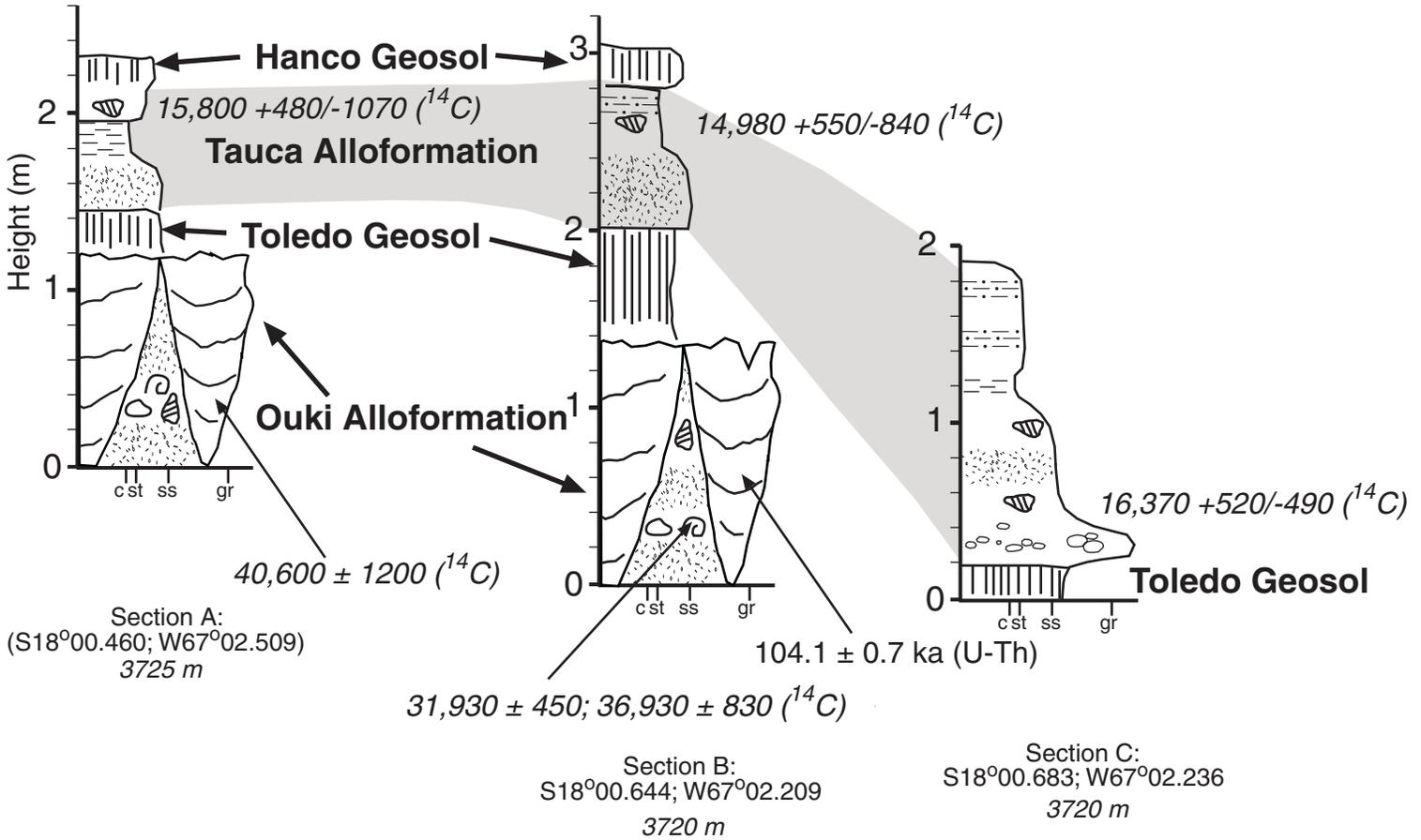


## Supplement summary:

This supplement contains complete site and locality descriptions for every radiometric date. In general, site descriptions are either stratigraphic sections, hillslope profiles, or photographs of tufa encrustations. The same legend applies to all site descriptions. Some sites consist of more than one stratigraphic section. GPS coordinates are provided for each site, allowing this material to be used as a field guide. A color copy of figure 5 is also provided.

<i>Symbols legend</i>	
grain size	┌───┴───┐ c st ss gr
c: clay	st: silt
ss: sand	gr: gravel
	gravel
	sand
	silt
	clay
	paleosol
	volcanic ash
	ooids
	cross-beds
	<i>Littoridina</i> sp.
	<i>Biomphalaria</i> sp.
	<i>Pisidium</i> sp.
	terrestrial snail
	Succineidae
	<i>Characeae</i>
	lithic fragment
	organic matter
	bone

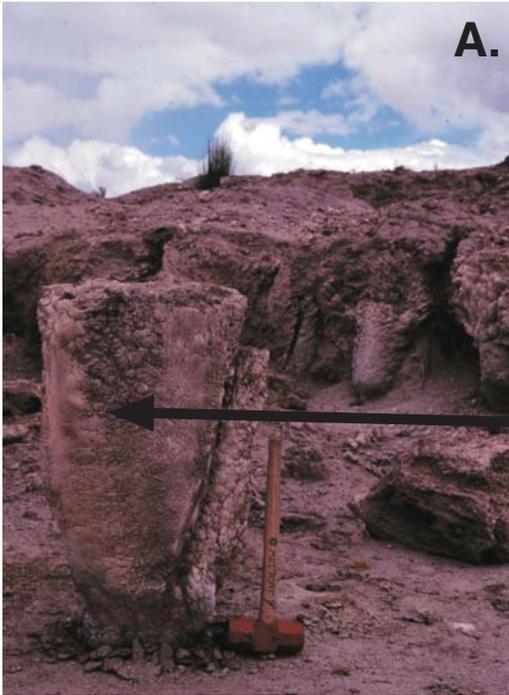
# Site 1: Vinto



Photograph of Ouki tufa heads visible at Vinto

# Site 2: Toledo

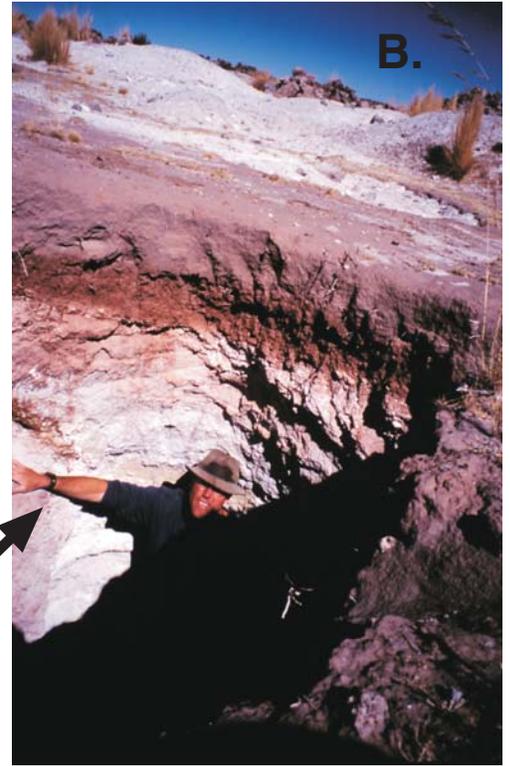
S18°16.793; W67°32.057  
3710-3715 m



**A.**

119.7 ± 3.0 ka (U-Th)

110.5 ± 7.8 ka (U-Th)

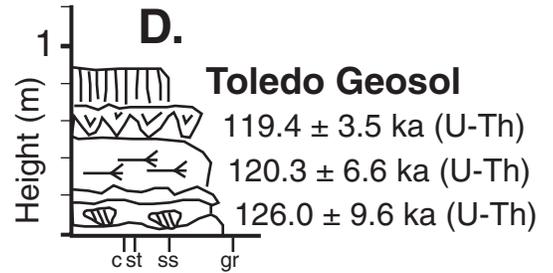


**B.**



**C.**

**Toledo Geosol**



**D.**

**Toledo Geosol**

119.4 ± 3.5 ka (U-Th)

120.3 ± 6.6 ka (U-Th)

126.0 ± 9.6 ka (U-Th)

c st ss gr

Examples of deposits from Toledo: a) inverted tufa cones; b) stucco quarry exposing the Ouki alloformation. The hand of a 1.7m man (standing) is on an inverted tufa cone; c) the Toledo geosol; d) multiple dates from a single exposure; e) U-Th dates from a large tufa head.

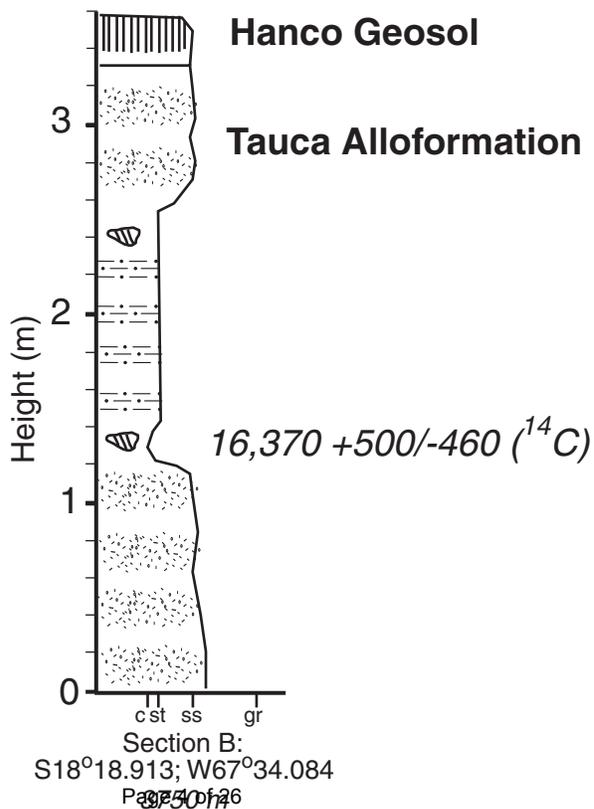
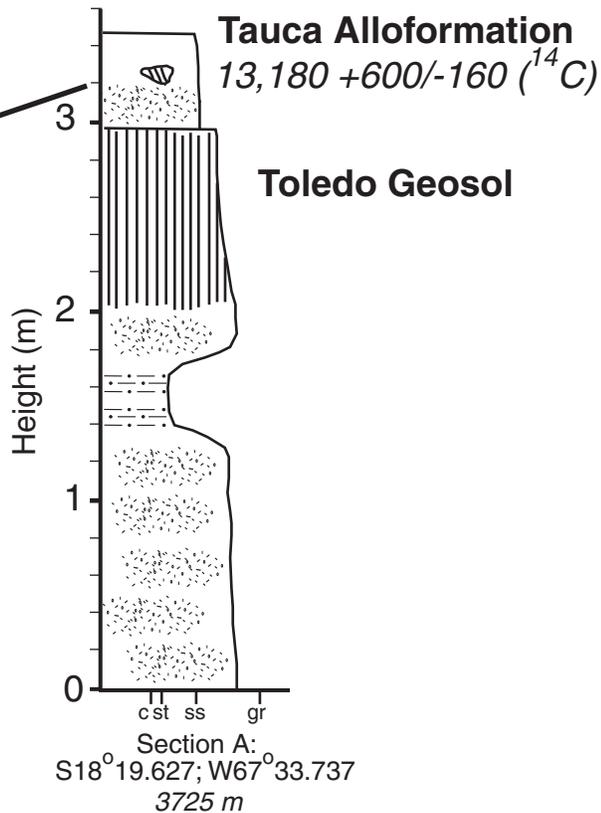


**E.**

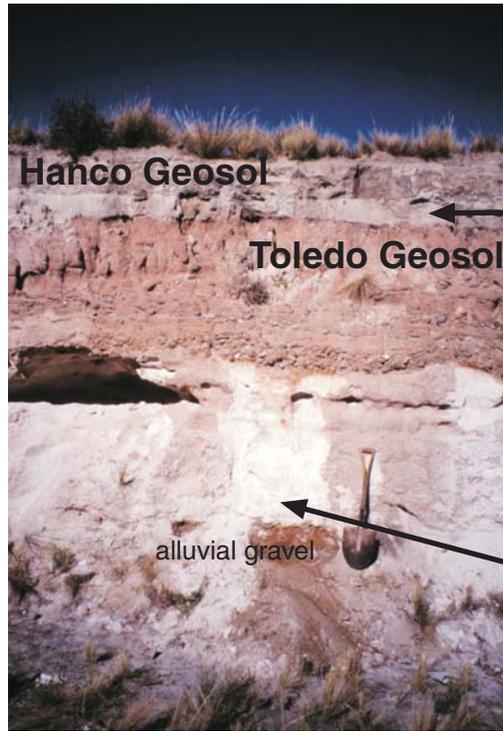
114.2 ± 5.4 ka (U-Th)

113.3 ± 7.8 ka (U-Th)

### Site 3:



# Site 4:Pazña



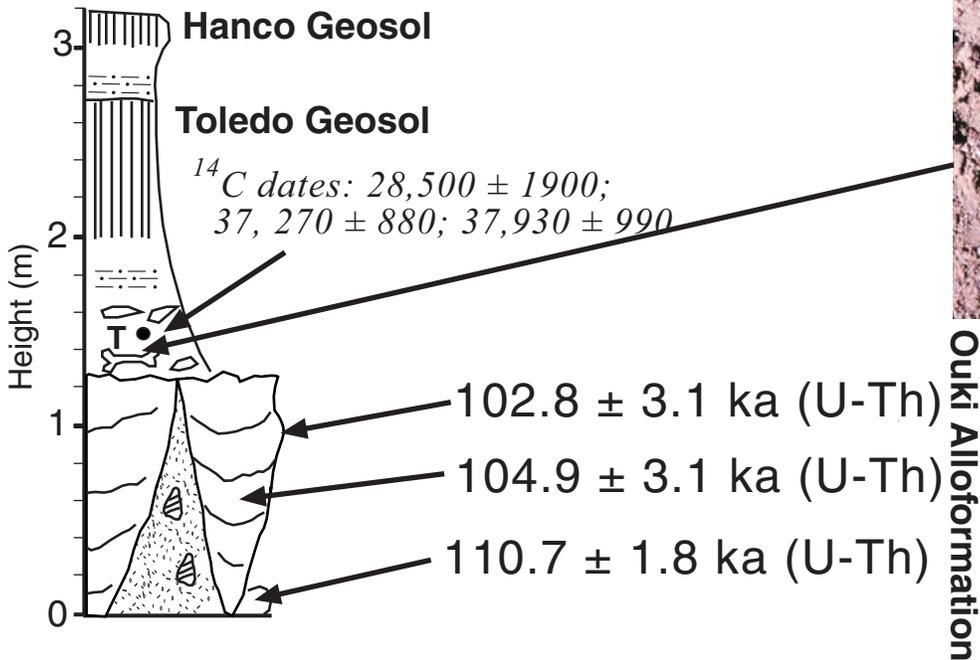
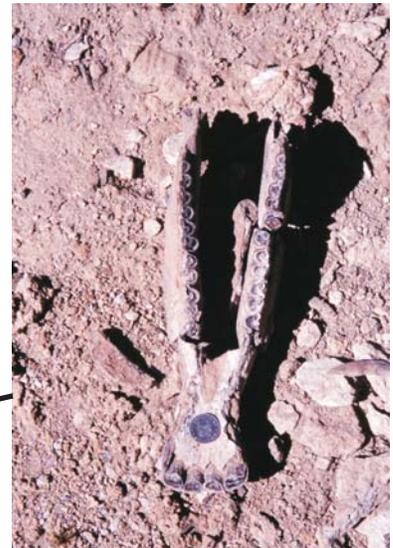
**Tauca Alloformation**  
 $14,290 \pm 1170/-430$ ;  $14,110 \pm 1270/-410$  ( $^{14}C$ )  
 Radiocarbon dates are taken from a laterally continuous section of the Tauca Alloformation that is ~30m north of this photo.

alluvial gravel

**Ouki Alloformation**

$106.0 \pm 1.0$  ka;  $109.1 \pm 1.9$  ka (U-Th)  
 $^{14}C$  date:  $34,110 \pm 570$

Section A:  
 S18°34.506; W66°55.991  
 3717 m

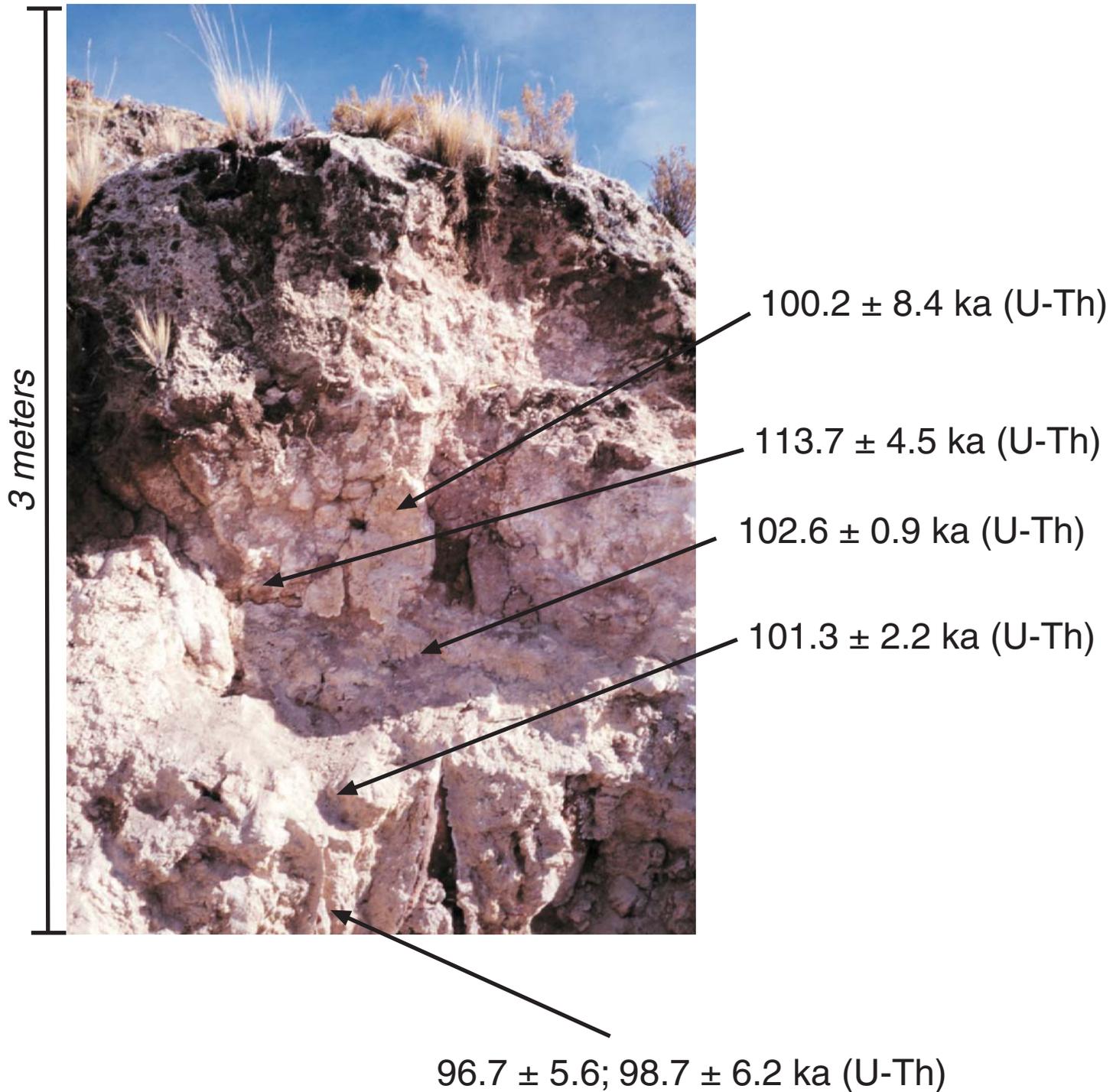


Section B:  
 S18°34.527; W66°55.835  
 3714 m

## Site 5:

S18°42.992; W66°51.896

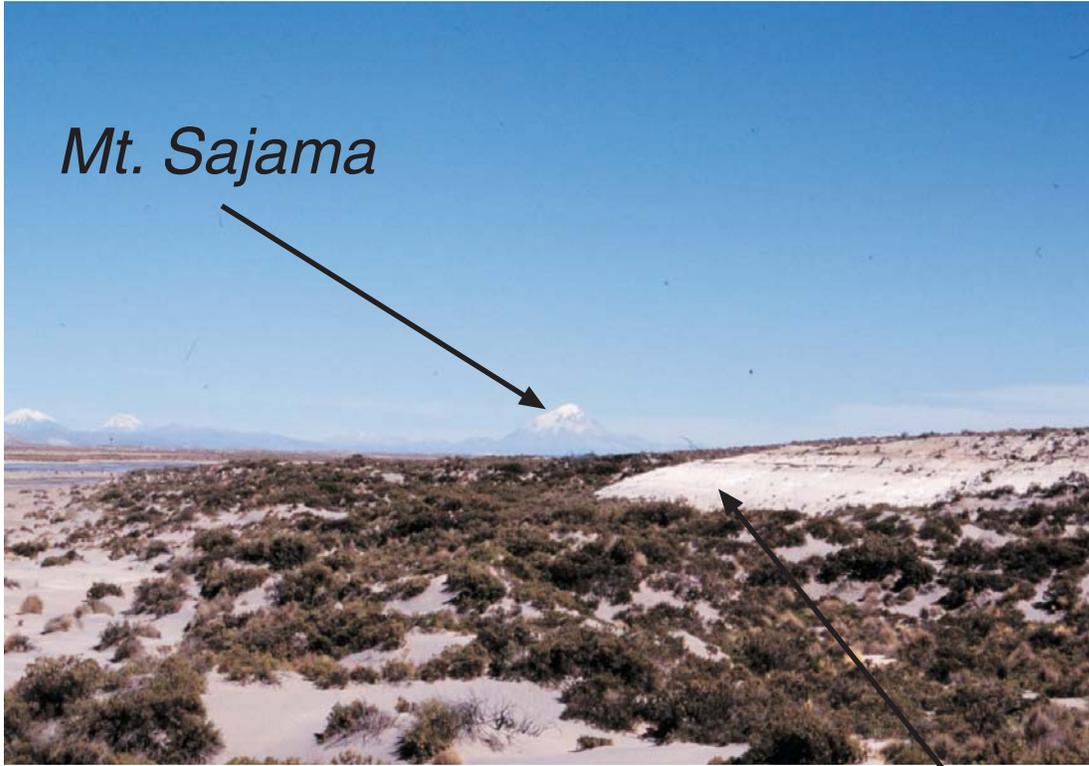
3700 m



# Site 6: Escara

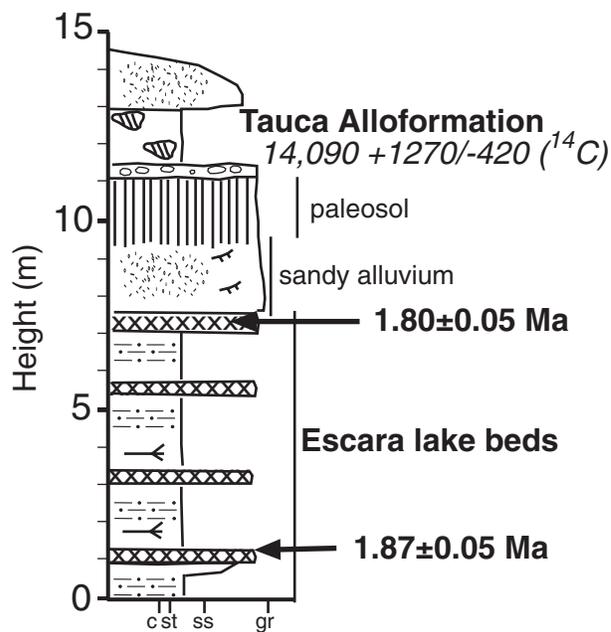
S18°46.807;W68°10.717

3710 m



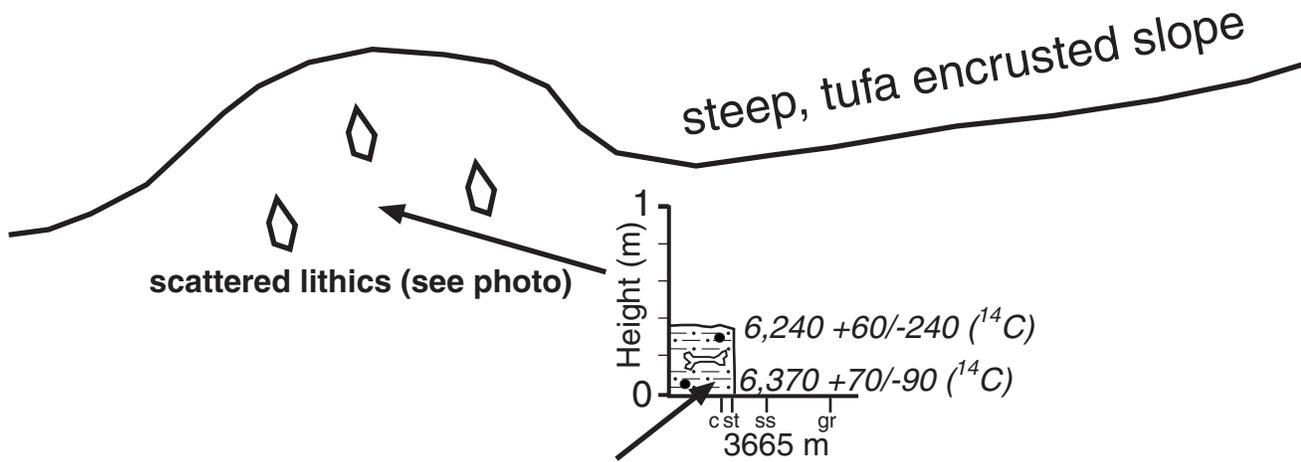
*Mt. Sajama*

Lake beds



# Site 7:

S18°16.793; W67°32.057



scattered lithics (see photo)

Height (m)

1  
0  
6,240 +60/-240 (<sup>14</sup>C)  
6,370 +70/-90 (<sup>14</sup>C)  
c st ss gr  
3665 m

Brown, sandy silt with abundant charcoal.  
Bone and lithic fragments are also present.  
Sediment is coarsly stratified.

20 m



spring  
3658 m

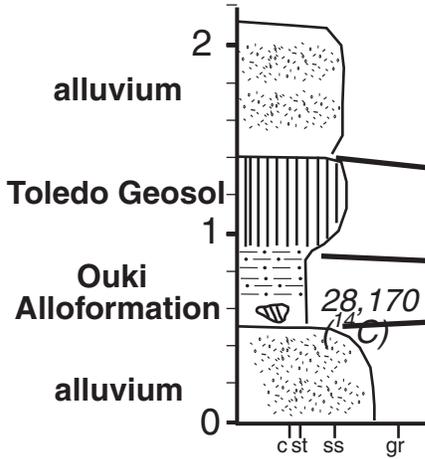


Photograph of lithics found on the surface within a 10 m radius of the dated charcoal.

## Site 8: Near or in the Karakota wash

### Section A:

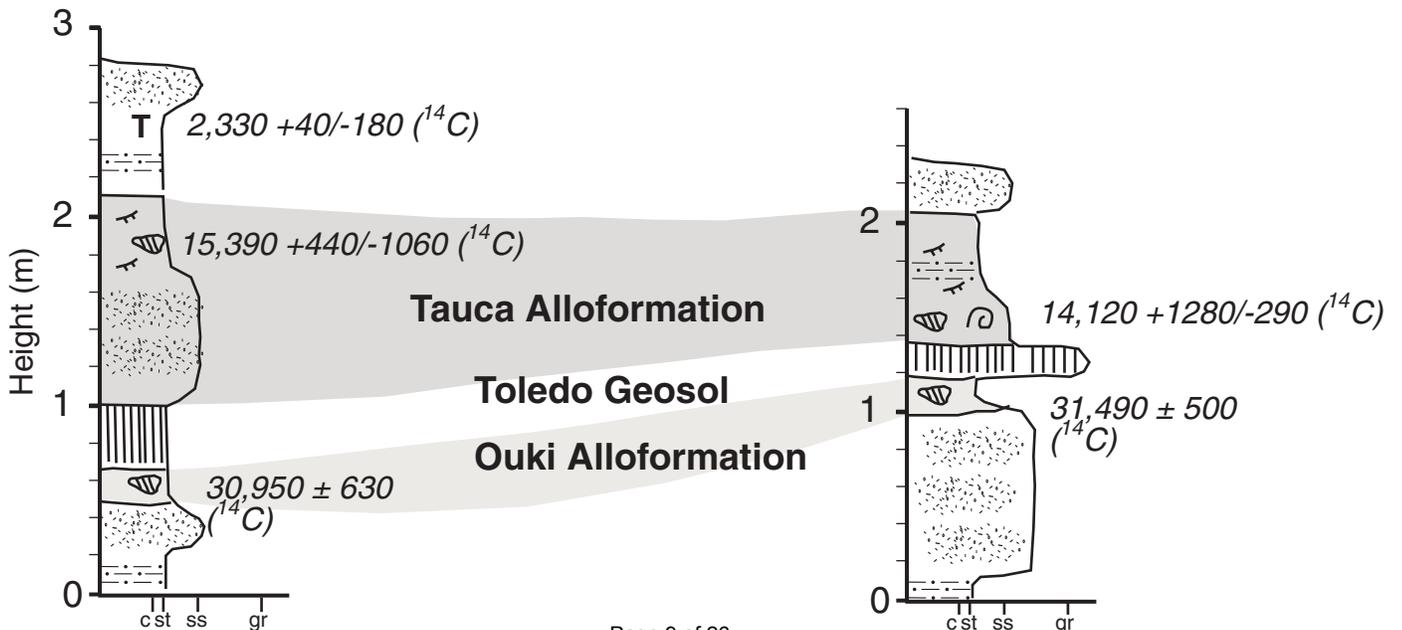
S19°18.984; W67°08.827  
3708 m



### Section B:

sample localities are ~ 20 meters apart

S19°19.722; W67°10.816  
3705 m

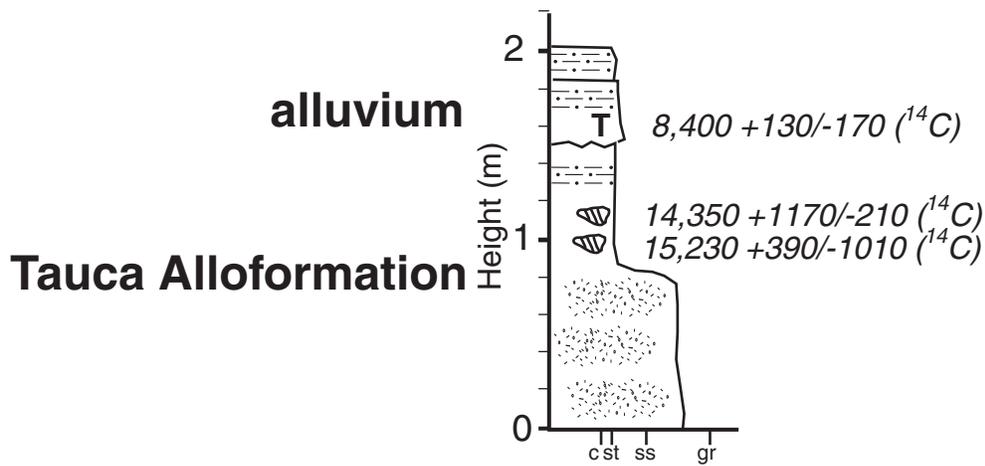


## Site 9: Dry wash near Cutempura

### Section A: downstream of Cutempura

S19°21.137; W67°12.793

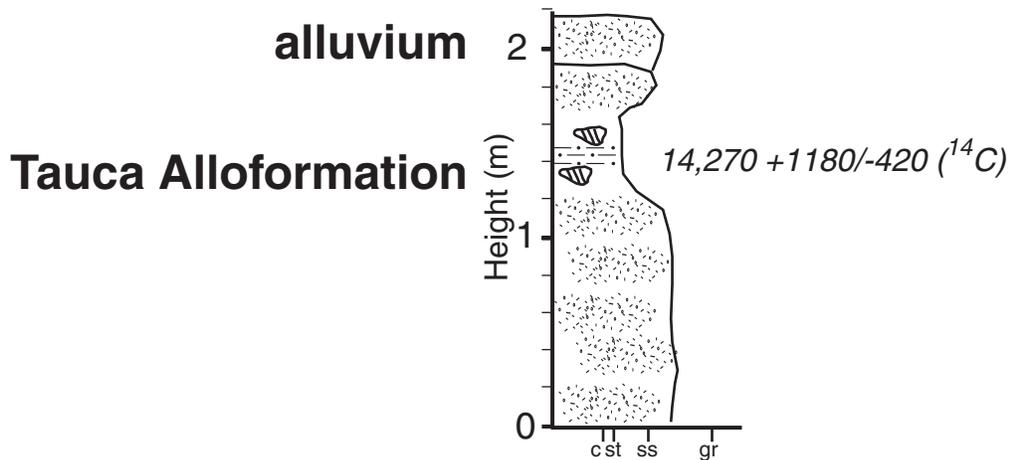
3710 m



### Section B: upstream of Cutempura

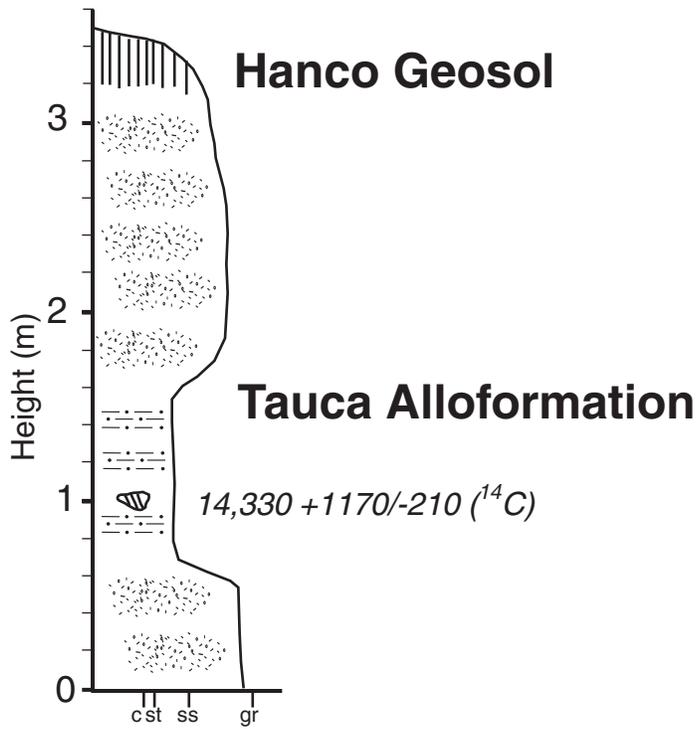
S19°22.182; W67°12.413

3738 m



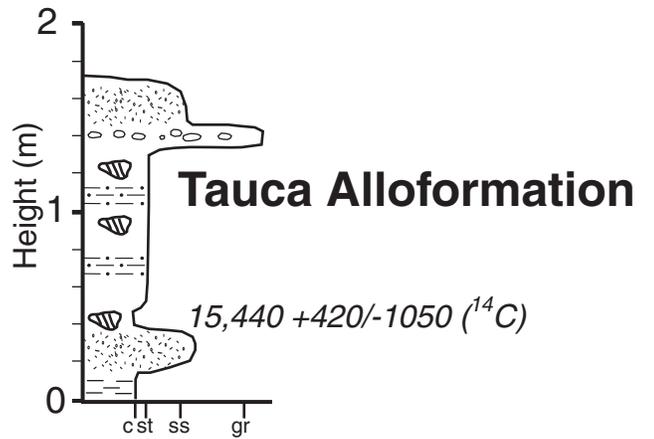
# Site 10:

## Section A:



S19°21.873; W67°13.242  
3745 m

## Section B:

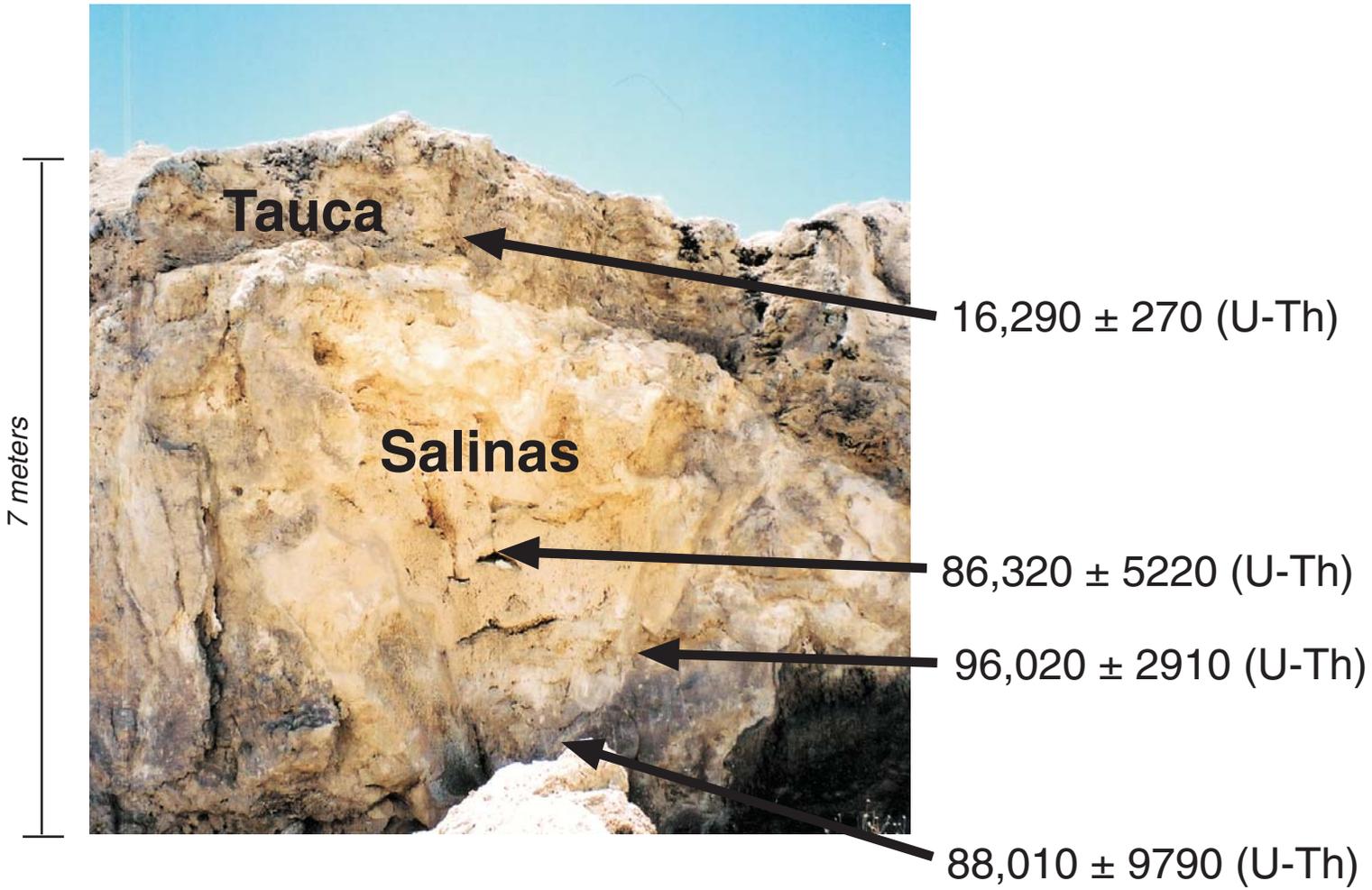


S19°22.237; W67°14.164  
3738 m

## Site 11:

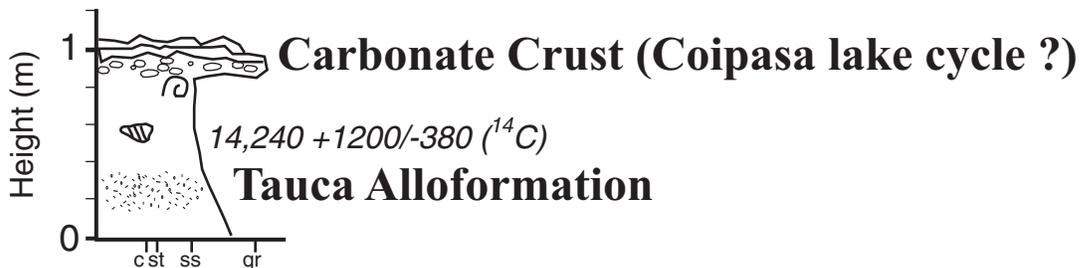
S19°40.828;W67°39.350

3655 m



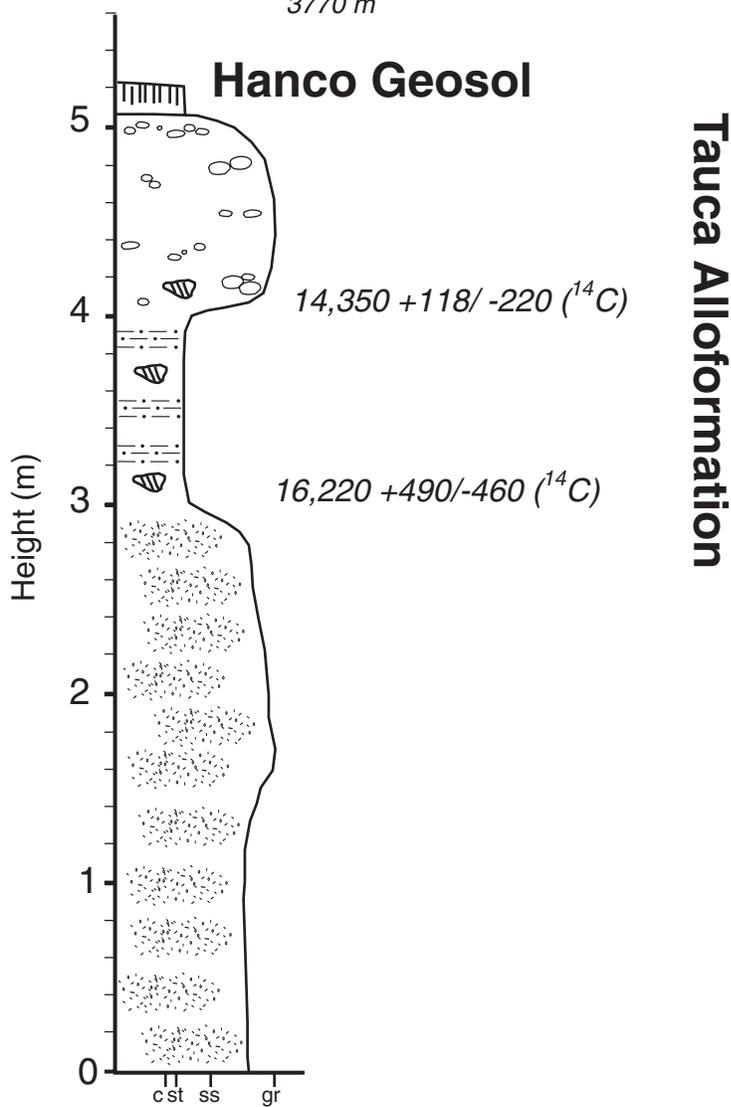
### Site 12:

S19°32.432; W66°01.882  
3659 m



### Site 13:

S19°38.957; W68°05.785  
3770 m

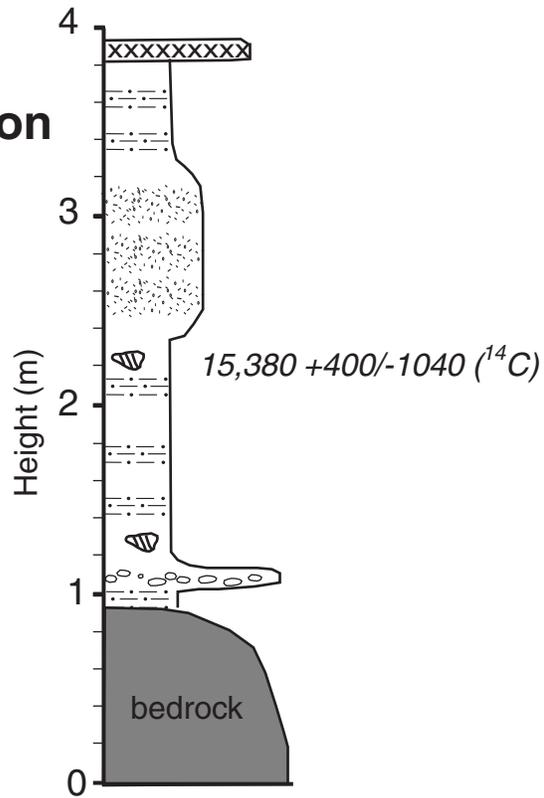


## Site 14: Section M -upstream of Sajsi

S19°45.542; W67°09.072

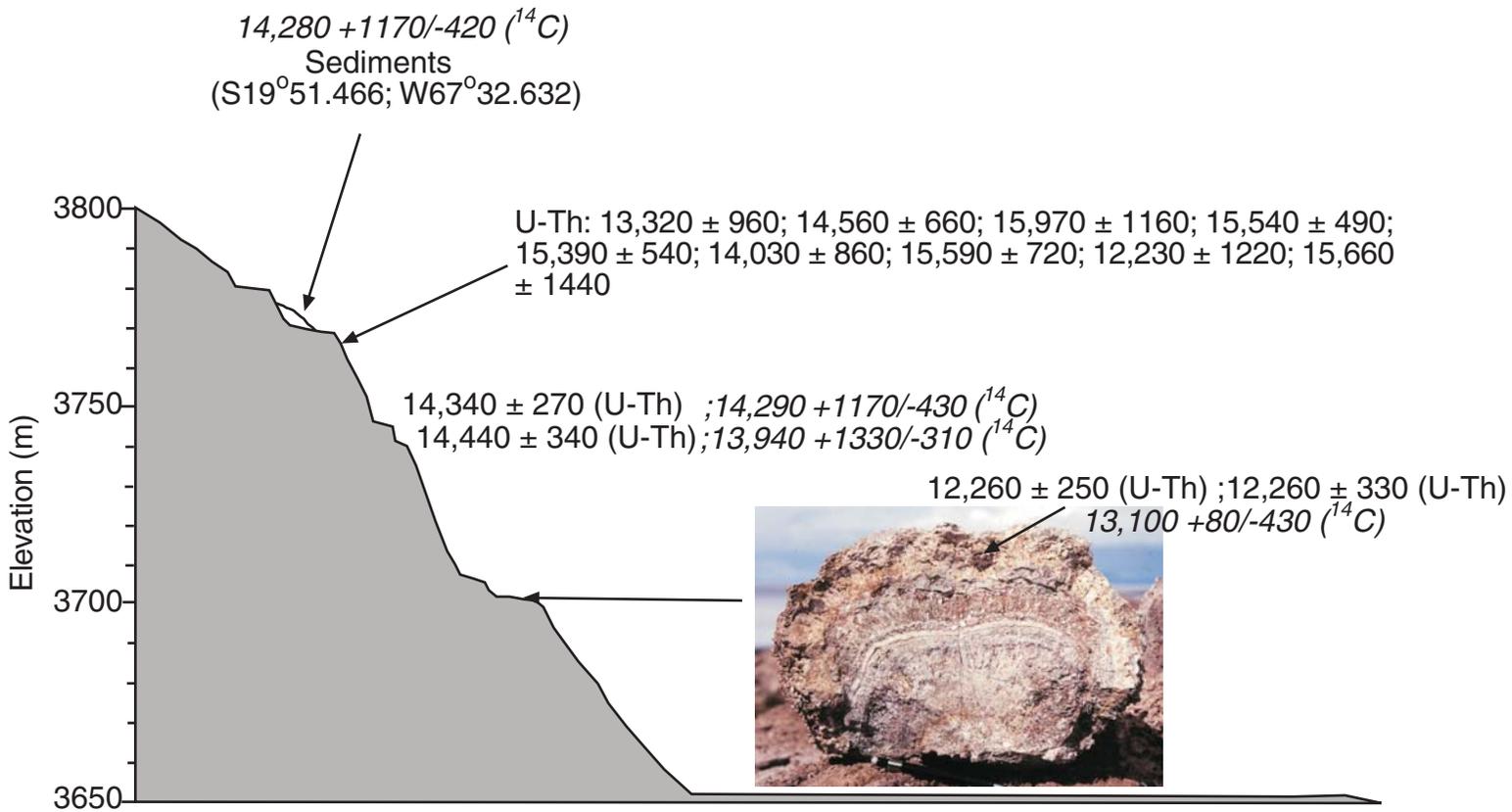
3727 m

### Tauca Alloformation



## Site 15:

S19°50.600; W67°33.117



## Site 16:

S19°57.204; W68°14.616

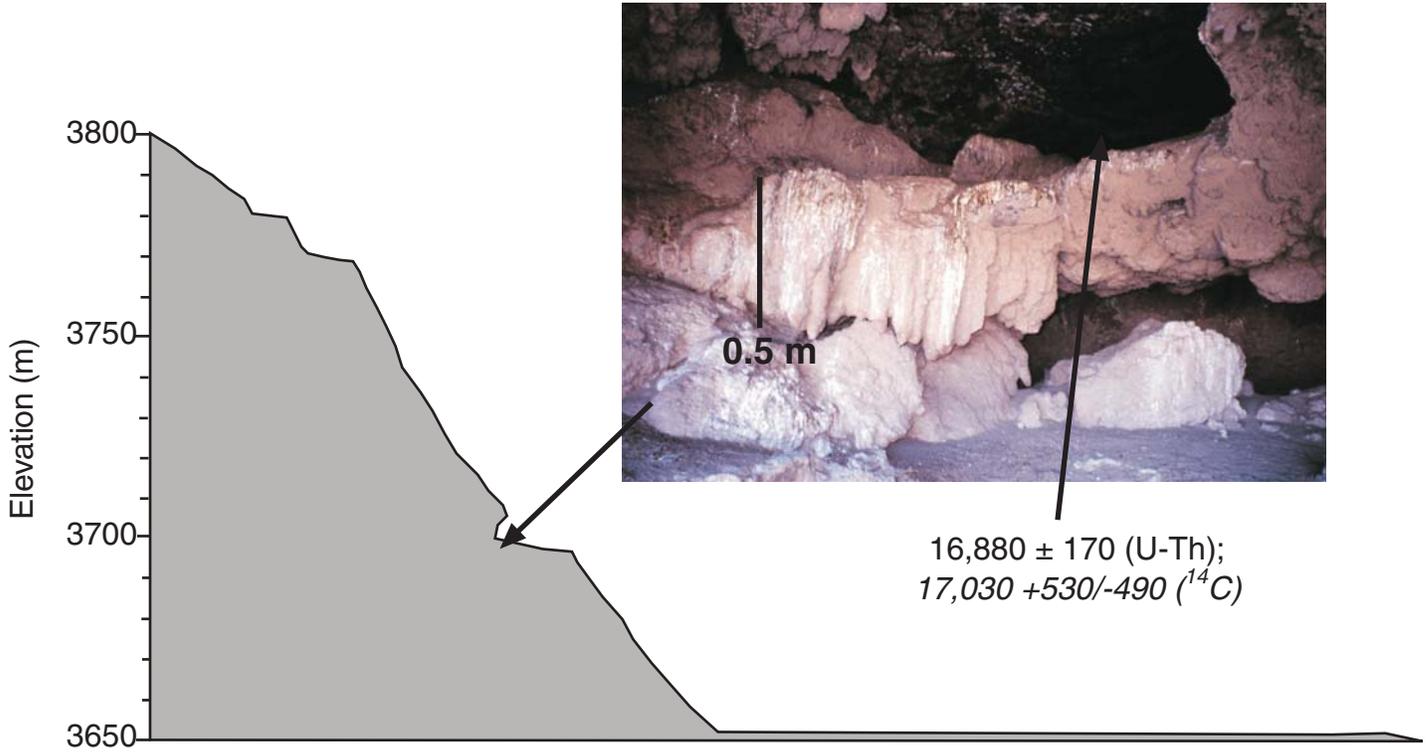
3661 m



45,760 ± 440 (U-Th)

# Site 17:

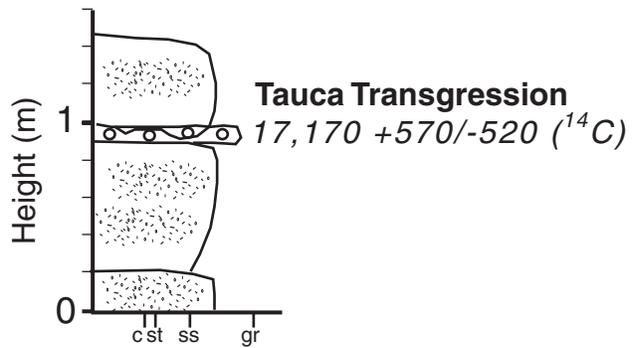
S20°05.692; W68°13.456



# Site 18:

S20°06.607; W67°01.608

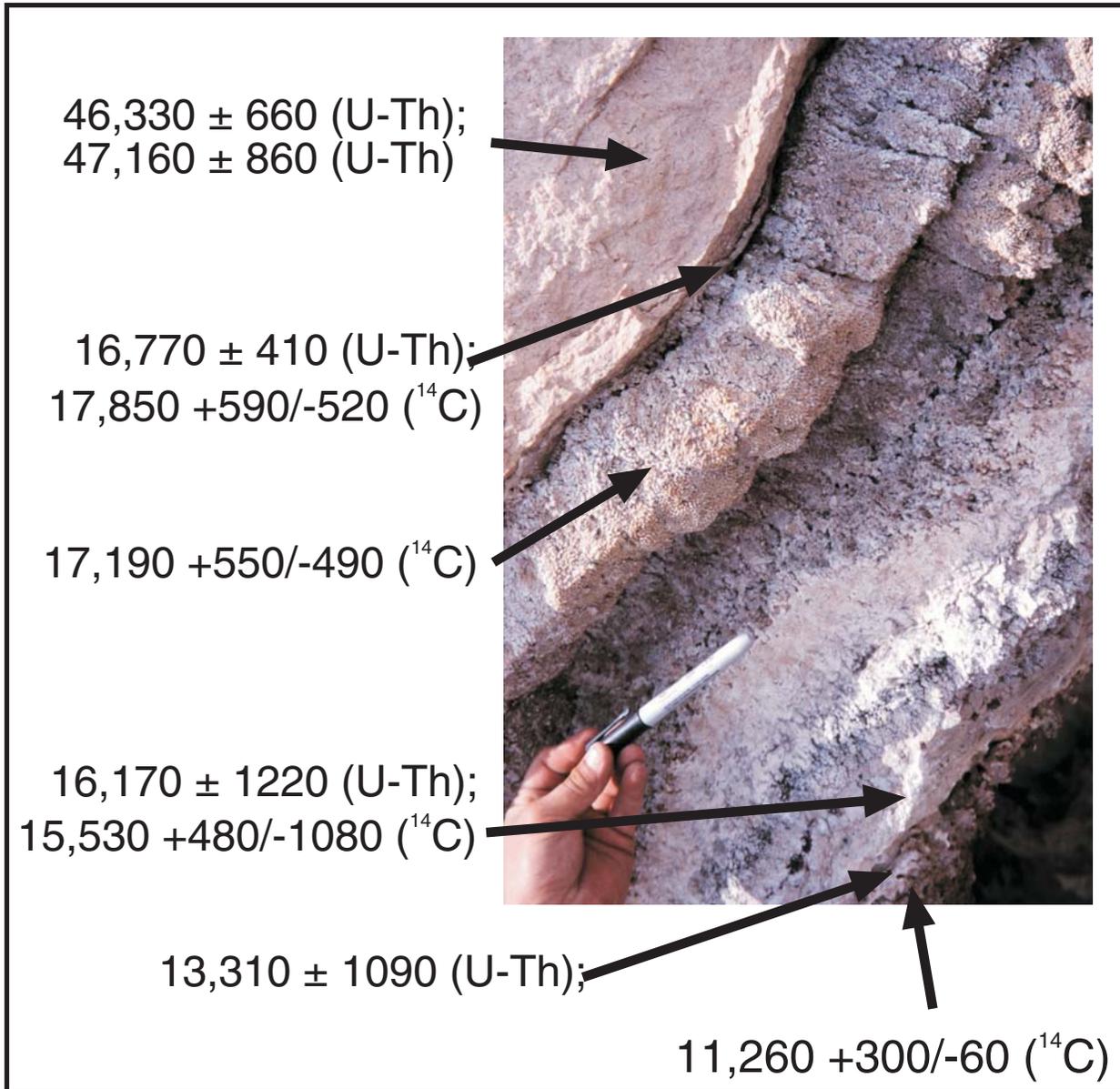
3760 m



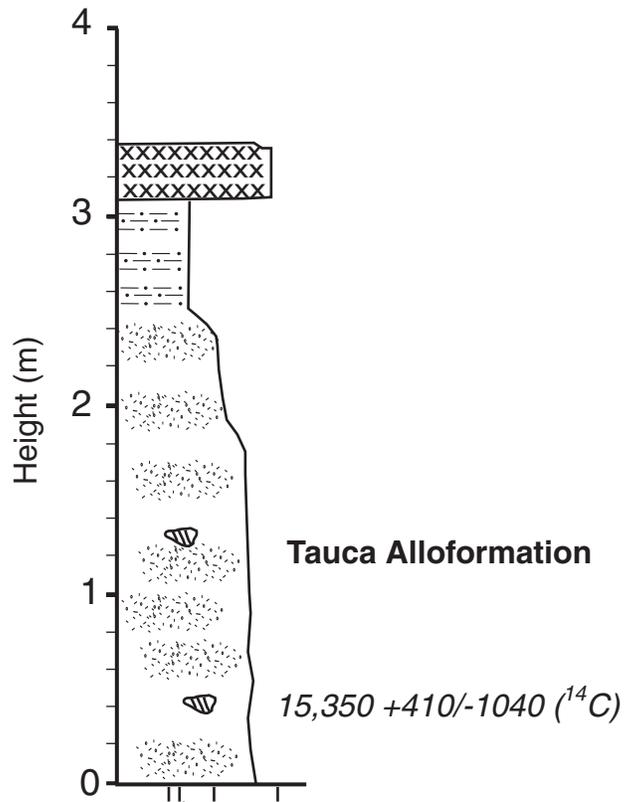
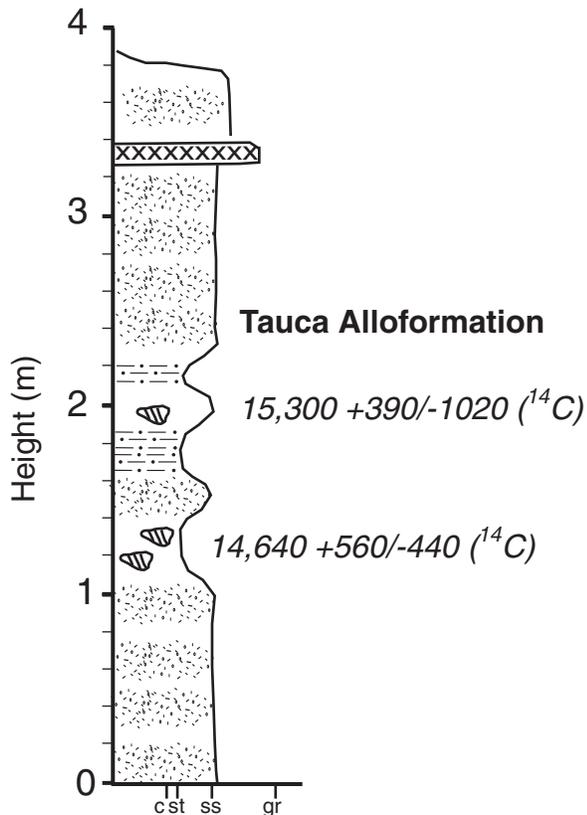
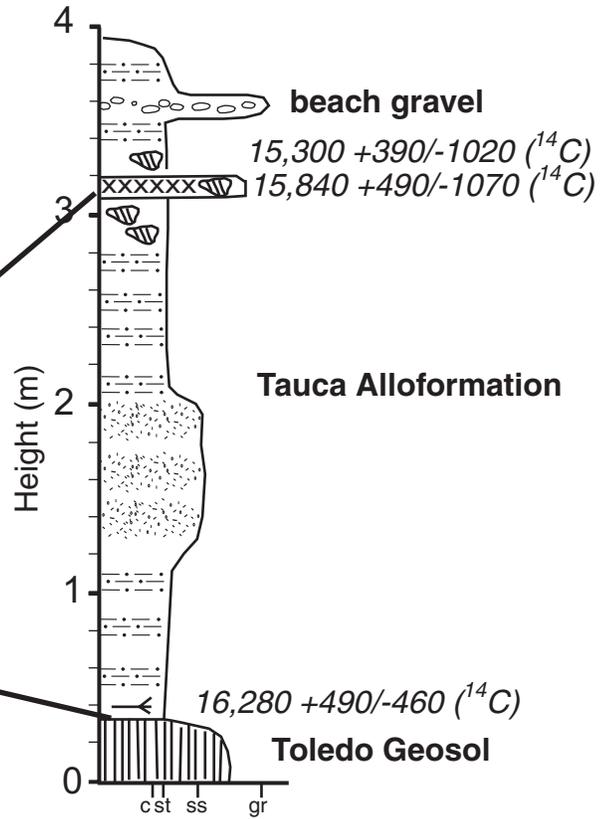
### Site 19:

S20°09.057;W67°48.574

3659 m



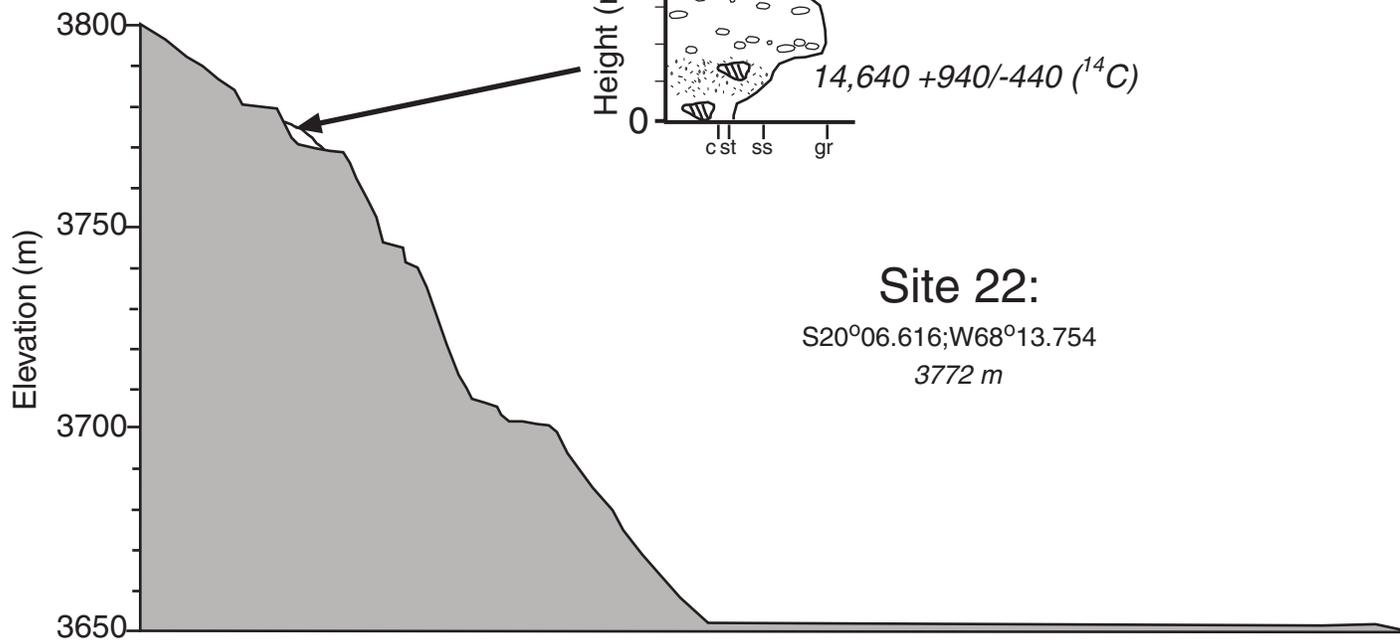
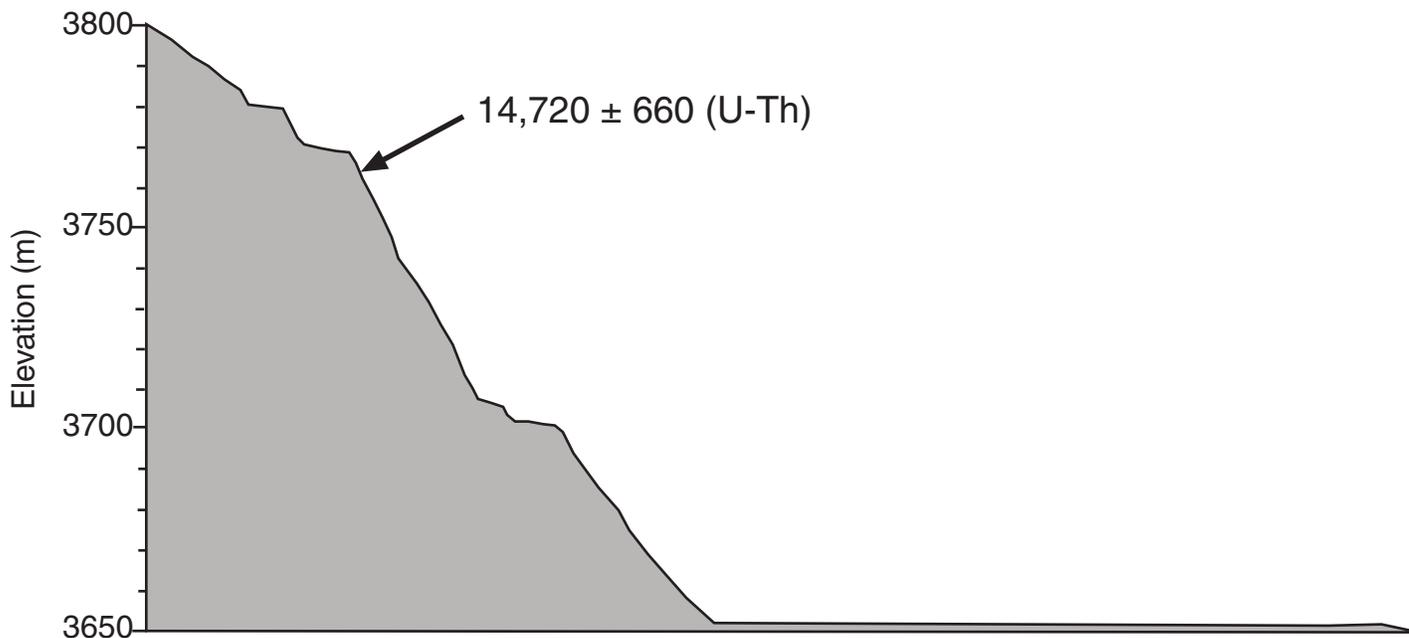
# Site 20:



### Site 21:

S20°06.440; W68°13.495

3765m



### Site 22:

S20°06.616; W68°13.754

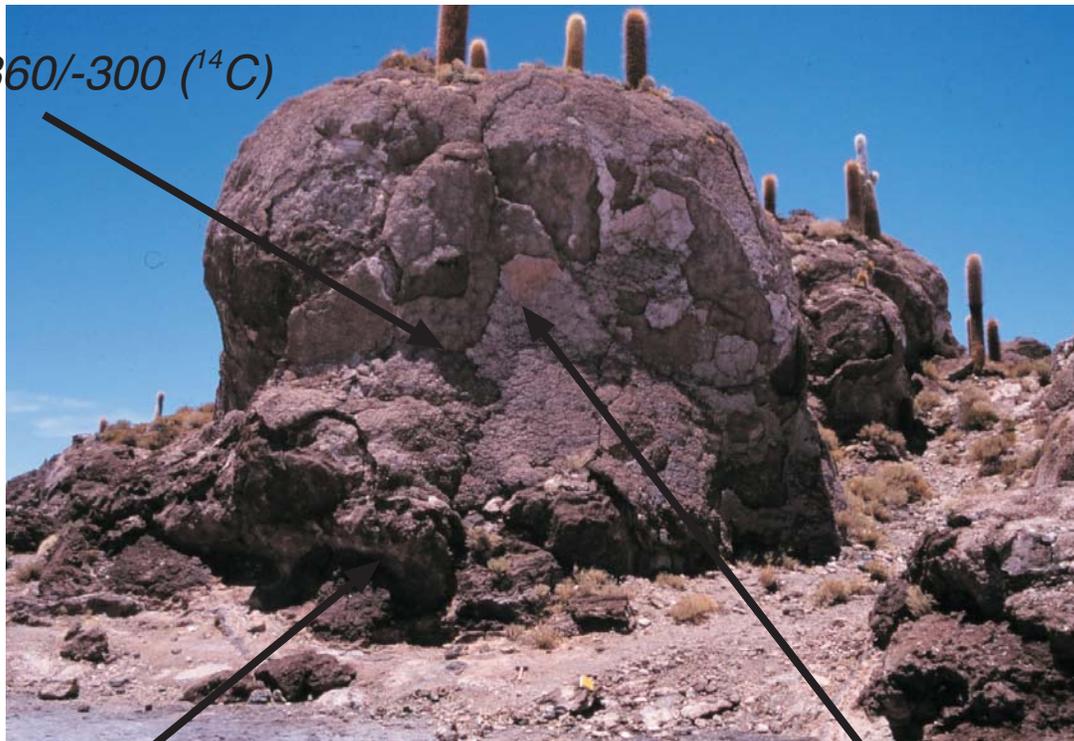
3772 m

### Site 23:

S20°14.223; W67°37.523

3655 m

13,480 +360/-300 (<sup>14</sup>C)



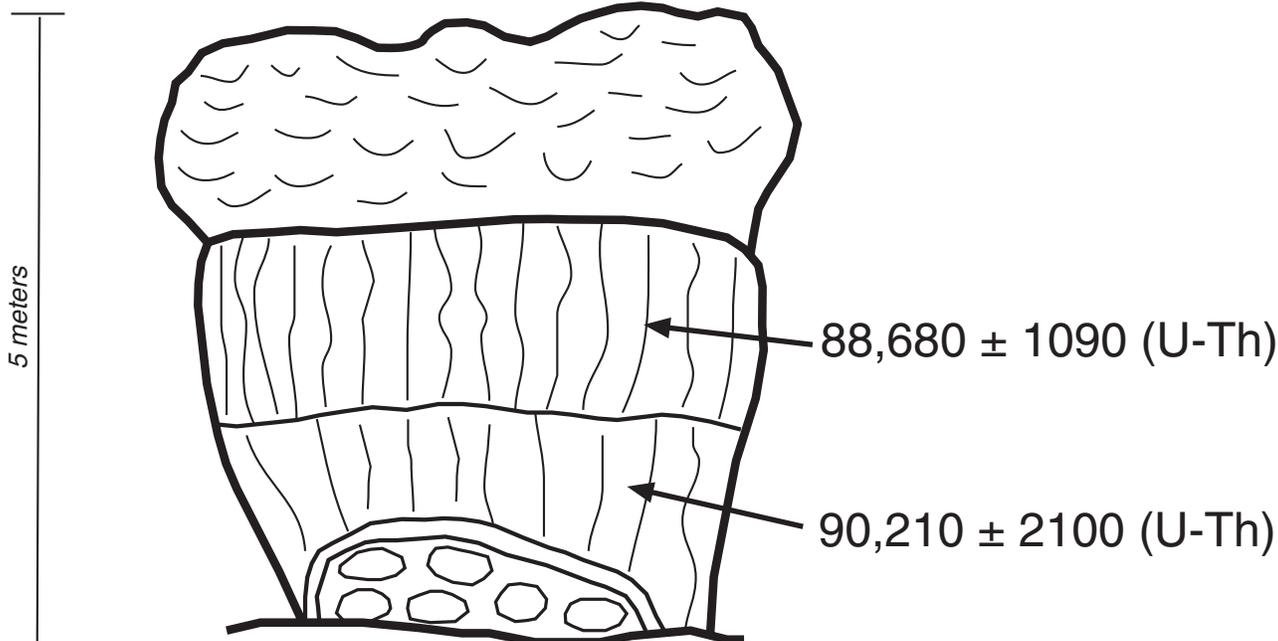
80,460 ± 1670 (U-Th)

12,800 +140/-470 (<sup>14</sup>C)

### Site 24:

S20°48.059; W67°39.411

3665 m

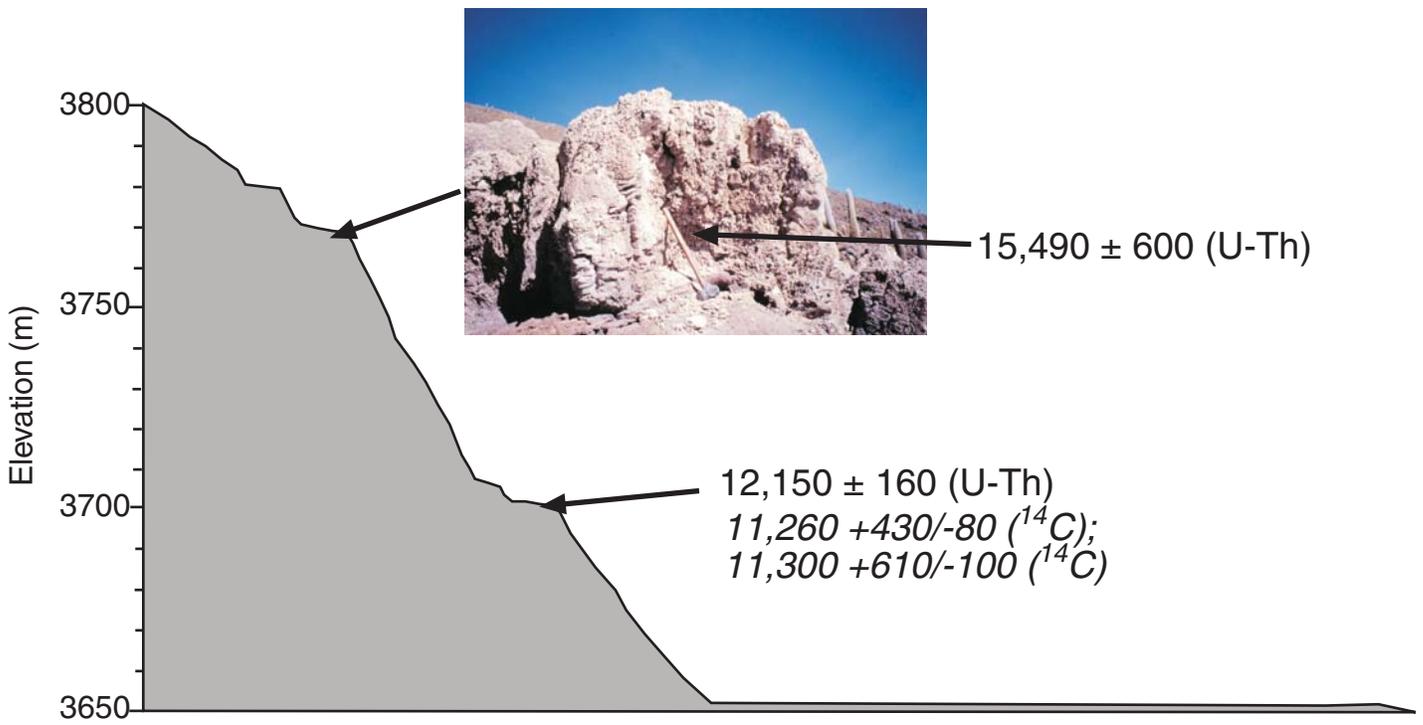


88,680 ± 1090 (U-Th)

90,210 ± 2100 (U-Th)

## Site 25:

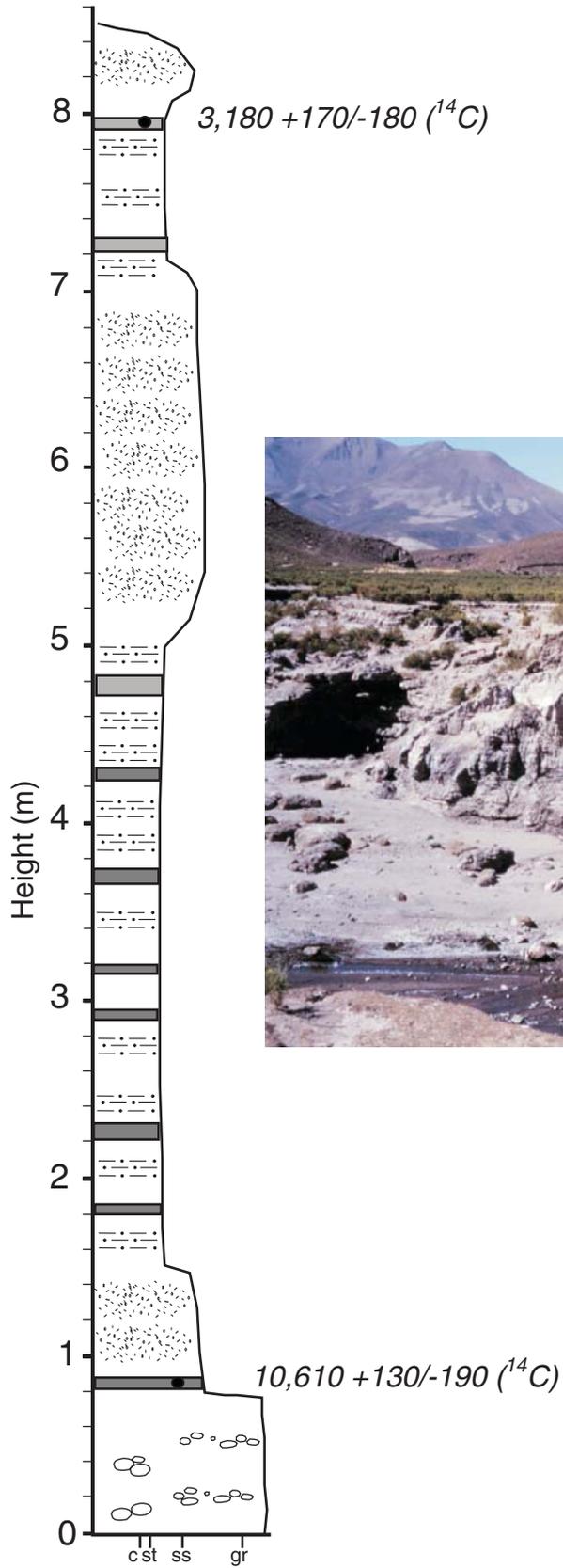
S20°36.274; W67°34.953



# Site 26:

S20°43.966; W67°39.954

3785 m

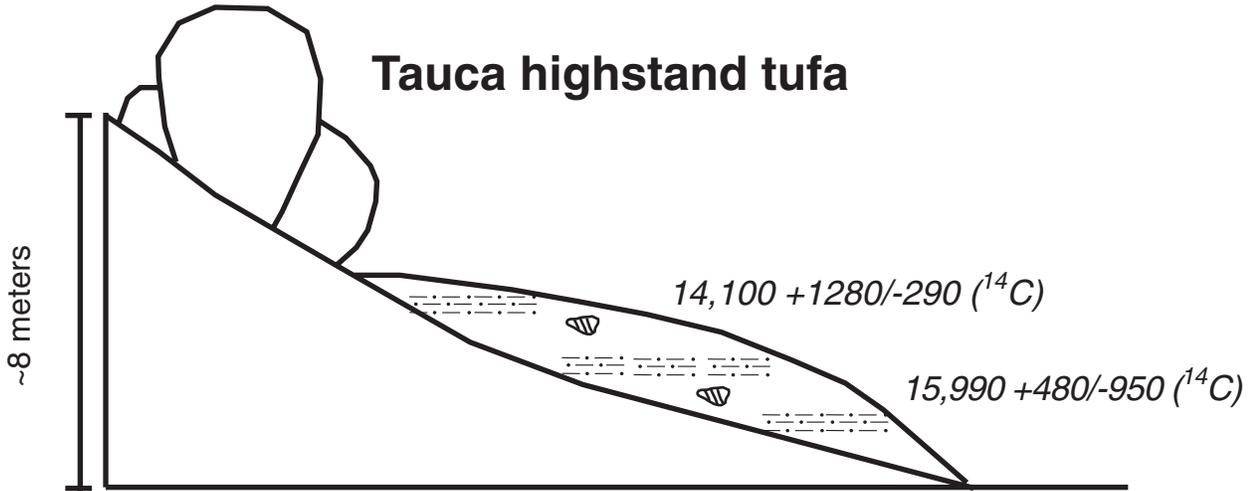


### Site 27:

S20°50.710; W68°00.494

3761 m

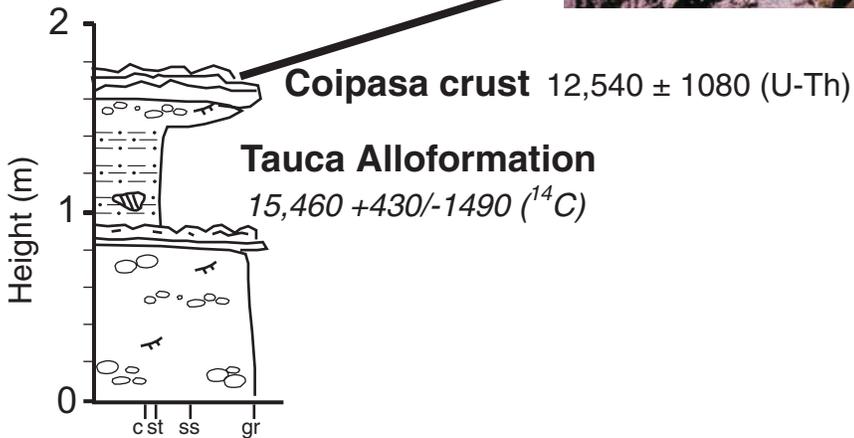
### Tauca highstand tufa



### Site 28:

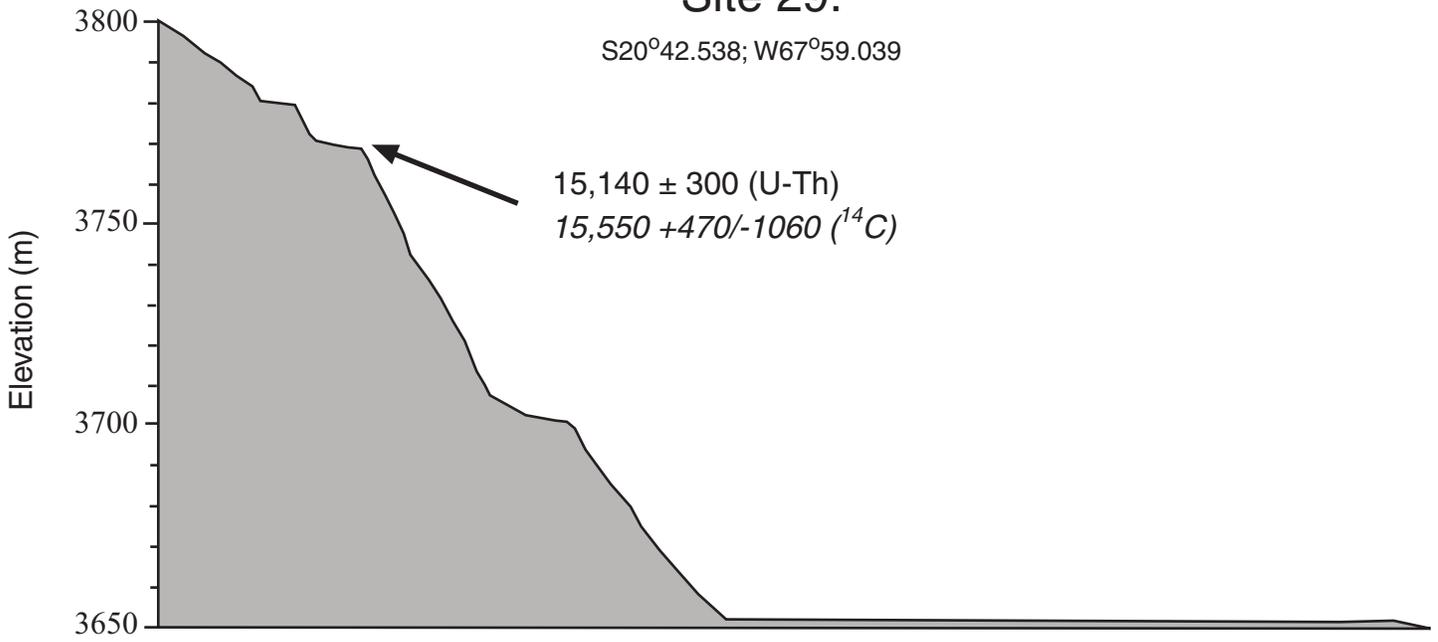
S20°46.535; W67°06.185

3667 m



### Site 29:

S20°42.538; W67°59.039



### Site 30:

S20°49.206; W67°08.659

3662 m



13,000 ± 170/-340 (<sup>14</sup>C)

## Site 31:

S21°02.346; W68°15.152

