

Noah-MP namelist.hrlDas File with Description of Options for use with WRF-Hydro V5

Below is an annotated namelist.hrlDas file for running with the Noah-MP land surface model. Do note that the file says "&NOAHLSTM_OFFLINE" however it is for use with the Noah-MP LSM. This namelist statement happens to be hardcoded and thus not easily changed. Notes and descriptions are indicated with <<--and blude text when after sections being described. When the beginning of sections are annotated, they being with ! ----- Following Section ----- !. See the official HRLDAS namelist description here: <https://github.com/NCAR/hrlDas-release/blob/release/HRLDAS/run/README.namelist>

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&NOAHLSTM_OFFLINE

HRLDAS_SETUP_FILE = "./DOMAIN/wrfinput_d01" <<-- Path to wrfinput file containing initialization data for the
LSM. This is required even for a warm start where a restart file is provided.
INDIR = "./FORCING" <<-- Path to atmospheric forcing data directory.
SPATIAL_FILENAME = "./DOMAIN/soil_properties.nc" <<-- Path to optional 2d/3d soil and vegetation
parameter file. If you are using this option, you must also use a binary compiled with SPATIAL_SOIL=1. If using the
traditional parameter lookup tables, compile with SPATIAL_SOIL=0 and comment out this option.
OUTDIR = "./" <<-- Generally leave this as-is (output goes to base run directory); redirected output only applies to
LSM output files and can cause issues when running coupled to WRF-Hydro.

START_YEAR = 2013 <<-- Simulation start year
START_MONTH = 09 <<-- Simulation start month
START_DAY = 12 <<-- Simulation start day
START_HOUR = 04 <<-- Simulation start hour
START_MIN = 00 <<-- Simulation start min

RESTART_FILENAME_REQUESTED = "RESTART.2013091204_DOMAIN1" <<-- Path to LSM restart file if using; this
contains a "warm" model state from a previous model run. Comment if not a restart simulation.

! Specification of simulation length in days OR hours
KDAY = 1 <<-- Number of days for simulation; can specify this OR KHOUR.
!KHOUR = 8 <<-- Number of hours for simulation; can specify this OR KDAY.

! ----- Following Section: NoahMP physics options ----- !
! Physics options (see the documentation for details)
DYNAMIC_VEG_OPTION = 4
CANOPY_STOMATAL_RESISTANCE_OPTION = 1
BTR_OPTION = 1
RUNOFF_OPTION = 3
SURFACE_DRAG_OPTION = 1
FROZEN_SOIL_OPTION = 1
SUPERCOOLED_WATER_OPTION = 1
RADIATIVE_TRANSFER_OPTION = 3
SNOW_ALBEDO_OPTION = 2
PCP_PARTITION_OPTION = 1
TBOT_OPTION = 2
TEMP_TIME_SCHEME_OPTION = 3
GLACIER_OPTION = 2
SURFACE_RESISTANCE_OPTION = 4
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! Timesteps in units of seconds
FORCING_Timestep = 3600 <<-- Timestep for forcing input data (in seconds)
NOAH_Timestep    = 3600 <<-- Timestep the LSM to cycle (in seconds)
OUTPUT_Timestep  = 86400 <<-- Timestep for LSM outputs, LDASOUT (in seconds)

! Land surface model restart file write frequency
RESTART_FREQUENCY_HOURS = 2 <<-- Timestep for LSM restart files to be generated (in hours). A value of -99999
will simply output restarts on the start of each month, useful for longer model runs. Restart files are generally quite
large, so be cognizant of storage space and runtime impacts when specifying.

! Split output after split_output_count output times.
SPLIT_OUTPUT_COUNT = 1 <<-- Number of timesteps to put in a single output file. This option must be 1 for NWM
output configurations.

! Soil layer specification
NSOIL=4 <<-- Number of soil layers
soil_thick_input(1) = 0.10 <<-- Thickness of top soil layer (m)
soil_thick_input(2) = 0.30 <<-- Thickness of second soil layer (m)
soil_thick_input(3) = 0.60 <<-- Thickness of third soil layer (m)
soil_thick_input(4) = 1.00 <<-- Thickness of bottom soil layer (m)

! Forcing data measurement height for winds, temp, humidity
ZLVL = 10.0 <<-- Height of input wind speed

! ----- Following Section: Restart IO file formats ----- !
Options to specify whether restart files (both read in and output) should be in binary or netCDF format. Generally
recommend using netCDF format (option 0) for both. -->>
! Restart file format options
rst_bi_in = 0          ! 0: use netcdf input restart file
                   ! 1: use parallel io for reading multiple
                   ! restart files (1 per core)
rst_bi_out = 0        ! 0: use netcdf output restart file
                   ! 1: use parallel io for outputting multiple
                   ! restart files (1 per core)
/
&WRF_HYDRO_OFFLINE

! Specification of forcing data: 1=HRLDAS-hr format,
! 2=HRLDAS-min format, 3=WRF, 4=Idealized, 5=Ideal w/ Spec.Precip., ! 6=HRLDAS-hrl y
fomat w/ Spec. Precip,
! 7=WRF w/ Spec.Precip
FORC_TYP = 1
/

```