

Data Formats for Aerial Photography

Getmapping are able to supply aerial photography in a range of data formats. This document will help you to compare the different formats available. If you would like any more information please phone the office (+44 (0)1252 845 444) and a member of staff will be happy to help you.

All aerial imagery is supplied in raster format where each image is made up of a large number of pixels in a grid pattern, and each pixel in the grid represents an area on the ground equal to the ground sample distance of your data, for example 25cms per image pixel.

Commonly used file formats

1. JPEG (*.JPG)

JPEG (Joint Photographic Experts Group), is the standard format used within Getmapping; it offers the best balance of file size, image quality and performance. It also has compatibility across nearly all software systems and applications including all Microsoft software.

JPEG can be susceptible to a noticeable degradation in image quality when high amounts of compression are applied. At Getmapping we store all of our RAW data with a maximum of 10% compression; this offers no noticeable reduction in image quality while maintaining the performance and file size advantages of the format.

Although you can create JPEG files over 100mbs, generally most users will have problems opening these without a high specification computer. As such it is recommended the file sizes of individual images are kept below 50mbs to reduce any problems.

Description	Advantages	Disadvantages
Normal storage requirement: 25cm 1km tile: 2 to 10 MB 12.5cm 1km tile: 17 to 32 MB World file type: *.jgw	<ul style="list-style-type: none"> ✓ Fast delivery times ✓ Reduced storage requirement ✓ Compatibility with most software ✓ Good performance in most software 	<ul style="list-style-type: none"> ✗ Restricted maximum file size ✗ Can suffer from compression problems

2. TIFF (*.TIF)

Tiff or Tagged Image File Format is a low compression file format but requires as much as 5 times the storage capacity than the same image in JPEG format. Due to this size it has a very slow performance in most software packages. Because all data at Getmapping is stored in JPEG to begin with there is no noticeable difference in image quality between these formats.

Description	Advantages	Disadvantages
Tagged Image File Format	<ul style="list-style-type: none"> ✓ Compatibility with most software 	<ul style="list-style-type: none"> ✗ Huge storage requirement

Normal storage requirement: 25cm 1km tile: 20 to 50 MB 12.5cm 1km tile: 90 to 130 MB World file type: *.tfw		× Slow read performance × Slower delivery times (due to Getmapping conversion)
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3. ECW

The 'Enhanced Compression Wavelet' or ECW format was specifically developed for geographic data, and because of this it has a number of benefits over other commonly used formats. Most notably the data contains its geographic referencing information so that a separate world file is not needed. It is also a high compression format and as such has very good performance in all GIS software packages. It also has the advantage of not having a maximum file size so that almost unlimited sized mosaics can be created.

Description	Advantages	Disadvantages
Enhanced Compression Wavelet Normal storage requirement: 25cm 1km tile: 0.5-6 MB 12.5cm 1km tile: 6-14 MB World file type: *.eww	<ul style="list-style-type: none"> ✓ Very fast read performance ✓ Small data storage requirements ✓ No maximum file size ✓ No additional geo-referencing file required 	<ul style="list-style-type: none"> × Compatible only with suitable software × Slower delivery times (due to Getmapping conversion) × Noticeable compression artefacts within images

4. MrSID

The MrSID format is a proprietary format owned by [LizardTech](http://www.lizardtech.com) and shares many similarities to ECW. This includes faster performance than JPEG and TIFF and integrated referencing information. The main disadvantage is the need for LizardTech software to create new MrSID files.

Additional Files

World Files (JGW, TFW, EWW, etc)

A world file is needed to position an image within the map environment. It is included with the majority of aerial photography so that the imagery can be seamlessly merged with other geographic data within your GIS.

The file itself is a simple 6 line txt document, although there is a different file extension depending on the format of the related imagery. For example JPG files have a *.JGW world file and .TIF files have a *.TFW file. The name of the world file must be the same as the image file it is referencing.

The data is contained as shown below. With;
 Line.1 Pixel size in the X direction (i.e. Ground Sample Distance)
 Line.2 Pixel rotation in the Y axis

Line.3 Pixel rotation in the X axis

Line.4 Pixel size in the Y direction and in the map unit

Line.5 X coordinate of the centre of the top left pixel

Line.6 Y coordinate of the centre of the top left pixel

