



JUST IN Missing 17-year-old girl found dead in Northeast Side ditch [21 MIN AGO](#)

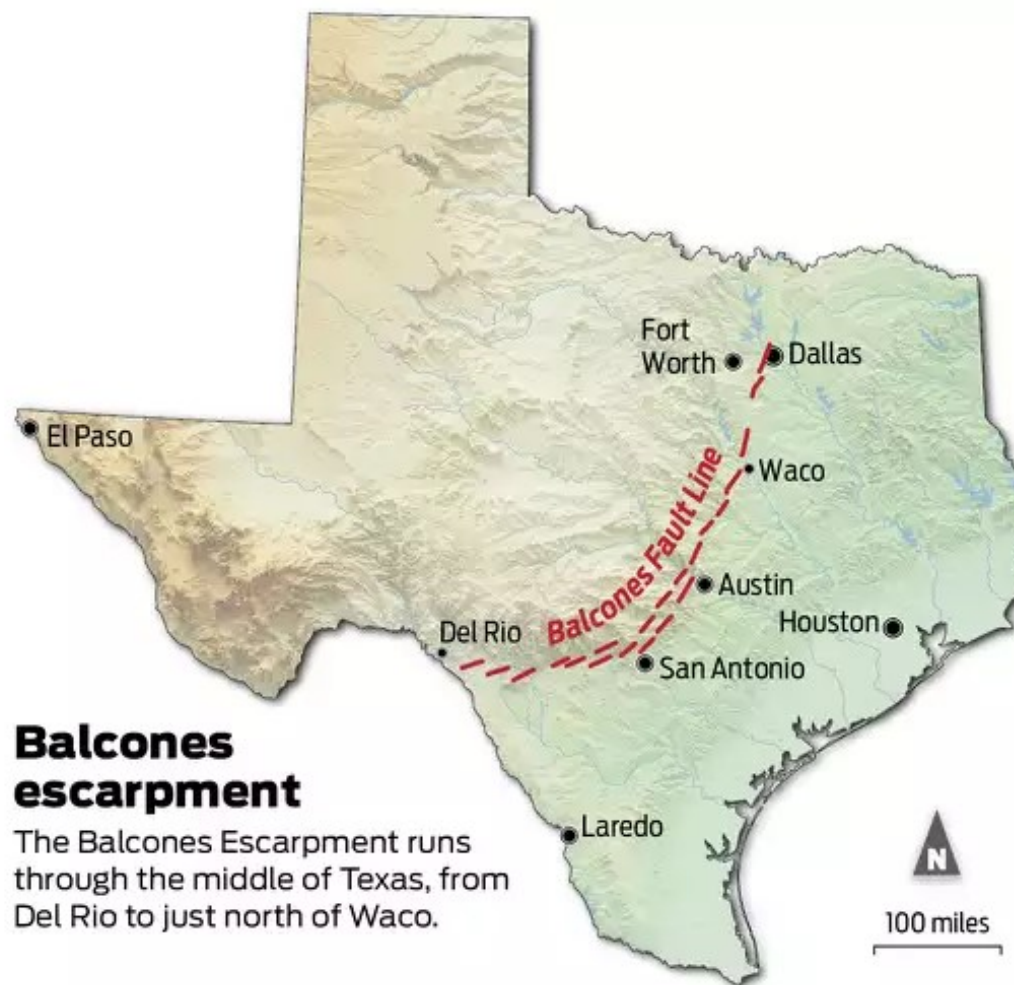
NEWS // TEXAS HILL COUNTRY

Why does the Balcones Escarpment matter? It's 'where the West begins.'

The fault line isn't just a geological marvel with a tongue-twisting name. It's what helped form the Texas Hill Country.

By **Ricardo Delgado**, *Staff writer*

Feb 9, 2024



Balcones escarpment

The Balcones Escarpment runs through the middle of Texas, from Del Rio to just north of Waco.

The Balcones Escarpment runs through Central Texas.
San Antonio Express-News

The Balcones Escarpment, a geological scar millions of years old running across Central Texas, is one of the most important geological features in the state. It has played a huge role in shaping what Texas looks like, as well as where and how the state's population has grown.

While you've probably heard of the Balcones Escarpment, you might not really know where it is — or even what it is. Or what role it played in forming the Texas Hill Country.

Here's everything you need to know about the Balcones Escarpment:

ADVERTISEMENT

Article continues below this ad



READ MORE: [Despite recent rains, San Antonio area still locked in drought](#)





Tyson McKinney, a science associate with the University of Texas at Austin, performs maintenance work on a research station overseen by the Edwards Aquifer Authority. The station lies near the Balcones Escarpment, a fault zone running from Del Rio to Waco that defines the geography of Central Texas. The escarpment is visible in North San Antonio.

Robin Jerstad

What is it, exactly?

In simple terms, an escarpment is a continuous line of cliffs or steep slopes facing in one general direction. The Balcones Escarpment is a zone of faults that runs through the middle of Texas, geologically dividing the state. Its curved line runs from Del Rio to just north of Waco, with the Hill Country starting just west of the escarpment. It separates the Edwards Plateau — the southeasternmost tip of the Great Plains — from the Coastal Plains bordering the Gulf of Mexico.

The Balcones Escarpment was likely formed between 20 million and 25 million years ago, according to the Bureau of Economic Geology at the University of Texas at Austin.

ADVERTISEMENT

Article continues below this ad

 POWERED BY CONCERT

“Geologically, that’s pretty recent,” said Charles Woodruff, a geologist with UT’s Bureau of Economic Geology. The oldest limestone in the Hill Country is estimated to be about 100 million years old.

In a process that took millions of years, geologists say, the Balcones Escarpment was formed as the Coastal Plains bent downward due to the weight of deposited sediment, while the Central Texas interior of the Llano Uplift remained relatively stable. The east side of Austin is about 700

feet lower than the west side as a result of this geologic activity.

“When you’re in San Antonio, you can get one of those big buildings and on one side, you can see the Hill Country across the Balcones Escarpment, but the other side, you’re looking at the Gulf Coastal Plain,” Woodruff said. “And that’s the boundary between two of the great geographic provinces of North America.”

READ MORE: [These 7 endangered species call the San Marcos River home](#)

How does it shape Texas, Hill Country?

The Balcones Escarpment forms a series of cliffs and clifflike structures on the surface, and serves as an entry to the Texas Hill Country, both physically and visually.

Woodruff said he was struck by the Balcones Escarpment the first time he encountered it more than 50 years ago.

“I saw those stair-step hills of the limestone, the hard and soft limestone layers and everything,” he said “I had this gut feeling that this is it. This is where the West really begins.”

Woodruff says one of his colleagues contends the Hill Country is a misnomer, because it’s really

the valleys, formed by the area's many streams, that give the topography its texture.

The streams winding through the Hill Country eroded the top layer of sediment and left the area's limestone exposed. The rock is synonymous with the region, used in constructing numerous buildings. The erosion deposits dissolved calcium carbonate into the region's groundwater, making it "hard."

John Cannon, a geologist and assistant professor of earth and planetary science at the University of Texas at San Antonio, said the exposed limestone, along with other rocks in the fault, is effective at funneling and filtering water into the Edwards Aquifer, a water source for millions of people in Central Texas. The uplift of the Balcones Escarpment and the streams spewing from it created a karst landscape, which helps filter groundwater.

The rugged limestone now carved by winding roads and booming development is more suited for ranching than farming, Woodruff said. The region's famous wineries are an exception, but the Hill Country isn't the only hilly region to recognize that potential.

"Some of the very famous locations in France, Spain and Italy are on rocky uplands, maybe similar to the Hill Country," Woodruff said. "The great Champagne district of France is on the same kind of rock that you see in the zoo in Brackenridge Park, or up in what the city of Austin is built on."

READ MORE: [A total solar eclipse is coming April 8. Here's what makes them so rare.](#)

Is there a downside to the escarpment?

While the rolling terrain of the Hill Country draws in people with its beauty, it also can create problems. One of those is the potential for flash floods. Large amounts of rainwater can't pool on inclines, meaning downpours can send waves of water roaring through the area. Despite recent record-setting drought, the area along the escarpment has been dubbed "Flash Flood Alley." Rapid development has increased the amount of impervious cover — materials like concrete that don't absorb water or allow it to pass through — and that contributes to flash floods.

The escarpment also presents at least some risk of earthquakes, although experts say it is very small. While the ground hasn't moved in recorded history, according to the University of Texas, it could move again. Two small earthquakes in 1893 and 1902 are thought to have been a result of fault movement.

The escarpment likely caused earthquakes in the distant past, but it isn't comparable to the San Andreas fault that regularly shakes California. Cannon said the belief that "tectonic deformations" such as faults are confined to the margins of tectonic plates is outdated. Low-level seismic activity occurs all across the country, and some active faults can be 1,000 miles from a plate boundary and still cause tremors.

“Over tens of millions of years, sure, it could easily be reactivated by tectonics again,” Cannon said, “but not any time in our human lifetimes.”

Feb 9, 2024

By **Ricardo Delgado**

Ricardo Delgado covers the Hill Country for the San Antonio Express-News. He previously worked for The University Star at Texas State University. Email Ricardo at Ricardo.Delgado@express-news.net.

MOST POPULAR



FOOD

Guy Fieri visits 3 S.A. restaurants for 'Diners, Drive-Ins and Dives'

The mayor of Flavortown spotlights seafood plus French and Chinese cuisine in San Antonio.

NEWS

2 Texas teachers found dead inside home

The bodies of Marina Garcia and Gene Mark Hudgson Sjogreen Jr. were discovered Monday in a Houston-area home.



NEWS

KSAT's tearful on-air farewell to weekend 'GMSA' anchor Max Massey

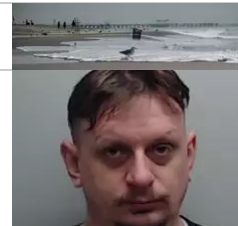
NEWS

BUSINESS
Man found dead in Tesla at S.A. real estate supercharger station on Northwest Side malpractice over



TEXAS

TEXAS HILL COUNTRY
Texas man killed in spring break Ex-Hays GOP shooting on Port Aransas beach official sentenced to 410 years in child sex abuse case



estate

Return To Top ^

San Antonio Express-News



About

Our Company

Careers

Our Use of AI

Standards and Practices

Contact

Customer Service

Frequently Asked Questions

Newsroom Contacts

Services

Archives

Advertising

Corporate Subscriptions

Photo Store

Account

Subscribe

Newsletters

e-Edition