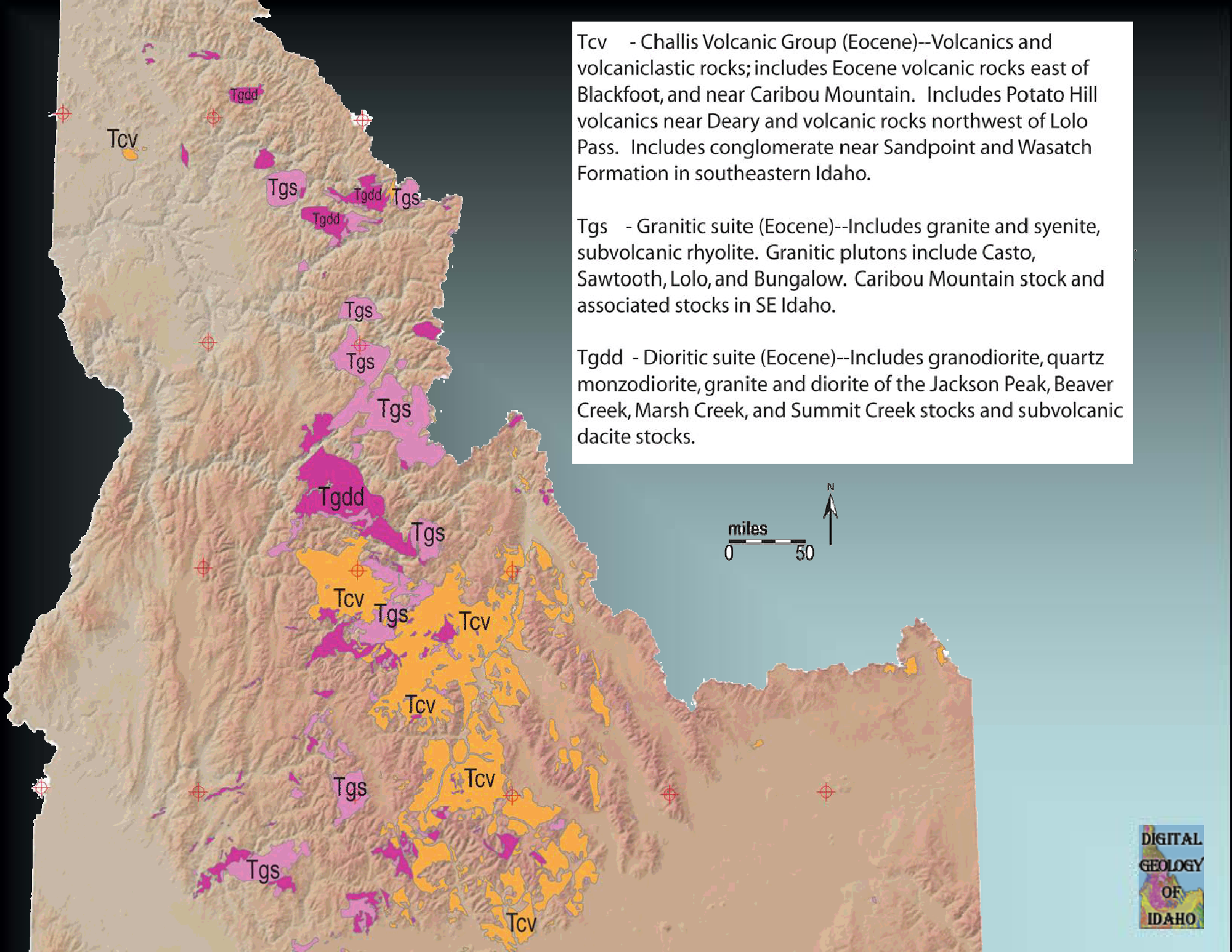
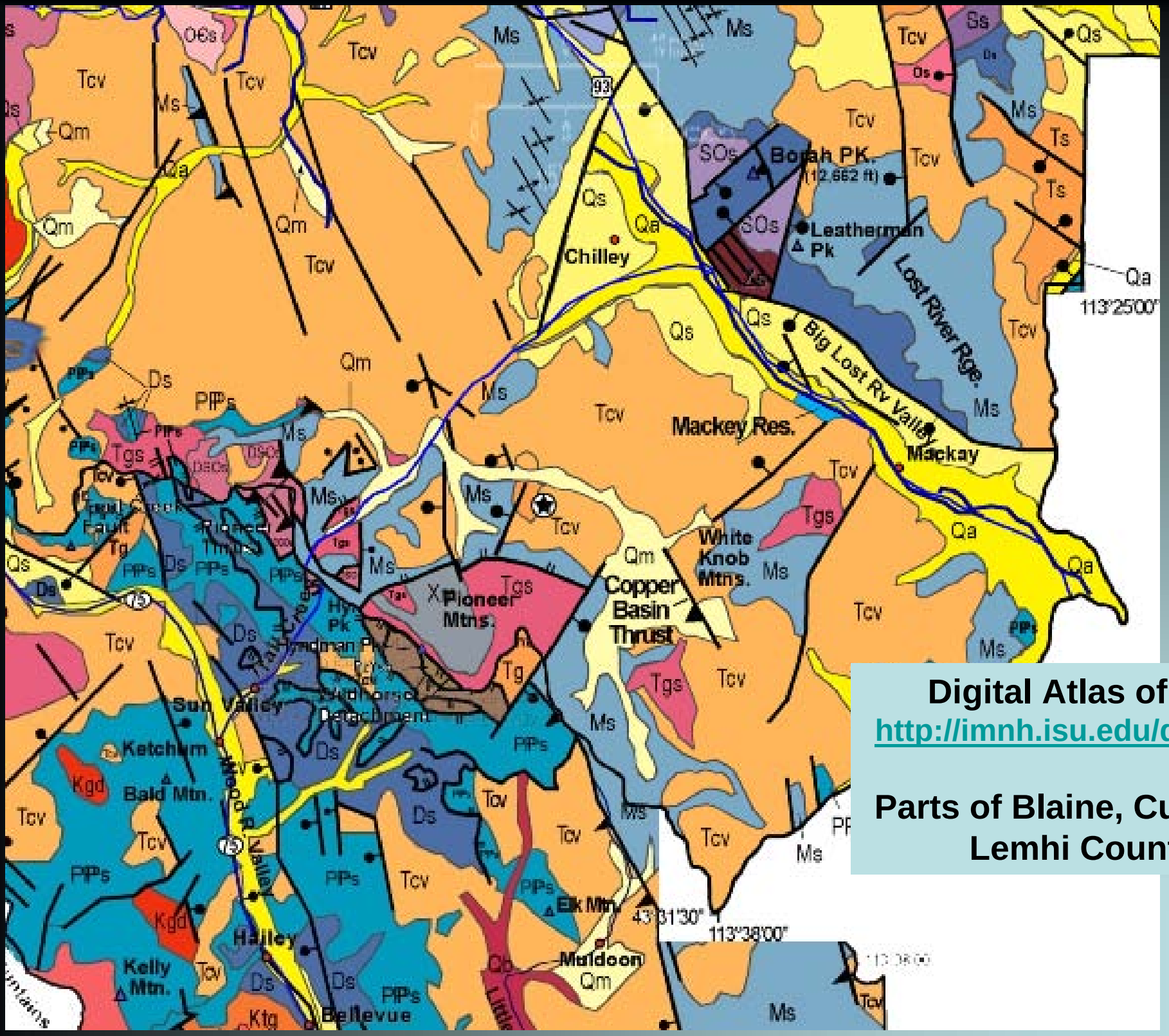

Tcv - Challis Volcanic Group (Eocene)--Volcanics and volcaniclastic rocks; includes Eocene volcanic rocks east of Blackfoot, and near Caribou Mountain. Includes Potato Hill volcanics near Deary and volcanic rocks northwest of Lolo Pass. Includes conglomerate near Sandpoint and Wasatch Formation in southeastern Idaho.
Tgs - Granitic suite (Eocene)--Includes granite and syenite, subvolcanic rhyolite. Granitic plutons include Casto, Sawtooth, Lolo, and Bungalow. Caribou Mountain stock and associated stocks in SE Idaho.
Tgdd - Dioritic suite (Eocene)--Includes granodiorite, quartz monzodiorite, granite and diorite of the Jackson Peak, Beaver Creek, Marsh Creek, and Summit Creek stocks and subvolcanic dacite stocks.
Tcv
Tgdd
Tgs
miles
0
50
N
DIGITAL GEOLOGY OF IDAHO



Digital Atlas of Idaho

http://imnh.isu.edu/digitalatlas

Parts of Blaine, Custer, and Lemhi Counties

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Aerial view of Fall Creek in Pioneer Mountains core complex. Note glaciated topography cut Eocene granite. Detachement is about halfway into the view, where the gray soft slopes change to the rocky cliffs.

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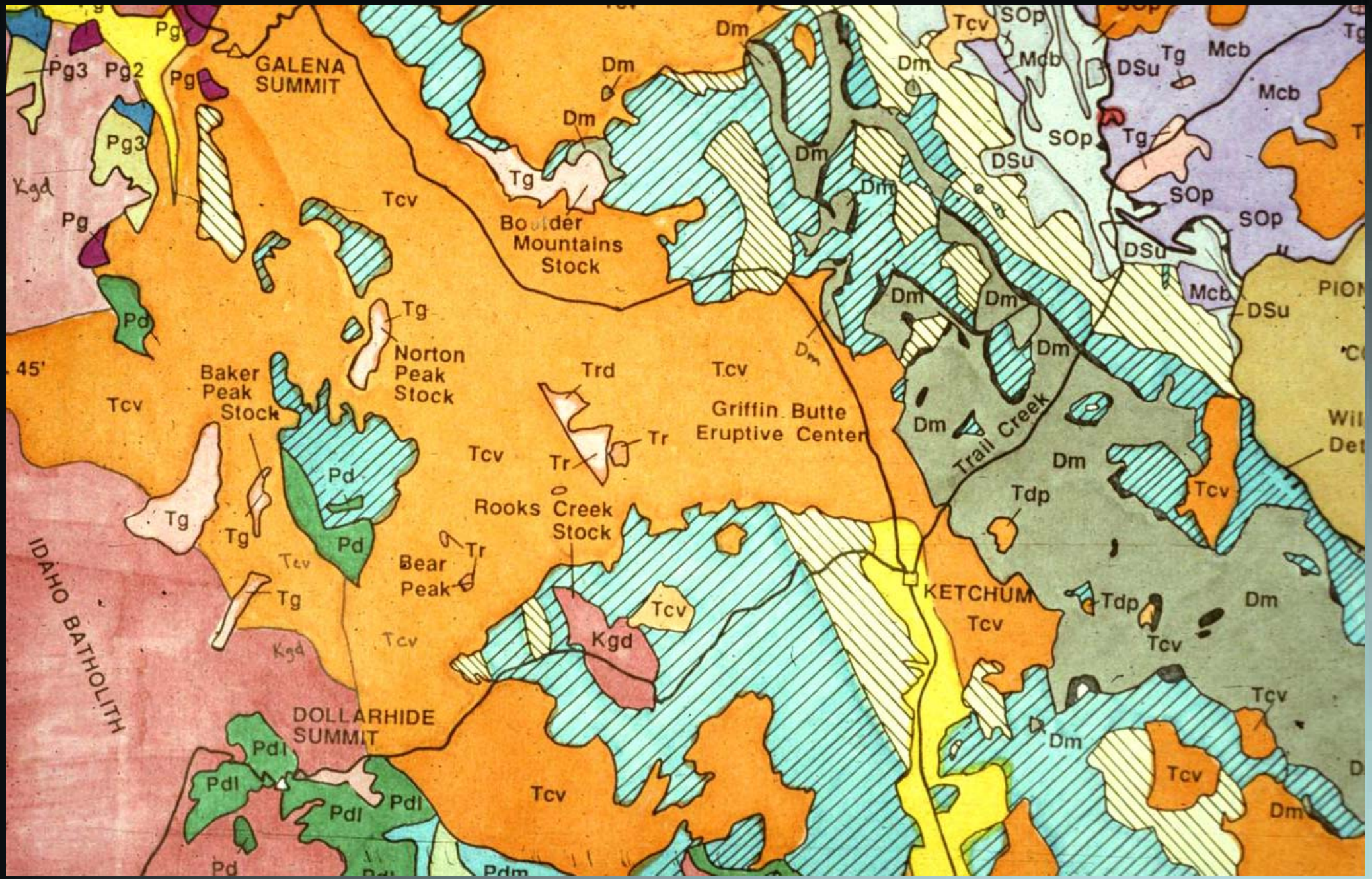

Geologic map of the Wood River Valley and Smoky Mountains.

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Tertiary Eocene granodiorite of the Smoky Mountains.

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Upper part of Wood River. Rocks are Challis Volcanics.

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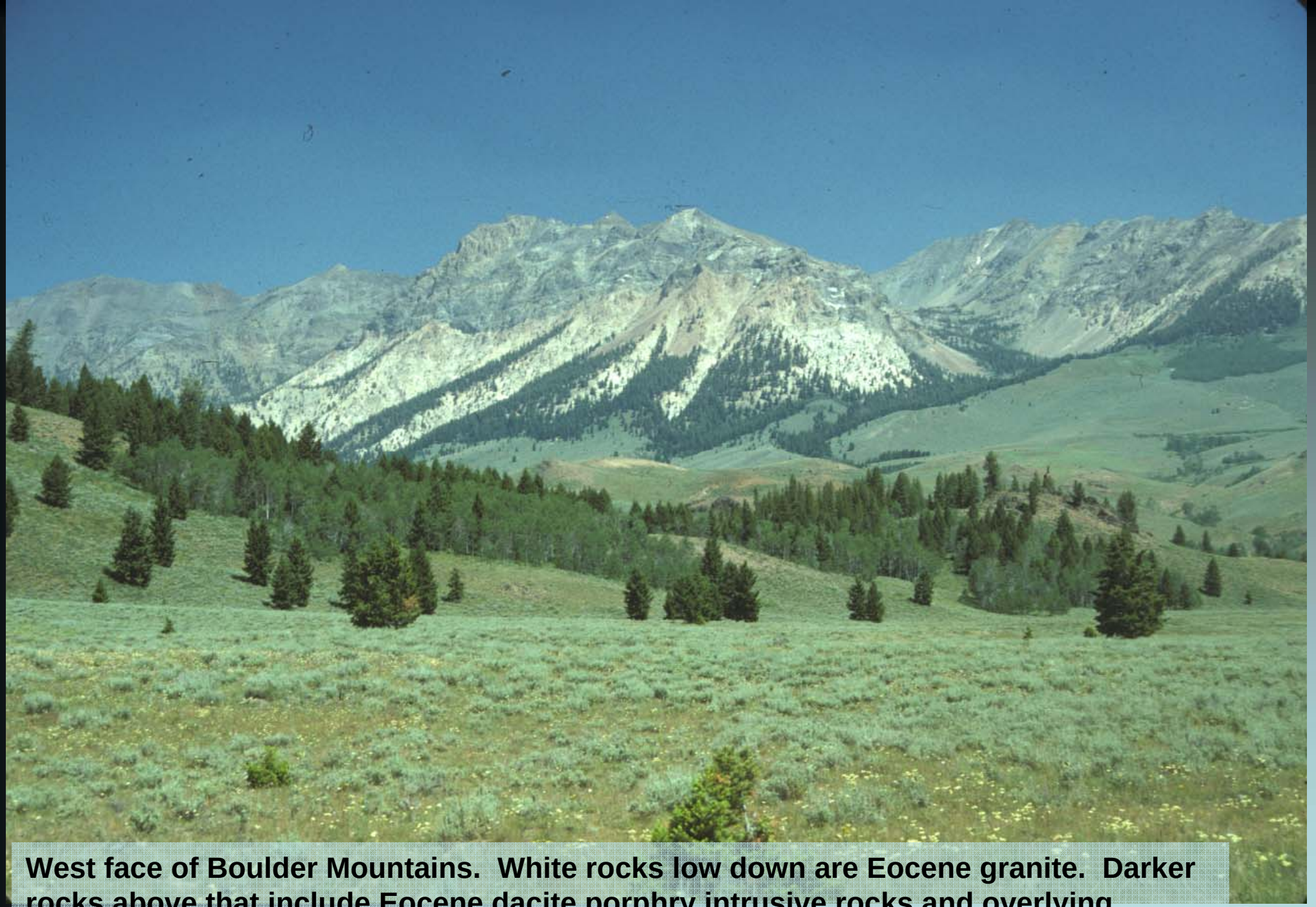

West face of Boulder Mountains. White rocks low down are Eocene granite. Darker rocks above that include Eocene dacite porphry intrusive rocks and overlying Challis volcanic rocks. Also present are wall rocks of Paleozoic sedimentary rocks as chocolate chips. In foreground are glacial deposits. Boulder Creek is the prominent creek. View from the mouth of Baker Creek.

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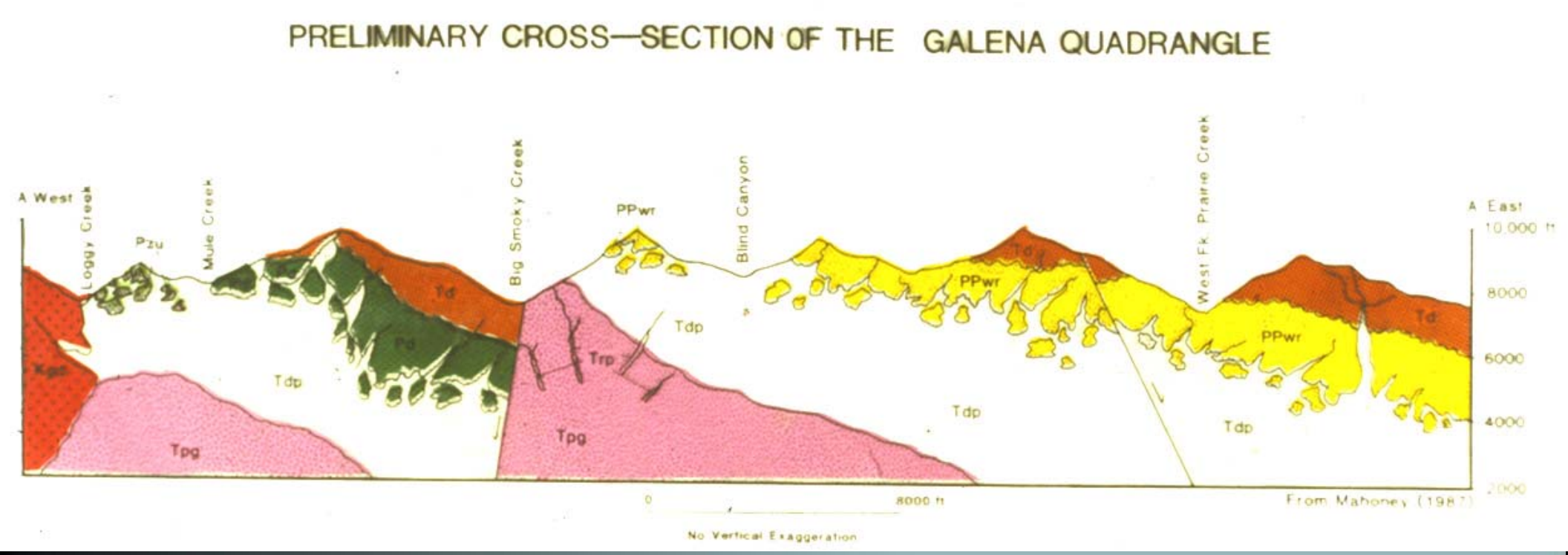

Cross section of Galena quad north of Ketchum, showing relations on west face of Boulder Mountains.

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View of Sawtooth Range from Stanley Ranger Station. *Photo by: Jim Cash, IGS*

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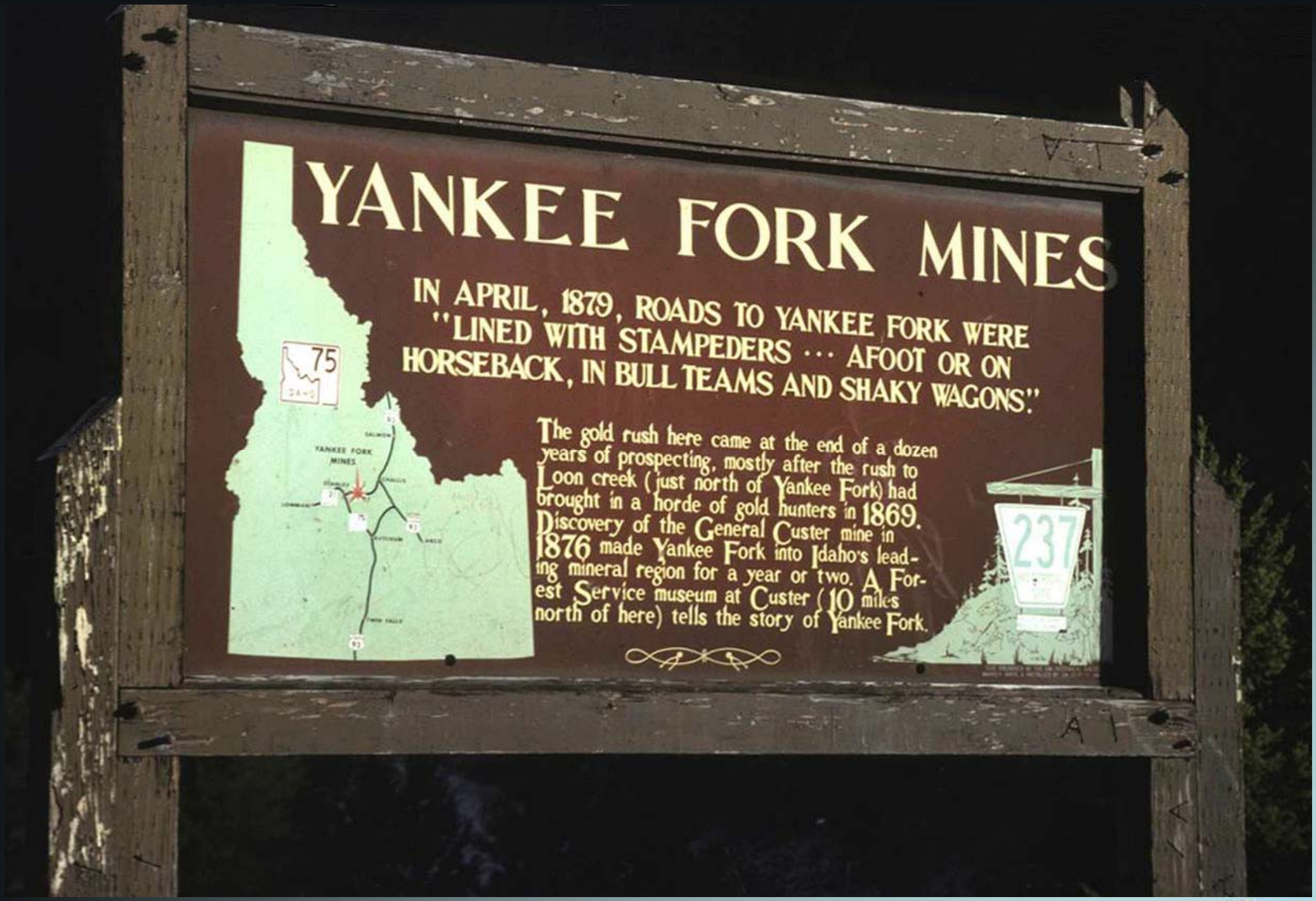

Historical Marker of Yankee Fork mines

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Main Salmon River near Yankee Fork.

DIGITAL GEOLOGY OF IDAHO

View of Pennal Gulch Tuff capped by Tuff of Challis Creek Outflow unit.

DIGITAL GEOLOGY OF IDAHO

Outcrop of volcanic ash. *Photo by: Jim Cash, IGS*

DIGITAL GEOLOGY OF IDAHO

View of dacitic / rhyodacitic lava flow

DIGITAL GEOLOGY OF IDAHO

Close-up of Challis volcanic rock

DIGITAL GEOLOGY OF IDAHO

View of Tuff of Ellis Cr. With mafic intrusion and K-rich lava flow- Proterozoic Sediments in foreground.

DIGITAL GEOLOGY OF IDAHO

View of Twin Peaks.

DIGITAL GEOLOGY OF IDAHO

View of Challis volcanics looking down Garden Cr. From Fluorspar Mine

DIGITAL GEOLOGY OF IDAHO

Outcrop of dacitic or rhyodicitic lava with weathered out clasts along Garden Cr. Rd.

DIGITAL GEOLOGY OF IDAHO

Outcrop of Pennal Gulch Tuff capped by Tuff of Challis Creek, talus of Challis Creek Tuff in foreground. *Photo by Jim Cash, IGS*

DIGITAL GEOLOGY OF IDAHO

Closeup of Tuff of Pennal Gulch

DIGITAL GEOLOGY OF IDAHO

Close-up of Challis volcanic rock showing texture.

DIGITAL GEOLOGY OF IDAHO

View of Castle Rock - Copper Basin

DIGITAL GEOLOGY OF IDAHO

Close-up of Challis volcanics along Big Lost River at Deep Creek.

DIGITAL GEOLOGY OF IDAHO

View of rhyolite domes south of Challis (looking 220 deg from Highway 93)

DIGITAL GEOLOGY OF IDAHO

Close-up of Tuff of Camas Cr-Black Mountain showing texture.

DIGITAL GEOLOGY OF IDAHO

Close-up of mafic rock along Lick Creek showing texture. Photo by: Jim Cash, IGS

DIGITAL GEOLOGY OF IDAHO

View of Challis volcanics from Cherry Creek Road looking 160º. Photo by: Jim Cash, IGS

DIGITAL GEOLOGY OF IDAHO

View of Sheep Mountain from Cherry Creek Road. *Photo by: Jim Cash, IGS*

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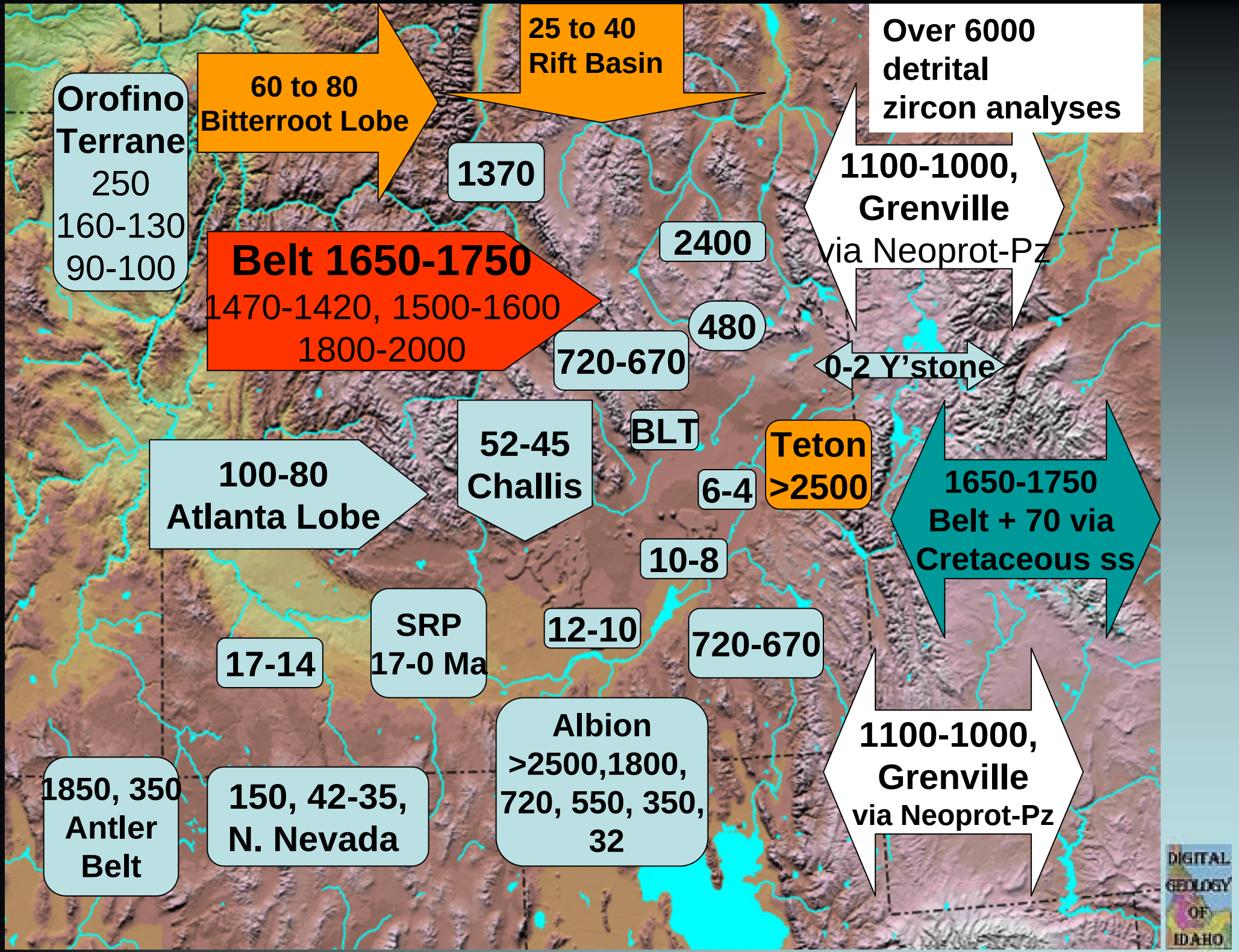
View of northern Twin Peak. *Photo by: Jim Cash, Idaho Geological Survey*

DIGITAL GEOLOGY OF IDAHO

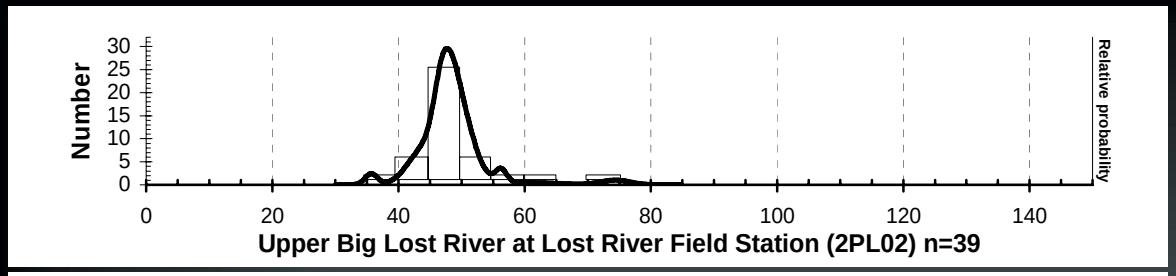
View of southern Twin Peak. *Photo by: Jim Cash, Idaho Geological Survey*

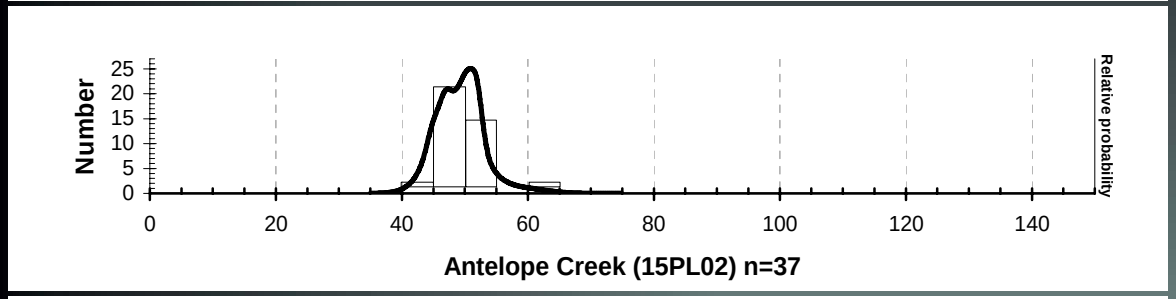
DIGITAL GEOLOGY OF IDAHO

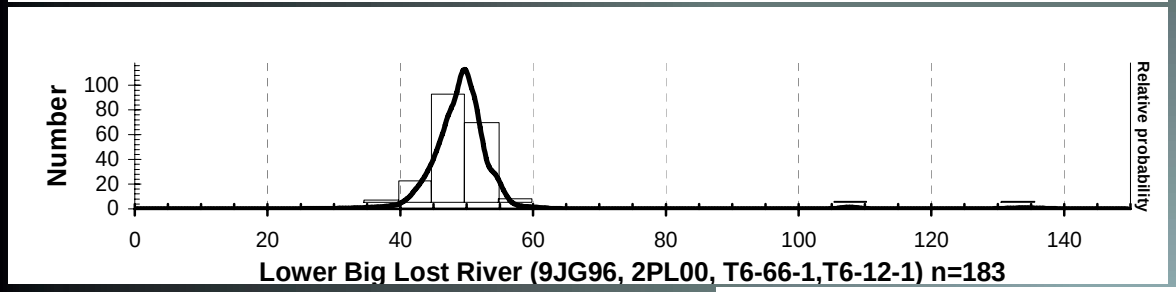

Orofino Terrane
250
160-130
90-100
60 to 80
Bitterroot Lobe
25 to 40
Rift Basin
Over 6000
detrital
zircon analyses
1370
2400
1100-1000,
Grenville
via Neoprot-Pz
Belt 1650-1750
1470-1420, 1500-1600
1800-2000
480
720-670
0-2 Y'stone
BLT
52-45
Challis
Teton
>2500
6-4
100-80
Atlanta Lobe
1650-1750
Belt + 70 via
Cretaceous ss
10-8
SRP
17-0 Ma
12-10
720-670
17-14
Albion
>2500,1800,
720, 550, 350,
32
1100-1000,
Grenville
via Neoprot-Pz
1850, 350
Antler
Belt
150, 42-35,
N. Nevada
DIGITAL
GEOLOGY
OF
IDAHO

Big Lost River System

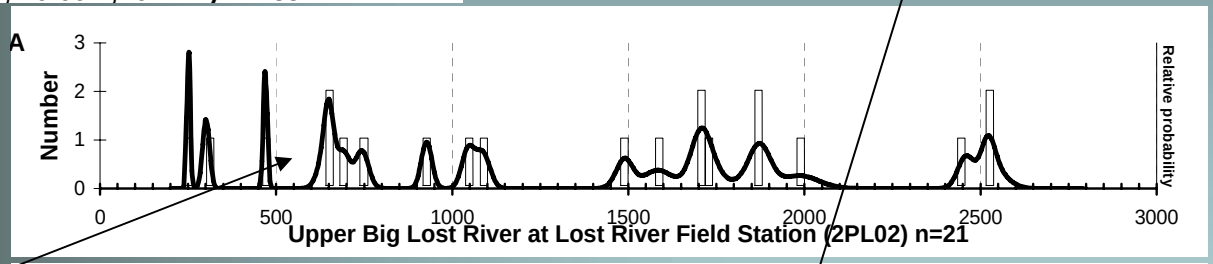
Abundant Eocene Grains
No Cretaceous Grains

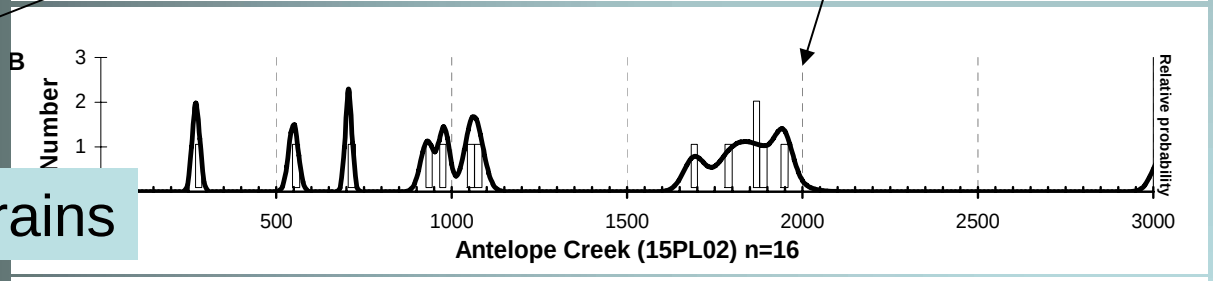




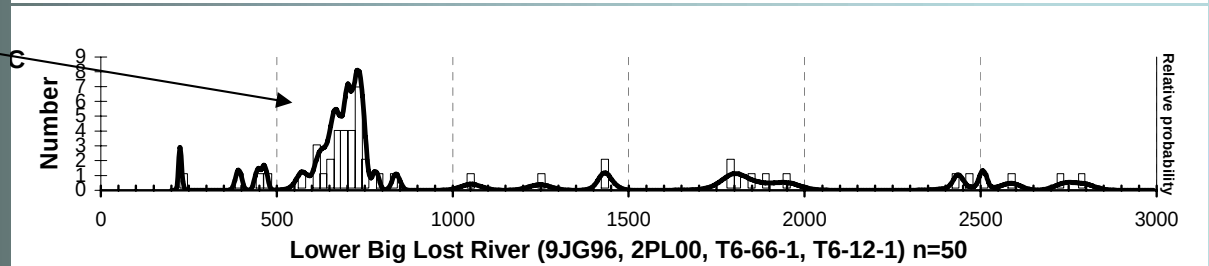


1800-1900 Ma Grains, recycled Through Miss. Copper Basin Group, Trans- Hudson derivation





“Ghost” Neoproterozoic Grains



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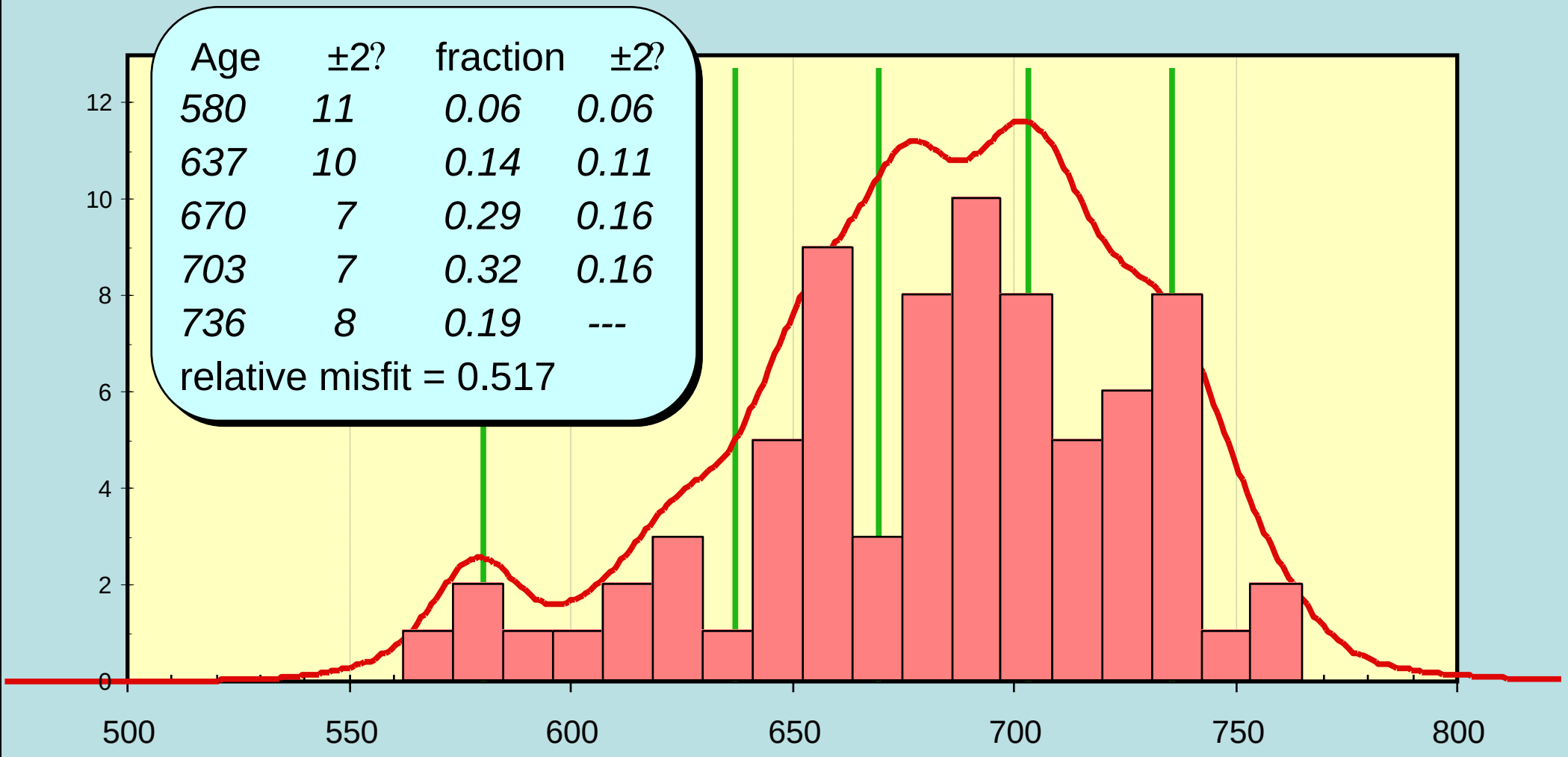
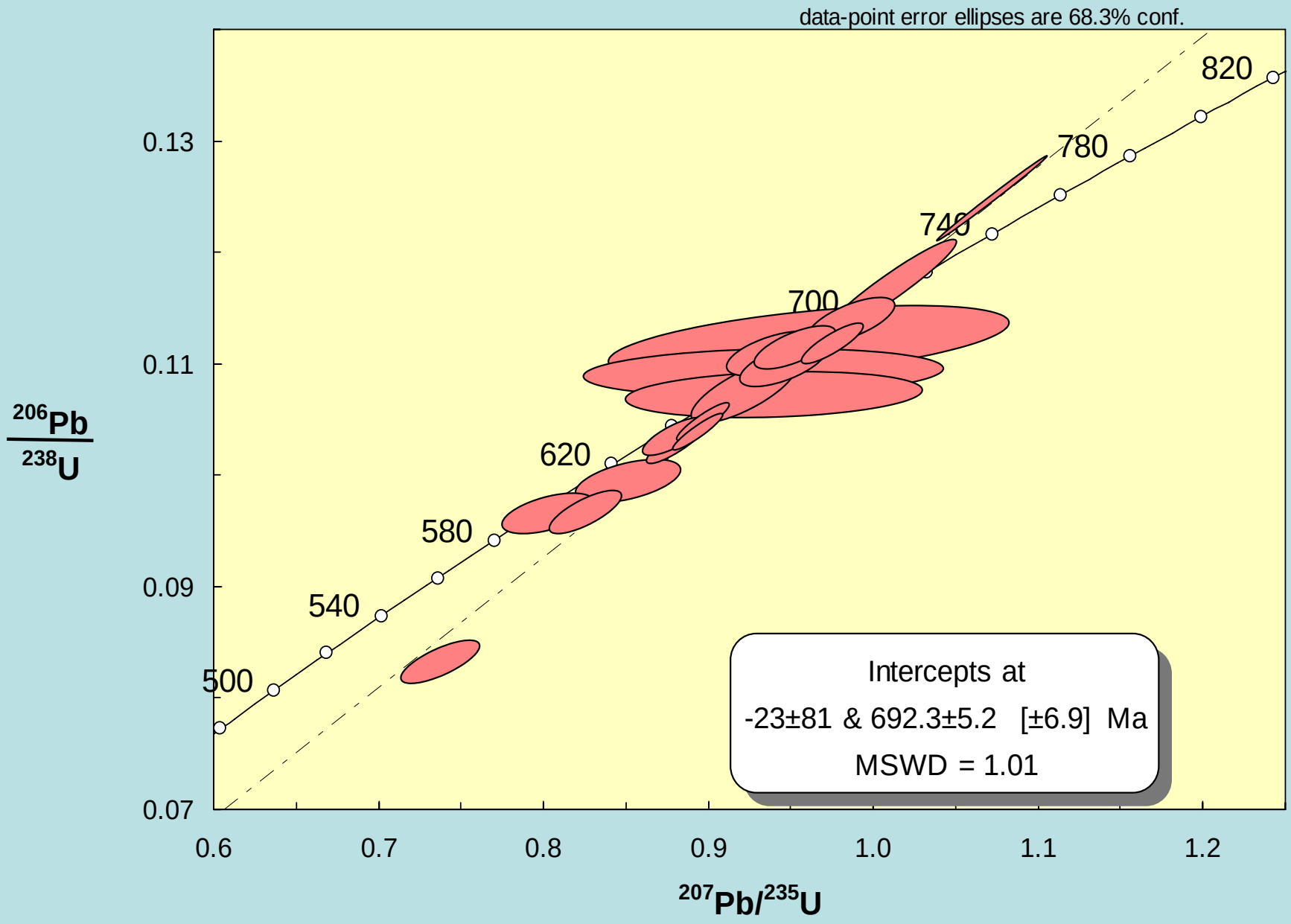
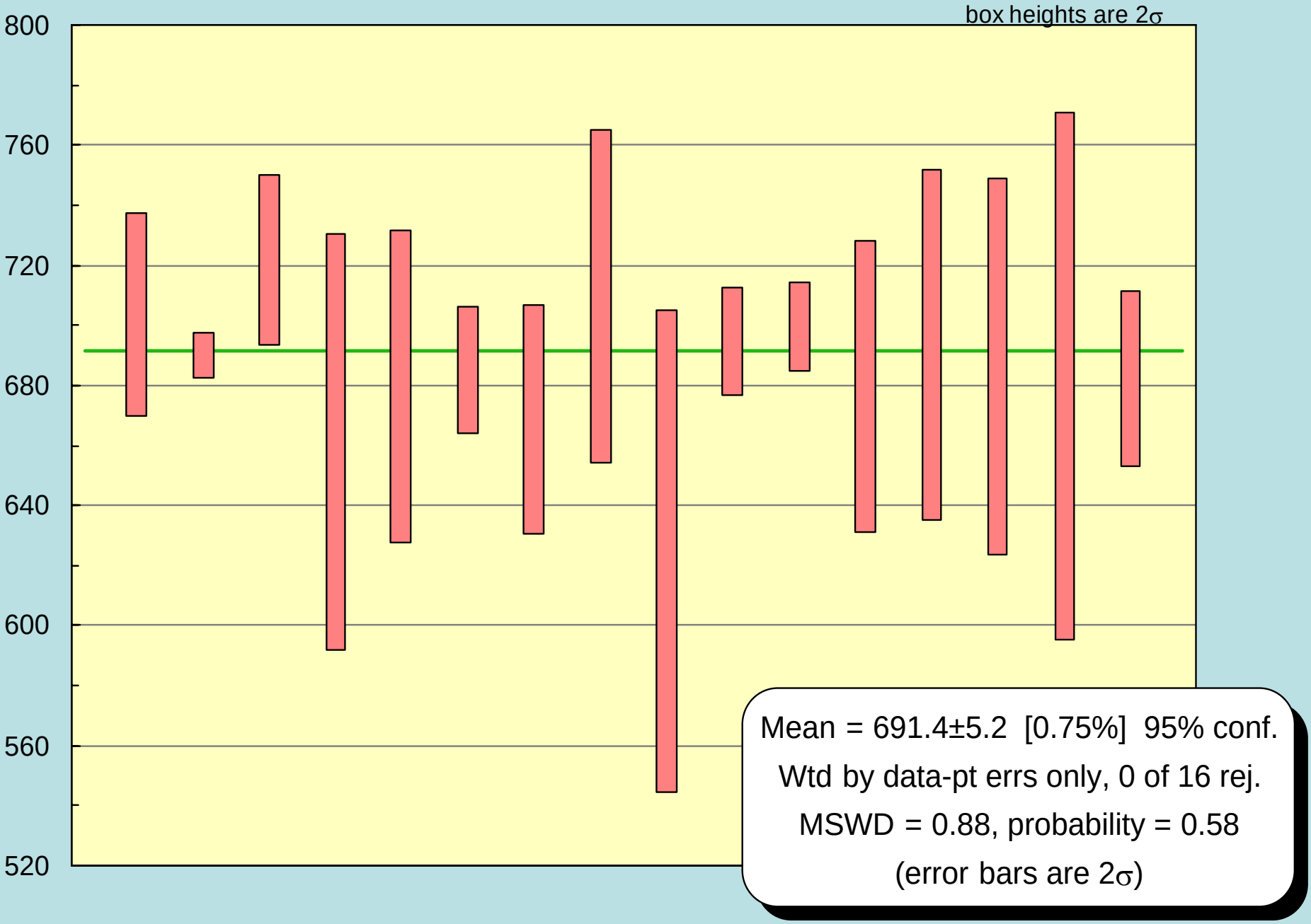


SHRIMP ages Late Neoproterozoic grains, Big Lost System , n=80

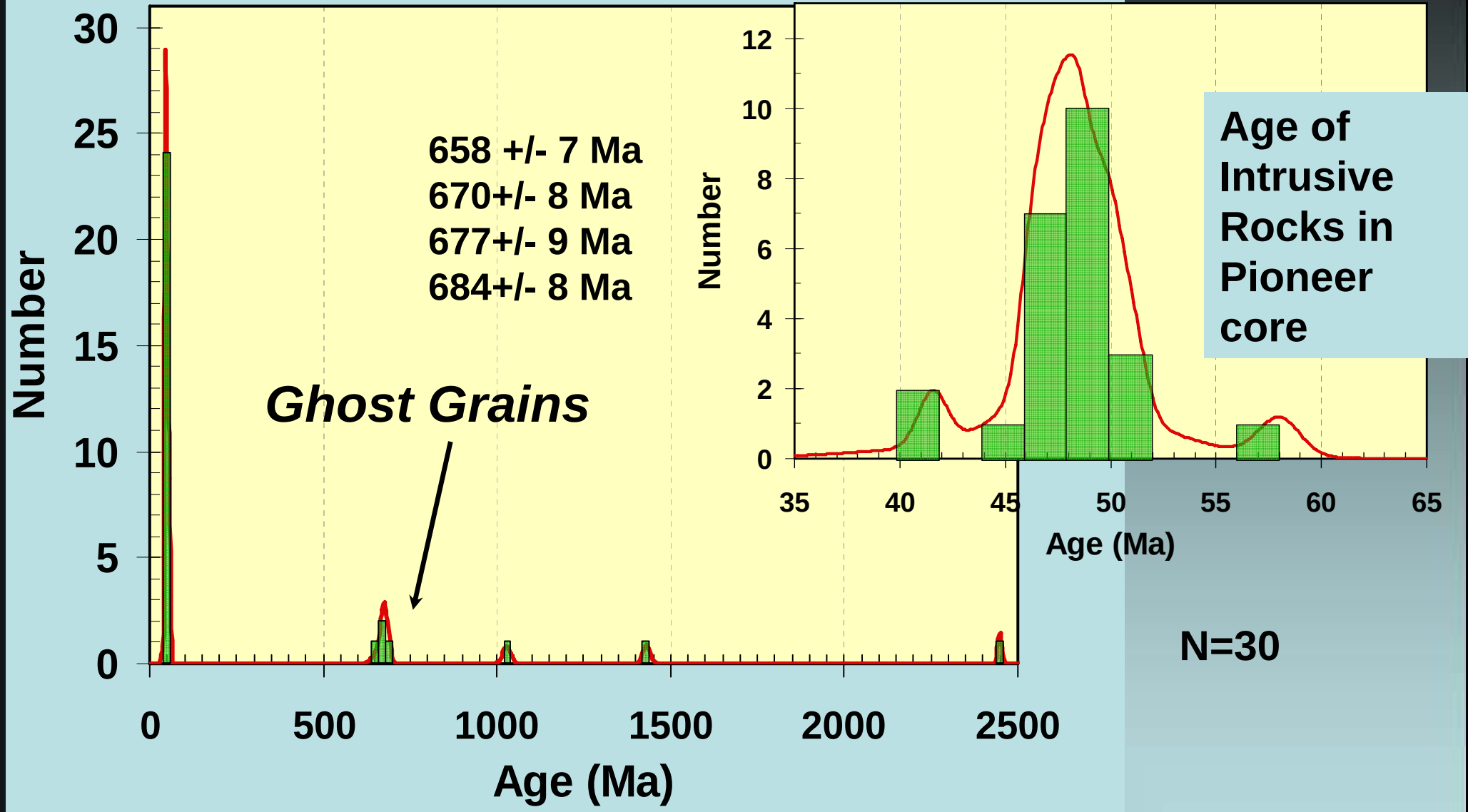
DIGITAL GEOLOGY OF IDAHO


data-point error ellipses are 68.3% conf.
820
780
740
700
620
580
540
500
0.13
0.11
0.09
0.07
0.6
0.7
0.8
0.9
1.0
1.1
1.2
206Pb/238U
207Pb/235U
Intercepts at
-23±81 & 692.3±5.2 [±6.9] Ma
MSWD = 1.01



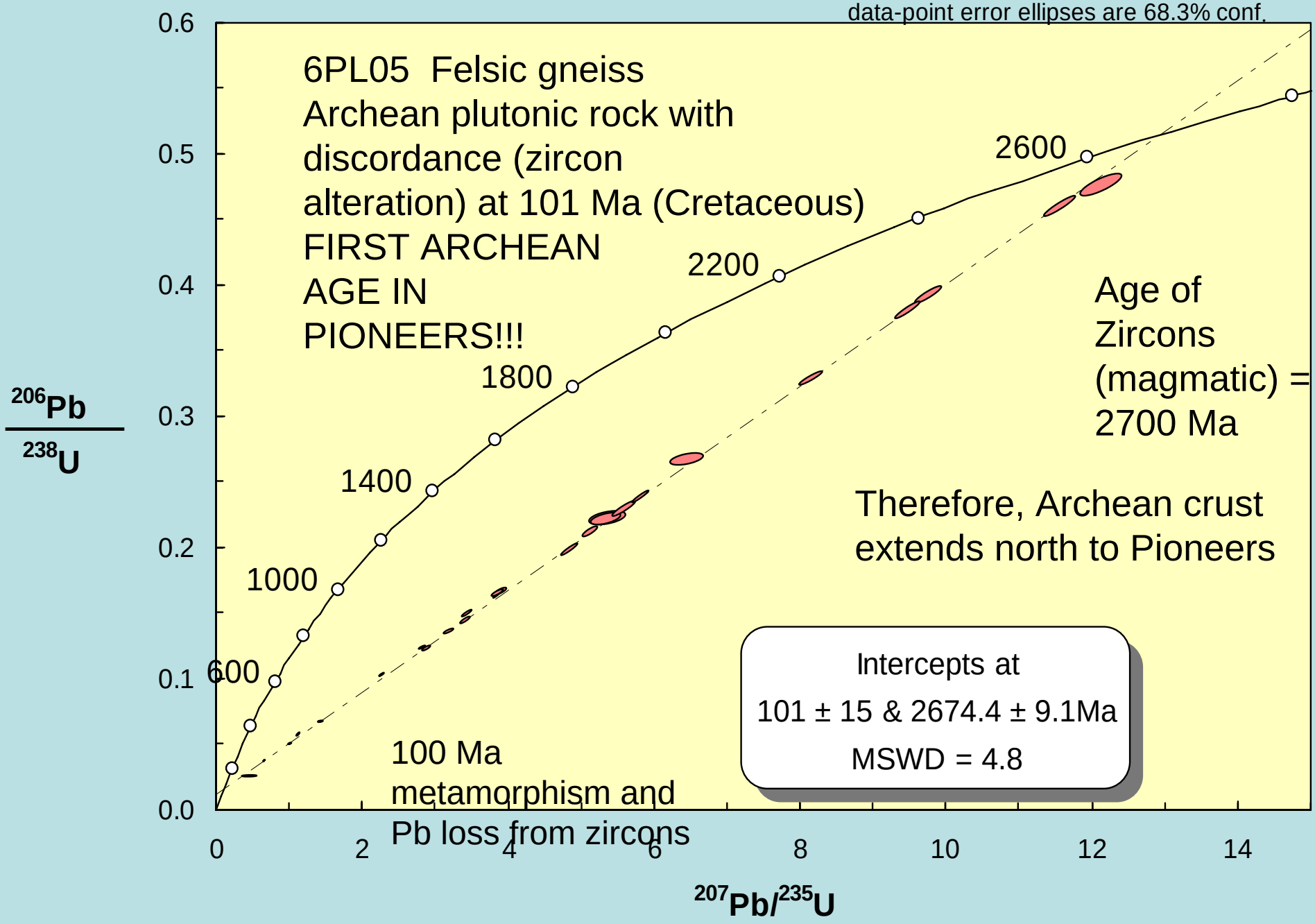
12KD06 Neoproterozoic orthogneiss

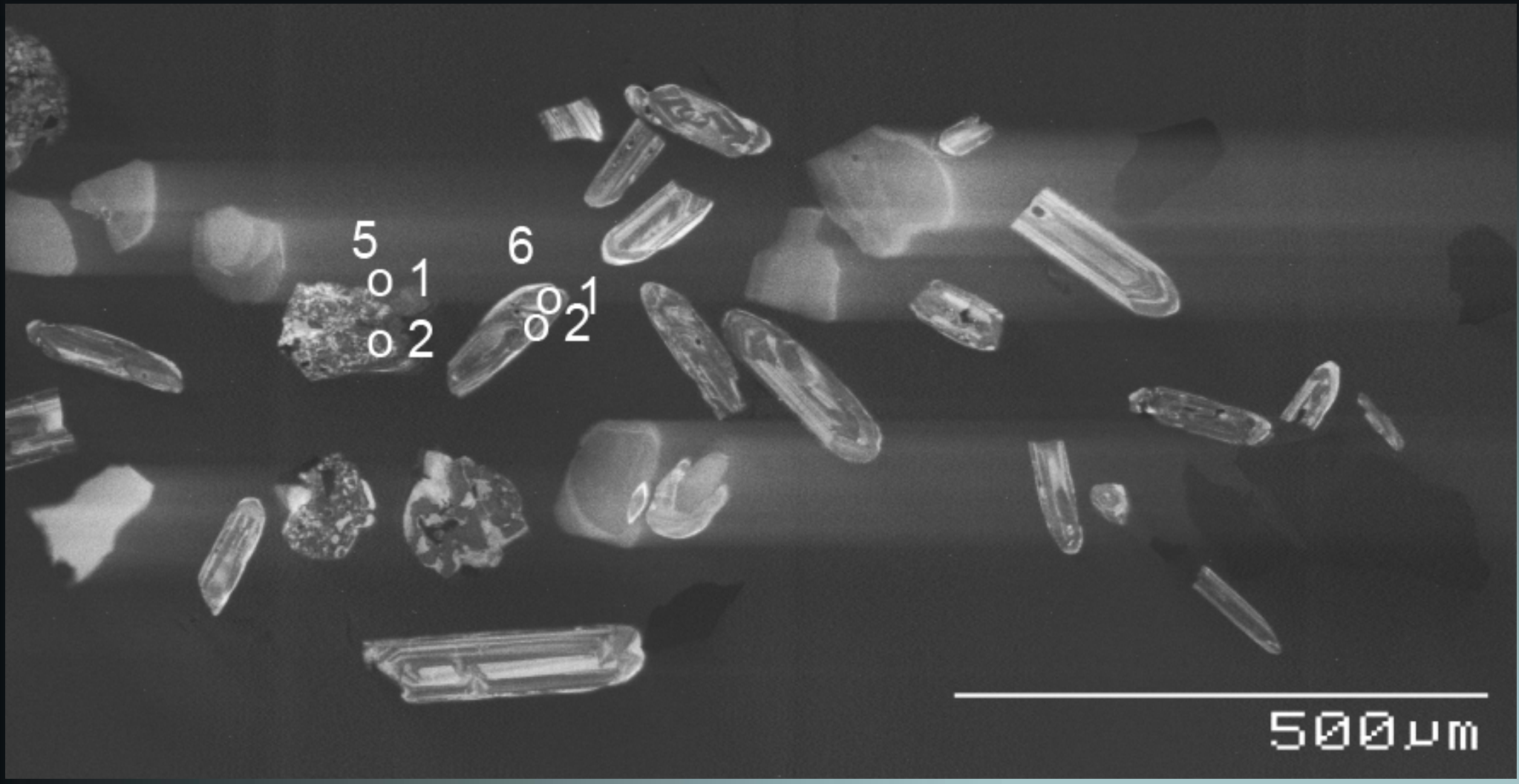
DIGITAL GEOLOGY OF IDAHO



8PL02 Wildhorse Creek, Source of the 660 Ma Grains

DIGITAL GEOLOGY OF IDAHO

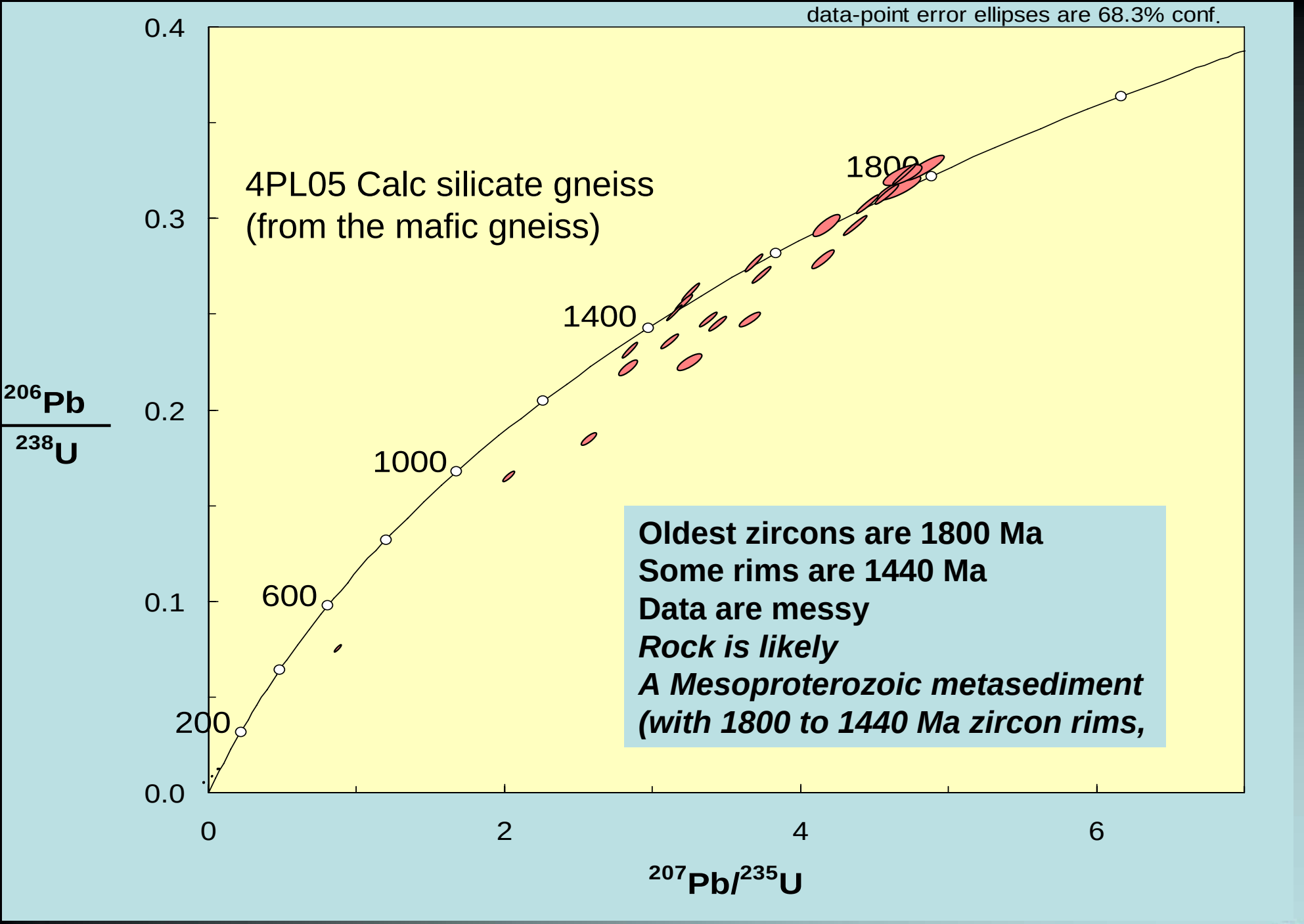

data-point error ellipses are 68.3% conf.
6PL05 Felsic gneiss
Archean plutonic rock with discordance (zircon alteration) at 101 Ma (Cretaceous)
FIRST ARCHEAN AGE IN PIONEERS!!!
Age of Zircons (magmatic) = 2700 Ma
Therefore, Archean crust extends north to Pioneers
Intercepts at
101 ± 15 & 2674.4 ± 9.1Ma
MSWD = 4.8
100 Ma metamorphism and Pb loss from zircons
600
1000
1400
1800
2200
2600
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
2
4
6
8
10
12
14
206Pb/238U
207Pb/235U

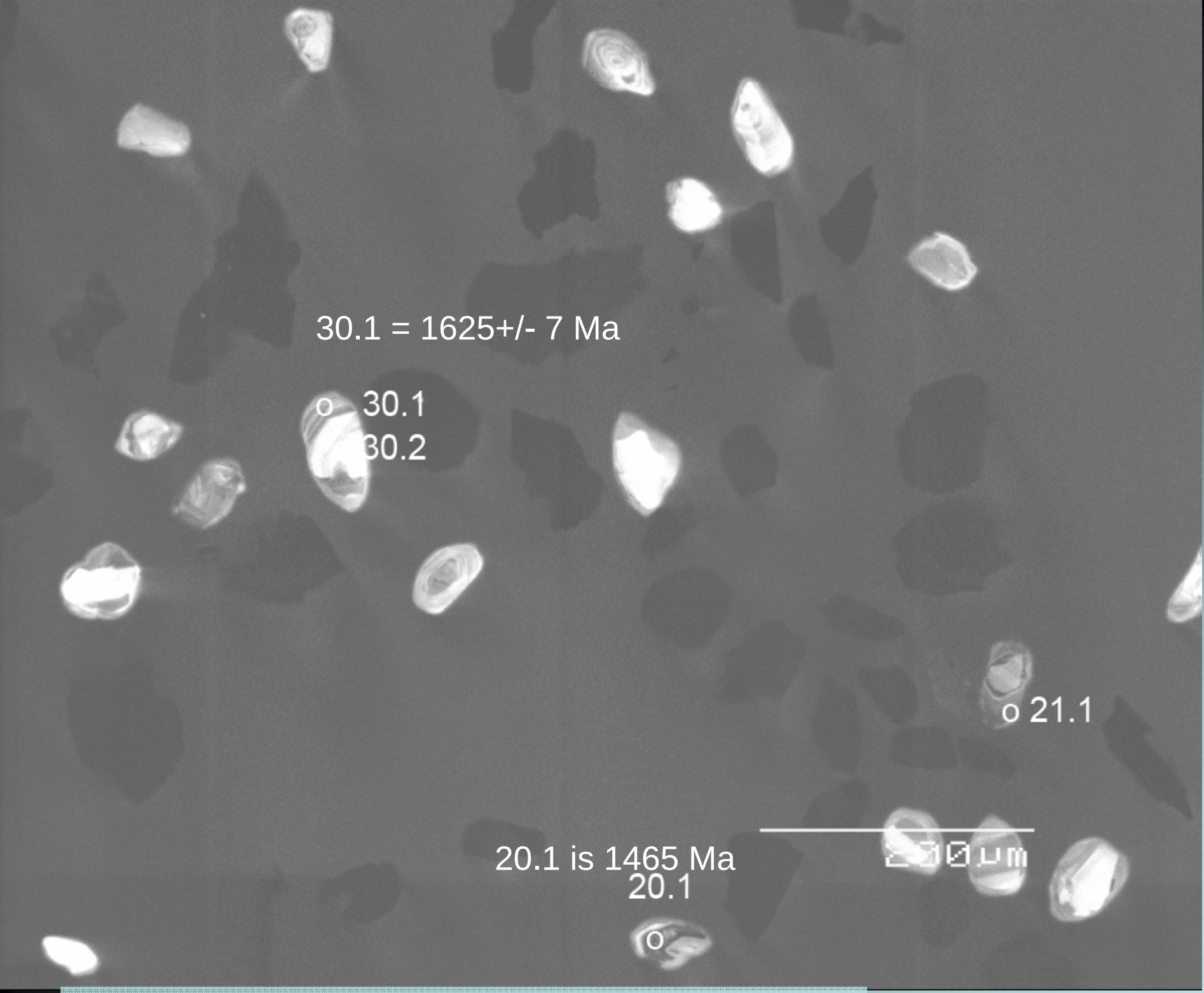


6 PL 05 Archean gneiss

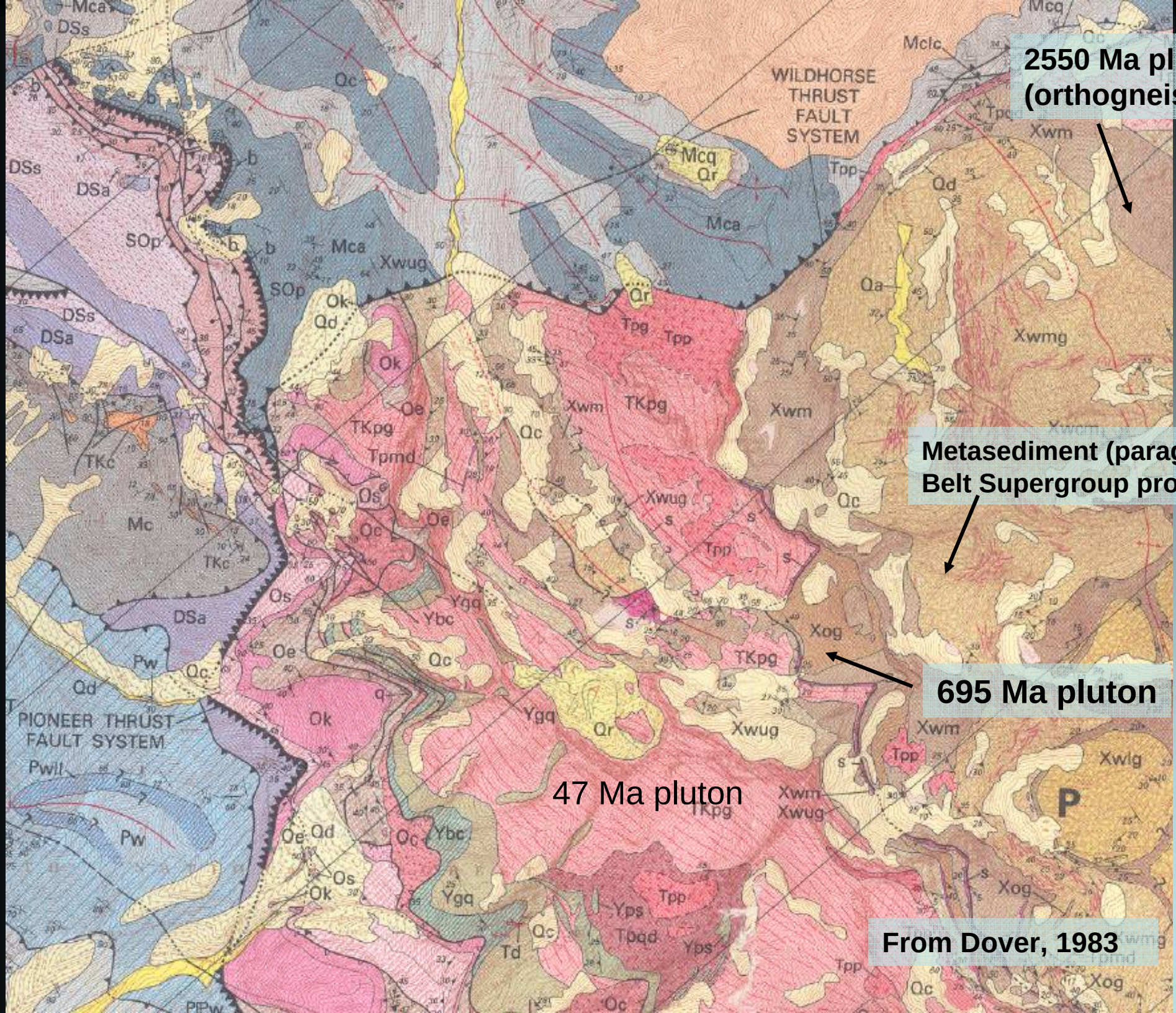
6.1 = 2566 +/ 15 Ma
6.2 = 2439 +/- 83 Ma

DIGITAL GEOLOGY OF IDAHO


data-point error ellipses are 68.3% conf.
4PL05 Calc silicate gneiss
(from the mafic gneiss)
1800
1400
1000
600
200
0.4
0.3
0.2
0.1
0.0
0
2
4
6
206Pb/238U
207Pb/235U
Oldest zircons are 1800 Ma
Some rims are 1440 Ma
Data are messy
Rock is likely
A Mesoproterozoic metasediment
(with 1800 to 1440 Ma zircon rims,



4PL05 Tiny zircon in a metamorphosed calc silicate?


2550 Ma pluton
(orthogneiss)
Metasediment (paragneiss)
Belt Supergroup protolith
695 Ma pluton
47 Ma pluton
From Dover, 1983
WILDHORSE
THRUST
FAULT
SYSTEM
PIONEER THRUST
FAULT SYSTEM
DIGITAL
GEOLOGY
OF
IDAHO