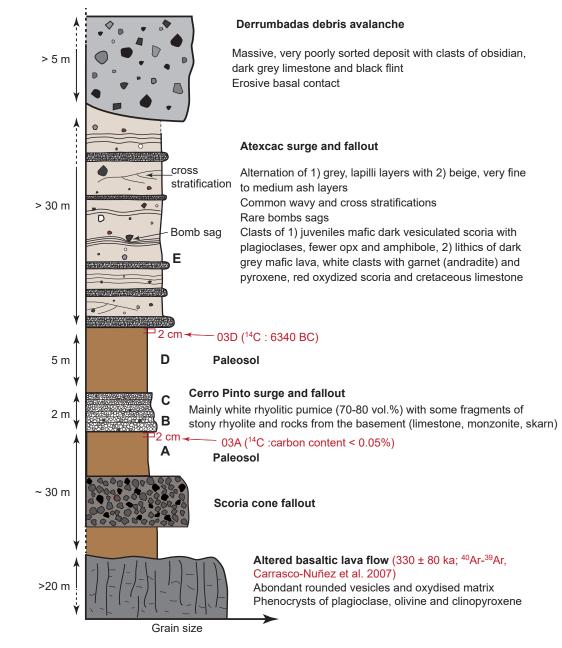
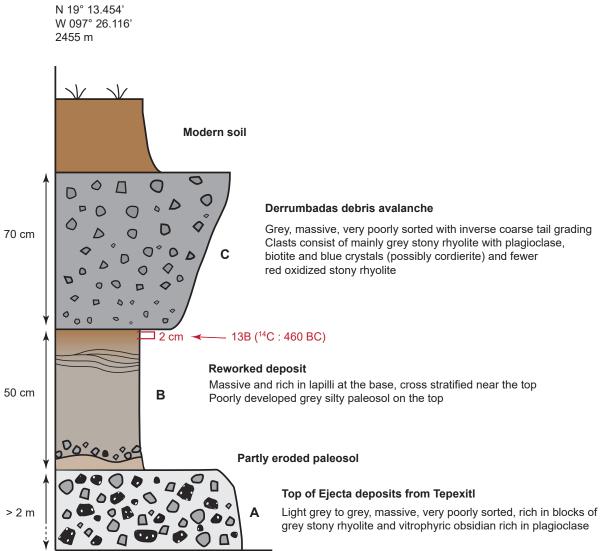
### Site 03 (Atexcac inner crater wall)

N 19° 19.822' W 097° 27.150' 2400 m



### Site 13 (Tepexitl outer west slopes)





50 cm

> 2 m

### N 19° 16.627' W 097° 28.839' 2549 m Debris avalanche 0 > 3 m Т $\bigcirc$ D Lahar or pyroclastic flow 100 cm н charred wood $\bigcirc$ D Laharic sequence E > 2 m D $\bigcirc$ 0 Beige, very fine ash layer with fine wavy D 120 cm stratification at the base 9 cm 🗶 Massive, grey, very coarse ash layer 90 cm Clast of dense grey stony rhyolite, some white-yellow round pumices, brown-beige and black limestones and white vesiculated rhyolite С 115 cm Rich in accretionary lapilli at the base Alternation of beige, fine ash layers with R 64 cm grey very coarse ash layers $\bigtriangleup$ Avalanche or pyroclastic flow Α Massive, poorly sorted, rich in blocks > 2 m Grey and red poorly crystalline stony rhyolite within a pink-gray matrix

### Site 16 (quarry west derrumbadas)

Block rich, poorly sorted with pink gray matrix and almost only grey and red-oxidized stony rhyolite with plagioclase, biotite and few garnet

### 16H (<sup>14</sup>C on partially charred wood : AD 1090)

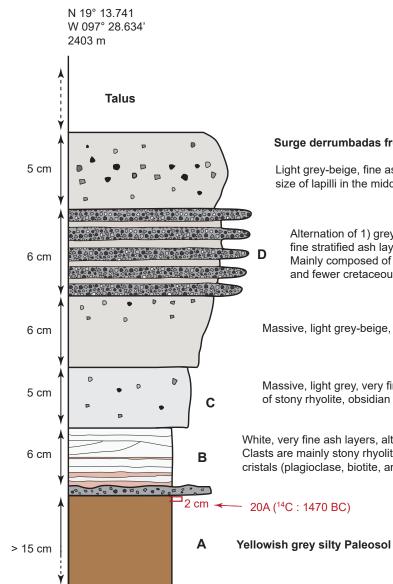
Poorly sorted, whitish deposit with mm to dm long, partially Thin orange-red oxidized layer at the basal contact with "J"

Mainly stony rhyolite from the lava domes

Surge sequence from las Derrumbadas Pinch and swell laterally

## C .

### Site 20 (Venustiano Carranza)



### Surge derrumbadas from las Derrumbadas

Light grey-beige, fine ash layer with increased concentration and size of lapilli in the middle of the layer

Alternation of 1) grey very coarse ash with 2) beige fine to very fine stratified ash layers Mainly composed of dense grey stony rhyolite, obsidian and fewer cretaceous limestone (<15 vol%)

С

В

Massive, light grey-beige, fine ash layer with normal grading

Massive, light grey, very fine ash layer with some disperse lapilli of stony rhyolite, obsidian and brown-beige limestone

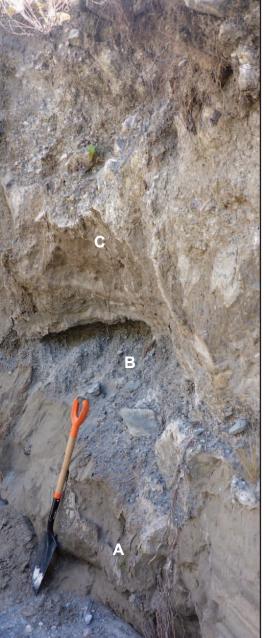
White, very fine ash layers, alternating with pinkish layers toward the base Clasts are mainly stony rhyolite, brown-beige limestone and free cristals (plagioclase, biotite, amphibole, oxides)

### Site 22 (SW Derrumbadas)

N 19° 14.818' W 097° 28.157' 2476 m

VV Modern soil Paleolake D > 5 m 290 cm С  $\bigcirc$  $\bigcirc$  $\cap$ В 0 22A : charcoals collected on the upper 5 cm (<sup>14</sup>C : AD 20) 45-80 cm Α

Brownish grey paleosol Rich in small charcoal fragments





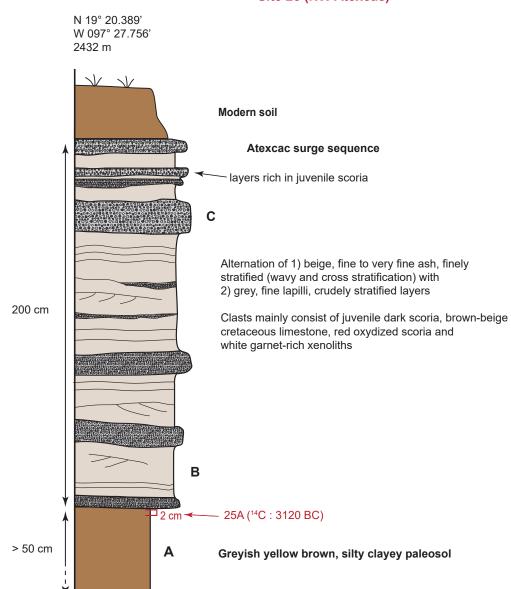
Alternation of white, very fine layers with grey, coarser layers

### Derrumbadas debris avalanche

Massive, brown beige, very poorly sorted layer with fine to very fine ash matrix Main clasts consist of grey stony rhyolite, obsidian, both containing plagioclases and few garnets, and cretaceous limestone

Fines poor grey lenses with same material

Grey, very poorly sorted, friable layer with stony rhyolite obsidian and cretaceous limestone

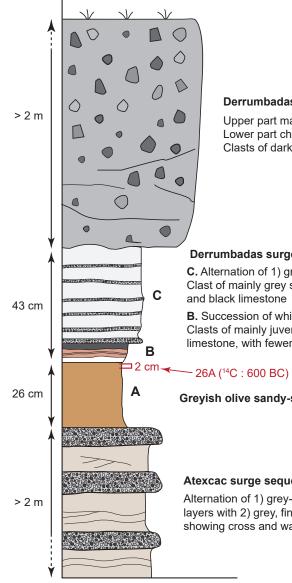


### The Photos and C В A

### Site 25 (NW Atexcac)

### Site 26 (NW Atexcac)

N 19° 20.336' W 097° 27.745' 2459 m



### Derrumbadas debris avalanche

Upper part massive and block rich Lower part chaotic and finer grained Clasts of dark grey limestone and light grey stony rhyolite

### Derrumbadas surge sequence (B+C)

C. Alternation of 1) grey, fine lapilli layers with 2) beige-grey, very fine ash layers Clast of mainly grey stony rhyolite, obsidian rhyolite with fewer brown-beige and black limestone

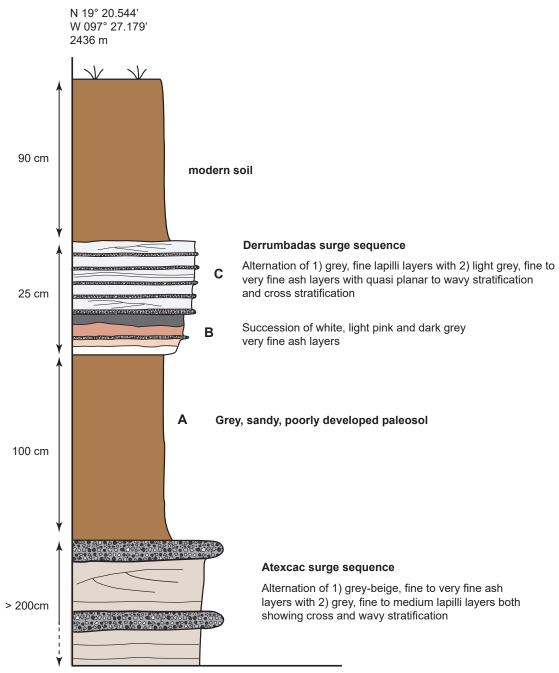
**B.** Succession of white, light pink and dark grey very fine ash layers Clasts of mainly juvenile grey-white stony rhyolite and lithics of brown-beige and black limestone, with fewer white lacustrine limestone, red oxydized lava and vitrous glass shard

Greyish olive sandy-silty Paleosol

### Atexcac surge sequence

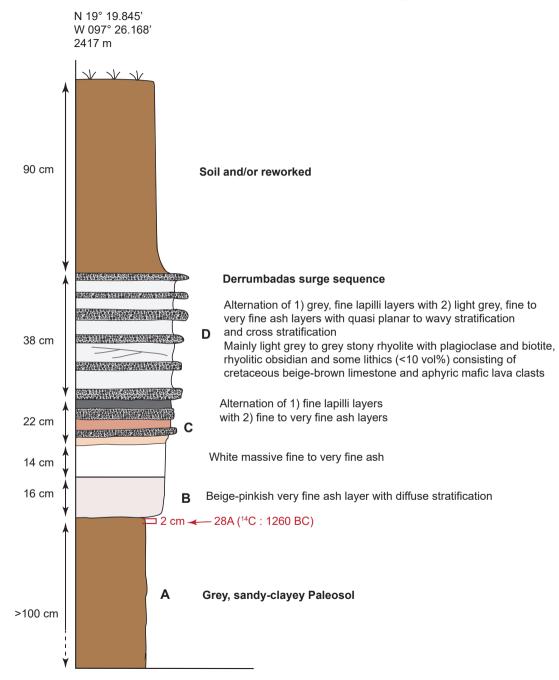
Alternation of 1) grey-beige, fine to very fine ash layers with 2) grey, fine to medium lapilli layers both showing cross and wavy stratification





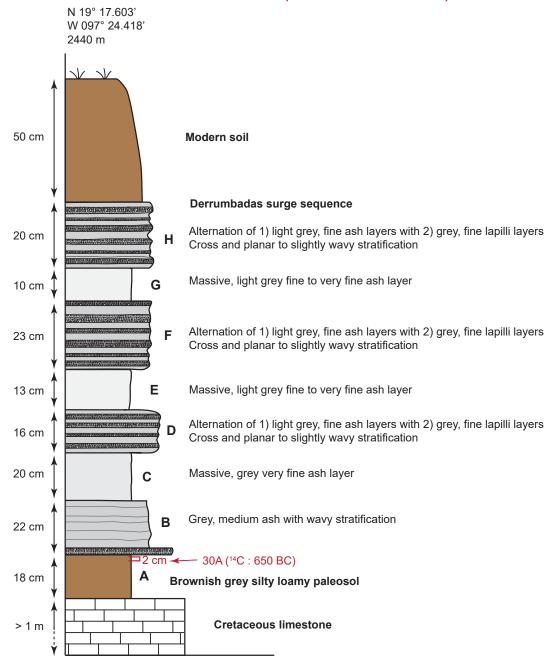
### Site 27 (San Luis Atexcac)

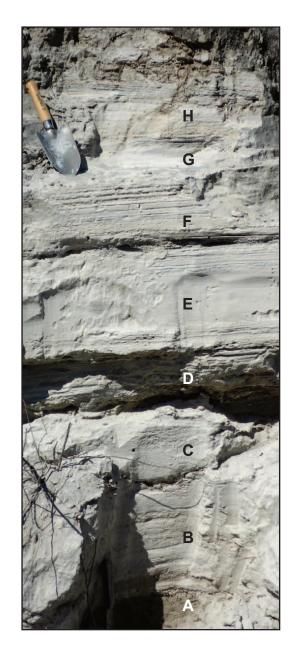




# The same

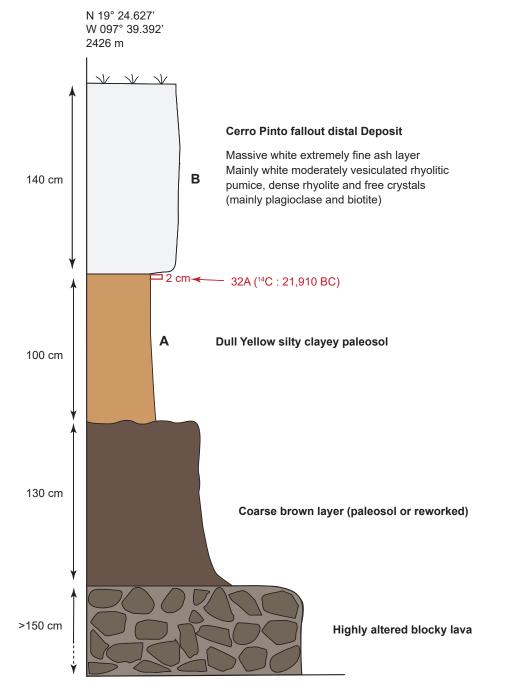
### Site 28 (West of Las Aguilas)





### Site 30 (East of las Derrumbadas)

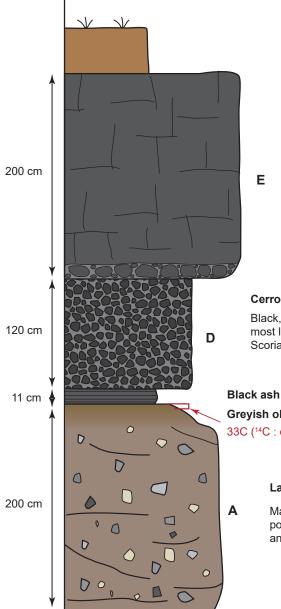
### Site 32 (along Motorway to Puebla)





### Site 33 (Guadalupe Victoria)

N 19° 17.065' W 097° 20.840' 2442 m



### Modern soil

### Cerro la Cruz lava flow

Dark grey, basaltic dense lava with porphyric texture Abundant olivine and plagioclase Contain some small vesicles (< 1 mm) which become more abundant and bigger (up to 2 cm) on the top part The lower part of the flow is brecciated

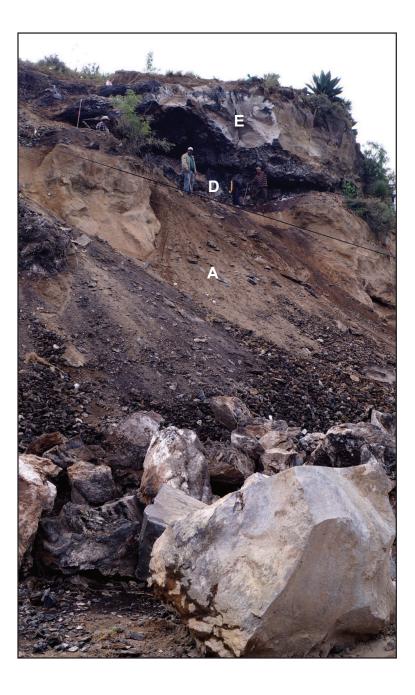
### Cerro la Cruz scoria fallout

Black, coarse ash to medium lapilli layers most layers are inversely graded and show planar stratification Scoria contain crystals of plagioclase and few olivines

Black ash fall deposit with planar stratification Greyish olive fine sandy loamy paleosol 33C (<sup>14</sup>C : carbon content < 0.05%)

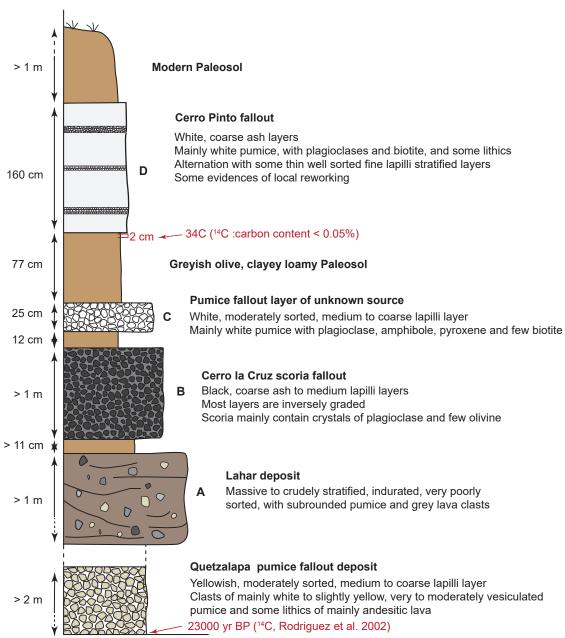
### Lahar deposit

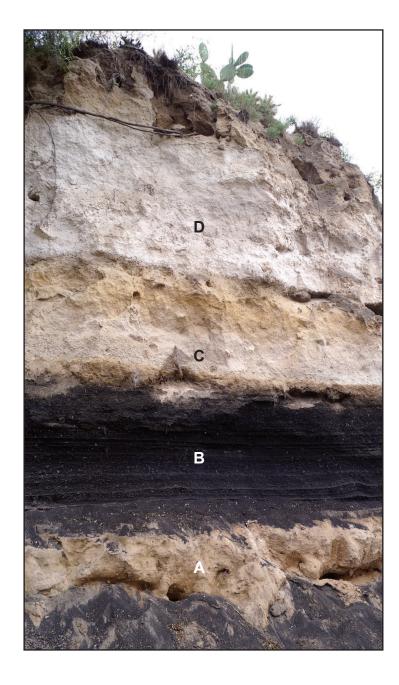
Massive to crudely stratified, slightly indurated, very poorly sorted layer with mostly subrounded pumice and grey lava clasts



### Site 34 (Guadalupe Victoria)

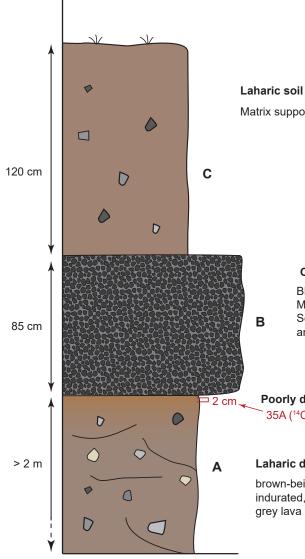
N 19° 17.140'
W 097° 20.811'
2444 m





### Site 35 (SW of Guadalupe Victoria)





Matrix supported with sub angular clasts of obsidian and lava

### Cerro la Cruz

Black, coarse ash to fine lapilli layers Most layers are inversely graded Scoria mainly contain crystals of plagioclase and few olivine

Poorly developed greyish olive, sandy loamy paleosol  $35A(^{14}C: carbon content < 0.05\%)$ 

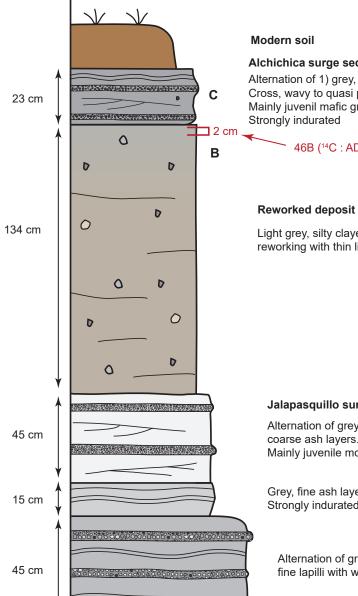
### Laharic deposit

brown-beige, massive to crudely stratified, matrix supported, indurated, very poorly sorted, with subrounded pumice and grey lava clasts



### Site 46 (Jalapasquillo 1)

N 19° 26.037' W 097° 30.458' 2345 m



### Alchichica surge sequence

Alternation of 1) grey, very fine ash with 2) dark grey, coarse ash layers Cross, wavy to quasi planar stratification Mainly juvenil mafic grey scoria

46B (<sup>14</sup>C : AD 770)

Light grey, silty clayey paleosol with some evidences of reworking with thin light grey, silty clayey paleosol developed on top

### Jalapasquillo surge sequence

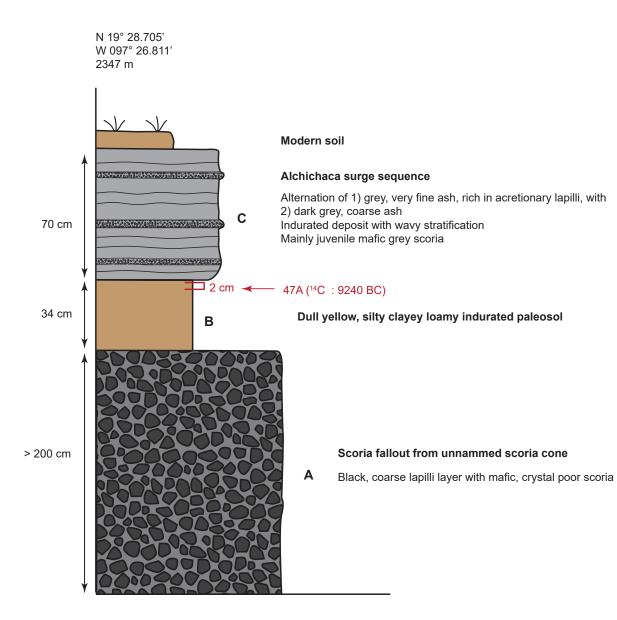
Alternation of grey-white, very fine ash layers with grey, coarse ash layers. Cross stratification Mainly juvenile moderately vesiculated rhyolitic pumice

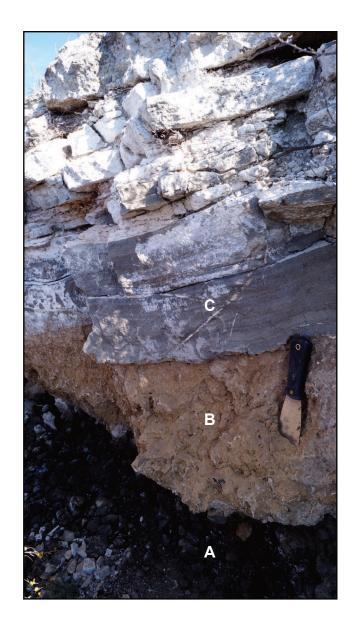
Grey, fine ash layers with sub-angular fine lapilli rhyolitic pumice clast Strongly indurated deposit with wavy stratification

Alternation of grey, very fine to fine ash with dark grey, fine lapilli with wavy to quasi planar stratification



### Site 47 (south of Cerro Pizarro)



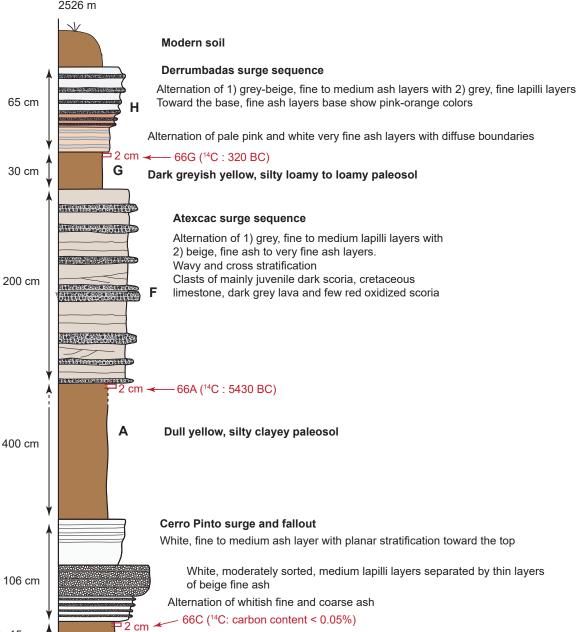


### Site 66 (West flank of las Aguilas)

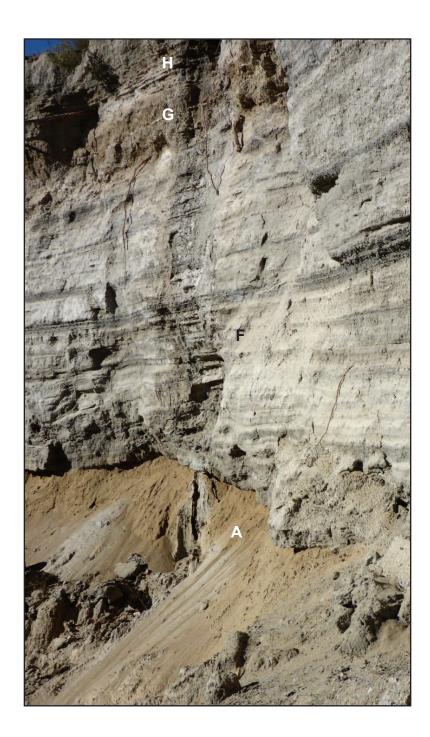
N 19° 20.133' W 097° 26.089' 2526 m

30 cm

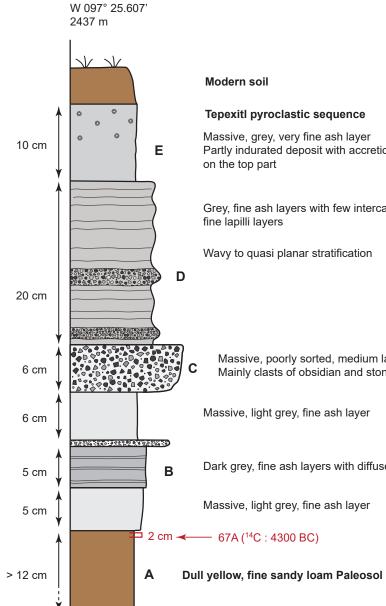
> 15 cm



С



### Site 67 (E of Tepetitlàn)



N 19° 11.616'

Massive, grey, very fine ash layer Partly indurated deposit with accretionary lapilli

Grey, fine ash layers with few intercalated grey

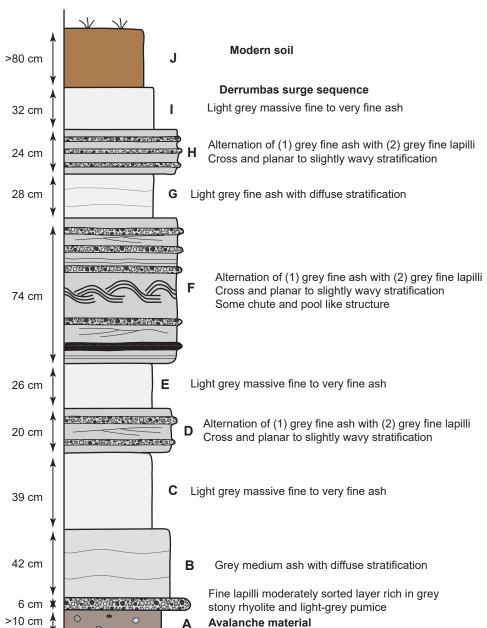
Massive, poorly sorted, medium lapilli Mainly clasts of obsidian and stony rhyolite

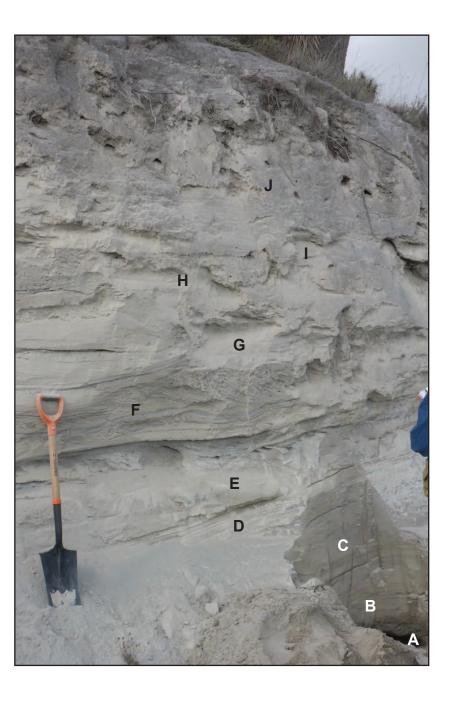
Dark grey, fine ash layers with diffuse stratification

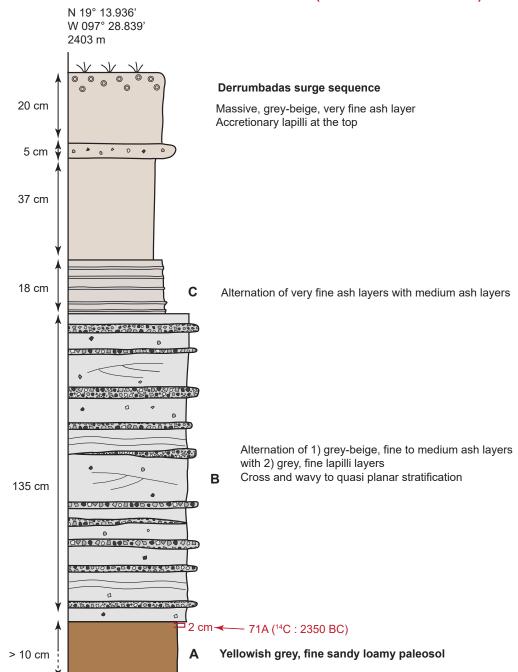
## E D

### Site 68 (hummock E of las Derrumbadas)







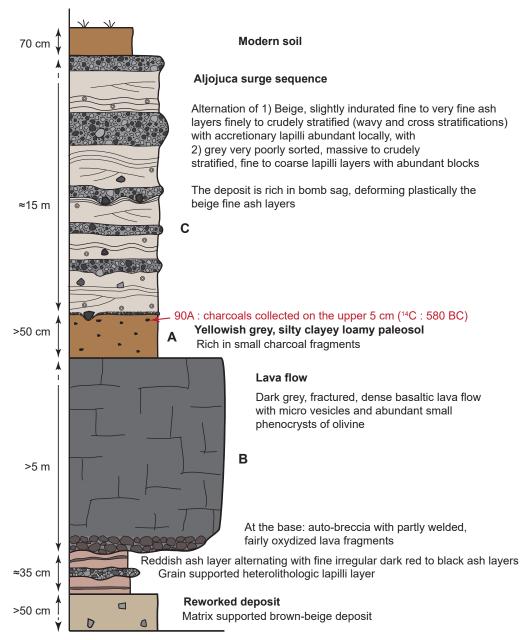


## В Α

### Site 71 (NW Venustiano Carranza)

### Site 90 (Aljojuca inner crater wall)

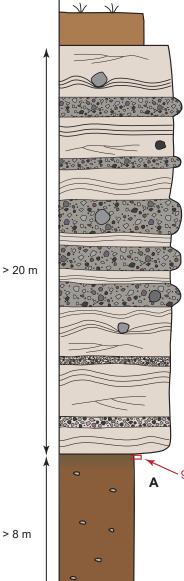
N 19° 05.382' W 097° 32.294' 2439 m





### Site 93 (Tecuitlapa)

N 19° 07.312' W 097° 32.622' 2388 m



Modern soil

### Tecuitlapa surge sequence

Alternation of 1) Beige, indurated, fine to very fine ash layers with wavy and cross stratification and rich in accretionary lapilli with 2) grey-brown, slightly indurated, matrix supported, very poorly sorted coarser layers, rich in blocks and lapilli

Fragments mainly consist of 1) grey and red oxidized lava with numerous phenocrysts of hornblende and plagioclases, and 2) fewer dark juvenile mafic scoria, rich in irregular vesicles, with phenocrysts of plagioclases and smaller olivine and orthopyroxene

Numerous large (>30 cm) ballistic lava blocks in the different layers, deforming plastically the beige finer stratified layers (bomb sags)

В

Dark greyish yellow, silty loamy poorly developed paleosol 93A : (<sup>14</sup>C : 6950 BC)

### Toba café

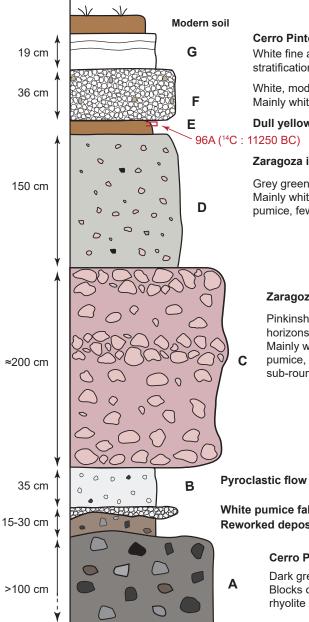
Massive, sandy light brown deposit with rounded pumice and lithic fragments in a loose matrix



> 20 m

### Site 96 (Cerro Pizarro debris avalanche)

N 19° 17.065' W 097° 20.840' 2442 m



### Cerro Pinto

White fine ash, massive at the base and with wavy stratification on the upper part

White, moderately sorted, clast supported coarse ash Mainly white, moderately to vesiculated fibrous pumice

Dull yellow, fine sandy loamy paleosol

### Zaragoza ignimbrite or reworked deposit

Grey greenish, very poorly sorted, matrix supported, friable Mainly white (with pinkish patine), fibrous, poorly crystalline pumice, fewer obsidian and grey lithics

### Zaragoza ignimbrite

Pinkinsh, very poorly sorted, matrix supported, with some horizons almost clast supported, rich in blocks (up to 60 cm) Mainly white (pinkish patine), fibrous, poorly crystalline pumice, sometimes banded with dark grey to black pumice with sub-rounded vesicles

White pumice fallout **Reworked deposit** 

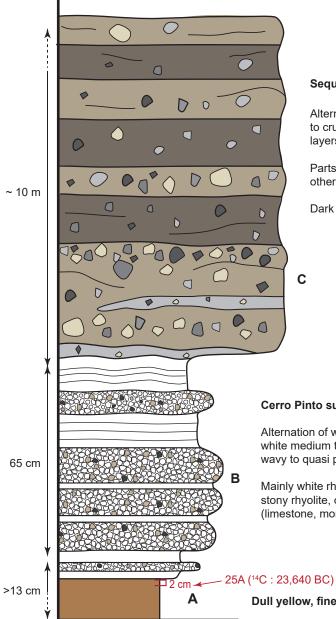
### Cerro Pizarro

Dark grey, matrix supported, rich in blocs Blocks of fracturated obsidian, grey to red (oxydized) stony rhyolite often showing flow banding.



### Site 102 (SSE of Cerro Pinto)

### N 19° 20.784" W 097° 28.988' 2495 m



### Sequence of reworked deposit

Alternation of polylithologic, poorly sorted, massive to crudely stratified brown-beige and dark brown layers

Parts of the brown-beige layers are block rich while other parts contain grey matrix rich lenses.

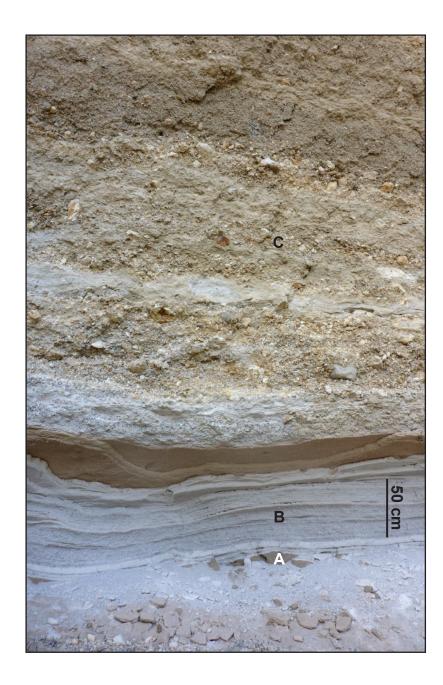
Dark brown layers are generally poorer in blocks

### Cerro Pinto surge and fallout

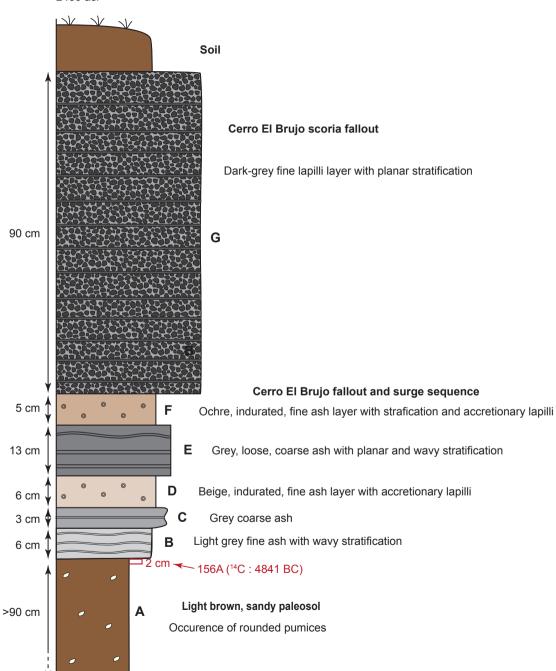
Alternation of white to light grey lapilli rich layers with white medium to coarse ash layers wavy to quasi planar stratifications

Mainly white rhyolitic pumice with some fragments of stony rhyolite, obsidian and rocks from the basement (limestone, monzonite, skarn)

A (<sup>14</sup>C : 23,640 BC) Dull yellow, fine sandy loamy paleosol



N 19° 06.154' W 97° 35.691' 2459 asl



### Site 156 (Sta Maria, SW of Cerro El Brujo)

Ξ D С Ξ VA.

### Site 173 (SW of Cerro El Brujo)

N 19° 05.647' W 97° 36.104' 2434 asl

