

## GENERAL ADVICES/ WARNINGS

- Be responsible by respecting the signs. Some parts of the circuit are carried on in private property. Be respectful.
- Do not throw litter. Bring a bag so as to place the litter in it and later on leave it in the city or nearby town.
- Check on your vehicle's condition.

- Respect the flora, fauna and geological resources of the circuit.
- It is recommended to spend the night in Catayate or Tolombón, returning to Tucumán by Quilmes -Tafi circuit.

- Check if the roads are transitable before deciding to do the trip.
- Make sure to bring provisions and first aid kit.
- If you lit up a fire, do it in an authorized area. Later on, make sure that it is absolutely extinguished.

### Sandstones

Sedimentary rock, formed by the accumulation mainly of Quartz grains. This accumulation could have been generated as a result of a fluvial or eolic transport.



### Schists and slates

Metamorphic rock generated out of a sedimentary rock, which has varied its mineralogic composition through a process named metamorphism that involves factors such as pressure and temperature.

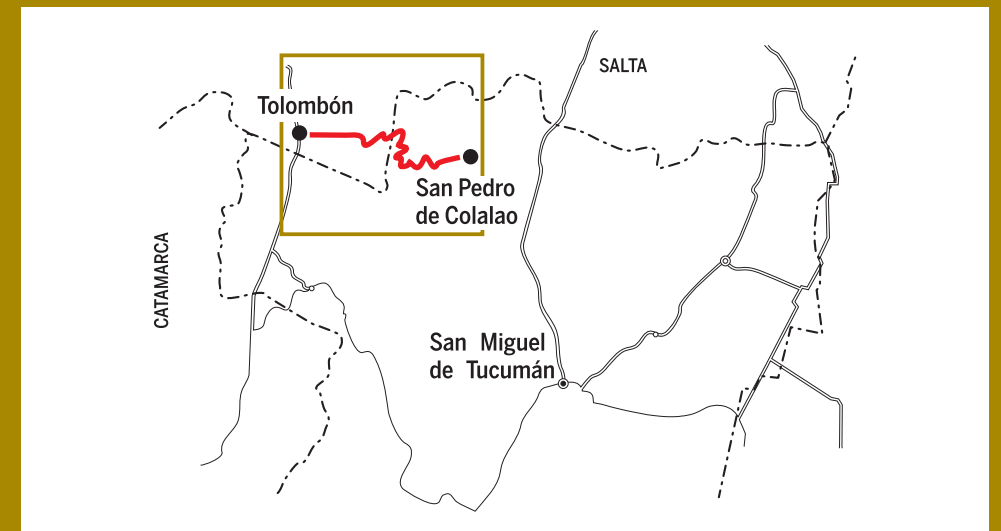


### Altered Schists

Metamorphic rocks that have lost their solid characteristic since they have been modified (in this particular circuit) by some exogenous factors such as climate.



## GUIDE FOR ROCK IDENTIFICATION IN THE FIELD



### Recommendations:

- Only 4 wheel-drive vehicles and motorbikes.
- Check if the road is opened to visitors.
- If riding a motorbike, be respectful with the environment.
- Do not leave paths or roads.
- Good alternative to sleep over in Valles Calchaquíes and return by circuit number 2.

### CHARACTERISTICS

**Longitude:** 140 kilometres

**By vehicle:** 12 horas

**By mule or on foot:** it is important to highlight that by these means the circuit will take over a day.

**Maximum altitude:** 3.300 m.a.s.l.

## DESCRIPCIÓN DE LA RUTA

Se recomienda posicionar el odómetro del vehículo en cero en el mástil de Yerba Buena a efectos de localizar las paradas propuestas de forma adecuada. El recorrido se inicia en Yerba Buena, tomando por Solano Vera con dirección a La Rinconada y de allí hacia Villa Nougues. Una vez concluida la ruta se puede volver a la ciudad tanto por RN n° 9 (desde Tapia) o regresando por La Sala y San Javier.

### PARADA 1

Situada XX kilómetros del inicio del recorrido, se aprecia un deslizamiento de ladera generado durante la época estival.

### PARADA 2

En el mirador ubicado a XX kilómetros del punto anterior se logra una panorámica hacia el norte de la sierra, así como de su pedemonte.

### PARADA 3

En la localidad de Villa Nougues se visitan el área de la hostería y Capilla.

### PARADA 4

A la vera de la ruta 341, en el kilómetro XXXX se aprecian las rocas más antiguas generadas a partir de sedimentos de un fondo marino hace unos 540 millones de años.

### PARADA 5

Pasando la localidad de San Javier, en el kilómetro XXX del recorrido se ingresa hacia la cascada del Río Noque, en el Parque Sierra de San Javier.

### PARADA 6

En el kilómetro XXX del recorrido, a unos XX minutos en coche, nos detenemos sobre el puente de La Sala.

### PARADA 7

Sobre el kilómetro XXX y en una curva cerrada en bajada y hacia el oeste nos detenemos a observar un punto de interés donde se aprecia areniscas conglomerádicas de coloración rojizas.

### PARADA 8

En el kilómetro XXX del recorrido y sobre la ladera se puede apreciar algunos procesos de erosión típicos del área.

### PARADA 9

Kilómetro XXX, esta parada se realiza en cercanías del monasterio, apreciando el cauce del arroyo El Siambón que corre a la vera de la ruta.

### PARADA 10

El último punto de interés se ubica a la vera del camino, a XX kilómetros hacia el este del cruce de las rutas provinciales 340 con 341.

# A HIGH MOUNTAIN ADVENTURE

ENGLISH



## A HIGH MOUNTAIN ADVENTURE

This geo touristic circuit offers a high mountain sightseeing in one of the less altered sectors of the Cumbres Calchaquíes in the Province of Tucumán. Landscape and geomorphological aspects of the circuit can be appreciated, where the fragil natural equilibrium is highlighted and men's capability of altering what it took nature

million years to model. Rocks that represent a marine buttom of about 540 million years, nowadays placed in the summit zone at about 3,000 m above sea level, and lacustrian sediments of up tp 60 million years, deposited after the dinosaur's era can be observed.



San Pedro de Colalao > Tolombón  
DIFFICULTY: HIGH

GeoRoute  
3



STOP

1

**The oldest rocks**

Outcroppings of the Puncoviscana Formation, aged 530 and 600 million years. This unity is composed by the most ancient rocks of the Andean margin of South America and it has the first life records of the region.



**Fluvial erosion**

Aestival erosive action of the Hualinchay river and near the homonymous locality. As a consequence of its territorial characteristic, in summer time, numerous cuts over the access road and the rised on high towards Tolombon take place.



STOP

2

**Mass removal**

Aspect that represents a slipping generated by a conjunction of climate and structure of the rock factors. The fillitas of the Puncoviscana Formation from the main nucleous of the Cumbres Calchaquies, and its abundant deformation facilitates this type of movement.



STOP

3

**Fossil Ferns, or not?**

These structures are named "manganese dendrites" and they are formed by the movement of manganese oxides, which are deposited following a mineralogic patron over the previous rock's surface. They are not fossils, and they are called "pseudofossils".



STOP

4

**Water in movement**

These structures are called "ripple marks" and they have represented the geological record of the water volumen on the marine bottom for over 500 million years. Nowadays, similar shapes can be appreciated in the marine and continental environment.



STOP

5

**Tradicional geological resources**

At these stops it can be appreciated how men takes advantage of what nature provides for their daily activities, in the construction of houses and temples (chapel and group of houses of Lara), developing their lives in tight bond with the environment.

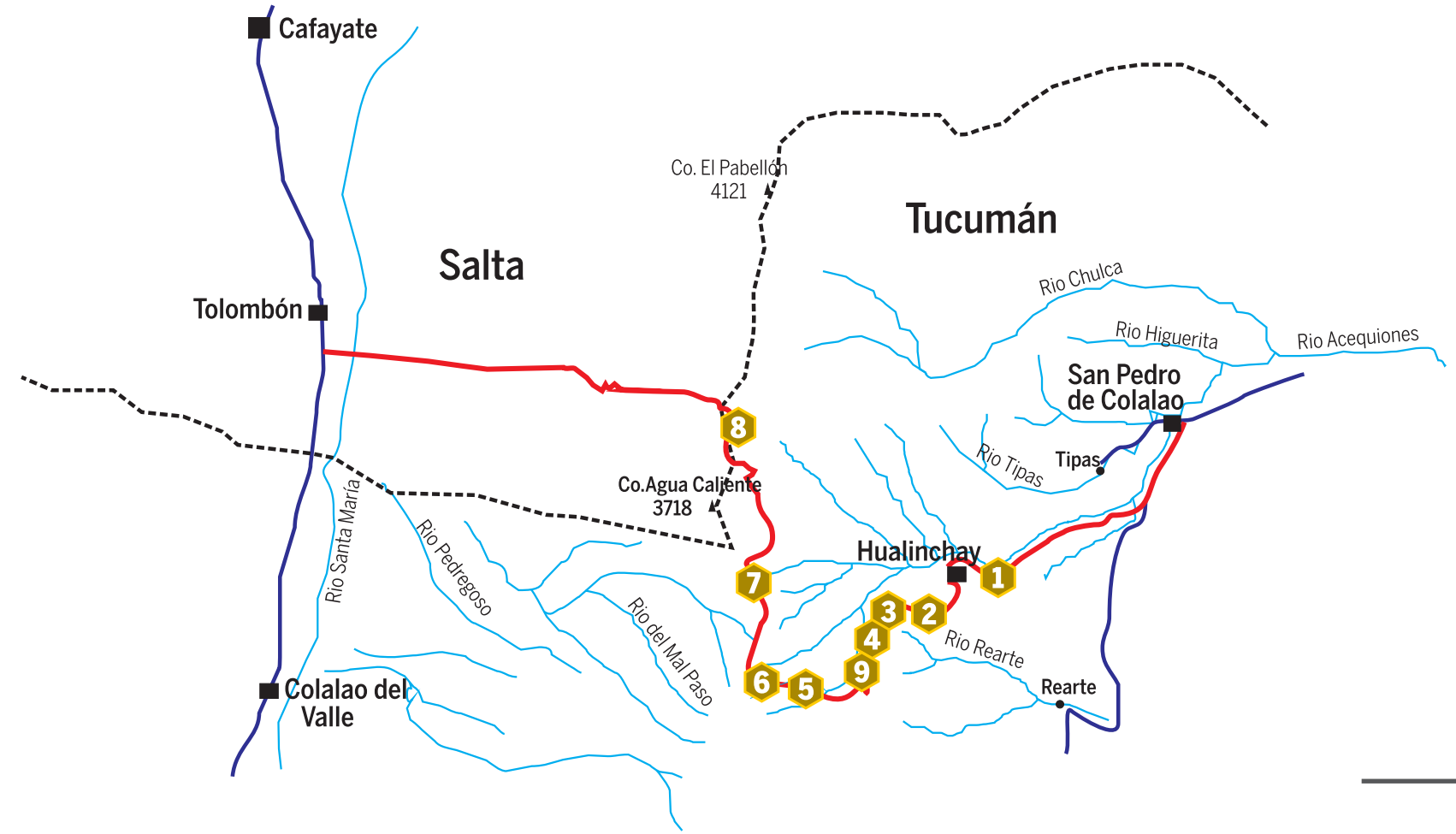
**GeoRoute**  
**3** **San Pedro de Colalao** > **Tolombón**  
 DIFFICULTY: **HIGH**

Scan the code with your cell phone to see the circuits in the web:



**GEOLOGICAL TIME CHART**

PRECAMBRIAN	PALEOZOIC						MESOZOIC			CENOZOIC		
	Cambrian	Ordovician	Silurian	Devonian	Carbonif.	Permian	Triassic	Jurassic	Cretaceous	Paleogene	Neogene	Cuaternary
<b>PARADAS</b> <b>1 4</b> Age of rocks forming the main cores of Tucumán ranges. 542 millions years ago	There are no rocks of this age in this route						There are no rocks of this age in this route			<b>PARADAS</b> <b>2 3 7 8 9</b> - Erosion and formation of the actual shape of the area. - Sedimentation of multi-colored rocks in the Calchaquí Valley - Rise of the Andes 65.5 millions years ago		



STOPS

6 7

The terrestrial crust constitutes the skin of Earth and it is in constant movement. The raising of the Andean mountain range is one of the main cause of shift of great rocky masses. The first picture highlights an outcropping slikenide over the road's margin towards the summit. This constitutes the real map of the landslide between two blocks of rocks, and the arrow shows the shift's direction of the figured piece. The second picture shows how the hillside undermines shifted by the loss of the outline generated as a consequence of the road opening.



STOPS

8 9

**Mountains' abrasion**

The great mountains abrade essentially by climatic phenomenons. There are regions where these phenomenons act accelerated by the rock's fracturament and others, where men as well as animals and plants modify its "natural" speed. The first picture highlights an important natural earthwork in the summit zone, while the second picture shows the alteration of the scarce soil that develops by an overshepherding that generates cattle paths, which are used by motorcyclists.