**TIFF CHANGE INFORMATION**

**Current Version**: v3.6.0  
**Previous Version**: [v3.5.7](http://docs.google.com/v3.5.7.html)  
**Master FTP Site**:  [download.osgeo.org](ftp://download.osgeo.org/libtiff), directory pub/libtiff  
**Master HTTP Site**: <http://www.simplesystems.org/libtiff/>

This document describes the changes made to the software between the *previous* and *current* versions (see above). If you don't find something listed here, then it was not done in this timeframe, or it was not considered important enough to be mentioned. The following information is located here:

* [Major Changes](#3dy6vkm)
* [Changes in the software configuration](#30j0zll)
* [Changes in libtiff](#1fob9te)
* [Changes in the tools](#3znysh7)
* [Changes in the contrib area](#2et92p0)
* [Changes in the LZW compression kit](#tyjcwt)

**MAJOR CHANGES:**

* New utility [raw2tiff](http://docs.google.com/man/raw2tiff.1.html) for converting raw rasters into TIFF files.
* Lots of new [tiff2ps](http://docs.google.com/man/tiff2ps.1.html) options.
* Lots of new [fax2tiff](http://docs.google.com/man/fax2tiff.1.html) options.
* Lots of bug fixes for LZW, JPEG and OJPEG compression.

### **Custom Tag Support**

The approach to extending libtiff with custom tags has changed radically. Previously, all internally supported TIFF tags had a place in the private TIFFDirectory structure within libtiff to hold the values (if read), and a "field number" (ie. FIELD\_SUBFILETYPE) used to identify that tag. However, every time a new tag was added to the core, the size of the TIFFDirectory structure would changing, breaking any dynamically linked software that used the private data structures.

Also, any tag not recognised by libtiff would not be read and accessable to applications without some fairly complicated work on the applications part to pre-register the tags as exemplified by the support for "Geo"TIFF tags by libgeotiff layered on libtiff.

Amoung other things this approach required the extension code to access the private libtiff structures ... which made the higher level non-libtiff code be locked into a specific version of libtiff at compile time. This caused no end of bug reports!

The new approach is for libtiff to read all tags from TIFF files. Those that aren't recognised as "core tags" (those having an associated FIELD\_ value, and place for storage in the TIFFDirectory structure) are now read into a dynamic list of extra tags (td\_customValues in TIFFDirectory). When a new tag code is encountered for the first time in a given TIFF file, a new anonymous tag definition is created for the tag in the tag definition list. The type, and some other metadata is worked out from the instance encountered. These fields are known as "custom tags".

Custom tags can be set and fetched normally using TIFFSetField() and TIFFGetField(), and appear pretty much like normal tags to application code. However, they have no impact on internal libtiff processing (such as compression). Some utilities, such as tiffcp will now copy these custom tags to the new output files.

As well as the internal work with custom tags, new C API entry points were added so that extension libraries, such as libgeotiff, could define new tags more easily without accessing internal data structures. Because tag handling of extension tags is done via the "custom fields" mechanism as well, the definition provided externally mostly serves to provide a meaningful name for the tag. The addition of "custom tags" and the altered approach to extending libtiff with externally defined tags is the primary reason for the shift to the 3.6.x version number from 3.5.x.

**CHANGES IN THE SOFTWARE CONFIGURATION:**

* configure, config.site: Fix for large files (>2GiB) support. New option in the config.site: LARGEFILE="yes". Should be enougth for the large files I/O.
* configure: Set -DPIXARLOG\_SUPPORT option along with -DZIP\_SUPPORT.
* html/Makefile.in: Updated to use groffhtml for generating html pages from man pages.
* configure, libtiff/Makefile.in: Added SCO OpenServer 5.0.6 support from John H. DuBois III.
* libtiff/{Makefile.vc, libtiff.def}: Missed declarations added.
* libtiff/Makefile.in, tools/Makefile.in: Shared library will not be stripped when installing, utility binaries will do be stripped. As per bug 93.
* man/Makefile.in: Patch DESTDIR handling as per bug 95.
* configure: OpenBSD changes for Sparc64 and DSO version as per bug 96.
* config.site/configure: added support for OJPEG=yes option to enable OJPEG support from config.site.
* config.guess, config.sub: Updated from ftp.gnu.org/pub/config.
* configure: Modify CheckForBigEndian so it can work in a cross compiled situation.
* configure, libtiff/Makefile.in: Changes for building on MacOS 10.1 as per bug 94.
* html/Makefile.in: added missing images per bug 92.
* port/Makefile.in: fixed clean target per bug 92.

**CHANGES IN LIBTIFF:**

* libtiff/tif\_getimage.c: New function [TIFFReadRGBAImageOriented()](http://docs.google.com/man/TIFFReadRGBAImage.3t.html) implemented to retrieve raster array with user-specified origin position.
* libtiff/tif\_fax3.c: Fix wrong line numbering.
* libtiff/tif\_dirread.c: Check field counter against number of fields.
* Store a list of opened IFD to prevent directory looping.
* libtiff/tif\_jpeg.c: modified segment\_height calculation to always be a full height tile for tiled images. Also changed error to just be a warning.
* libtiff/tif\_lzw.c: fixed so that decoder state isn't allocated till LZWSetupDecode(). Needed to read LZW files in "r+" mode.
* libtiff/tif\_dir.c: fixed up the tif\_postdecode settings responsible for byte swapping complex image data.
* libtiff/tif\_open.c: Removed error if opening a compressed file in update mode bug (198).
* libtiff/tif\_write.c: TIFFWriteCheck() now fails if the image is a pre-existing compressed image. That is, image writing to pre-existing compressed images is not allowed.
* html/man/\*.html: Web pages regenerated from man pages.
* libtiff/tif\_jpeg.c: Hack to ensure that "boolean" is defined properly on Windows so as to avoid the structure size mismatch error from libjpeg (bug 188).
* libtiff/tiff.h: #ifdef USING\_VISUALAGE around previous Visual Age AIX porting hack as it screwed up gcc. (bug 39)
* libtiff/tiff.h: added COMPRESSION\_JP2000 (34712) for LEAD tools custom compression.
* libtiff/tif\_dirread.c: Another fix for the fetching SBYTE arrays by the TIFFFetchByteArray() function. (bug 52)
* libtiff/tif\_dirread.c: Expand v[2] to v[4] in TIFFFetchShortPair() as per bug 196.
* libtiff/tif\_lzw.c: Additional consistency checking added in LZWDecode() and LZWDecodeCompat() fixing bugs 190 and 100.
* libtiff/tif\_lzw.c: Added check for valid code lengths in LZWDecode() and LZWDecodeCompat(). Fixes bug 115.
* tif\_getimage.c: Ensure that TIFFRGBAImageBegin() returns the return code from the underlying pick function as per bug 177.
* libtiff/{tif\_jpeg.c,tif\_strip.c,tif\_print.c}: Hacked tif\_jpeg.c to fetch TIFFTAG\_YCBCRSUBSAMPLING from the jpeg data stream if it isn't present in the tiff tags as per bug 168.
* libtiff/tif\_jpeg.c: Fixed problem with setting of nrows in JPEGDecode() as per bug 129.
* libtiff/tif\_read.c, libtiff/tif\_write.c: TIFFReadScanline() and TIFFWriteScanline() now set tif\_row explicitly in case the codec has fooled with the value as per bug 129.
* libtiff/tif\_ojpeg.c: Major upgrade from Scott. Details in bug 156.
* libtiff/tif\_open.c: Pointers to custom procedures in TIFFClientOpen() are checked to be not NULL-pointers.
* libtiff/tif\_lzw.c: Assertions in LZWDecode and LZWDecodeCompat replaced by warnings. Now libtiff should read corrupted LZW-compressed files by skipping bad strips as per bug 100.
* libtiff/: tif\_dirwrite.c, tif\_write.c, tiffio.h: [TIFFCheckpointDirectory()](http://docs.google.com/man/TIFFWriteDirectory.3t.html) routine added as per bug 124. The [TIFFWriteDirectory](http://docs.google.com/man/TIFFWriteDirectory.3t.html) man page discusses this new function as well as the related [TIFFRewriteDirectory()](http://docs.google.com/man/TIFFWriteDirectory.3t.html).
* libtiff/: tif\_codec.c, tif\_compress.c, tiffiop.h, tif\_getimage.c: Introduced additional members tif->tif\_decodestatus and tif->tif\_encodestatus for correct handling of unconfigured codecs (we should not try to read data or to define data size without correct codecs). See bug 119.
* tif\_dirread.c: avoid div-by-zero if rowbytes is zero in chop func as per bug 111.
* libtiff/: tiff.h, tif\_dir.c, tif\_dir.h, tif\_dirinfo.c, tif\_dirread.c, tif\_dirwrite.c: Dwight Kelly added get/put code for new tag XMLPACKET as defined in Adobe XMP Technote. Added missing INKSET tag value from TIFF 6.0 spec INKSET\_MULTIINK (=2). Added missing tags from Adobe TIFF technotes: CLIPPATH, XCLIPPATHUNITS, YCLIPPATHUNITS, OPIIMAGEID, OPIPROXY and INDEXED. Added PHOTOMETRIC tag value from TIFF technote 4 ICCLAB (=9).
* libtiff/tif\_getimage.c: Additional check for supported codecs added in TIFFRGBAImageOK, TIFFReadRGBAImage, TIFFReadRGBAStrip and TIFFReadRGBATile now use TIFFRGBAImageOK before reading a per bug 110.
* libtiff/: tif\_dir.c, tif\_dir.h, tif\_dirinfo.c, tif\_dirread.c, tif\_dirwrite.c: Added routine [TIFFDataWidth](http://docs.google.com/man/TIFFDataWidth.3t.html) for determining TIFFDataType sizes instead of working with tiffDataWidth array directly as per bug 109.
* libtiff/: tif\_dirinfo.c, tif\_dirwrite.c: Added possibility to read broken TIFFs with LONG type used for TIFFTAG\_COMPRESSION, TIFFTAG\_BITSPERSAMPLE, TIFFTAG\_PHOTOMETRIC as per bug 99.
* libtiff/{tiff.h,tif\_fax3.c}: Add support for \_\_arch64\_\_ as per bug 94.
* libtiff/tif\_read.c: Fixed TIFFReadEncodedStrip() to fail if the decodestrip function returns anything not greater than zero as per bug 97.
* libtiff/tif\_jpeg.c: fixed computation of segment\_width for tiles files to avoid error about it not matching the cinfo.d.image\_width values ("JPEGPreDecode: Improper JPEG strip/tile size.") for ITIFF files. Apparently the problem was incorporated since 3.5.5, presumably during the OJPEG/JPEG work recently.
* libtiff/tif\_getimage.c: If DEFAULT\_EXTRASAMPLE\_AS\_ALPHA is 1 (defined in tiffconf.h - 1 by default) then the RGBA interface will assume that a fourth extra sample is ASSOCALPHA if the EXTRASAMPLE value isn't set for it. This changes the behaviour of the library, but makes it work better with RGBA files produced by lots of applications that don't mark the alpha values properly. As per bugs 93 and 65.
* libtiff/tif\_jpeg.c: allow jpeg data stream sampling values to override those from tiff directory. This makes this work with ImageGear generated files.

**CHANGES IN THE TOOLS:**

* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Added page size setting when creating PS Level 2.
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Fixed PS comment emitted when FlateDecode is being used.
* [tiffsplit](http://docs.google.com/man/tiffsplit.1.html): increased the maximum number of pages that can be split.
* [raw2tiff](http://docs.google.com/man/raw2tiff.1.html): Added option `-p' to explicitly select color space of input image data.
* [tiffmedian](http://docs.google.com/man/tiffmedian.1.html): Suppiort for large (> 2GB) images.
* [ppm2tiff](http://docs.google.com/man/ppm2tiff.1.html): Fixed possible endless loop.
* [tiff2rgba](http://docs.google.com/man/tiff2rgba.1.html): Switched to use [TIFFReadRGBAImageOriented()](http://docs.google.com/man/TIFFReadRGBAImage.3t.html) instead of [TIFFReadRGBAImage()](http://docs.google.com/man/TIFFReadRGBAImage.3t.html).
* [tiffcmp](http://docs.google.com/man/tiffcmp.1.html): Fixed problem with unused data comparing (bug 349). `-z' option now can be used to set the number of reported different bytes.
* [tiffcp](http://docs.google.com/man/tiffcp.1.html): Added possibility to specify value -1 to -r option to get the entire image as one strip (bug 343).
* [tiffcp](http://docs.google.com/man/tiffcp.1.html): Set the correct RowsPerStrip and PageNumber values (bug 343).
* [fax2tiff](http://docs.google.com/man/fax2tiff.1.html): Page numbering fixed (bug 341).
* [ppm2tiff](http://docs.google.com/man/ppm2tiff.1.html): PPM header parser improved: now able to skip comments.
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Force deadzone printing when EPS output specified (bug 325).
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Add ability to generate PS Level 3. It basically allows one to use the /flateDecode filter for ZIP compressed TIFF images. Patch supplied by Tom Kacvinsky (bug 328).
* [tiffcp](http://docs.google.com/man/tiffcp.1.html): Fixed problem with colorspace conversion for JPEG encoded images (bugs 23 and 275)
* [fax2tiff](http://docs.google.com/man/fax2tiff.1.html): Applied patch from Julien Gaulmin. More switches for fax2tiff tool for better control of input and output (bugs 272 and 293).
* [raw2tiff](http://docs.google.com/man/raw2tiff.1.html): New utility for turning raw raster images into TIFF files written by Andrey Kiselev.
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Sebastian Eken provided patches (bug 200) to add new these new switches:
  + **-b #**: for a bottom margin of # inches
  + **-c**: center image
  + **-l #**: for a left margin of # inches
  + **-r**: rotate the image by 180 degrees

Also, new features merged with code for shrinking/overlapping.

* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Don't emit BeginData/EndData DSC comments since we are unable to properly include the amount to skip as per bug 80.
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Added workaround for some software that may crash when last strip of image contains fewer number of scanlines than specified by the `/Height' variable as per bug 164.
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): Patch from John Williams to add new functionality for tiff2ps utility splitting long images in several pages as per bug 142. New switches:
  + **-H #**: split image if height is more than # inches
  + **-L #**: overLap split images by # inches
* [tiff2ps](http://docs.google.com/man/tiff2ps.1.html): New commandline switches to override resolution units obtained from the input file per bug 131:
  + **-x**: override resolution units as centimeters
  + **-y**: override resolution units as inches
* [fax2tiff](http://docs.google.com/man/fax2tiff.1.html): Updated to reflect latest changes in libtiff per bug 125.
* tiff2ps: Division by zero fixed as per bug 88.
* [tiffcp](http://docs.google.com/man/tiffcp.1.html): Added support for 'Orientation' tag.
* [tiffdump](http://docs.google.com/man/tiffdump.1.html): include TIFFTAG\_JPEGTABLES in tag list.
* tiffset: fix bug in error reporting.

**CHANGES IN THE CONTRIB AREA:**

* Fixed distribution to include contrib/addtiffo/tif\_ovrcache.{c,h}.
* libtiff/contrib/win95: renamed to contrib/win\_dib. Added new Tiffile.cpp example of converting TIFF files into a DIB on Win32 as per bug 143.

**CHANGES IN THE LZW COMPRESSION KIT:**

* LZW compression kit synchronized with actual libtiff version.

 TIFF home page.

Last updated $Date: 2016-09-25 20:05:45 $.