QGIS Application - Feature request #4236
Add ability to (over)write CRS for an existing raster file e.g. to geotif or to .aux.xml file for jpg + jgw

2011-08-29 07:30 PM - Alister Hood

Status:	Open		
Priority:	Normal		
Assignee:			
Category:	Rasters		
Pull Request or Patch supplied:	No	**Resolution:**	
Easy fix?:	No	**Copied to github as #:**	14188

Description

PROBLEM AND SUGGESTED SOLUTION

- .prj or .qpj files are not supported for raster formats

- Some raster formats (e.g. jpeg, bitmap) cannot include coordinate or projection information. These formats are typically used with world files to provide the coordinate information, in which case QGIS prompts for the CRS when the layer is added.

- as well as a world file, some raster files georeferenced by ArcGIS include projection information in a PAM (.aux.xml) file. QGIS supports this information (QGIS does not prompt for CRS if it is present).

In the case where:
1. a raster file did not come with projection information, or
2. a raster came with incorrect projection information, which the user has overriden in QGIS by setting another CRS,
it would be good if QGIS could write the CRS to the file itself (if supported, e.g. for geotif), or to a .aux.xml file.

Possibly the best solution would be for QGIS to write the CRS information whenever the CRS is set for the layer in QGIS (so immediately after the layer is loaded in the first case). If this happened automatically it would be undesirable (as per comment 8 below), especially so if the "CRS for new layers" option is not set to "Prompt for CRS". But it would probably be fine if the user was prompted e.g. "Do you want to write this CRS to file?", or if there was a button in the "Set layer CRS" dialog to "write selected CRS to file". Personally I think a button in the "Set layer CRS" dialog would be best.

I also think it would be worth somehow indicating in the layers panel that layers have had their CRS set in QGIS but not written to file, although I am aware of the issues around "gui clutter" in the layers panel.

ASSOCIATED PROBLEMS WHICH COULD BE AVOIDED

I suspect there are quite a lot of features and tools which don't work correctly using layers which do not come with the correct projection information. At least some of these don't produce a helpful error message.

e.g. there are a number of places on the internet where people have encountered the following error when trying to clip a raster which comes with a world file but no projection information, using the gdaltools "clip raster by mask layer" option to "Crop the extent of the target dataset to take the nodata value from input":

    GDAL command output:
    ERROR 1: Cannot compute bounding box of cutline

In some cases people have figured out that they can work around the problem by saving to a new geotif first. In other cases they have given up on the "clip raster by mask layer" tool and looked for alternatives or changed their workflow. Often a number of other people have wasted their time trying to work out what is going out.

I realise the error message comes from upstream, but this kind of problem where a simple task fails without a clear error message leaves the impression that QGIS is unreliable i.e. try something and it might fail randomly, but if you are lucky it will work!

The suggested feature could prevent a lot of these problems and avoid the associated perception of QGIS being unreliable.

KNOWN WORKAROUNDS

See comment #7 for how to write the CRS information for a file using gdal_edit.py

History

#1 - 2011-08-29 07:34 PM - Alister Hood

Just for information, here is an example .aux.xml which defines CRS:

```
<PAMDataset>
  <Metadata domain="xml:ESRI" format="xml">
    <GeodataXform xsi:type="typens:IdentityXform" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:typens="http://www.esri.com/schemas/ArcGIS/9.2">
      <SpatialReference xsi:type="typens:ProjectedCoordinateSystem">

<WKT>PROJCS[&quot;GD_1949_New_Zealand_Map_Grid&quot;,GEOGCS[&quot;GCS_New_Zealand_1949&quot;,DATUM[&quot;D_New_Zealand_1949&
aland_1949&quot;,SPHEROID[&quot;International_1924&quot;,6378388.0,297.0]],PRIMEM[&quot;Greenwich&quot;,0.0],UNIT[&quot;Degree&quot;,0.017453
uot;,0.0174532925199433]],PROJECTION[&quot;New_Zealand_Map_Grid&quot;],PARAMETER[&quot;False_Easting&quot;,2510000.0],PARAMETER[&quo
METER[&quot;False_Northing&quot;,6023150.0],PARAMETER[&quot;Central_Meridian&quot;,173.0],PARAMETER[&quot;Latitude_Of_Origin&quot;,-41.0],U
quot;,-41.0],UNIT[&quot;Meter&quot;,1.0]]</WKT>
      <XOrigin>-149973.520044524</XOrigin>
      <YOrigin>-339656.819984179</YOrigin>
      <XYScale>1052125299.09217</XYScale>
      <ZOrigin>0</ZOrigin>
      <ZScale>8192</ZScale>
      <MOrigin>-100000</MOrigin>
      <MScale>10000</MScale>
      <XYTolerance>0.001</XYTolerance>
      <ZTolerance>2</ZTolerance>
      <MTolerance>2</MTolerance>
      <HighPrecision>true</HighPrecision>
    </SpatialReference>
    </GeodataXform>
  </Metadata>
</PAMDataset>
```

#2 - 2011-12-16 02:11 PM - Giovanni Manghi

- Target version set to Version 1.7.4

#3 - 2012-04-15 10:09 AM - Giovanni Manghi

- Target version changed from Version 1.7.4 to Version 2.0.0

#4 - 2012-10-06 02:15 AM - Pirmin Kalberer

- Target version changed from Version 2.0.0 to Future Release - Nice to have

#5 - 2014-10-08 09:53 PM - Miroslav Umlauf

It actually would be nice to have. And it shouldn't be that hard. When I am creating JPGs from TIF with -co WORDFILE=YES it actually creates *.wld file plus .aux.xml with:

```
<PAMDataset>
  <SRS>PROJCS["WGS 84 / Pseudo-Mercator",...]</SRS>
</PAMDataset>
```

JPGs created this way are opened by QGIS straight (QGIS does not prompt for CRS).

#6 - 2017-05-01 12:50 AM - Giovanni Manghi

- Easy fix? set to No

#7 - 2018-01-10 03:36 AM - Alister Hood

- Description updated

Miroslav Umlauf wrote:

> *And it shouldn't be that hard.*

Correct - e.g. you can write the CRS information like this:

gdal_edit.py -ro -a_srs EPSG:2105 "C:\Processing\1.jpg"

A complicating factor in this case is that the jpeg driver requires -ro:

gdal_edit.py -stats "C:\Processing\1.jpg"
ERROR 6: The JPEG driver does not support update access to existing datasets.

But there may be files that don't require -ro, and in those cases I guess it would be best not to use -ro. (By default the gdal driver normally writes statistics when you open a raster in QGIS (or at least used to) - are these always written to a .aux.xml file? I can't figure out how to enable it to test - I thought I'd disabled it by setting GDAL_PAM_ENABLED=NO in the QGIS options, but it isn't showing up there.)

#8 - 2018-01-10 03:46 AM - Alister Hood

Alister Hood wrote:

> *It would be good if QGIS could create .aux.xml files containing CRS information, **probably after prompting for CRS when a raster layer is added.***

Thinking about it, writing it when loading a layer would be bad, as people probably often guess a CRS, to see if the raster shows up in the right place, and they wouldn't want it written if they'd guessed the wrong CRS.
So I guess it would be better to provide an option to "Save CRS with layer", either from the right-click menu in the TOC (I'm sure this wouldn't be accepted, on the basis that the menu is busy), or in the coordinate reference system selector.

#9 - 2018-01-10 03:47 AM - Alister Hood

Also see #5005 and #4100

#10 - 2018-01-11 12:28 AM - Alister Hood

Alister Hood wrote:

> *So I guess it would be better to provide an option to "Save CRS with layer"*

To be clear, I meant to suggest a button, rather than a checkbox or something.

#11 - 2018-01-11 12:30 AM - Alister Hood

Alister Hood wrote:

> *But there may be files that don't require -ro, and in those cases I guess it would be best not to use -ro. (By default the gdal driver normally writes*
> *statistics when you open a raster in QGIS (or at least used to) - are these always written to a .aux.xml file? I can't figure out how to enable it to test -*
> *I thought I'd disabled it by setting GDAL_PAM_ENABLED=NO in the QGIS options, but it isn't showing up there.)*

Ah, of course - I don't have .aux.xml generation disabled currently, I'd just forgotten that they aren't actually written until the layer is removed or the project closed.

Testing opening a tiff without embedded statistics in QGIS, I see the statistics are written to a .aux.xml file. This seems sub-optimal if I can write statistics to the actual tiff using gdal_edit, but it does mean that if we always wrote CRS to a .aux.xml we would be consistent.

#12 - 2018-01-11 12:37 AM - Alister Hood

Incidentally, gdal_edit -ro -a_srs ... doesn't do anything for a tiff, and if the tiff file is read-only gdal_edit -ro -a_srs... fails silently.

#13 - 2018-03-05 06:30 AM - Alister Hood
- Description updated
- Subject changed from Write CRS to .aux.xml file when adding raster with no embedded CRS information to Add ability to (over)write CRS for an
existing raster file e.g. to geotif or to .aux.xml file for jpg + jgw

#14 - 2018-03-05 06:33 AM - Alister Hood

I have rewritten the description including adding an example of the less obvious benefits of this feature i.e. one of the frustrating problems it would help to avoid.

#15 - 2018-10-05 12:13 PM - Alister Hood

Re the suggested workaround to use gdal_edit, I see that this is now available in Processing, as "Assign Projection". Unfortunately it doesn't allow editing the command to use -ro, so it is no use for jpeg layers.