LYRA Data Processing: Data Levels

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In my opinion, the difference between data levels is determined by the first question: "Are they for internal use, or are they for the public?" And by the second question: "Are the data fixed (i.e. constant and unchanged from the time they come from telemetry), or are they variable (i.e. not constant but subject to - maybe regular? - changes)?"

According to this, one could define:

Level 0 = raw data from telemetry
= constant, non-public.

From my current understanding, these data are in LUMPs, interweaved time series in bits. They have to be unpacked, sorted, decompressed, maybe time-extrapolated, and maybe corrected for obvious data faults. This would lead to:

Level 1 = time series in arbitrary units (LYRA counts)
= constant, public

Maybe the format could be one FITS file per channel (one out of twelve, like 1-1, 1-2,...,3-4) per day, the file containing columns for time-of-day and LYRA-channel-counts plus other useful information.

These data have to converted, like

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bit -> pulse -> frequence -> tension -> current -> irradiance
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(Is there a need to introduce another level here, in between? I do not think so.) What has to be taken into account? Temperature. Pointing / flat field. Degradation. Exposure (integration) time / cadence. Flux / solar minimum or maximum. Radiometric model. (Anything else?) Later: In-flight calibration. Cross calibration.

This would lead to:

Level 2 = time series in physical units (W m-2)
= non-constant, public

Again, the format could be one FITS file per channel per day, the file containing time-of-day and irradiance plus additional information like calibration version, day of update, maybe history of updates.

Additional public data products:

- Calibration History with software such that every user can produce level 2 data from level 1 data (full transparency).
- Selected Daily Time Series (maybe separate, maybe four channels together?) with equidistant time units (maybe one value per minute?). Level 1 and/or level 2? Files and/or images?
- Housekeeping Data (time-of-day and temperature, pointing, voltage,...?)

[inspired by "LYRA_DP" and "LYRA_unpack_lump" from P2SC wiki]