

QGIS Application - Bug report #22010
Raster calculator, abs() not working

2019-05-07 04:45 PM - Adriaan van Natijne

Status:	Open	
Priority:	High	
Assignee:		
Category:	Raster Calculator	
Affected QGIS version:	3.6.1	Regression?: Yes
Operating System:		Easy fix?: No
Pull Request or Patch supplied:	No	Resolution:
Crashes QGIS or corrupts data:	No	Copied to github as #: 29824
Description <p>The abs() function in the QGIS 3.6.1 Raster Calculator does not work. When the absolute value is taken using the <i>Raster -> Raster Calculator</i> function it will return the original (negative) values without a warning. As an example a GeoTiff (neg2.tif) is attached with the result from the Raster Calculator (abs2.tif). Behaviour was observed on both Microsoft Windows and Linux machines.</p> <p>I am unsure if the function worked properly in previous versions of QGIS. Although we have not noticed the problem before upgrading to QGIS 3, reanalysis of earlier results shows that the bug <i>might</i> have been present before.</p> <p>From issue #21405 I understood that the OpenCL acceleration may produce erroneous results in the raster calculator. OpenCL was disabled on at least some of the machines this was tested on.</p> <p>The Raster Calculator provided by GDAL provides the correct results.</p> <pre>gdal_calc.py --calc "abs(A)" --format GTiff --type Float32 -A /tmp/abs2.tif --A_band 1 --outfile /tmp/abs2_gdal.tif</pre> Workaround <p>Use GDAL Raster Calculator or <code>sqrt("neg2@1"^2)</code> in the QGIS Raster Calculator.</p>		

History

#1 - 2019-05-07 05:13 PM - Alessandro Pasotti

Just to clarify, OpenCL option should not produce wrong results and if it does it's a bug and should be reported.

That said, it is important for us to know if the issue was found with that option on or off because the code paths are different.

#2 - 2019-05-07 05:17 PM - Adriaan van Natijne

Alessandro Pasotti wrote:

That said, it is important for us to know if the issue was found with that option on or off because the code paths are different.

On my machine OpenCL was switched **off** (and can't be enabled due to missing drivers).

I have since installed QGIS 3.6.2, which did not solve the issue.

#3 - 2019-05-08 01:53 PM - Adriaan van Natijne

This issue is also confirmed in QGIS 3.4.4 on Windows.

Diving into the source, the issue is probably more general in nature. As far as I could reconstruct the syntax checking is done in `source:src/analysis/raster/qgsrastercalcparser.yy`. Here *any* function is accepted, therefore the use of `abs()`, `chocolate()` and `spaghetti()` are all considered valid by the raster calculator - although none of them is implemented. I believe the actual calculations are done in consecutive calls to `source:src/analysis/raster/qgsrastercalcnode.cpp#L53`. For unknown operations this function will return false. As the output of the `calculate()` function is checked before writing (either `source:src/analysis/raster/qgsrastercalculator.cpp#L233` or `source:src/analysis/raster/qgsrastercalculator.cpp#L306`) I am unsure on why/how the original data is written to the output. Possibly due to the fact that ("`neg2@1`") is a valid statement in itself, that copies the input to the output matrix (`source:src/analysis/raster/qgsrastercalcnode.cpp#L189?`) before trying to apply the non-existent `abs` function?

#4 - 2019-05-09 09:20 AM - Giovanni Manghi

- Regression? changed from No to Yes
- Operating System deleted (Ubuntu 18.04.2)
- Priority changed from Normal to High

Files

neg2.tif	25.5 KB	2019-05-07	Adriaan van Natijne
abs2.tif	25.5 KB	2019-05-07	Adriaan van Natijne
abs2_gdal.tif	25.5 KB	2019-05-07	Adriaan van Natijne