# GammaLib - Support #2784

## compile gammalib/ctools against anaconda python

01/12/2019 10:51 PM - Kelley-Hoskins Nathan

| | | | |
|---|---|---|---|
| **Status:** | Closed | **Start date:** | 01/12/2019 |
| **Priority:** | Normal | **Due date:** | |
| **Assigned To:** | Knödlseder Jürgen | **% Done:** | 100% |
| **Category:** | | **Estimated time:** | 0.00 hour |
| **Target version:** | 1.6.0 | | |

**Description**

I'm in a situation where I can get access to ~1000 cpu cores, but to do so I need to compile gammalib and ctools against anaconda python. The situation is:

- I have my own veritas python package that depends on 10ish other anaconda python packages, so I can't go without anaconda
- I need to manually compile gammalib and ctools devel, which have a bugfix that the anaconda gammalib releases dont have yet, so I can't use anaconda gammalib/ctools

When I configure+make gammalib against the system python with the following command, leaving out all anaconda stuff, gammalib+ctools compile fine.

```
./configure --prefix=$PWD LDFLAGS=-L$SOFTWARE/cfitsio/lib CPPFLAGS=-I$SOFTWARE/cfitsio/include/
```

When I try to make this with anaconda python, I get many errors like:

```
...
creating build/temp.linux-x86_64-3.6/gammalib
gcc -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall -Wstrict-prototypes -fPIC -I../include
 -I/nv/hp11/nkelleyh3/data/software/cfitsio/include/ -I/gpfs/pace2/project/pc1/nkelleyh3/software/miniconda3/include/python3.6m
 -I/gpfs/pace2/project/pc1/nkelleyh3/software/miniconda3/include/python3.6m -I../inst/mwl/include -I../inst/cta/include
 -I../inst/lat/include -I../inst/com/include -I/nv/hp11/nkelleyh3/data/software/miniconda3/include/python3.6m -c
 gammalib/app_wrap.cpp -o build/temp.linux-x86_64-3.6/gammalib/app_wrap.o -fopenmp
cc1plus: warning: command line option ‘-Wstrict-prototypes’ is valid for C/ObjC but not for C++
gammalib/app_wrap.cpp: In function ‘swig_module_info* SWIG_Python_GetModule()’:
gammalib/app_wrap.cpp:2452:51: error: ‘PyCObject_Import’ was not declared in this scope
        (char*)"type_pointer" SWIG_TYPE_TABLE_NAME);
                                                   ^
gammalib/app_wrap.cpp: In function ‘void SWIG_Python_SetModule(swig_module_info*)’:
gammalib/app_wrap.cpp:2521:92: error: ‘PyCObject_FromVoidPtr’ was not declared in this scope
   PyObject *pointer = PyCObject_FromVoidPtr((void *) swig_module, SWIG_Python_DestroyModule);
                                                                                            ^
gammalib/app_wrap.cpp:2512:22: warning: unused variable ‘swig_empty_runtime_method_table’ [-Wunused-variable]
   static PyMethodDef swig_empty_runtime_method_table[] = { {NULL, NULL, 0, NULL} };/* Sentinel */
                     ^
gammalib/app_wrap.cpp: In function ‘swig_type_info* SWIG_Python_TypeQuery(const char*)’:
gammalib/app_wrap.cpp:2544:60: error: ‘PyCObject_AsVoidPtr’ was not declared in this scope
     descriptor = (swig_type_info *) PyCObject_AsVoidPtr(obj);
                                                         ^
gammalib/app_wrap.cpp:2549:51: error: ‘PyCObject_FromVoidPtr’ was not declared in this scope
      obj = PyCObject_FromVoidPtr(descriptor, NULL);
                                                   ^

...

gammalib/app_wrap.cpp:17046:59: error: ‘PyString_AsString’ was not declared in this scope
      temp2 = GFilename(std::string(PyString_AsString(obj1)));
                                                           ^
gammalib/app_wrap.cpp:17050:106: error: ‘PyString_AsString’ was not declared in this scope
      temp2 = GFilename(std::string(PyString_AsString(PyUnicode_AsEncodedString(obj1, "utf-8", "Error ~"))));
```

```
                                                                                    ^
gammalib/app_wrap.cpp: In function ‘PyObject* _wrap_GApplicationPar_filename(PyObject*, PyObject*)’:
gammalib/app_wrap.cpp:17847:35: error: ‘PyString_Check’ was not declared in this scope
       if (PyString_Check(argv[1]) ||
                                   ^
error: command 'gcc' failed with exit status 1
make[3]: *** [build] Error 1
make[3]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel/pyext'
make[2]: *** [all] Error 2
make[2]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel/pyext'
make[1]: *** [all-recursive] Error 1
make[1]: Leaving directory `/gpfs/pace2/project/pc1/nkelleyh3/software/gammalib-devel'
make: *** [all] Error 2
```

I've found python has a python-config, which spits out various flags, but anaconda version doesn't symlink it very well:

```
$ cd /nv/hp11/nkelleyh3/data/software/miniconda3/bin
 $ ls -l py*config
lrwxrwxrwx 1 nkelleyh3 phy-otte   17 Jan  6 08:19 python3.6-config -> python3.6m-config
-rwxrwxr-x 1 nkelleyh3 phy-otte 3428 Jan  6 08:18 python3.6m-config
lrwxrwxrwx 1 nkelleyh3 phy-otte   17 Jan  6 08:19 python3-config -> python3.6m-config
```

I tried adding the include flags from this python-config into the gammalib configure command, like:

```
./configure --prefix=$PWD LDFLAGS=-L$SOFTWARE/cfitsio/lib CPPFLAGS="-I$SOFTWARE/cfitsio/include/ $(python3.6m-config
 --includes)"
```

But I get the same above errors.  I've also added miniconda/lib to LD_LIBRARY_PATH, but no luck that way either.

I realize that if this build is successful, and anaconda updates any part of itself, this gammalib/ctools will probably break and need to be recompiled, but thats acceptable price for 1000 cpu cores.

Does anyone know the right configure commands to compile gammalib/ctools against anaconda python?

## History

**#1 - 01/13/2019 09:38 PM - Knödlseder Jürgen**

Here is how GammaLib and ctools are built for anaconda. You may check if this also works for you:

```
# Setup environment
export PATH="$HOME/miniconda3/bin:$PATH"
source activate build

# Clean conda source and build cache
conda clean -s
rm -rf $HOME/miniconda3/conda-bld/*-64/*
rm -rf $HOME/miniconda3/conda-bld/src_cache/*

# Create conda recipe
./autogen.sh
./configure

# Build conda packages
conda-build dev/conda.recipe
```

```
# Setup environment
export PATH="$HOME/miniconda3/bin:$PATH"
source activate build
```

```
# Clean conda source and build cache
conda clean -s
rm -rf $HOME/miniconda3/conda-bld/*-64/*
rm -rf $HOME/miniconda3/conda-bld/src_cache/*

# Create conda recipe
export GAMMALIB=$HOME/jenkins/install/release/gammalib
./autogen.sh
./configure

# Build conda packages
conda-build dev/conda.recipe
```

**#2 - 01/18/2019 05:12 PM - Kelley-Hoskins Nathan**

*- Status changed from New to Resolved*

I've got it working. I think the trick is that gcc, swig, and cfitsio must all be installed via anaconda, rather than using other (system or manual) installations.

The commands I used to install them are:

```
$ conda install gcc swig
$ conda install -c conda-forge cfitsio
```

Then configuring gammalib and ctools was just like normal (no extra lib or include flags):

```
$ cd gammalib
$ ./autogen.sh
$ ./configure --prefix=$PWD
$ make
$ make install
```

My current package list is (most packages came by default with anaconda):

```
# packages in environment at /nv/hp11/nkelleyh3/data/software/anaconda:
#
# Name                    Version                   Build  Channel
_ipyw_jlab_nb_ext_conf    0.1.0                     py36_0
alabaster                 0.7.12                    py36_0
anaconda                  custom                    py36hbbc8b67_0
anaconda-client           1.7.2                     py36_0
anaconda-navigator        1.9.6                     py36_0
anaconda-project          0.8.2                     py36_0
asn1crypto                0.24.0                    py36_0
astroid                   2.1.0                     py36_0
astropy                   3.1.1                     py36h7b6447c_0
atomicwrites              1.2.1                     py36_0
attrs                     18.2.0                    py36h28b3542_0
babel                     2.6.0                     py36_0
```

| | | | |
|---|---|---|---|
| backcall | 0.1.0 | py36_0 | |
| backports | 1.0 | py36_1 | |
| backports.os | 0.1.1 | py36_0 | |
| backports.shutil_get_terminal_size | 1.0.0 | py36_2 | |
| beautifulsoup4 | 4.6.3 | py36_0 | |
| bitarray | 0.8.3 | py36h14c3975_0 | |
| bkcharts | 0.2 | py36_0 | |
| blas | 1.0 | mkl | |
| blaze | 0.11.3 | py36_0 | |
| bleach | 3.0.2 | py36_0 | |
| blosc | 1.14.4 | hdbcaa40_0 | |
| bokeh | 1.0.3 | py36_0 | |
| boto | 2.49.0 | py36_0 | |
| bottleneck | 1.2.1 | py36h035aef0_1 | |
| bzip2 | 1.0.6 | h14c3975_5 | |
| ca-certificates | 2018.11.29 | ha4d7672_0 | conda-forge |
| cairo | 1.14.12 | h8948797_3 | |
| certifi | 2018.11.29 | py36_1000 | conda-forge |
| cffi | 1.11.5 | py36he75722e_1 | |
| cfitsio | 3.430 | hc04bd9f_1001 | conda-forge |
| chardet | 3.0.4 | py36_1 | |
| click | 7.0 | py36_0 | |
| cloog | 0.18.0 | 0 | |
| cloudpickle | 0.6.1 | py36_0 | |
| clyent | 1.2.2 | py36_1 | |
| colorama | 0.4.1 | py36_0 | |
| conda | 4.5.12 | py36_1000 | conda-forge |
| conda-build | 3.17.6 | py36_0 | |
| conda-env | 2.6.0 | 1 | |
| conda-verify | 3.1.1 | py36_0 | |
| contextlib2 | 0.5.5 | py36_0 | |
| cryptography | 2.3.1 | py36hdffb7b8_0 | conda-forge |
| cryptography-vectors | 2.3.1 | py36_1000 | conda-forge |
| curl | 7.63.0 | h74213dd_0 | conda-forge |
| cycler | 0.10.0 | py36_0 | |
| cython | 0.29.2 | py36he6710b0_0 | |
| cytoolz | 0.9.0.1 | py36h14c3975_1 | |
| dask | 1.0.0 | py36_0 | |
| dask-core | 1.0.0 | py36_0 | |
| datashape | 0.5.4 | py36_1 | |
| dbus | 1.13.2 | h714fa37_1 | |
| decorator | 4.3.0 | py36_0 | |
| defusedxml | 0.5.0 | py36_1 | |
| distributed | 1.25.2 | py36_0 | |
| docutils | 0.14 | py36_0 | |
| entrypoints | 0.2.3 | py36_2 | |
| et_xmlfile | 1.0.1 | py36_0 | |
| expat | 2.2.6 | he6710b0_0 | |
| fastcache | 1.0.2 | py36h14c3975_2 | |
| filelock | 3.0.10 | py36_0 | |
| flask | 1.0.2 | py36_1 | |
| flask-cors | 3.0.7 | py36_0 | |
| fontconfig | 2.13.0 | h9420a91_0 | |
| freetype | 2.9.1 | h8a8886c_1 | |
| fribidi | 1.0.5 | h7b6447c_0 | |
| future | 0.17.1 | py36_0 | |
| gcc | 4.8.5 | 7 | |
| get_terminal_size | 1.0.0 | haa9412d_0 | |
| gevent | 1.4.0 | py36h7b6447c_0 | |
| glib | 2.56.2 | hd408876_0 | |
| glob2 | 0.6 | py36_1 | |
| gmp | 6.1.2 | h6c8ec71_1 | |
| graphite2 | 1.3.13 | h23475e2_0 | |
| greenlet | 0.4.15 | py36h7b6447c_0 | |
| gst-plugins-base | 1.14.0 | hbbd80ab_1 | |
| gstreamer | 1.14.0 | hb453b48_1 | |
| h5py | 2.9.0 | py36h7918eee_0 | |
| harfbuzz | 1.8.8 | hffaf4a1_0 | |
| hdf5 | 1.10.4 | hb1b8bf9_0 | |
| heapdict | 1.0.0 | py36_2 | |
| html5lib | 1.0.1 | py36_0 | |
| icu | 58.2 | h9c2bf20_1 | |
| idna | 2.8 | py36_0 | |
| imageio | 2.4.1 | py36_0 | |
| imagesize | 1.1.0 | py36_0 | |

| | | | |
|---|---|---|---|
| importlib_metadata | 0.6 | py36_0 | |
| intel-openmp | 2019.1 | 144 | |
| ipykernel | 5.1.0 | py36h39e3cac_0 | |
| ipython | 7.2.0 | py36h39e3cac_0 | |
| ipython_genutils | 0.2.0 | py36_0 | |
| ipywidgets | 7.4.2 | py36_0 | |
| isl | 0.12.2 | 0 | |
| isort | 4.3.4 | py36_0 | |
| itsdangerous | 1.1.0 | py36_0 | |
| jbig | 2.1 | hdba287a_0 | |
| jdcal | 1.4 | py36_0 | |
| jedi | 0.13.2 | py36_0 | |
| jeepney | 0.4 | py36_0 | |
| jinja2 | 2.10 | py36_0 | |
| jpeg | 9b | h024ee3a_2 | |
| jsonschema | 2.6.0 | py36_0 | |
| jupyter | 1.0.0 | py36_7 | |
| jupyter_client | 5.2.4 | py36_0 | |
| jupyter_console | 6.0.0 | py36_0 | |
| jupyter_core | 4.4.0 | py36_0 | |
| jupyterlab | 0.35.3 | py36_0 | |
| jupyterlab_server | 0.2.0 | py36_0 | |
| keyring | 17.1.1 | py36_0 | |
| kiwisolver | 1.0.1 | py36hf484d3e_0 | |
| krb5 | 1.16.2 | hbb41f41_0 | conda-forge |
| lazy-object-proxy | 1.3.1 | py36h14c3975_2 | |
| libarchive | 3.3.3 | h823be47_0 | conda-forge |
| libcurl | 7.63.0 | hbdb9355_0 | conda-forge |
| libedit | 3.1.20170329 | h6b74fdf_2 | |
| libffi | 3.2.1 | hd88cf55_4 | |
| libgcc-ng | 8.2.0 | hdf63c60_1 | |
| libgfortran-ng | 7.3.0 | hdf63c60_0 | |
| libiconv | 1.15 | h470a237_4 | conda-forge |
| liblief | 0.9.0 | h7725739_1 | |
| libpng | 1.6.36 | hbc83047_0 | |
| libsodium | 1.0.16 | h1bed415_0 | |
| libssh2 | 1.8.0 | h5b517e9_3 | conda-forge |
| libstdcxx-ng | 8.2.0 | hdf63c60_1 | |
| libtiff | 4.0.9 | he85c1e1_2 | |
| libtool | 2.4.6 | h7b6447c_5 | |
| libuuid | 1.0.3 | h1bed415_2 | |
| libxcb | 1.13 | h1bed415_1 | |
| libxml2 | 2.9.8 | h26e45fe_1 | |
| libxslt | 1.1.32 | h1312cb7_0 | |
| llvmlite | 0.27.0 | py36hd408876_0 | |
| locket | 0.2.0 | py36_1 | |
| lxml | 4.3.0 | py36hefd8a0e_0 | |
| lz4-c | 1.8.1.2 | h14c3975_0 | |
| lzo | 2.10 | h49e0be7_2 | |
| markupsafe | 1.1.0 | py36h7b6447c_0 | |
| matplotlib | 3.0.2 | py36h5429711_0 | |
| mccabe | 0.6.1 | py36_1 | |
| mistune | 0.8.4 | py36h7b6447c_0 | |
| mkl | 2019.1 | 144 | |
| mkl-service | 1.1.2 | py36he904b0f_5 | |
| mkl_fft | 1.0.10 | py36ha843d7b_0 | |
| mkl_random | 1.0.2 | py36hd81dba3_0 | |
| more-itertools | 5.0.0 | py36_0 | |
| mpc | 1.0.3 | hec55b23_5 | |
| mpfr | 3.1.5 | h11a74b3_2 | |
| mpmath | 1.1.0 | py36_0 | |
| msgpack-python | 0.5.6 | py36h6bb024c_1 | |
| multipledispatch | 0.6.0 | py36_0 | |
| navigator-updater | 0.2.1 | py36_0 | |
| nbconvert | 5.3.1 | py36_0 | |
| nbformat | 4.4.0 | py36_0 | |
| ncurses | 6.1 | hfc679d8_2 | conda-forge |
| networkx | 2.2 | py36_1 | |
| nltk | 3.4 | py36_1 | |
| nose | 1.3.7 | py36_2 | |
| notebook | 5.7.4 | py36_0 | |
| numba | 0.42.0 | py36h962f231_0 | |
| numexpr | 2.6.9 | py36h9e4a6bb_0 | |
| numpy | 1.15.4 | py36h7e9f1db_0 | |
| numpy-base | 1.15.4 | py36hde5b4d6_0 | |

| | | | |
|---|---|---|---|
| numpydoc | 0.8.0 | py36_0 | |
| odo | 0.5.1 | py36_0 | |
| olefile | 0.46 | py36_0 | |
| openpyxl | 2.5.12 | py36_0 | |
| openssl | 1.0.2p | h14c3975_1002 | conda-forge |
| packaging | 18.0 | py36_0 | |
| pandas | 0.23.4 | py36h04863e7_0 | |
| pandoc | 2.2.3.2 | 0 | |
| pandocfilters | 1.4.2 | py36_1 | |
| pango | 1.42.4 | h049681c_0 | |
| parso | 0.3.1 | py36_0 | |
| partd | 0.3.9 | py36_0 | |
| patchelf | 0.9 | he6710b0_3 | |
| path.py | 11.5.0 | py36_0 | |
| pathlib2 | 2.3.3 | py36_0 | |
| patsy | 0.5.1 | py36_0 | |
| pcre | 8.42 | h439df22_0 | |
| pep8 | 1.7.1 | py36_0 | |
| pexpect | 4.6.0 | py36_0 | |
| pickleshare | 0.7.5 | py36_0 | |
| pillow | 5.4.1 | py36h34e0f95_0 | |
| pip | 18.1 | py36_0 | |
| pixman | 0.34.0 | hceecf20_3 | |
| pkginfo | 1.4.2 | py36_1 | |
| pluggy | 0.8.0 | py36_0 | |
| ply | 3.11 | py36_0 | |
| prometheus_client | 0.5.0 | py36_0 | |
| prompt_toolkit | 2.0.7 | py36_0 | |
| psutil | 5.4.8 | py36h7b6447c_0 | |
| ptyprocess | 0.6.0 | py36_0 | |
| py | 1.7.0 | py36_0 | |
| py-lief | 0.9.0 | py36h7725739_1 | |
| pycodestyle | 2.4.0 | py36_0 | |
| pycosat | 0.6.3 | py36h14c3975_0 | |
| pycparser | 2.19 | py36_0 | |
| pycrypto | 2.6.1 | py36h14c3975_9 | |
| pycurl | 7.43.0.2 | py36hb7f436b_0 | |
| pyflakes | 2.0.0 | py36_0 | |
| pygments | 2.3.1 | py36_0 | |
| pylint | 2.2.2 | py36_0 | |
| pyodbc | 4.0.25 | py36he6710b0_0 | |
| pyopenssl | 18.0.0 | py36_0 | |
| pyparsing | 2.3.0 | py36_0 | |
| pyqt | 5.9.2 | py36h05f1152_2 | |
| pysocks | 1.6.8 | py36_0 | |
| pytables | 3.4.4 | py36h71ec239_0 | |
| pytest | 4.0.2 | py36_0 | |
| pytest-arraydiff | 0.3 | py36h39e3cac_0 | |
| pytest-astropy | 0.5.0 | py36_0 | |
| pytest-doctestplus | 0.2.0 | py36_0 | |
| pytest-openfiles | 0.3.1 | py36_0 | |
| pytest-remotedata | 0.3.1 | py36_0 | |
| python | 3.6.6 | h5001a0f_3 | conda-forge |
| python-dateutil | 2.7.5 | py36_0 | |
| python-libarchive-c | 2.8 | py36_6 | |
| pytz | 2018.7 | py36_0 | |
| pywavelets | 1.0.1 | py36hdd07704_0 | |
| pyyaml | 3.13 | py36h14c3975_0 | |
| pyzmq | 17.1.2 | py36h14c3975_0 | |
| qt | 5.9.6 | h8703b6f_2 | |
| qtawesome | 0.5.3 | py36_0 | |
| qtconsole | 4.4.3 | py36_0 | |
| qtpy | 1.5.2 | py36_0 | |
| readline | 7.0 | h7b6447c_5 | |
| requests | 2.21.0 | py36_0 | |
| rope | 0.11.0 | py36_0 | |
| ruamel_yaml | 0.15.46 | py36h14c3975_0 | |
| scikit-image | 0.14.1 | py36he6710b0_0 | |
| scikit-learn | 0.20.2 | py36hd81dba3_0 | |
| scipy | 1.1.0 | py36h7c811a0_2 | |
| seaborn | 0.9.0 | py36_0 | |
| secretstorage | 3.1.0 | py36_0 | |
| send2trash | 1.5.0 | py36_0 | |
| setuptools | 40.6.3 | py36_0 | |
| simplegeneric | 0.8.1 | py36_2 | |

| | | |
|---|---|---|
| singledispatch | 3.4.0.3 | py36_0 |
| sip | 4.19.8 | py36hf484d3e_0 |
| six | 1.12.0 | py36_0 |
| snappy | 1.1.7 | hbae5bb6_3 |
| snowballstemmer | 1.2.1 | py36_0 |
| sortedcollections | 1.0.1 | py36_0 |
| sortedcontainers | 2.1.0 | py36_0 |
| sphinx | 1.8.2 | py36_0 |
| sphinxcontrib | 1.0 | py36_1 |
| sphinxcontrib-websupport | 1.1.0 | py36_1 |
| spyder | 3.3.2 | py36_0 |
| spyder-kernels | 0.3.0 | py36_0 |
| sqlalchemy | 1.2.15 | py36h7b6447c_0 |
| sqlite | 3.26.0 | h7b6447c_0 |
| statsmodels | 0.9.0 | py36h035aef0_0 |
| swig | 3.0.12 | h38cdd7d_3 |
| sympy | 1.1 | py36_0 |
| tblib | 1.3.2 | py36_0 |
| terminado | 0.8.1 | py36_1 |
| testpath | 0.4.2 | py36_0 |
| tk | 8.6.8 | hbc83047_0 |
| toolz | 0.9.0 | py36_0 |
| tornado | 5.1.1 | py36h7b6447c_0 |
| tqdm | 4.28.1 | py36h28b3542_0 |
| traitlets | 4.3.2 | py36_0 |
| typed-ast | 1.1.0 | py36h14c3975_0 |
| unicodecsv | 0.14.1 | py36_0 |
| unixodbc | 2.3.7 | h14c3975_0 |
| urllib3 | 1.24.1 | py36_0 |
| wcwidth | 0.1.7 | py36_0 |
| webencodings | 0.5.1 | py36_1 |
| werkzeug | 0.14.1 | py36_0 |
| wheel | 0.32.3 | py36_0 |
| widgetsnbextension | 3.4.2 | py36_0 |
| wrapt | 1.10.11 | py36h14c3975_2 |
| wurlitzer | 1.0.2 | py36_0 |
| xlrd | 1.2.0 | py36_0 |
| xlsxwriter | 1.1.2 | py36_0 |
| xlwt | 1.3.0 | py36_0 |
| xz | 5.2.4 | h14c3975_4 |
| yaml | 0.1.7 | had09818_2 |
| zeromq | 4.2.5 | hf484d3e_1 |
| zict | 0.1.3 | py36_0 |
| zlib | 1.2.11 | h7b6447c_3 |
| zstd | 1.3.7 | h0b5b093_0 |

**#3 - 03/06/2019 12:35 PM - Knödlseder Jürgen**

*- Status changed from Resolved to Closed*

*- Assigned To set to Knödlseder Jürgen*

*- Target version set to 1.6.0*

*- % Done changed from 0 to 100*

I added some text to the Known issues section of GammaLib and ctools.