COLORADO GEOLOGICAL SURVEY
COLORADO SCHOOL OF MINES
GOLDEN, COLORADO

CRETACEOUS STRATIGRAPHY OF COLORADO

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MAP SERIES 54
COLORADO CREATACEOUS STRATIGRAPHY CHART
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Colorado's stratigraphy is dominated by gaps. The distribution of strata reflects the tectonic and climatic evolution of each of the region's basin areas. To foster comparison of these patterns, we have organized the stratigraphy using a linear timescale and illustrated where orogenic uplift has led to removal of strata or nondeposition. Not all orogenic features are illustrated on the chart. In the past ~10 Ma, regional uplift has raised Colorado and has allowed the modern landscapes to be created due to erosion. The color scheme for stratigraphic units gives a sense of dominant lithologies and depositional environments across basins.

Updates to this chart, as well as additional stratigraphic resources, such as stratigraphic and structural cross-sections, can be found at ***https://coloradostratigraphy.org***. To learn more about the unit names on this chart, resources are available at the U.S. Geological Survey's Geolex site: ***https://ngmdb.usgs.gov/Geolex***.

This chart scaffolds on the work of Richard H. Pearl's 1977 compilation (Rocky Mountain Association of Geologists, Special Publication 2). This data has been recast against the International Commission on Stratigraphy's chrono-stratigraphic chart v. 2015/01, updated at: ***https://stratigraphy.org***.

The Jurassic Morrison Formation is overlain unconformably by the basal sandstone beds of the Dakota Group. These strata are often characterized by chert pebbles and represent the onset of accommodation associated with the transgression of the Interior Seaway. For a time span on the order of thirty million years, Colorado was inundated by shallow seas.

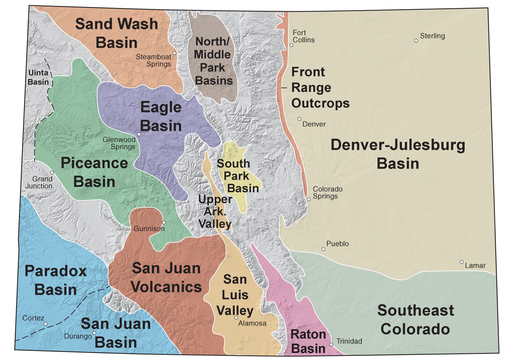
The thick organic-rich marine shale units that dominate the Cretaceous sedimentary package are source rocks for many hydrocarbon accumulations.

Submarine erosion and non-deposition resulted in subtle diastems and unconformities during the Turonian and Coniacian.

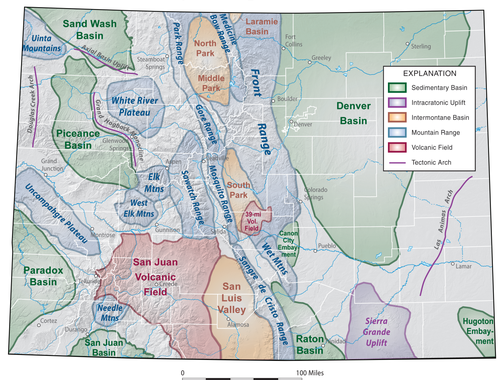
A complex series of transgression and regression episodes are recorded in western Colorado, culminating in the regressive Fox Hills Sandstone representing the departure of the seaway. The overlying fluvial-dominated Kirkland, Williams Fork, and Laramie formations accumulated on the low elevation coastal plain that replaced the seaway.

At the end of the Cretaceous, the Laramide Orogeny shattered the craton, defining basement-cored uplifts and adjacent downwarps that filled with synorogenic sediments.

Stratigraphic Chart Basin Boundaries



Major Geologic Features



Legend

- Coastal/near-shore sandstone
- Non-marine sandstone, mudstone
- Marine shale
- Marine carbonates (limestone, dolostone)
- Organic-rich shale
- Volcanic rocks
- Coal seam
- Conglomerate

Laramide mountain building event with associated shed material

Missing strata due to uplift and erosion

NALM = North American Land Animal age * Dated Ash

Drafted by Larry Scott, CGS September 2022

Ammonite Range Zones from USGS OF 2006-1250, * indicates radiometric date. See also *https://precisionstratigraphy.com* for boundary info.
Date for Coal Canyon Ash (Piceance Basin) is from Walker, J.T., Aslan, A., Cole, R., and Heizler, M.T., 2021, Mt Geologist, v. 58, p. 5–26.
Dates for Codell, X Bentonite, and Clay Spur Bentonite from Longman, M., Gent, J., and Hagadorn, J., 2021, Mt Geologist, v. 58, p. 289–304.
Pmag from GSA, 2009 with C32/C33 boundary shifted to 73.5 after Fassett USGS PP 1625-B, and Santonian Campanian boundary put at top of C34, C28r to C30n from Clyde et al., 2016.
Stage boundaries from International Committee on Stratigraphy *https://stratigraphy.org*.

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Additional Resource: Correlation of the Upper Cretaceous Strata of Wyoming, 2017, WSGS-2017-ofr-03, by Ranie M. Lynds and Joshua S. Slattery