SWAT-HDAS

类别：Soil and Water Assessment Tool-Hydrological Data Assimilation System
标签：SWAT，数据同化，水文
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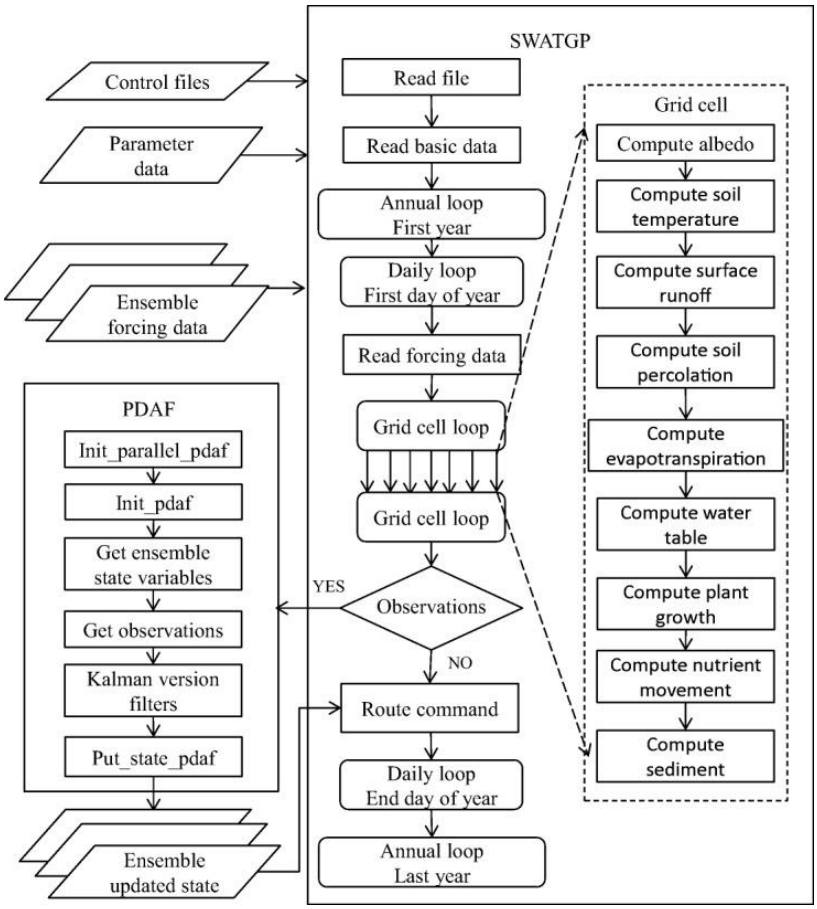
SWAT-HDAS 下载
链接：https://pan.baidu.com/s/1TITIsOxfLV2Msh6DQG9_9Q&shfl=sharepset
提取码：cckj

SWAT-HDAS 总体框架



SWAT-HDAS 特点

SWAT-HDAS 是基于网格化并行化 SWAT 水文模型（SWATGP），整合了行数据同化框架（PDAF），

用于水文数据同化研究的水文数据同化系统。
其数据同化算法包括集合 Kalman 滤波类算法。SWAT-HDAS 可以同化遥感观测或者地面站点观测的土壤水分，径流，雪水当量等数据。
SWAT-HDAS 使用 GNU gfortran 编译器进行测试。未来的计划包括粒子滤波同化算法的加入，Weather Research & Forecasting （WRF）模型的整合，实现陆气离线耦合数据同化系统。

SWAT-HDAS 软硬件开发环境

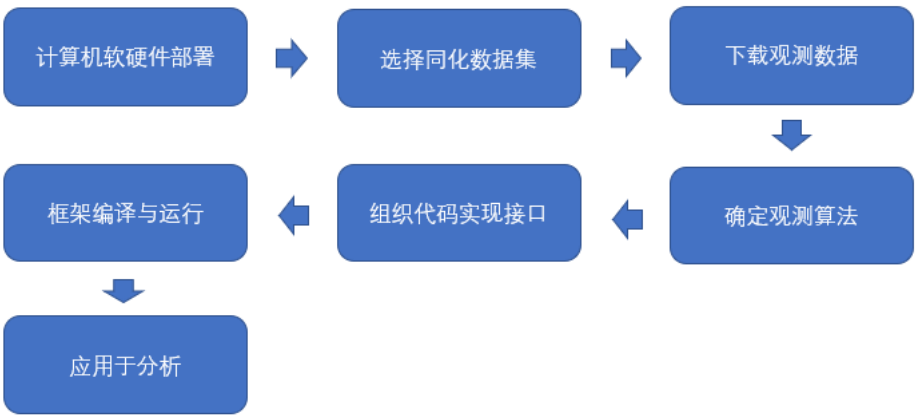
硬件环境
普通应用无特殊要求
软件环境
　　操作系统：Linux
开发语言：Fortran, Python
　　第三方类库：NetCDF4,
并行环境
　　OpenMP

示例

基本要求

1. Linux 下 Fortran 与 Python 的交互编程；
2. 基本的专业应用知识。

基本流程



土壤水分数据同化实例

利用 ArcSWAT 或者 QSWAT 等 SWAT 软件准备模型的参数与气候输入数据，配置 file.cio 文件，file.cio 例子文件如下：

```
2
Project Description:
General Input/Output section (file.cio):
2014/8/5 0:00:00 ARCGIS-SWAT interface AV

General Information/Watershed Configuration:
fig.fig
187
130
/home/zhangy/met_wrf/
               2    | NBYR : Number of years simulated
            2007    | IYR : Beginning year of simulation
             364    | IDAF : Beginning julian day of simulation
             365    | IDAL : Ending julian day of simulation
20
               0    | IGEN : Random number seed cycle code
               1    | PCPSIM : precipitation simulation code: 1=measure
lated
               0    | IDT : Rainfall data time step
               0    | IDIST : rainfall distribution code: 0 skewed, 1 e
l
           1.300    | REXP : Exponent for IDIST=1
               1    | NRGAGE: number of pcp files used in simulation
               6    | NRTOT: number of precip gage records used in simu
               6    | NRGFIL: number of gage records in each pcp file
               2    | TMPSIM: temperature simulation code: 1=measured,
ed
               0    | NTGAGE: number of tmp files used in simulation
               0    | NTTOT: number of temp gage records used in simula
               0    | NTGFIL: number of gage records in each tmp file
               2    | SLRSIM : Solar radiation simulation Code: 1=measu
mulated
               0    | NSTOT: number of solar radiation records in slr f
               2    | RHSIM : relative humidity simulation code: 1=meas
imulated
               0    | NHTOT: number of relative humidity records in hmd
               2    | WINDSIM : Windspeed simulation code: 1=measured,
ed
               0    | NWTOT: number of wind speed records in wnd file
               0    | FCSTYR: beginning year of forecast period
               0    | FCSTDAY: beginning julian date of forecast period
               0    | FCSTCYCLES: number of time to simulate forecast p
0.5
```

同化测试实验运行如下：

```
[zhangy@cluster swathgioopda]$ ./swatpdaf
                      SWAT-HDAS
                       V1.0
             Soil & Water Assessment Tool
         Hydrological Data Assimilation System
         Reading from file.cio . . . executing

         130         187
 v   4.0000000             130         187
 id          40           4         787           4         178
 hrutot         178
 sub           1
```

运行结果：

表层，中层和深层土壤水分模拟结果（a, c, e）与同化结果(b, d, f)对比图如下：