Plate 1: Terrane Map of the Precambrian Basement of South Dakota

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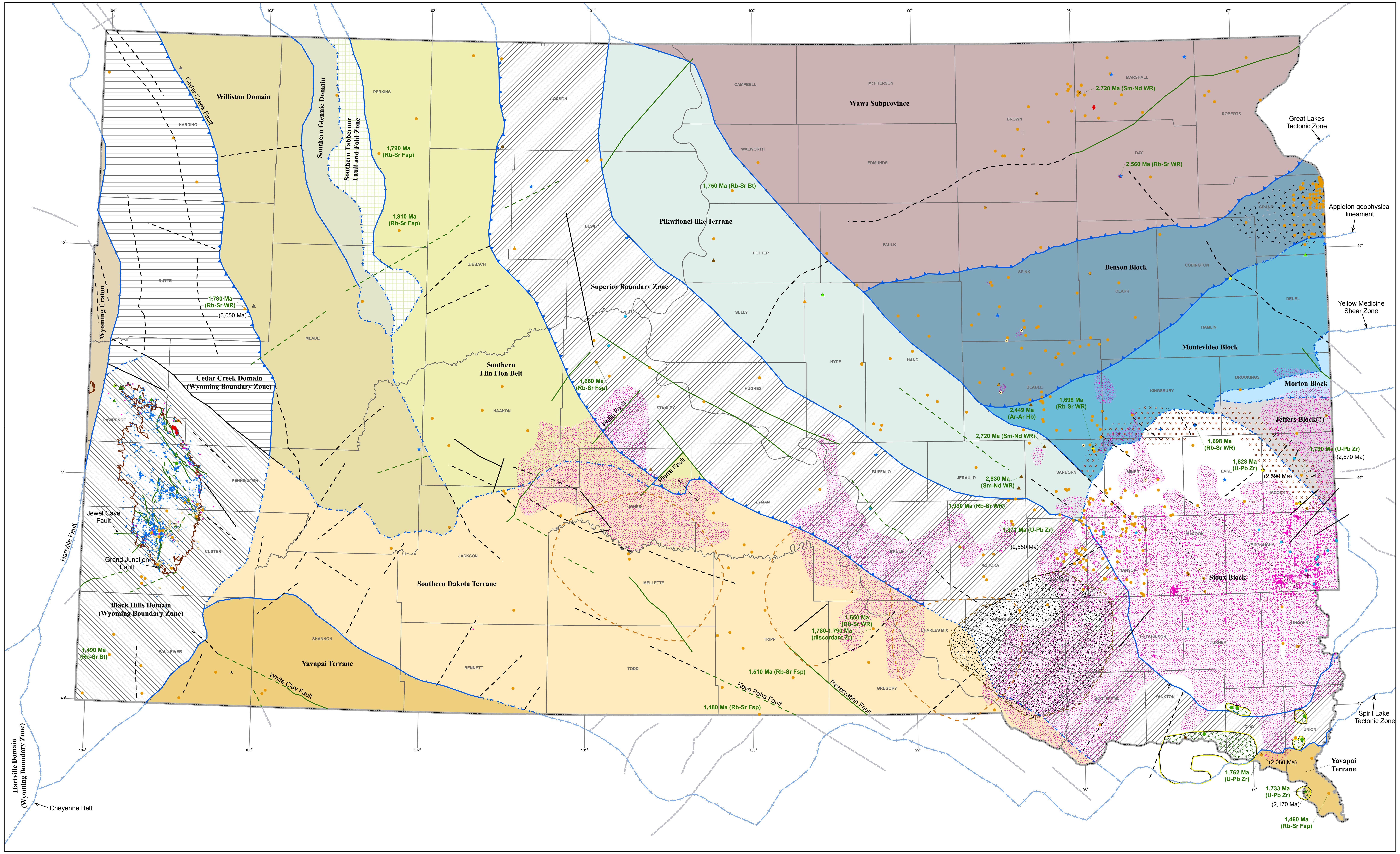

Basement Terranes

Yavapai Orogen
- Yavapai Terrane
- Southern Dakota Terrane

Trans-Hudson Orogen
- Williston Domain
- Southern Glennie Domain
- Southern Tabbernor Fault and Fold Zone
- Southern Flin Flon Belt

Wyoming Craton

Wyoming Boundary Zone
- Cedar Creek Domain
- Black Hills Domain

- Wyoming Craton

Superior Craton
- Superior Boundary Zone
- Pikwitonei-like Terrane

Minnesota River Valley Subprovince
- Sioux Block
- Jeffers Block(?)
- Morton Block
- Montevideo Block
- Benson Block

- Wawa Subprovince

Structures

- Possible magmatic center
- Igneous intrusion
- Possible igneous intrusion
- Fault
- Possible fault
- Fault, concealed beneath Sioux Quartzite
- Fault, previously published at least in part
- Possible fault, previously published at least in part
- Fault in or extended into adjacent state
- Structural boundary
- Structural boundary, known geometry
- Structural boundary, uncertain
- Pre-Yavapai structural boundary, inferred
- Structural boundary in or extended into adjacent state

Mapped Rock Types

- Zone of volcanic rocks; location and extent approximate
- Intrusive
- Possible intrusive
- Sioux Quartzite
- Milbank Granite
- Areas of Precambrian outcrop in the Black Hills

Radiometric Dates and Model Ages

1,828 Ma (Rb-Sr WR) — Radiometric date in millions of years before present (Ma). Method of dating in parentheses. Ar-Ar = argon-argon, Sm-Nd = samarium-neodymium, Rb-Sr = rubidium-strontium, U-Pb = uranium-lead, Bt = biotite, Fsp = feldspar, Hb = hornblende, Zr = zircon, WR = whole rock.

(2,080 Ma) — Samarium-neodymium (Sm-Nd) model age in millions of years before present (Ma).

Rock Types Intersected in Drill Holes

- Quartzite
- Possible quartzite
- Sioux Quartzite pipestone
- Possible Sioux Quartzite pipestone
- Granite
- Possible granite
- Granite or felsic gneiss
- Gneiss
- Possible granite or felsic gneiss
- Possible altered granite
- Pegmatite
- Possible pegmatite
- Granite or granodiorite
- Diabase, diorite, or granodiorite
- Possible diabase, diorite, or granodiorite
- Gabbro
- Amphibolite or metagabbro
- Greenstone
- Possible greenstone
- Andesite or latite
- Rhyolite or silicic volcanic rock
- Banded iron formation
- Possible iron formation
- ? Iron formation?
- Schist or slate
- Probable metasedimentary rock
- Granite and schist
- Quartzite and granite
- Quartzite and schist, slate, or phyllite
- Possible diabase and quartzite
- Precambrian rubble
- Schist and granite or pegmatite
- Quartz vein
- Schist, slate, or phyllite; Black Hills Domain
- Possible schist, slate, or phyllite; Black Hills Domain

The Geological Survey Program, Department of Environment and Natural Resources, engages in an ongoing data collection and interpretation process. An outcome of that process is to reflect those interpretations on maps such as this one. Reasonable efforts have been made to ensure that this map accurately reflects the source data used in its preparation. This map is date specific. As additional data become available, geologic interpretations may be revised and the map may be updated by the Geological Survey Program. This map should not be enlarged or otherwise used in an attempt to interpret more detail than can be seen at the 1:1,000,000 scale.

N W E S

Scale 1:1,000,000

0 10 20 40 60 80 Miles

0 10 20 40 60 80 Kilometers

North American Datum of 1927
Lambert Conformal Conic

Acknowledgements

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