

INI-files SOBEK 2

Description of the used INI-files in SOBEK 2

Technical Reference Manual

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INI-files SOBEK 2, Technical Reference Manual

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1 SOBEKSIM.INI

1.1 Time step estimation

for all 1D links:

$$facsum = \sum_{m=1}^{n_{links}} \left(\frac{q_m}{vl1_m Up} \right)^2 \quad (1.1)$$

$$facmax = \max \left(\frac{q_m}{vl1_m Up} \right), m = 1..n_{links} \quad (1.2)$$

For all 2d links:

$$facsum = \sum_{m=1}^{n_{links}} \left(\frac{u_m}{dx_m} \right)^2 \quad (1.3)$$

$$facmax = \max \left(\frac{u_m}{dx_m} \right), m = 1..n_{links} \quad (1.4)$$

For all links

$$facavg = \frac{facsum}{n_{links}} \quad (1.5)$$

$$dt = \max \left(dt_{min}, \frac{Cfl_{limiter}}{facmax} \right) \quad (1.6)$$

1.2 General

Keyword:	Version
Default:	PLUV2.70
Description:	

Keyword:	Language
Default:	1
Description:	

1.3 InitialConditions

Keyword: InitialEmptyWells
 Default: 0
 Description: Switch for starting with dry system; 1 = on, 0 = off

Keyword: InitialSalinity
 Default: 0.0
 Description:

1.4 RunoffOptions

Keyword: FixedQlatAtBranch
 Default: -1 (true)
 Description: If FixedQlatAtBranch = True then SplitQlatAtBranch = False

Keyword: MultipleStormEvents
 Default: 0 (false)
 Description:

Keyword: SplitQlatAtBranch
 Default: 0 (false)
 Description:

1.5 ResultsNodes

Keyword: Density
 Default: 0
 Description:

Keyword: Dispersion
 Default: 0
 Description:

Keyword: Freeboard
 Default: 0
 Description:

Keyword: LateralToGW
 Default: 0
 Description:

Keyword: LateralOnNodes
 Default: 0
 Description:

Keyword: LateralToTrench
Default: 0
Description:

Keyword: LevelFromStreetLevel
Default: 0
Description:

Keyword: RunOff
Default: 0
Description:

Keyword: Salinity
Default: 0
Description:

Keyword: TimeWaterOnStreet
Default: 0
Description:

Keyword: TotalArea
Default: 0
Description:

Keyword: TotalWidth
Default: 0
Description:

Keyword: Volume
Default: 0
Description:

Keyword: VolumeError
Default: 0
Description:

Keyword: VolumeInTrench
Default: 0
Description:

Keyword: VolumesOnStreet
Default: 0
Description:

Keyword: WaterDepth
Default: 0
Description:

Keyword: WaterLevel
Default: -1
Description:

Keyword: WaterLevelInTrench
 Default: 0
 Description:

Keyword: WaterOnStreet
 Default: 0
 Description:

1.6 ResultsBranches

Keyword: Chezy
 Default: 0
 Description:

Keyword: Discharge
 Default: -1
 Description:

Keyword: EnergyHeadMethod
 Default: 0
 Description: The energy levels are computed, when LevelsOutputOnPipes/=0
 EnergyHeadMethod/10 ==1: the water level at the gridpoint is used
 EnergyHeadMethod/10 ==2: the water level is computed, taking the Froude number into account
 Mod(EnergyHeadMethod,10) == 1: the velocity in the velocity point is used
 Mod(EnergyHeadMethod,10) == 2: the velocity is computed by Q/A

Keyword: Levelsoutputonpipes
 Default: 0
 Description:

Keyword: RiverSubsectionParameters
 Default: 0
 Description:

Keyword: SedimentFrijlink
 Default: 0
 Description:

Keyword: SedimentVanRijn
 Default: 0
 Description:

Keyword: Velocity
 Default: 0
 Description:

Keyword: WaterLevelSlope
Default: 0
Description:

Keyword: Wind
Default: 0
Description:

Keyword: TWind
Default: 0
Description:

Keyword: FWind
Default: 0
Description:

1.7 ResultsStructures

Keyword: CrestLevel
Default: 0
Description:

Keyword: CrestWidth
Default: 0
Description:

Keyword: Discharge
Default: 1
Description:

Keyword: GateLowerEdgeLevel
Default: 0
Description:

Keyword: Head
Default: 0
Description:

Keyword: OpeningsArea
Default: 0
Description:

Keyword: PressureDifference
Default: 0
Description:

Keyword: ThresholdForSpillCountInHours
Default: 1000
Description: ThresholdForSpillCountInHours=12
This means that if a structure does not work for more than 12 hours, and then starts again, that you have 2 spills (and later maybe even 3 or more).

Keyword: Velocity
Default: 0
Description:

Keyword: WaterLevel
Default: 0
Description: Water levels upstream and downstream of structure

Keyword: Waterleveloncrest
Default: 0
Description:

1.8 ResultsPumps

Keyword: PumpResults
Default: 0
Description:

1.9 ResultsGeneral

Keyword: ActualValue
Default: -1 (true)
Description: ActualValue, MaximumValue and MeanValue are mutual exclusive

Keyword: DelwaqNoStaggeredGrid
Default: 0 (false)
Description:

Keyword: FlowAnalysisTimeSeries
Default: 0 (false)
Description:

Keyword: MaximumValue
Default: 0 (false)
Description: ActualValue, MaximumValue and MeanValue are mutual exclusive

Keyword: MeanValue
Default: 0 (false)
Description: ActualValue, MaximumValue and MeanValue are mutual exclusive

Keyword: SobeksimStamp
Default: 0
Description:

Keyword: Zero2DRainEvap2Delwaq
Default: 0 (false)
Description:

1.10 ResultsGrid

Keyword: 1DFlowDischargeMeasuringSection
Default: 0
Description:

1.11 Sediment

Keyword: DepthUsedForSediment
Default: 0.3
Description:

Keyword: D50
Default: 0.0005
Description:

Keyword: D90
Default: 0.0010
Description:

1.12 Specials

Keyword: DesignFactorDLG
Default: 1.0
Description: Design Factor used in the Rational Method

1.13 Indication

Keyword: VelocityBranchSegments
 Default: 0.5
 Description:

Keyword: VelocityStructures
 Default: 0.75
 Description:

1.14 NumericalParameters

Keyword: AccelerationTermFactor
 Default: 1.0
 Description:

Keyword: AccurateVersusSpeed
 Default: 3
 Description: Iteration criteria:
 1 = Less Accurate / Fast (1.0E-6)
 2 = Medium (1.0E-9)
 3 = Accurate / Slow (1.0E-12)

Keyword: CourantNumber
 Default: 1
 Description: Maximum allowable Courant number Cfl_{max} .

Keyword: DtMinimum
 Default: 0.01
 Description: Minimum time step for the Courant time step estimation dt_{min} (source code: dt_pluv_min)

Keyword: EpsilonValueVolume
 Default: 0.005
 Description: Source code name *epsvol*. Accuracy factor for volumes.

Keyword: EpsilonValueWaterDepth
 Default: 0.005
 Description: Source code name *epss*. Accuracy factor for water levels.

Keyword: FloodingDividedByDrying
 Default: 2.0
 Description:

Keyword:	Gravity
Default:	9.81
Description:	

Keyword:	MaxDegree
Default:	2
Description:	

Keyword:	MaxIterations
Default:	8
Description:	

Keyword:	MinimumSurfaceatStreet
Default:	0.1
Description:	

Keyword:	MinimumSurfaceinNode
Default:	0.1
Description:	

Keyword:	MinumumLength
Default:	1.0
Description:	

Keyword:	RelaxationFactor
Default:	1.0
Description:	

Keyword:	Rho
Default:	1000
Description:	

Keyword:	StructureInertiaDampingFactor
Default:	1.0
Description:	

Keyword:	Theta
Default:	1.0
Description:	

Keyword:	ThresholdValueDrying
Default:	0.005 (ThresholdValueFlooding/FloodingDividedByDrying)
Description:	

Keyword:	ThresholdValueFlooding
Default:	0.01
Description:	

Keyword:	ThresholdValueDryingFLS
Default:	0.0005 (ThresholdValueFloodingFLS/FloodingDividedByDrying)
Description:	

Keyword: ThresholdValueFloodingFLS
 Default: 0.001
 Description:

Keyword: UseTimeStepReducerStructures
 Default: 0 (false)
 Description: Source code name *structimestepreducer*.
 When at the end of the calculation of a time step a weir or orifice is assumed to be dry ($kfu(m) == 0$), but on one side or both sides of this structure the water level is above the crest level there is a contradiction. This can be the result of an oscillation, therefore the time step is reduced and the current time step is recomputed.

1.15 SimulationOptions

Keyword: AllowableLargerTimestep
 Default: 0
 Description: In source code denoted as *largerdt*. As long as the number of iterations is less than *largerdt Cfl_{div}* can be reduced for each time step by:

$$Cfl_{div} = \max(0.01, \frac{facavg}{facmax}, \sqrt{0.5} \cdot Cfl_{div}) \quad (1.7)$$

When the number of iterations exceeds *largerdt Cfl_{div}* remains unchanged. This seems to be a bug since two lines of code is used to leave *Cfl_{div}* unchanged.

Keyword: AllowableTimeStepLimiter
 Default: 30
 Description: Variable *maxlimitdt* in *limitdt* is set to *maxlimitdt*, in subroutine SETBACK. In subroutine PLDTMX (estimation of the new time step) *limitdt* is set to *limitdt -1*. As long as *limitdt > 0* a more conservative time step estimation is used:

$$Cfl_{limiter} = 0.9 \cdot \frac{Cfl_{max}}{Cfl_{div}} \quad (1.8)$$

Keyword: ASCIIFileUVComponent
 Default: 1 (true)
 Description: In source code set to true anyway, so always true.

Keyword: Cflcheckalllinks
 Default: 0 (false)
 Description:

Keyword:	Channel
Default:	1 (true)
Description:	
Keyword:	Debug
Default:	0
Description:	
Keyword:	DebugTime
Default:	0
Description:	
Keyword:	DepthsBelowBobs
Default:	0
Description:	
Keyword:	DispMaxFactor
Default:	0.45
Description:	
Keyword:	DumplInput
Default:	0
Description:	
Keyword:	ladvec1D
Default:	1
Description:	<p>Advection Type in 1D Flow</p> <p>ladvec1D = 1: Conservation of Momentum</p> <p>ladvec1D = 2: Balanced Average of Conservation of Momentum and Conservation of Energy in Contraction and Expansion</p> <p>ladvec1D = 3: Balanced Average of Conservation of Momentum and Conservation of Energy in Contraction Only</p> <p>ladvec1D = 4: Balanced Average of Conservation of Momentum and Conservation of Energy in Expansion Only</p> <p>ladvec1D = 5: Balanced Average of Conservation of Momentum and Conservation of Energy but no Contraction and Expansion Losses</p>
Keyword:	Limtyphu1D
Default:	1
Description:	<p>Limiter Type for Estimating Flow Area at Velocity Point in 1D Flow</p> <p>Limtyphu1D = 1: Upwind</p> <p>Limtyphu1D = 2: Central in Cross-Sections</p> <p>Limtyphu1D = 3: Central in Water Levels</p>
Keyword:	Manhloss
Default:	0
Description:	

Keyword: MaxAdjacentEdges
 Default: 20
 Description:

Keyword: MissingValue
 Default: -999.999
 Description:

Keyword: Momdilution1D
 Default: 1
 Description: Advection Control Volume Based upon Flow Area or Total Area in 1D Links
 Momdilution1D = 1: Total Area
 Momdilution1D = 2: Flow Area with Account for Storage Sink Term
 Momdilution1D = 3: Flow Area

Keyword: OnlineCommunicationFile
 Default: "
 Description:

Keyword: Onlineplot
 Default: 0 (false)
 Description:

Keyword: OnLineWQ
 Default: 0 (false)
 Description:

Keyword: PercentAllowableVolumeError
 Default: 1
 Description:

Keyword: PreissmannMinClosedManholes
 Default: 0.001
 Description:

Keyword: Readsamples
 Default: 0 (false)
 Description:

Keyword: River
 Default: 0 (false)
 Description:

Keyword: RTCInUse
 Default: 0
 Description:

Keyword: RunoffInUse
 Default: 0
 Description:

Keyword:	Salinity
Default:	0
Description:	
Keyword:	Sewer
Default:	0
Description:	
Keyword:	SimulationSynchron
Default:	0
Description:	
Keyword:	SiphonUpstreamThresholdSwitchOff
Default:	0.1
Description:	
Keyword:	Skipstructimestepreduction
Default:	0
Description:	Weirs and orifices can oscillate and for both structure types the flow direction can be limited to one direction only. When at the end of the iteration loop, the computed flow direction is incorrect, the time step is reduced and the current time step is recomputed. When "Skipstructimestepreduction" is set to true, this check is not performed.
Keyword:	StrucFlowDirectionAccuracyFactor
Default:	1.0
Description:	source code name <i>sfd_a_factor</i> . The accuracy factor used in Skipstructimestepreduction is equal to $StrucFlowDirectionAccuracyFactor \cdot Epsilon Value WaterDepth$
Keyword:	StructureStabilityFactor
Default:	0
Description:	
Keyword:	ThresholdForSummerDike
Default:	0.4
Description:	
Keyword:	TimersOutputFrequency
Default:	1
Description:	
Keyword:	Treat2DFrictiontermsameas1D
Default:	0 (false)
Description:	
Keyword:	Use1D2DNode
Default:	-1 (true)
Description:	

Keyword: Use1D2DRestartInputFile
 Default: 0 (false)
 Description:

Keyword: Use1D2DRestartOutputFile
 Default: 0 (false)
 Description:

Keyword: Use2DWindFrictSameAs1DFormulation
 Default: -1 (true)
 Description:

Keyword: UseExtraFrictionDepth1D
 Default: -1 (true)
 Description:

Keyword: UseFls
 Default: 0 (false)
 Description:

Keyword: UseGridAsSurface
 Default: -1 (true)
 Description:

Keyword: UseTimers
 Default: 0 (false)
 Description:

Keyword: Usevariableteta
 Default: 0 (false)
 Description:

Keyword: VolumeCheck
 Default: 0 (false)
 Description:

Keyword: Writesamples
 Default: 0 (false)
 Description:

1.16 SteadyState

Keyword: ComputeSteadyState
 Default: 0 (false)
 Description:

Keyword: Dtsteady
 Default: 7200
 Description:

Keyword: EpsMaxU
 Default: 1e-6
 Description:

Keyword: Ntendcontrolsteady
 Default: 200
 Description:

Keyword: Ntintcontrolsteady
 Default: 20
 Description:

Keyword: Ntmaxsteady
 Default: 1500
 Description:

1.17 Salinity

Keyword: DiffusionAtBoundaries
 Default: false
 Description:

Keyword: SaltComputation
 Default: 0 (false)
 Description:

1.18 AdvancedOptions

Keyword: CalculateDelwaqOutput
 Default: 0 (false)
 Description:

Keyword: ExtraResistanceGeneralStructure
 Default: 0.0
 Description:

Keyword: LateralLocation
 Default: 1
 Description: 0 = Laterals at Nearest Water Level Point
 1 = Laterals at Lowest Water Level Point

Keyword: MaxLoweringCrossAtCulvert
 Default: 0.0
 Description:

Keyword: MaxVolFact
Default: 0.9
Description:

Keyword: NoNegativeQlatWhenThereIsNoWater
Default: 0
Description:

Keyword: TransitionHeightSD
Default: 1.0
Description:

1.19 Overland Flow

Keyword: 2DEddyViscosity
Default: 0.0
Description:

Keyword: DefaultChezy1D2DConnections
Default: 1000
Description:

Keyword: Limtyp
Default: 1
Description:

Keyword: NorocoBufferFactor
Default: 2
Description: Factor for allocating memory for irocol table, if array size too small, increase buffer

Keyword: Noslip
Default: 0
Description:

1.20 ResultsARCVIEW

Keyword: FilePath
Default: ../WORK/
Description:

Keyword: UvelocityVvelocityResultingvelocityNoDecimalsInASCIIMapFiles
Default: 4
Description:

Keyword: WaterlevelWaterdepthBedlevelNoDecimalsInASCIIMapFiles
Default: 4
Description:

Deltares, 2016. "BIBTEX key with no entry, needed if no citations are made in the document."

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