

QGIS Application - Bug report #5598
CRS attribution algorithm for newly added layers broken in qgis-master (upcoming 1.8)

2012-05-14 07:26 PM - Mathieu Pellerin - nIRV

Status:	Closed	
Priority:	Severe/Regression	
Assignee:		
Category:	Projection Support	
Affected QGIS version:	master	Regression?: No
Operating System:		Easy fix?: No
Pull Request or Patch supplied:		Resolution: fixed
Crashes QGIS or corrupts data:		Copied to github as #: 15172
Description		
<p>Something's seriously wrong with CRS attribution for newly added layers in qgis-master (i.e. soon to be 1.8). I have no idea what is happening, however the steps below will reproduce the issue:</p> <p>1) Add moeareas.shp to a QGIS project 2) Open the Properties dialog and go to the General tab 3) Take note of the custom CRS applied to the layer</p> <p>The above shapefile's coordinate reference system is EPSG:3148, defined as follow: "+proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +towgs84=198,881,317,0,0,0,0 +units=m +no_defs"</p> <p>The custom CRS created by qgis 1.8 when loading the above shapefile: "+proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +units=m +no_defs"</p> <p>While qgis 1.7.x will correctly attribute the newly loaded layer its proper CRS (EPSG:3148), qgis 1.8 creates the custom CRS with the exact same projection settings (minus the +towgs84). Something must be wrong in the CRS attribution algorithm. This issue leads to misalignment with on-the-fly re-projection projects in which wgs layers & utm layers are mixed together.</p> <p>While I'm initially setting the priority as high, the issue should most probably considered a blocker as it's a pretty serious regression from 1.7.x. It's present on windows and linux</p>		
Related issues:		
Related to QGIS Application - Bug report # 5066: (regression) QGIS 1.7.* misd...		Closed 2012-02-22

History

- #1 - 2012-05-14 07:45 PM - Mathieu Pellerin - nIRV
- Category set to Projection Support
 - Priority changed from High to Severe/Regression
 - Target version set to Version 1.8.0
 - Operating System set to all
- #2 - 2012-05-14 11:02 PM - cgsbob -

I have the same problem as you. I believe it is a problem with gdal. testpsg shows the towgs84 is being stripped off:

```
$ testpsg moeareas.prj
Validate Succeeds.
WKT[moeareas.prj] =
PROJCS["Indian_1960_UTM_Zone_48N",
  GEOGCS["GCS_Indian_1960",
```

```
DATUM["D_Indian_1960",
  SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],
PRIMEM["Greenwich",0.0],
UNIT["Degree",0.0174532925199433]],
PROJECTION["Transverse_Mercator"],
PARAMETER["False_Easting",500000.0],
PARAMETER["False_Northing",0.0],
PARAMETER["Central_Meridian",105.0],
PARAMETER["Scale_Factor",0.9996],
PARAMETER["Latitude_Of_Origin",0.0],
UNIT["Meter",1.0]]
```

Simplified WKT[moeareas.prj] =

```
PROJCS["Indian_1960_UTM_Zone_48N",
  GEOGCS["GCS_Indian_1960",
    DATUM["D_Indian_1960",
      SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],
    PRIMEM["Greenwich",0.0],
    UNIT["Degree",0.0174532925199433]],
  PROJECTION["Transverse_Mercator"],
  PARAMETER["False_Easting",500000.0],
  PARAMETER["False_Northing",0.0],
  PARAMETER["Central_Meridian",105.0],
  PARAMETER["Scale_Factor",0.9996],
  PARAMETER["Latitude_Of_Origin",0.0],
  UNIT["Meter",1.0]]
```

Old Style WKT[moeareas.prj] =

```
PROJCS["Indian_1960_UTM_Zone_48N",GEOGCS["GCS_Indian_1960",DATUM["D_Indian_1960",SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER["False_Easting",500000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",105.0],PARAMETER["Scale_Factor",0.9996],PARAMETER["Latitude_Of_Origin",0.0],UNIT["Meter",1.0]]
```

ESRI'ified WKT[moeareas.prj] =

```
PROJCS["Indian_1960_UTM_Zone_48N",
  GEOGCS["GCS_Indian_1960",
    DATUM["D_Indian_1960",
      SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],
    PRIMEM["Greenwich",0.0],
    UNIT["Degree",0.017453292519943295]],
  PROJECTION["Transverse_Mercator"],
  PARAMETER["False_Easting",500000.0],
  PARAMETER["False_Northing",0.0],
  PARAMETER["Central_Meridian",105.0],
  PARAMETER["Scale_Factor",0.9996],
  PARAMETER["Latitude_Of_Origin",0.0],
  UNIT["Meter",1.0]]
```

PROJ.4 rendering of [moeareas.prj] = +proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +units=m +no_defs

I can confirm the issue with the provided shapefile (tested on Windows/osgei4w) as actually I don't have a Linux machine with qgis and gdal 1.9

I have vectors in other CRSs with towgs84 parameters and the issue is not surfacing.

The issue sounds a lot like this #5142 filed by me, where I arrived at the conclusion that there was something strange going on if QGIS is not compiled against gdal 1.9, but obviously this case is different as the tests were made using qgis compiled against gdal 1.9.

#4 - 2012-05-15 12:54 AM - Mathieu Pellerin - nIRV

I don't think it's a gdal issue here: on a windows machine with both qgis (1.7.4) and qgis-dev (to-be 1.8) installed, qgis 1.7.4 assigns the right EPSG to the newly loaded layer, while qgis 1.8 fails. I believe both versions are compiled using the same gdal 1.9 library.

#5 - 2012-05-15 12:57 AM - Mathieu Pellerin - nIRV

Also, regarding teststepsg not showing the +towgs84 value, I believe this is not linked to the issue raised here. The absence of +towgs84 in teststepsg (or gdalsrsinfo) is a problem present in gdal (and discussing here: <http://trac.osgeo.org/gdal/ticket/4345>) but has not prevent previous version of qgis from assigning the right srs to loaded layers.

#6 - 2012-05-15 01:19 AM - Salvatore Larosa

It seem depends on the PRJ file definition!

If you use the definition as below [1], QGIS acknowledges the correct reference system (3148)!

How you created the shp?

which software you used?

[1] - <http://spatialreference.org/ref/epsg/3148/>

```
PROJCS["Indian 1960 / UTM zone 48N",GEOGCS["Indian
1960",DATUM["D_Indian_1960",SPHEROID["Everest_1830_1937_Adjustment",6377276.345,300.8017]],PRIMEM["Greenwich",0],UNIT["Degree",0.017453292519943295]],PROJECTION["Transverse_Mercator"],PARAMETER["latitude_of_origin",0],PARAMETER["central_meridian",105],PARAMETER["scale_factor",0.9996],PARAMETER["false_easting",500000],PARAMETER["false_northing",0],UNIT["Meter",1]]
```

#7 - 2012-05-15 01:22 AM - Giovanni Manghi

Salvatore Larosa wrote:

It seem depends on the PRJ file definition!

If you use the definition as below [1], QGIS acknowledges the correct reference system (3148)!

How you created the shp?

which software you used?

[1] - <http://spatialreference.org/ref/epsg/3148/>

[...]

but the bottom line is that qgis 1.7.4 reads correctly also the provided prj

#8 - 2012-05-15 01:25 AM - Jürgen Fischer

Giovanni Manghi wrote:

| *but the bottom line is that qgis 1.7.4 reads correctly also the provided prj*

In the same setup (GDAL and maybe PROJ.4)?

#9 - 2012-05-15 01:28 AM - Giovanni Manghi

| *In the same setup (GDAL and maybe PROJ.4)?*

yes, on osgeo4w

#10 - 2012-05-15 01:38 AM - Salvatore Larosa

Also, I noticed that in PROJ4.7 EPSG 3148 is defined:

```
# Indian 1960 / UTM zone 48N
<3148> +proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +units=m +no_defs <>
```

instead in PROJ4.8 is:

```
# Indian 1960 / UTM zone 48N
<3148> +proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +towgs84=198,881,317,0,0,0,0 +units=m +no_defs <>
```

#11 - 2012-05-18 08:32 PM - Etienne Tourigny

The problem is that OGR's MorphFromESRI() wkt fixing code (see gdal bug #4345) does not work with this file, because of a mismatch in SPHEROID name - "Everest 1830 (1937 Adjustment)" vs. "Everest_Adjustment_1937" despite identical spheroid parameters.

```
$ gdalinfo moeareas.shp
```

```
PROJ.4 : '+proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +units=m +no_defs '
```

OGC WKT :

```
PROJCS["Indian_1960_UTM_Zone_48N",
  GEOGCS["GCS_Indian_1960",
    DATUM["Indian_1960",
      SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],
    PRIMEM["Greenwich",0.0],
    UNIT["Degree",0.0174532925199433]],
  PROJECTION["Transverse_Mercator"],
```

```
PARAMETER["False_Easting",500000.0],
PARAMETER["False_Northing",0.0],
PARAMETER["Central_Meridian",105.0],
PARAMETER["Scale_Factor",0.9996],
PARAMETER["Latitude_Of_Origin",0.0],
UNIT["Meter",1.0]]
```

tourigny@supernova: /data/research/work/qgis/issues/5598 \$ gdalsrsinfo EPSG:3148

PROJ.4 : '+proj=utm +zone=48 +a=6377276.345 +b=6356075.41314024 +towgs84=198,881,317,0,0,0,0 +units=m +no_defs '

OGC WKT :

```
PROJCS["Indian 1960 / UTM zone 48N",
  GEOGCS["Indian 1960",
    DATUM["Indian_1960",
      SPHEROID["Everest 1830 (1937 Adjustment)",6377276.345,300.8017,
        AUTHORITY["EPSG","7015"]],
      TOWGS84[198,881,317,0,0,0,0],
      AUTHORITY["EPSG","6131"]],
    PRIMEM["Greenwich",0,
      AUTHORITY["EPSG","8901"]],
    UNIT["degree",0.0174532925199433,
      AUTHORITY["EPSG","9122"]],
    AUTHORITY["EPSG","4131"]],
  PROJECTION["Transverse_Mercator"],
  PARAMETER["latitude_of_origin",0],
  PARAMETER["central_meridian",105],
  PARAMETER["scale_factor",0.9996],
  PARAMETER["false_easting",500000],
  PARAMETER["false_northing",0],
  UNIT["metre",1,
    AUTHORITY["EPSG","9001"]],
  AXIS["Easting",EAST],
  AXIS["Northing",NORTH],
  AUTHORITY["EPSG","3148"]]
```

Created ticket in gdal : <http://trac.osgeo.org/gdal/ticket/4673> , and committed changes to gdal which fix this issue. The fix is to compare SPHEROID parameters rather than node names. However, it is unlikely it will be in gdal 1.9.1 which is around the corner.

QGis 1.7 was not restrictive enough in comparing spatial reference definitions, which is why it works, despite the lack of TOWGS84 node in the .prj files. It "works" because all other parameters are equal, but for some reason does not enforce strictly equal +towgs84 parameters (perhaps because they are missing in the definition).

This needs a little more investigation to find how it does recognize the srid with towgs84 parameters in 1.7 and not in 1.8.

#12 - 2012-05-18 10:34 PM - Etienne Tourigny

Found a solution - the parameters passed to sql query must be trimmed.

This is a regression caused by commit:2a830339ed5fae9e6002b7d56442991fe1a18a8c "split proj4string on spaces followed by '+' (instead of spaces

only).

see <http://trac.osgeo.org/proj/ticket/132>"

See my pull request: <https://github.com/qgis/Quantum-GIS/pull/142>

#13 - 2012-05-19 04:16 AM - Giuseppe Sucameli

Happy to know that my commit doesn't work as I expected :)

But I really don't understand why trimming the string fixes the problem...

The string is splitted on space(s) followed by '+' sign, where spaces are in the param?

#14 - 2012-05-19 05:19 AM - Giuseppe Sucameli

Giuseppe Sucameli wrote:

| *The string is splitted on space(s) followed by '+' sign, where spaces are in the param?*

Found, if the last param ends with a space that space is kept and passed to the query.

#15 - 2012-05-19 07:31 AM - Etienne Tourigny

in this case (and probably most cases, it's the +nodefs . Most (all?) proj strings end with a space:

'+proj=longlat +datum=WGS84 +no_defs '

#16 - 2012-05-19 07:33 AM - Giuseppe Sucameli

- Resolution set to fixed

- Status changed from Open to Closed

The pull request (by Etienne) was merged in master branch.

#17 - 2012-05-19 07:39 AM - Giuseppe Sucameli

Probably we should go deeper and search for the function that adds (or not removes) that trailing space, otherwise the problem may come back and break anything else.

I.e. trimming the user input, the OSRExportToProj4 output, and so on...

#18 - 2012-05-19 12:07 PM - Etienne Tourigny

OSRExportToProj4 always inserts a trailing space, and we should consider that user input could have a trailing space, so you are right about that!

#19 - 2012-05-19 08:41 PM - Etienne Tourigny

I have addressed your concern, and also added a test which should point out any new regressions.

<https://github.com/qgis/Quantum-GIS/pull/144>

#20 - 2012-05-19 08:58 PM - Mathieu Pellerin - nIRV

Etienne, thanks for looking into this.

I've compiled the latest revision of qgis-master, which includes your commit, and I still can't get proper behavior with the shape file I attached to this issue. Did you check with the attached shape file whether your change fixed the issue on your computer?

#21 - 2012-05-19 09:04 PM - Etienne Tourigny

Hi

this is probably because you already have that user-defined crs in your personal srs.db . This happened to me when testing - yes I did test your file.

Please delete \$HOME/.qgis/qgis.db (or rename it) and try again. If not compile qgis with debug support and attach the log here.

#22 - 2012-05-19 09:13 PM - Etienne Tourigny

Just saw this - you can delete the user-defined crs from your personal db with Settings-Custom CRS

#23 - 2012-05-19 10:13 PM - Mathieu Pellerin - nIRV

I've done that, as well as removing the custom crs from the recently used crs. QGIS still ends up creating a custom CRS. I've noticed your pull request #144 isn't merged into qgis-master yet. Is it required to properly fix the issue?

#24 - 2012-05-20 09:09 AM - Etienne Tourigny

What gdal version are you using? works here with gdal 1.9, even before changes in pull request 144.

#25 - 2012-05-20 07:00 PM - Mathieu Pellerin - nIRV

Etienne, I've just tested a osgeo4w QGIS windows build (based on commit:c64b715) and - yay - the attached shapefile is attributed the proper CRS.

Yesterday, the issue was still present on a QGIS linux build (based on commit:1b6b841545) which I had built myself. The gdal version I used was 1.9 (as confirmed in the QGIS about dialogue). However, I will try to verify this on a ubungis build today.

Are you using a linux or windows build?

#26 - 2012-05-21 04:52 AM - Etienne Tourigny

I use and dev on linux, and sometimes test on windows. I will post another, permanent fix today(for stray buggy GEOGCS files) with more unit tests so stay

tuned.

Again - it should work in linux now (as it does in the osgeo4w build), so re-check your build. I think there is a nightlybuild you can download and test.

<https://issues.qgis.org/projects/quantum-gis/wiki/Download>

#27 - 2012-05-21 01:11 PM - Etienne Tourigny

I have committed more changes to my pull request. Once committed and built, I will send a mailing list email to ask people to test, because there is a change that **might** have negative impacts in some cases.

I found a few more issues, notably with GEOGCS nodes only. Using gdal-1.8 they are not loaded completely, I don't see how to fix that as this is external to QGIS (try them with teststepg...). So I set the tests as "Expected Failure" when gdal<1.9 for those. The solution for these problems is "upgrade to gdal 1.9".

The best solution I see is to use GDAL_FIX_ESRI_WKT=GEOGCS instead of TOWGS84 because gdal-1.9.1 has some bugs when using TOWGS84. These have been fixed, but will not make it in gdal-1.9.1. The downside is that GEOGCS changes more things than TOWGS84 and this **might** change the CRS. See <http://trac.osgeo.org/gdal/ticket/4673> for a follow-up.

I also added the possibility to set GDAL_FIX_ESRI_WKT externally (it's a CPL option), so this could be used to resolve specific issues. For example, if GEOGCS has a negative impact, user can add GDAL_FIX_ESRI_WKT=TOWGS84 to environment.

Example GEOGCS definitions which do not work without this fix with gdal-1.8:

EPSG:4131

```
GEOGCS["GCS_Indian_1960",DATUM["D_Indian_1960",SPHEROID["Everest_Adjustment_1937",6377276.345,300.8017]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]
```

EPSG:4618

```
GEOGCS["GCS_South_American_1969",DATUM["D_South_American_1969",SPHEROID["GRS_1967_Truncated",6378160.0,298.25]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]
```

#28 - 2012-05-25 08:56 PM - Mathieu Pellerin - nIRV

Etienne, I still see this issue on my linux machine. I've tried both a ubuntuqgis nightly build, as well as building qgis myself. In both linux builds, the issue remains.

Libraries used by the two builds are: gdal 1.9.0 (offered on ubuntuqgis ppa) and proj 4.7 (ubuntu package).

#29 - 2012-05-27 02:06 PM - Giovanni Manghi

- Status changed from Closed to Feedback

nirvn - wrote:

Etienne, I still see this issue on my linux machine. I've tried both a ubuntuqgis nightly build, as well as building qgis myself. In both linux builds, the issue remains.

Libraries used by the two builds are: gdal 1.9.0 (offered on ubuntuqgis ppa) and proj 4.7 (ubuntu package).

this needs to be reopened? please leave feedback asap as this is/was a blocker.

#30 - 2012-05-27 02:22 PM - Etienne Tournigny

as I said in the ML, please re-open this bug as I found and fixed other issues, and it seems that it didn't work for nirvn.

The fixes in my pull request should work for him : <https://github.com/qgis/Quantum-GIS/pull/144>

#31 - 2012-05-27 02:23 PM - Giovanni Manghi

- Resolution deleted (fixed)
- Status changed from Feedback to Open
- Operating System deleted (all)

#32 - 2012-05-28 10:24 AM - Etienne Tournigny

Jurgen has just committed the changes I pushed. Nirv - if you can update your master and test it would be nice. If you have any problems please post a debug log here.

#33 - 2012-05-29 01:59 PM - Etienne Tournigny

- File *crstest.patch* added

Autotests are failing in i386 linuxes because of a difference in the precision of the +b parameters (see the [mailing list](#)). Attached patch should work fine in all architectures, as it only looks for towgs84 parameter instead of matchin proj.4 string.

#34 - 2012-05-31 04:32 PM - Etienne Tournigny

I've tested latest ubuntu-gis-nightly using ubuntu 11.10 AMD64 (gdal 1.9.0)

There might be an issue with i386 linux (because of a difference in the +b parameter of the PROJ.4 string).

Can someone please test the latest ubuntu-nightly with a 32 bit linux (with gdal-1.9)? This is the last blocker, so it would be nice to clear it!

Thanks

#35 - 2012-05-31 05:19 PM - Etienne Tournigny

Also ok in the osgeo4w build (i386 VM)

#36 - 2012-05-31 08:05 PM - Mathieu Pellerin - nIRV

OMG, it's now working, yay! Both on osgeo4w build and ubuntu-gis nightly ppa.

Kudos Etienne. Leaving you the honor of closing this bug. :)

#37 - 2012-06-01 03:34 AM - Etienne Tourigny

That's great to know! I'd like to close it but redmine won't let me!

Can somebody please give me "Edit issues" permissions for the QGis or quantum-gis redmine project?

#38 - 2012-06-01 03:36 AM - Giovanni Manghi

Etienne Tourigny wrote:

That's great to know! I'd like to close it but redmine won't let me!

Can somebody please give me "Edit issues" permissions for the QGis or quantum-gis redmine project?

try now (logout before)

#39 - 2012-06-01 03:42 AM - Etienne Tourigny

- % Done changed from 0 to 100
- Status changed from Open to Closed
- Resolution set to fixed

thanks

Files			
MoEAreas.zip	148 KB	2012-05-14	Mathieu Pellerin - nIRV
crstest.patch	2.76 KB	2012-05-29	Etienne Tourigny