

DSM2 Quick Start: Input System

June 23, 2023

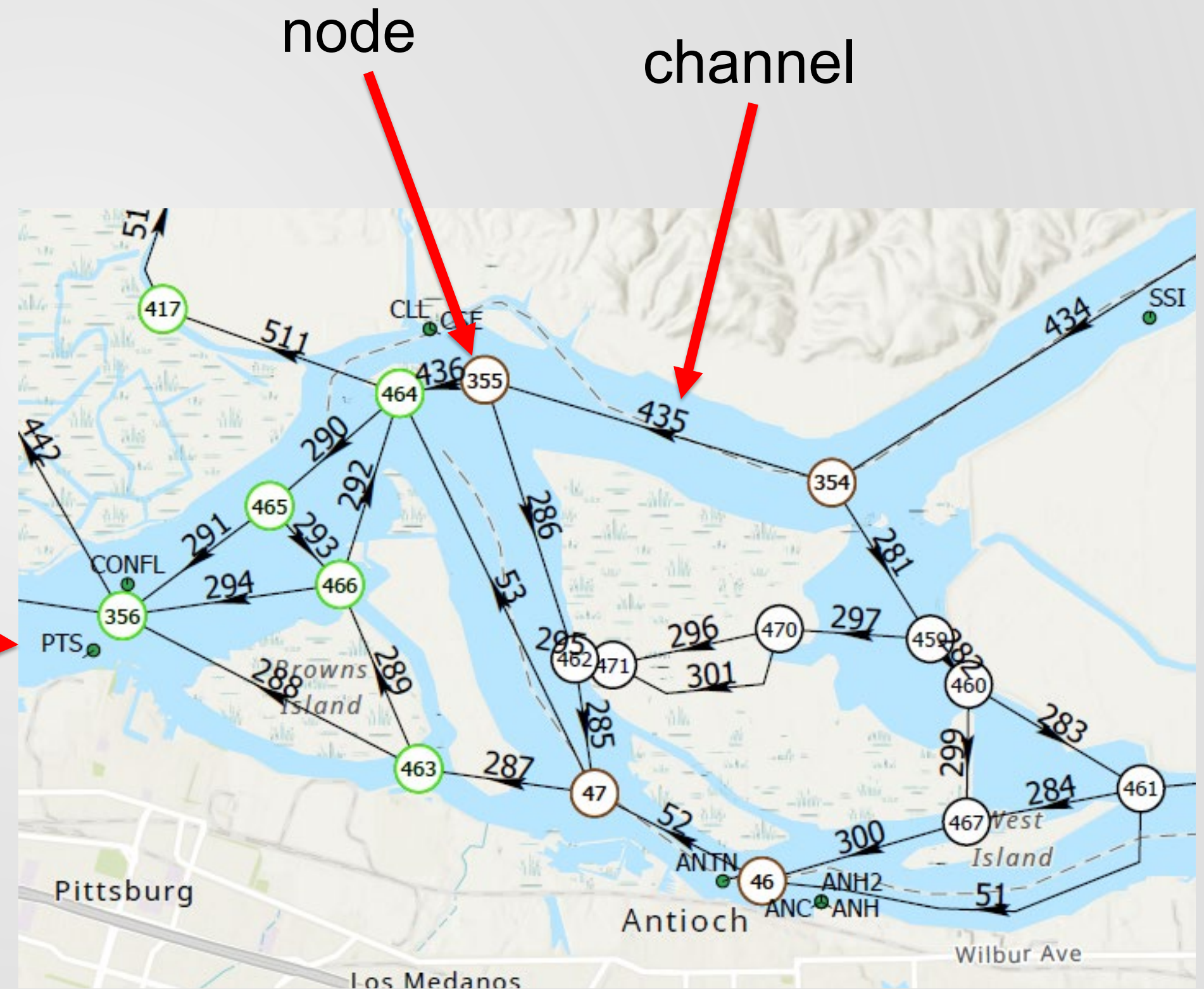
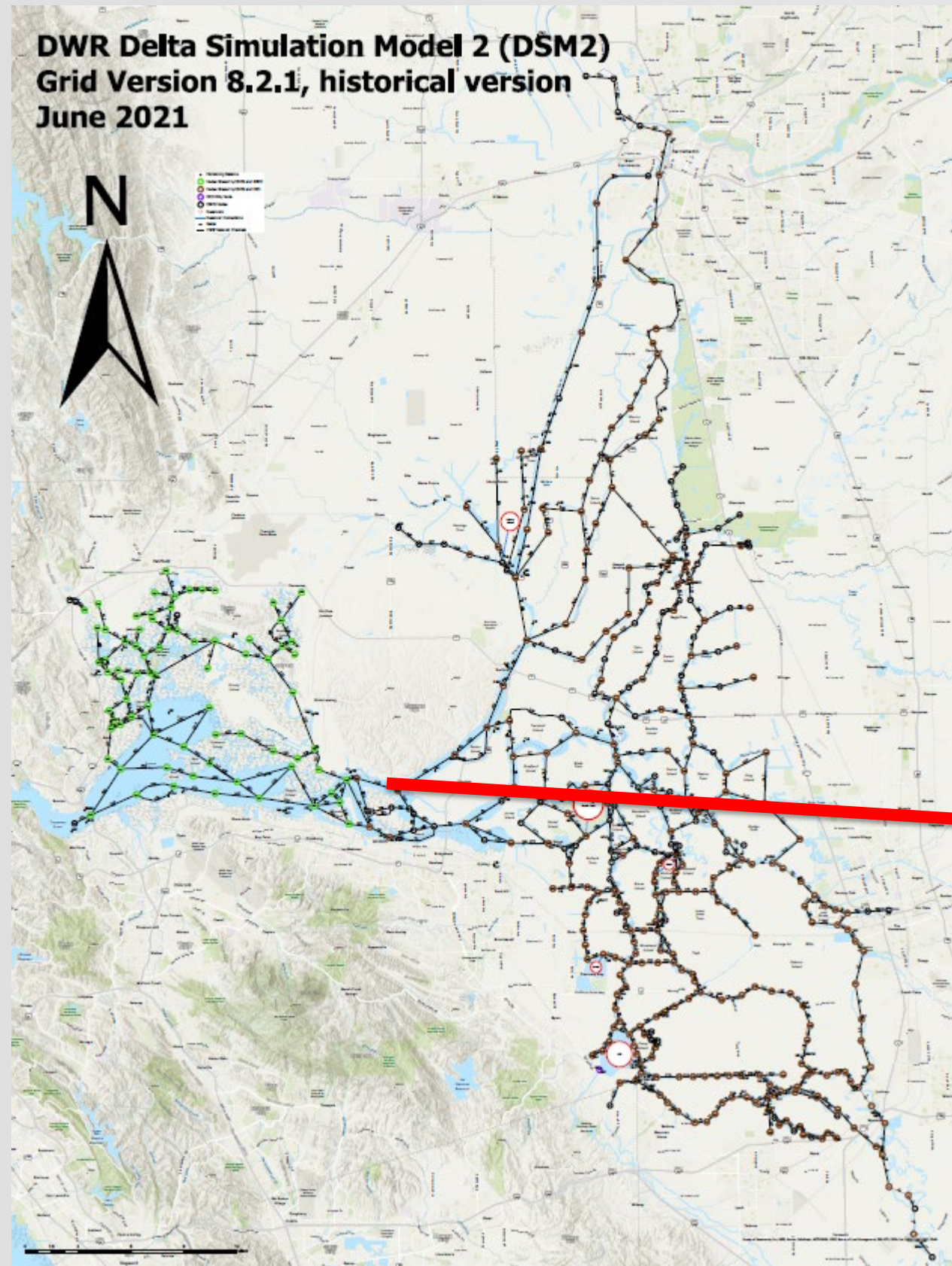


Overview

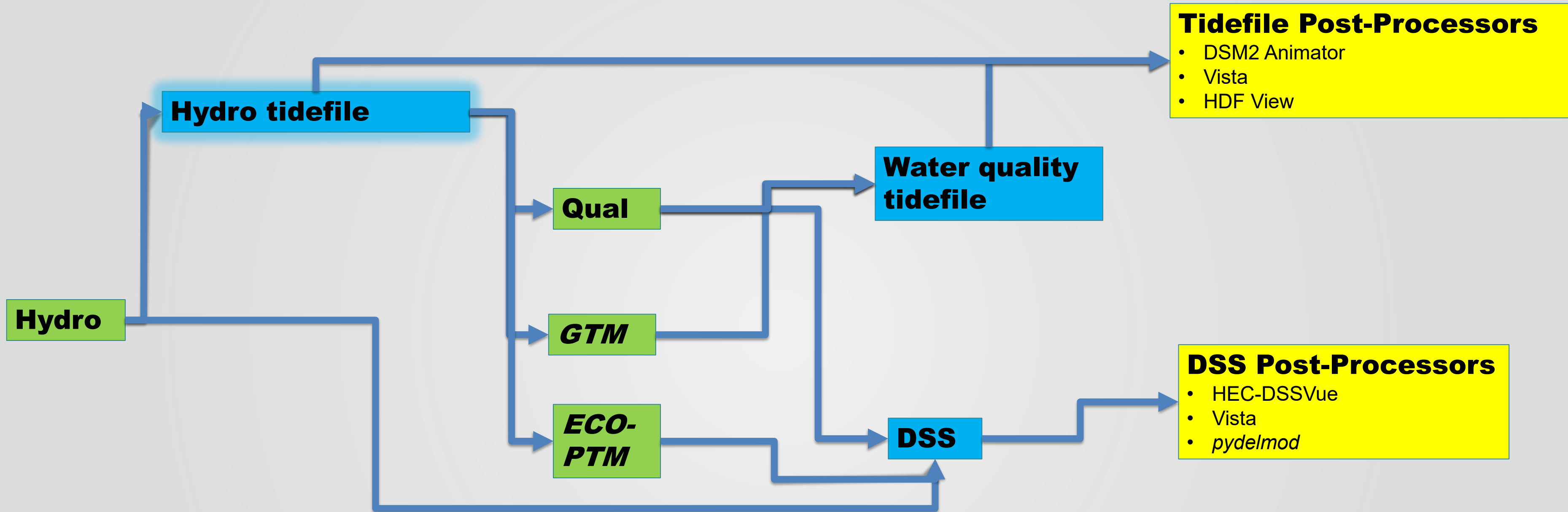
1. DSM2 grid map
2. DSM2 Modules and Post-Processors
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1. DSM2 grid map

<https://data.cnra.ca.gov/dataset/dsm2-georeferenced-model-grid/>



2. DSM2 Modules and Post-Processors



Legend

Module

Model output file

Post-processor

3. Folders in the DSM2 installation

Folders in dsm2\ folder

- bin\:
dsm2 executables
- common_input\:
shared dsm2 input files
- documentation\:
dsm2 documentation
- extras\:
software you may find useful
- license\:
DSM2 copyright and license
- scripts\:
vscript scripts for input/output processing
- studies\:
create your studies here
- study_templates\:
Copy these folders to create new studies
- timeseries\:
shared dss timeseries input data
- tutorials\:
dsm2 tutorials
- vista\:
the DSM2 Vista application

4. Input file general guidelines

- Input system is very flexible
- Use best practices
- If you don't, you can simplify your setup later

5. Fixed vs time-varying input

- Fixed input: text files

BOUNDARY_FLOW					
NAME	NODE	SIGN	FILLIN	FILE	PATH
calaveras	21	1	last	\${BNDRYINPUT}	/FILL+CHAN/RCAL009/FLOW//1DAY/\${HISTFLOWVERSION}/
cosumnes	446	1	last	\${BNDRYINPUT}	/FILL+CHAN/RCSM075/FLOW//1DAY/\${HISTFLOWVERSION}/
moke	447	1	last	\${BNDRYINPUT}	/FILL+CHAN/RMKL070/FLOW//1DAY/\${HISTFLOWVERSION}/
north_bay	273	-1	last	\${BNDRYINPUT}	/FILL+CHAN/SLBAR002/FLOW-EXPORT//1DAY/\${HISTFLOWVERSION}/
sac	330	1	last	\${BNDRYINPUT}	/FILL+CHAN/RSAC155/FLOW//1DAY/\${HISTFLOWVERSION}/
vernalis	17	1	last	\${BNDRYINPUT}	/FILL+CHAN/RSAN112/FLOW//1DAY/\${HISTFLOWVERSION}/
yolo	316	1	last	\${BNDRYINPUT}	/FILL+CHAN/BYOLO040/FLOW//1DAY/\${HISTFLOWVERSION}/
END					

- Time-varying input: DSS files (inflows, stage, exports, gate positions, etc.)

Date / Time	RCAL009 FLOW DWR-DMS...
	cfs
	INST-VAL
01 Oct 89, 24:00	138.0
02 Oct 89, 24:00	133.0
03 Oct 89, 24:00	119.0
04 Oct 89, 24:00	118.0
05 Oct 89, 24:00	134.0
06 Oct 89, 24:00	145.0
07 Oct 89, 24:00	164.0
08 Oct 89, 24:00	148.0

6. Layering in DSM2 Hydro Input Setup

DSM2_batch.bat

Input sections

Legend

Fixed input

Time-varying input

Time-varying output

Hydro.inp (“main input file”)

Scalar: model settings

- config.inp (start/end time, environment variables)

IO File

Model Configuration

- config.inp (start/end time, environment variables)

Model Grid Definition

- channel.inp (chan/node connectivity, manning’s n, dispersion, cross-sections)
- reservoir.inp (Reservoir geometry and connectivity)
- gate.inp (gate configuration and connectivity)

Initial Conditions

- channel_ic.inp (initial flow, stage)
- reservoir_ic.inp (initial stage)

Hydro Time Series

- boundary_flow.inp (rim inflows)
- source_flow.inp (Exports: CCWD, CVP, SWP; Stockton effluent inflow)
- boundary_stage.inp (Martinez stage)
- source_flow_dcd.inp (DCD model results: Delta DIV, DRAIN, SEEP)
- source_flow_jones.inp (Jones Tract breach input)
- source_flow_scd.inp (SMCD model results: Suisun Marsh DIV, DRAIN, SEEP)

Operation

- oprule_historical_gate.inp (gate information)
- oprule_hist_temp_barriers.inp (SD temp barriers information)

Output Locations

- output.inp (output locations: data type, channel, distance)

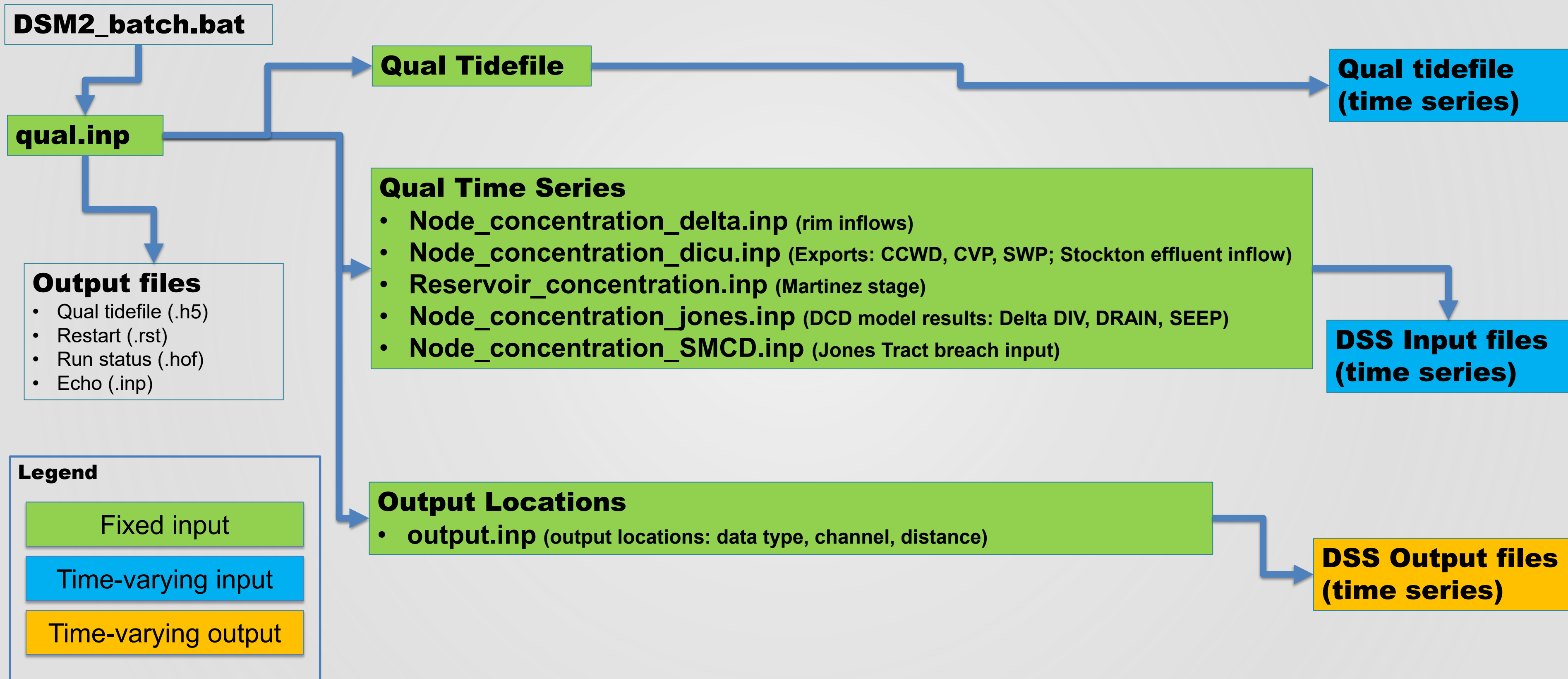
Output files

- Tidefile (.h5)
- Restart (.qrf)
- Run status (.qof)
- Echo (.inp)

DSS Input files (time series)

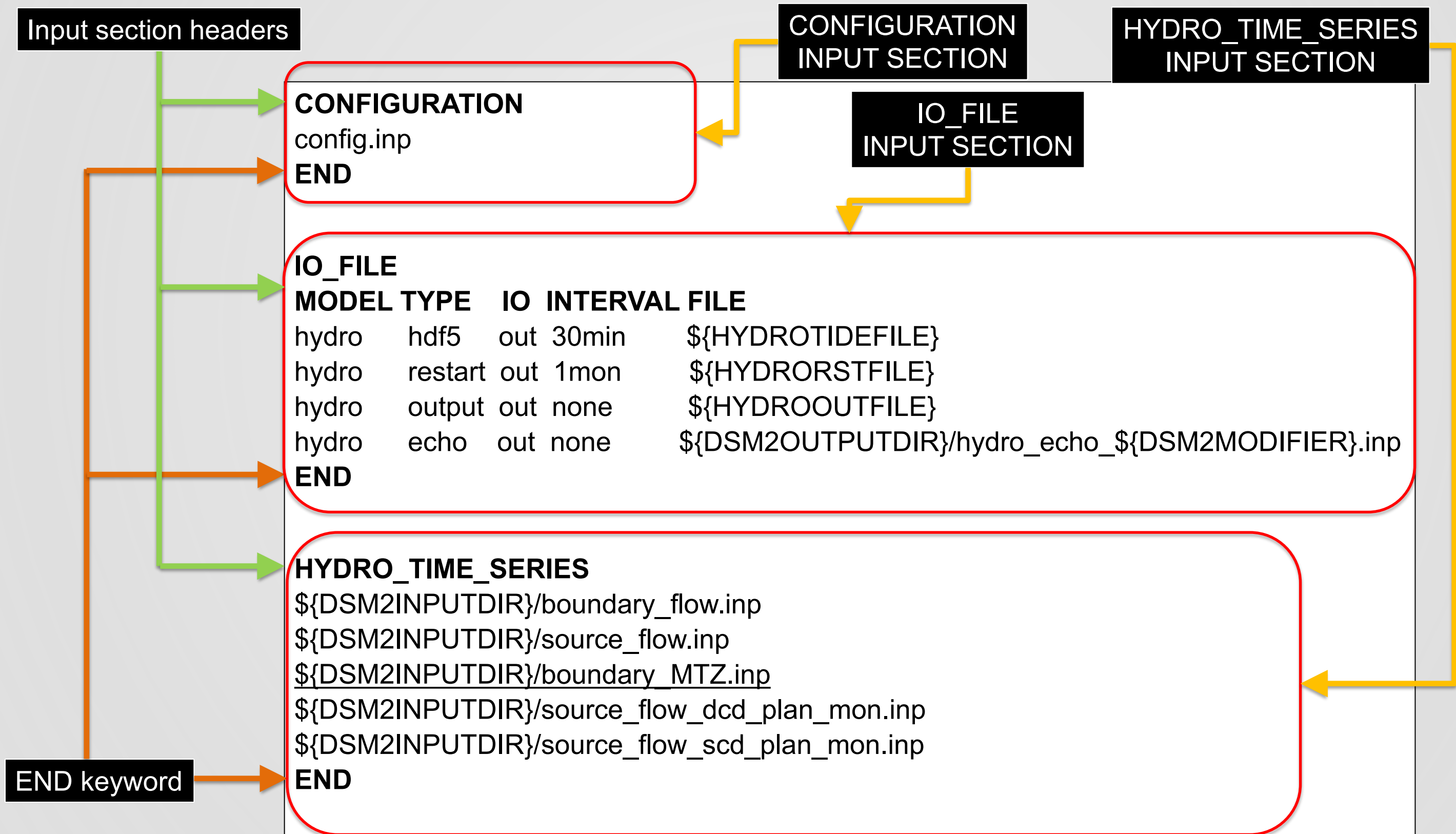
DSS Output files (time series)

6. Layering in DSM2 Qual Input Setup



7. Input sections

main input file hydro.inp



8. Environment variables in DSM2 input config.inp file

Defines environment variables, which are used to configure a DSM2 simulation

Defining the environment variable
DSM2MODIFIER



```
ENVVAR
NAME      VALUE
DSM2MODIFIER historical      # Study name used for DSM2 output
START_DATE 01Jan1990
END_DATE   31Dec2019
DSM2INPUTDIR ..../common_input
END
```

Using the environment variable
DSM2INPUTDIR



```
HYDRO_TIME_SERIES
${DSM2INPUTDIR}/boundary_flow.inp
END
```

To get the value of an environment variable, use a dollar sign and curly braces.
Example: “\${DSM2INPUTDIR}/boundary_flow.inp”
Becomes “historical/boundary_flow.inp”

9. Using Layering to specify time-varying input

Martinez stage input specification: layering with environment variables

“Main Input File” for Hydro: hydro.inp

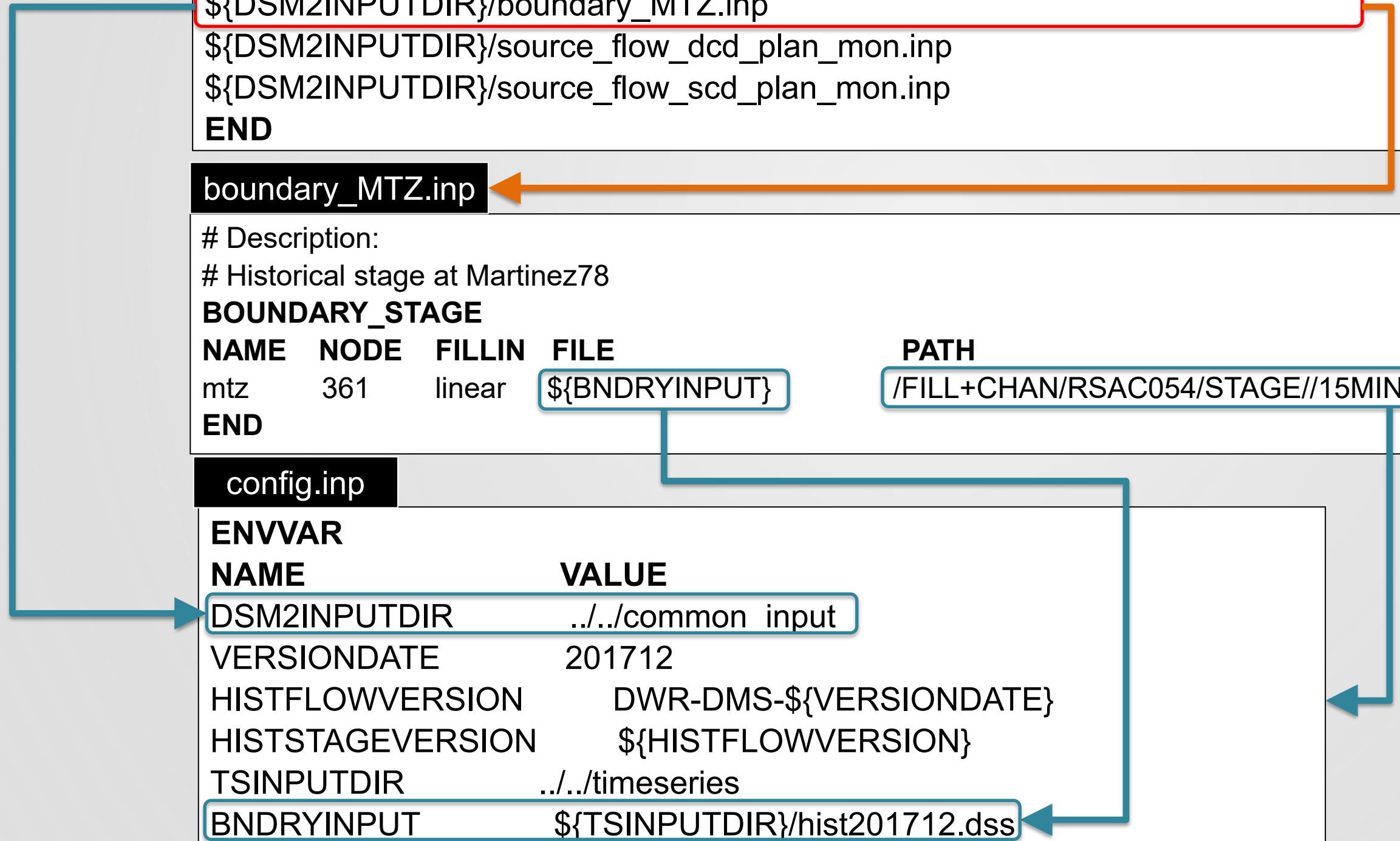
```
HYDRO_TIME_SERIES
${DSM2INPUTDIR}/boundary_flow.inp
${DSM2INPUTDIR}/source_flow.inp
${DSM2INPUTDIR}/boundary_MTZ.inp
${DSM2INPUTDIR}/source_flow_dcd_plan_mon.inp
${DSM2INPUTDIR}/source_flow_scd_plan_mon.inp
END
```

boundary_MTZ.inp

```
# Description:
# Historical stage at Martinez78
BOUNDARY_STAGE
NAME  NODE  FILLIN  FILE  PATH
mtz   361   linear  ${BNDRYINPUT}  /FILL+CHAN/RSAC054/STAGE//15MIN/${HISTSTAGEVERSION}_NAVD/
END
```

config.inp

```
ENVVAR
NAME  VALUE
DSM2INPUTDIR  ../../common input
VERSIONDATE   201712
HISTFLOWVERSION  DWR-DMS-${VERSIONDATE}
HISTSTAGEVERSION  ${HISTFLOWVERSION}
TSINPUTDIR      ../../timeseries
BNDRYINPUT      ${TSINPUTDIR}/hist201712.dss
END
```



Questions?

Please enter questions into the chat



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