

SECARB Black Warrior Coal Test

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PRINCIPAL SPONSOR

U.S. Department of Energy - NETL

PROGRAM TEAM

SSEB, Virginia Tech - **Administrative Lead**

Geol. Survey of AL - **Technical Lead, Geology**

SCGCS (University of Alabama) - **Engineering**

Southern Company/EPRI - **MMV**

Institute for Clean Energy Technology (MSU) - **MMV**

Univ. British Columbia - **Analytical**

Oak Ridge National Laboratory - **Analytical**

ARI - **Reservoir Simulation**

CCP2 - **Reservoir Modeling**

Denbury Resources - **CO₂**

HighMount E & P - **CBM well**



WHY COAL?

CO₂ capacity > 69 Gt (35 yr) in US.

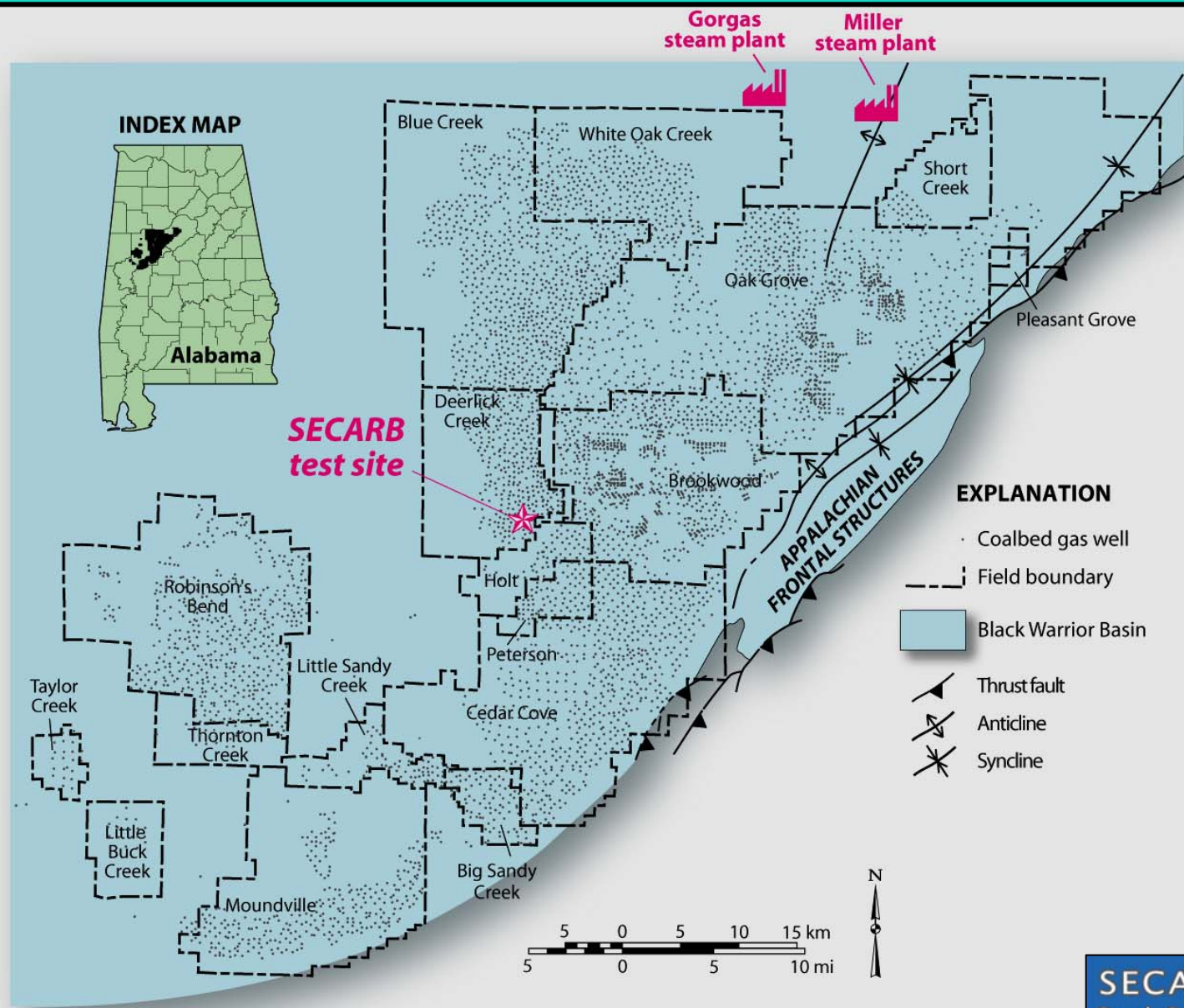
CO₂-ECBM potential ~ 4.3 Tcm (150 Tcf).

**Shallow reservoir (150-1500 m) with low
P&T can reduce compression cost**

**Coal is abundant near major CO₂ emission
sources, such as power plants.**

**Gas is stored in coal securely by adsorption
rather than by free storage or solution.**

BLACK WARRIOR TEST SITE



EXPLANATION

- Coalbed gas well
- - - Field boundary
- Black Warrior Basin
- ▲ Thrust fault
- ↗ Anticline
- ✱ Syncline

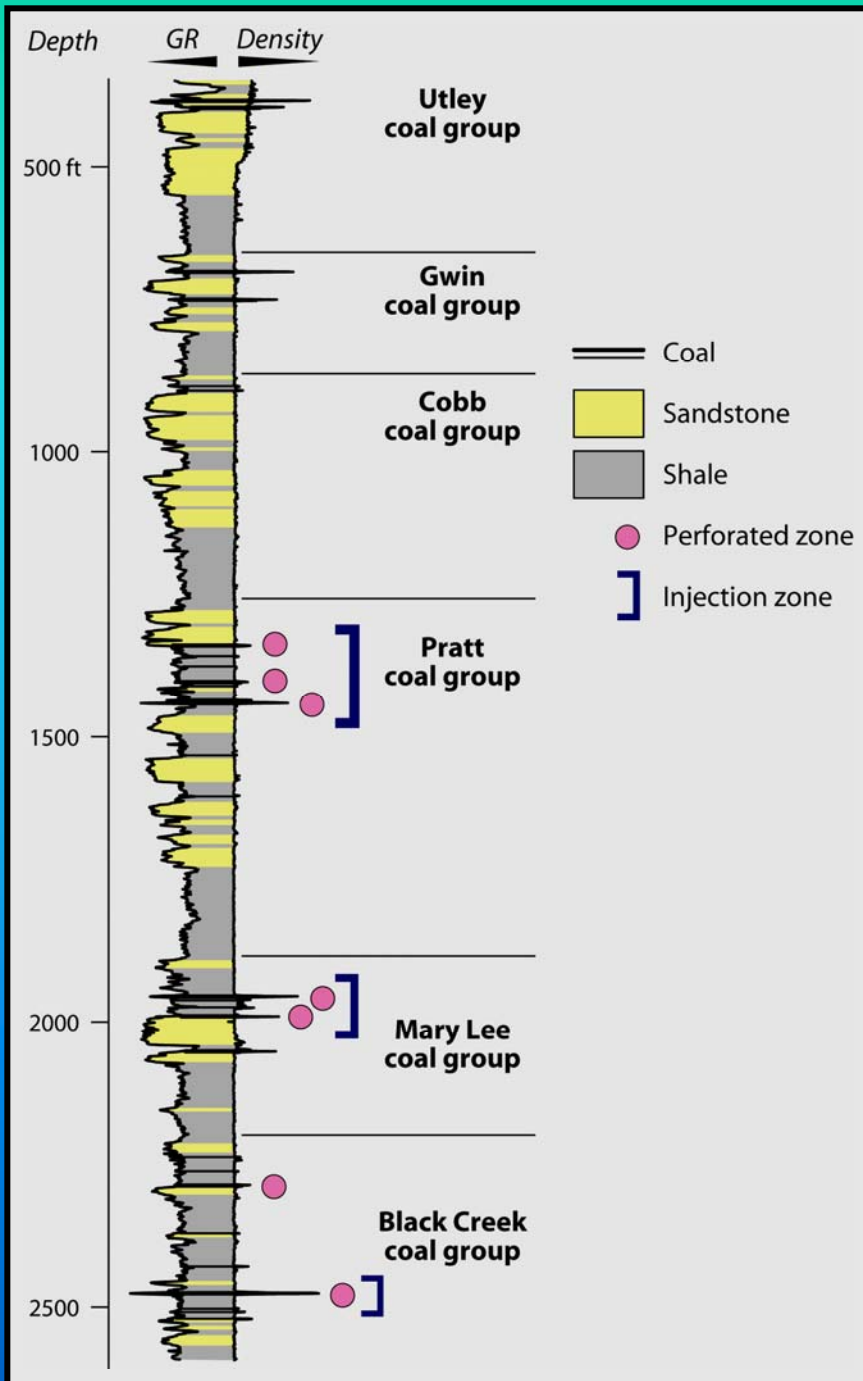
JOBSON 24-14 #11 WELL DEERLICK CREEK FIELD

SECARB
Coal Group

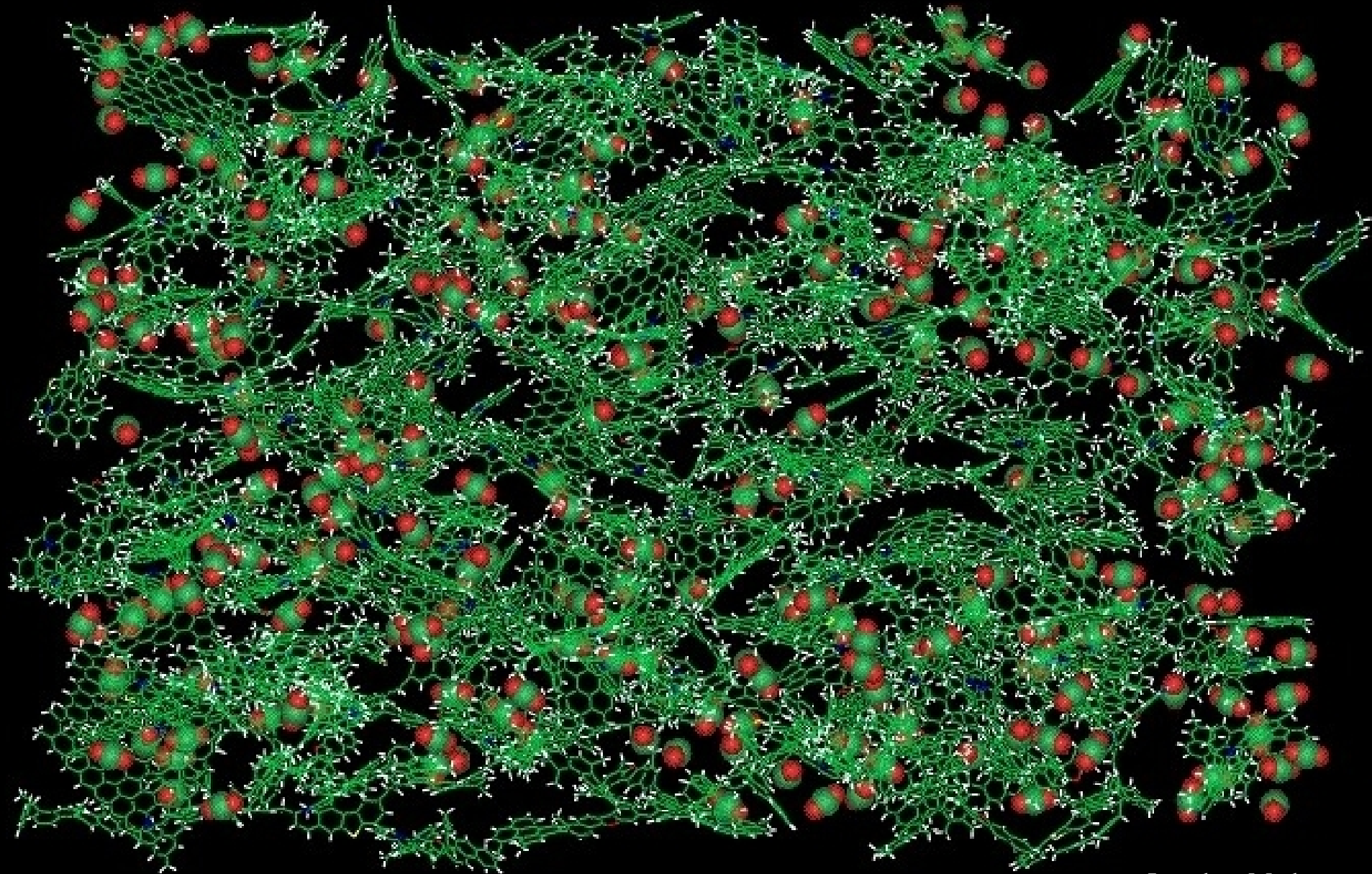


POTTSVILLE STRATIGRAPHY

Jobson 24-14 #11
SECARB test well
Deerlick Creek Field

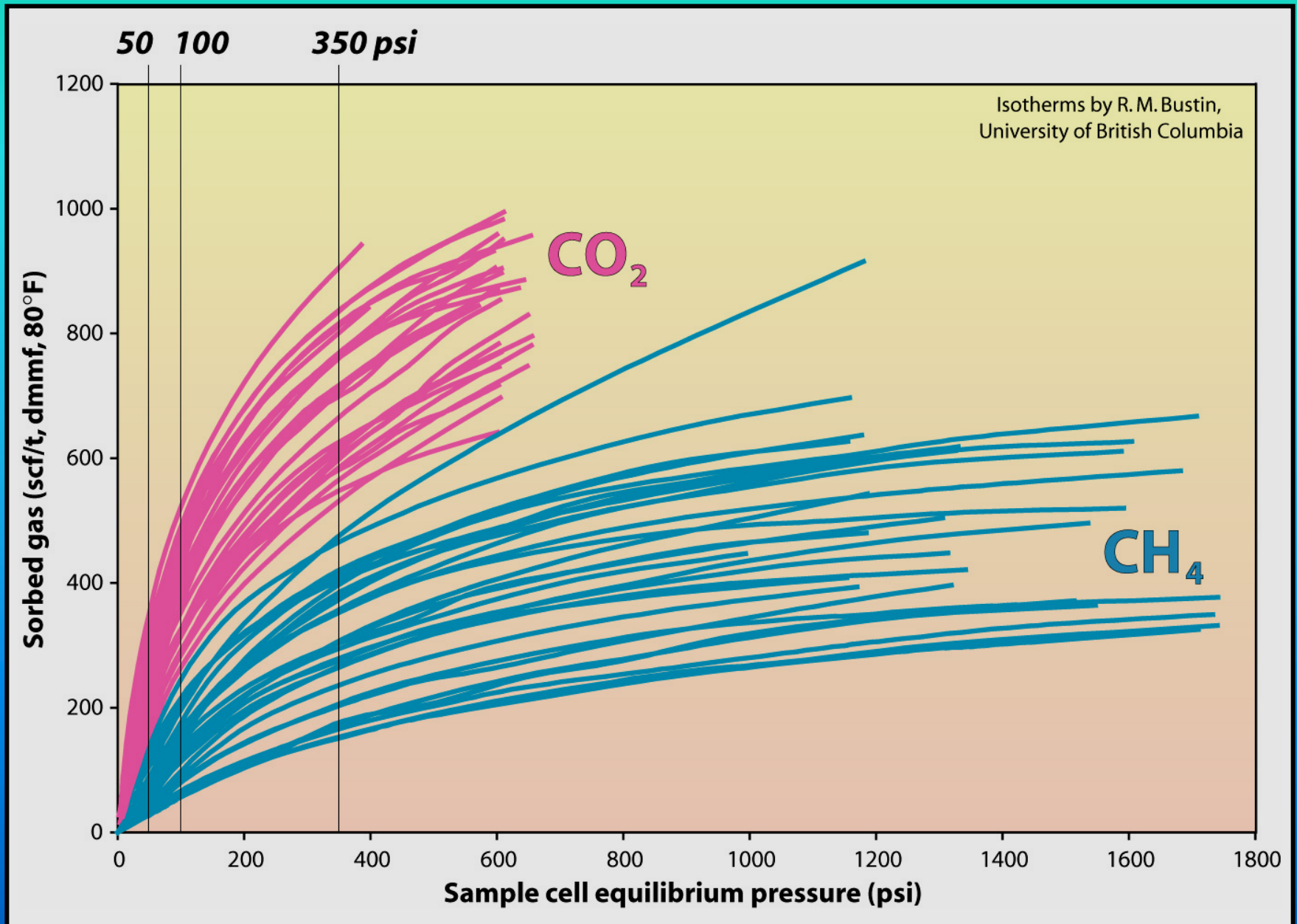


MOLECULAR MODEL - SORBED CO₂

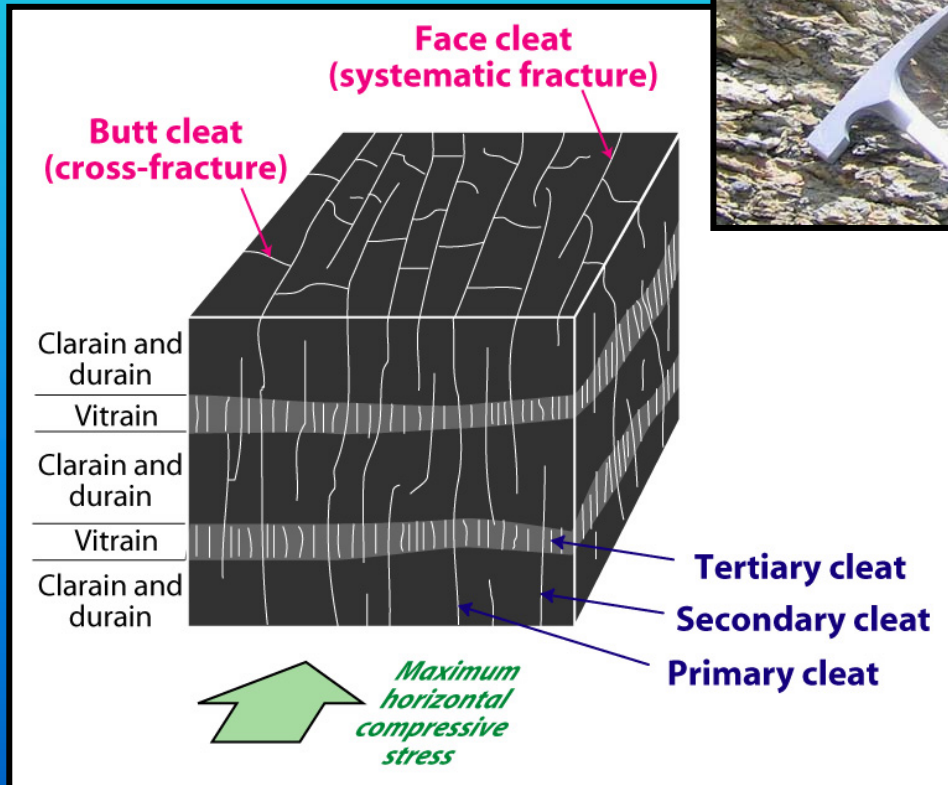


courtesy Jonathan Mathews

POTTSVILLE ISOTHERMS, ALABAMA

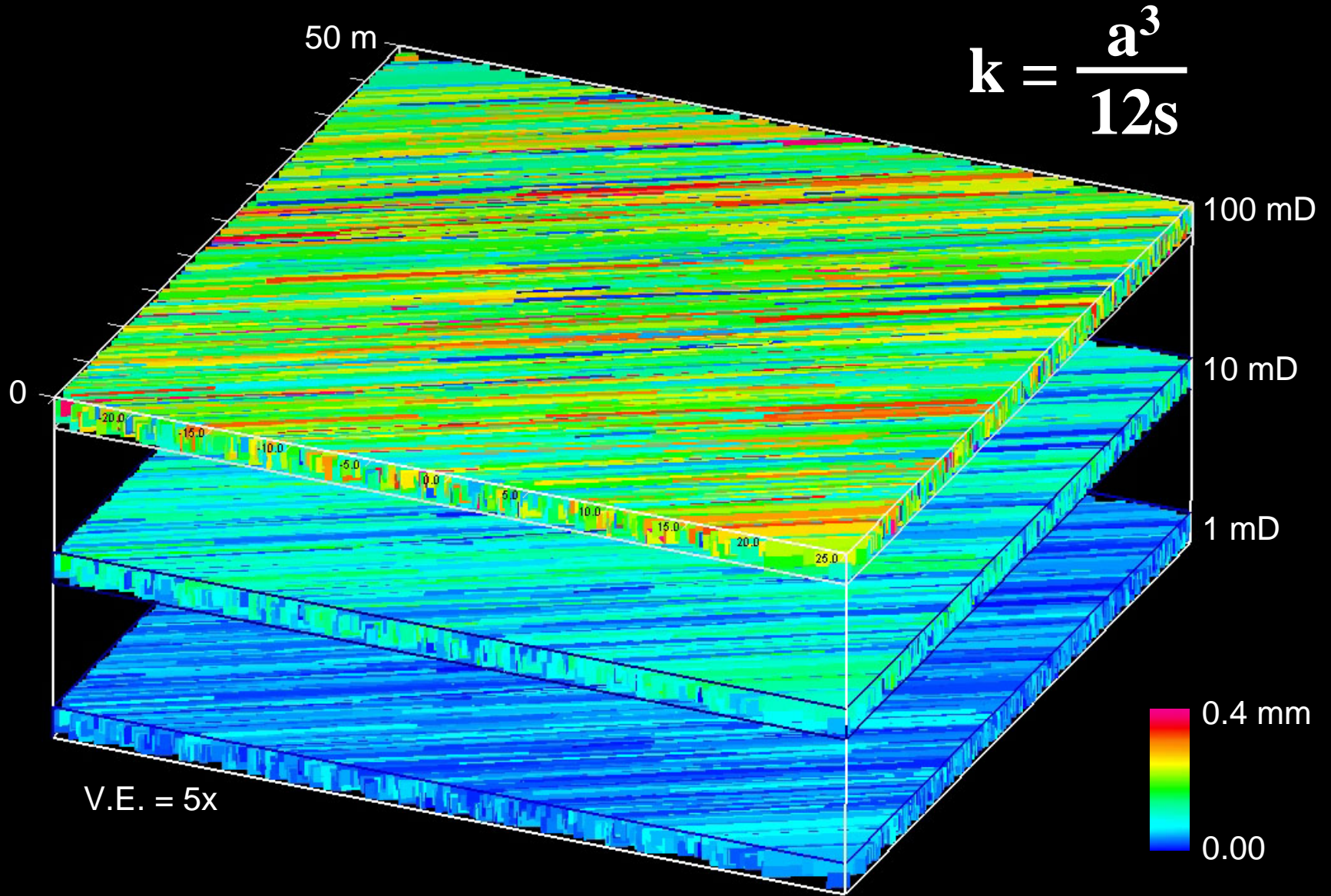


DUAL POROSITY

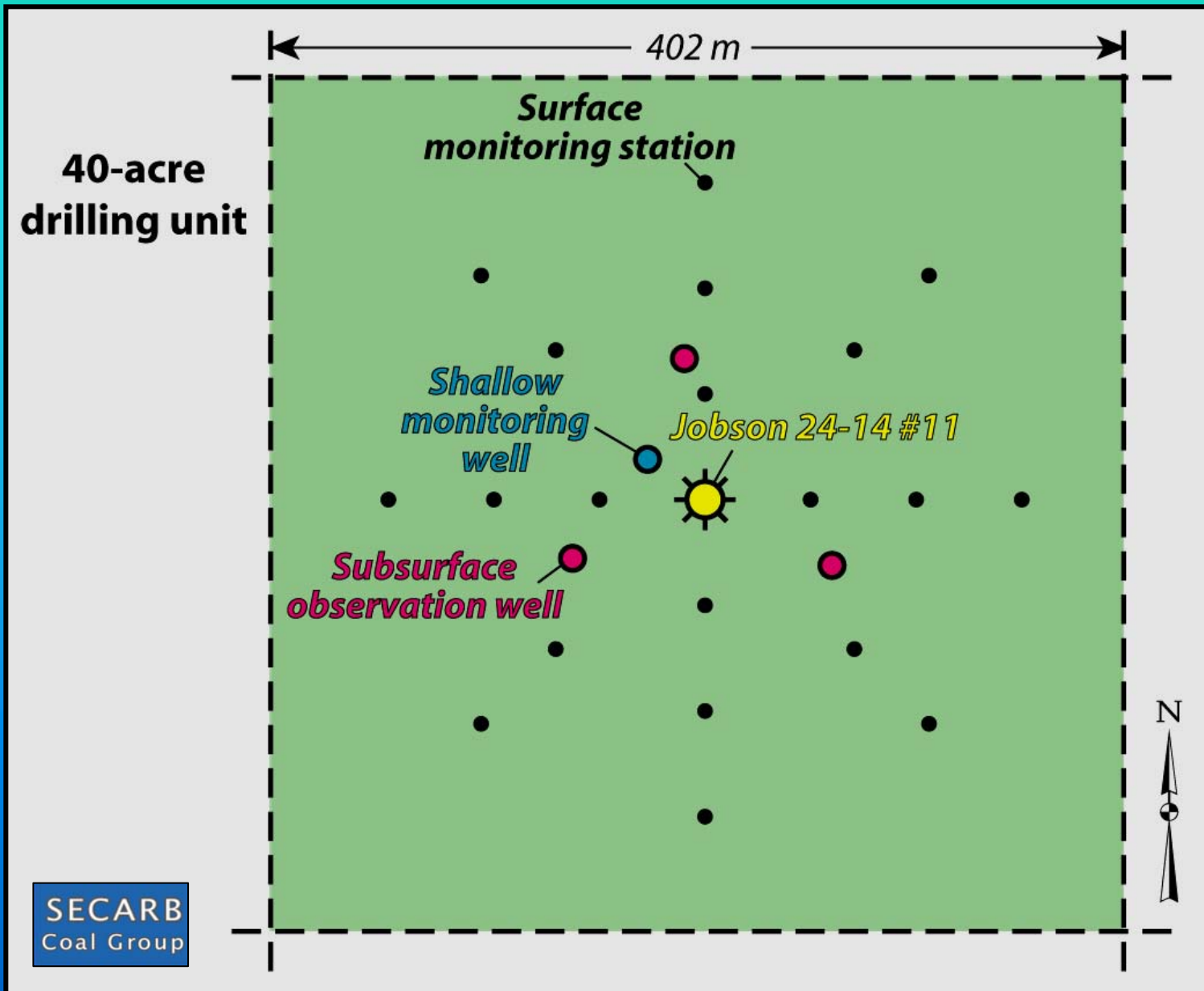


Fractures Facilitate Flow

COAL PERMEABILITY



MONITORING LAYOUT

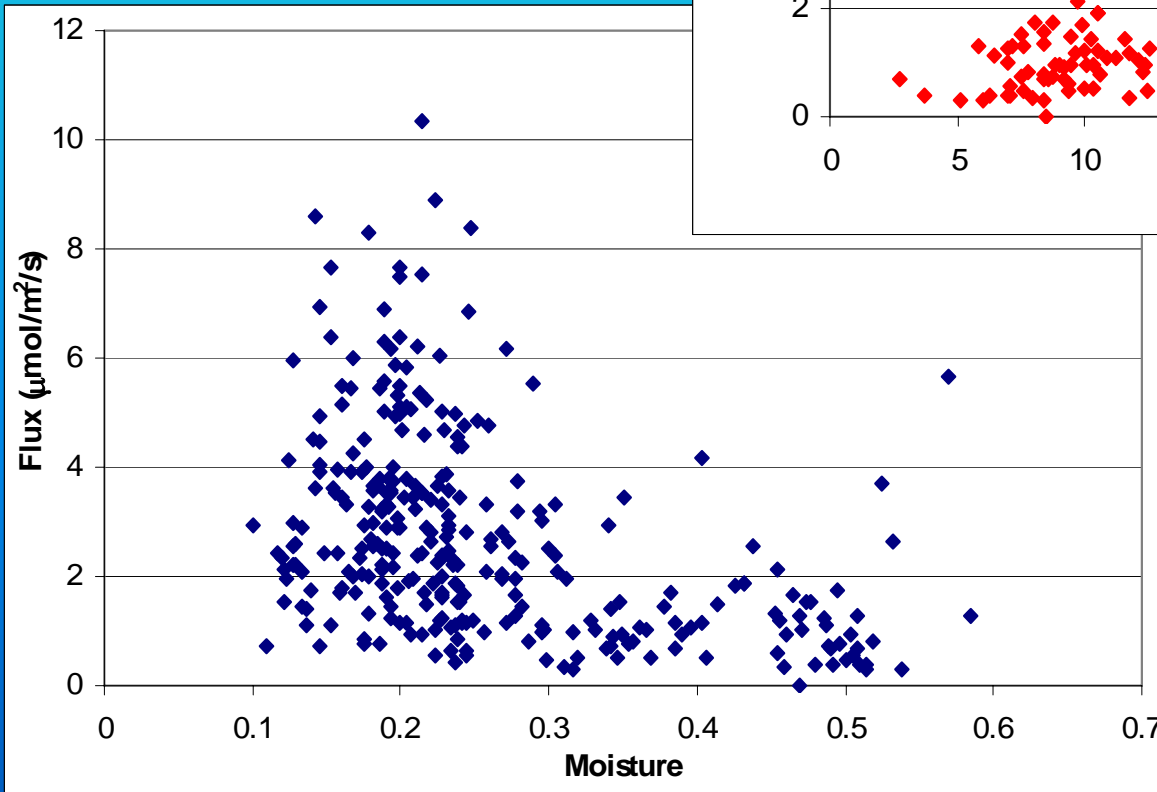
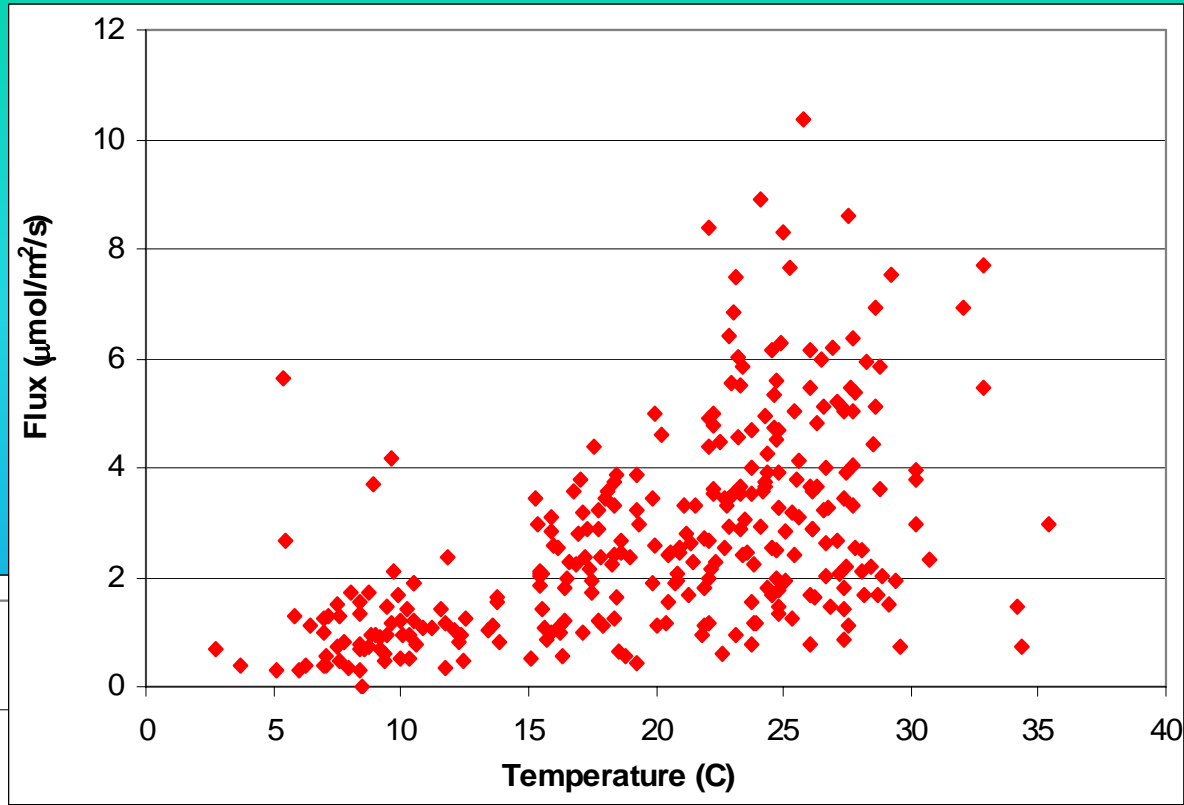


SURFACE MONITORING

Southern Company
NETL



Soil Flux vs. Temperature and Soil Moisture



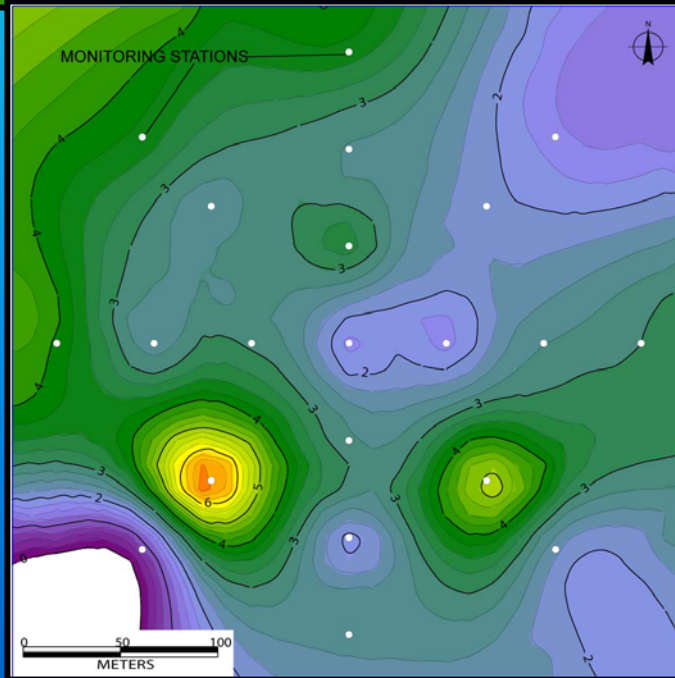
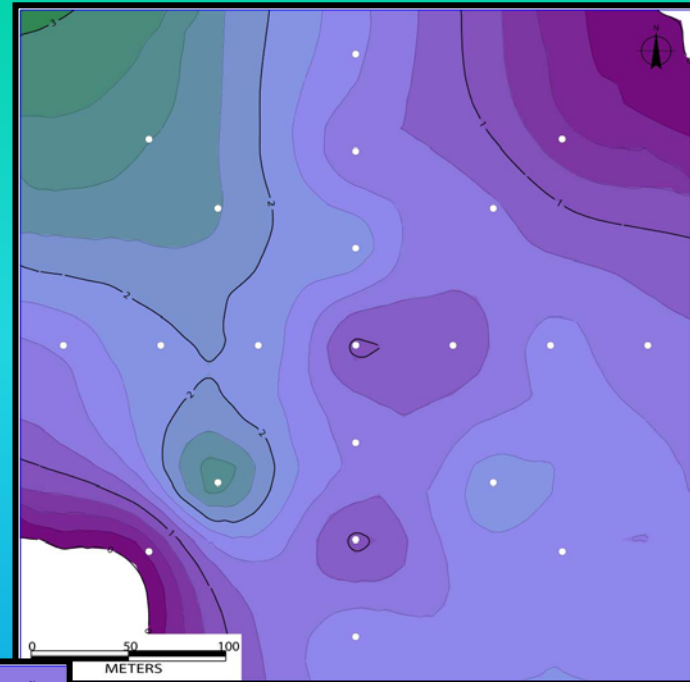
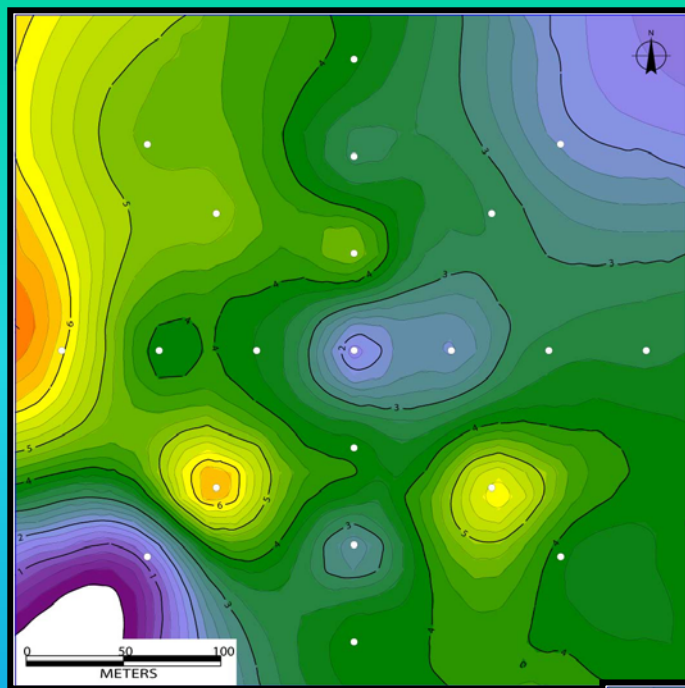
Seasonal averages

fall

summer

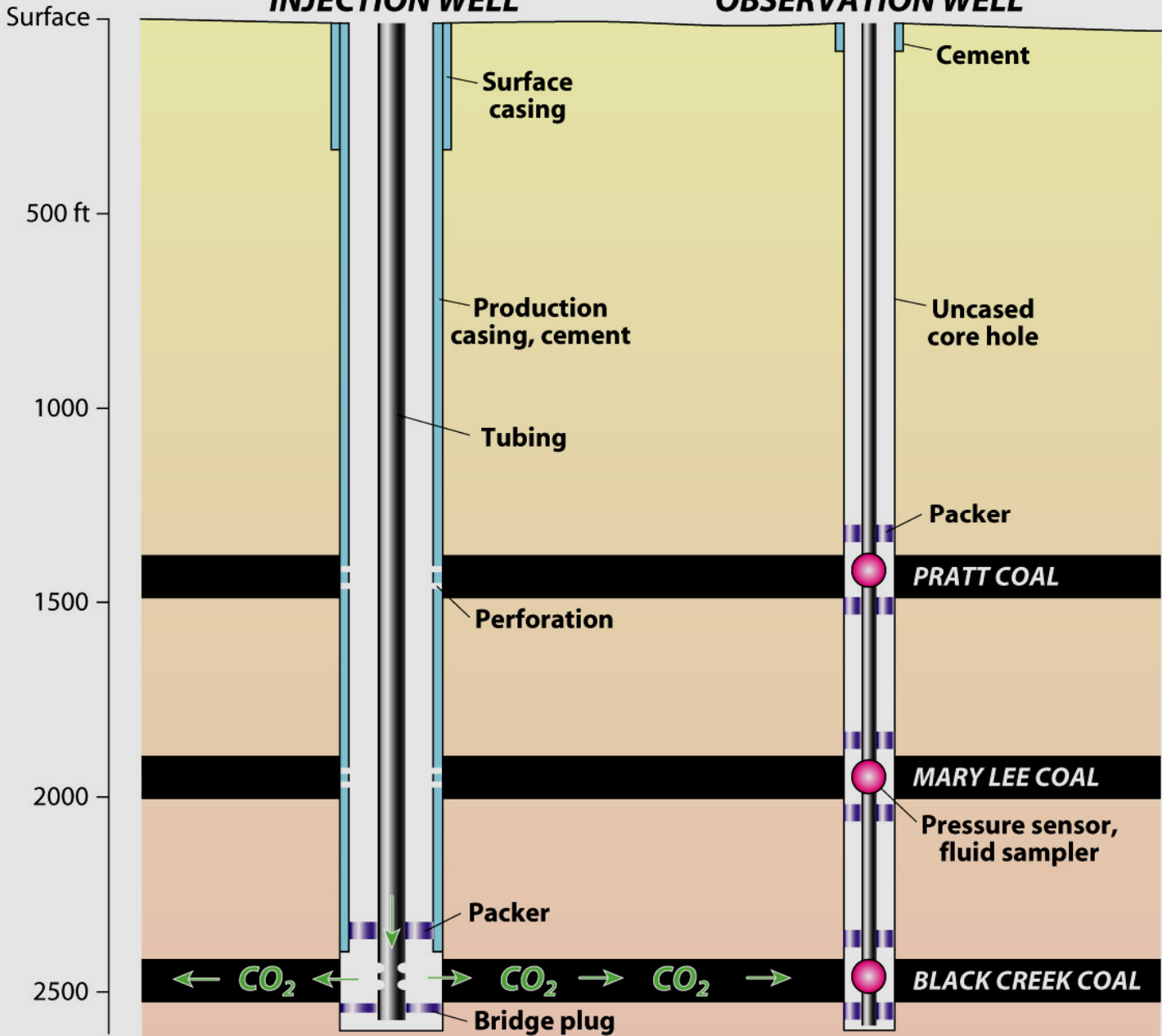
winter

0 2 4 6 8



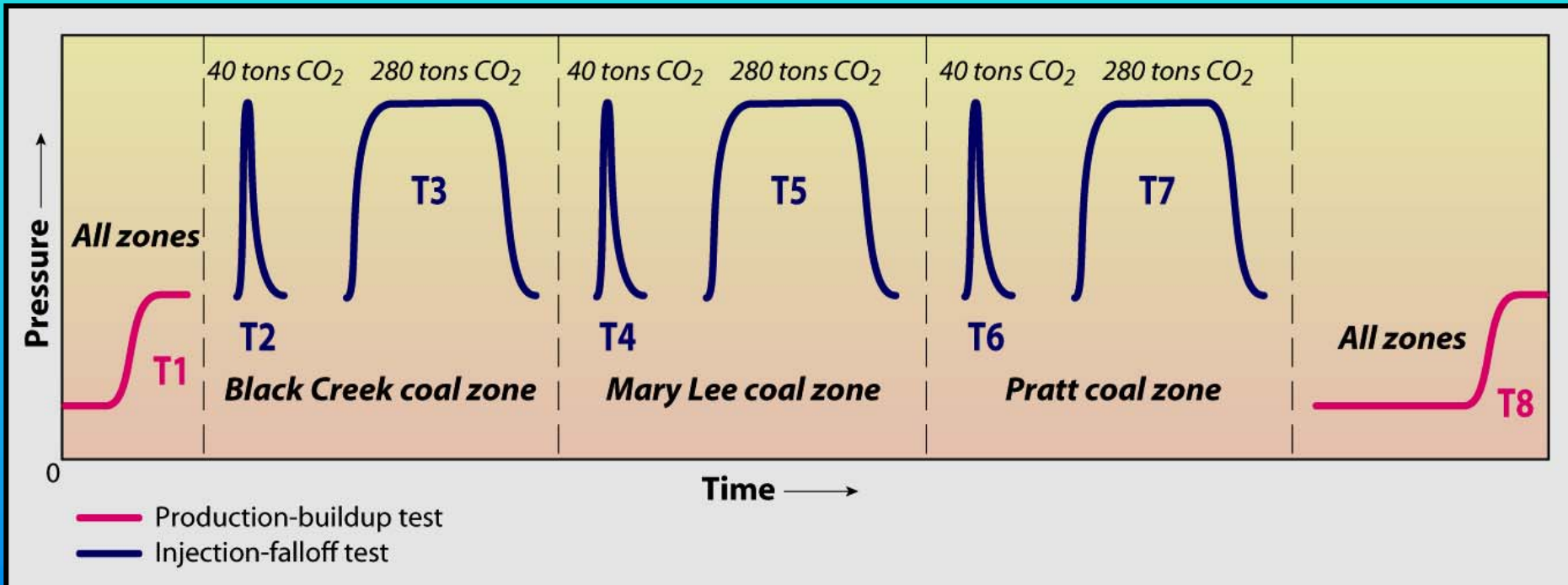
INJECTION WELL

OBSERVATION WELL



DEEP TESTING

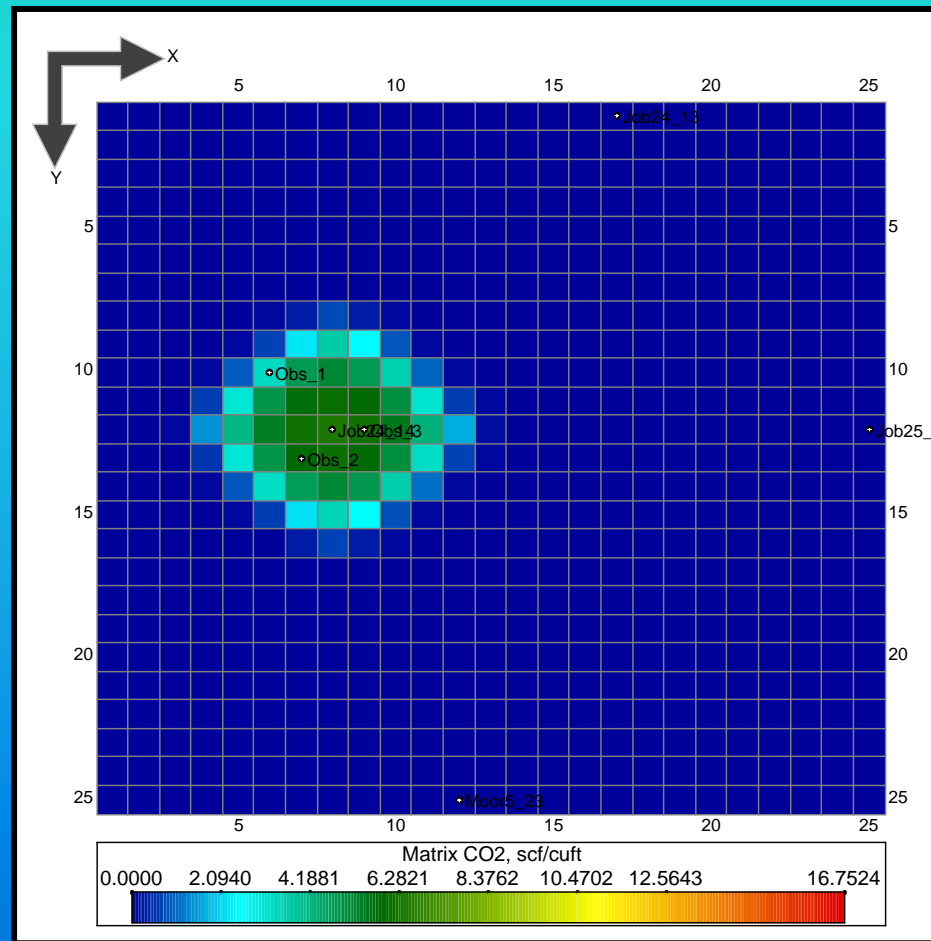
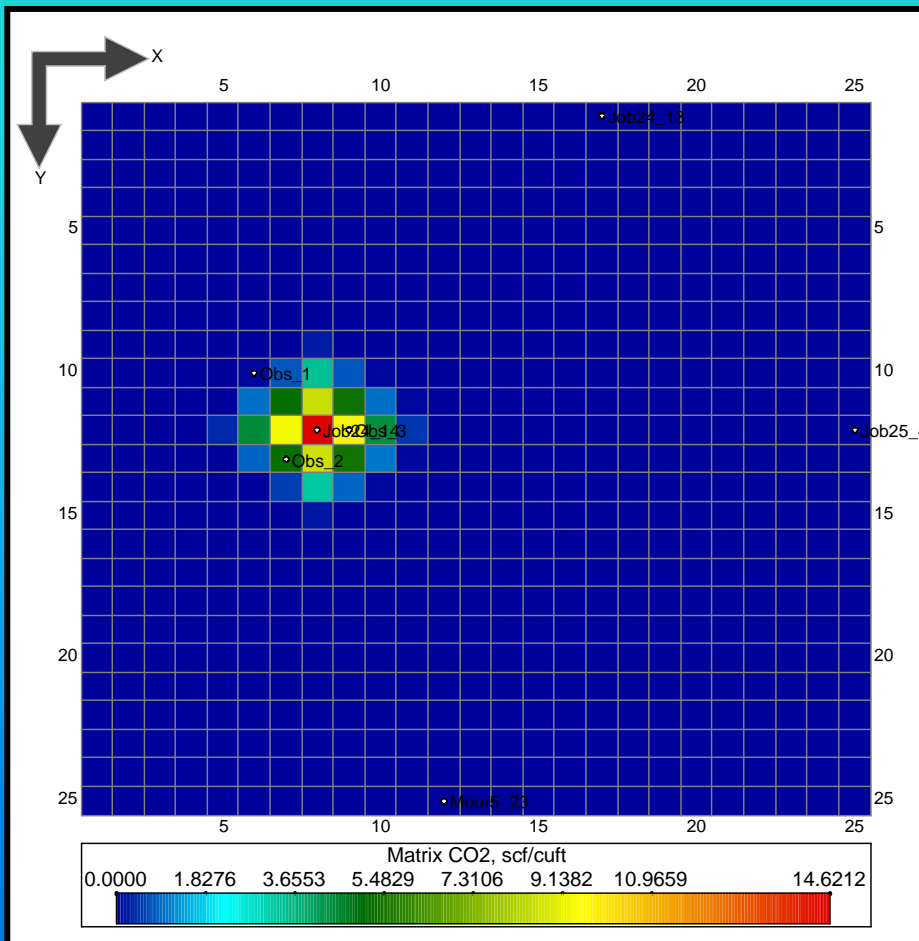
PRODUCTION AND INJECTION TESTS



RESERVOIR MODELS

Black Creek zone

Pratt zone



COMET3 models by Advanced Resources International




Web resources

CARBON SEQUESTRATION RESEARCH

<http://portal.gsa.state.al.us/CO2/SECARB2/secarb2.htm>


CARBON SEQUESTRATION ...

GEOLOGICAL SURVEY OF ALABAMA



CARBON SEQUESTRATION RESEARCH
Southeastern Regional Carbon Sequestration
Partnership (SECARB Phase II)

A study sponsored by the



U.S. Department of Energy
National Energy Technology Laboratory

<http://portal.gsa.state.al.us/CO2/CO2.htm>

Meetings



OUTREACH ACTIVITIES

Publications

