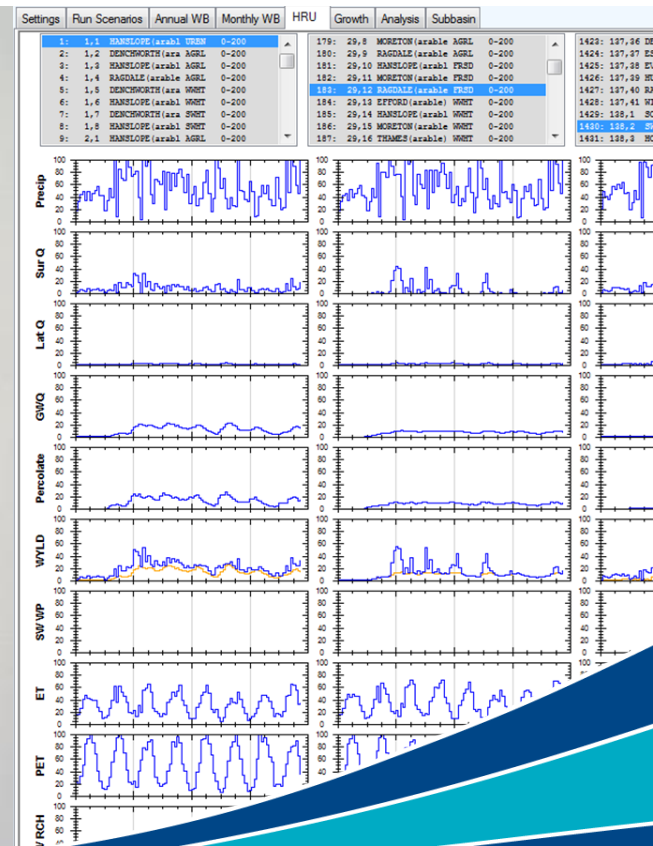




SWAT OWL: A New Tool for Quicker Visualisation of SWAT Outputs and Calibration

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Introduction

- Working with Anglian Water.
- 23 Surface Water Catchments over 2 years.
- Diffuse pollution from agricultural land (metaldehyde).
- Tools and methodologies developed to quickly produce calibrated models and run scenarios.

Objectives

- Quick and easy way to visualise model outputs
- Quick and easy ways to automate changing of parameters and run SWAT.

SWAT Error Checker

High Level Checks

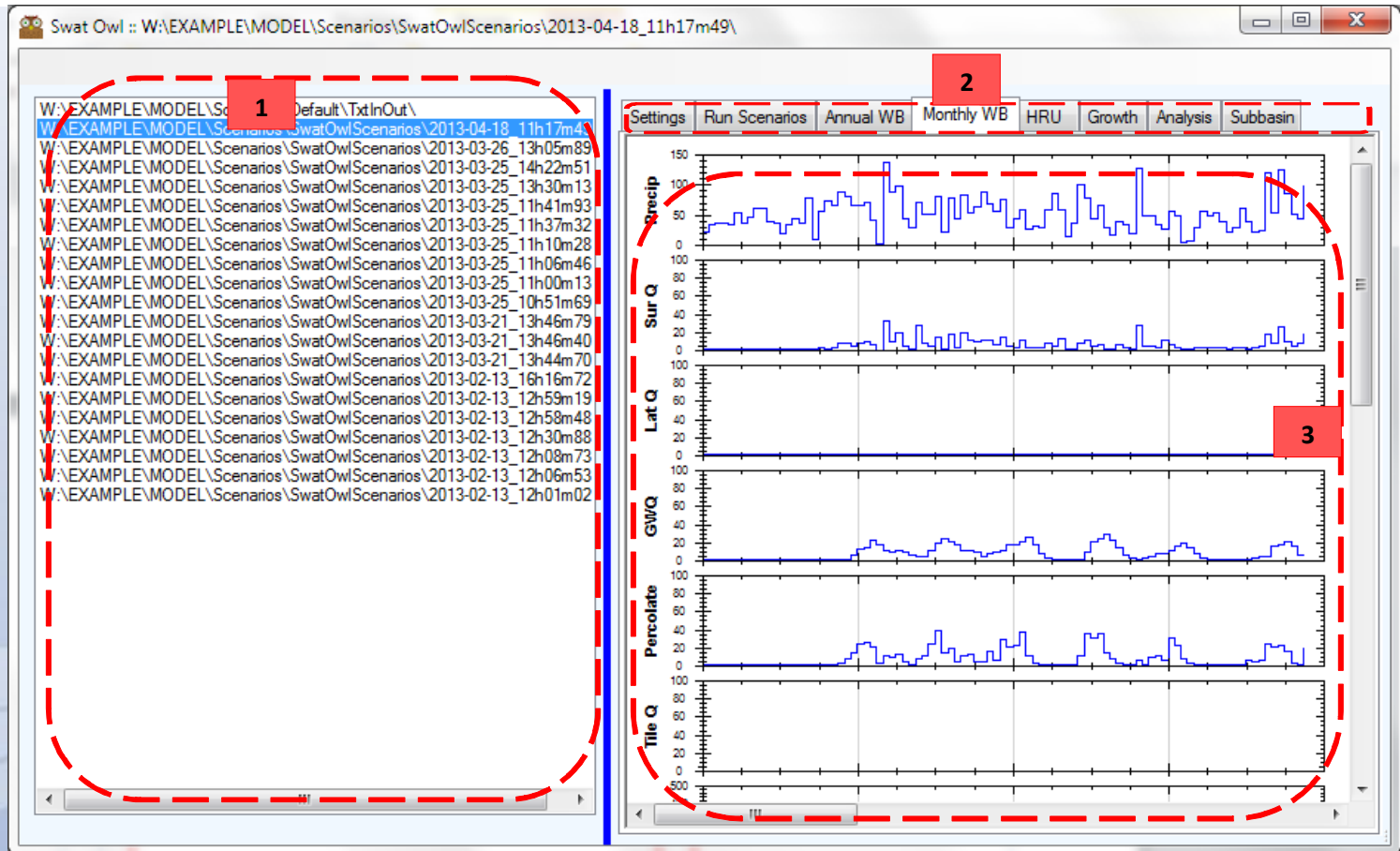
SwatOwl

Swat-Cup

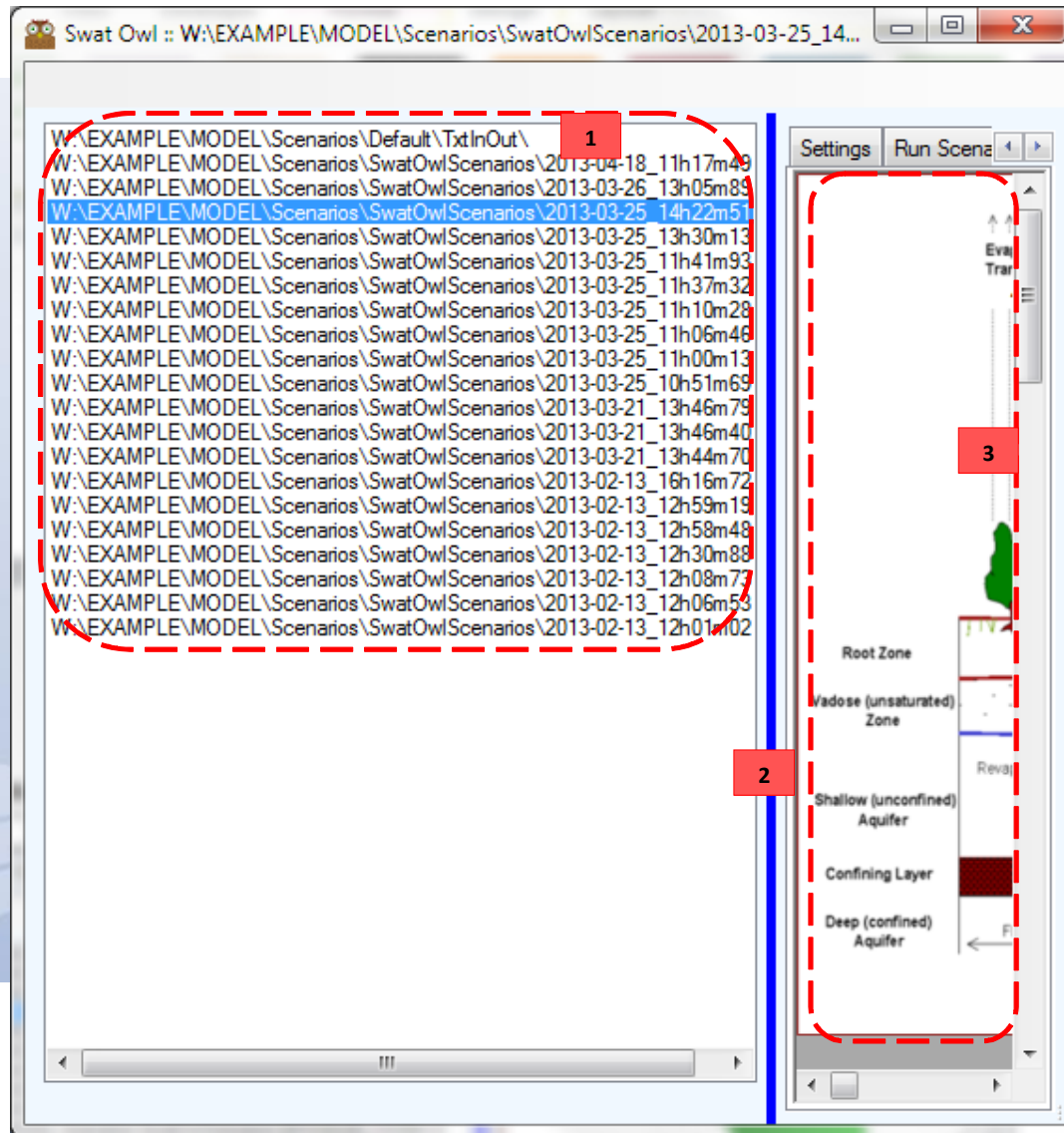
Powerful calibration tool

- Visualisation enables greater understanding of the effect changes to SWAT parameters.

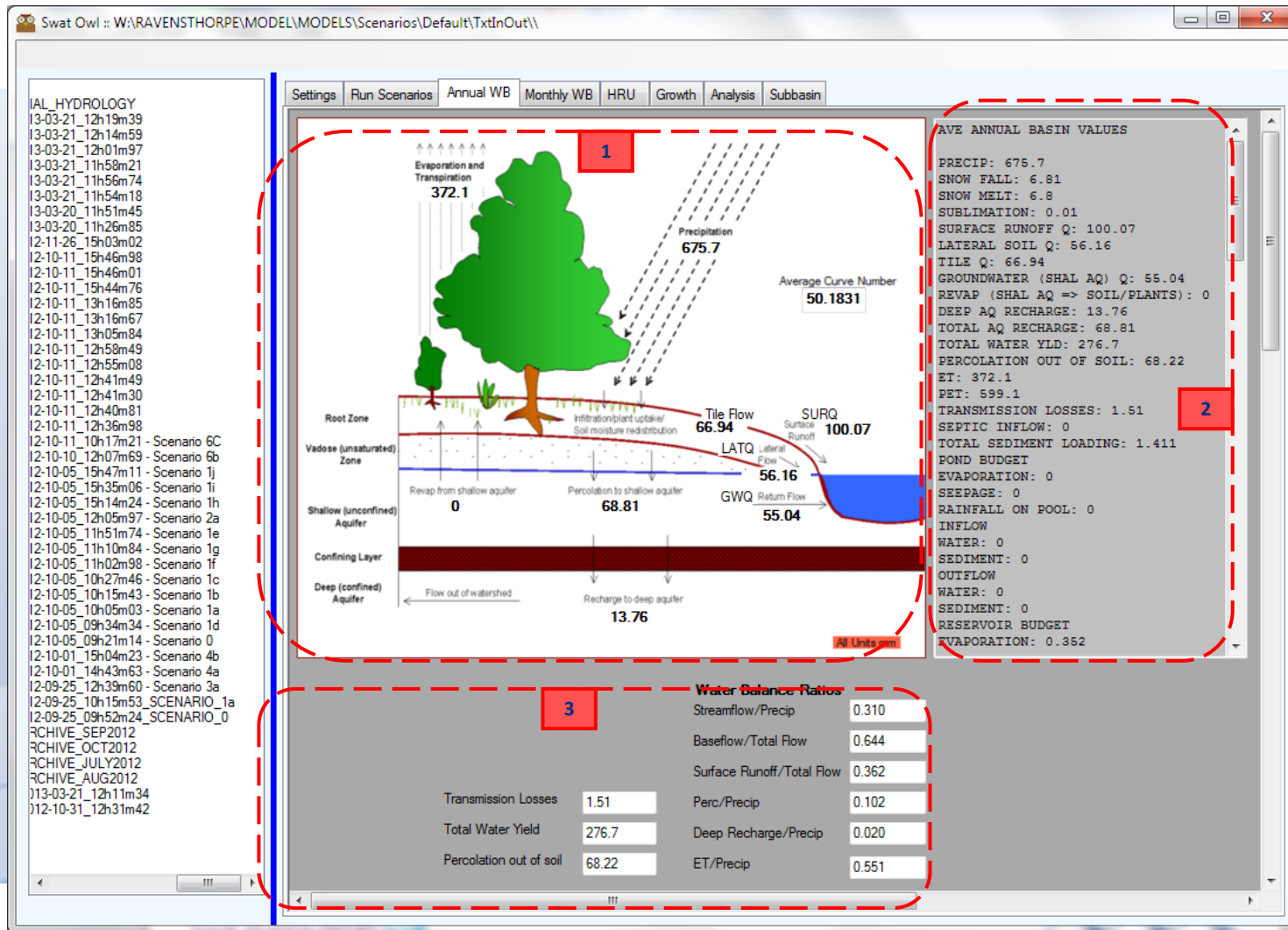
Overview of Swat Owl Window



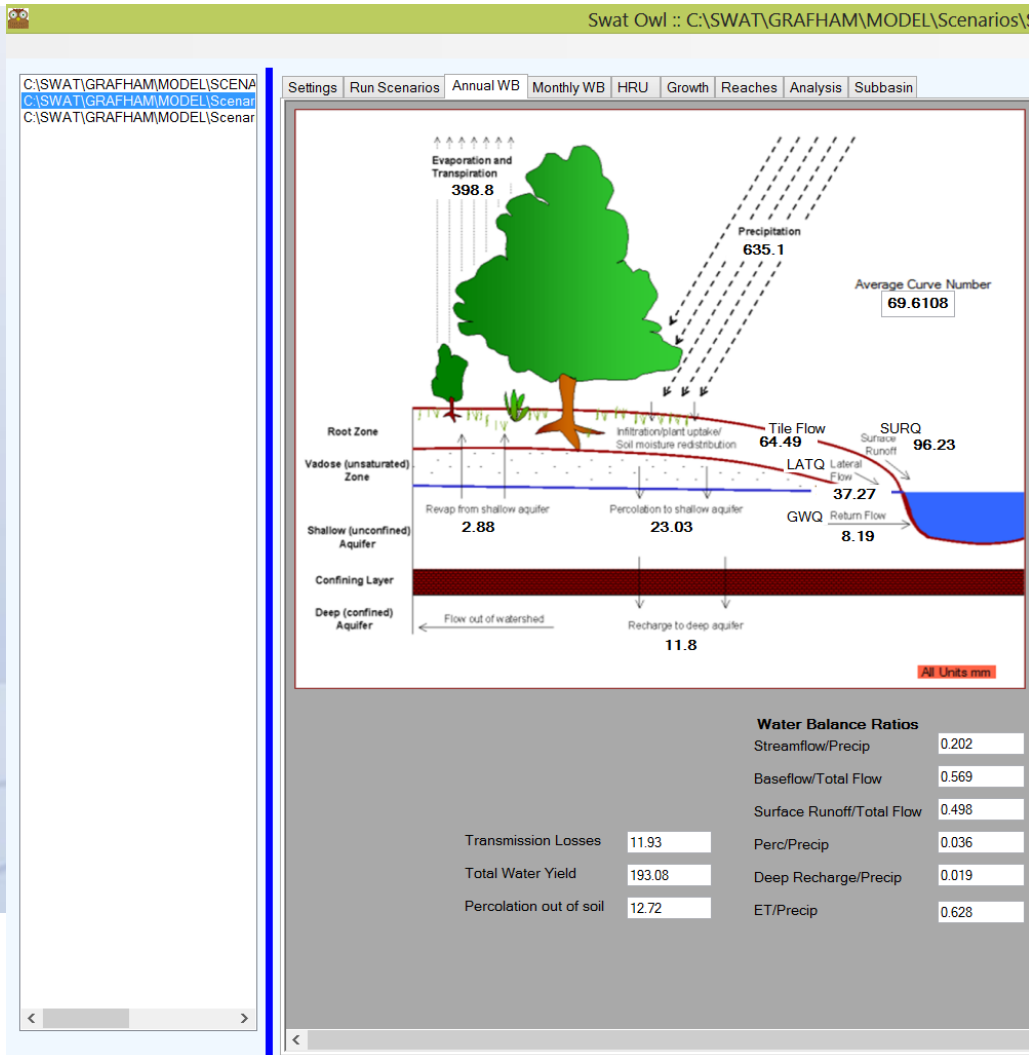
Swat Model Run Selection Panel



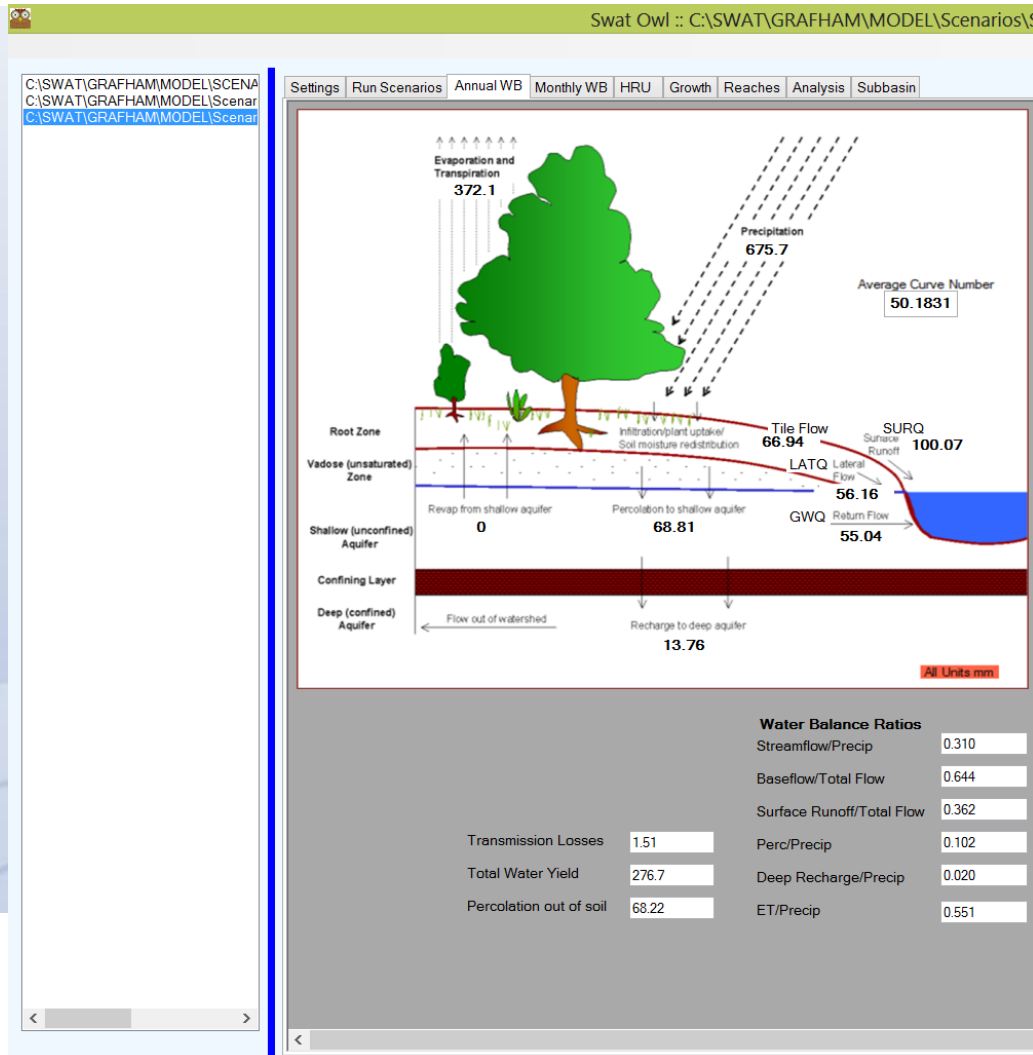
Annual Water Balance Output



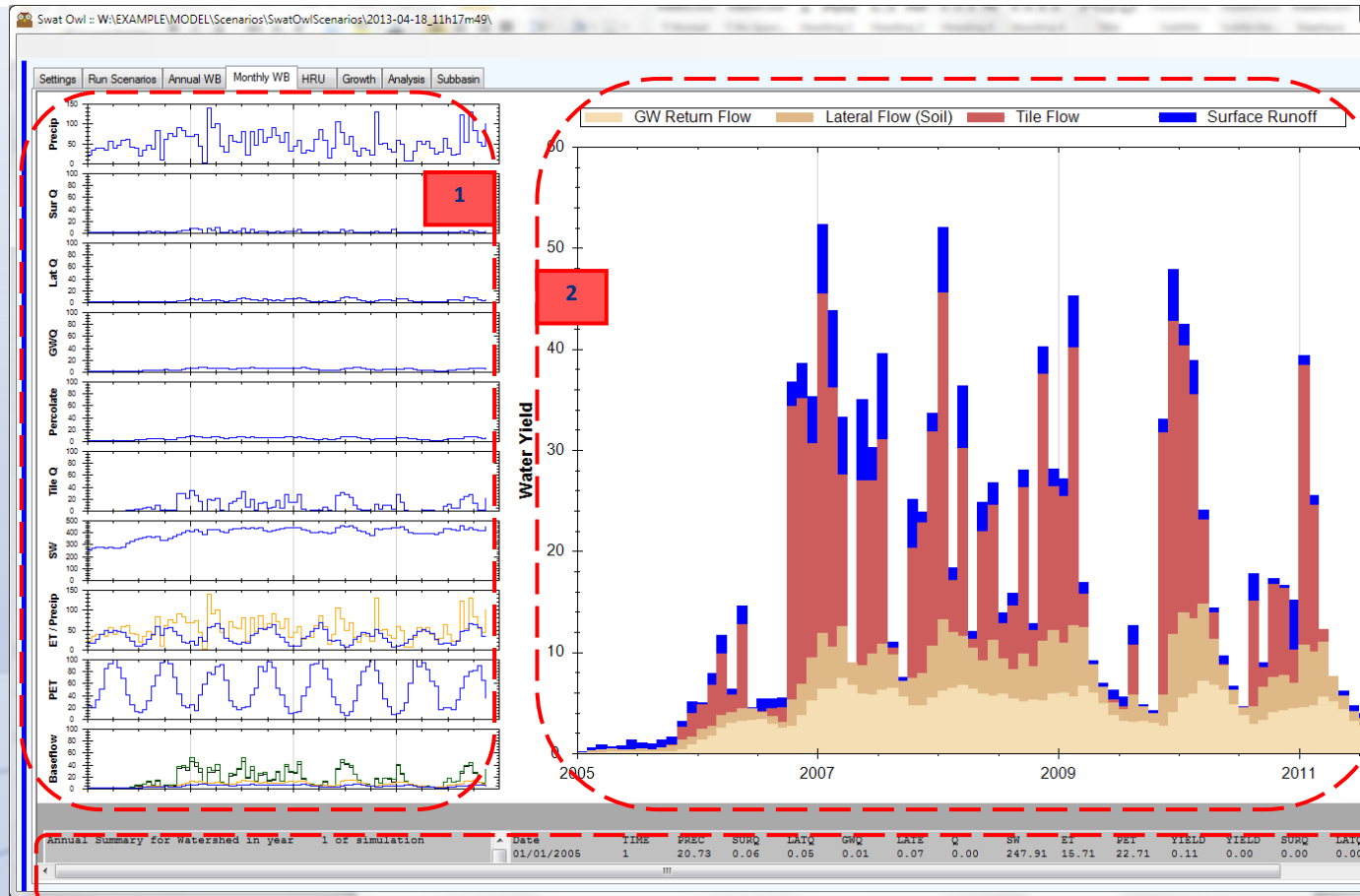
Annual Water Balance Selection



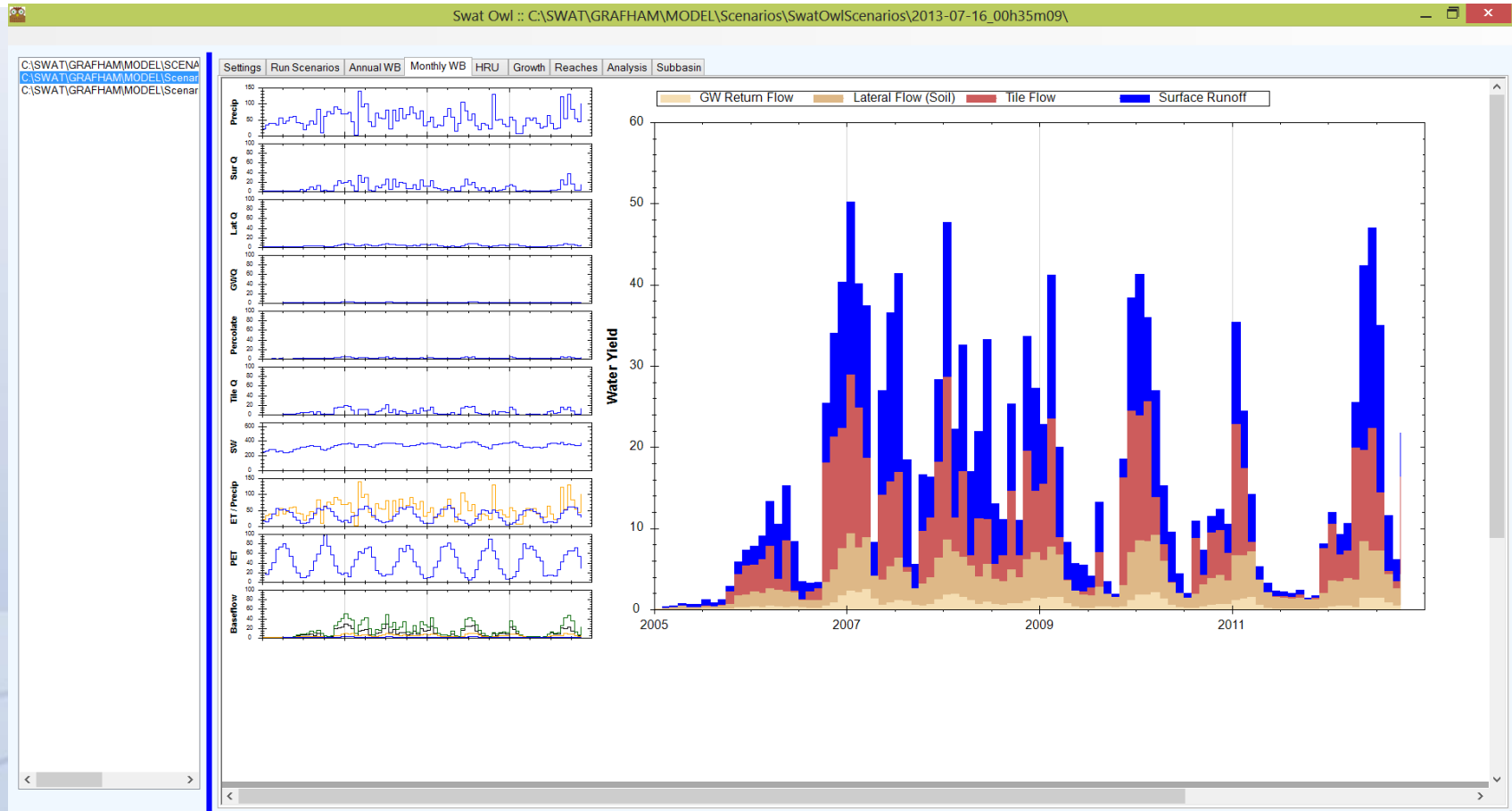
Annual Water Balance Selection



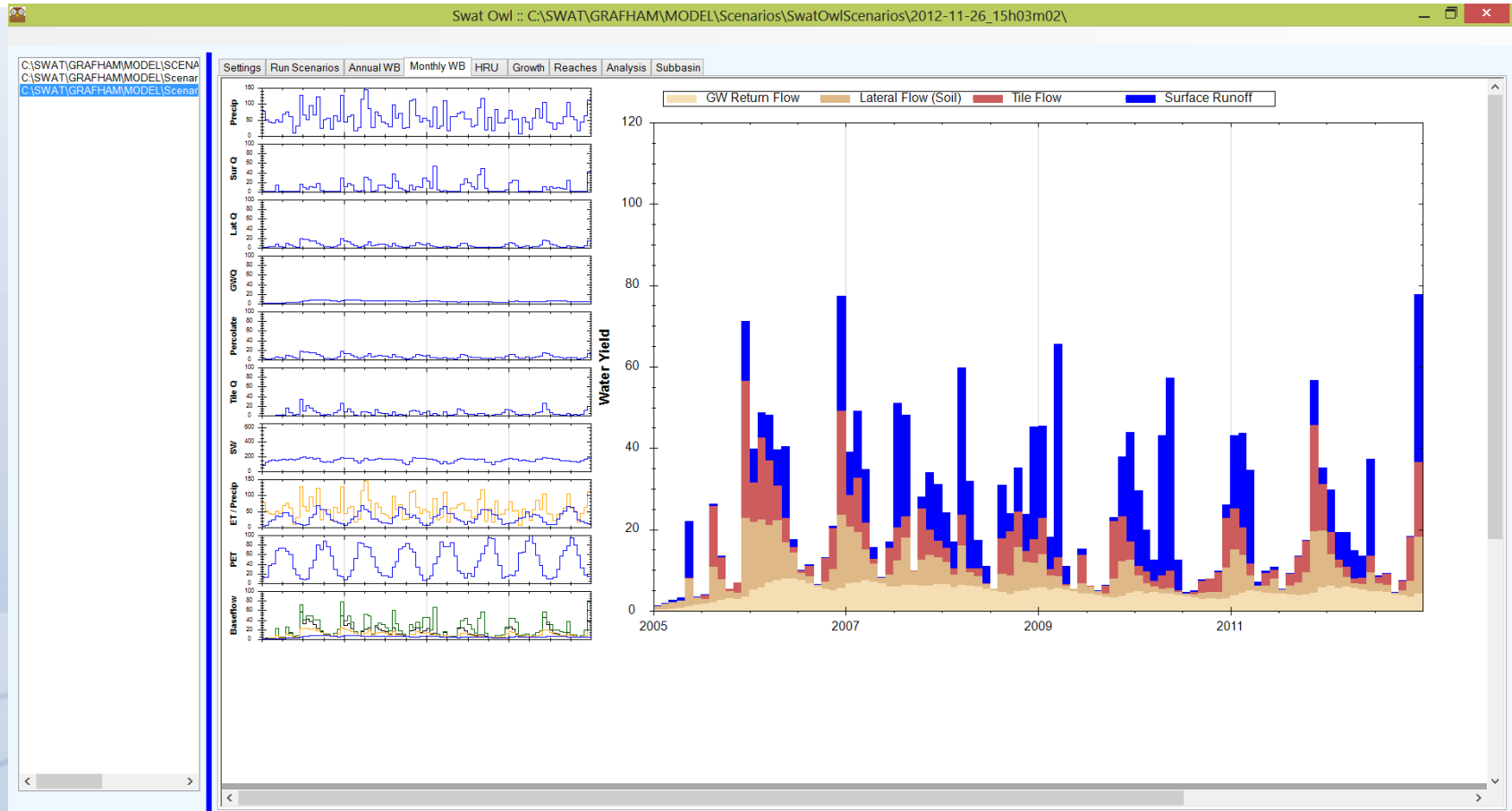
Monthly Water Balance Output



Monthly Water Balance Selection



Monthly Water Balance Selection



Swat Owl Settings

Swat Owl :: W:\EXAMPLE\MODEL\Scenarios\Default\TxtInOut\

Settings | Run Scenarios | Annual WB | Monthly WB | HRU | Growth | Analysis | Subbasin

SwatOwlSettings.txt

ROOT: C:\SWAT

EXECUTABLE: C:\SWAT\ArcSwat\rev585_64rel.exe
SWATDATABASE: C:\SWAT\ArcSwat\Databases\SWAT2009.mdb
MODELDATABASE: W:\EXAMPLE\MODEL\MyModel.mdb
TXTINOUT: W:\EXAMPLE\MODEL\Scenarios\Default\TxtInOut
TXTEDITPATH: C:\Program Files (x86)\NDM Computer Solutions\UltraEdit\Uedit32.exe
STARTDATE: 01/01/2005
ENDDATE: 31/12/2012
HRUCOUNT: 1698
REFERENCEDIR: C:\Swat\ArcSWAT\ArcSWATHelp
SCENARIOIDIR: W:\EXAMPLE\MODEL\Scenarios\SwatOwlScenarios

Change Settings

Edit Settings
Save Settings
Open in Text Editor
Explore Settings Directory

Swat Root Directory: C:\SWAT\

Swat Executable File Path: C:\SWAT\ArcSwat\rev585_64rel.exe

Swat Database File Path: C:\SWAT\ArcSwat\Databases\SWAT2009.mdb

Model Database File Path: W:\EXAMPLE\MODEL\MyModel.mdb

SWAT TxtInOut Directory: W:\EXAMPLE\MODEL\Scenarios\Default\TxtInOut\

Scenario Directory: W:\EXAMPLE\MODEL\Scenarios\SwatOwlScenarios\

Text Editor File Path: C:\Program Files (x86)\NDM Computer Solutions\UltraEdit\Uedit32.exe

Start Date: 01/01/2005

End Date: 31/12/2012

Number of HRUs: 1698

Open a database

Open model .mdb
Open Swat2009.mdb

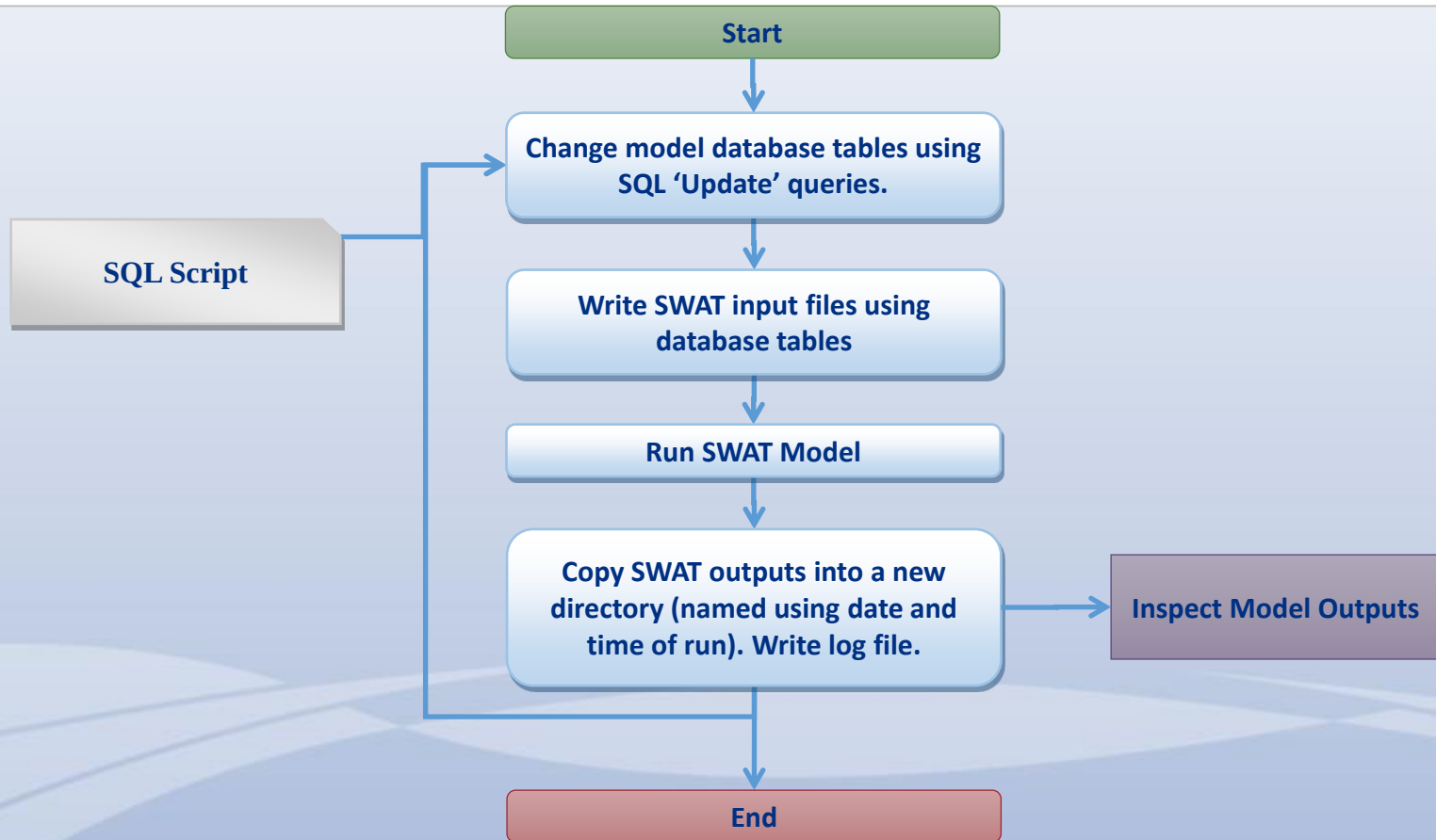
Open a folder

Explore 'TxtInOut' Directory
Explore Model Directory
Explore Root Directory
Explore Scenarios Directory

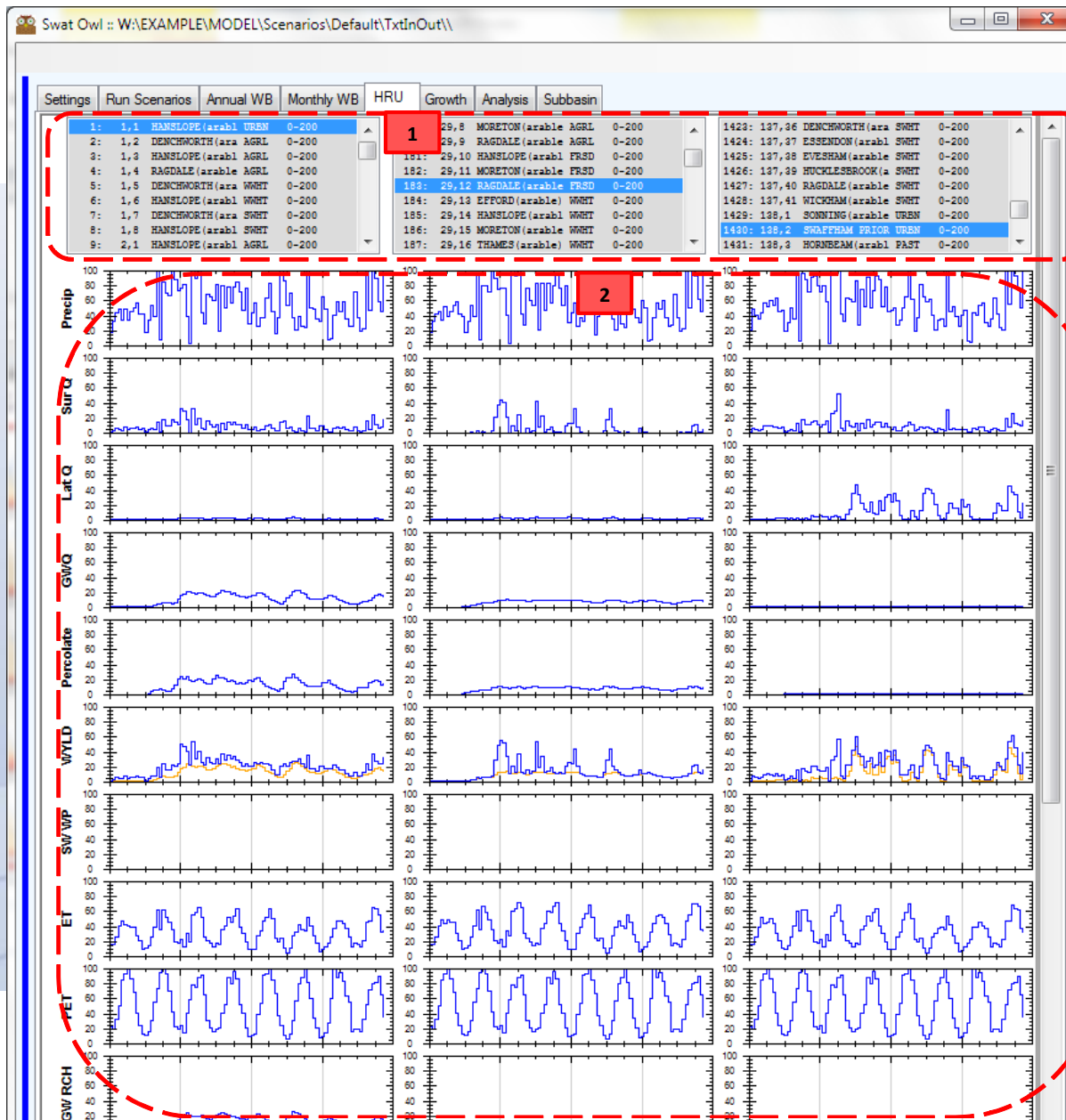
Open a reference

IO Documentation
Theoretical Documentation
ArcSWAT User Manual

Swat Model Automation



HRU Outputs



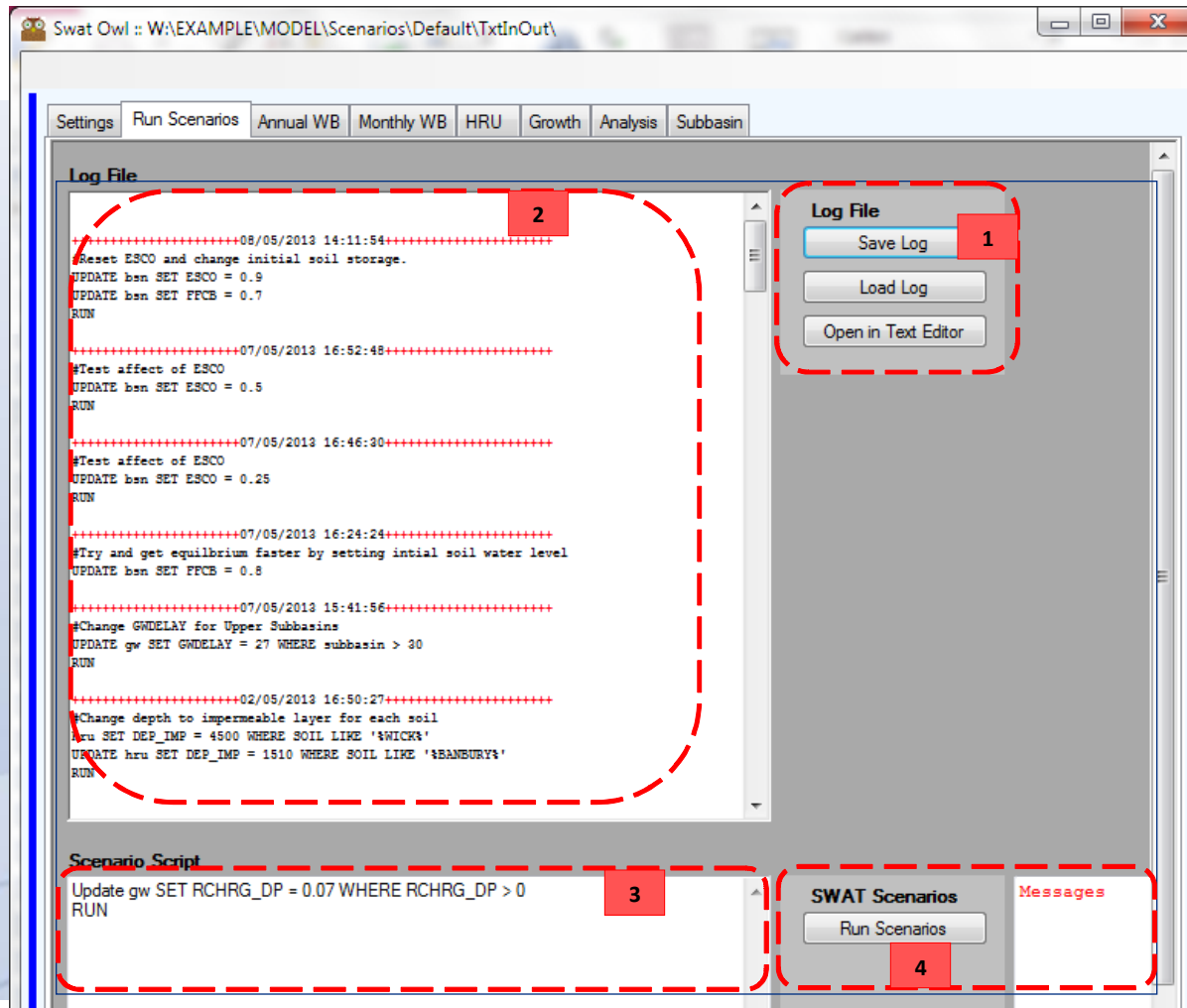
Growth Outputs



Subbasins



Automation of Parameter Changes and Model Runs



Example SQL Scripts

Example1:

```
#Scenario 1a: ESCO and EPCO
UPDATE bsn SET ESCO = 0.25
UPDATE bsn SET EPCO = 0.5
RUN

#Scenario 1b: ESCO and EPCO
UPDATE bsn SET ESCO = 0.5
UPDATE bsn SET EPCO = 0.1
RUN

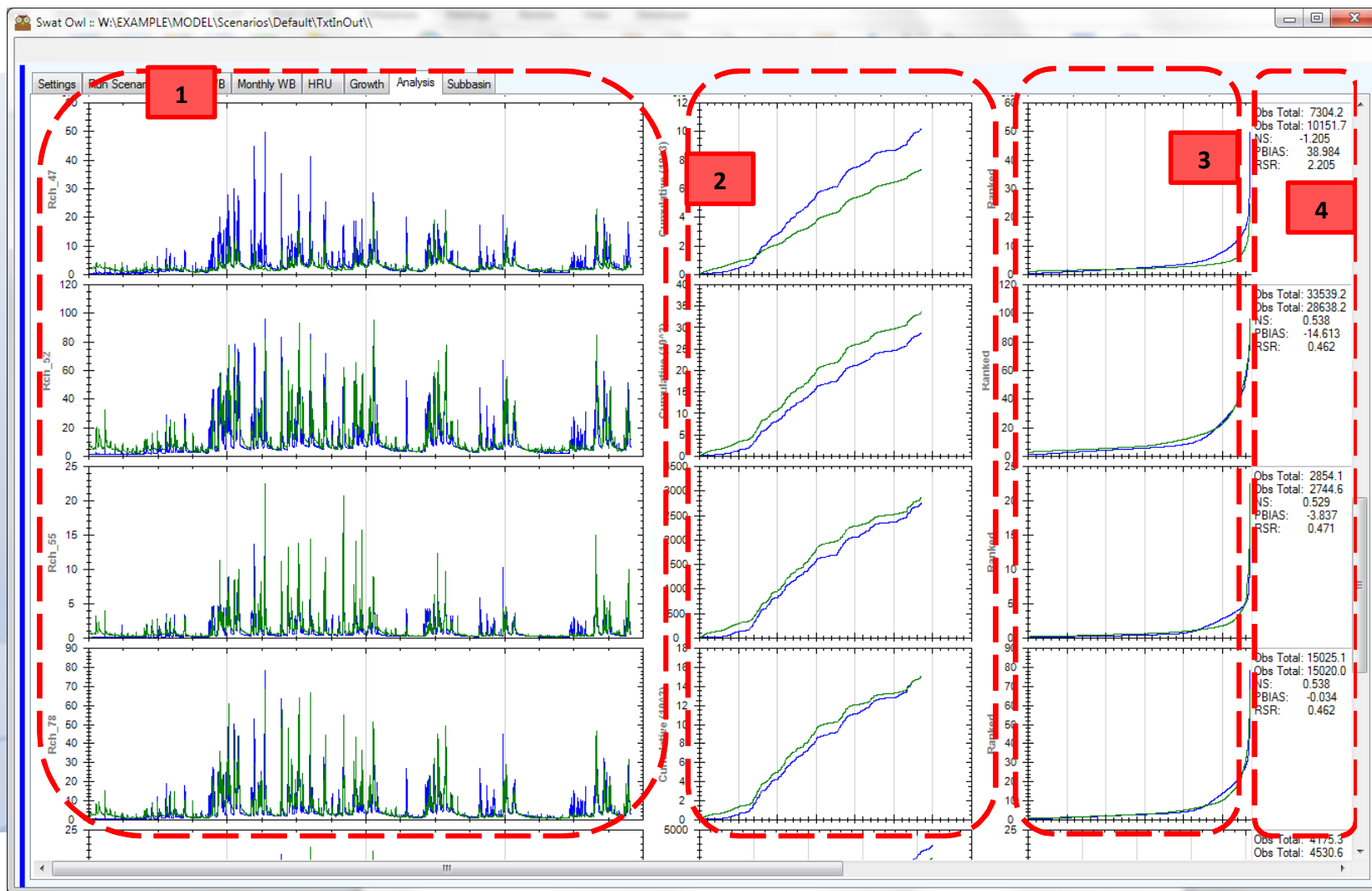
#Scenario 1c: ESCO and EPCO
UPDATE bsn SET ESCO = 0.75
UPDATE bsn SET EPCO = 0.3
RUN
```

Example2:

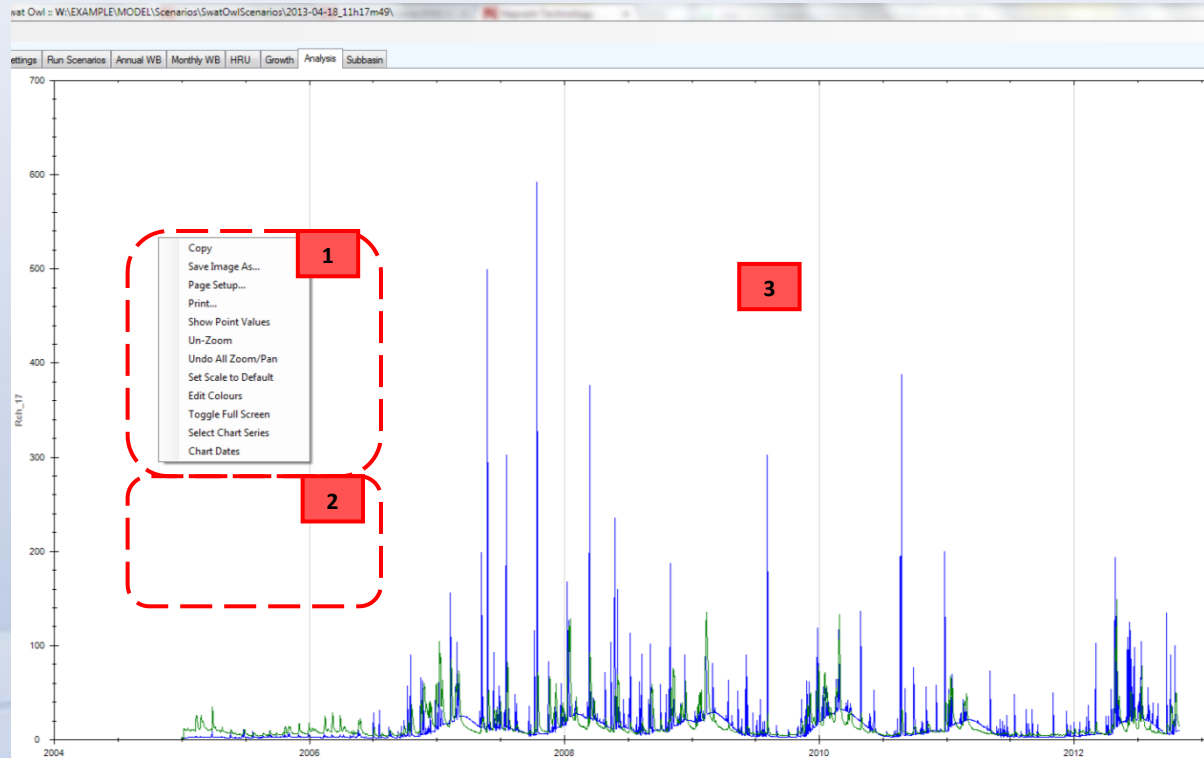
```
#Scenario 1b: Update ESCO
UPDATE hru SET DEP_IMP = 4500 WHERE SOIL LIKE '%WICK%'
UPDATE hru SET DEP_IMP = 1510 WHERE SOIL LIKE
'%BANBURY%'
RUN
```



Analysis

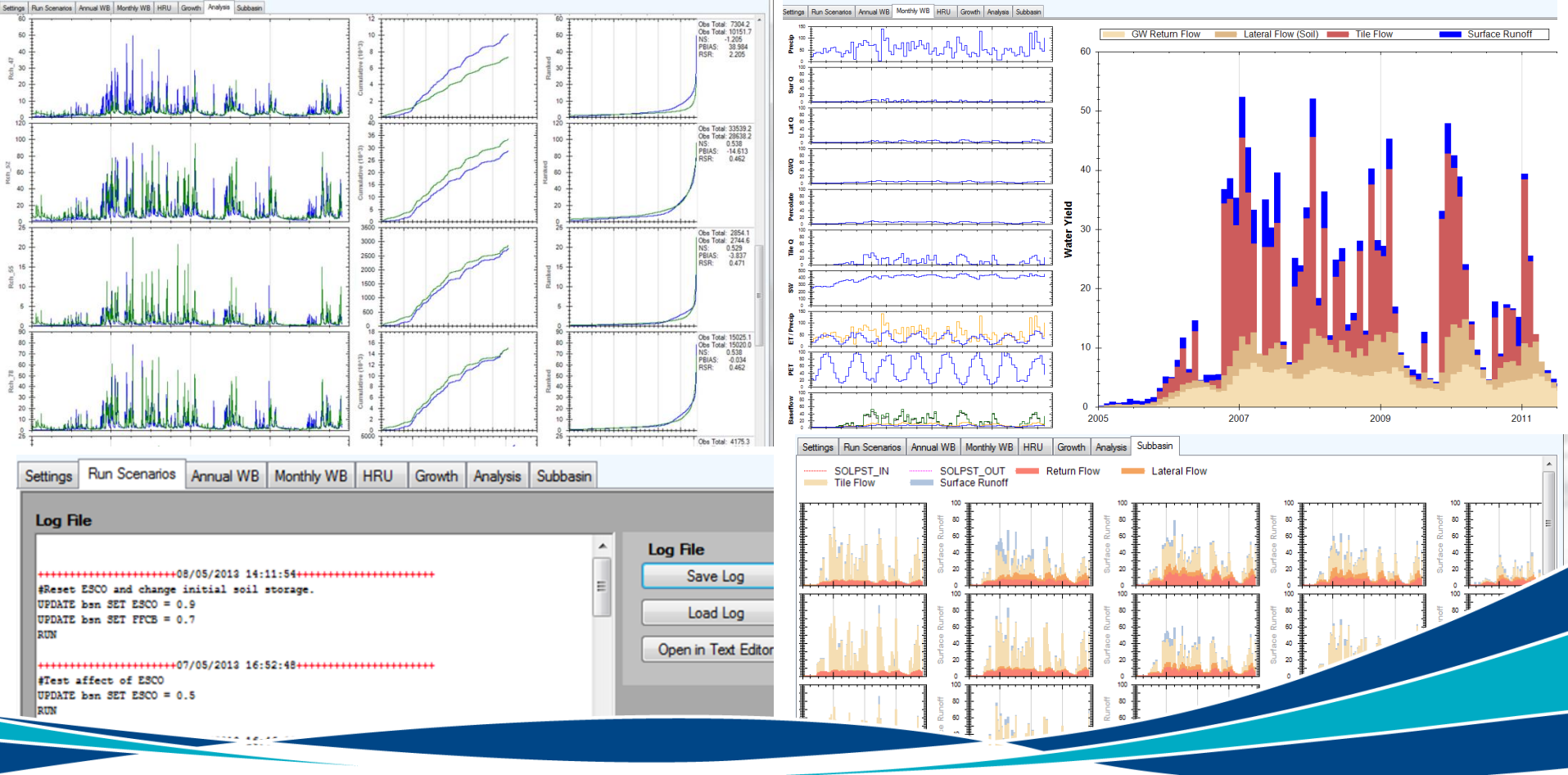


Graph Functionality



Objectives

- Quick and easy way to visualise model outputs
- Quick and easy ways to automate changing of parameters and run SWAT.
- Visualisation enables greater understanding of the effect changes to SWAT parameters.



Thank you for listening.

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