py-stint: PYthon Spatial/Temporal INtersection Toolset

IndEcol @ Norges teknisk-naturvitenskapelige universitet
Wiley Bogren
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Abstract

This document describes the capabilities and use of the `py-stint` toolset for spatial and temporal intersections. The primary expected use for py-stint is to produce datasets combining land-use and climate data with MODIS albedo timeseries.

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1 Requirements & Installation

On an Ubuntu system with UbuntuGIS repositories activated and sudo (administrator) access, the following libraries and python modules are simple to install.

1.1 Library Dependencies

The following software libraries must be compiled before many of the python modules can be installed. When possible, try to compile them in the order listed, as some (such as gdal) have capabilities which depend on the previous libraries already being present.

GEOS : link to GEOS, required for geometric intersections

libspatialindex : link to libspatialindex, required for rtree spatial indexing module for python

netCDF4 : link to netCDF, required for both ERA climate data and gdal support for MODIS hdf

hdf5 : link to hdf5, required for h5py and the format used to aggregate MODIS and ERA subset arrays.

GDAL : link to GDAL, required for geospatial data I/O

proj.4 : link to proj.4, required for reprojecting shapefile and raster datasets.

1.2 Python Dependencies

Basic Modules : os, sys, math, glob, multiprocessing, datetime, cPickle, csv

Scientific Modules : numpy, scipy, netCDF4, h5py

Geospatial Modules : gdal+ogr+osr, rtree

1.3 Directory Structure

`py-stint` directory should pretty much just hold the `*.py` files, `INPUT.txt` parameter file and the `Data/` directory, which has the modis tile shapefile.

`MODIS_ARCHIVE/`

`ERA_ARCHIVE/`

`working_directory/`

2 Getting Data

2.1 Corine Landcover

Stuff about getting CLC shapefile