National Water Model V3.0.0 Dependencies

Terminology note:
   a) The term "soft", used below, indicates an upstream job or data dependency that is not critical. In this case it is still extremely preferable to have the upstream data, but it is not critical enough to warrant a job failure. The job can instead revert to using other less preferable data, or in some cases run without the data altogether.
   b) If no term is specified, the upstream job or data dependency is critical. If the upstream data or job is missing, the job should fail.

National Water Model Forcing Engine Dependency Description

1) Analysis and Assimilation

JNWM_FORCING_ANALYSIS_ASSIM ← D1 (soft), D2 (soft), D3, and D4

D1 (CONUS_MULTISENSOR_QPE):
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**conus**/MultiSensorQPE
   Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/conus/MultiSensorQPE/**MRMS_MultiSensor_QPE_01H_Pass{1,2}_00.00_YYYYMMDD-hh0000.grib2.gz**

D2 (RADARONLY):
/lfs/h1/ops/prod/dcom/us007003/ldmdata/obs/upperair/mrms/**conus**/RadarOnly_QPE/
   Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/conus/RadarOnly_QPE/**RadarOnly_QPE_01H_00.00_YYYYMMDD-hh0000.grib2.gz**

D3 (RAP): /lfs/h1/ops/prod/com/rap/v5.1
   Data example:
/lfs/h1/ops/prod/com/rap/v5.1/rap.YYYYMMDD/**rap.t{00..23)z.awp130bgrbf01.grib2**

D4 (CONUS HRRR): /lfs/h1/ops/prod/com/hrrr/v4.1
   Data example:
/lfs/h1/ops/prod/com/hrrr/v4.1/hrrr.YYYYMMDD/**conus/hrrr.t{00..23}z.wrfsfcf01.grib2**

2) Extended Analysis and Assimilation

JNWM_FORCING_MPE ← D1, D3, D4, and D5 (all soft)

D1 (CONUS_MULTISENSOR_QPE):
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**conus**/MultiSensorQPE
     Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/conus/**MultiSensorQPE/MRMS_MultiSensor_QPE_0 1H_Pass{1,2}_00.00_20200918-190000.grib2.gz**

D3 (RAP): /lfs/h1/ops/prod/com/rap/v5.1
     Data example: /lfs/h1/ops/prod/com/rap/v5.1/rap.YYYYMMDD/**rap.t21z.awp130pgrbf12.grib2**

D4 (CONUS HRRR): /lfs/h1/ops/prod/com/hrrr/v4.1
     Data example:
/lfs/h1/ops/prod/com/hrrr/v4.1/hrrr.YYYYMMDD/**conus/hrrr.t{00..23}z.wrfsfcf01.grib2**

D5 (CONUS STAGE IV): /lfs/h1/ops/prod/com/pcpanl/v4.1/
     Data example:
/lfs/h1/ops/prod/com/pcpanl/v4.1/pcpanl.YYYYMMDD/**st4_conus.YYYYMMDDHH.01h.grb2**

JNWM_FORCING_ANALYSIS_ASSIM_EXTEND ←
JNWM_FORCING_ANALYSIS_ASSIM (uses 13Z previous day to 16Z today data in
"*com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim*")
                        ← JNWM_FORCING_MPE (soft, uses mpe
forcing data "*com/nwm/v3.0/nwm.$PDY/nwges/nwm_forcing*")

3) *Short Range*

JNWM_FORCING_SHORT_RANGE ← D3 and D4

D3 (RAP): /lfs/h1/ops/prod/com/rap/v5.1
     Data example:
/lfs/h1/ops/prod/com/rap/v5.1/rap.YYYYMMDD/**rap.t{00..23}z.awp130bgrbf01.grib2**

D4 (CONUS HRRR): /lfs/h1/ops/prod/com/hrrr/v4.1
     Data example:
/lfs/h1/ops/prod/com/hrrr/v4.1/hrrr.YYYYMMDD/conus/**hrrr.t{00..23}z.wrfsfcf01.grib2**

4) *Medium Range*

JNWM_FORCING_MEDIUM_RANGE ← D6

D6 (GFS): /lfs/h1/ops/prod/com/gfs/v16.3/
     Data example:
/lfs/h1/ops/prod/com/gfs/v16.3/gfs.YYYYMMDD/{00,06,12,18}/atmos/**gfs.t{00,06,12,18}z.sfluxgrbf{{001.. 120},{123..240..3}}.grib2**

5) Medium Range Blend

JNWM_FORCING_MEDIUM_RANGE_BLEND ← D6 and D7 (soft)

D6 (GFS): /lfs/h1/ops/prod/com/gfs/v16.3/
    Data example:
/lfs/h1/ops/prod/com/gfs/v16.3/gfs.YYYYMMDD/{00,06,12,18}/atmos/**gfs.t{00,06,12,18}z.sfluxgrbf{{001.. 120},{123..240..3}}.grib2**

D7 (CONUS BLEND – NBM): /lfs/h1/ops/prod/com/blend/v4.1/
    Data example:
/lfs/h1/ops/prod/com/blend/v4.1/blend.YYYYMMDD/{00,06,12,18}/core/**blend.t{00,06,12,18}z.core.f{{001 ..036},{042..240..6}}.co.grib2**

6) Long Range (There are 4 members per cycle, here is an example for member 1)

JNWM_FORCING_LONG_RANGE (forcing engine member 1) ← D8

D8 (CFS): /lfs/h1/ops/prod/com/cfs/v2.3/
    Data example:
/lfs/h1/ops/prod/com/cfs/v2.3/cfs.YYYYMMDD/{00,06,12,18}/**6hrly_grib_{01**,02,03,04**}/flxfYYYYMMDD{0 0,06,12,18}.{01**,02,03,04**}.YYYYMMDD{00,06,12,18}.grb2**

7) Hawaii Analysis and Assimilation and Short range

JNWM_FORCING_ANALYSIS_ASSIM_HAWAII ← D9 (soft) and D10

JNWM_FORCING_SHORT_RANGE_HAWAII ← D10 and D11 (soft; uses 00Z and 12Z hiresw data)

D9 (HAWAII_ MULTISENSOR_QPE):
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**hawaii**/MultiSensorQPE
    Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/hawaii/MultiSensorQPE/**MRMS_MultiSensor_QPE_01 H_Pass{1,2}_00.00_20200918-120000.grib2.gz**

D10 (NAM-Nest): /lfs/h1/ops/prod/com/nam/v4.2/
    Data example:
/lfs/h1/ops/prod/com/nam/v4.2/nam.YYYYMMDD/**nam.t{00,06,12,18}z.hawaiinest.hiresf48.tm00.grib2**

D11 (ARW): /lfs/h1/ops/prod/com/hiresw/v8.1/
    Data example:
/lfs/h1/ops/prod/com/hiresw/v8.1/hiresw.YYYYMMDD/**hiresw.t{00,12}z.arw_2p5km.f48.hi.grib2**

8) Puerto Rico Analysis and Assimilation and Short Range

JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO ← D10 and D12 (soft)

JNWM_FORCING_SHORT_RANGE_PUERTORICO ← D10 and D11 (soft; uses 06Z and 18Z hiresw data)

D10 (NAM-Nest): /lfs/h1/ops/prod/com/nam/v4.2
       Data example:
/lfs/h1/ops/prod/com/nam/v4.2/nam.YYYYMMDD/**nam.t{00,06,12,18}z.priconest.hiresf48.tm00.grib2**

D11 (ARW): /lfs/h1/ops/prod/com/hiresw/v8.1
       Data example:
/lfs/h1/ops/prod/com/hiresw/v8.1/hiresw.YYYYMMDD/**hiresw.t{06,18}z.arw_2p5km.f48.pr.grib2**

D12 (PUERTORICO_ MULTISENSOR_QPE):
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**carib**/MultiSensorQPE
       Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**carib**/MultiSensorQPE/**MRMS_MultiSensor_QPE_01 H_Pass{1,2}_00.00_20200918-120000.grib2.gz**

9) Alaska Analysis and Assimilation, Extended Analysis, Short Range, Medium Range, and Medium Range Blend

JNWM_FORCING_ANALYSIS_ASSIM_ALASKA ← D4 and D1 (soft)

JNWM_FORCING_ANALYSIS_ASSIM_EXTEND_ALASKA ← JNWM_FORCING_ANALYSIS_ASSIM_ALASKA (uses 13Z previous day to 20Z today data) and D5 (soft)

JNWM_FORCING_SHORT_RANGE_ALASKA ← D4 and D7 (soft)

JNWM_FORCING_MEDIUM_RANGE_BLEND_ALASKA ← D6 and D7 (soft)

JNWM_FORCING_MEDIUM_RANGE_ALASKA ← D6

D1 (ALASKA_MULTISENSOR_QPE):
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/**alaska**/MultiSensorQPE

Data example:
/lfs/h1/ops/prod/dcom/ldmdata/obs/upperair/mrms/alaska/MultiSensorQPE/**MultiSensor_QPE_01H_Pass{1,2}_00.00_20200918-190000.grib2.gz**

D4 (Alaska HRRR): /lfs/h1/ops/prod/com/hrrr/v4.1
    Data example:
/lfs/h1/ops/prod/com/hrrr/v4.1/hrrr.YYYYMMDD**/alaska/hrrr.t18z.wrfsfcf04.ak.grib2**

D5 (Alaska STAGE IV): /lfs/h1/ops/prod/com/pcpanl/v4.1/
    Data example:
/lfs/h1/ops/prod/com/pcpanl/v4.1/pcpanl.YYYYMMDD/**st4_ak.YYYYMMDD{18,00,06,12}.06h.grb2**

D6 (GFS): /lfs/h1/ops/prod/com/gfs/v16.3/
    Data example:
/lfs/h1/ops/prod/com/gfs/v16.3/gfs.YYYYMMDD/{00,06,12,18}/atmos/**gfs.t{00,06,12,18}z.sfluxgrbf{{001..120},{123..240..3}}.grib2**

D7 (Alaska BLEND – NBM):   /lfs/h1/ops/prod/com/blend/v4.1/
    Data example:
/lfs/h1/ops/prod/com/blend/v4.1/blend.YYYYMMDD/{00,06,12,18}/core/**blend.t{00,06,12,18}z.core.f048.ak.grib2**

Stream/Reservoir observations and forecasts Data Processing

JNWM_USGS_TIMESLICES ← D1 (soft)

D1: /lfs/h1/ops/prod/dcom/usgs_streamflow
    data example: /lfs/h1/ops/prod/dcom/**usgs_streamflow/04119055.xml**

JNWM_ACE_TIMESLICES ← D2 (soft)

D2: /lfs/h1/ops/prod/dcom/usace_streamflow
    data example: /lfs/h1/ops/prod/dcom/usace_streamflow/**MT00025.xml**

JNWM_RFC_TIMESERIES ← D3 (soft)

D3: /lfs/h1/ops/prod/dcom/RFC_data/Reservoir

    data example:

/lfs/h1/ops/prod/dcom/RFC_data/Reservoir/**202009151109_LMRFC_Reservoir_export.xml**

JNWM_CANADA_TIMESLICES ← D4 (soft)

D4: /lfs/h1/ops/prod/dcom/can_streamgauge/
    data example: /lfs/h1/ops/prod/dcom/can_streamgauge/**QC_02OA107_hourly_hydrometric.csv**

JNWM_MERGE_USGS_CA_TIMESLICES ← JNWM_CANADA_TIMESLICES (soft, uses canada_timeslices "com/nwm/v3.0/nwm.$PDY/canada_timeslices")
                                  ← JNWM_USGS_TIMESLICES (soft, uses usgs_timeslices data "com/nwm/v3.0/nwm.$PDY/usgs_timeslices")

National Water Model INLAND Model Dependency Description

1) Analysis and Assimilation

JNWM_MODEL (Analysis and Assimilation model run) ← JNWM_MODEL (soft, uses restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL Analysis and Assimilation)
                                    ← JNWM_FORCING_ANALYSIS_ASSIM (uses Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim"*)
                                    ← JNWM_USGS_TIMESLICES (soft)
                                    ← JNWM_ACE_TIMESLICES (soft)
                                    ← JNWM_RFC_TIMESERIES (soft)
                                    ← JNWM_CANADA_TIMESERIES (soft)
                                    ← JNWM_MERGE_USGS_CA_TIMESERIES
                         (soft)

2) Extended Analysis and assimilation

JNWM_MODEL (Extended Analysis and Assimilation model run) ← JNWM_MODEL (soft, uses restart file valid at12z generated by previous day of JNWM_MODEL Extended Analysis and Assimilation or will use 12Z Analysis and Assimilation restart file if no Extended Analysis and Assimilation restart file)
                                    ←
JNWM_FORCING_ANALYSIS_ASSIM_EXTEND (soft, uses Extended Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend"*)
                                    ← JNWM_USGS_TIMESLICES (soft)
                                    ← JNWM_CANADA_TIMESLICES (soft)
                                    ← JNWM_RFC_TIMESERIES (soft)
                                    ← JNWM_MERGE_USGS_CA_TIMESERIES
                         (soft)

3) Short_Range

JNWM_MODEL (Short-range model run) ← JNWM_FORCING_SHORT_RANGE (uses Short-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range"*)

← JNWM_MODEL (uses current Analysis and Assimilation restart file)

4) Medium_Range (There are 6 members per cycle)

JNWM_MODEL (normal Medium-range model run (member 1 of ensemble)) ← JNWM_FORCING_MEDIUM_RANGE (uses the current (t-0) gfs-based NWM model forcing *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range"*)

← JNWM_MODEL (soft, uses current Analysis and Assimilation restart file)

JNWM_MODEL (5 additional members of the Medium-range ensemble model run, members 2-6)

← JNWM_FORCING_MEDIUM_RANGE (uses the gfs-based NWM model forcing from t-6, t-12, t-18, t-24 and t-30 hours before the current gfs cycle *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range"*)

5) Medium_Range Blend

JNWM_MODEL (normal Medium-range Blend model run (member 1 of ensemble)) ← JNWM_FORCING_MEDIUM_RANGE_BLEND (uses the current (t-0) gfs+blend-based NWM model forcing *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_blend"*)

← JNWM_MODEL (soft, uses current Analysis and Assimilation restart file)

6) Long_Range Analysis and assimilation

JNWM_MODEL (Long-range analysis and assimilation model run) ← JNWM_MODEL (soft, uses restart file valid at t-12 hours generated by an earlier cycle of JNWM_MODEL Long-range Analysis and Assimilation)

← JNWM_FORCING_ANALYSIS_ASSIM (soft, uses Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim"*)

← JNWM_USGS_TIMESLICES (soft)
← JNWM_CANADA_TIMESLICES (soft)

<div align="center">← JNWM_RFC_TIMESERIES (soft)</div>
<div align="center">← JNWM_MERGE_USGS_CA_TIMESERIES (soft)</div>

7) Long_Range (There are 4 members per cycle)

JNWM_MODEL (Long-range model run member 1) ← JNWM_FORCING_LONG_RANGE
(uses Long-range forcing engine member 1
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/long_range")

<div align="right">← JNWM_MODEL (uses current</div>

Long-range Analysis and Assimilation restart file)

JNWM_MODEL (Long-range model run member 2) ← JNWM_FORCING_LONG_RANGE
(uses Long-range forcing engine member 2
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/long_range")

<div align="right">← JNWM_MODEL (uses current</div>

Long-range Analysis and Assimilation restart file)

JNWM_MODEL (Long-range model run member 3) ← JNWM_FORCING_LONG_RANGE
(uses Long-range forcing engine member 3
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/long_range")

<div align="right">← JNWM_MODEL (uses current</div>

Long-range Analysis and Assimilation restart file)

JNWM_MODEL (Long-range model run member 4) ← JNWM_FORCING_LONG_RANGE
(uses Long-range forcing engine member 4
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/long_range")

<div align="right">← JNWM_MODEL (uses current</div>

Long-range Analysis and Assimilation restart file)

8) Hawaii Analysis and assimilation

JNWM_MODEL (Hawaii Analysis and Assimilation model run) ← JNWM_MODEL (soft, uses
restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL Hawaii Analysis
and Assimilation)

<div align="right">← JNWM_FORCING_ANALYSIS_ASSIM_HAWAII</div>

(Hawaii Analysis and assimilation forcing
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_hawaii")

<div align="right">← JNWM_USGS_TIMESLICES (soft)</div>
<div align="right">← JNWM_MERGE_USGS_CA_TIMESERIES</div>

(soft)

9) Hawaii Short_Range

JNWM_MODEL(Hawaii Short-range model run) ←
JNWM_FORCING_SHORT_RANGE_HAWAII (Hawaii Short-range forcing engine
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range_hawaii"))

← JNWM_MODEL (uses current Hawaii
Analysis and Assimilation restart file)

10) PuertoRico Analysis and assimilation

JNWM_MODEL (Puertorico Analysis and Assimilation model run) ← JNWM_MODEL (soft,
uses restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL Puertorico
Analysis and Assimilation)

← JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO
(Puertorico Analysis and Assimilation forcing
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_puertorico")

← JNWM_USGS_TIMESLICES (soft)
← JNWM_MERGE_USGS_CA_TIMESERIES (soft)

11) PuertoRico Short_Range
JNWM_MODEL (Puertorico Short-range model run)←
JNWM_FORCING_SHORT_RANGE_PUERTORICO (Puertorico Short-range forcing
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range_hawaii")

← JNWM_MODEL (uses current Puertorico
Analysis and Assimilation restart file)

12) Alaska Analysis and assimilation

JNWM_MODEL (Alaska Analysis and Assimilation model run) ← JNWM_MODEL (soft, uses
restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL Alaska Analysis
and Assimilation)

← JNWM_FORCING_ANALYSIS_ASSIM_ALASKA
(Alaska Analysis and assimilation forcing
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_alaska")

← JNWM_USGS_TIMESLICES (soft)
← JNWM_MERGE_USGS_CA_TIMESERIES (soft)
← JNWM_RFC_TIMESERIES (soft)

13) Alaska Extended Analysis and assimilation

JNWM_MODEL (Alaska Extended Analysis and Assimilation model run) ← JNWM_MODEL (soft, uses restart file valid at12z generated by previous day of JNWM_MODEL Alaska Extended Analysis and Assimilation or will use 12Z Alaska Analysis and Assimilation restart file if no Extended Analysis and Assimilation restart file)

←

JNWM_FORCING_ANALYSIS_ASSIM_EXTEND_ALASKA (soft, uses Alaska Extended Analysis and Assimilation forcing data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend_alaska")

← JNWM_USGS_TIMESLICES (soft)
← JNWM_RFC_TIMESERIES (soft)
← JNWM_MERGE_USGS_CA_TIMESERIES (soft)

14) Alaska Short_Range

JNWM_MODEL(Alaska Short-range model run) ←
JNWM_FORCING_SHORT_RANGE_ALASKA (Alaska Short-range forcing engine
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range_alaska")

← JNWM_MODEL (uses current Alaska Analysis and Assimilation restart file)

15) Alaska Medium_Range (There are 6 members per cycle)

JNWM_MODEL (Alaska Medium-range model run (member 1 of ensemble)) ←
JNWM_FORCING_MEDIUM_RANGE_ALASKA (uses the current (t-0) gfs-based NWM model forcing *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_alaska"*)

← JNWM_MODEL (soft, uses current Alaska Analysis and Assimilation restart file)

JNWM_MODEL (5 additional members of the Medium-range ensemble model run, members 2-6)

← JNWM_FORCING_MEDIUM_RANGE_ALASKA (uses the gfs-based NWM model forcing from t-6, t-12, t-18, t-24 and t-30 hours before the current gfs cycle *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_alaska"*)

16) Alaska Medium_Range Blend

JNWM_MODEL (Alaska Medium-range Blend model run (member 1 of ensemble)) ←
JNWM_FORCING_MEDIUM_RANGE_BLEND_ALASKA (uses the current (t-0) gfs+blend-based NWM model forcing
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_blend_alaska")

← JNWM_MODEL (soft, uses current Alaska Analysis and Assimilation restart file)

17) Open-loop Analysis and Assimilation

JNWM_MODEL_NO_DA (Non-DA Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL_NO_DA Analysis and Assimilation)
← JNWM_MODEL (uses Analysis and Assimilation Channel-Only data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_no_da"*)

18) Open-loop Extended Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Extended Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at12z generated by previous day of JNWM_MODEL_NO_DA Extended Analysis and Assimilation or will use 12Z Non-DA analysis and Assimilation restart file if no Extended Analysis and Assimilation restart file)
← JNWM_MODEL (soft, uses Extended Analysis and Assimilation Channel-Only data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend_no_da"*)

19) Open-loop Long_Range Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Long-range Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at t-12 hours generated by an earlier cycle of JNWM_MODEL_NO_DA Long-range Analysis and Assimilation)
← JNWM_MODEL (soft, uses Analysis and Assimilation Channel-Only data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_long_no_da"*)

20) Open-loop Hawaii Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Hawaii Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at t-3 hours generated by an earlier cycle of JNWM_MODEL_NO_DA Hawaii Analysis and Assimilation)
← JNWM_MODEL (Hawaii Analysis and Assimilation Channel-Only data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_hawaii_no_da"*)

21) Open-loop PuertoRico Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Puertorico Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at t-3 hours generated by an earlier cycle of
JNWM_MODEL_NO_DA Puertorico Analysis and Assimilation)
         ← JNWM_MODEL (Puertorico Analysis and
Assimilation Channel-Only data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_puertorico_no_da")

22) Open-loop Alaska Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Alaska Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at t-3 hours generated by an earlier cycle of
JNWM_MODEL_NO_DA Alaska Analysis and Assimilation)
         ← JNWM_MODEL (Alaska Analysis and
Assimilation Channel-Only data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_alaska_no_da")

23) Open-loop Alaska Extended Analysis and assimilation

JNWM_MODEL_NO_DA (Non-DA Alaska Extended Analysis and Assimilation model run) ←
JNWM_MODEL_NO_DA (soft, uses restart file valid at12z generated by previous day of
JNWM_MODEL_NO_DA Alaska Extended Analysis and Assimilation or will use 12Z Alaska
Non-DA analysis and Assimilation restart file if no Alaska Extended Analysis and Assimilation
restart file)
         ← JNWM_MODEL (soft, uses Alaska Extended
Analysis and Assimilation Channel-Only data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend_no_da")

24) Open-loop Hawaii Short_Range

JNWM_MODEL_NO_DA (Non-DA Hawaii Short-range model run) ← JNWM_MODEL (Hawaii
Short-range Channel-Only data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range_hawaii_no_da")
         ← JNWM_MODEL_NO_DA (uses
current Non-DA Hawaii Analysis and Assimilation restart file)

25) Open-loop PuertoRico Short_Range
JNWM_MODEL_NO_DA (Non-DA Puertorico Short-range model run) ← JNWM_MODEL
(Puertorico Short-range Channel-Only data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/short_range_puertorico_no_da")

← JNWM_MODEL_NO_DA (uses current Non-Da Puertorico Analysis and Assimilation restart file)

26) Open-loop Medium_Range (member 1 only)

JNWM_MODEL_NO_DA (Non-DA Medium-range model run (member 1 of ensemble))
            ← JNWM_MODEL (Medium-Range_mem1 Channel-Only *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_no_da"*)
                  ← JNWM_MODEL_NO_DA   (soft, uses current Non-DA Analysis and Assimilation restart file)

27) Open-loop Alaska Medium_Range (member 1 only)

JNWM_MODEL_NO_DA (Non-DA Alaska Medium-range model run (member 1 of ensemble))
            ← JNWM_MODEL (Medium-Range-Alaska_mem1 Channel-Only *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/medium_range_alaska_no_da"*)
                  ← JNWM_MODEL_NO_DA   (soft, uses current Non-DA Alaska Analysis and Assimilation restart file)

National Water Model Coastal Model Dependency Description

1) Atlgulf Analysis and Assimilation

JNWM_COASTAL (Atlgulf Analysis and Assimilation Coastal run)
            ← JNWM_COASTAL (soft, uses coastal restart file valid at t-3 hours generated by an earlier cycle of JNWM_COASTAL Atlgulf Analysis and Assimilation)
            ← D1
            ← JNWM_FORCING_ANALYSIS_ASSIM (uses Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim"*)
            ← JNWM_MODEL Analysis and Assimilation (*"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_no_da"*)

D1 (**STOFS**): /lfs/h1/ops/prod/com/stofs/v1.1

   Data example:
/lfs/h1/ops/prod/com/stofs/v1.1/stofs_2d_glo.$PDY/**stofs_2d_glo.t{00,06,12,18}z.fields.cwl.nc**

2) Atlgulf Extended Analysis and Assimilation

JNWM_COASTAL (Atlgulf Extended Analysis and Assimilation Coastal run)
     ← JNWM_COASTAL (soft, uses restart file valid at12z generated by previous day of Atlgulf Extended Analysis and Assimilation or will use 12Z Atlgulf Analysis and Assimilation restart file if no Atlgulf Extended Analysis and Assimilation restart file)
     ← D1
     ← JNWM_FORCING_ANALYSIS_ASSIM_EXTEND (soft, uses Extended Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend"*)
     ← JNWM_MODEL Extended Analysis and Assimilation (soft, uses *"com/nwm/v3.0/nwm.$PDY/analysis_assim_extend_no_da"*

3) Atlgulf Short Range

JNWM_COASTAL (Atlgulf Short-range Coastal run)
     ← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation restart file)
     ← D1
     ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_SHORT_RANGE (uses AnA and Short-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, short_range}"*)
     ← JNWM_MODEL Analysis_assim and Short-range *"com/nwm/v3.0/nwm.$PDY/{analysis_assim,short_range}/*channel_rt*"*)

4) Atlgulf Medium Range

JNWM_COASTAL (Atlgulf Medium-range Coastal run)
     ← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation restart file)
     ← D1
     ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_MEDIUM_RANGE (uses AnA and Medium-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, medium_range}"*)
     ← JNWM_MODEL Analysis_assim and Medium-range *"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range_mem1}/*channel_rt*"*)

5) Atlgulf Medium Range Blend

JNWM_COASTAL (Atlgulf Medium-range Blend Coastal run)
  ← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation restart file)
  ← D1
  ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_MEDIUM_RANGE_BLEND (uses AnA and Medium-range Blend forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, medium_range_blend}"*)
  ← JNWM_MODEL Analysis_assim and Medium-range-Blend*"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range_blend}/*channel_rt*"*)

6) Atlgulf Short Range (PSURGE)

JNWM_COASTAL (Atlgulf Short-range Psurge Coastal run)
  ← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation restart file)
  ← D1
  ← D2
  ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_SHORT_RANGE (uses AnA and Short-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, short_range}"*)
  ← JNWM_MODEL Analysis_assim and Short-range *"com/nwm/v3.0/nwm.$PDY/{analysis_assim,short_range}/*channel_rt*"*)

D2 (**PSURGE**): /lfs/h1/ops/prod/com/psurge/v2.10

  Data example:
/lfs/h1/ops/prod/com/psurge/v2.10/psurge.$PDY/**psurge.t${PDY}${cyc}z.*_e10_inc_agl.h102.conus_625m.grib2**

7) Atlgulf Medium Range (PSURGE)

JNWM_COASTAL (Atlgulf Medium-range Psurge Coastal run)
  ← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation restart file)
  ← D1

← D2

← JNWM_FORCING_ANALYSIS_ASSIM and
JNWM_FORCING_MEDIUM_RANGE (uses AnA and Medium-range forcing data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, medium_range}")

← JNWM_MODEL Analysis_assim and Medium-range
*"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range_**mem1**}/*channel_rt*
"*)

8) Atlgulf Medium Range Blend (PSURGE)

JNWM_COASTAL (Atlgulf Medium-range Blend Psurge Coastal run)

← JNWM_COASTAL (uses current Atlgulf Analysis and Assimilation
restart file)

← D1

← D2

← JNWM_FORCING_ANALYSIS_ASSIM and
JNWM_FORCING_MEDIUM_RANGE_BLEND (uses AnA and Medium-range
Blend forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim,
medium_range_blend}"*)

← JNWM_MODEL Analysis_assim and
Medium-range-Blend*"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range
_blend}/*channel_rt*"*)

9) Pacific Analysis and Assimilation

JNWM_COASTAL (Pacific Analysis and Assimilation Coastal run)

← JNWM_COASTAL (soft, uses coastal restart file valid at t-3 hours
generated by an earlier cycle of JNWM_COASTAL Pacific Analysis and
Assimilation)

← D1

← JNWM_FORCING_ANALYSIS_ASSIM (uses Analysis and
Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim"*)

← JNWM_MODEL Analysis and Assimilation
(*"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_no_da"*)

D1 (**STOFS**): /lfs/h1/ops/prod/com/stofs/v1.1

Data example:
/lfs/h1/ops/prod/com/stofs/v1.1/stofs_2d_glo.$PDY/**stofs_2d_glo.t{00,06,12,18}z.fields.cwl.nc**

10) Pacific Extended Analysis and Assimilation

JNWM_COASTAL (Pacific Extended Analysis and Assimilation Coastal run)
   ← JNWM_COASTAL (soft, uses restart file valid at12z generated by previous day of Pacific Extended Analysis and Assimilation or will use 12Z Pacific Analysis and Assimilation restart file if no Pacific Extended Analysis and Assimilation restart file)
    ← D1
    ← JNWM_FORCING_ANALYSIS_ASSIM_EXTEND (soft, uses Extended Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_extend"*)
    ← JNWM_MODEL Extended Analysis and Assimilation (soft, uses *"com/nwm/v3.0/nwm.$PDY/analysis_assim_extend_no_da"*)

11) Pacific Short Range

JNWM_COASTAL (Pacific Short-range Coastal run)
   ← JNWM_COASTAL (uses current Pacific Analysis and Assimilation restart file)
    ← D1
    ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_SHORT_RANGE (uses AnA and Short-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, short_range}"*)
    ← JNWM_MODEL Analysis_assim and Short-range *"com/nwm/v3.0/nwm.$PDY/{analysis_assim,short_range}/*channel_rt*"*)

12) Pacific Medium Range

JNWM_COASTAL (Pacific Medium-range Coastal run)
   ← JNWM_COASTAL (uses current Pacific Analysis and Assimilation restart file)
    ← D1
    ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_MEDIUM_RANGE (uses AnA and Medium-range forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, medium_range}"*)
    ← JNWM_MODEL Analysis_assim and Medium-range *"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range_mem1}/*channel_rt*"*)

13) Pacific Medium Range Blend

JNWM_COASTAL (Atlgulf Medium-range Blend Coastal run)

   ← JNWM_COASTAL (uses current Pacific Analysis and Assimilation restart file)

   ← D1

   ← JNWM_FORCING_ANALYSIS_ASSIM and JNWM_FORCING_MEDIUM_RANGE_BLEND (uses AnA and Medium-range Blend forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim, medium_range_blend}"*)

   ← JNWM_MODEL Analysis_assim and Medium-range-Blend*"com/nwm/v3.0/nwm.$PDY/{analysis_assim,medium_range_blend}/*channel_rt*"*)

14) Hawaii Analysis and Assimilation

JNWM_COASTAL (Hawaii Analysis and Assimilation Coastal run)

   ← JNWM_COASTAL (soft, uses coastal restart file valid at t-3 hours generated by an earlier cycle of JNWM_COASTAL Hawaii Analysis and Assimilation)

   ← D1

   ← JNWM_FORCING_ANALYSIS_ASSIM_HAWAII (uses Hawaii Analysis and Assimilation forcing data *"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_hawaii"*)

   ← JNWM_MODEL Hawaii Analysis and Assimilation (*"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_hawaii_no_da"*)

D1 (**STOFS**): /lfs/h1/ops/prod/com/stofs/v1.1

 Data example:
/lfs/h1/ops/prod/com/stofs/v1.1/stofs_2d_glo.$PDY/**stofs_2d_glo.t{00,06,12,18}z.fields.cwl.nc**

15) Hawaii Short Range

JNWM_COASTAL (Hawaii Short-range Coastal run)

   ← JNWM_COASTAL (uses current Hawaii Analysis and Assimilation restart file)

   ← D1

   ← JNWM_FORCING_ANALYSIS_ASSIM_HAWAII and JNWM_FORCING_SHORT_RANGE_HAWAII (uses Hawaii AnA and Short-range forcing data

"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim_hawaii, short_range_hawaii}")

⟵ JNWM_MODEL Hawaii Analysis_assim and Short-range
*"com/nwm/v3.0/nwm.$PDY/{analysis_assim_hawaii,short_range_hawaii}/*channel_rt*"*)

16) Puertorico Analysis and Assimilation

JNWM_COASTAL (Puertorico Analysis and Assimilation Coastal run)

⟵ JNWM_COASTAL (soft, uses coastal restart file valid at t-3 hours generated by an earlier cycle of JNWM_COASTAL Puertorico Analysis and Assimilation)

⟵ D1

⟵ JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO (uses Analysis and Assimilation forcing data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_puertorico")

⟵ JNWM_MODEL Puertorico Analysis and Assimilation
(*"com/nwm/v3.0/nwm.$PDY/nwges/nwm/analysis_assim_puertorico_no_da"*)

D1 (**STOFS**): /lfs/h1/ops/prod/com/stofs/v1.1

Data example:
/lfs/h1/ops/prod/com/stofs/v1.1/stofs_2d_glo.$PDY/**stofs_2d_glo.t{00,06,12,18}z.fields.cwl.nc**

17) Puertorico Short Range

JNWM_COASTAL (Puertorico Short-range Coastal run)

⟵ JNWM_COASTAL (uses current Puertorico Analysis and Assimilation restart file)

⟵ D1

⟵ JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO and JNWM_FORCING_SHORT_RANGE_PUERTORICO (uses Puertorico AnA and Short-range forcing data
"com/nwm/v3.0/nwm.$PDY/nwges/nwm/{analysis_assim_puertorico, short_range_puertorico}")

⟵ JNWM_MODEL Puertorico Analysis_assim and Short-range
*"com/nwm/v3.0/nwm.$PDY/{analysis_assim_puertorico,short_range_puertorico}/*channel_rt*"*)