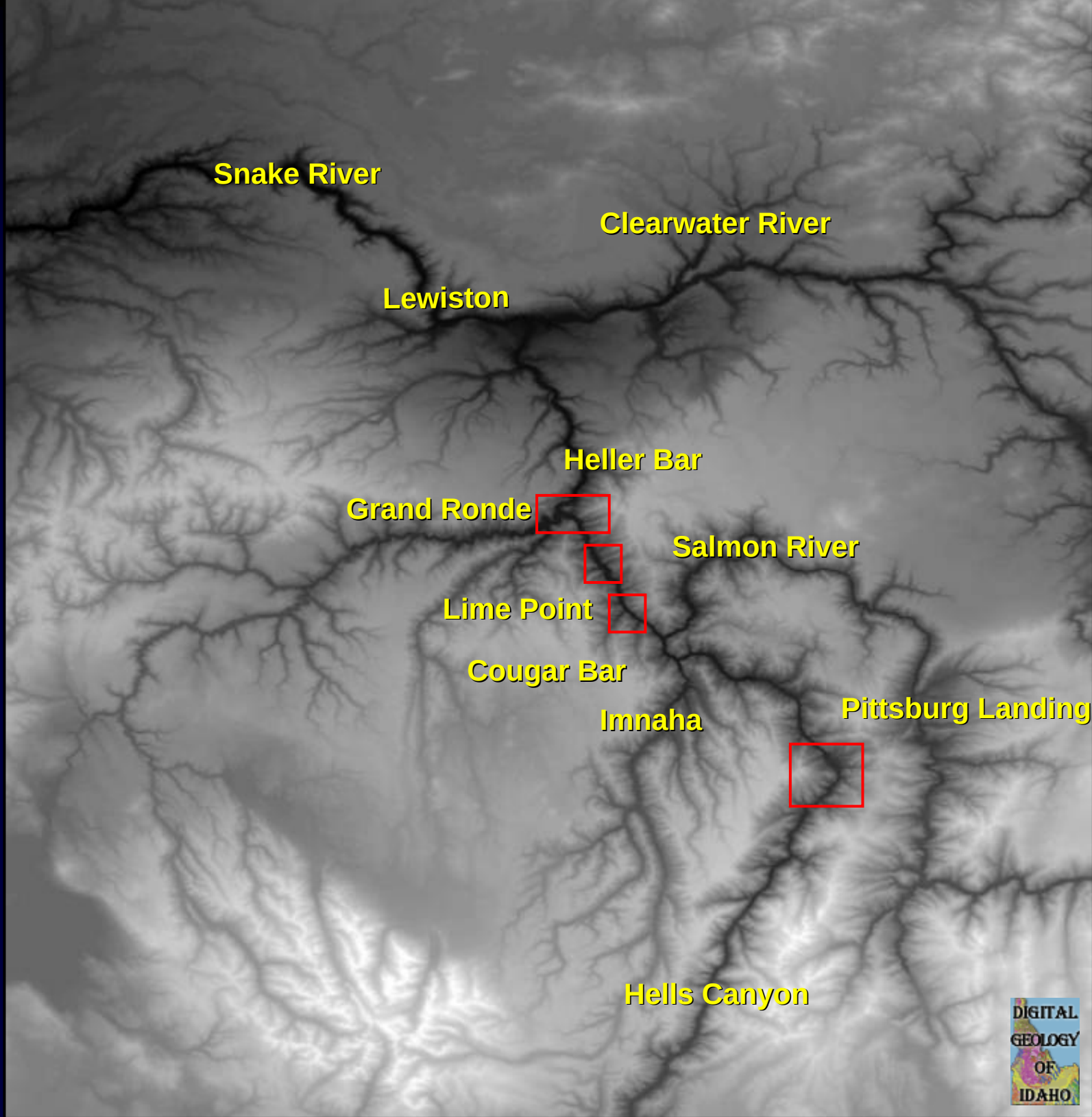
A Virtual Tour of Hells Canyon

Pictures are included from the red boxes shown.

Keegan Schmidt, 2007
Lewis-Clark State College, Lewiston, Idaho

klschmidt@lcsc.edu



Northern entrance to Hell's Canyon looking south up the Snake River, at the mouth of the Grand Ronde River, which drains northeast from the Blue and Wallowa Mountains in Oregon.

DIGITAL GEOLOGY OF IDAHO

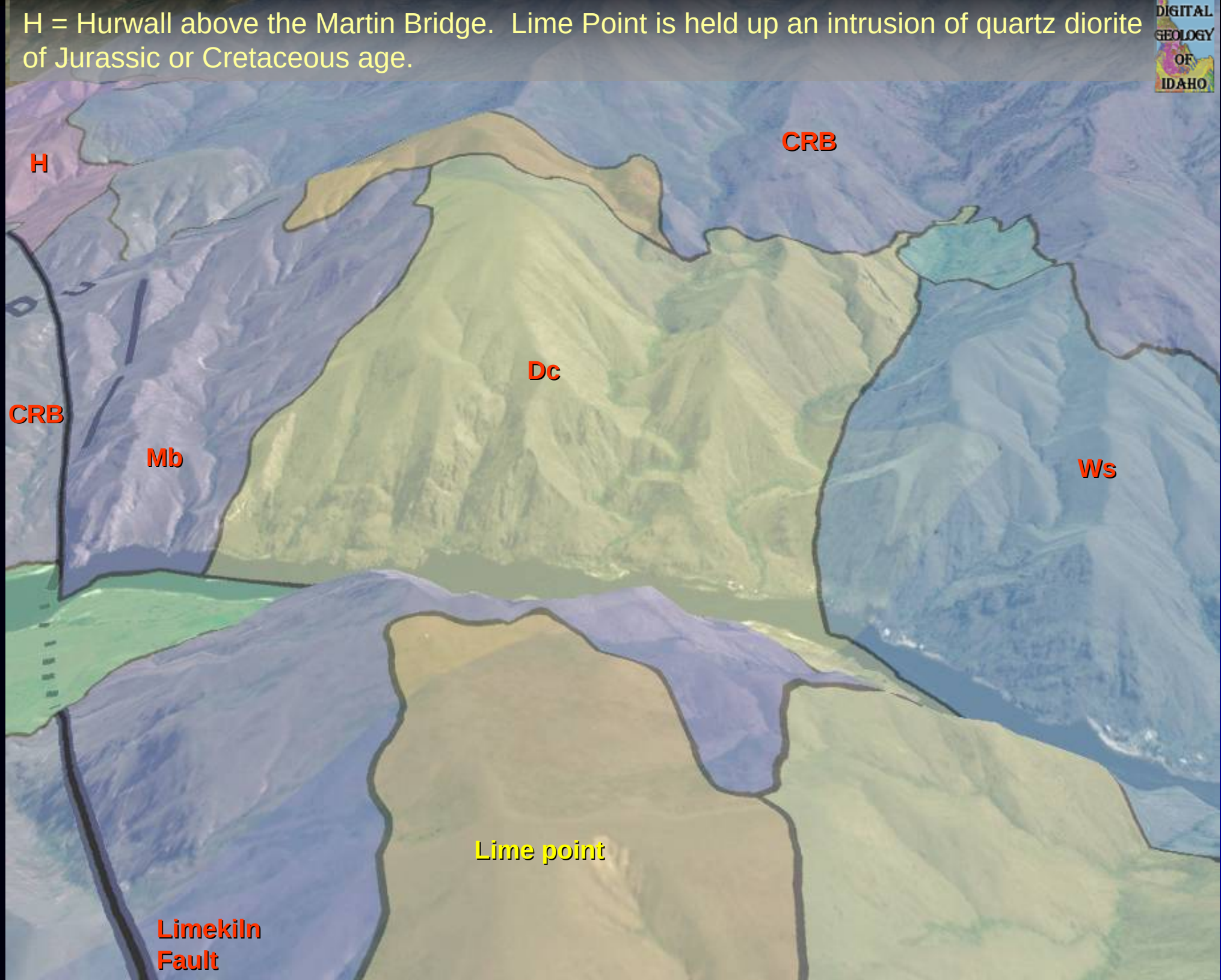
Same view as last slide. Limekiln fault brings basement rocks to south up against Columbia River Basalt to north. Note: Columbia River Basalt lying unconformably on basement south of the fault. From limekiln fault south, the section is dipping northwest, thus, as you go up the river you are going down section, starting with the Martin Bridge Limestone (MB), Doyle Creek (DC) and Ws (Wild Sheep Creek Formations).

View to the west looking up the Grande Ronde, and across the Snake, flowing north to the right. Heller Bar is around the corner on the right. Rogersburg, WA is the settlement on the east side of the river. Limekiln fault runs right of north dipping Martin Bridge limestone, and Doyle Creek volcaniclastic rocks are beneath Martin Bridge on the far left.

DIGITAL GEOLOGY OF IDAHO

View to east of Snake River flowing north across Limekiln fault at north end of Hells Canyon. Lime Point is landmark in foreground, (in Washington).

H = Hurwall above the Martin Bridge. Lime Point is held up an intrusion of quartz diorite of Jurassic or Cretaceous age.



Stratigraphy of the Wallowa Terrane, *from Vallier, 1998*

Folding, faulting, & uplift

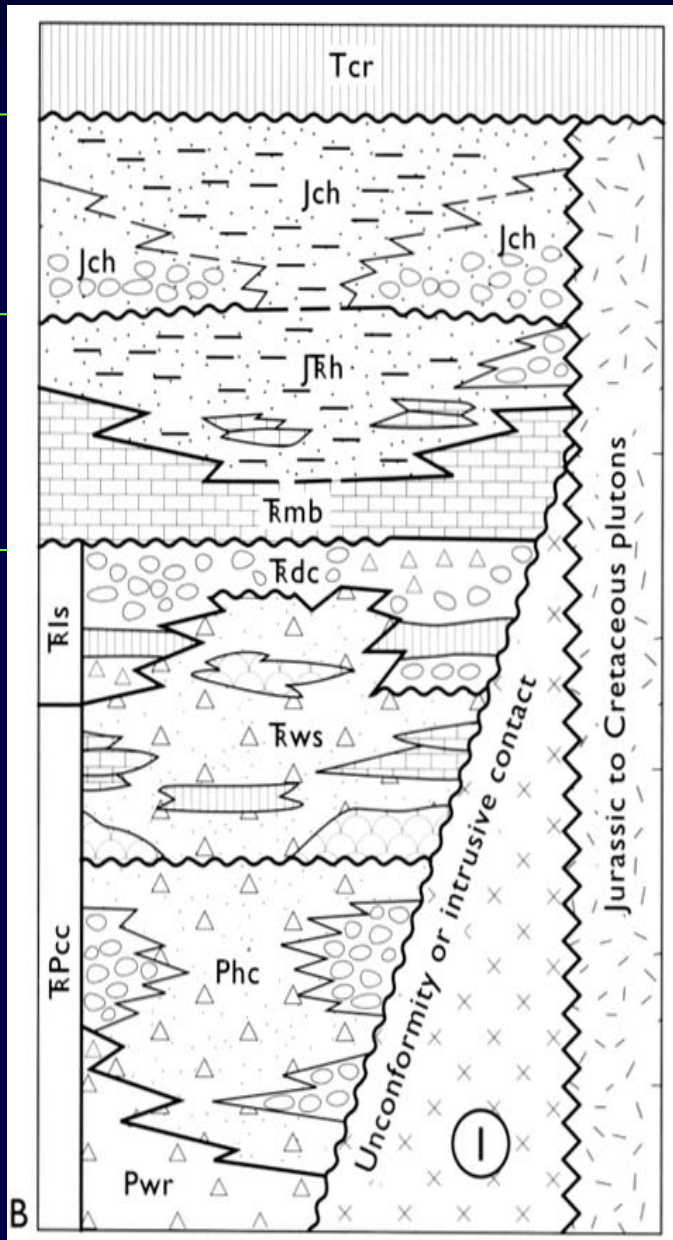
Mid-Late Jurassic shale & conglomerate

Uplift & erosion

Late Triassic- Early Jurassic limestone

Arc volcanism ceases

Permian-Triassic island arc volcanism (active subduction)



EXPLANATION

Tcr	Columbia River Basalt Group (Miocene)
Jch	Coon Hollow Formation (Upper and Middle Jurassic)
JTrh	Hurwal Formation (Lower Jurassic and Upper Triassic)
Trmb	Martin Bridge Limestone (Upper Triassic)
Trls	"Lower Sedimentary Series" of Prostka (1962) (Upper Triassic)
Trdc	Doyle Creek Formation (Upper and Middle Triassic)—Includes:
Trdck	Kurry unit (Upper Triassic)
Trws	Wild Sheep Creek Formation (Upper and Middle Triassic)
TrPcc	Clover Creek Greenstone (Triassic and Permian)
Phc	Hunsaker Creek Formation (Lower Permian)
Pwr	Windy Ridge Formation (Lower Permian)

Volcanic flows
Sandstone, siltstone, and shale
Conglomerate
Sandstone
Limestone
Breccia
Breccia and sandstone
Pillow lava
Interfingering contact
Intrusive contact
Unconformity

DIGITAL GEOLOGY OF IDAHO

Contact of Doyle Creek under Martin Bridge, on the east side of the river from Lime Point.

DIGITAL GEOLOGY OF IDAHO

Martin Bridge limestone at Lime Point area.

DIGITAL GEOLOGY OF IDAHO

Cleaved Doyle Creek formation of andesitic volcaniclastic rocks eroded from Permian islands. Note prominent cleavage development.

DIGITAL GEOLOGY OF IDAHO

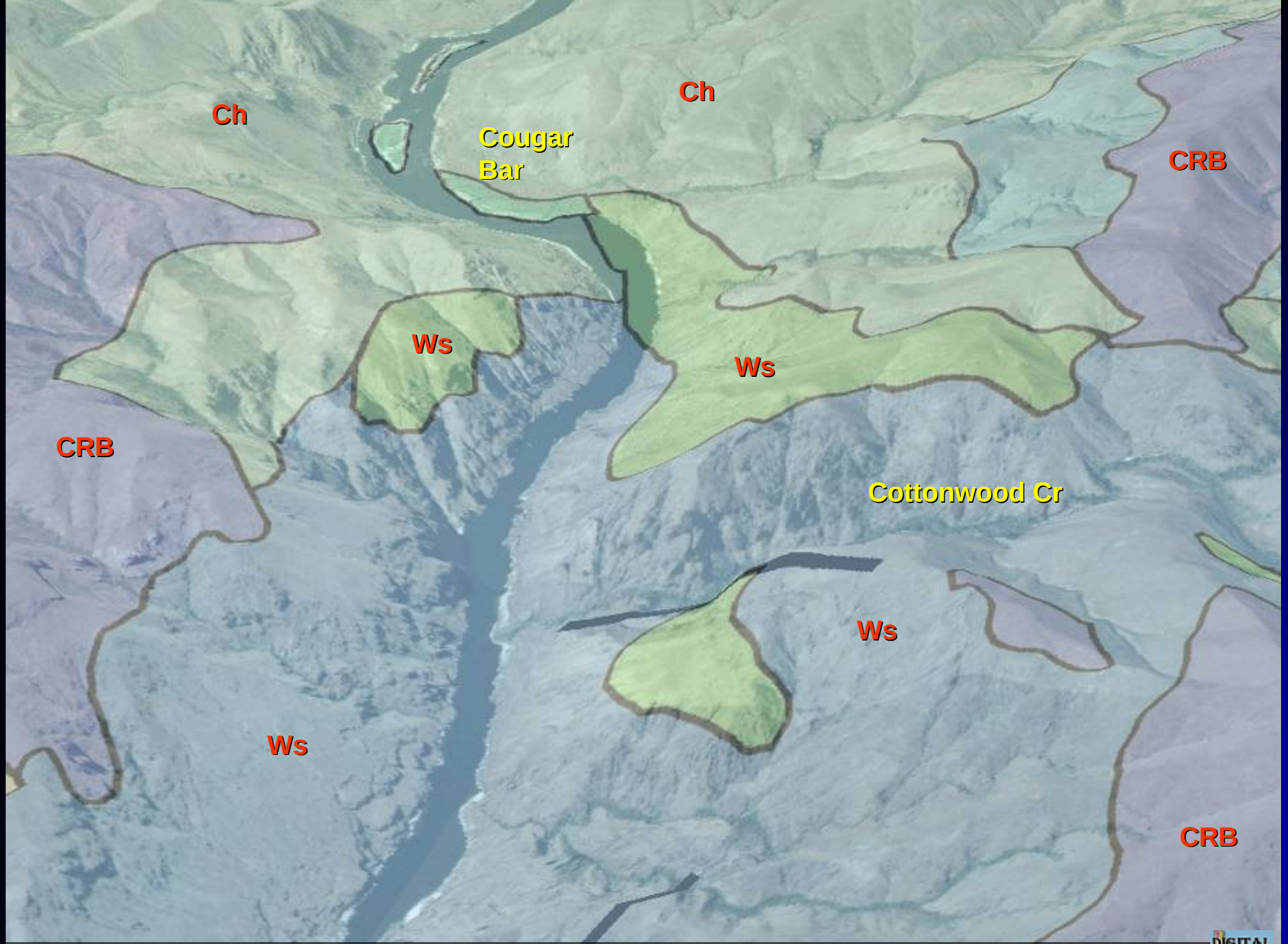
View to the southeast of Cave Gulch coming into Snake River from the east. On the right are large landslide complexes underlain by Coon Hollow Formation (Jurassic).

Landslide complex looking south across Cave Gulch. Landslide complex on the right.

DIGITAL GEOLOGY OF IDAHO

View to the north (Idaho is on the right). Cottonwood Creek drains Craig Mountain south of Lewiston.

DIGITAL GEOLOGY OF IDAHO



Ch = Coon Hollow Formation above the Wild Sheep Creek Formation. Martin Bridge and Doyle Creek and Hurwall formations are not present across the unconformity.

DIGITAL GEOLOGY OF IDAHO

Wallowa Terrane Stratigraphy

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Mid-Late Jurassic shale & conglomerate

Uplift & erosion

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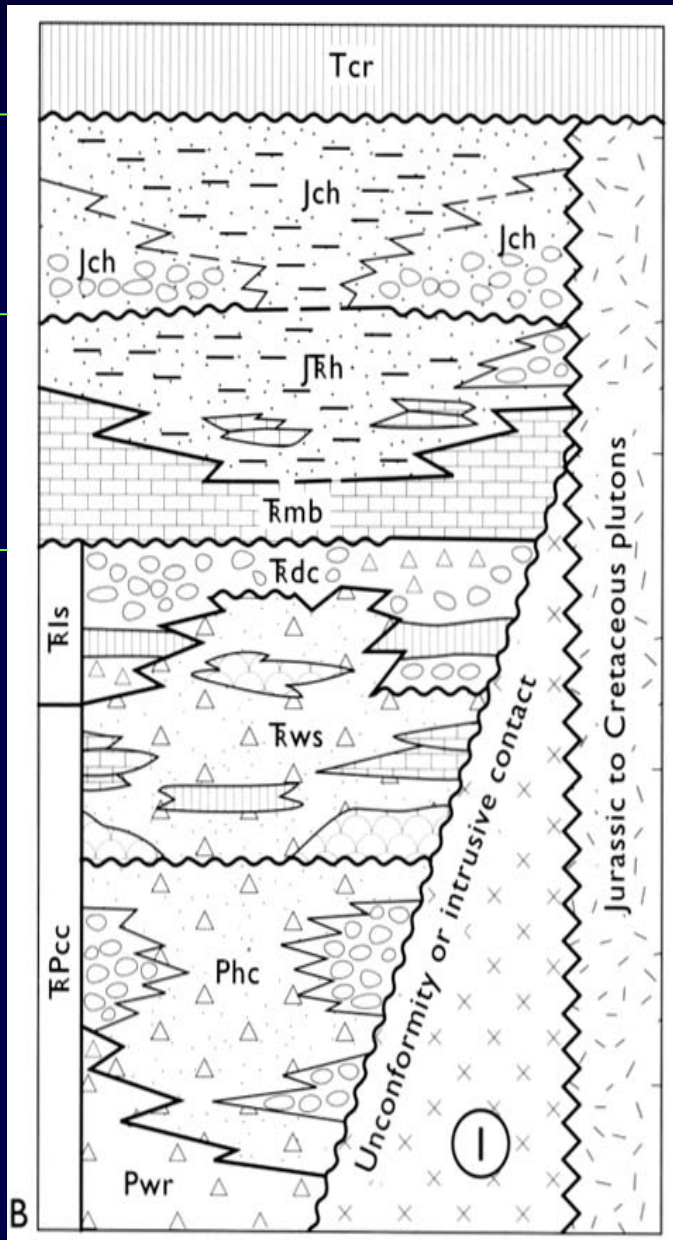
Permian-Triassic island arc volcanism (active subduction)

From Vallier, 1998



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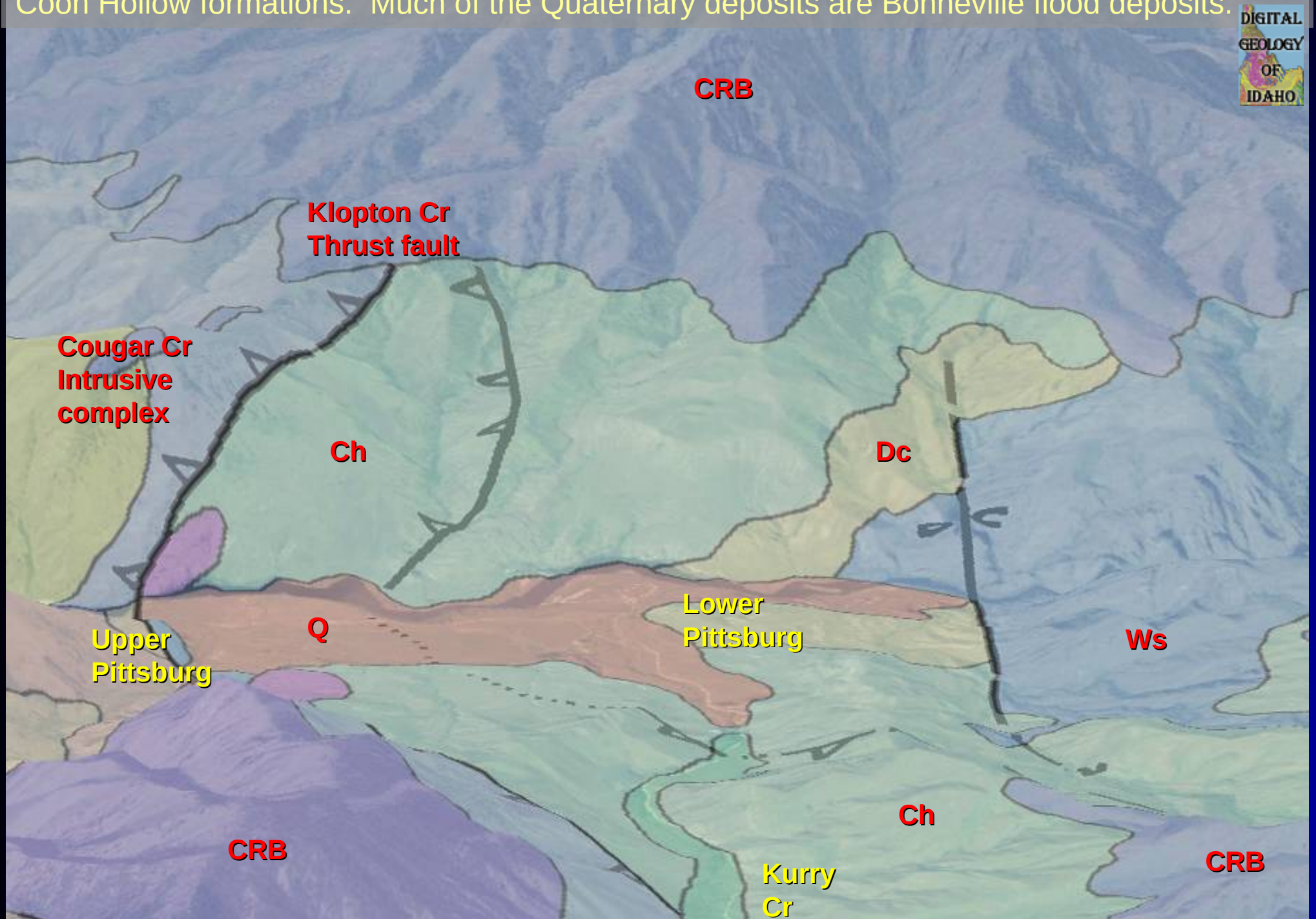
DIGITAL GEOLOGY OF IDAHO

View to south, upstream from Cougar Bar of shallowly north dippking unconformity.
Note the difference in dip of Wild Sheep vs. Coon Hollow.

DIGITAL GEOLOGY OF IDAHO

View looking west, coming down Kurry Creek from Whitebird, road to Pittsburg Landing.

In Oregon, Columbia River Basalt's lie unconformably on Wallowa terrane basement. In basement, Cougar Creek intrusive complex is thrust over rest of volcano-sedimentary section. The rest of the section is south plunging anitcline in Wild Sheep, Doyle Creek, and Coon Hollow formations. Much of the Quaternary deposits are Bonneville flood deposits.



View looking west down Kurry Creek to Columbia River Basalt in Oregon. Complex structure in foreground near Pittsburg Landing.

DIGITAL GEOLOGY OF IDAHO

View north looking downstream in Snake River at the north end of Pittsburg Landing. Wild Sheep Creek volcanics are promenent outcrops. Subdued outcrops in foreground are Doyle Creek Formation.

DIGITAL GEOLOGY OF IDAHO

View same place. Looking east into thick conglomerates of Coon Hollow Formation above. Doyle Creek Formation below.

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Conglomerates of the Coon Hollow Formation, Klopton Creek thrust faults is in middle distance, placing Courgar Creek complex on shales of marine Coon Hollow. Splay in front places the marine black shale of the Coon Hollow on the conglomerates.

DIGITAL GEOLOGY OF IDAHO

Same outcrop. Fossil Wood in Coon Hollow Formation. Fluvial channel conglomerates. Dorsey and LeMaskin (in prep).

DIGITAL GEOLOGY OF IDAHO

Ammonite in marine Coon Hollow Formation.

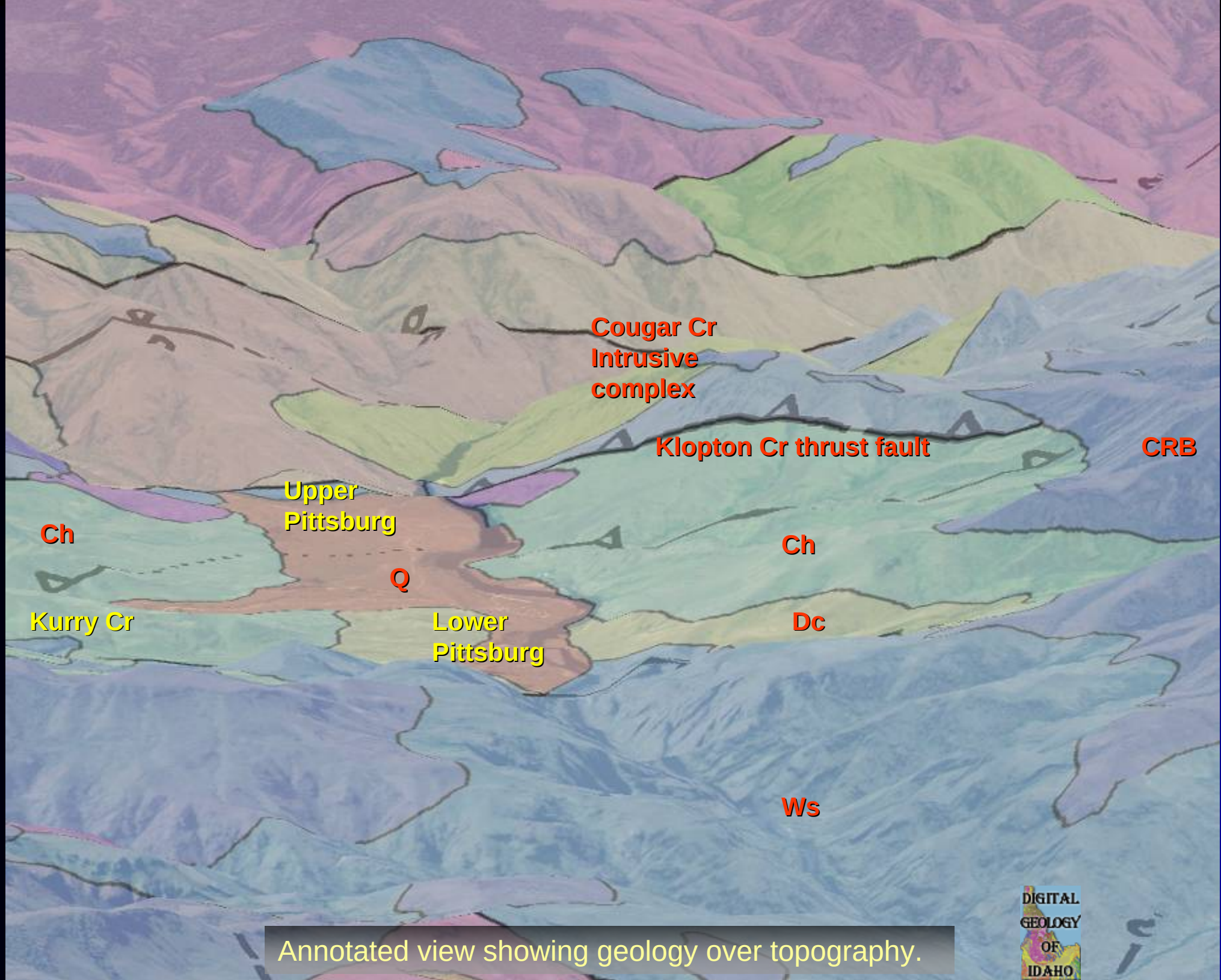
DIGITAL GEOLOGY OF IDAHO

Megaripples in Bonneville Gravels near upper Pittsburg Landing. View is to the east. Klopton Creek drains west from Idaho.

DIGITAL GEOLOGY OF IDAHO

Same area, view is to the south.

DIGITAL GEOLOGY OF IDAHO



Annotated view showing geology over topography.

DIGITAL GEOLOGY OF IDAHO

Same view, except from the ground. View is to the south from the ground. Kurry Creek is in foreground. High topography is the Cougar Creek Complex.

DIGITAL GEOLOGY OF IDAHO

Cougar Creek instrusive complex. Mylonitic along Klopton Creek Thrust. On right is mylonitic granites and diorites, quartz diorites, andesites, tyrondhemites.

DIGITAL GEOLOGY OF IDAHO