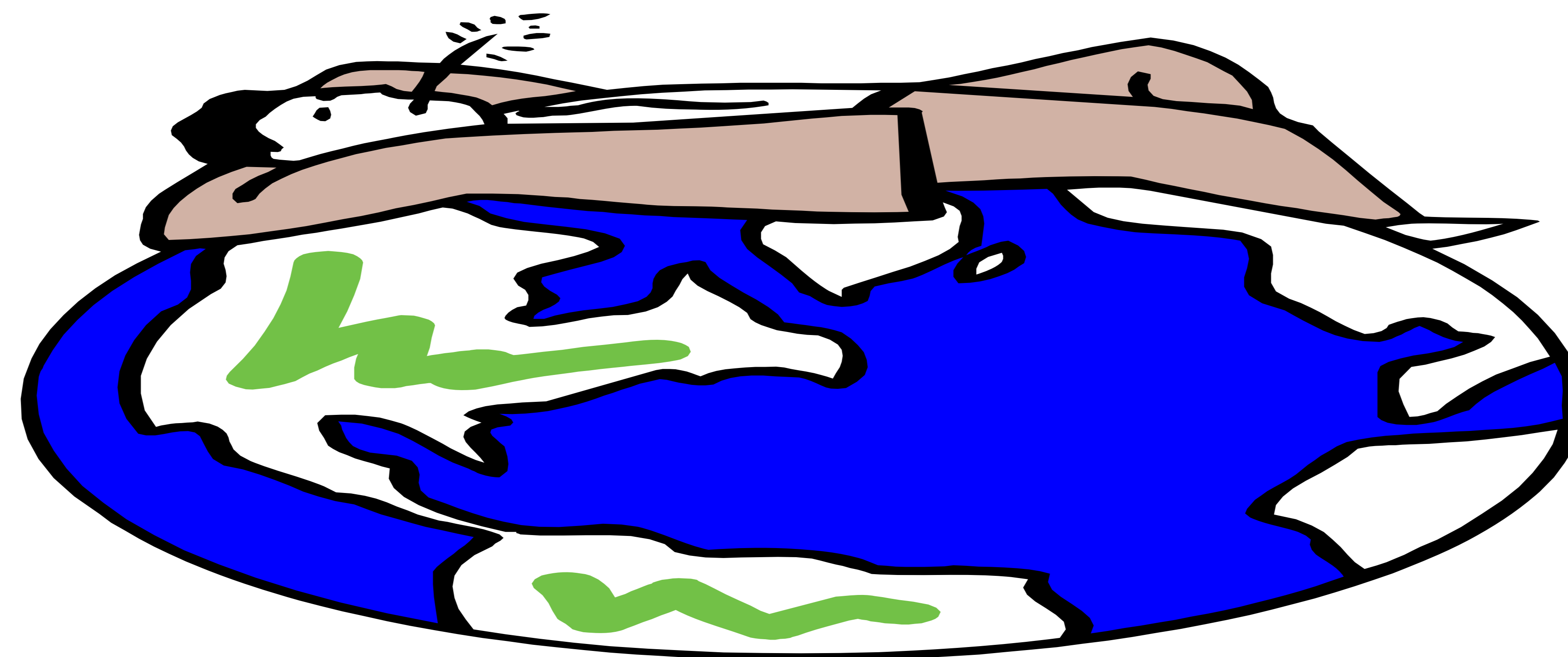


AIRBORNE GEOSPATIAL TECHNOLOGIES - COMPRESSION

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Supporting the airborne data acquisition and mapping industries



To view in full screen in Adobe Acrobat press the Ctrl + L key on your computer. Press Esc to return to normal view

Image Compression

- CCD and CMOS arrays are increasing in size
- Data transfer rates are not keeping up due to bandwidth limitations and bottlenecks in existing systems
- Data compression allows faster retrieval from disk and makes use of advances in CPU speed
- Data compression is intranet friendly

Image Compression

Data compression programmes can analyse an input file and produce a smaller non-redundant file – and then later, (may) use the smaller file to reproduce the original file flawlessly

- Reduced file size
- Faster access
- Easier distribution
- Large area coverage

Lossless v Lossy compression

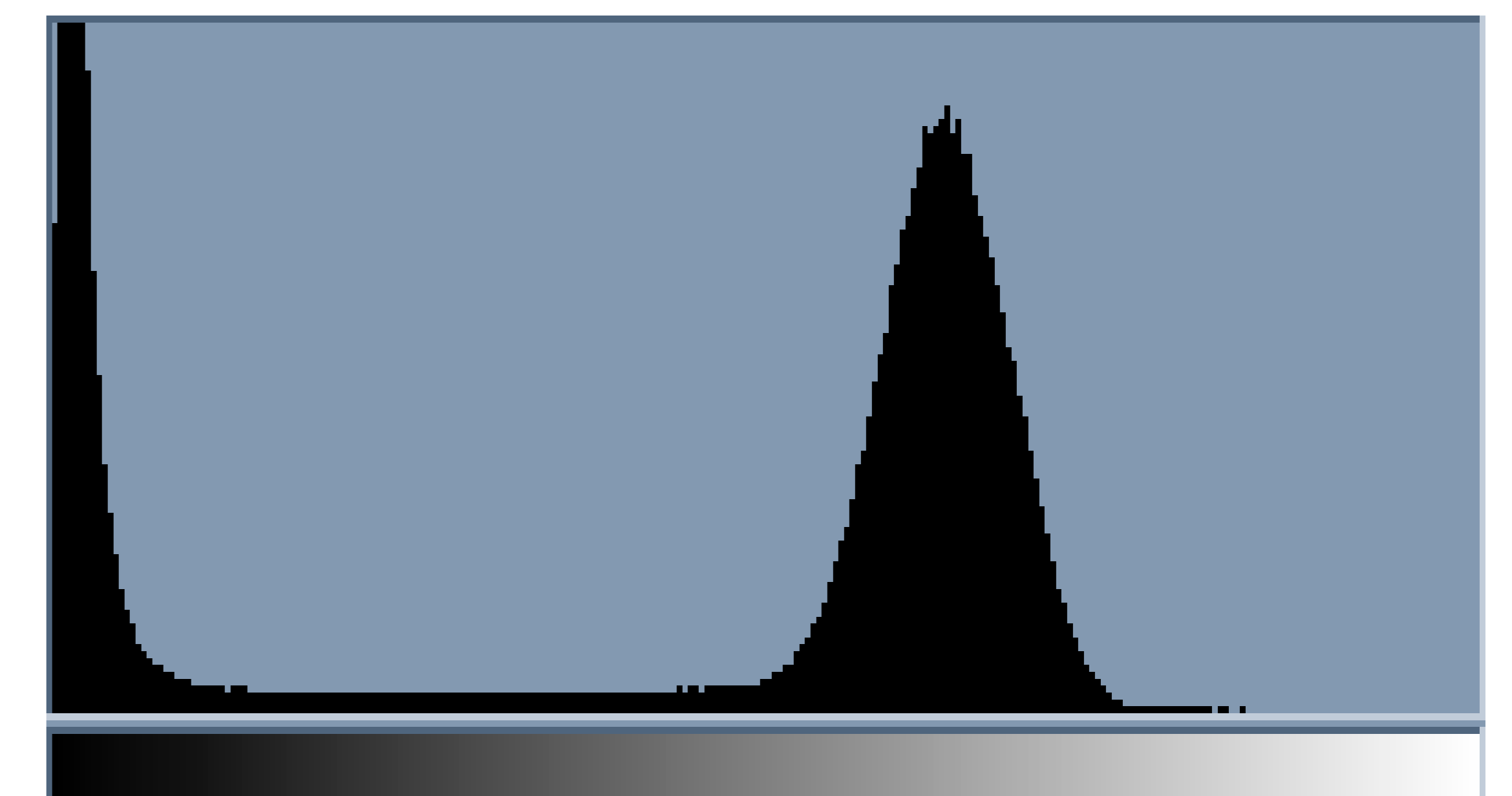
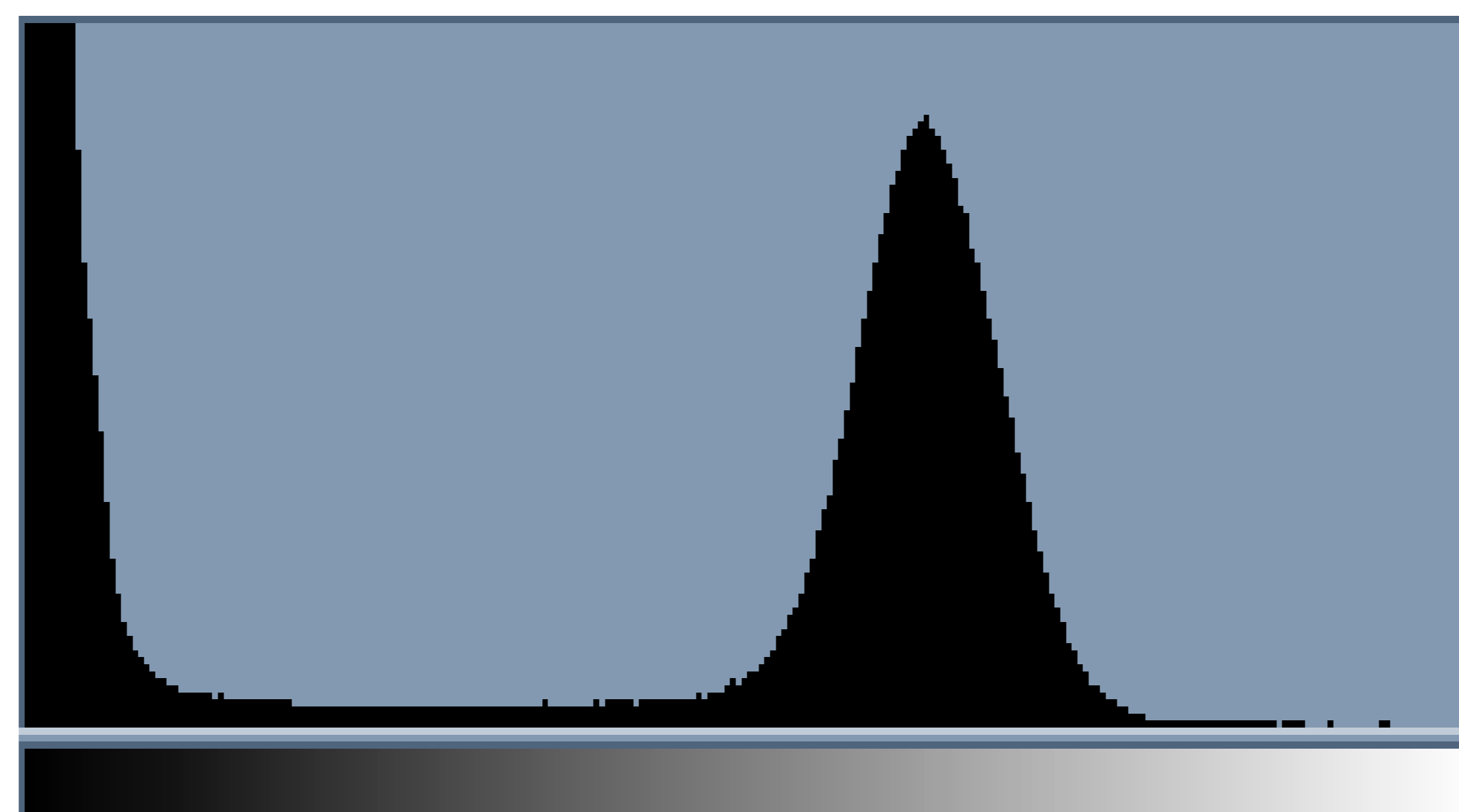
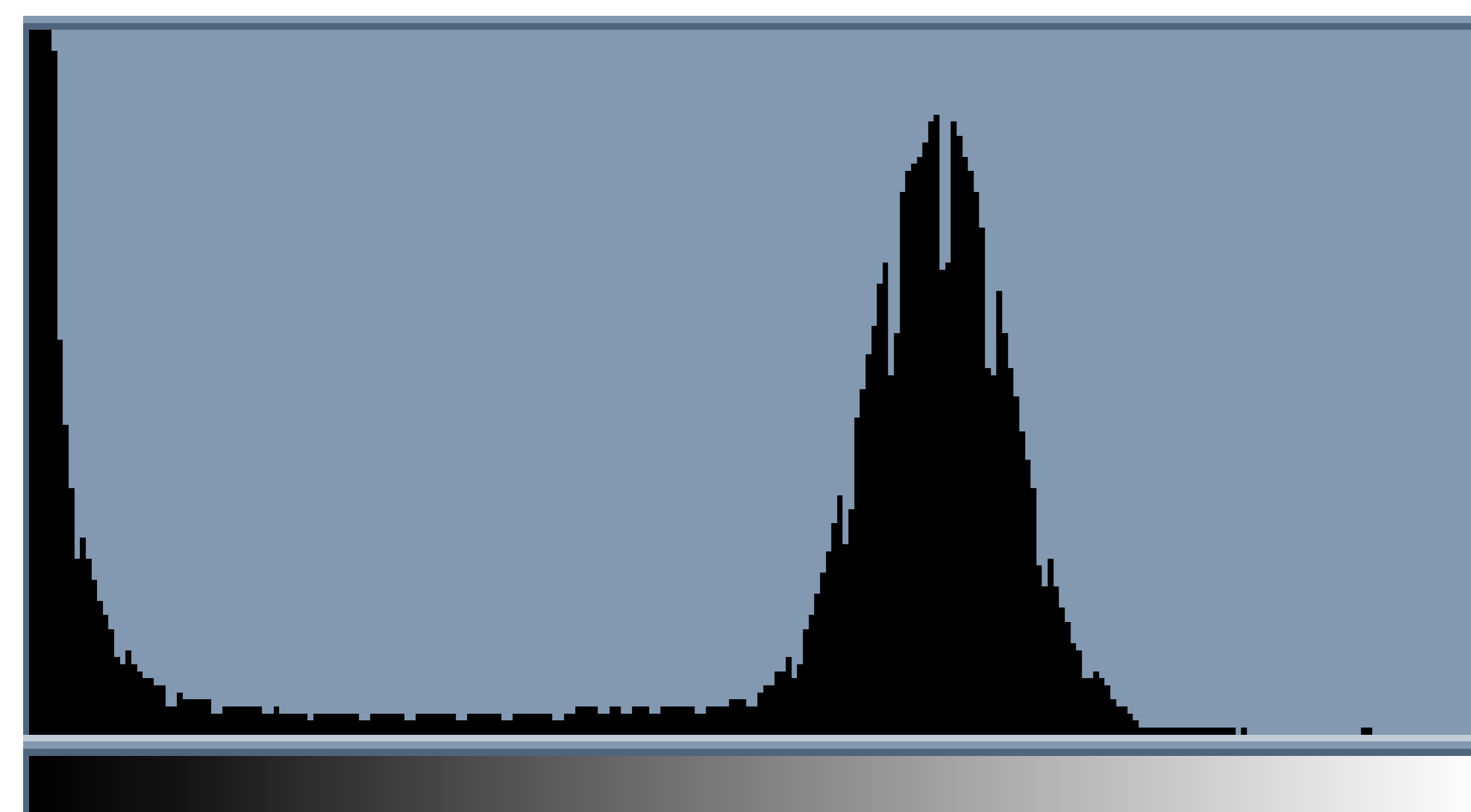
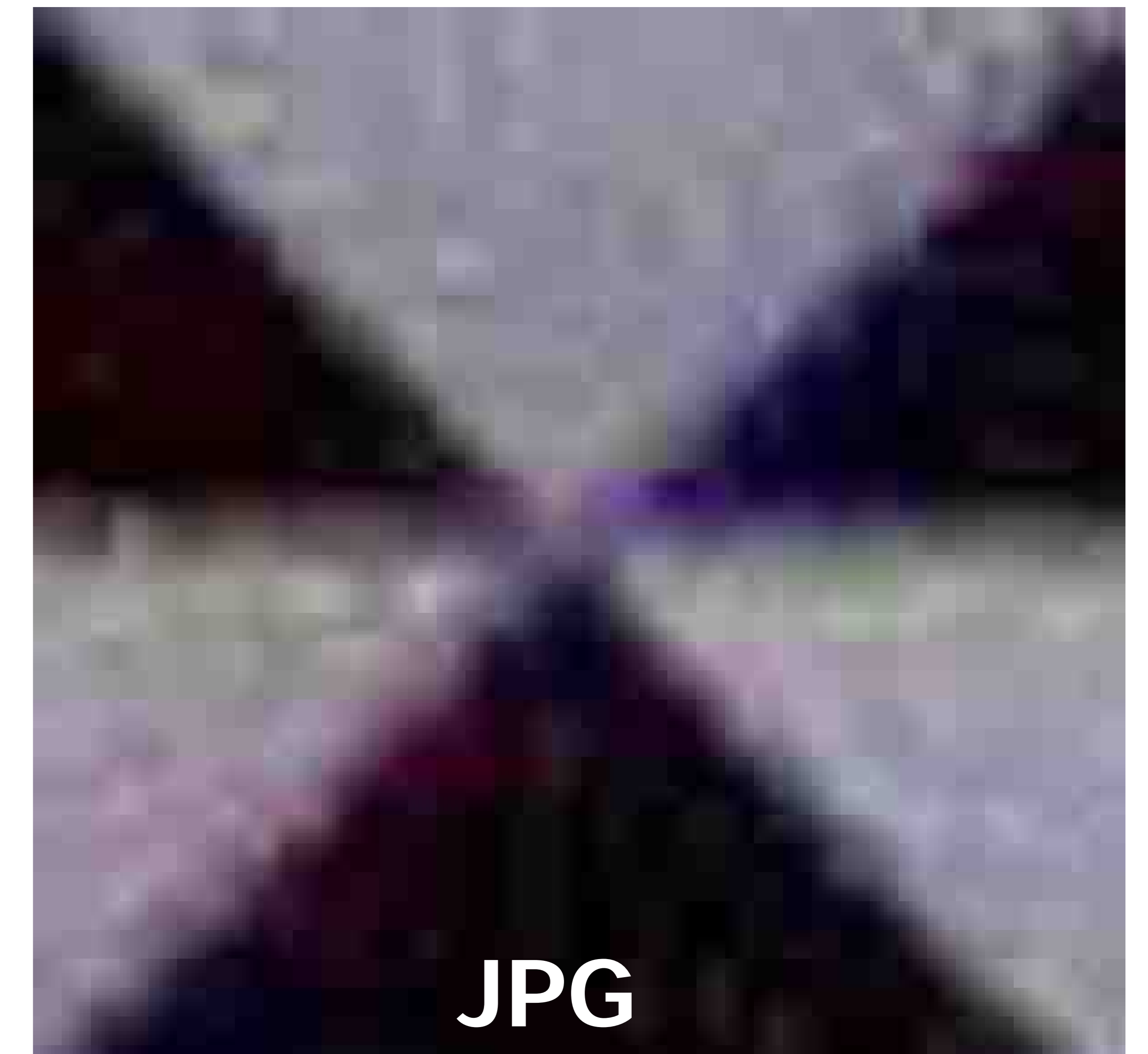
Lossless

- Can be perfectly reconstructed
- Limited to ~2:1 compression
 - TIFF
 - ZIP
 - Raw image files
 - ECW (low compression)
 - JPEG 2000 (low)

Lossy

- Suffers loss of data on reconstruction
- High compression rates achievable
 - JPEG
 - JPEG 2000
 - ECW
 - Mr Sid

Image Compression May Have Significant Impacts on Accuracy and Precision of Mapping



Uncompressed TIF, compressed ECW and compressed JPG image data histograms (x-axis = DN, y-axis = frequency)

To Compress or Not to Compress?

Do not compress

- Hyperspectral imagery
- Mission critical applications
e.g. navigation using DEM data
- Where subtle but important information may be lost
- Images used for sensor calibration

Do compress

- Airphotos, satellite images, orthophotos
- For fast access from CD-ROM
- For easy distribution of large amounts of imagery (MB to TB)

Compressing large files

The compression ratio depends on the content of the image

If the image contains e.g. large tracts of water or desert the compression ratio may be higher than the target specified