NoahMP namelist.hrldas File with Description of Options

Below is an annotated namelist.hrldas file. Notes and descriptions are in blue and indicated with <<--. See the official HRLDAS namelist description here:
https://github.com/NCAR/hrldas-release/blob/release/HRLDAS/run/README.namelist

&NOAHLSM_OFFLINE

HRLDAS_SETUP_FILE = "./DOMAIN/wrfinput.nc" <<-- 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   = 01 <<-- Simulation start day
START_HOUR = 00 <<-- Simulation start hour
START_MIN   = 00 <<-- Simulation start min

RESTART_FILENAME_REQUESTED = "RESTART.2013090100_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.

KDAY = 30 <<-- Number of days for simulation; can specify this OR KHOUR.
!KHOUR = 8 <<-- Number of hours for simulation; can specify this OR KDAY.

<<-- NoahMP physics options -->>
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

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TEMP_TIME_SCHEME_OPTION  = 3
GLACIER_OPTION = 2
SURFACE_RESISTANCE_OPTION = 4


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)
```

RESTART_FREQUENCY_HOURS = -99999 <<-- 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.

<<-- not used -->>
```
! XSTART = 1
! XEND   = 1
! YSTART = 1
! YEND   = 1


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)


ZLVL = 10.0 <<-- Height of input wind speed
```

<<-- 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. -->>
```
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

<<-- Select atmospheric forcing input file format, FORC_TYP -->>

1=HRLDAS-hr format	Standard HRLDAS hourly file format, e.g., 2013091200.LDASIN_DOMAIN1 (note that the number after DOMAIN might vary by nest and must track the IGRID value specified in the hydro.namelist)
2=HRLDAS-min format	Standard HRLDAS minute file format, e.g., 201309120006.LDASIN_DOMAIN1
3=WRF	Use this option when feeding in WRF output files
4=Idealized	Simple test case built into the code (single pulse of rainfall, standard uniform values for other forcing variables); useful for initial model testing and debugging as it does not require any prepared forcing files.
5=Ideal w/ Spec.Precip.	Same as option 4 except it will use provided supplemental precipitation forcing files (e.g., 201309120006.PRECIP_FORCING.nc); useful for running simple flood simulations where temperature, radiation, and wind are not critical; also useful for testing/debugging.
6=HRLDAS-hrl y fomat w/ Spec. Precip	Same as option 1 but with supplemental precipitation forcing files (e.g., 201309120006.PRECIP_FORCING.nc)

```
! 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,
FORC_TYP = 1

/
```