

# DSM2 Quick Start: Input System

June 23, 2023



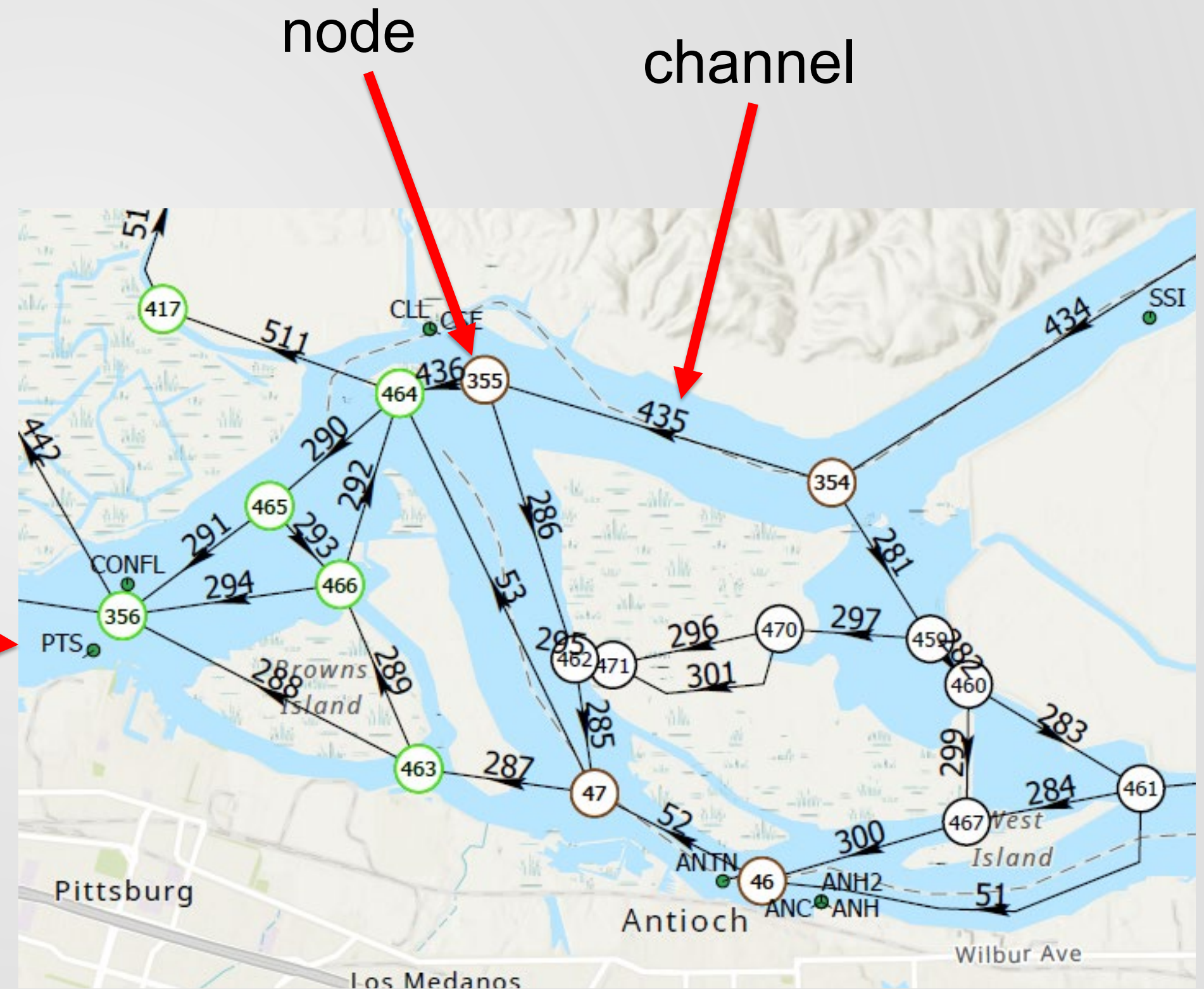
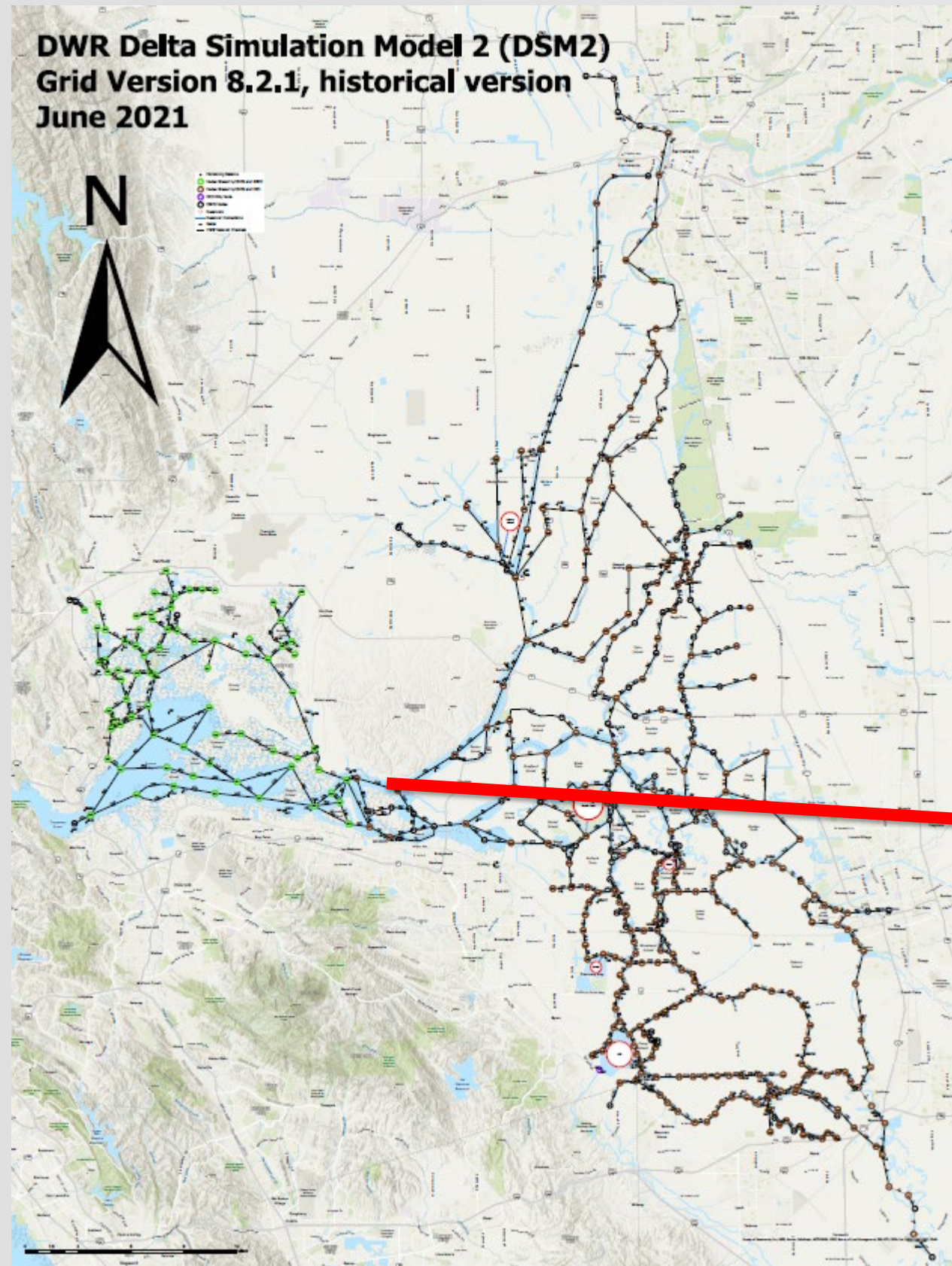
# Overview

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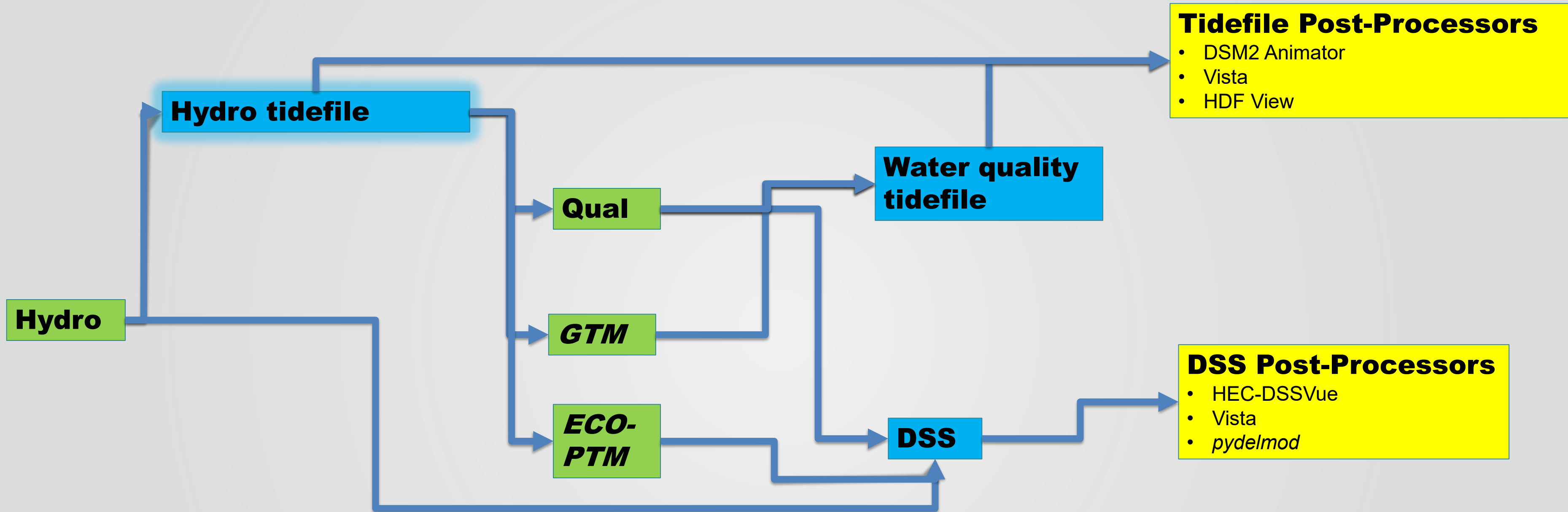
# 1. DSM2 grid map

<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<br>FLOW<br>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

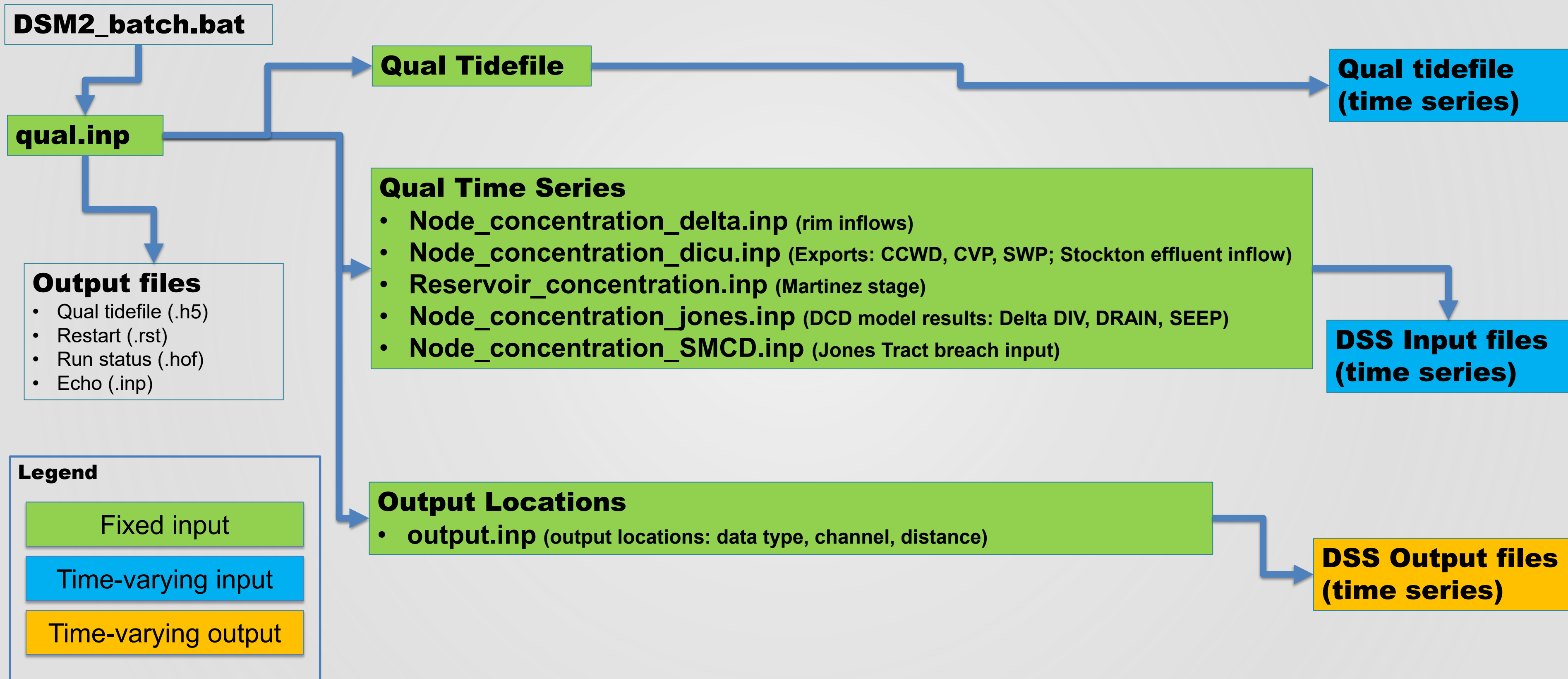
- Tidefile (.h5)
- Restart (.qrf)
- Run status (.qof)
- Echo (.inp)

## DSS Input files (time series)

## DSS Output files (time series)

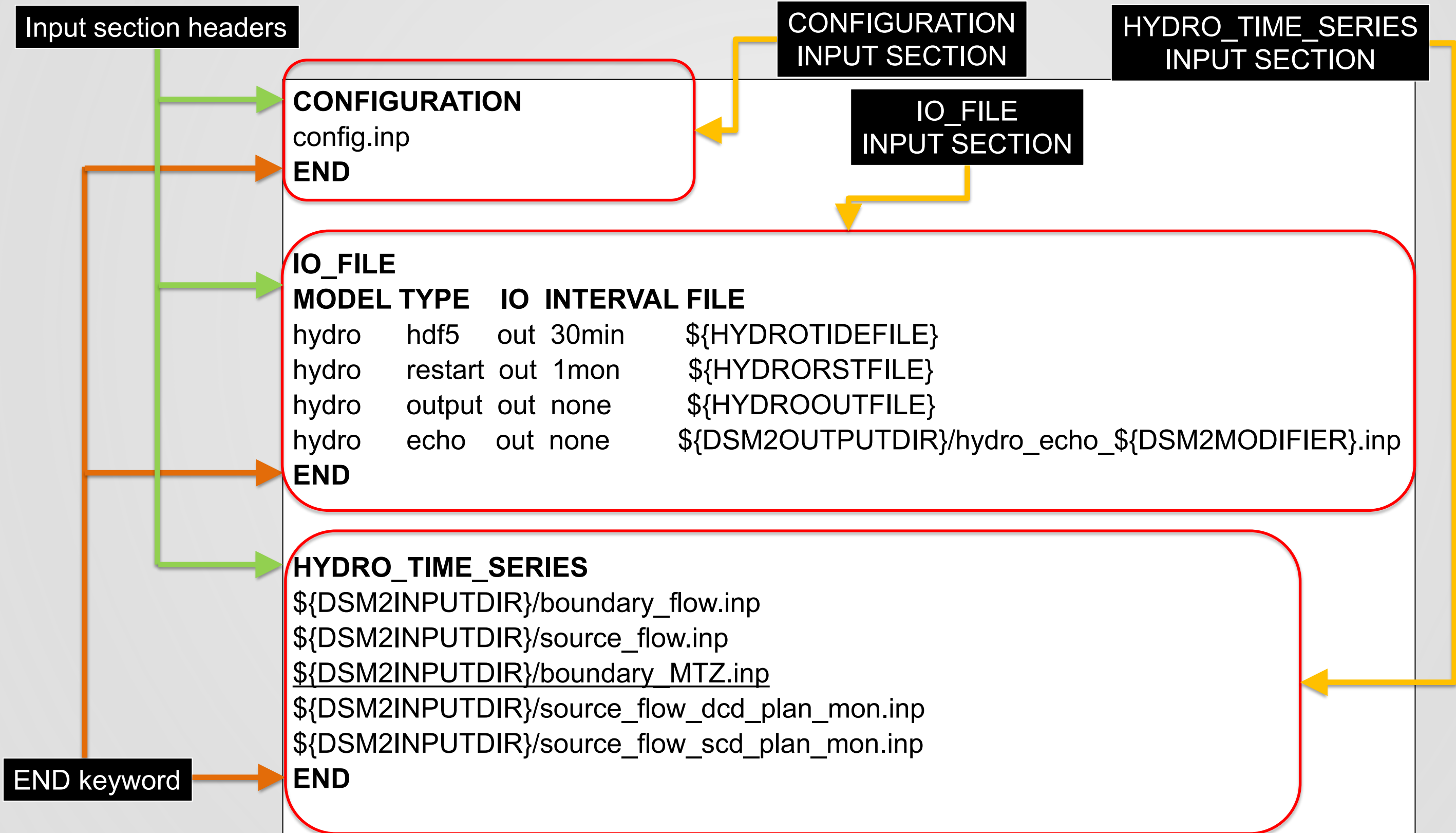


# 6. Layering in DSM2 Qual Input Setup



# 7. Input sections

main input file hydro.inp



# 8. Environment variables in DSM2 input config.inp file

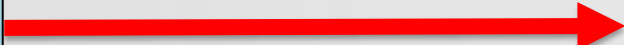
Defines environment variables, which are used to configure a DSM2 simulation

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

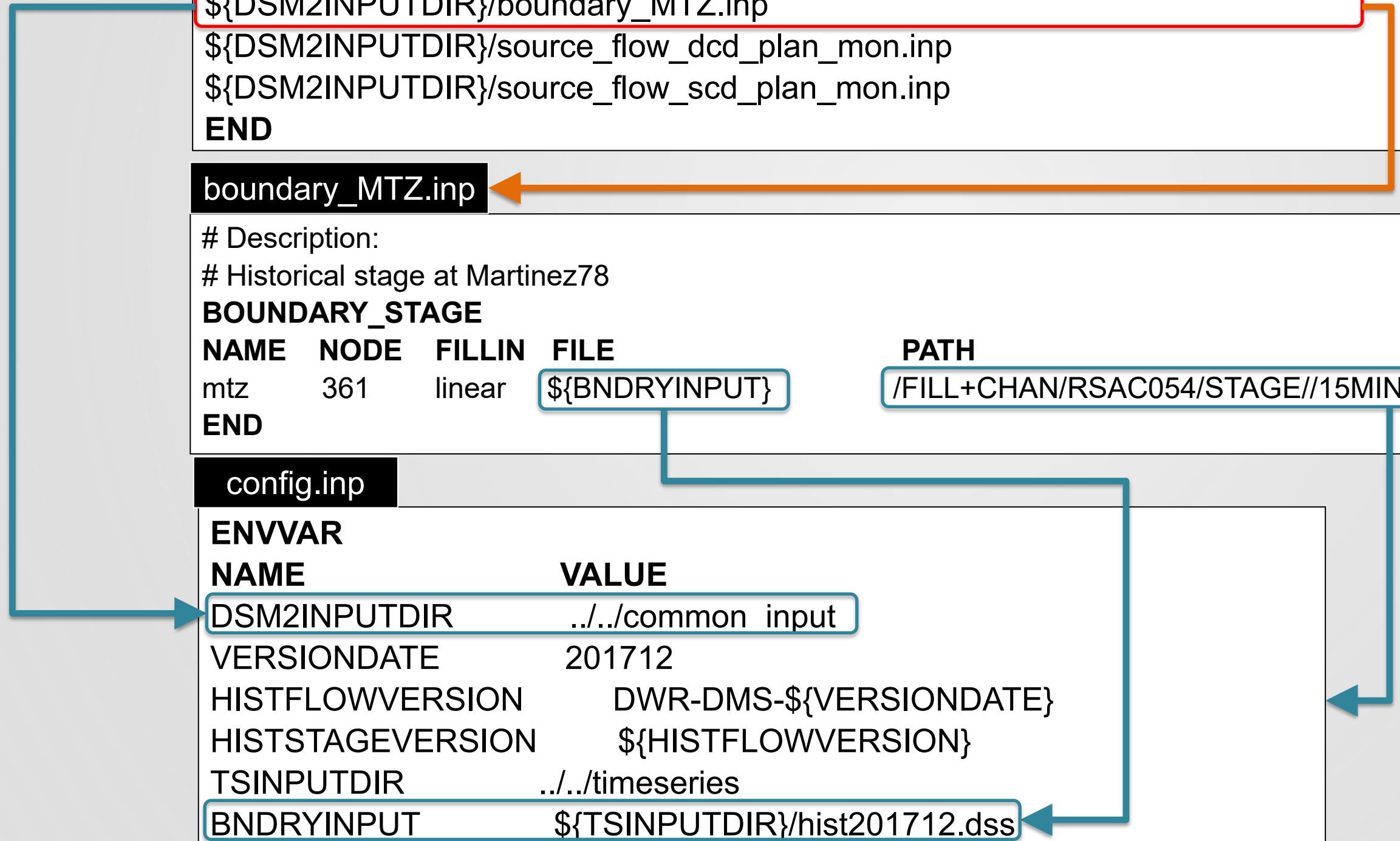
```
HYDRO_TIME_SERIES
${DSM2INPUTDIR}/boundary_flow.inp
${DSM2INPUTDIR}/source_flow.inp
${DSM2INPUTDIR}/boundary_MTZ.inp
${DSM2INPUTDIR}/source_flow_dcd_plan_mon.inp
${DSM2INPUTDIR}/source_flow_scd_plan_mon.inp
END
```

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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