**DHSVM 流程图**

**Initialization Procedures:**

Initialize constants

Initialize file I/O

Initialize tables

Initialize terrain maps

Initialize network

Initialize meteorology

Initialize meteorology map

Initialize Dump

Initialize snow map

Initialize basin-wide value

Initialize model state

Initialize new month

Initialize new day

**Sediment Initialization Procedures:**

Initialize parameters

Initialize sediment table

Initialize fine resolution map

Initialize sediment map

**Setup for mass balance:**

Start water balance calculation

Start sediment balance calculation

**Start Perform calculations (Time loop):**

Determine erosion and routing scheme (sediment)

**Initialization Procedures:**

Initialize new step

Initialize channel network (if has network)

**Start grid loop (x,y):**

Read local meteorology data

Read soil temperature

**Mass energy balance**

**Routing process (consider snow):**

Subsurface routing

Channel routing

Sediment routing

Surface routing

**Update mass balance & graphics:**

Draw output

Aggregation

Mass balance

**Mass energy balance:**

Radiation Balance

Leaf drip impact calculation

Rainfall impact calculation

Interception storage & through fall calculation

ET calculation

Calculation for surface water & Road water & infiltration & unsaturated flow & channel grid water & surface temperature & sensible/no sensible heat & longwave balance

Aggregate radiation

**Dump intermediate results**

**End up with mass balance**

**Perform calculations (Time loop t++)**

**MassEnergyBalance: C MassEnergyBalance**

**EvapoTranspiration**

**CEvapoTranspiration**

**Radiation Balance:**

**RadiationBalance**.csettings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h

**shorwaveBalance: independent**

**longwaveBalance: independent**

**Leaf drip impact calculation: independent**

**Rainfall impact calculation: independent**

**Interception storage & through fall calculation:**

**SnowInterception**.c brent.h constants.h settings.h massenergy.h data.h Calendar.h snow.h functions.h DHSVMChannel.h getinit.h channel.h channel\_grid.h

**SatVaporPressure.c** lookuptable.h

**InitFloatTable.c** lookuptable.h DHSVMerror.h

**MassRelease.c** constants.h settings.h massenergy.h data.h Calendar.h snow.h

**RadiationBalance**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h

**shorwaveBalance: independent （separated file）**

**longwaveBalance: independent（separated file）**

**InterceptionStorage**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h

**SnowMelt**.c brent.h constants.h settings.h massenergy.h data.h Calendar.h

functions.h DHSVMChannel.h getinit.h channel.h channel\_grid.h snow.h

**CalcSnowPackEnergyBalance**

**SnowPackEnergyBalance**.c settings.h constants.h massenergy.h data.h Calendar.h snow.h functions.h DHSVMChannel.h getinit.h channel.h channel\_grid.h

**StabilityCorrection.c** settings.h massenergy.h data.h Calendar.h constants.h

**SatVaporPressure.c** lookuptable.h

**InitFloatTable.c** lookuptable.h DHSVMerror.h

**ET calculation:**

**EvapoTranspiration**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h

**CanopyResistance**.c settings.h massenergy.h data.h Calendar.h constants.h

**SoilEvaporation**.c settings.h DHSVMerror.h massenergy.h data.h Calendar.h constants.h

**Desorption**.c settings.h massenergy.h data.h Calendar.h constants.h

**surface water: independent**

**Road water: independent**

**Infiltration:**

**SurfaceWater**, **RoadWater**,

**UnsaturatedFlow**.c constants.h settings.h functions.h data.h Calendar.h DHSVMChannel.h getinit.h channel.h channel\_grid.h soilmoisture.h

**WaterTableDepth**.c settings.h soilmoisture.h

**Update channel grid water:**

**channel\_grid**.c channel\_grid.h channel.h settings.h data.h Calendar.h tableio.h errorhandler.h DHSVMChannel.h getinit.h

**channel\_grid\_cell\_length: independent**

**unsaturated flow:**

**UnsaturatedFlow**.c constants.h settings.h functions.h data.h Calendar.h DHSVMChannel.h getinit.h channel.h channel\_grid.h soilmoisture.h

**WaterTableDepth**.c settings.h soilmoisture.h

**Update infiltration**

**Independ: check MassEnergyBalance.c**

**Sensible heat flux (surface temperature):**

**SensibleHeatFlux**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h brent.h functions.h DHSVMChannel.h getinit.h channel.h channel\_grid.h

**CalcEffectiveKh.c** settings.h constants.h DHSVMerror.h functions.h data.h Calendar.h DHSVMChannel.h getinit.h channel.h channel\_grid.h

**longwave balance:**

**RadiationBalance**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.hconstants.h

**no sensible heat flux:**

**SensibleHeatFlux**.c settings.h data.h Calendar.h DHSVMerror.h massenergy.h constants.h brent.h functions.h DHSVMChannel.h getinit.h channel.h channel\_grid.h

**Aggregate radiation:**

**AggregateRadiation**.c settings.h data.h Calendar.h massenergy.h