

NWM v3.0.0 Test Plan

Regression Testing

Run through model after identifying and removing input files

- Test for appropriate failure (failure occurs in the right job)
- Test for error checking (make sure failure details are reported)
- Test for appropriate error context (position of error and text of error allow effective troubleshooting)
- Test use of backup input data/files, if applicable
- Test cold start capability, if applicable

- Failure Mode Testing:

Test	Affected job	Expected Result	Error/Warning message
Missing RAP, or HRRR data	JNWM_FORCING_ANALYSIS_ASSIM JNWM_FORCING_SHORT_RANGE	Jobs should fail	error
Missing CONUS MultiSensorQPE or RADARONLY data	JNWM_FORCING_ANALYSIS_ASSIM	Job should not fail	warning
Missing GFS data	JNWM_FORCING_MEDIUM_RANGE and JNWM_FORCING_MEDIUM_RANGE_BLEND	Job should fail	error
Missing BLEND (NBM) data	JNWM_FORCING_MEDIUM_RANGE_BLEND	Job should not fail	warning
Missing CFS data	JNWM_FORCING_LONG_RANGE	Job should fail	error
Missing Hawaii NAM-nest data	JNWM_FORCING_ANALYSIS_ASSIM_HAWAII	Job should fail	error
Missing Hawaii MultiSensorQPE data	JNWM_FORCING_ANALYSIS_ASSIM_HAWAII	Job should not fail	warning

Missing Hawaii NAM-nest or Hawaii HIRESW data	JNWM_FORCING_SHORT_RANGE_HAWAII	Job should fail	error
Missing PuertoRico NAM-nest data	JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO	Job should fail	error
Missing PuertoRico HIRESW data	JNWM_FORCING_ANALYSIS_ASSIM_PUERTORICO	Job should not fail	warning
Missing PuertoRico NAM-nest or HIRESW	JNWM_FORCING_SHORT_RANGE_PUERTORICO	Job should fail	error
Missing Alaska MultiSensorQPE data	JNWM_FORCING_ANALYSIS_ASSIM_ALASKA	Job should not fail	warning
Missing HRRR data	JNWM_FORCING_ANALYSIS_ASSIM_ALASKA	Job should fail	error
Missing Alaska PCPANL (StageIV) data	JNWM_FORCING_ANALYSIS_ASSIM_EXTEND_ALASKA	Job should force to complete	warning
Missing Forcing Analysis and Assim files	JNWM_FORCING_ANALYSIS_ASSIM_EXTEND_ALASKA	Job should fail	error
Missing Alaska HRRR data	JNWM_FORCING_SHORT_RANGE_ALASKA	Job should fail	error
Missing Alaska BLEND (NBM) data	JNWM_FORCING_SHORT_RANGE_ALASKA and JNWM_FORCING_MEDIUM_RANGE_BLEND_ALASKA	Job should not fail	warning
Missing GFS data	JNWM_FORCING_MEDIUM_RANGE_ALASKA	Job should fail	error
Missing MPE forcing files	JNWM_FORCING_ANALYSIS_ASSIM_EXTEND	Job should force to complete	warning
Missing Analysis and Assimilation forcing files	JNWM_FORCING_ANALYSIS_ASSIM_EXTEND	Job should force to complete	warning
Missing Analysis and Assimilation forcing file	JNWM_MODEL (Analysis_Assim and Long Analysis_Assim)	Jobs should fail	error
Missing Short-range forcing file	JNWM_MODEL (Short-range)	Job should fail	error

Missing Medium-range forcing file	JNWM_MODEL (Medium-range_mem{1..6})	Job should fail	error
Missing Medium-range-blend forcing file	JNWM_MODEL (Medium-range_blend)	Job should fail	error
Missing Long-range forcing file	JNWM_MODEL (Long-range_mem{1..4})	Job should fail	error
Missing Extended Analysis/Assimilation forcing file	JNWM_MODEL (Extended AnA CONUS)	Job should force to complete	warning
Missing Analysis/Assimilation or Short-Range Hawaii forcing file	JNWM_MODEL (Analysis_Assim or Short-range Hawaii)	Job should fail	error
Missing Analysis/Assimilation or Short-Range PuertoRico forcing file	JNWM_MODEL (Analysis_Assim or Short-range PuertoRico)	Job should fail	error
Missing Analysis/Assimilation or Short-Range Alaska forcing file	JNWM_MODEL (Analysis_Assim or Short-range Alaska)	Job should fail	error
Missing Extended Analysis Assimilation Alaska	JNWM_MODEL (Extended Analysis_Assim Alaska)	Job should force to complete	warning
Missing Medium-range Alaska forcing file	JNWM_MODEL (Medium-range Alaska)	Job should fail	error
Missing Medium-range-blend Alaska forcing file	NWM_MODEL (Medium-range-blend Alaska)	Job should fail	error
Missing Channel-only file of Conus, Hawaii, or PuertoRico Analysis/Assimilation; Long Analysis-Assim; Extended Analysis-Assim; Hawaii or PuertoRico Short-range; or Medium-range	JNWM_MODEL_NO_DA (Conus, Hawaii, or PuertoRico Analysis and Assimilation; Long Analysis-Assim; Extended Analysis-Assim; Hawaii or PuertoRico Short-range; or Medium-range)	Job should fail	error
Missing Channel-only file of Conus or Alaska	JNWM_MODEL_NO_DA (Conus and Alaska Extended Analysis-Assim)	Job should force to complete	warning

Missing raw (USGS, ACE, CANADA) input files	JNWM_{USGS,ACE,CANADA}_TIMESLICES	Job should fail	error
Missing raw RFC input files	JNWM_RFC_TIMESERIES	Job should fail	error
Missing processed USGS, ACE, CANADA, or RFC files	JNWM_MODEL (all configs)	Jobs should not fail	warning
Missing previous model restart file	JNWM_MODEL (Long Analysis-Assim, Extended Analysis-Assim)	Job should fail	error
Without restart files	JNWM_MODEL (all configs)	Jobs should not fail	warning
Without restart files	JNWM_COASTAL(all configs)	Jobs should fail	error
Missing 16z Coastal Extended AnA hotstart file	JNWM_COASTAL(16z Atlgulf or Pacific Extended Analysis-Assim)	Job should not fail	warning
Missing 16z Coastal Extended AnA hotstart file	JNWM_COASTAL(19z Atlgulf or Pacific Extended Analysis-Assim)	Job should not fail	warning
Missing STOFS data	JNWM_COASTAL(all configs)	Jobs should fail	error
Missing PSURGE data	JNWM_COASTAL(all Psurge Atlgulf configs)	Jobs should fail	error
Missing Channel_rt or forcing file of Conus, Hawaii or Puertorico Analysis-Assim	JNWM_COASTAL(Atlgulf, Pacific, Hawaii or Puertorico Analysis-Assim)	Job should fail	error
Missing Channel_rt or forcing file of Conus Extended Analysis-Assim	JNWM_COASTAL(Atlgulf and Pacific Extended Analysis-Assim)	Job should force to complete	warning
Missing Channel_rt or forcing file of Conus, Hawaii or Puertorico Short-range	JNWM_COASTAL(Atlgulf, Pacific, Hawaii or Puertorico Short-range)	Jobs should fail	error
Missing Channel_rt or forcing file of Conus Medium-range or Medium_range Blend	JNWM_COASTAL(Atlgulf and Pacific Medium-range; Or Medium-range Blend)	Jobs should fail	error
Missing Channel_rt or forcing file of Conus Medium-range, Medium-range Blend or Short-range	JNWM_COASTAL(Psurge Atlgulf Medium-range, Medium-range Blend or Short-range)	Job should fail	error

Cold Start Capabilities:

- Analysis and assimilation: if the restart files are completely missing, it uses the generic restart in the genericRst folder. If genericRst is also missing, it runs without restart files (cold restart). When there are restart files specified in the spin_rst/RESTART.com and spin_rst/HYDRO_RST.com directory under \$GESROOT directory, the restart files in this directory (RESTART.com and HYDRO_RST.com) will overwrite other restart files such as the normal restart or generic restart.
- Extended and long range analysis assimilation: if the restart files are completely missing, it uses the restart files from the normal analysis and assimilation. If the normal restart files are also missing, the job stops with an error message.
- Short, medium, and long range: if restart files are completely missing, the model should switch to the generic restart files in the genericRst folder. If the generic restart files are also missing, the program continues without restart files (cold start).
- Coastal analysis assimilation: if the hotstart file for the current cycle is missing, it will search for a compatible hotstart in the previous cycles up to 24 cycles. If there is no hotstart file found within the previous 24 cycles, a fatal error will be thrown and the job fails.
- Coastal short range and medium range: If the required hotstart file is missing, the job stops with an error like, "ERROR: \${CASETYPE} \${PDY} \${cyc} is missing hotstart file. Exiting ..."
- Coastal extended analysis assimilation: if the required hotstart file is missing, it will try to use the hotstart file from the normal analysis assimilation. If the hotstart from the normal analysis assimilation is also missing, the jobs stops with an error like, "ERROR: \${CASETYPE} could not find either the extended hotstart file or a normal hotstart file. Exiting ...".

Downstream Dependencies:

- There are NOSOFS and STOFS downstream dependencies for the NWM model.

Changes to Output

- Extensive (new domains, new coastal module). Detailed in draft SCN (https://docs.google.com/document/d/16TTzGP3Up7X_bf1OnREsSIhZAJMhTPsN9e_JbtkiBF8/edit?usp=sharing).

Product Changes

- The model Medium-range member 7 has been removed

Additional Products and their Contents

- Forcing and Model Medium_range_blend
- Alaska Forcing and Model

- Atlgulf, Pacific, Hawaii and Puertorico Coastal Model

Changes to Runtime

- Some configuration run-times have decreased some minutes due to adjusting the resource (nodes and cores).