

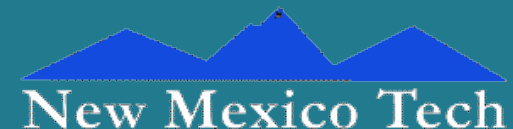


The Geothermal Program at the New Mexico Bureau of Geology

Shari Kelley
Geophysicist/Field Geologist

March 1, 2024
NMT Research Symposium

A Research Division of New Mexico Institute of Mining and Technology



History of the program

Catalog of Thermal Waters by W.K. Summers, 1976

Marshall Reiter, 1976-2010

- Crustal scale thermal processes

- Aquifer studies and mine waste piles

Current program with Mark Person, Hydrology 2010-now

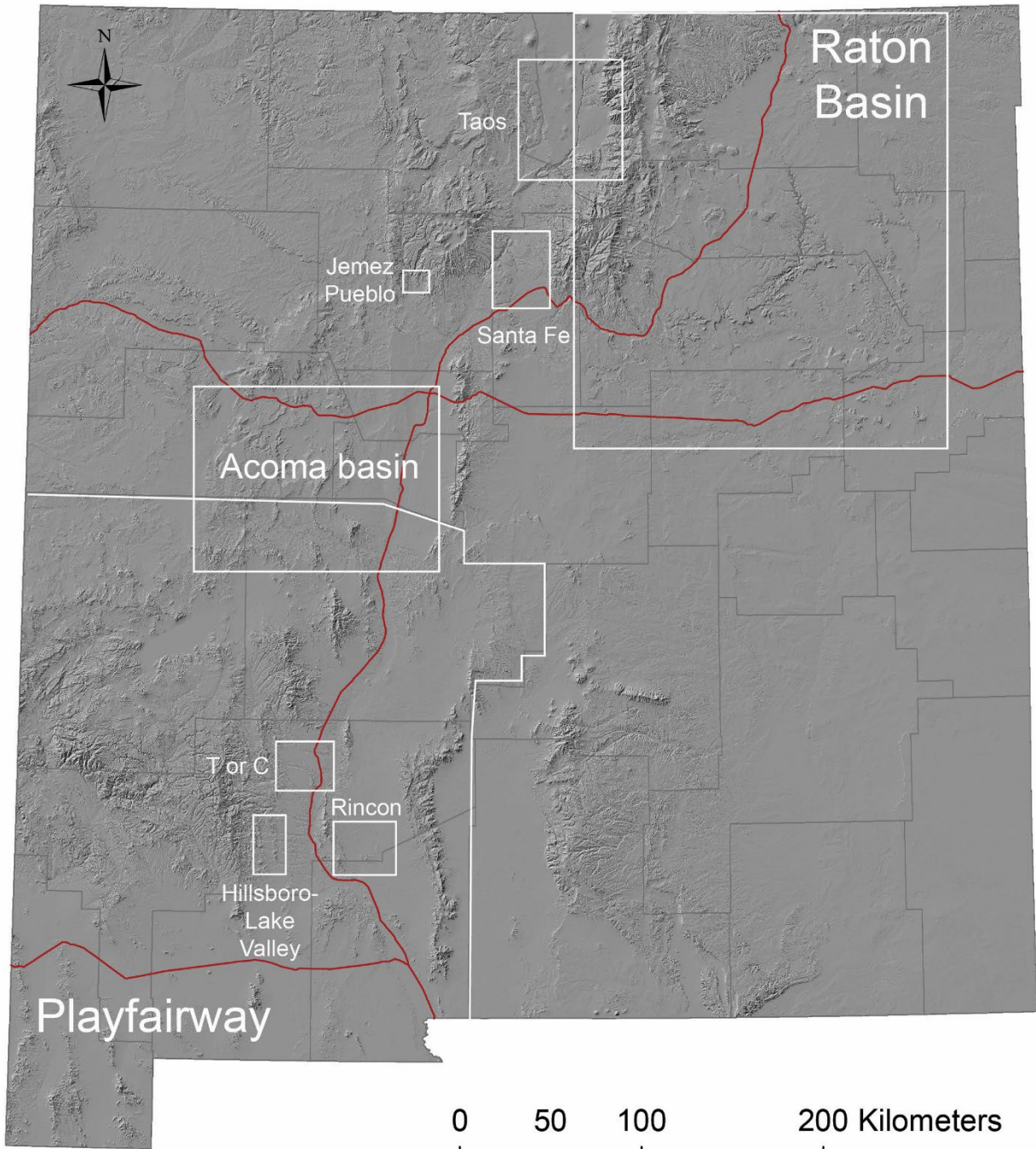
- Geothermal database

- Geophysical surveys using EM methods

 - Truth or Consequences

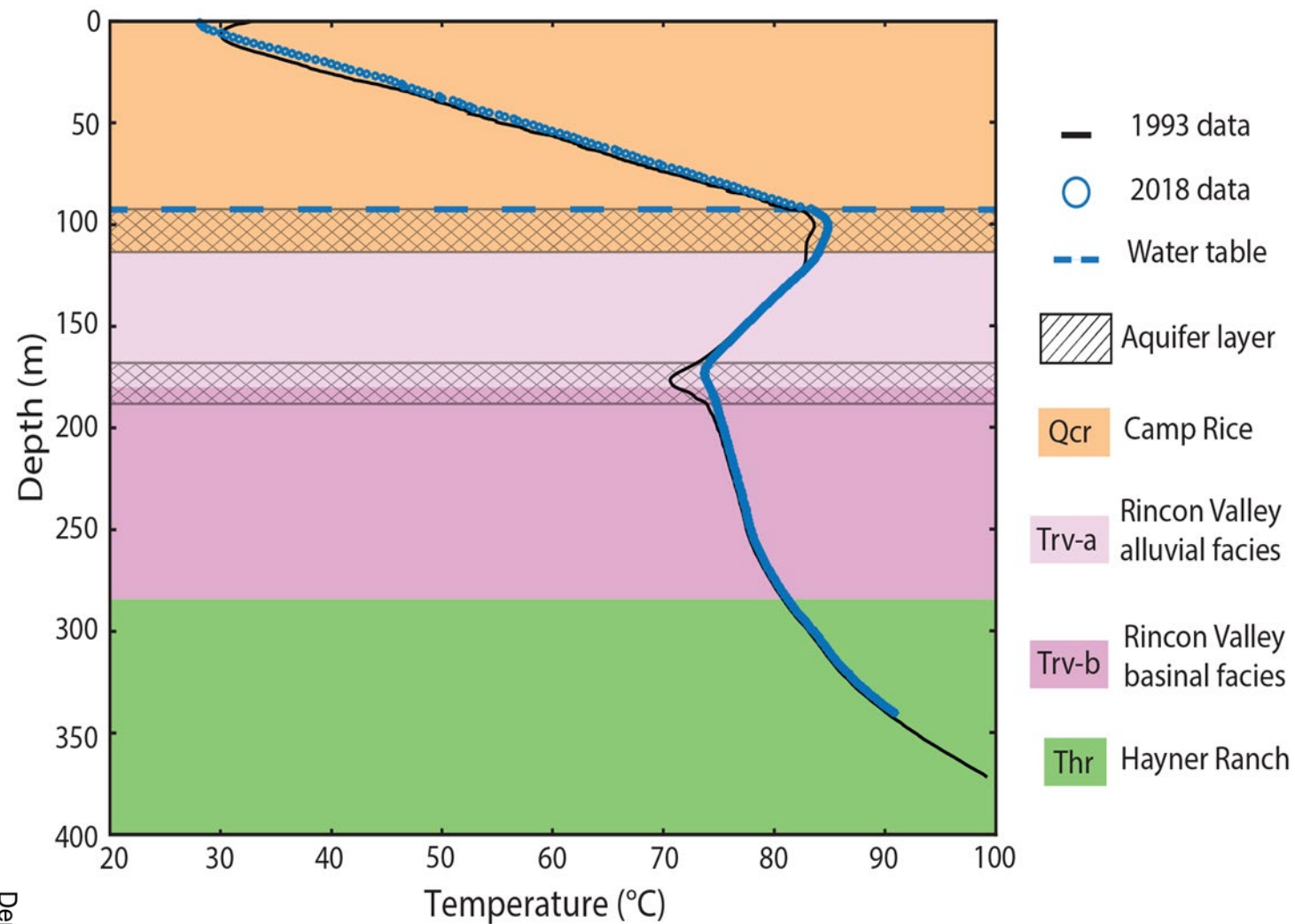
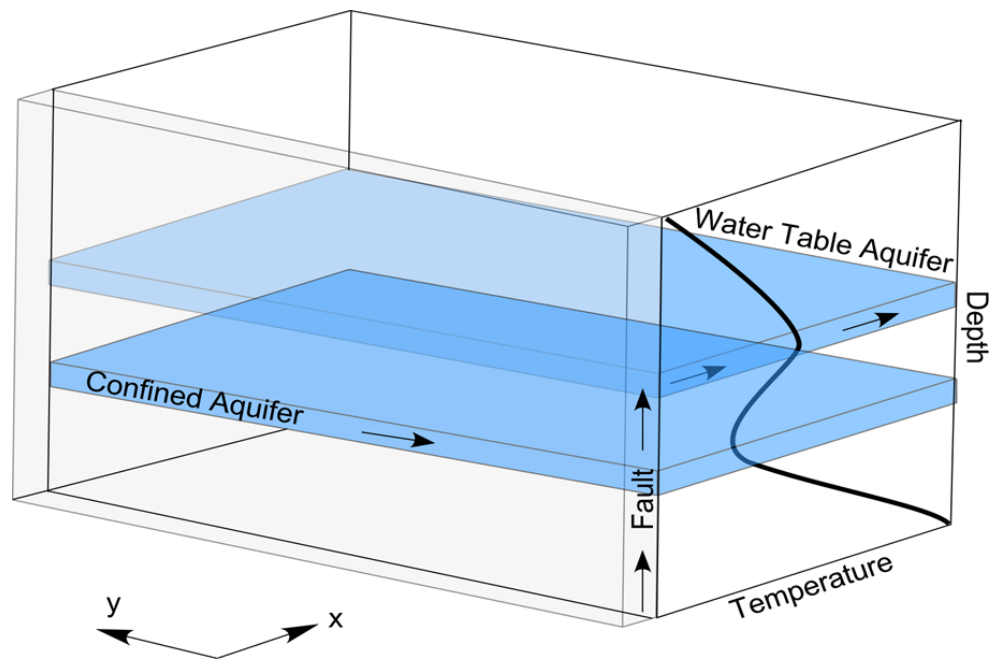
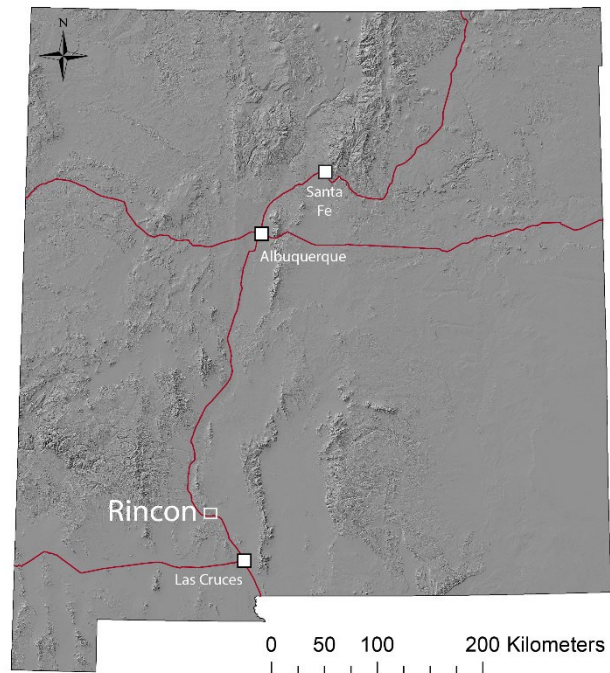
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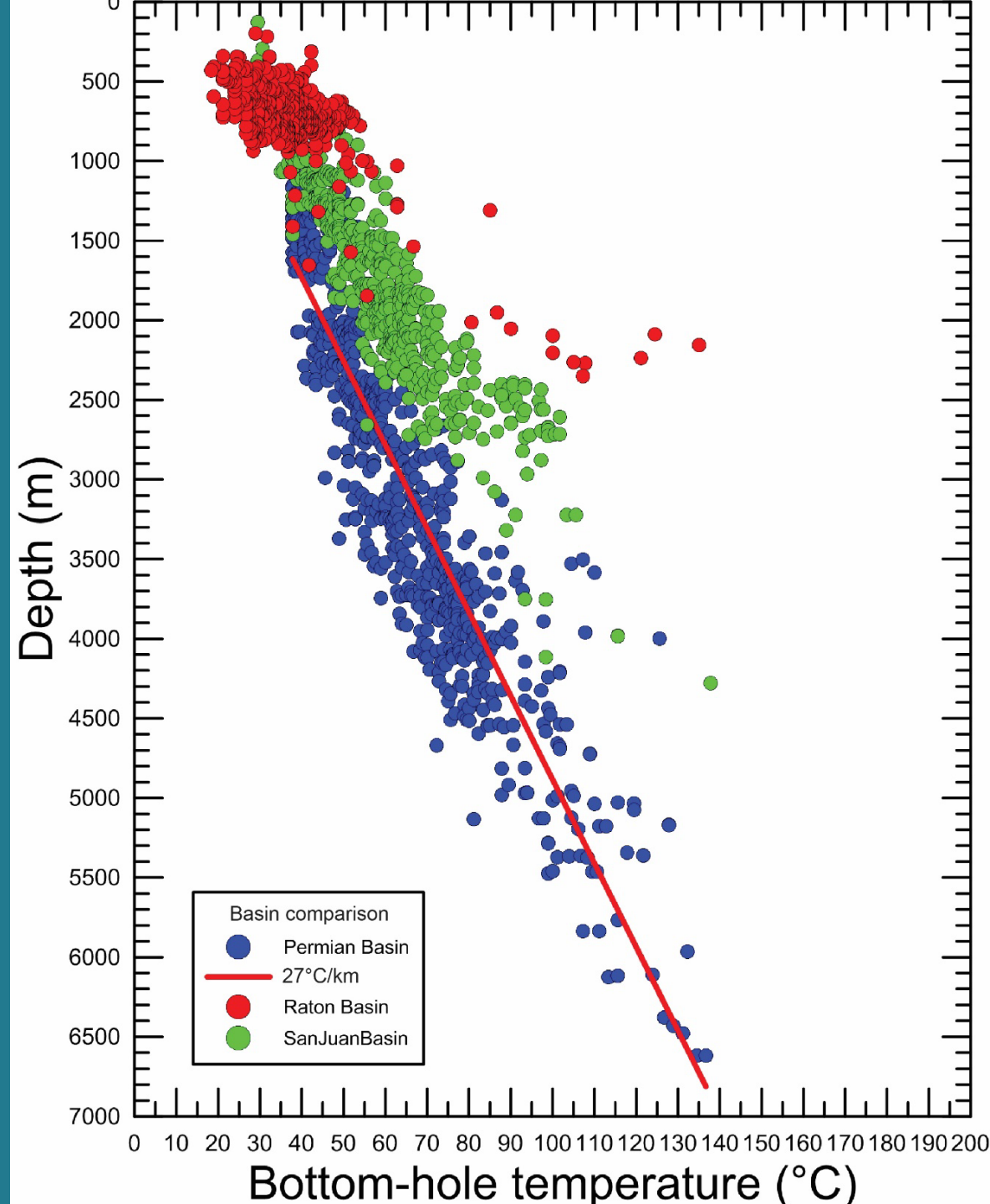
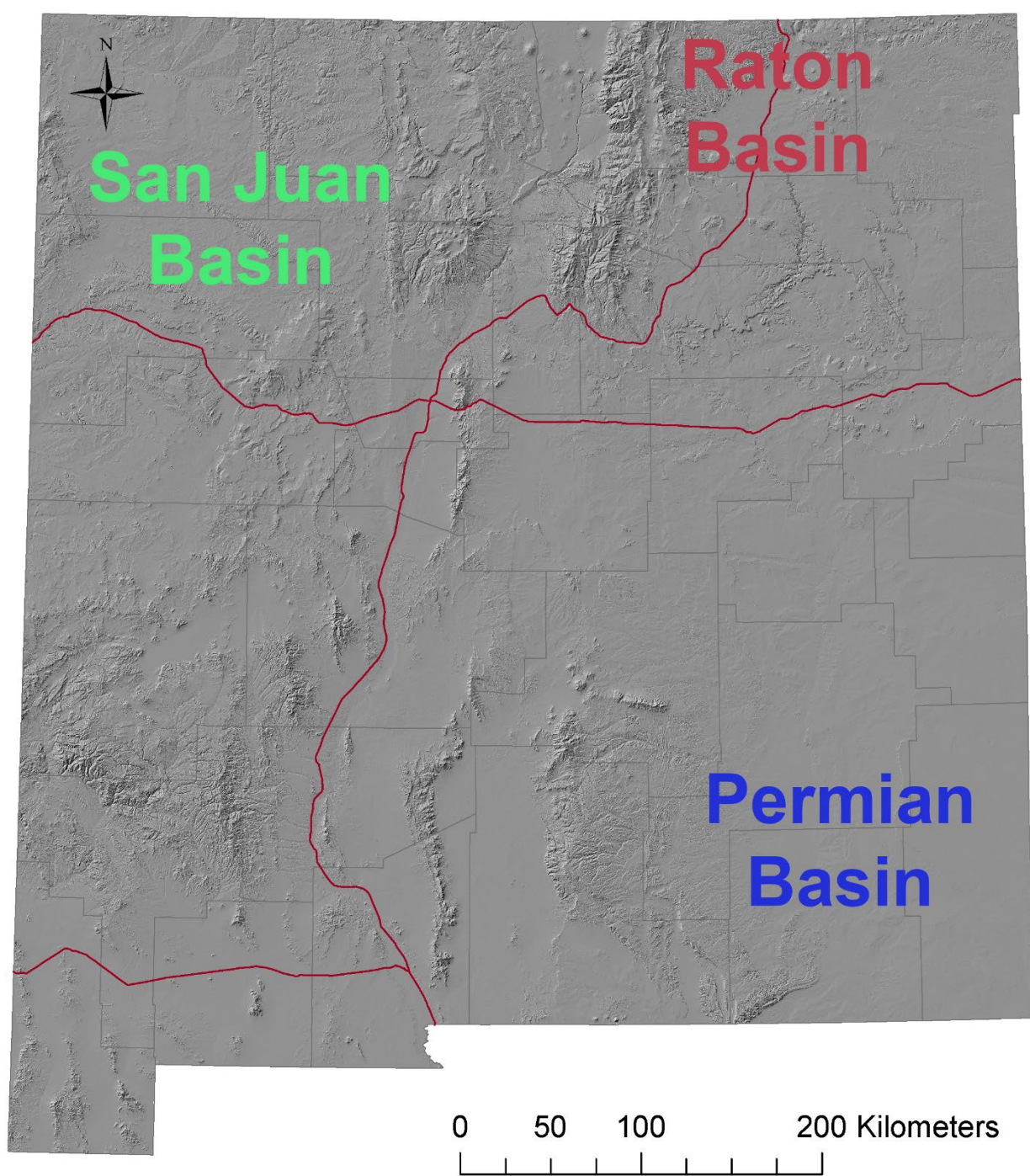
- Regional studies

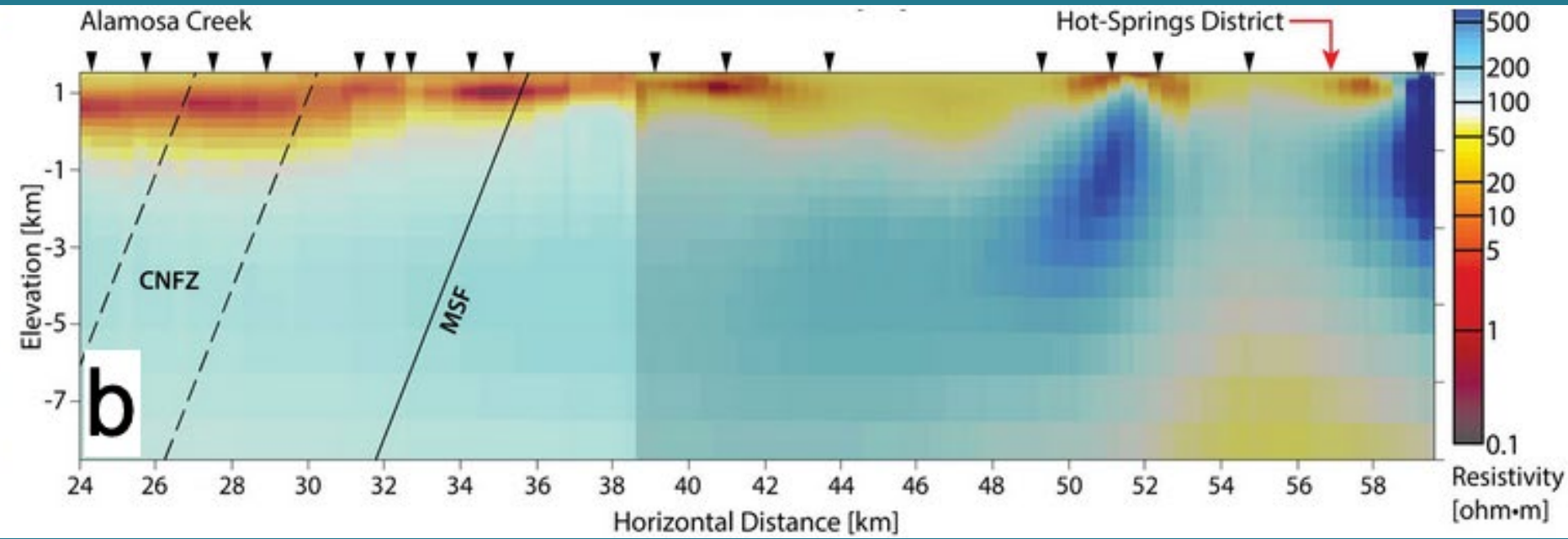
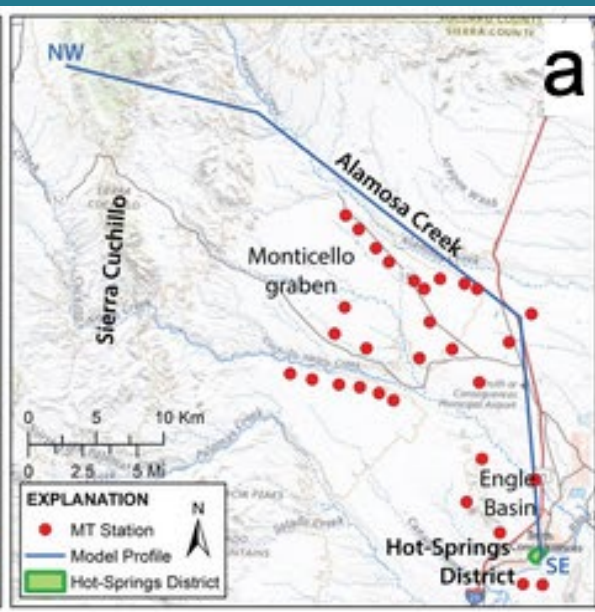




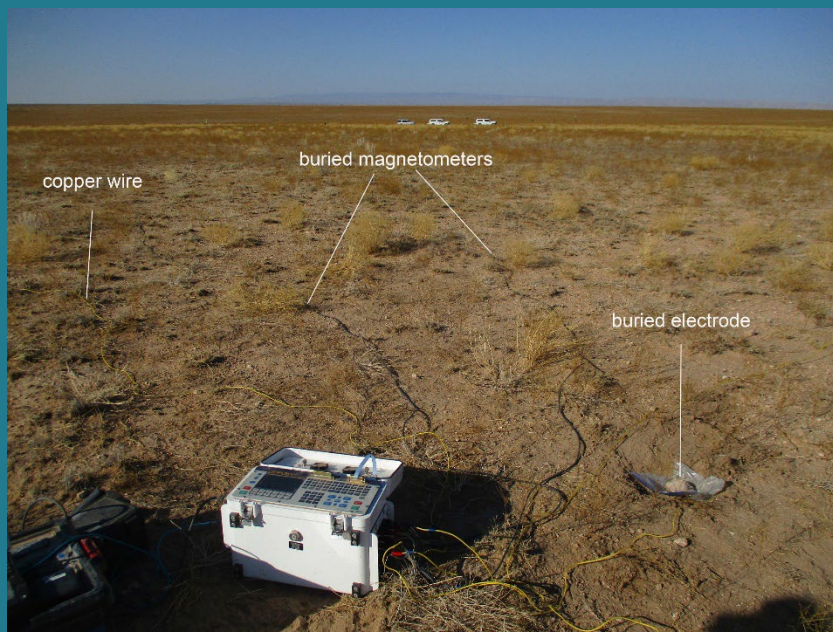
NMBGMR temperature logging truck







Magnetotelluric and transient electromagnetic surveys



The geothermal community is now embracing the development of the entire spectrum Earth's heat

Ground Source Heat Pumps	Thermal Storage & Community Thermal Networks	Direct Use	Hydrothermal Systems	Engineered Systems
Heating & Cooling Buildings	Heating & Cooling Buildings	Greenhouses Fish Farms Agricultural Drying, etc.	Electricity	Electricity
10–15°C	15–70°C	70–150°C	>150°C	>150°C

Geothermal Working Group

Meeting monthly since Feb 2022

- Senator Gerald Ortiz y Pino
- Senate Pro Tem Mimi Stewart
- Representative Patricia Roybal Caballero
- Tom Solomon, facilitator
- Dr. Shari Kelley, NMBGMR
- Dr. Olga Lavrova, NMSU
- Dr. Patricia Sullivan, NMSU
- Representatives from Sen. Martin Heinrich DC office

Proposed Legislation

A. **HB91 Geothermal Project Funding & Management**

1. Amends the geothermal duties of the EMNRD Energy Minerals and Natural Resources Department to include applying for federal grants for geothermal resource development and administering two new geothermal funds. The EMNRD budget requested 1 FTE to carry out the duties of the act.

2. Establishes the geothermal resources development fund and the geothermal resources revolving loan fund at \$2.5M each: to study the costs and benefits of geothermal resource development projects and provide grants & loans to help finance them.

(Separately, the House budget proposes to fund a geothermal research program at NM Tech at \$0.5M/year for FY 2025-2027.)

B. **SB 58 the Geothermal Electricity Tax Credit** act provides a combined \$5M/yr cap on tax credits for income tax plus corporate income tax, for electricity at \$0.015/kWh through 2031. It also provides capital equipment gross receipts tax deductions for projects constructed from 2025-2031.

C. **SB40 the Geothermal Heat Pump Tax Credit** act allows tax credits of 30% of the system cost of ground-coupled heat pumps up to \$9000 with an aggregate annual cap of \$16M.

Current NMT research group includes:

Mark Person, Hydrology, NMT

Luke Martin, Petroleum Geology, NMBGMR

Hamid Rahnema, Petroleum Engineering, NMT

Sajjad Esmailpur, Petroleum Engineering, NMT

Tan Nguyen, Petroleum Engineering, NMT

Tasks to this point

- Updating the geothermal database
- Examined the NMSU system; determined that it is not operational
- Workshop last fall; began making connections
- Workshop April 18, 2024, Fidel Center; build on previous collaborations and make new connections.

Upcoming goals

- Build NMT connections to drive new research and develop workforce training; geothermal certificate
- Write a comprehensive report about multifaceted aspects of geothermal development. The report will examine the size of the geothermal opportunity, where to best develop our resources, the engagement of the oil and gas industry, community benefits and impacts, entrepreneurial opportunities, and policy and political considerations.

For more Information

Shari Kelley

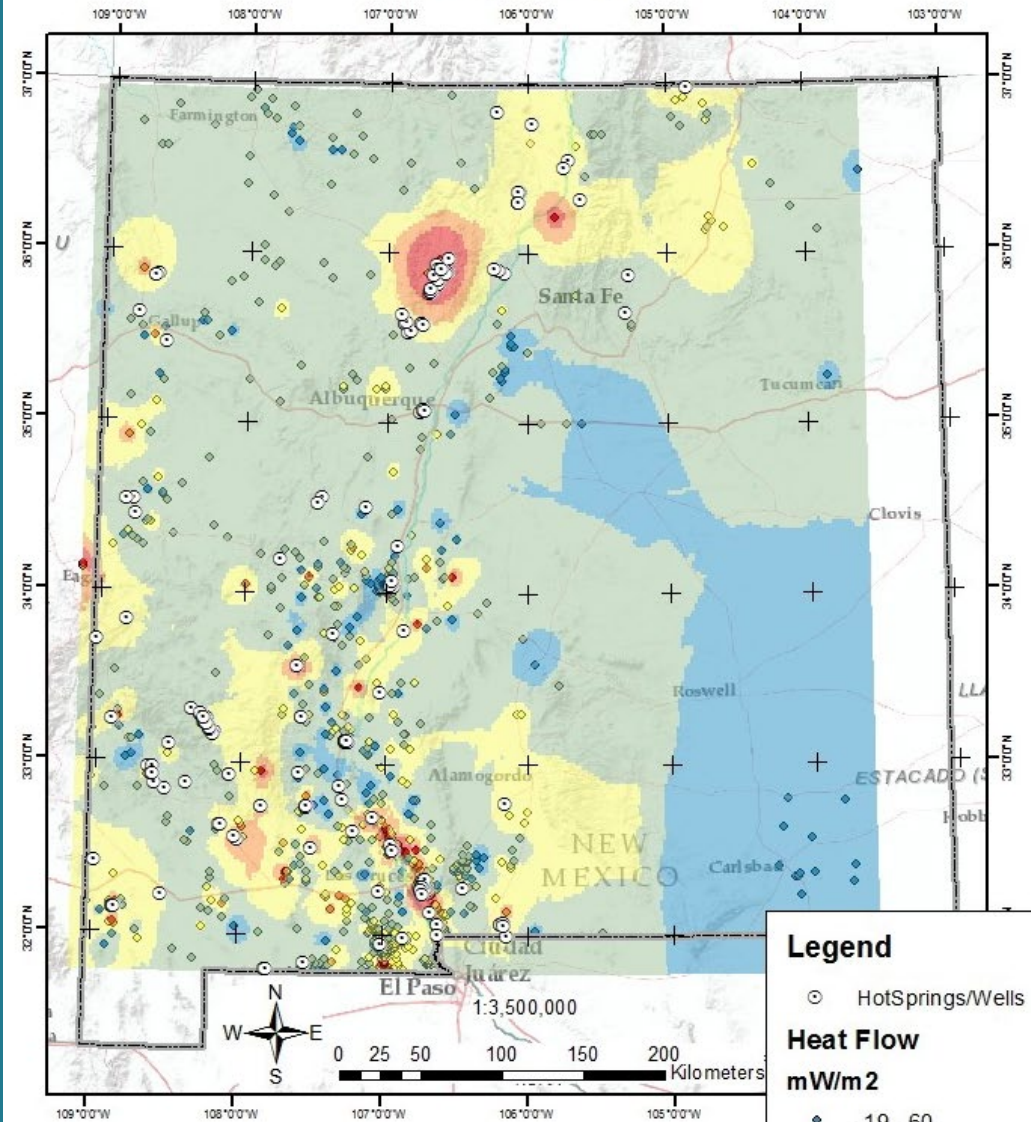
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Heat Flow Map of New Mexico

Shari Kelley and Matt Sophy



Legend

- HotSprings/Wells

Heat Flow
mW/m²

- ◆ -19 - 60
- ◇ 61 - 100
- ◇ 101 - 150
- ◇ 151 - 200
- ◆ 201 - 981