

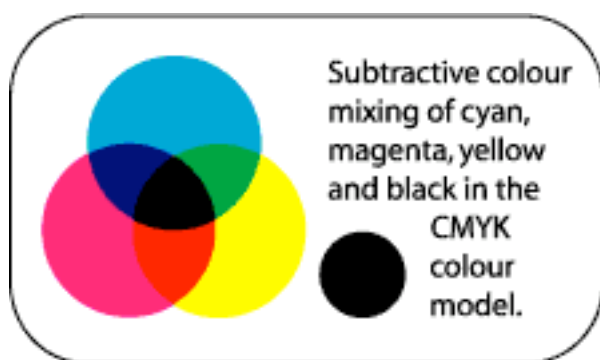
Electronic Artwork Information for Authors

Glossary and definitions

Bitmap An image stored in a pixel-by-pixel fashion. Continuous tone images are stored in this format. Sometimes used to denote an image composed solely of black and white, in which each pixel is either on or off (each pixel being represented by 0 or 1, in computer terms a bit).

BMP Windows bitmap. A common form of bitmap file in Microsoft Windows. Poorly supported by other operating systems and with limited support for colour. Should be avoided for print and web. PC suffix .bmp

CMYK Cyan, magenta, yellow, black. A colour model used to represent colour in print. Known as subtractive colour model. Colour is reproduced by the reflection of light off pigments. Although the full colour gamut can be represented in CMY, true black cannot be made owing to impurities in the actual inks. Black (K) is added to counter this.



Combination figure Artwork that contains both vector/text and continuous tone elements, e.g. an annotated photograph.

Compuserve GIF Graphical interchange format, a compressed file format that uses run-length encoding (LZW) to make smaller files. This type of compression is only useful for images with flat areas of colours and can only store up to 256 colours/greys. It is a very useful format for the web but with its very limited range of colours should not be used for print. PC suffix .gif

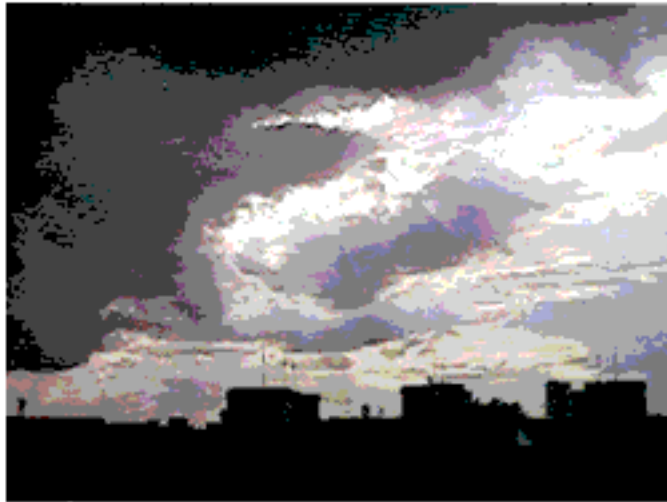
Continuous tone An image composed of a range of tones, eg a photograph. These images cannot be described mathematically and are instead described pixel-by-pixel in a bitmap. TIFF is an example of a bitmap format.

Encapsulated PostScript (EPS) PostScript is a page description language developed by Adobe. It encodes vector artwork as a series of mathematic descriptions, allowing vector artwork and text to be stored and resized irrespective of resolution. Bitmaps can also be embedded in PostScript files, making this a useful format for both line art and combination figures. EPS files can be placed in larger PostScript publications. We recommend this format for vector and combination of vector and bitmapped images. PC suffix .eps.

Filenaming convention A logical approach to filenames. We suggest that filenames combine a manuscript identification number, the figure number and part, and a suffix representing the filetype, eg.

<manuscript number>_<figure number>.<suffix>

abc9145_f1a.eps would be Figure 1, part (a) accompanying manuscript abc9145. Manuscript numbers are often assigned by editorial offices. Try to avoid generic names like Fig1.eps. It's recommended that you use the underscore ('_') character rather than a space (' ') or full stop ('.') as a divider in filenames as it avoids problems in different filenames systems.



Continuous
tone GIF
showing the
limitations of
only 256
colours



Comparison of
vector EPS graphic
(left) and low
resolution TIFF
(right). The vector
EPS graphic can
also be rescaled
without losing
crispness



FTP File Transfer Protocol. A method for transferring files over the Internet.

Greyscale An image composed of black, white and intermediate shades of grey. Although greyscale can be represented in colour, file sizes are larger as a result of unused data. There are normally 256 shades of grey in a greyscale image.

Halftone A method of reproducing continuous tone artwork in print by screening an image to break it down into a series of dots of varying size (which can be reproduced by spots of ink). The size of each dot represents the ink density. Colour halftones are reproduced as a series of CMYK dots laid down in rosette patterns. Halftones are used as printing presses cannot print the fine graduations of ink required for continuous tone.

JPEG A type of compressed file (strictly a type of compression) particularly suited for storing continuous tone bitmap data (such as photographs). It achieves a high level of compression by discarding some of the data in an image. JPEG compression can result in artefacts such as areas of blocky appearance and auras around sharp edges and text. Consequently should not be used for print but is particularly suited to the web. PC suffix .jpg/.jpe/.jpeg

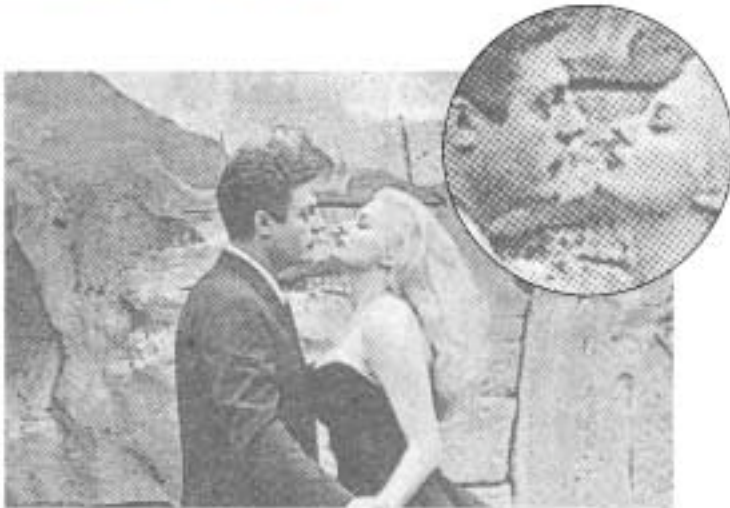
Line art Any image composed of lines and text, such as graphs, charts and illustrations. Best saved in vector formats (such as EPS)

LZW Lempel, Zif, Welch compression. A form of run-length encoding that compresses some bitmap images. Compression is carried out by an algorithm that looks for areas of a single colour or patterns and replaces the repeating pixel data with the equivalent of 'the next x pixels are...' Of little use for compressing continuous tone bitmaps and may in fact enlarge them.

PDF Portable document format. A derivative of PostScript, also able to store both vector and bitmap data. Whilst this format can be used for encoding individual images, it is more often used to store documents in a 'print on screen' format that can be viewed with Adobe's free Acrobat reader software on a wide range of computer operating systems. PC suffix .pdf



Colour halftone (top) comprising a rosette of CMYK dots. Black and white halftone (bottom) comprising black dots of differing sizes.





Additive colour mixing of red, green and blue in the RGB colour model.

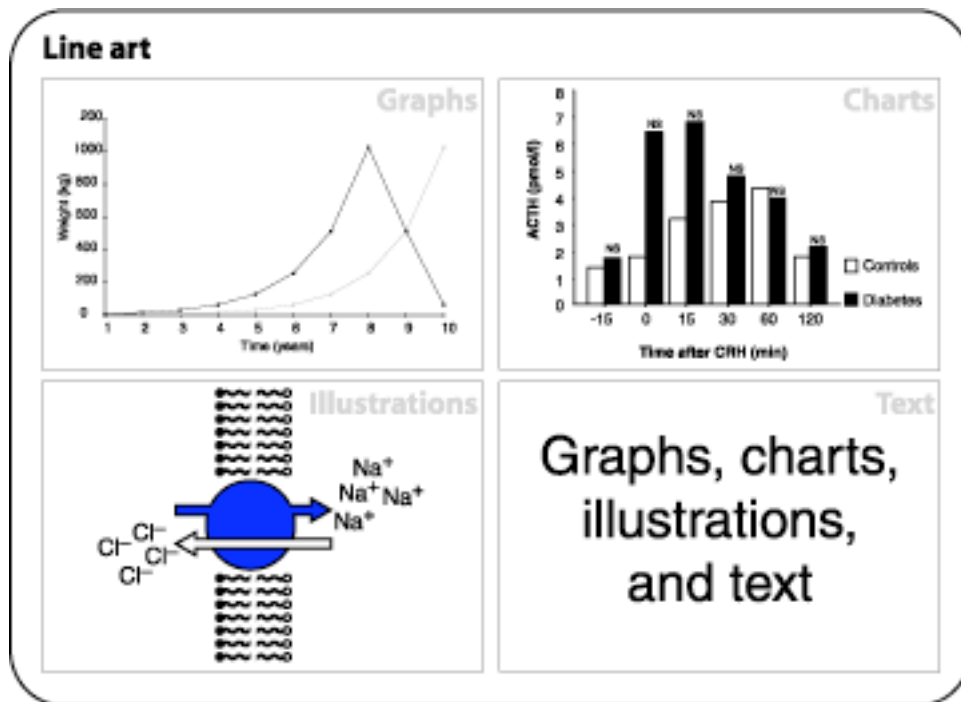


Effect of JPEG compression. Magnified section of a TIFF figure (top) compared with the same section after high JPEG compression. (bottom). The blocky artefacts are notable.

PICT A primarily Macintosh format, often used for graphic file interchange between Macintosh applications but less support exists on other systems. PC suffix .pic/ .pict

PPD PostScript Printer Description. A file that contains printer specific information for PostScript printer drivers. Required when installing a PostScript driver, even you do not have a printer

RGB Red, green, blue. A colour model used to represent colour on screen. Known as an additive colour model. Colours are reproduced by additive amounts of light passing through a range of pigments.



TIFF Tagged image format files. A widely supported standard for saving bitmap images (continuous tone). It can store images in colour (RGB, CMYK) and greyscale and supports LZW compression. A recommended format for storing continuous tone images. Line art must be saved as high resolution TIFF (800+ dpi). PC suffix .tif

Vector art An image that can be described mathematically as a series of coordinates, lines and shapes. EPS is an example of a vector format. Vector artwork may include text, graphs or illustrations.

WMF Windows metafile. A Microsoft Windows format, usually used for interchange of image data between Windows software, and rarely used as an end format. PC suffix .wmf

Zip Another derivative of the LZW compression. Commonly used for compressing and archiving files in Microsoft Windows environments



Standard fonts Common fonts that are available and easily substituted for in all computer operating systems. For maximum clarity we recommend you use sans serif fonts (Arial/Helvetica) for labelling figures, and Symbol for Greek and other characters. Unusually fonts may not be supported on all systems and may be lost on conversion.