**Input and output document**

**Input data**

**1 BndOpt.in File**

The BndOpt.in file contains the names of boundary conditions related to the simulation calculations in this paper and controls whether the boundaries are active.

If **SIMRCH**=1, then the Recharge Package is active. If SIMRCH=0 then the Recharge Package is inactive.

If **SIMSHB** =1, then the Time-Variant Specified-Head Boundary is active. If SIMSHB =0 then the Time-Variant Specified-Head Boundary is inactive.

If **SIMWEL**=1, then the Well Package is active. If SIMWEL=0 then the Well Package is inactive.

If **SIMSUB** =1, then the Subsidence Package is active. If SIMSUB =0 then the Subsidence Package is inactive.

**2 Cell.in file**

The Cell.in file contains the hydraulic parameters of model cells.

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**CELLTOP**-is the top elevation of cells (L).

**CELLBOT**- is the bottom elevation of cells (L).

**IBOUND**-contains a code for each cell that indicates whether the head varies with time.

-1-means constant-head cell.

0-means no flow or inactive cell.

1-means variable-head cell.

**HK**-is the horizontal hydraulic conductivity along rows (L/T).

**HANI**- Ratio of horizontal hydraulic conductivity along columns to hydraulic conductivity along rows, this variable is read only if LYRHANI=-1.

**VKA**-Vertical hydraulic conductivity (L/T) or the ratio of horizontal hydraulic conductivity along rows (HK) to vertical hydraulic conductivity (depend on LYRVKA).

**VKCB**-is the vertical hydraulic conductivity (L/T) of a confining bed below a layer, this variable is read only if LYRCBD=1.

**TKCB**-is the thickness (L) of a confining bed below a layer, this variable is read only if LYRCBD=1.

**SC1**-is the specific storage of cells (1/L).

**SC2**-is the specific yield of cells.

**WETDRY**- is the wetting threshold (L) combined with a wetting flag for the trial-and-error method employed by MODFLOW-2005 and other earlier MODFLOW versions, this variable is read only if SIMMTHD=2 and IWDFLG=1.

<0- indicate that wetting is based only on the head in the dry cell below.

=0- indicate that deactivates wetting for the dry cell.

>0- indicate that wetting is based on head from the four surrounding horizontal cells and the cell below.

**SHEAD**-is the initial head of cells (L).

**3 CtrlPar.in file**

The CtrlPar.in file contains the control parameters used in the simulation.

**NUMLYR**- is the number of layers in the model grid.

**NUMROW**- is the number of rows in the model grid.

**NUMCOL**- is the number of columns in the model grid.

**DIMUNIT**- is the length unit of model data (L).

**TIMEUNIT**- is the time unit of model data (T).

**XSTCORD**- is the X-coordinate at the upper-left corner of the model grid (L).

**YSTCORD**- is the Y-coordinate at the upper-left corner of the model grid (L).

**SIMMTHD**-is the simulation method option code.

1-the Picard iteration-based Always active cell (PAAC) method was selected for the simulation.

2-the MODFLOW-2005 method was selected for the simulation.

**SIMTYPE**-is the steady state/transient option code.

1-the simulation is steady state.

2-the simulation is transient.

**LAMBDA-** is the user-specified retardation factor bewteen 0.0001 and 0.001 for the steady-state finite difference flow equation of drying resistant cells. This variable is read only if SIMMTHD=1 and SIMTYPE=1.

**-**1-this option is not active.

**INTBLKM-** is the input format options for aquifer types and grid cell data

1- BCF format.

2- LPF format.

**ISOLVE**-is the solver option code

1-Strongly-Implicit Procedure (SIP).

2-Preconditioned Conjugate Gradient (PCG).

**MAXIT**-is the user-specified maximum number of outer iterations.

**DAMP**-is the user-specified global relaxation factor between 0.0 and 1.0.

**HCOLSE**-is the head change criterion for convergence (L).

**RCLOSE**-is flux change criterion for convergence (L3/T).

**IRELAX**-is the cell-by-cell relaxation mechanism option code

0-the cell-by-cell relaxation mechanism is inactive.

1-the cell-by-cell relaxation mechanism is active.

**THETA**-is the decreasing factor of the adaptive relaxation factors, this variable is read only if IRELAX=1.

**GAMMA**-is the increasing factor of the adaptive relaxation factors, this variable is read only if IRELAX=1.

**AKAPPA**-is the single-step increase value of the adaptive relaxation factors, this variable is read only if IRELAX=1.

**NITER**-is the iteration inteval for attempting to increase the adaptive relaxation factor, this variable is read only if IRELAX=1.

**HNOFLO**- is the value of head (L) to be assigned to all no-flow cells, inactive cells and dry cells.

**ICHFLG**-indicates whether the flow between adjacent constant-head cells should be calculated.

0-no.

1-yes.

**IWDFLG**-is the Cell drying and rewetting option code

0-cell drying is active and cell rewetting is inactive, this variable is read only if SIMMTHD=2.

1-the trial-and-error method employed by MODFLOW-2005 and other earlier MODFLOW versions was used to simulate the drying-rewetting problems, this variable is read only if SIMMTHD=2.

**WETFCT**-is a factor that is included in the calculation of the head that is initially established at a cell when the cell is converted from dry to wet, this variable is read only if SIMMTHD=2 and IWDFLG=1.

**NWETIT**-is the iteration interval for attempting to wet cells, this variable is read only if SIMMTHD=2 and IWDFLG=1.

**IHDWET**- is a flag that determines which equation is used to define the initial head at cells that become wet, this variable is read only if SIMMTHD=2 and and IWDFLG=1.

0-this equation is used:

1-this equation is used:

**IREGSTA** - is the option to enable partitioned water balance statistics

0-disabled.

1-enabled.

**IOBSOUT** - is the option to output simulation results for cell observation points

0-do not output.

1-output.

**IMULTD**- is the parallel computing option code

0-the parallel computing is inactive.

1-the parallel computing is active.

**NUMTD**-is the number of threads used for parallel computing.

**4 Discrete.in file**

Discretization information is read from the Discrete.in file

**ATTI**

If ATTI =R, means the DELT is the cell width along rows.

If ATTI =C, means the DELT is the cell width along columns.

**NUMID**-is the row or column number.

**DELT**-is the cell width along rows or columns (L).

**5 Layer.in file**

Input for the Layer-Property Flow(LPF) is read from the Layer.in file.

**LYRID**-is the layer number.

**LYRTYPE**-contains a flag for each layer that specifies the layer type.

0-confined.

1-convertible.

**LYRHANI**-contains a value for each layer that is a flag or the horizontal anisotropy.

-1-indicates variable HANI (in Cell.in file) defines horizontal anisotropy.

>0-indicates LYRHANI is the horizontal anisotropy for the entire layer, and HANI is not read (in Cell.in file).

**LYRVKA**-contains a flag for each layer that indicates whether variable VKA (in Cell.in file) is vertical hydraulic conductivity or the ratio of horizontal to vertical hydraulic conductivity.

0-indicates VKA is vertical hydraulic conductivity

1-indicates VKA is the ratio of horizontal to vertical hydraulic conductivity, where the horizontal hydraulic conductivity is specified as HK in cell.in file.

**LYRCBD**-Quasi–3D confining bed flag.

0-there is no Quasi–3D confining bed below the layer.

1-there is a Quasi–3D confining bed below the layer.

**LYRIBS** – is the option to simulate interbed storage for the aquifer

0- do not simulate;

1-simulate.

**6 OutOpt.in file**

Input to the Output Control Option is read from the OutOpt.in file.

**GDWBDPRN**-is the output flag for overall volumetric budget printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**LYRBDPRN**-is the output flag for layer-by-layer volumetric budget printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**CELLBDPRN**- is the output flag for cell-by-cell volumetric budget printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**CELLHHPRN**- is the output flag for head printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**CELLDDPRN**- is the output flag for drawdown printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**CELLFLPRN**-is the output flag for cell-by-cell volumetric flow printout.

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**SUBPRN**-is the option to control the output of cell subsidence simulation results

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**REGBDPRN**-is the option to control the output of partitioned water balance statistics

0-data is not printed.

1- data is printed for each time step of each period.

2- data is printed for each stress period.

**7 Period.in file**

Information for stress periods is read from the Period.in file.

**IPER**- is the stress period number.

**PERLEN**- is the length of a stress period (T).

**NSTEP**- is the number of time steps into which a stress period is to be divided.

**MULTR**- is the time step multiplier. The time step multiplier is the ratio of the length of each time step to that of the preceding time step.

**8** **Sub\_CoGrain.in**

Information about coarse-grained sediment in the SUB package is read from the Sub\_CoGrain.in file.

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**CGCR** - It depends on the CSOPT option in the Sub\_CtrlPar.in. CSOPT=1 indicates that this parameter is the elastic compression index of coarse-grained sediment at the cell (-); CSOPT=2 indicates that this parameter is the elastic specific storage of coarse-grained sediment at the cell (1/L).

**CGTHETA** - is the initial porosity of coarse-grained sediment at the cell (-).

**9** **Sub\_CtrlPar.in**

The Sub\_CtrlPar.in file primarily contains control parameters related to subsidence simulation.

**NNDB** -is the number of non-delay interbeds.

**NDB** - is the number of delay interbeds.

**CSOPT** - is the storage parameter usage option

1-use compression index.

2-use specific storage.

**PCSOPT** - is the initial pre-consolidation stress input option (measured in water column height, unit L)

1-input absolute value of pre-consolidation stress.

2-input the difference between pre-consolidation stress and initial effective stress.

**GAMAW** - is the specific weight of water (M/L²/T²).

**BETA** - is the compression coefficient of water (L/T²/M).

**DISOPT**- is the discrete format used for equivalent interbeds, The half-thickness discrete format is faster, while the full-thickness discrete format offers slightly higher accuracy.

1-half-thickness discrete format.

2-full-thickness discrete format.

**NMZ**- is the number of media zones.

**NN**- is the number of discrete points of the equivalent interbed, must be greater than or equal to 3.

**DSHOPT**- is the option for determining initial head for delay interbeds.

1-use initial head from the Sub\_DIBCell.in.

2-use initial head from the aquifer where the interbed is located.

**KMOPT**- is the option for whether to adjust the permeability K of interbeds according to compaction during simulation

0- do not adjust.

1- adjust.

**OBSOPT**- is the option for whether to output simulation results of observation points for delay interbeds

0- do not output.

1-output. If output is selected, the user needs to prepare data in the Sub\_DIBObs.in.

**PRNOPT**- is the option for whether to output simulation data of coarse-grained sediment and delay/non-delay interbeds within groundwater cells.

0- do not output.

1-output.

**10 Sub\_DIBCell.in**

Attribute information about delay interbeds in the SUB package is read from the Sub\_DIBCell.in.**IDB**-is the number of the delay interbeds (number ranges from 1 to NDB).

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**RNB**-is the number of equivalent interbeds present at the cell (L). If this value is less than 1, it is considered that there is no distribution of that interbed at the cell.

**DSH**-is effective only when DSHOPT=1. It is initial head of the equivalent interbed at the cell. When DSHOPT=2, the initial head DSH of the equivalent interbed will be automatically assigned the initial head of the cell.

**HCOFF**-is determined by the PCSOPT option in the Sub\_CtrlPar.in. PCSOPT=1 indicates that this parameter is the absolute value of initial pre-consolidation stress; PCSOPT=2 indicates that this parameter is the difference between initial pre-consolidation stress and initial effective stress (calculated automatically by the model).

**COM**-is the initial compression amount of the equivalent interbed at the cell (L). This data is only used to calculate total ground subsidence.

**EZ**-is equivalent thickness of the equivalent interbed at the cell (L)

**IMZ**-is the number corresponding to the media zone for the equivalent interbes at the cell (number ranges from 1 to NMZ). Parameters for different numbered media zones can be found in the Sub\_Material.in.

**11 Sub\_DIBLyr.in**

Layer information about delay interbeds in the SUB package is read from the Sub\_DIBLyr.in.**IDB**-is the number of the delay interbeds (number ranges from 1 to NDB).

**ILYR** - is the layer number of the model where the delay interbeds is located. Different delay interbeds can be situated within the same model layer.

**12 Sub\_DIBObs.in**

The location information of the cell where the selected observed delay interbeds is located is read from the Sub\_DIBObs.in

**IDB**-is the number of the delay interbeds (number ranges from 1 to NDB).

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**13** **Sub\_Material.in**

Attribute information of each media zone is read from the Sub\_Material.in.**IMZ**-is the number of the media zone (number ranges from 1 to NMZ).

**MZVK**-is the vertical hydraulic conductivity of the media zone (L/T).

**MZCR**-is determined by the CSOPT option in the Sub\_CtrlPar.in. CSOPT=1 indicates that this parameter is the elastic compression index of the media zone (-); CSOPT=2 indicates that this parameter is the elastic specific storage of the media zone (-).

**MZCC**-is determined by the CSOPT option in the Sub\_CtrlPar.in. CSOPT=1 indicates that this parameter is the inelastic compression index of the media zone (-); CSOPT=2 indicates that this parameter is the inelastic specific storage of the media zone (-).

**MZTHETA**-is the initial porosity of the media zone.

**14** **Sub\_SpGrav.in**

The specific gravity of the medium in each model layer (i.e., the aquifers in the model) is read from the Sub\_SpGrav.in.**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**SGM**-is specific gravity of the aquifer medium at the cell under unsaturated conditions (i.e., the ratio of its density to the density of water).

**SGS**-is specific gravity of the aquifer medium at the cell under saturated conditions (i.e., the ratio of its density to the density of water).

**15** **Sub\_Stress.in**

The overburden stress conditions of the specified cell is read from the Sub\_Stress.in.

**IPER**-is the stress period number (starting from 1).

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**STOPGL**-is initial load above the ground at the cell during the stress period (measured in height of water column) (L).

**ETOPGL**-is final load above the ground at the cell during the stress period (measured in height of water column) (L).

**Output data**

**1 CellBD.dat**

Cell-by-cell volumetric budget values are saved in CellBD.dat file.

**IPER**-is the stress period number.

**ISTEP**-is the time step number of a stress period.

**DLEN**- is the time span during current time step or stress period (T).

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**STA** -is the storage variables of cell during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**FBC**-is the net flow volume from the six adjacent cells during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**CST**-is the net coarse-grained sediment flow volume during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**IBE** -is the net flow volume caused by elastic deformation of interbed during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**IBV**-is the net flow volume caused by inelastic deformation of interbed during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**WST**- is the net flow volume caused by compaction and expansion water during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**CNH**-is the net constant-head flow volume during the time step or the stress period (L3). A positive value indicates that the net flow is into the cell and a negative value indicates that the net flow is away from the cell.

**ABER**-is the budget error during the time step or the stress period (L3).

**2 CellFlow.dat file**

Cell-by-cell volumetric flow are saved in CellFlow.dat file.

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**DLEN**- is the time span during current time step or stress period.

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**XCORD**- is the X-coordinate at the center of cells (L).

**YCORD**- is the Y-coordinate at the center of cells (L).

**FlowX**-is the flow volume across the right face during the time step or the stress period (L3). A positive value indicates that the flow is away from the cell and a negative value indicates that the flow is into the cell.

**FlowY**- is the flow volume across the front face during the time step or the stress period (L3). A positive value indicates that the flow is away from the cell and a negative value indicates that the flow is into the cell.

**FlowZ**- is the flow volume across the lower face during the time step or the stress period (L3). A positive value indicates that the flow is away from the cell and a negative value indicates that the flow is into the cell.

**3 CellHead.dat file**

Heads are written to CellHead.dat file

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**-is the total simulation time (T).

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**XCORD**- is the X-coordinate at the center of cells (L)

**YCORD**- is the Y-coordinate at the center of cells (L)

**HEAD**-is the simulated heads of cells (L).

**4 GWBD.out file**

Overall volumetric budget values are saved in GWBD.out file.

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**- is the total simulation time.

**STAIN**-is the cumulative flow volume to storage from the beginning of the simulation (L3).

**CSTIN**-is the cumulative inflow volume caused by expansion of coarse-grained sediment from the beginning of the simulation (L3) .

**IBEIN**-is the cumulative inflow volume caused by elastic compaction of interbed from the beginning of the simulation (L3).

**IBVIN**-is the cumulative inflow volume caused by inelastic compaction of interbed from the beginning of the simulation (L3).

**WSTIN**- is the cumulative inflow volume caused by compaction of water from the beginning of the simulation (L3).

**CNHIN**-is the cumulative constant-head inflow volume from the beginning of the simulation (L3).

**STAOUT**-is the cumulative flow volume from storage from the beginning of the simulation (L3).

**CSTOUT**-is the cumulative outflow volume caused by expansion of coarse-grained sediment from the beginning of the simulation (L3).

**IBEOUT**-is the cumulative outflow volume caused by elastic expansion of interbed from the beginning of the simulation (L3).

**IBVOUT**-is the cumulative outflow volume caused by inelastic expansion of interbed from the beginning of the simulation (L3).

**WSTOUT**- is the cumulative outflow volume caused by expansion of water from the beginning of the simulation (L3).

**CNHOUT**-is the cumulative constant-head outflow volume from the beginning of the simulation (L3).

**ABER**-is the cumulative budget error (L3) .

**RBER**-is the total percentage budget error (%).

**5 LyrBD.out file**

Layer-by-layer volumetric budget values are saved in LyrBD.out file.

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period, this variable is valid only if LYRBDPRN=1.

**TLEN**- is the total simulation time (T, depend on LYRBDPRN).

**ILYR**- is the layer number.

**STAIN**-is the cumulative flow volume to storage from the beginning of the simulation (L3).

**TOPIN**-is the cumulative leakage volume from the upper aquifer layer from the beginning of the simulation (L3).

**BOTIN**-is the cumulative leakage volume from the underlying aquifer layer from the beginning of the simulation (L3).

**CSTIN**-is the cumulative inflow volume caused by expansion of coarse-grained sediment from the beginning of the simulation (L3) .

**IBEIN**-is the cumulative inflow volume caused by elastic compaction of interbed from the beginning of the simulation (L3).

**IBVIN**-is the cumulative inflow volume caused by inelastic compaction of interbed from the beginning of the simulation (L3).

**WSTIN**- is the cumulative inflow volume caused by compaction of water from the beginning of the simulation (L3).

**CNHIN**-is the cumulative constant-head inflow volume from the beginning of the simulation (L3).

**STAOUT**-is the cumulative flow volume from storage from the beginning of the simulation (L3).

**TOPOUT**- is the cumulative leakage volume to the upper aquifer layer from the beginning of the simulation (L3).

**BOTOUT**- is the cumulative leakage volume to the underlying aquifer layer from the beginning of the simulation (L3).

**CSTOUT**-is the cumulative outflow volume caused by expansion of coarse-grained sediment from the beginning of the simulation (L3).

**IBEOUT**-is the cumulative outflow volume caused by elastic expansion of interbed from the beginning of the simulation (L3).

**IBVOUT**-is the cumulative outflow volume caused by inelastic expansion of interbed from the beginning of the simulation (L3).

**WSTOUT**- is the cumulative outflow volume caused by expansion of water from the beginning of the simulation (L3).

**CNHOUT**-is the cumulative constant-head outflow volume from the beginning of the simulation (L3).

**ABER**-is the cumulative budget error (L3).

**6 Sub\_CellDisp.dat file**

Total cumulative compaction status of each cell is written to Sub\_CellDisp.dat file

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**-is the total simulation time (T).

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**DISP**- is the vertical displacement (L) of the cell at the current time.

**COM**- is the total cumulative compaction (L) of the cell at the current time, which is the sum of the cumulative compaction of coarse-grained sediments and each interbed.

**TOTGL**- is the total vertical stress (L) at the bottom of the cell at the current time, measured in terms of water column height.

**EST**- is effective stress (L) at the bottom of the cell at the current time, measured in terms of water column height.

**7** **Sub\_CoGrain.out file**

Total cumulative compaction status of coarse-grained sediments is written to Sub\_CoGrain.out file

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**-is the total simulation time (T).

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**COM**- is cumulative compaction (L) of coarse-grained sediments at the current time.

**THETA**- is the porosity (-) of coarse-grained sediments at the current time.**THIK**- is the total thickness (L) of coarse-grained sediments at the current time.

**SKE**- is elastic specific storage (1/L) of coarse-grained sediments at the current time.

**8 Sub\_DIB.out file**

Total cumulative compaction status of delay interbeds is written to Sub\_DIB.out file.

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**-is the total simulation time (T).

**IDB** -is the identification number of the delay interbed.

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**CHEAD**- is the head (L) at the center of the delay interbed at the current time.

**COM**- is the cumulative compaction (L) of the delay interbed at the current time.

**EST**- is the effective stress (measured in water column height) (L) of the delay interbed at the current time, calculated at the center of the layer.

**HC**- is the preconsolidation stress (measured in water column height) (L) of the delay interbed at the current time, calculated at the center of the layer.

**RERR**- is the cumulative relative water balance error (%) of the equivalent interbed simulation at the current time, for reference.

**9 Sub\_DIBObs.out file**

Simulation results of delay interbeds at observation points are written to Sub\_DIBObs.out file.

**IPER**- is the stress period number.

**ISTEP**- is the time step number of a stress period.

**TLEN**-is the total simulation time (T).

**IDB** -is the identification number of the delay interbed.

**ILYR**-is the layer number of cells.

**IROW**- is the row number of cells.

**ICOL**- is the column number of cells.

**NODE**- is the identification number of the equivalent interbed node.

**THIK**- is the thickness (L) of the node unit at the current time.

**HEAD**- is the head (L) at the node unit at the current time.

**THETA**- is the porosity (-) at the node unit at the current time.

**VK**- is the vertical hydraulic conductivity (-) at the node unit at the current time.

**SKE**- is the elastic specific storage (1/L) at the node unit at the current time.

**SKV**- is the inelastic specific storage (1/L) at the node unit at the current time.