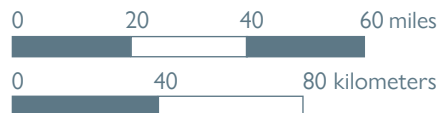
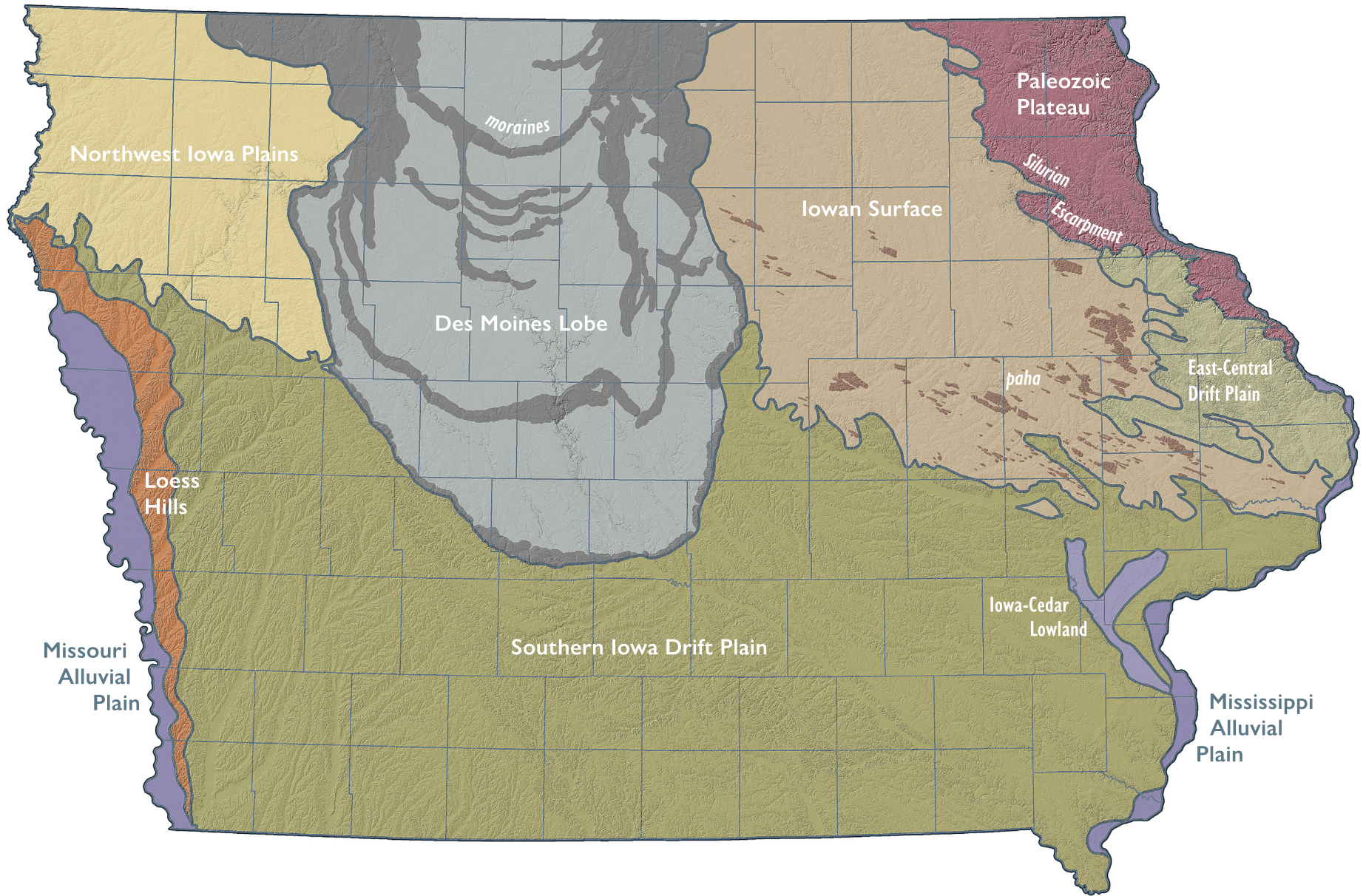


# LANDFORM REGIONS OF IOWA – 2024





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A landscape is a collection of terrain features, or landforms. Iowa's landforms are composed of earth materials derived from glacial ice, strong winds, flowing rivers, and marine environments during the geologic past. This map is a guide to the state's remarkably diverse landscapes and landform features.

## DES MOINES LOBE

The last glacier to enter Iowa advanced in a series of surges beginning 18,000 years ago and reached its southern limit, the site of modern-day Des Moines, 16,000 years ago. By 13,000 years ago, the slowly decaying ice sheet was gone, leaving behind a poorly drained landscape underlain by pebbly clay as well as sand and gravel from swift meltwater streams. Today, broadly curved bands of ridges and knobby hills (moraines) mark the positions of glacial advances. Clear Lake and Storm Lake lie along the Lobe's eastern and western borders, respectively. Iowa's "Great Lakes," smaller prairie potholes or kettle lakes, and abundant wetlands dot the terrain of this freshly glaciated landscape.

## LOESS HILLS

Uncommonly thick deposits of wind-blown silt (loess) create a distinct landscape along Iowa's western border with the Missouri River. The silt, finely ground by glaciers to the north, was carried down the Missouri River by seasonal meltwater floods, especially between 27,000 and 14,000 years ago. During seasonal low-flow periods, vast quantities of this loose silt were swept by wind from the broad valley and deposited downwind. The deepest accumulations are along the Missouri Valley's leeward margins. Subsequent erosion sculpted these deposits into an array of peaked hills and narrow ridges with steep diverging side slopes, which now include sizeable tracts of native prairie.

## SOUTHERN IOWA DRIFT PLAIN

Older glacial deposits left by ice sheets that extended far south into Missouri over 500,000 years ago dominate this region. These deposits were carved by deepening episodes of stream erosion so that only a horizon line of hill summits or occasional tabletop divides remain to mark the once-continuous glacial plain. Numerous rills, creeks, and rivers branch out across the landscape shaping the old glacial deposits into steeply rolling hills and valleys. A mantle of loess drapes the uplands and upper hill slopes. The East-Central Drift Plain is a sub-region that includes shallow dolomite bedrock with sinkholes, wind-aligned sand and loess deposits, and significant local relief.

## IOWAN SURFACE

The gently rolling terrain reflects vigorous weathering during the last period of intense glacial cold, 26,000 to 12,000 years ago. Northern Iowa experienced a periglacial climate where tundra and permafrost conditions persisted. The preexisting topography was leveled out when frozen sediments thawed and melted downslope. This region typically lacks thick loess deposits found to the south and also has exposed glacial erratics scattered across this landscape. However, loess-mantled hills which trend NW to SE (paha) and other linear features stand above the eroded plain

## NORTHWEST IOWA PLAINS

The open rolling hills of this region also result from the intense erosion that accompanied the period of maximum glacial cold. A moderate loess mantle adds to the region's relief, a reflection of its proximity to two silt sources, the Missouri and Big Sioux river valleys. Land elevations are uniformly higher, and precipitation amounts lower than elsewhere in Iowa. Low wind-polished outcrops of reddish Sioux Quartzite, the oldest bedrock seen in the state (1.6 billion years), occur in the far northwest corner of this region.

## PALEOZOIC PLATEAU

The unusually scenic topography results from a near-absence of glacial deposits and valleys that are deeply carved into sedimentary bedrock. Rock layers vary in resistance to erosion, producing picturesque bluffs, waterfalls, and rapids. Fossil-bearing strata originated as sediment on tropical sea floors between 300 and 550 million years ago (Paleozoic age). A prominent bluff line of resistant dolomite, the Silurian Escarpment, marks the western boundary of most of this region. Shallow limestone and dolomite coupled with the dissolving action of groundwater yields karst topography, characterized by numerous caves, springs, and sinkholes.

## ALLUVIAL PLAINS

Flowing rivers weave throughout Iowa, eroding and depositing sediment (alluvium) on their adjoining floodplains. Backwater sloughs and oxbow lakes in larger valleys mark former river channel meanders. Most rivers originated during melting of various ice sheets that covered all or parts of Iowa. Some alluvial plains (Iowa-Cedar Lowland) appear unusually wide for their river's size, owing to the lack of confining bedrock and large volumes of meltwater floods that once flowed through them. Larger river valleys are commonly fringed by sand dunes, shaped by the wind into linear and curved (parabolic) forms.

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**FOR FURTHER INFORMATION:** *Landforms of Iowa* by Jean C. Prior, University of Iowa Press, Iowa City, 153 pages, with numerous color photographs, illustrations, and maps, 1991.