State of GDAL GDAL 2.4 and 3.0

Even Rouault
SPATIALYS

GDAL/OGR : Introduction

- GDAL? Geospatial Data Abstraction Library. The swiss army knife for geospatial.
- Read and write Raster (GDAL) and Vector (OGR) datasets
- 240 (mainly) geospatial formats and protocols.
- Widely used

(> 100 http://trac.osgeo.org/gdal/wiki/SoftwareUsingGdal)

- MIT/X Open Source license (permissive)

GDAL/OGR 2.4

- v2.4.0: December 2018
- v2.4.2: July 2019
- Last release in the 2.X series / designed to work with PROJ < 6
- 1370 commits
- 86 contributors

GDAL/OGR 2.4

5 new raster drivers

- ○ BYN: read/write support for Natural Resources Canada's Geoid binary format
- ○ IGNFHeightASCIIGrid: read-only driver to read IGN-France height correction ASCII grids
- ○ NTv1: read-only driver for NTv1 datum shift grids
- ○ NGW: NextGIS Web read-only driver (creation added in GDAL 3.0)
- ○ EEDAI: read-only driver for Google Earth Engine Data API

GDAL/OGR 2.4

3 new vector drivers

- GeoJSONSeq: read/creation support of new-line or record-separator separated GeoJSON features
- NGW: NextGIS Web read-write driver
- EEDA: read-only driver for Google Earth Engine Data API

GDAL/OGR 2.4

Improved drivers

- BAG: variable-resolution grids, and write support for single-resolution grids
- GTiff driver: add Lerc and WebP codecs
- PostgisRaster: add support for out-db rasters

GDAL/OGR 2.4

Other changes

- /vsihdfs/ & /vsiwebhdfs/
- gdal_contour rewriting: speed optimizations, polygon generation
- Removal of the PHP and Ruby bindings

Migration of Python autotest suite

- GDAL regression test suite: 244 000 lines of Python code
- Predates most Python test frameworks
- Used a completely homegrown framework
- Completely alien for non-core developers

- Migration to use the pytest framework
- Mostly automated with Bowler
- https://www.youtube.com/watch?v=SLbOWiz4KSs : "How I migrated a huge OSS project to use pytest" - Craig de Stigter (PyCon AU 2019)
- Kudos to Craig & Koordinates for this massive and much needed rework !

GDAL/OGR 3.0

- v3.0.0: May 2019
- v3.0.1: July 2019
- Requires PROJ >= 6
- 672 commits
- 56 contributors

GDAL/OGR 3.0

- New GDAL drivers:
  - DAAS: read driver for Airbus DS Intelligence Data As A Service
  - TileDB: read/write driver for https://www.tiledb.io
- New OGR driver:
  - MongoDBv3: read/write driver using libmongocxx v3.4.0 client (for MongoDB >= 4.0)

GDAL/OGR 3.0

- Improved drivers:
  - netCDF: read support for groups
  - PDF: COMPOSITION_FILE creation option.
  - FITS: read/write support for scale, offset and CRS
  - PDS4: subdataset creation support, read/write table/vector support
- Support for minimal builds on Unix

  --disable-all-optional-drivers

  --disable-driver-{foo}
- A few Docker images tracking GDAL master at:

  https://github.com/OSGeo/gdal/tree/master/gdal/docker

  https://hub.docker.com/r/osgeo/gdal

PROJ 6 integration

- All WKT support has been moved to PROJ. Support for WKT2:2015 and :2019
- No longer any CSV file related to CRS → use PROJ database
- Time-dependent coordinate operations possible.
- -ct {proj_pipeline} switch to ogr2ogr, gdalwarp, gdaltransform
- EPSG axis order compliant by default !

Website & documentation overhaul

- Used to be a mix of Doxygen files and static HTML pages
- Non-obvious structure / not friendly for contributors
- Hard to generate alternative output such as PDF
- Overhaul during the OSGeo Code sprint 2019 at Minneapolis
- Use of Sphinx Read-the-docs

Website & documentation overhaul

A preview of GDAL 3.1

- New COG driver / more efficient COG generation and reading
- New API to read & write hierarchical and multidimensionnal arrays: netCDF, HDF4, HDF5, GRIB
- netCDF driver (vector side): read/write support for CF-1.8 Simple Geometries.

Questions?

Links:

http://gdal.org/

https://github.com/OSGeo/gdal/blob/v2.4.0/gdal/NEWS

https://github.com/OSGeo/gdal/blob/v3.0.0/gdal/NEWS

Contact: even.rouault@spatialys.com