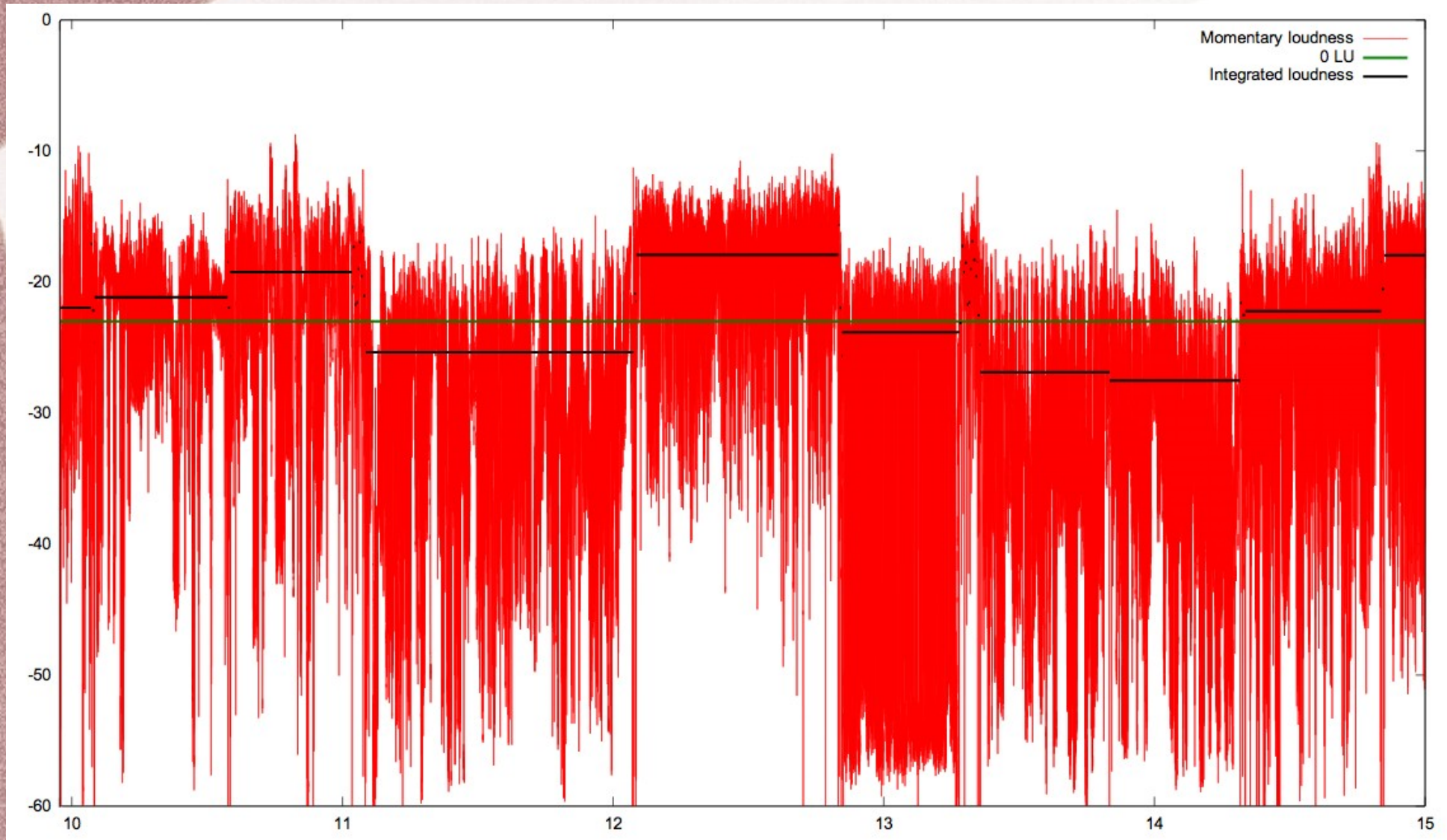


FreeLCS

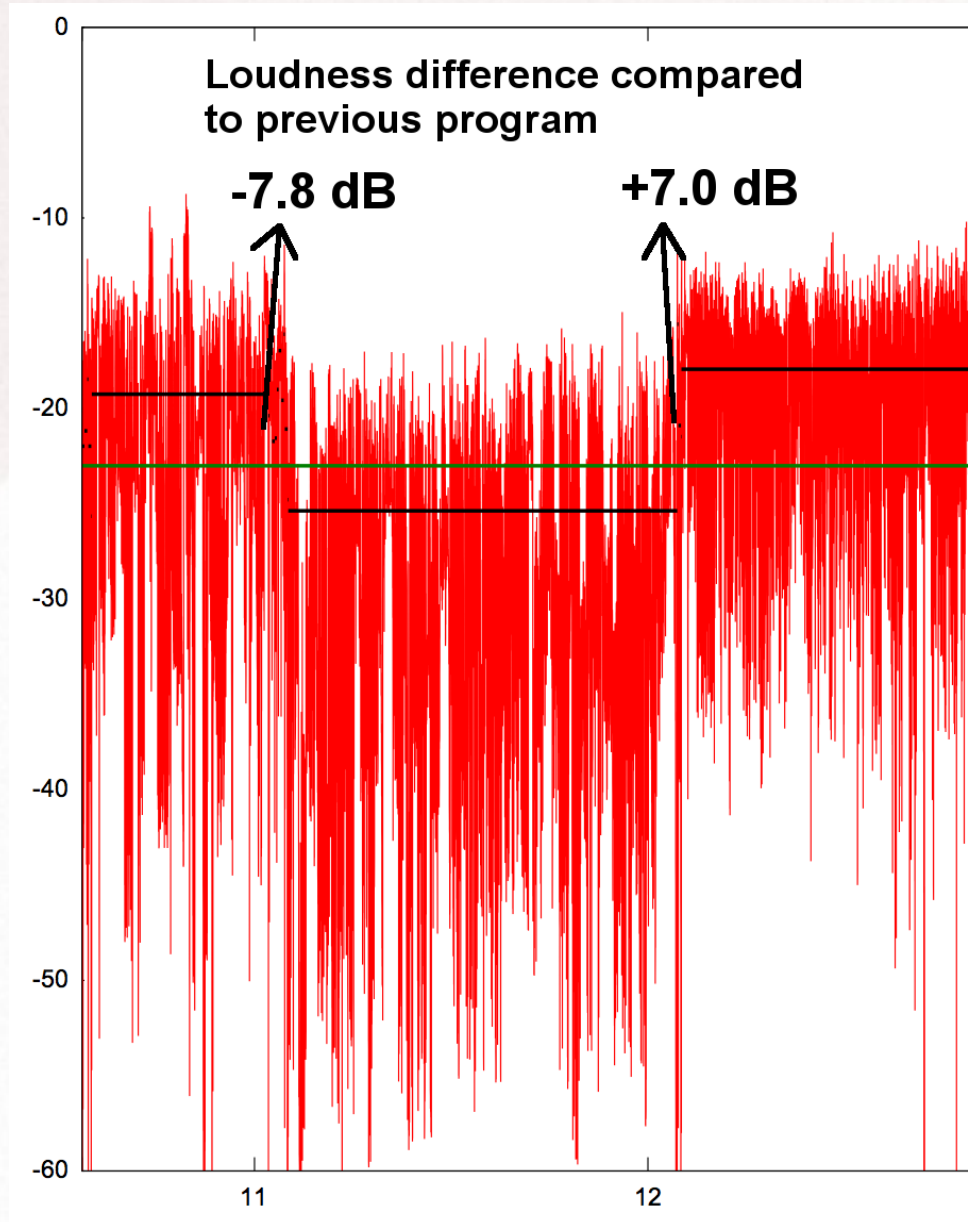
Free Loudness Correction Server

<http://freelcs.sourceforge.net>

The Problem



Loudness Jumps



Traditional Loudness Control

- An audio engineer uses his ears as a loudness meter.
- An audio engineer can produce very consistent loudness inside one program. All loudness metering algorithms try to imitate human hearing.
- There has been no standard for the correct loudness target level. Mixing is done using a “gut feeling” and as a result the loudness level varies from program to program.

EBU R128 Loudness Measurement Standard

- Peak meters don't tell about loudness.
- R128 imitates the way humans perceive loudness.
- The algorithm is simple and easy to implement.
- Supports channel counts from mono to 5.1.
- Works well on all kinds of material (classical music, speech, heavy metal, etc).
- Freeware tools available.

Possible solutions

- If audio is stored as a file before transmission, loudness can be measured from the file and a loudness corrected version created.
- There often is nothing wrong with loudness inside one program. Only the averaged loudness level of the mix might be too high or low.
- Audio needs to be loudness adjusted before transmission so that loudness of all programs are on the same level.
- Buying a large number of R128 compatible audio meters is expensive and not always necessary.

FreeLCS

- Calculates loudness according to EBU R128 for files dropped into the HotFolder.
- Creates loudness corrected versions of each file dropped in the servers HotFolder.
- For each file it creates an loudness history graphics file which gives visual feedback of the loudness variations in the file.
- Very easy to use, just drop in your file and copy back the corrected version.
- Takes advantage of multiple processor cores to run calculations simultaneously.
- Uses a protective limiter to prevent clipping in cases where volume must be increased.
- Uses FFmpeg to pre-process files and supports the huge number of file formats FFmpeg supports.

FreeLCS

- Supports channel counts from mono to 5.1.
- Supports files with several audio streams. Each stream is demuxed to a separate file and loudness corrected.
- Even video files can be dropped in for processing. Audio streams are demuxed from the file and processed.
- Automatic file deletion after a set time.
- Very easy to use, just drop in your file and copy back the corrected version.
- Easy to integrate in many workflows.
- One pc is able to process a huge amount of files in a day.
- Possible error messages are emailed to the admin.
- Modest hardware requirements.
- All software is free and Open Source.

FreeLCS

- Restriction: All audio channels in a mix must be in the same audiofile. All channels in the mix must be exported from the audio workstation as a single file.
- Restriction: Loudness corrected files are always audio only, user must combine video and audio himself if needed
- First 1.00 release was on 2012.07.08 there might be some bugs still :)

Demo: Usage

Other Open Source software used in FreeLCS

- Libebur128 to make loudness measurements.
- Gnuplot for creating loudness history graphics.
- FFmpeg for finding and extracting audio streams from files.
- Sox to create loudness corrected files.
- Runs on Ubuntu Linux 12.04.
- Written in Python3.

Requirements

- A modestly fast Dual Core Pc.
- Software Raid 0 recommended for maximum speed, but not required.
- A person familiar with Linux and being able to support a Linux installation.
- Users must be educated about loudness and how to use Loudness Correction.



***Demo Video
Installation***

Getting FreeLCS

- The latest released package can be downloaded from:
`http://freelcs.sourceforge.net`
- Development happens at Github. The latest unreleased version can be downloaded with the source versioning tool git.
- **`git clone http://github.com/mhartzel/freelcs.git`**