

“nceplibs” SURVEY RESULTS

Participated Groups

1. EMC- SYSTEM (G.V.)
2. NEMS - group
3. DTC (NCAR/RAL +GSD)
4. NOAA/NCEP/EMC - HWRF group
5. EMC, GMB (gfs, sl)
6. NCO/SIB
7. NCEP/EMC/MMB;
8. NOAA/OAR/ESRL/GSD/ACB
9. ESRL/GSD/AMB
10. NCAR/RAL/JNT
11. EMC- DTC-GSI (integrated)
12. NOAA/NESDIS/JCSDA

Applications

- NEMS
- GFS
- NMMB
- NCEP coupler,
- GSI,
- WPS
- All codes that run in the operational NAM, including NEMS-NMMB, NCEP Post, GSI analysis
- POM
- Related Some Fortran and C utility programs. Community (DTC) versions of everything because we need cross-platform support, which does not exist with most EMC programs or unreliable)
- uni-post HWRF
- Utility tools (copygb, copygb2, cnvgrib, tocgrib, tocgrib2, grbindex, invindex, NCEP decoders
- All codes that run in the operational NAM, including NCEP Post, GSI analysis
- FIM/NIM MET (Model Evaluation Tools)
- Verification software GSI
- HWRF Unified Post GSI
- GSI - Gridpoint Statistical Interpolation
- GDAS/GFS - Global Data Assimilation System/Global Forecast System
- WRF - Weather, Research and Forecast model
- HWRF - Hurricane WRF system
- VSDB - Verification Statistics Data Base
- Gvrfy, Pvrffy, suru.fd, enkf
- JCSDA's : GDAS/GFS, WRF, HWRF, MIRS, GSI, VSDB

Different sets of Libs

Different sets of

1. w3, sp, bacio, bufr, ipsp,
2. w3, ip, sigio, bufr, bacio, sfcio, g2lib nemsio,
3. w3, bacio, sp, sigio, sfcio, crtm2.0.2, g2, g2tmpl , bacio_4
4. w3-1.6_d, w3-1.9_4, w3-2.0_4 , w3-2.0_d
ip_d, sp_4, sp_d, sp_noessl_4, sp_noessl_d
sfcio_4, sfcio_big_4, sigio_4, sigio_big_4, bufr_4_64, bufr_d_64
gfsio_big_4, crtm_2.0.5, nemsio
5. Current version of libraries in /nwprod/lib bufr_4_32 (=v10.0.0) . crex_32 NAWIPS v5.11.4 From CCS : w3_v2.2.2, bacio_v1.4.0, landsfcutil, ip, sp_v2.0.0, sfcio, gfsio, sigio_v2.0.0, crtm.2.0.2, nemsio, bufr, g2, g2tmpl bacio 1.3
w3 (unknown version, ~2008)
sfcio (unknown version, >2005)
sigio (unknown version, >2005)
sp (unknown version, ~2008)
*All of our versions have modifications to port to IBM, Linux, SGI, Cray, Mac, etc.
Some contain patches so listed revisions are probably not completely accurate.
We are happy to update to newer library versions.*
6. g2clib: <http://www.nco.ncep.noaa.gov/pmb/codes/GRIB2/g2clib-1.2.3.tar> BUFRLIB version 10.0.1 retrieved from NCO:
<http://www.nco.ncep.noaa.gov/sib/decoders/BUFRLIB/>
7. Originated from:
G2C GRIB2 library retrieved from NCO website:
<http://www.nco.ncep.noaa.gov/pmb/codes/GRIB2/> Versions, unless specified are unknown. Code is originally taken from EMC repositories.
8. GSI: bacio, bufr, crtm V2.0, gfsio, gsdcloud, nemsio, sfcio, sigio, sp, w3
9. HWRF: bacio, blas, bufr, sfcio, sigio, sp, w3 bacio, ip, sfcio, sigio, sp, w3, nemsio, g2
10. Current all of these libraries except w3 are retained from :
<http://www.nco.ncep.noaa.gov/pmb/codes/nwprod/lib/sorc/>
11. there are sire specific changes to these - largely for little endian support NEMSIO, w3, SP, BUFR, BACIO, SIGIO, SFCIO, CRTM_2.0.5 sp, ip sigio, sfcio, bacio, bufr, gfsio, w3
12. GSI also calls for mpeu, crtm, transf

Example of the set (from MMB)

- sp_noessl_4; sp_noessl_d; sfcio_4; sfcio_big_4; sigio_4; sigio_big_4; bufr_4_64; bufr_d_64; gfsio_big_4; crtm_2.0.5; nemsio
- Applications : nam_angupdate.fd; nam_coldstart.fd; nam_combc.fd
nam_firewx_gridspecs.fd; nam_get1236hpcp.fd
nam_gridgen_sfc.fd; nam_gsi.fd; nam_ice2mdl.fd
nam_lspasno24h.fd; nam_makeprecip_151.fd; nam_makeprecip_212.fd
nam_makeprecip_215.fd; nam_makeprecip_217.fd
nam_makeprecip_218.fd; nam_makeprecip_242.fd
nam_merge2n4.fd; nam_mkbnd.fd; nam_nceppost.fd;
nam_nems_nmmb_fcst.fd; nam_nps.fd; nam_pcpbudget.fd
nam_pcpprep.fd; nam_post0.fd; nam_prdgen.fd
nam_sfcupdate.fd; nam_sndp.fd; nam_snow2mdl.fd
nam_sst2mdl.fd; nam_stnm1ist.fd
- Site specific: ibbacio_4.a; libbacio_d.a
libbufr_4_64.a; libbufr_8_64.a
libbufr_d_64.a; libbufr_s_64.a
libip_4.a; libip_d.a ;libsfcio_big_4.a
libsigio_4.a; libsigio_big_4.a
libsigio_lit_4.a; libsp_4.a
libsp_noessl_4.a; libsp_noessl_d.a
libw3-1.6_4.a; libw3-1.6_d.a
libw3-1.9_4.a; libw3-1.9_d.a
libw3-2.0_4.a; libw3-2.0_d.a
libw3ext_4.a

Required EXTERNAL (3rd party) libraries

- Some version of LAPACK
- netcdf 4.0.0 ; NETCDF-4.0.1 netcdf.4.1.3; netCDF v3.5.0; NetCDF 3.5.1 NETCDF V3.6 ; NetCDF version 3.6.3 ; NETCDF-4.0.1
- When using the Intel compiler, MKL library
- HDF5
- ESMF 3_1_0rp2; ESMF 3.1.0_rp5 ; ESMF 4_0_0rp1; ESMF 5_1_0; ESMF 5_2_0rp2;
- Jasper
- PNG
- Z libraries
- MADIS v3.9
bzip2 v1.0.6
- essl ; Mass
- NCARG, ncarg_gks, ncagr_c
- PNG
- WRF IO libraries
- JCSDA crtm2
- X11
- GNU scientific library

Compilers (modules) used

- Ifort, PGI
Jet: ifort (IFORT) 11.1 20100414
Zeus: ifort (IFORT) 12.0.4 20110427
cirrus: ncepxlf90, ncepxlc
Zeus: model load intel, ifort, cc
Zeus: INTEL ncep-xlf (FORTRAN and C)
- cirrus+stratus: ncepxlf -O3 -q32
ncepxlc -O3 Zeus : module load intel bluefire:
mpxlf90_r, mpcc_r, xlf90_r: -q64 -qnostrict -qarch=auto -qspill=32767 -
qmaxmem=32767
cirrus/stratus:
mpxlf90_r, mpcc_r, xlf90_r: -q64 -qnostrict -qarch=auto -qspill=32767 -
qmaxmem=32767
jet:
ifort: -fpe0 -ftz (optional)
lf95: --chk -g --trap --trace --info
module switch intel lahey/8.10b
ranger:
ifort: -fpe0 -ftz (optional)
module unload pgi mvapich
module load intel
module load mvapich
module load netcdf
zeus:
ifort: -fp-model precise
module load intel
module load mpt
module load netcdf
module load ncl
module load grads

Compilers (modules) used continued

- jaguar:
 - pgf90: -byteswapio
 - ifort: -fpe0 -ftz (optional)
 - module switch PrgEnv-pgi PrgEnv-intel
 - module switch intel intel/11.1.064
 - module unload netcdf
 - module load netcdf
- ftn:
 - module switch PrgEnv-pgi PrgEnv-gnu
 - module unload netcdf
 - module load netcdf
- Mac:
 - gfortran: -frecord-marker=4
 - jet: intel
 - GNU, PGI
 - Bluefire: IBM/AIX Intel on jet
 - PGI
 - GNU
- IBM (xlf) on
- bluefire PGI, Intel, gfortran, xlf
- Community supported code for:
 - PGI, gfortran, ifort, and gcc w/ openMPI or MPICH
 - currently have support documentation for OSX
- Jet: Intel
- Zeus: module load intel, module load mpt
- JIBB: Intel 11.1.056; impi 4.0.0.025-beta
- S4: Intel 11.1.059; impi 4.0.3.008

After visiting

DTC (NCAR+GSD) can help with:

- Using practice and enhancement of portability and configuration.
- UNIT TESTS: Development libs and apps based unit tests
- Distribution versions and gathering and planned releases community feedback
- Future porting on new platforms
- Agreed cross-repositories code management
- Deployment at (DTC branch of EMC repository), use of previous DTC experience
- Using DTC expertise and experience in the problem solving

NCEPLIBS Trac Opened Tickets

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{1} Active Tickets (8 matches)

- List all active tickets by priority.
- Color each row based on priority.

Max items per page

Ticket	Summary	Component	Version	Milestone	Type	Owner	Status	Created
#4	Bug in IPLIB routine ipsector	ip			defect		new	03/23/12
#5	Problem with IPLIB routines gdswwzcb and gdswwzdc	ip	1.0		defect		new	03/23/12
#6	Create regression (or unit) tests for IPLIB	ip	1.0		task		new	03/28/12
#7	Remove obsolete routines from IPLIB	ip	1.0		task		new	04/04/12
#2	Convert IPLIB from fixed to free form Fortran	ip	1.0		enhancement	george.gayno@noaa.gov	assigned	03/08/12
#3	Bugs in IPLIB routine gdswwz04	ip	1.0		defect		new	03/19/12
#8	Real variables initialized to integer 0 in sp library - bug	sp	1.0		defect		new	04/09/12
#1	Bugs in IPLIB routines polateg0 and polateg1	ip	1.0		defect		new	03/06/12

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Windows taskbar: Start, X-Session, Eugene.Mir..., 2 Microsoft..., 3 Firefox, C:\user-doc..., Microsoft E..., Microsoft P..., 12:47 PM

So far collections and on Zeus (to be merged)

```
[Eugene.Mirvis@fe3 modules-3.2.9]$ ls /scratch1/portfolios/NCEPDEV/nceplibs/save/src
001_G.Vanderberghe_ALL_nocrtm
002_E.Mirvis_NEMS_Jet
003_S.Trahan_hwrf-utilities-20120302
004_H.Juang_GSM_MSM
005_S.Moorthi_GFS_para
006_S.Trahan_hwrf-post_no_crtm2
007_T.Slovacek_UPPV1.1
```

The builds under:

```
[Eugene.Mirvis@fe3 nceplibs]$ ls /contrib/nceplibs/lib/001intel
esmf310rp5  libbufr_4_64.a libesmf.a  libip_d.a  libsp_4.a  libw3-2.0_4.a
incmod     libbufr_8_64.a libgfsio_4.a libsfcio_4.a libsp_8.a  libw3-2.0_d.a
libadds_4.a libbufr_d_64.a libgfsio_big_4.a libsfcio_big_4.a libsp_d.a  libw3lib-1.9_4.a
libbacio_4.a libbufr_s_64.a libip_4.a  libsigio_4.a libw3-1.6_4.a libw3lib-1.9_d.a
libbbufr_8_64.a libCRTM.a  libip_8.a  libsigio_big_4.a libw3-1.6_d.a sorc
```

```
[Eugene.Mirvis@fe3 nceplibs]$ ls /contrib/nceplibs/incmod/001_intel
esmf esmf310rp5 gfsio_4 gfsio_big_4 gfsio_lit_4 libCRTM sfcio_4 sfcio_big_4 sigio_4
sigio_big_4
```

Initial Shared Library Table for NCEPLIBS group

Shared Library Name	Purpose	Applications	Responsible code manager group	Man-months to merge	Proposed month to merge
bacio	Byte-addressable I/O		EMC/software	0.5	May 2012
bufr	Encode and decode BUFR		NCO/SIB	1	Jul 2012
crtm	Community Radiative Transfer Model		EMC/DA	1	Jul 2012
g2	Encode and decode GRIB2		NCO/SIB	1	Jul 2012
gfsio	GFS grid I/O		EMC/global	1	Jun 2012
gph			NCO/SIB	1	Jul 2012
gphcntr			NCO/SIB	1	Jul 2012
ip	Interpolation		EMC/software	0.5	May 2012
landsfcutil	Common land surface		EMC/land	1	Jun 2012
nemsio	Generic I/O for NEMS		EMC/software	0.5	May 2012
nstio			?		
sfcio	GFS surface I/O		EMC/global	1	Jun 2012
sigio	GFS spectral I/O		EMC/global	1	Jun 2012
sp	Spectral transforms		EMC/software	0.5	May 2012
w3	Miscellaneous including GRIB1 coding and date routines		NCO/SIB	3	Aug 2012