

Savannah River Basin Study

Role of USGS

**Cooperative Agreement with SCDNR and
GADNR (2001)**

2 + year study

Period of study estimates 1950-2000 WYs

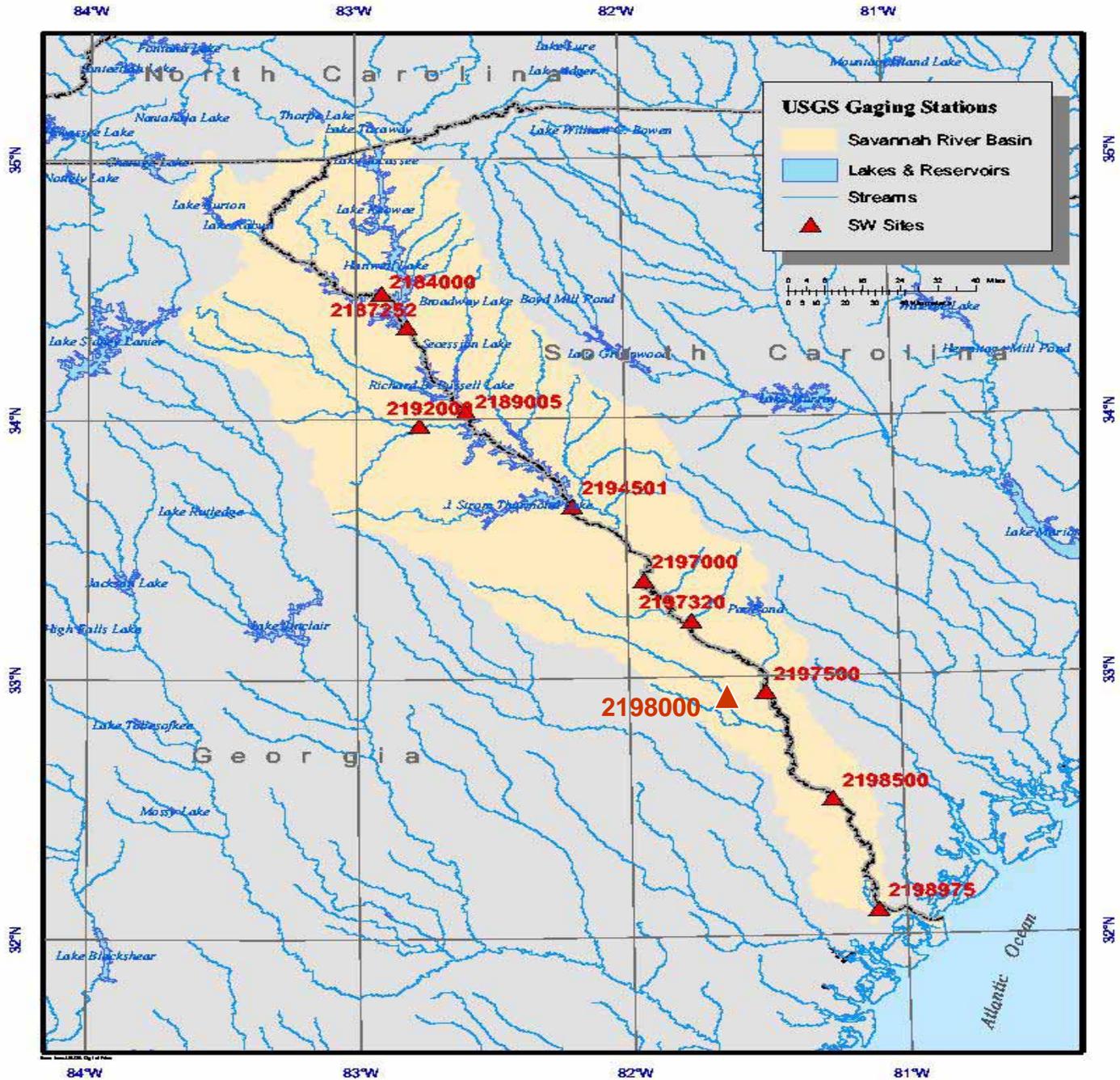
**Supply daily discharges at 9 sub-basin
locations for use in HEC model**

**Estimated discharges to be determined at
ungaged locations and missing periods of
gaged data**

Study Area

- **9 Sub-basins of the Savannah River**

1. Mouth of the Tugaloo River
2. Lake Hartwell Dam
3. Lake Richard B. Russell Dam near Calhoun Falls
4. Lake J. Strom Thurmond Dam near Clarks Hill
5. USGS Station 02197000, Savannah River at Augusta
6. USGS Station 02197320, Savannah River near Jackson
7. USGS Station 02197500, Savannah River at Burtons Ferry Bridge near Millhaven
8. USGS Station 02198500, Savannah River near Clyo
9. Savannah River at Savannah, Ga.



Estimation of Daily Discharges

- Period studied – 1940 – 2000 WYs
- Methods used – multi-Linear regression of selected index gages using:

Drainage areas

Lagged Daily Discharges

Cross products of DA and Lagged data to make final volume adjustments of intervening discharges

Estimation of Daily Discharges

- Similar sized basins used where possible for correlations
- Correlations were hydrologically and statistically compared
- Daily discharge hydrographs were also used to graphically compare results

Estimation of Daily Discharges

- **Augusta to Jackson/Millhaven (Preliminary results)**
- Brier Creek nr Millhaven used as index site
- Standard error of estimate – about 15%
- **Millhaven to Clyo (Preliminary Results)**
- Brier Creek nr Millhaven used as index site
- Standard error of estimate – about 12%
- Some periods show large negative flows

Estimation of Daily Discharges

- **Clyo to Savannah (Preliminary results)**
- Brier Creek nr Millhaven used as index site
- Drainage area ratio adjustment also used
- Standard error of estimate – about 10%

- **More specific details of estimation methods and results for all sub-basins will be in the final Report**

What has been done

- Initial computations completed for all 9 sub-basins
- Still some work to be done on the upper reaches
- Very Rough draft of report
- Preliminary estimates provided to COE for initial model input

What's left to do

- **Verify all Sub-basin estimates**
- **Re-run estimation routing in upper part of the basin**
- **Minimize and quantify error of estimated discharges**
- **Complete/Finalize the daily discharge estimates for the entire basin**
- **Finalize report – Furnish final data to States and COE**

Helpful Flow Statistics for Scenarios

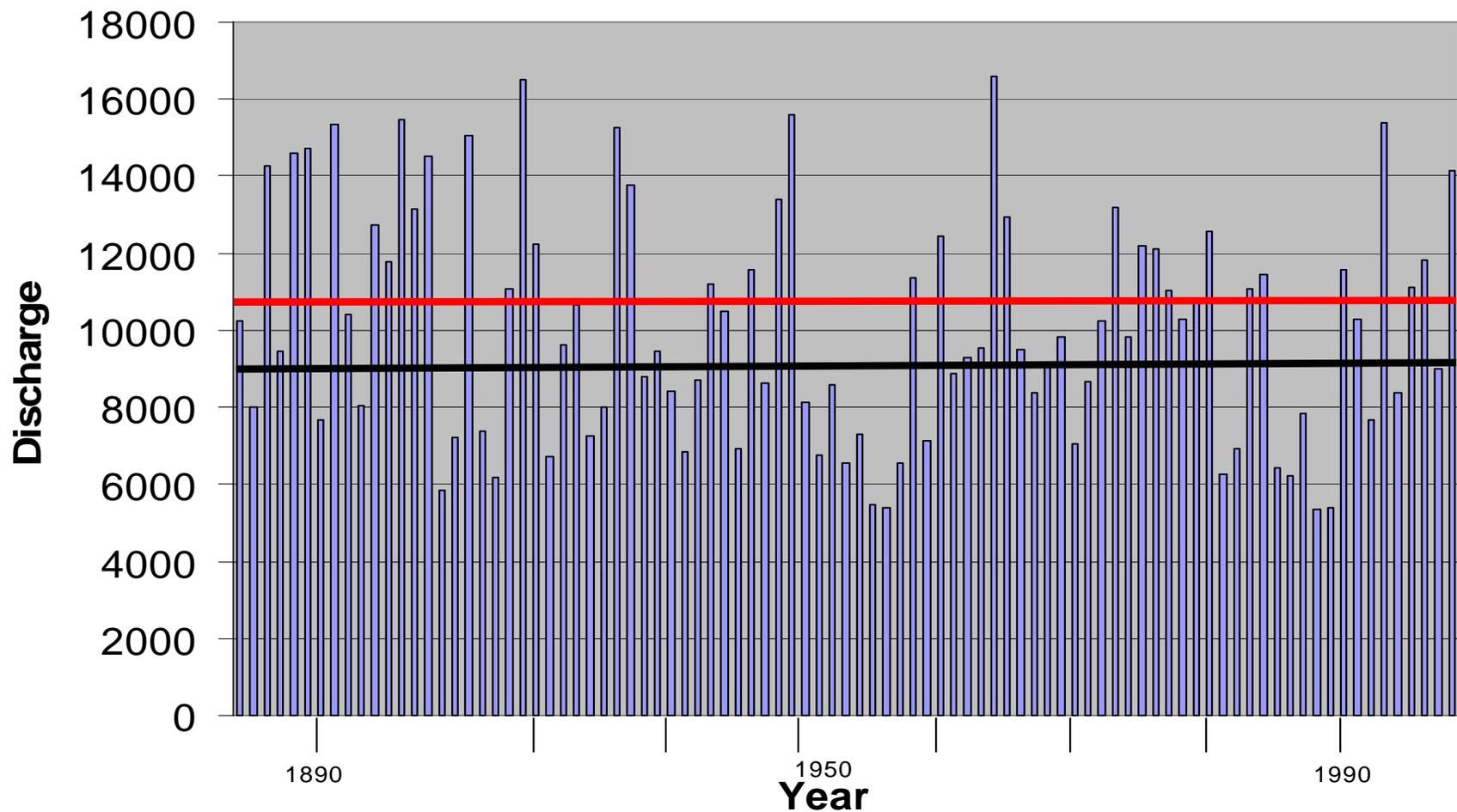
- Mean annual and POR years for comparison of drought and normal and wet years
- Flow duration stats for comparisons
- Others ?

Annual Mean Discharges

Prior to regulation

02197000

Post regulation



POR Flow Duration (1998)

% Exceedence	Q	% Exceedence	Q
95.0	3273.4	50.0	6994.9
90.0	4002.9	45.0	7469.9
85.0	4573.8	40.0	7944.9
80.0	5033.9	35.0	8604.7
75.0	5365.5	30.0	9518.7
70.0	5697.1	25.0	10812.0
65.0	6019.4	20.0	12628.0
60.0	6336.2	15.0	15290.2
55.0	6653.1	10.0	19102.0
		5.0	26473.6

Questions?

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