Colorado's Decision Support Systems (CDSS)

Overview

Version: 2010-05-10

Duration: Approximately 45 minutes

Level: Introduction/Overview

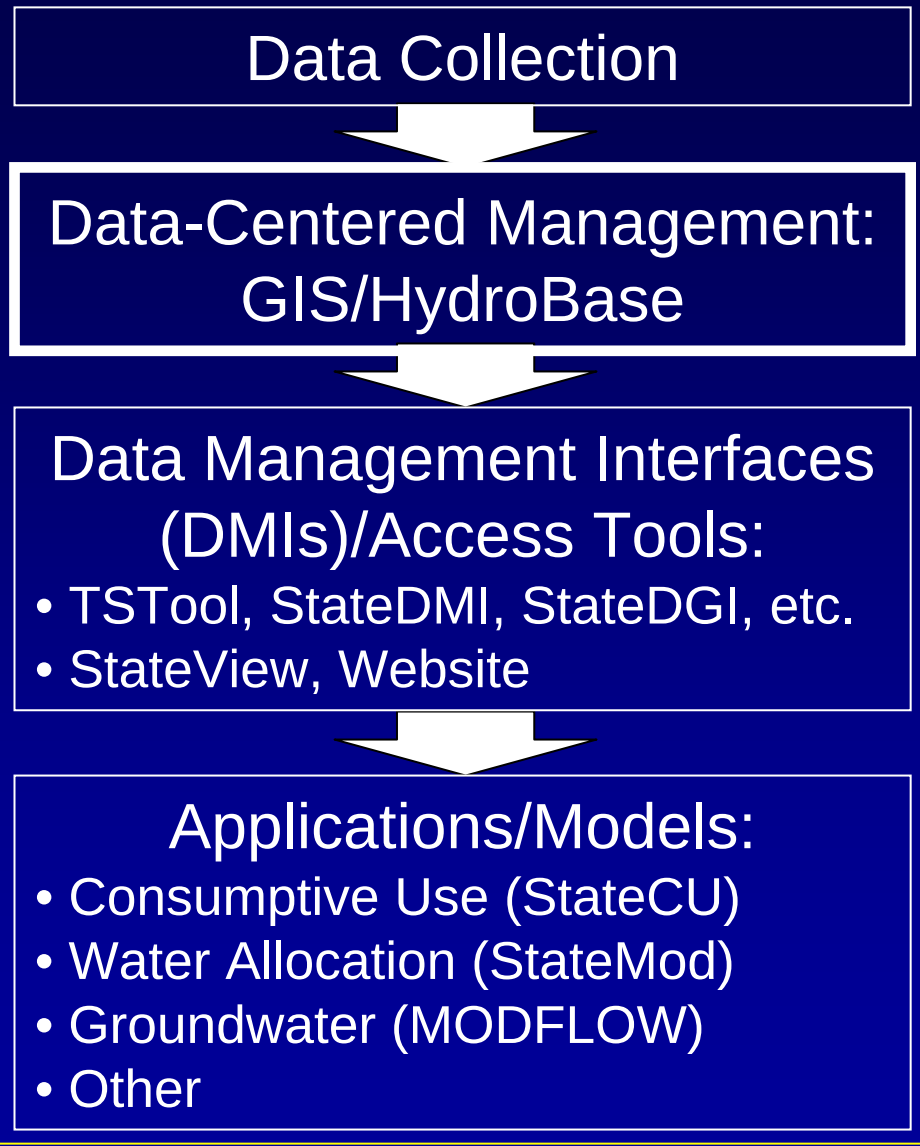
CDSS Overview

Colorado's Decision Support Systems (CDSS) are data and tools that help users make more informed decisions about Colorado's water resources.

http://cdss.state.co.us

Data-Centered Approach

- Open access to data
- Share data for multiple uses
- Applications focus on analysis and generating results/products



CDSS Includes

Water Resources Planning DSS (basin models):

- Colorado River (CRDSS)
- Rio Grande (RGDSS)
- South Platte (SPDSS)
- Arkansas (ArkDSS) – feasibility study in process

Integrated Systems

"CDSS" refers collectively to the Water Resources Planning (Basin) DSS, and other integrated DSS used by the State of Colorado.

The remainder of this presentation focuses on the Basin DSS aspects of CDSS, which provide core data and tools to analyze water supply issues and support more specialized DSS efforts.

More Information

Basin model documentation describes in detail the sources of data, estimates, and processes that were used to create the data sets, and summarizes results.

Numerous task memoranda, reports, software documentation, and other documents provide technical information and are available on the CDSS web site.

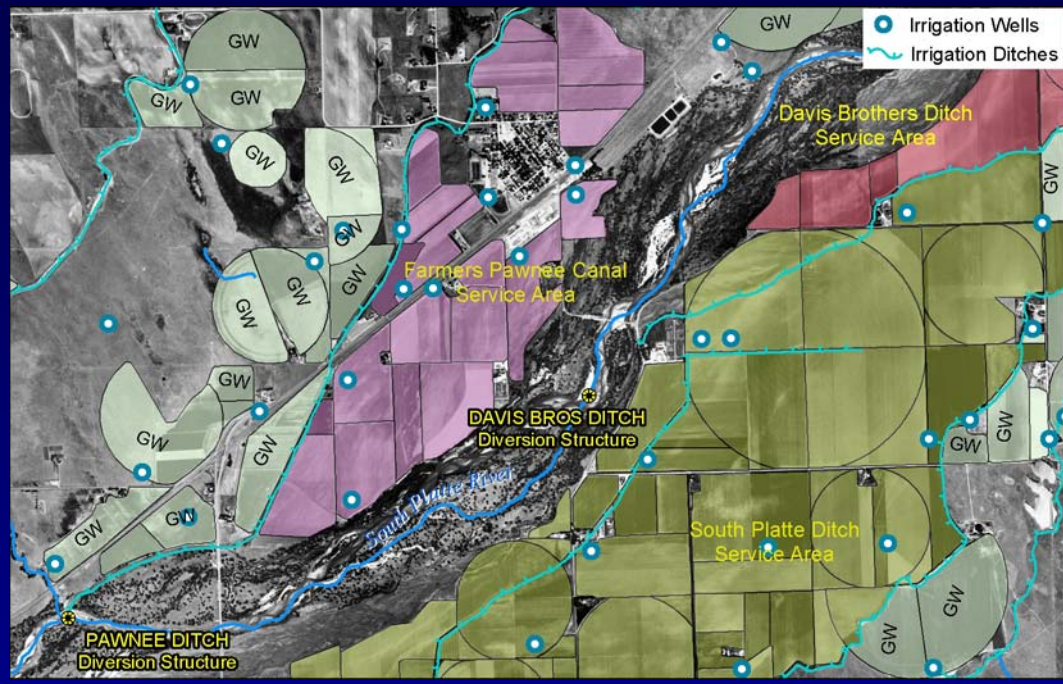
http://cdss.state.co.us (see Products links)

Main CDSS Activities/Areas

- Data collection
- Data management
- Software tools
- Baseline model data sets
- Access/distribution
- Management, coordination, application, extension

Data Collection – Irrigated Lands

- New evaluation approximately every 5 years
- Crop type
- Irrigation method
- Supply sources
  - Ditches
  - Wells
- Input to consumptive use analysis



Data Collection – Observations

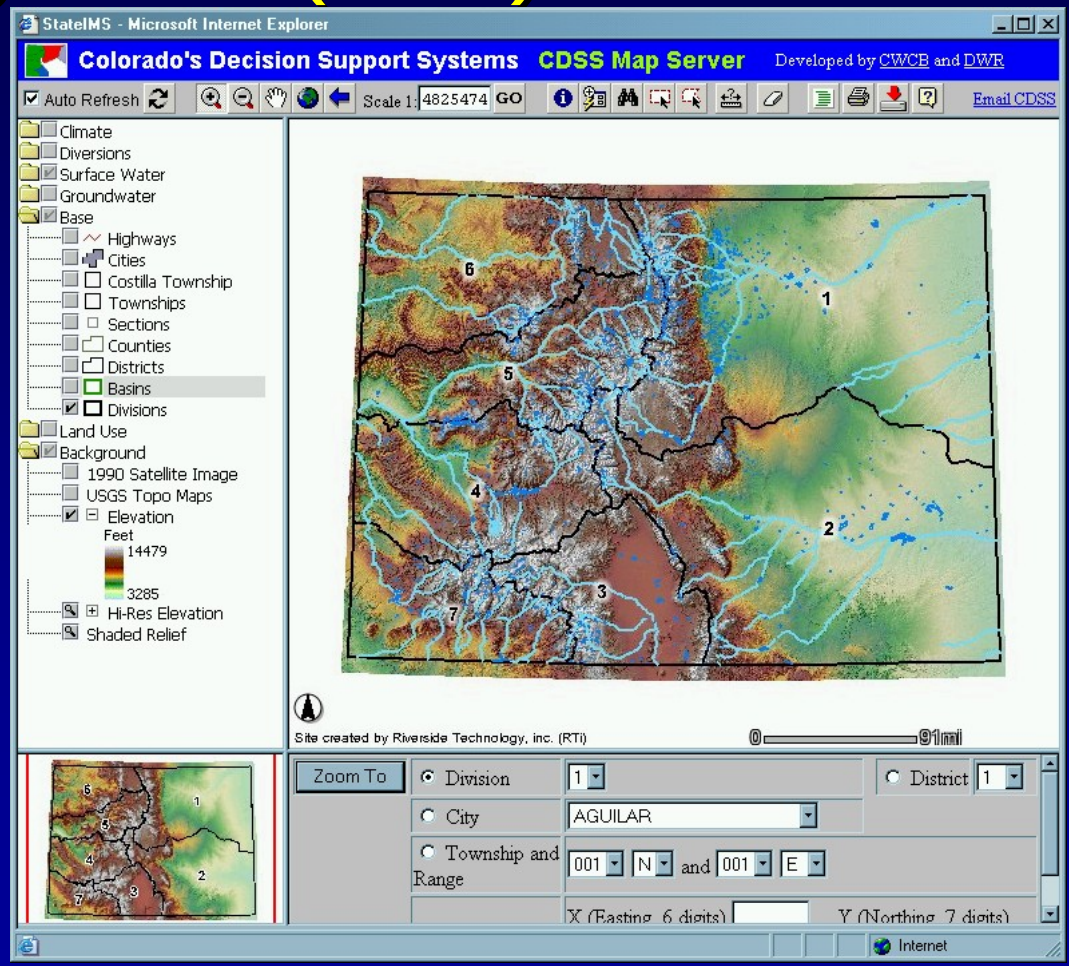
- New gages
- New observation wells
- Well tests
- GPS locates
- Additional data facilitates model calibration and water resource administration

Data Management – HydroBase

- Maintained by DWR
- Distributed as SQL Server Express on DVD with TSTool and StateView software (no real-time data)
  - Structures, diversion records, water rights
  - Climate and stream gages with time series
  - Well characteristics and permits
  - Irrigated lands
  - Many other useful data types
- Accessible via web (includes real-time data)
- Does NOT contain model results
- http://cdss.state.co.us (see View Data links)

Data Management – Geographic Information System (GIS)

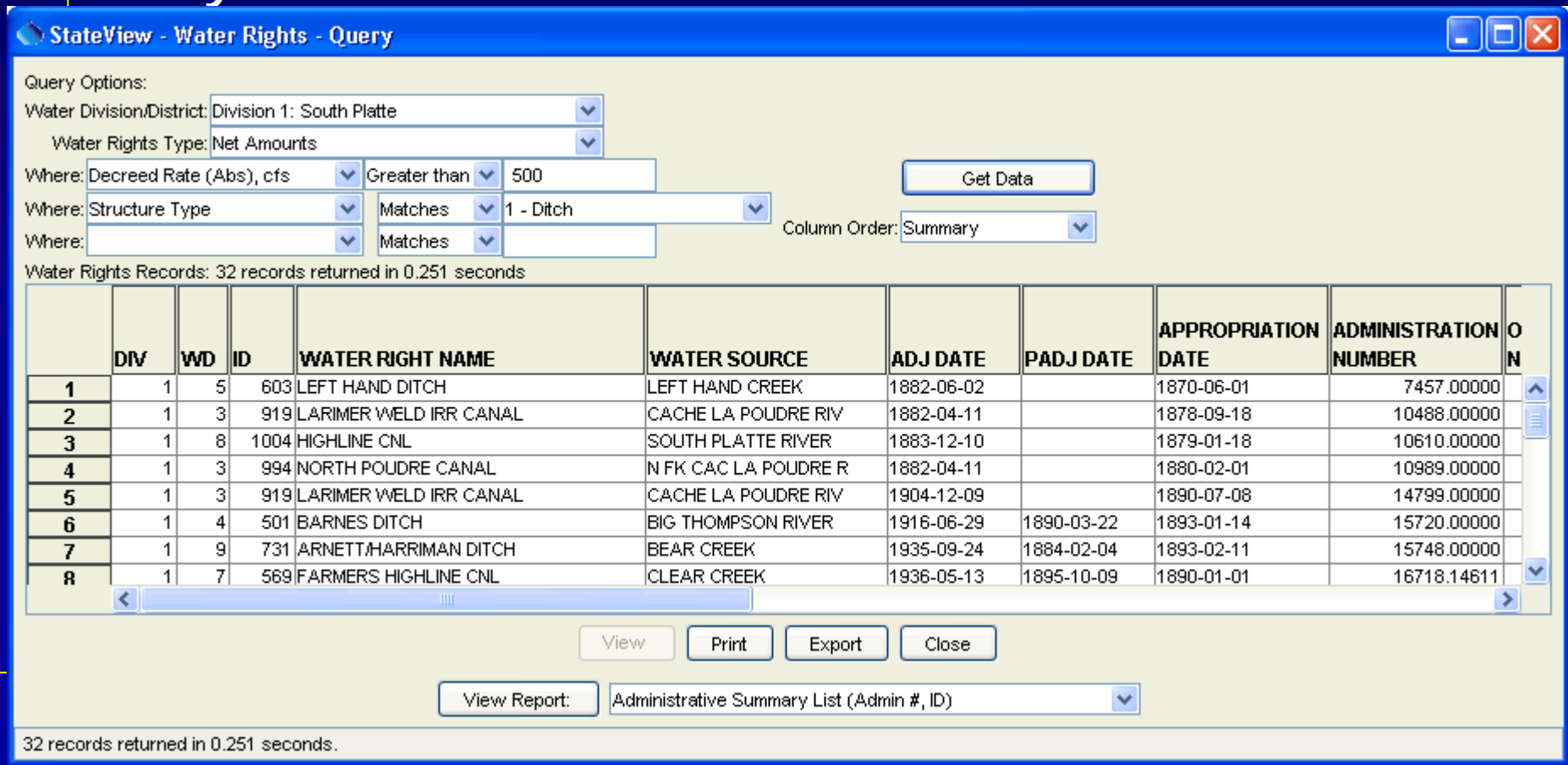
- Irrigated lands
- Point layers extracted from HydroBase
- Imagery and background layers
- Other useful layers



http://cdss.state.co.us (see Map Viewer and Products…GIS)

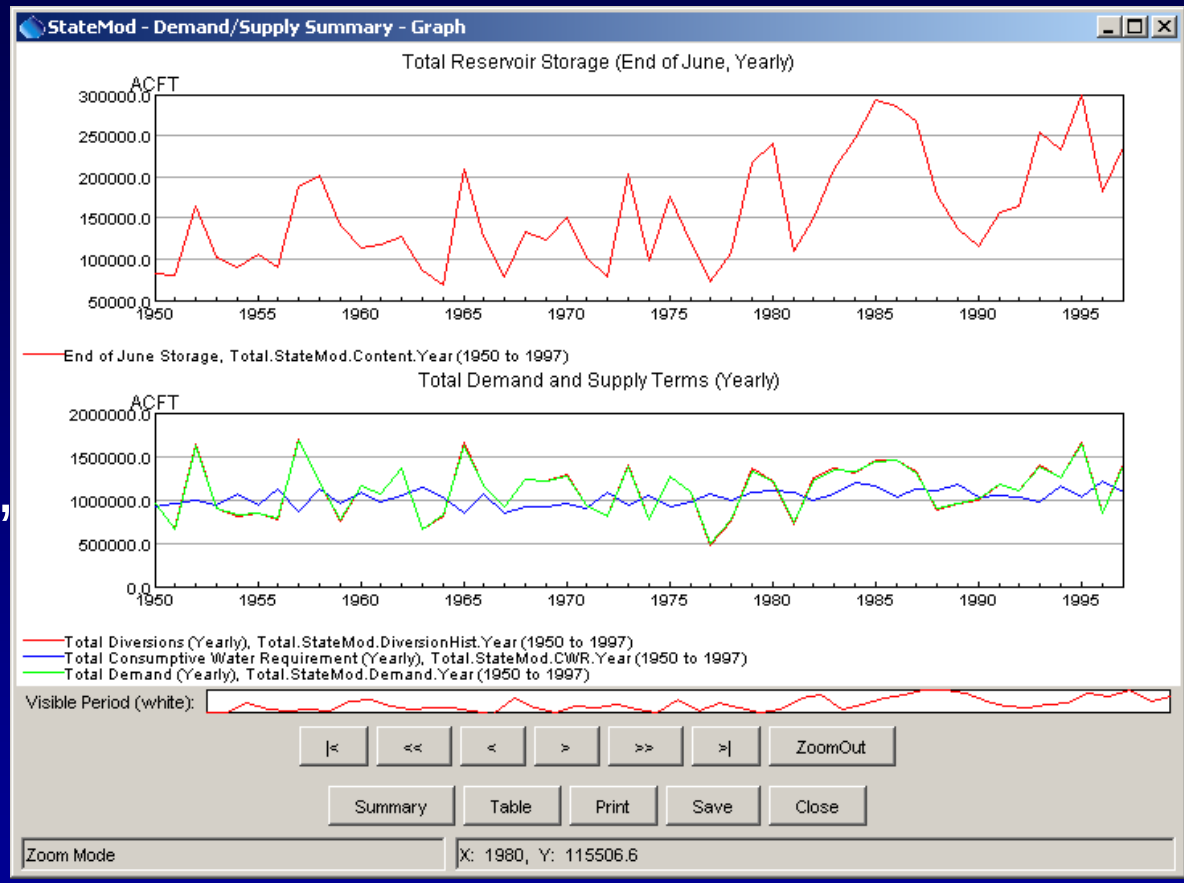
Software – StateView

- Desktop HydroBase viewer
- Available on HydroBase DVD
- Query filters
- Standard display tools
- Export data



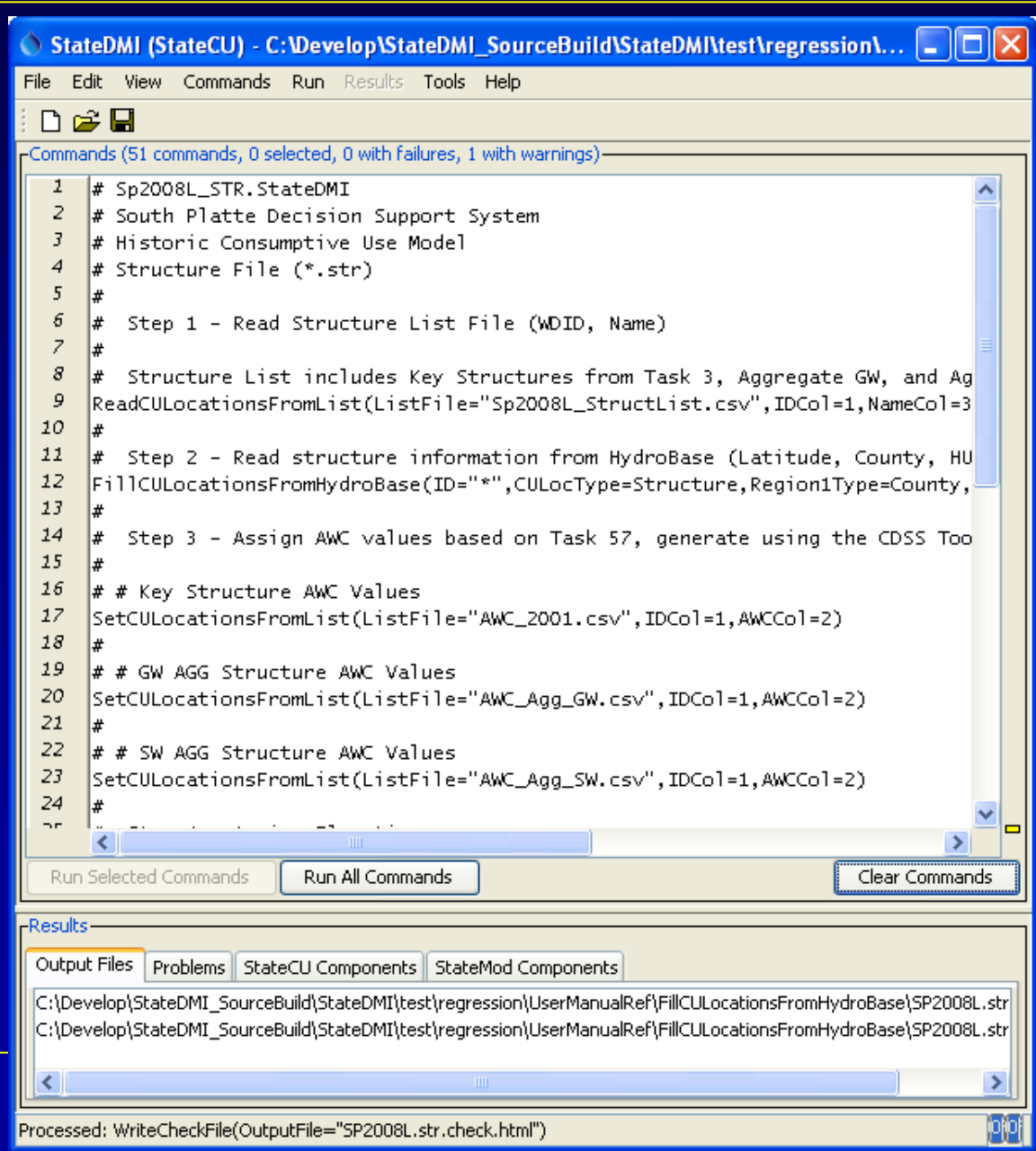
Software – TSTool

- Processes time series
- Reads model files, HydroBase, other inputs
- Filling, analysis, quality control, etc.
- Product generation
- Can be automated



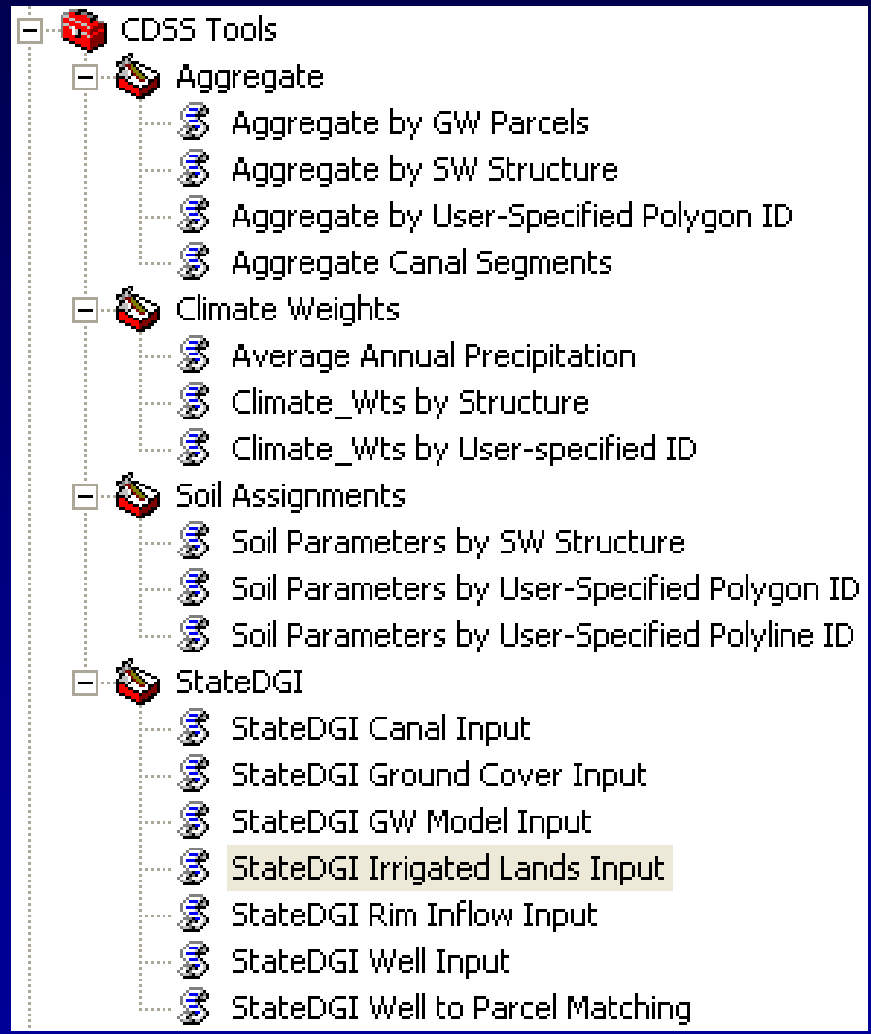
Software – StateDMI

- Processes input files for StateCU and StateMod
- Provides editors for commands
- Provides data viewers
- Can be automated



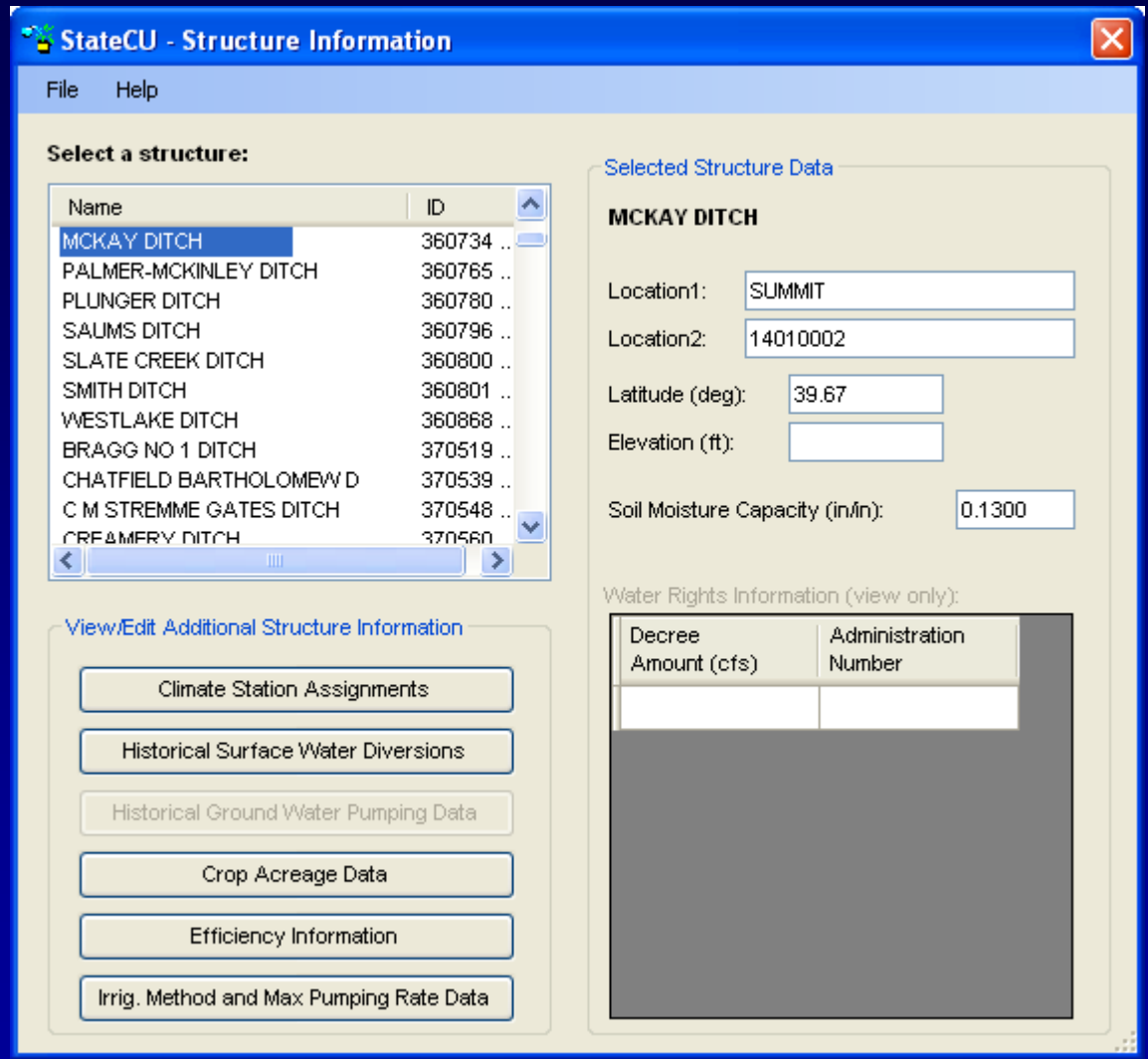
Software – StatePP, StateDGI

- Uses ArcGIS
- MODFLOW file generation
  - Recharge
  - ET
  - Wells
  - Drains
- Process StateCU/StateMod structure data to cells



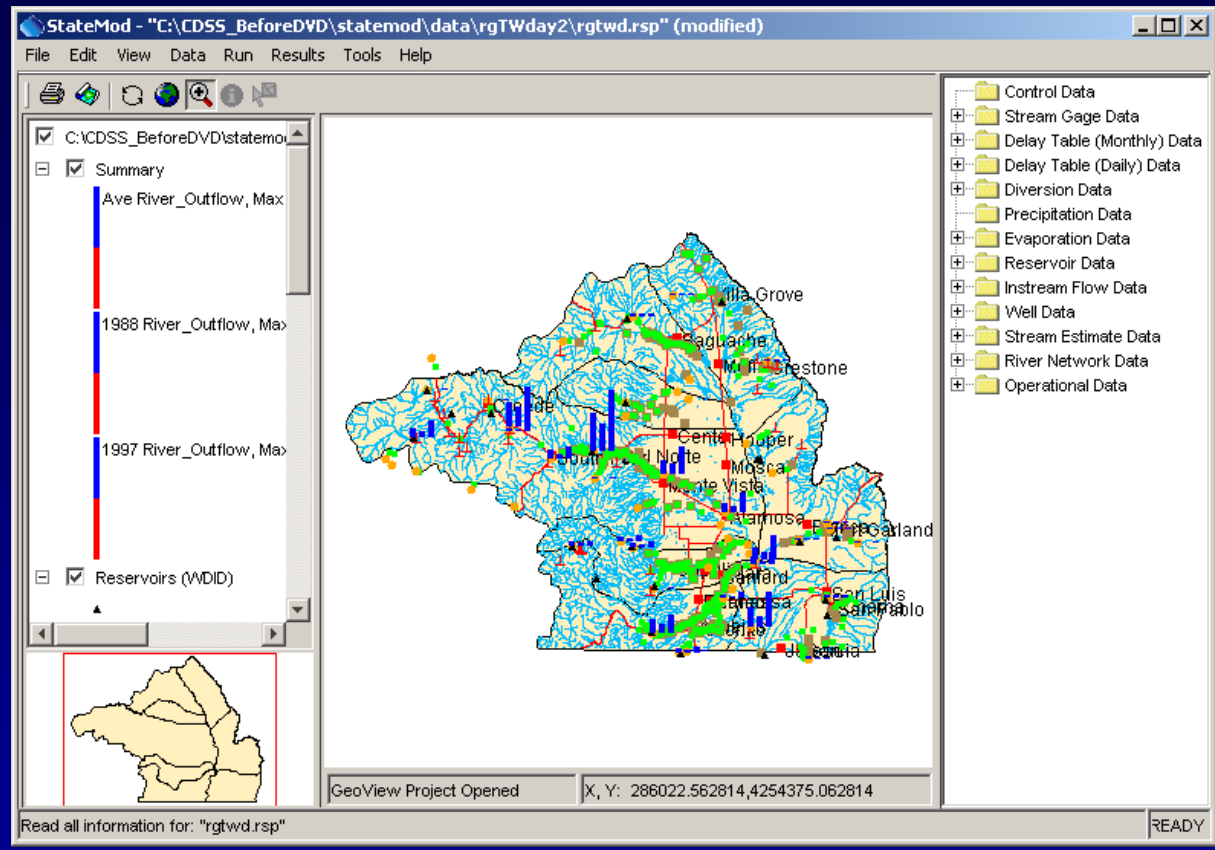
Software – StateCU Model

- Consumptive use model
- Compatible with StateMod and groundwater model
- Calculates agricultural, municipal, and industrial demands



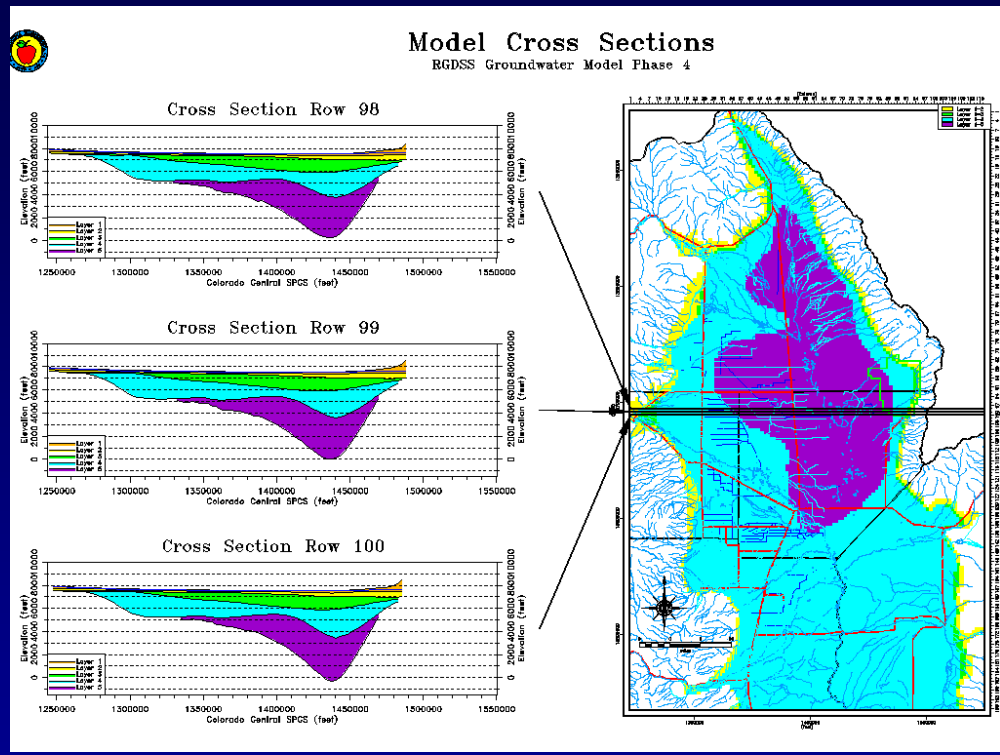
Software – StateMod Model

- Water allocation model
- Distributes water supply to meet demand based on system definition, water rights, and operations
- Shares files with StateCU and MODFLOW



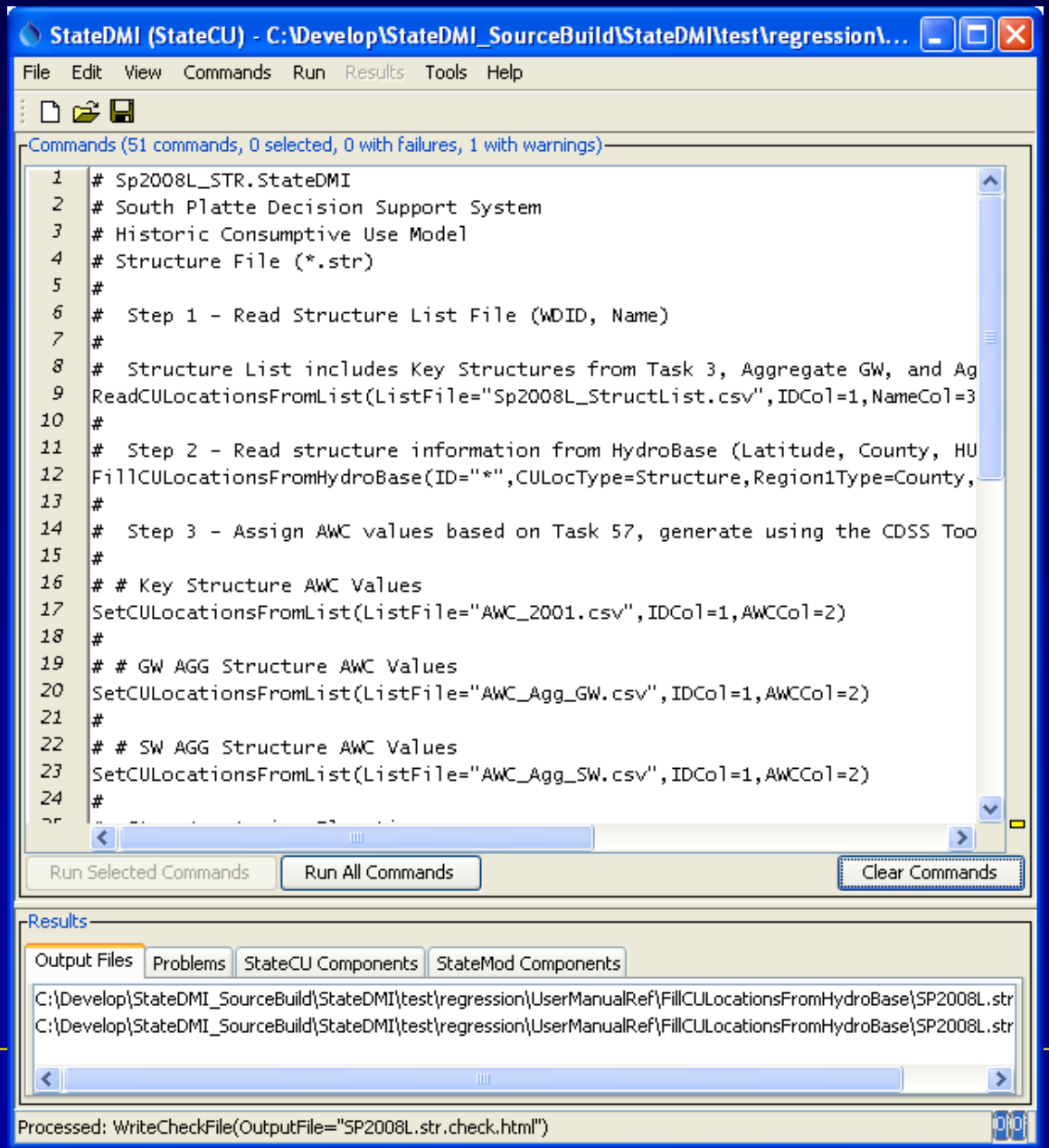
Software – Groundwater Model

- Based on USGS MODFLOW software
- Compatible with various visualization tools
- Rio Grande and South Platte data sets



Data Set Processing

- Use HydroBase, GIS for input
- Automate processing with TSTool, StateDMI, StateDGI, StatePP, etc.
- Follow CDSS modeling procedures
- Repeatable

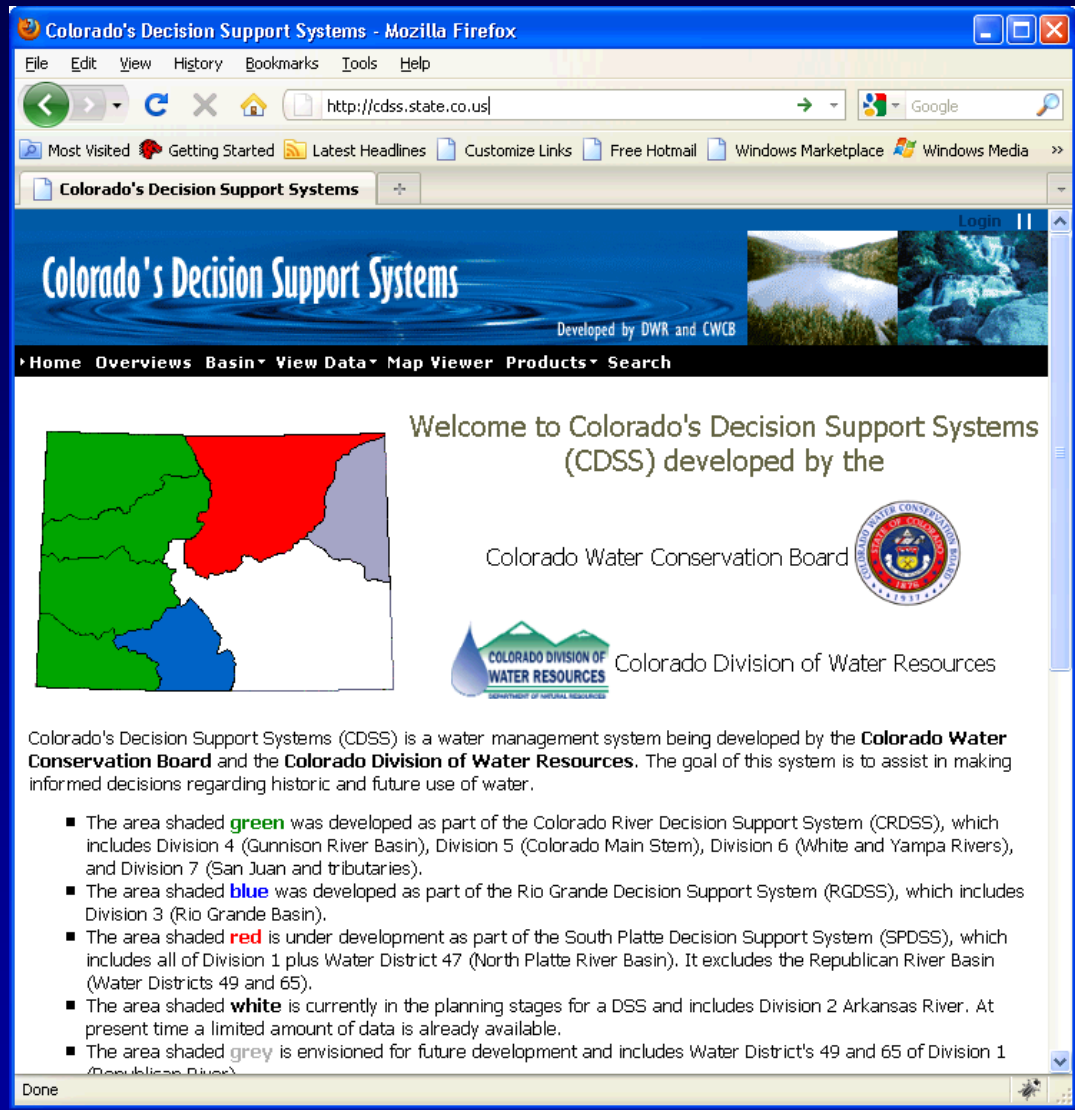


Baseline Model Data Sets

- Created for major river basins
  - Demand, supply, allocation, water balance
- StateCU, StateMod, MODFLOW files are maintained separately, and specific files are shared where needed
- Updated periodically to incorporate new data
- Available on CDSS web site
- Model output files are typically not distributed due to size – must rerun models
- Documentation describes input, processing, and results

Access to Data and Tools

- CDSS website: cdss.state.co.us
- HydroBase DVD
- Email: ray.alvarado@state.co.us
- See also presentations for specific tools



CDSS Future Activities

- Complete SPDSS implementation
- Complete ArkDSS feasibility study, followed by full DSS implementation
- Maintain/update existing DSS
- Use CDSS for specific applications, such as the Colorado River Water Availability Study (CRWAS)