presence or absence of UT is also summarized by comet in the excel file

"Unidentified\_Emissions\_by\_Comet\_Format.xlsx," also attached.

(2) For 21P, Field 9 (Brightness) is "9.2" in the table, but claims "null value" in the .xml description. Is this the integrated magnitude? If not then units need to be given, as does the aperture over which brightness is measured.

(3) Geometric parameters other than R (i.e., Delta, Delta-dot, R-dot) should not contain null values. Surely these are available, even if as with Borrelly the time of observation is only accurate to one UT Date. Surely at least approximate values are known for these parameters (e.g., through JPL/Horizons) and should be listed.

(4) Having values for Flux ( $\text{W/m}^2$ ), S/N, Equivalent Width would be very helpful to users, even if only for stronger emission features.