



Natural Resources
Canada

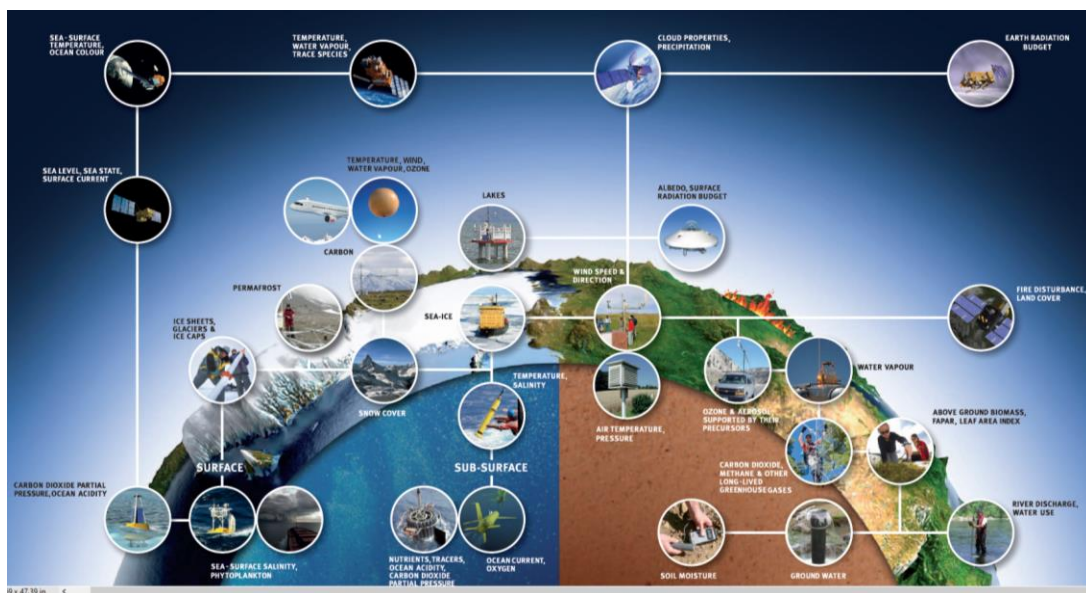
Ressources naturelles
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LEAF – Toolbox (Landscape Evolution and Forecasting)

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Canada

Purpose: Vegetation Essential Climate Variables

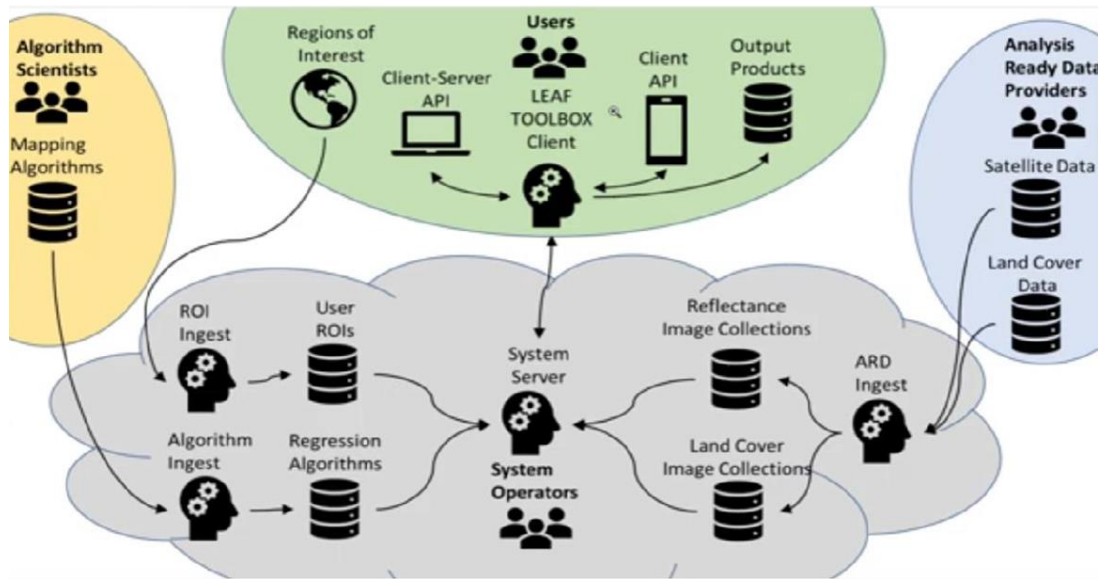


<https://gcos.wmo.int/en/essential-climate-variables>

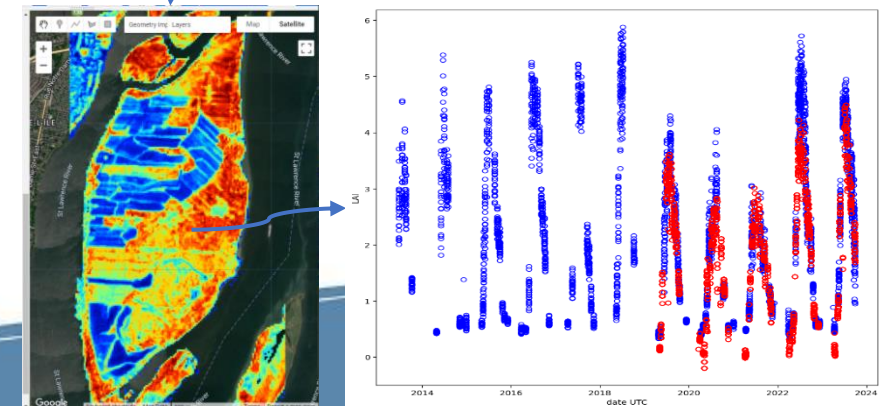
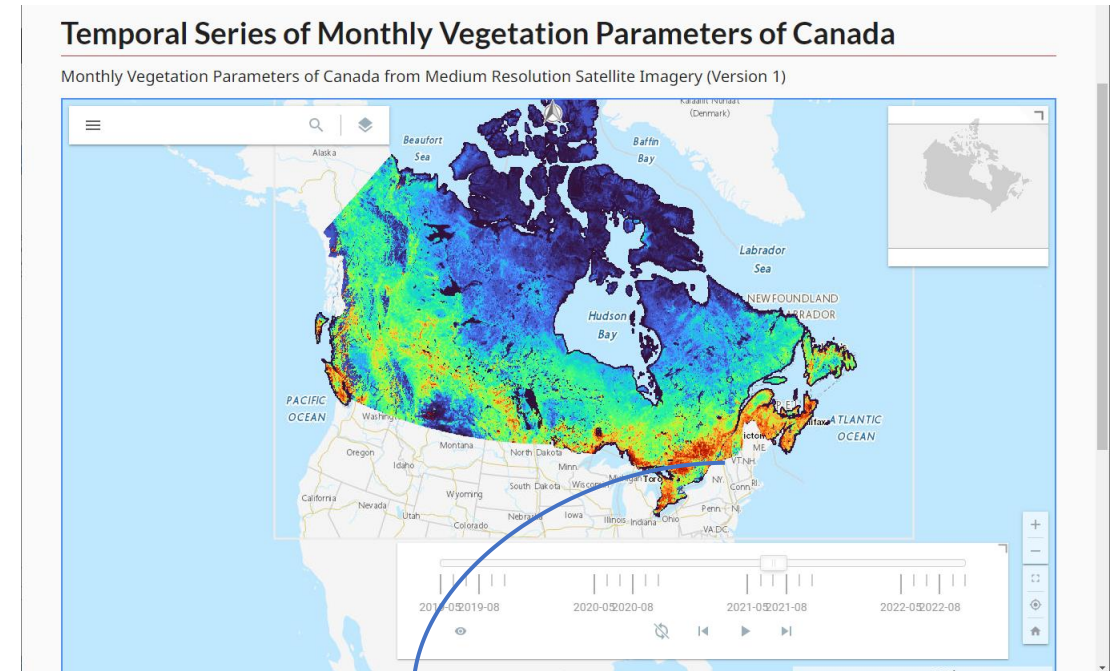
- Canopy Cover (fCOVER)
 - Foliage presence
 - Habitat
 - Land cover change
- fAPAR
 - Foliage productivity/health
 - Status and trends
 - Crop modelling
- Leaf Area Index
 - Foliage density/biomass
 - Status and trends
 - Ecosystem/weather models
- Surface Albedo
 - Ecosystem/weather models



Description



- ML Algorithms uploaded using as Tensor Flow like objects
- ARD inputs using ESA/USGS/GEE API (free and open)
- Free and open algorithms
- ARD outputs interoperable at Canada and Global levels

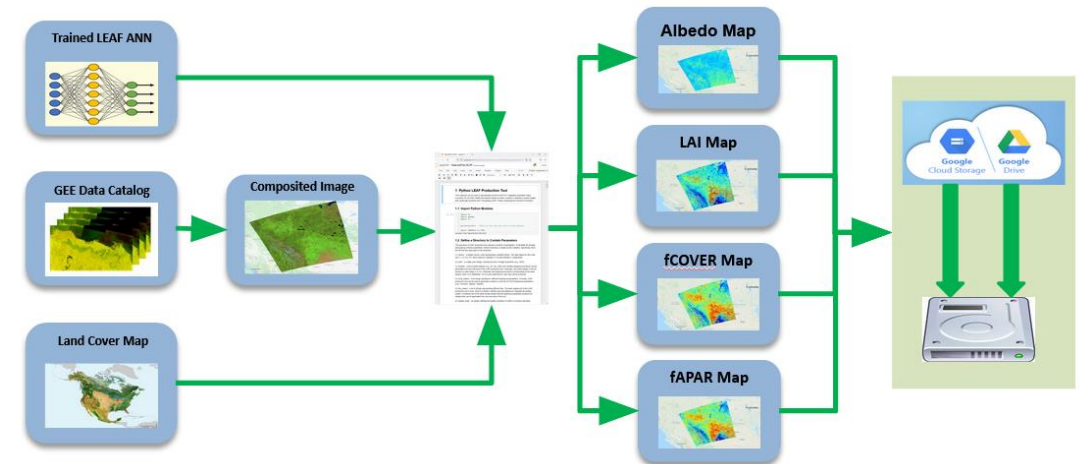


Description

Analysis Ready Input Data

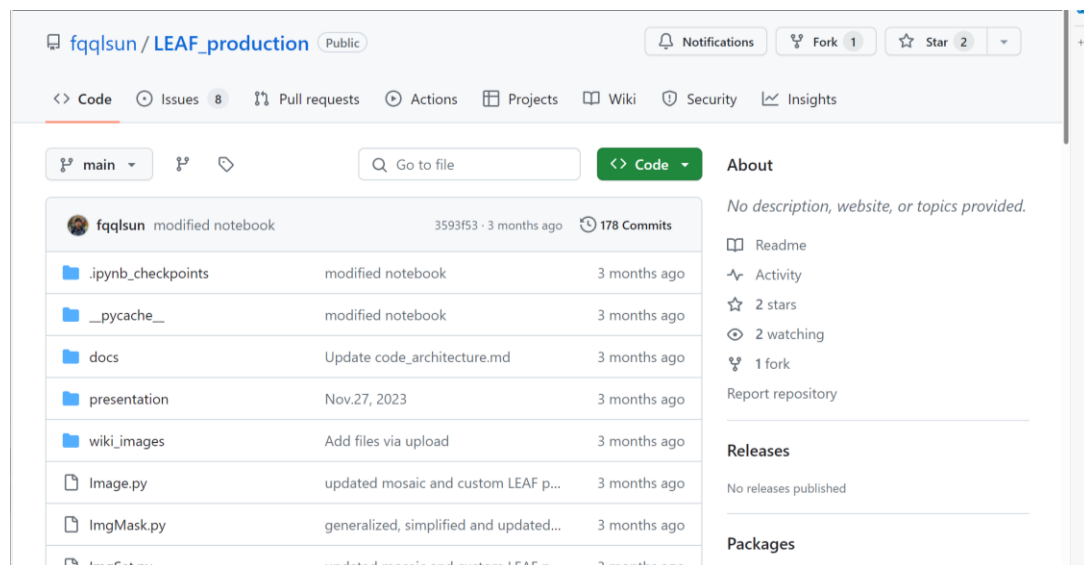
Dataset	Source	Resolution	Official Access	Other Access
Surface Reflectance	ESA Sentinel 2A & 2B	10m, daily	Copernicus Data Hub	AWS,GEE
Surface Reflectance	USGS Landsat 5,7,8,9	30m, daily	Earth Explorer	AWS,GEE
Land Cover	NALCMS North America	30m, annual	Geo.ca	AWS,GEE
Land Cover	Coprenicus Global Land Service	100m, annual	AWS,GEE	AWS,GEE
Water Cover	ECCC	30m, annual	Geo.ca	AWS
Elevation	Tokyo University	90m	GEE	GEE

Algorithms



Description

Spatial Processing



fqqlsun / LEAF_production Public

Notifications Fork 1 Star 2

<> Code Issues 8 Pull requests Actions Projects Wiki Security Insights

main Go to file <> Code

fqqlsun modified notebook 3593f53 · 3 months ago 178 Commits

File	Commit	Time
.ipynb_checkpoints	modified notebook	3 months ago
__pycache__	modified notebook	3 months ago
docs	Update code_architecture.md	3 months ago
presentation	Nov.27, 2023	3 months ago
wiki_images	Add files via upload	3 months ago
Image.py	updated mosaic and custom LEAF p...	3 months ago
ImgMask.py	generalized, simplified and updated...	3 months ago
ImrSet.nv	updated mosaic and custom LEAF n	3 months ago

About

No description, website, or topics provided.

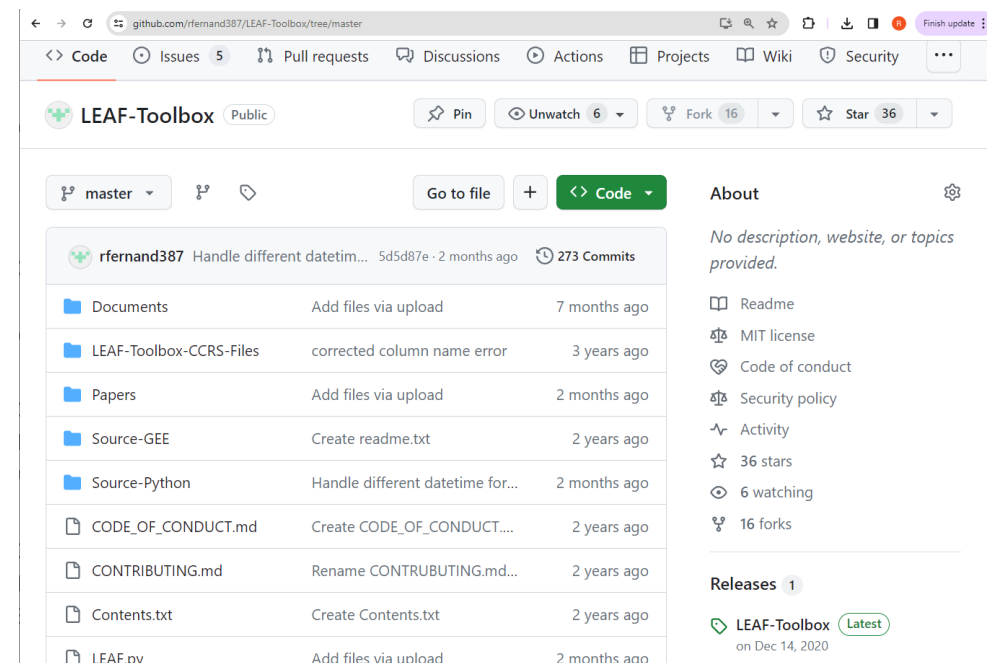
Readme Activity 2 stars 2 watching 1 fork Report repository

Releases

No releases published

Packages

Temporal Processing



github.com/rfernand387/LEAF-Toolbox/tree/master

<> Code Issues 5 Pull requests Discussions Actions Projects Wiki Security

LEAF-Toolbox Public Pin Unwatch 6 Fork 16 Star 36

master Go to file + <> Code

rfernand387 Handle different datetim... 5d5d87e · 2 months ago 273 Commits

File	Commit	Time
Documents	Add files via upload	7 months ago
LEAF-Toolbox-CCRS-Files	corrected column name error	3 years ago
Papers	Add files via upload	2 months ago
Source-GEE	Create readme.txt	2 years ago
Source-Python	Handle different datetime for...	2 months ago
CODE_OF_CONDUCT.md	Create CODE_OF_CONDUCT....	2 years ago
CONTRIBUTING.md	Rename CONTRIBUTING.md...	2 years ago
Contents.txt	Create Contents.txt	2 years ago
LEAF.py	Add files via upload	2 months ago

About

No description, website, or topics provided.

Readme MIT license Code of conduct Security policy Activity 36 stars 6 watching 16 forks

Releases 1

LEAF-Toolbox Latest on Dec 14, 2020



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Technical capabilities expected of DEC Prototype

Back End

- Global Multi archive access (Landsat, Sentinel 1,2,3, Modis)
- GEE API option (OAUTH)
- Load balancing, auto scaling
- Mosaicing/subsetting/reprojection on the fly
- GIT integration of input algorithms
- *Tensor Processing Hardware*
- *Generative AI tools*

Front End

- Python Notebook interface (a la Federal Science Data Hub)
- Job Scheduler
- Export to Cloud or Local Drive
- Copernicus Data Hub Like Query/Production Functionality
- *EODMS Export*
- *External access*



Updated Storage and Compute Requirements

Storage (annual)

Dataset	Granules	Volume (Tb)
Landsat (2013+)	100,000	60
Sentinel-2 (2016+)	600,000	480
MODIS/S3 (2000+)	1000	1
500m Products (2000+)	1460	1
20m Products	72	5

Compute

Requirement	GEE EECU-hr	48 core, high ram
Canada 30d, 20m	50000	1 month
Canada 30d, 30m	10000	1 week
Regional stack, 10m	1000	?
Local stack, 10m	100	?
Canada 1d, 500m	?	?

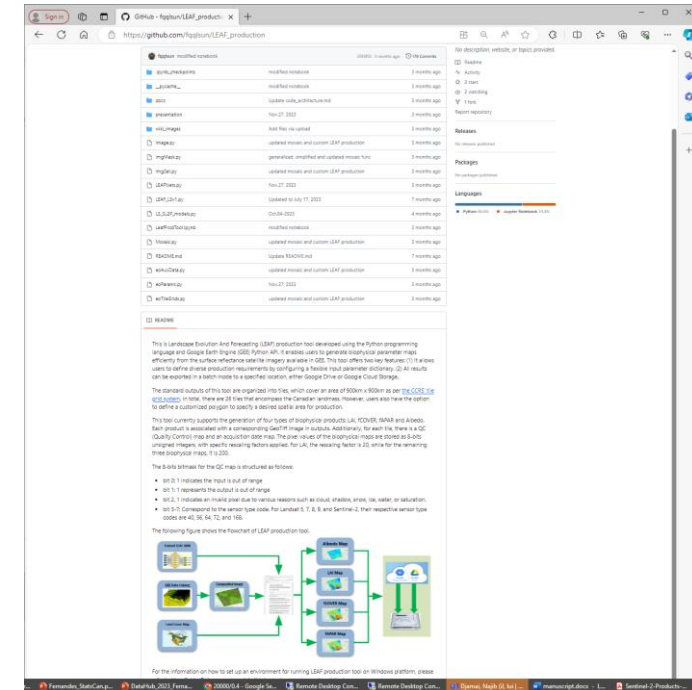


Time Period & Result

Schedule

- 20m & 30m monthly – now
- 20m and 30m local – now
- 500m daily – September 2024

Result: [GitHub - fqqlsun/LEAF_production](https://github.com/fqqlsun/LEAF_production)



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