The Public Release of NCEP Libraries and Utilities on GitHub

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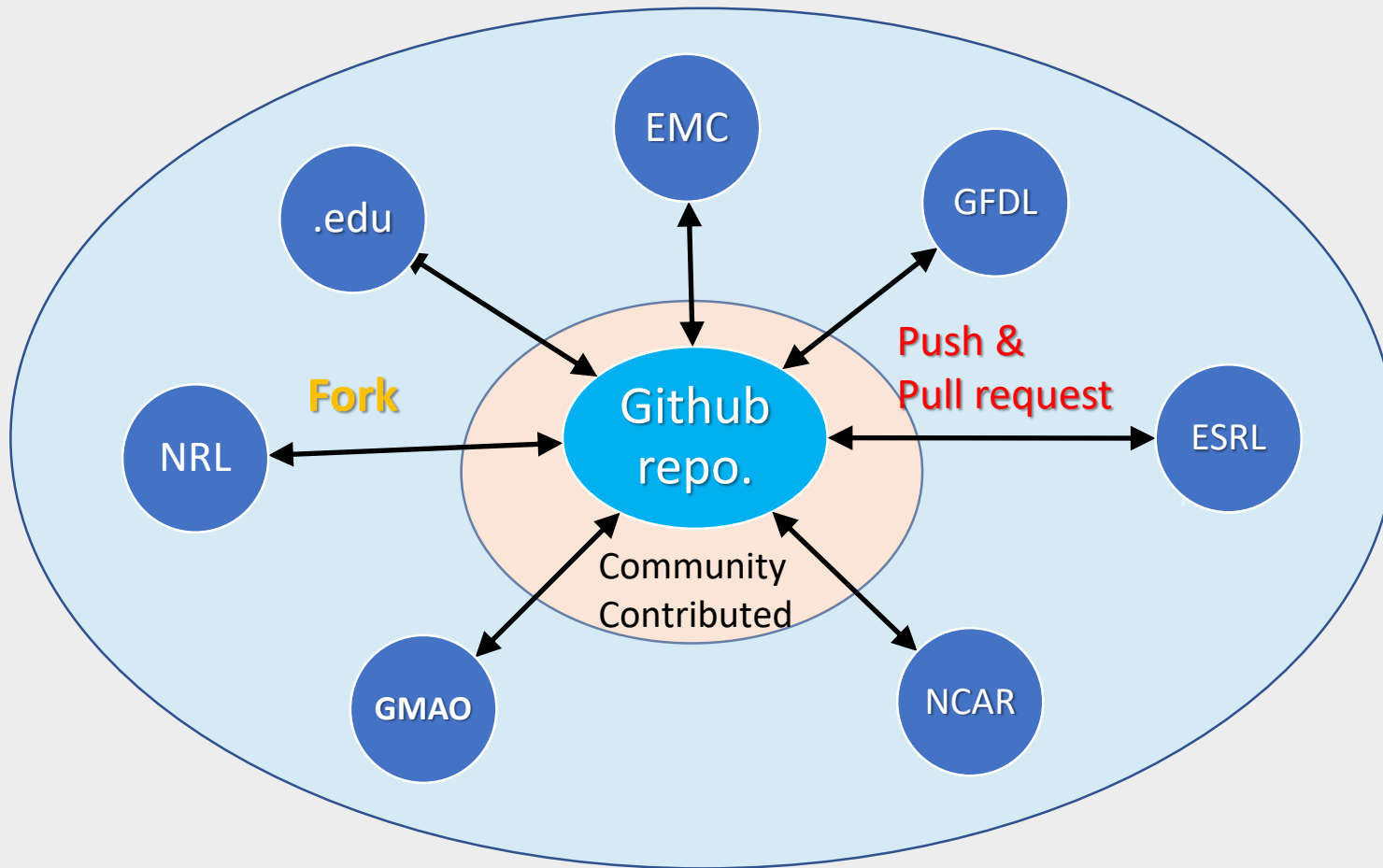
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Introduction to NCEPLIBS

- In order to support research development and operational production of National Weather Service numerical predictions, the NCEP libraries and utilities (collectively called NCEPLIBS) developed and maintained in National Centers for Environmental Prediction (NCEP) Environmental Modeling Center (EMC) is released on GitHub.

Library (21)	ip	ip2	landsfc util	bufr	bacio	ncio	g2	g2c	g2tmpl	gfsio	nemsio	nemsio gfs	sfcio	sigio	sp	w3emc	w3nco	wrf_io	grib_ut il	prod_u til	pyprod _util
operation Version	v3.0.0	v1.0.0	v2.1.0	v11.2.0	v2.0.2	v1.0.0	v3.1.0	v1.5.0	v1.5.0	v1.1.0	v2.2.3	v2.0.1	v1.0.0	v2.0.1	v2.0.2	v2.3.0	v2.0.6	v1.0.0	v1.1.0	v1.0.0	v1.0.0
Code Manager	George Gayno	George Gayno	George Gayno	Jeff Ator	Hang Lei	Hang Lei	Boi Vuong	Boi Vuong	Boi Vuong	George V.	Hang Lei	Hang Lei	George V.	George V.	Mark Iredell	Boi Vuong	Boi Vuong	George V.	Boi Vuong	Kyle Gerhei ser	Kyle Gerhei ser
Depend on MPI?	no	no	no	no	no	no	no	no	no	no	yes	no	no	no	no	no	no	no	yes	no	no
Built IMPI	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Latest Version	v3.0.1	v1.0.1	v2.1.1	v11.3.1	v2.0.3	v1.0.0	v3.1.1	v1.5.1	v1.6.1	v1.1.1	v2.2.4	v2.2.1	v1.1.1	v2.1.1	v2.0.3	v2.4.0	v2.0.7	v1.1.1	v1.1.1	v1.0.1	v1.0.0

Community repositories on github.com

Diagram of community repositories centered on a "Github repo." (Community Contributed) with Fork, Push & Pull request connections to EMC, GFDL, ESRL, NCAR, GMAO, NRL, and .edu

https://github.com/orgs/NOAA-EMC/teams/nceplibs/repositories

- Community repositories on github.com + alternative build systems + 'unit test'
- Improved collaborative environment. Fork; Push; Pull request.
- Enforce software quality (correctness, coding norms, efficiency)
- Initial work toward continuous integration
- Continuous online discussions + testing
- Fast-paced code development + reviews

Repository structure – gitflow method

- develop
  This branch is for the development work that take the latest changes in source code.

- master
  This branch is to keep the stable and verified versions that will be tagged.

- ufs_release_v1.0
  This branch is used for the formal public release branch. cmake is used for UFS release.

- others (temporary feature branches): e.g. spck-build; bug868. Specific development work.

Get clone repo path alternated from http or ssh

Once the development works accumulated and need to be passed to NCO or support new GFS development, the version will be merged into master branch. Tag will be made to master branch.

Access the repo or tag

❏Http clone the repo

%git clone https://github.com/NOAA-EMC/NCEPLIBS-nemsio.git

%svn co https://github.com/NOAA-EMC/NCEPLIBS-nemsio.git

(open access to the public, no restrictions)

❏ssh clone the repo

%git clone git@github.com:NOAA-EMC/NCEPLIBS-nemsio.git

(need to register the rsa key from github.com account)

❏Directly checkout the tag

%curl -L https://github.com/NOAA-EMC/NCEPLIBS-nemsio/archive/nemsio_v2.2.4.tar.gz > nemsio_v2.2.4.tar.gz

(need to have curl)

Interactive Interfaces

- **Wiki** -- introduction and update
  - ➤Introductions about the library
  - ➤Basic tutorial for use
  - ➤Major changes to the library. Include new features, functions.
  - ➤Announcement to users.

- **Issues** -- questions, bug, discussions
  - ➤Ask support/questions on library
  - ➤Discuss any issues in use
  - ➤Report bugs
  - ➤Trace the development track. Keep a record
  - ➤A dictionary to look up recurring issues for future users

Management of the development work

- **Fork** -- individual copy of the repo for development work
  - ➢ Full control for person practice
  - ➢ Free to create and change any branches
  - ➢ Connections to main repo
  - ➢ Get updates
  - ➢ Main repo monitored

  To do a fork: In the top-right corner of the page, click Fork.

- **Pull request** -- ask for commit back through code-review process
  - ➢ For non-collaborator users
  - ➢ Commit after finish the development work
  - ➢ Code manager order a code-review procedure before bring back to main repo
  - ➢ Recorded as a contributor

Summary

- The NCEPLIBS have been relocated to github.com under the NOAA-EMC group. Total 21 repos for individual libraries and 3 repos for building support.

- Users can access through git clone with http / ssh access.

- Repositories are managed following the gitflow method..

- User communication through wiki and issues functions.

- User contributes to development through fork and pull request functions.

Thanks

NCEP library/utility	Description
NCEPLIBS-bacio	Byte-addressable C I/O library
NCEPLIBS-bufr	BUFR format encoding and decoding library
NCEPLIBS-g2	GRIB2 format encoding and decoding FORTRAN library
NCEPLIBS-g2c	GRIB2 format encoding and decoding C library
NCEPLIBS-g2tmpl	GRIB2 templates library
NCEPLIBS-gfsio	GFSIO format I/O library
NCEPLIBS-grib_util	GRIB utility library
NCEPLIBS-ip	General interpolation library using GRIB1 grid definitions
NCEPLIBS-ip2	General interpolation library using GRIB2 grid definitions
NCEPLIBS-landsfcutil	Land surface utility library
NCEPLIBS-ncio	NetCDF format I/O library

Additional Information about NCEPLIBS   II

NCEP library/utility	Description
NCEPLIBS-nemsio	NEMSIO format I/O library
NCEPLIBS-nemsiogfs	NEMSIO format I/O library specifically for GFS model
NCEPLIBS-prod_util	Production utility library
NCEPLIBS-pyprodutil	Python production utility library
NCEPLIBS-sfcio	SFCIO format I/O library
NCEPLIBS-sigio	SIGIO format I/O library
NCEPLIBS-sp	General spectral transform library
NCEPLIBS-umbrella	Umbrella build utilities for NCEPLIBS
NCEPLIBS-w3emc	Miscellaneous legacy library
NCEPLIBS-w3nco	Miscellaneous legacy library with GRIB1 format encoding and decoding
NCEPLIBS-wrf_io	WRFIO format I/O library