

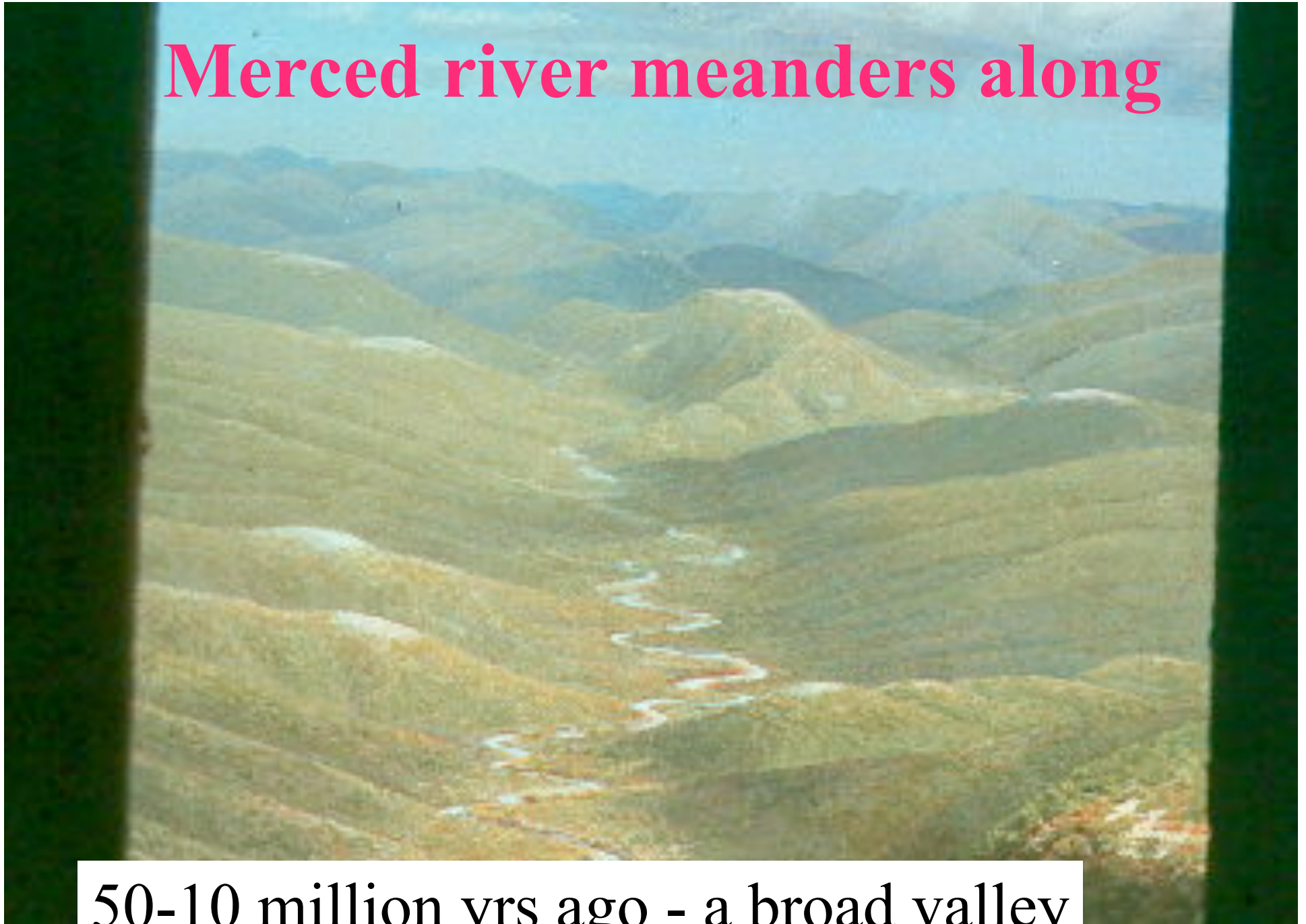
# YOSEMITE VALLEY

# GENERAL CHARACTERISTICS

- Yosemite means ‘grizzly bear’
- 7 miles in length
- 1-2 miles in width
- Elevation almost exactly 4,000’

# Merced river meanders along

50-10 million yrs ago - a broad valley



## Valley Stage: 50-10 My

- The land destined to become Yosemite National Park was made up of gentle, rolling hills and streams.
- The Merced River was a slow-moving, sluggish stream.
- Hardwood forests flourish



The land rises- the valley becomes a canyon  
10-3 million years ago, tilting of Sierras



## 10-3 Ma Canyon Stage

- 10-3 million years ago, the Sierra Nevada, California's "backbone", rose.
- The Sierran block uplifted, tilting westward, increasing the Merced Rivers flow so it carved the valley into a canyon.
- Redwood forests flourished.
- 3 Ma ago the Merced River is a steep, V-shaped, riverine canyon.



**40-60 miles  
in length**

The Ice Age begins, glaciers carve the valley  
El Portal/Sherwin glacial stage: 1 My

# Major Glaciation

- Probably lasted about 300,000 years
- Glaciers filled the V-shaped Yosemite Valley, widening, deepening and carving it into a "U" shape, forming hanging valleys from which waterfalls now cascade.
- Gouged out basin that lies more than 1,000' below present valley floor
- Half dome a nunatak



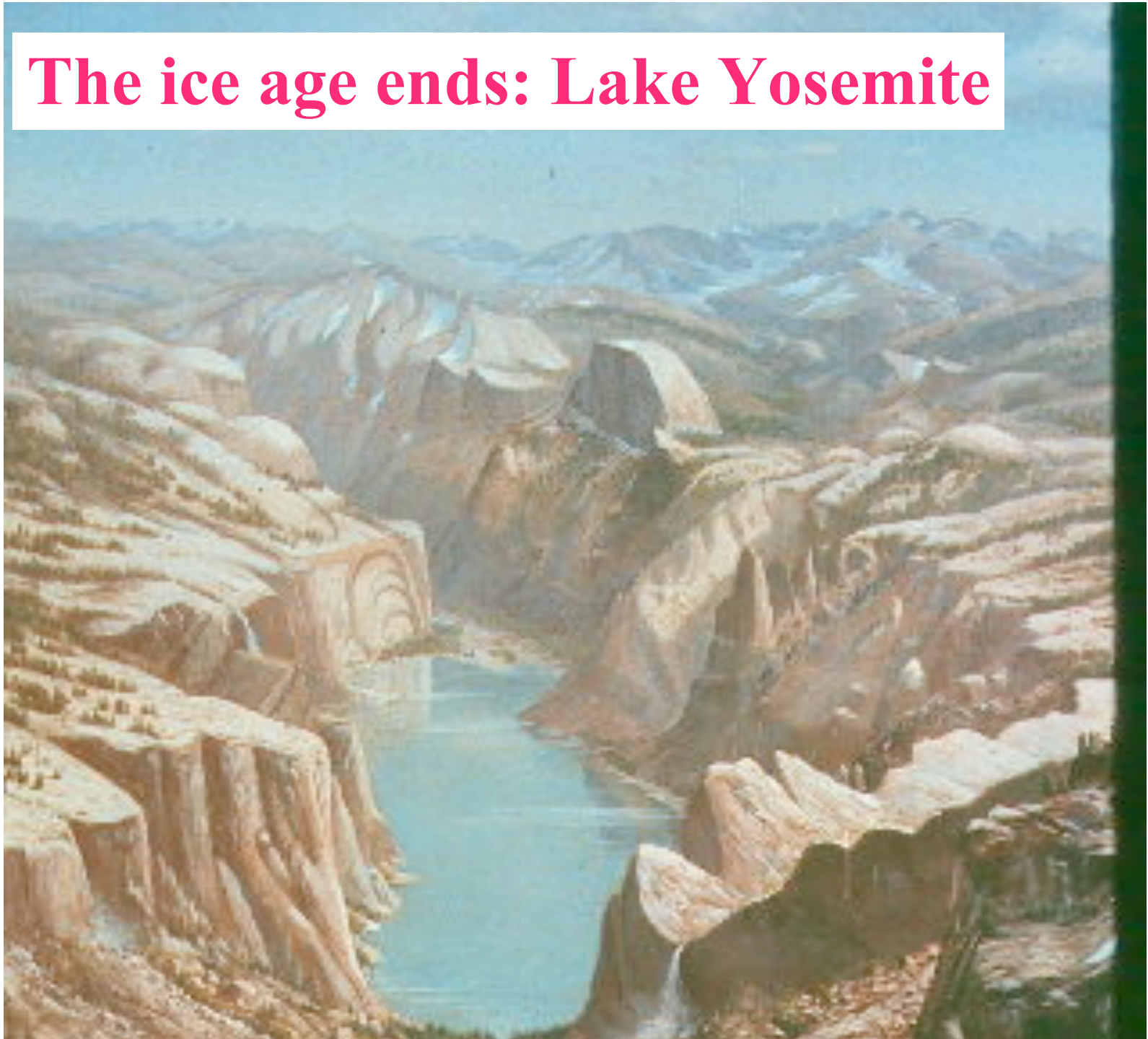
# The last glacier surge- 30,000 yrs ago



# Tioga Glacial Stage

- Yosemite Glacier entered the valley but did little to alter the landscape. Older glaciers had already excavated 2,000 feet into the bedrock.
- Only advanced as far as Bridalveil Falls.
- At this location the forward movement of the glacier was balanced by the melting of ice at its front, producing a large terminal moraine.

# The ice age ends: Lake Yosemite



## 14,000-10,000 years ago

- Temperatures warmed and the last valley glacier melted. Its terminal moraine (rock debris) dammed the valley 14,000 to 15,000 years ago, creating Lake Yosemite. Sediment eventually filled the lake, which became the flat valley floor we see today.





**Following pictures from the USGS site at:**

<http://geology.wr.usgs.gov/docs/usgsnps/yos/topobk.html>



**El Capitan on left**





**Cathedral Spires**



**Bridal Veil Falls, Leaning Tower**





**Sentinel Rock**



**Yosemite Falls**



**Royal Arches, Washington's column**





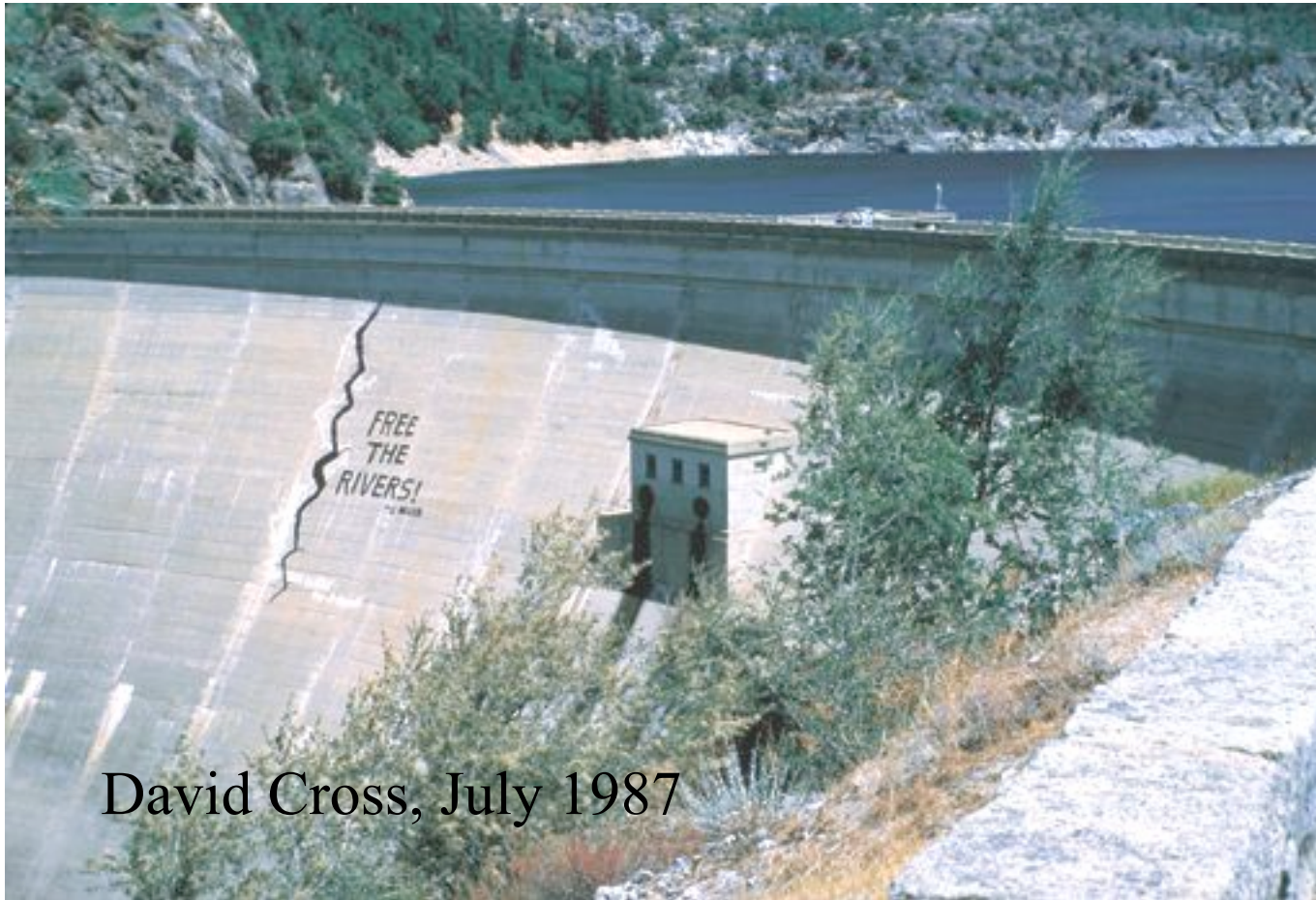
**Half Dome**





**Hetch Hetchy Canyon, next to Yosemite Valley  
Now Hetch Hetchy Reservoir, San Fran water supply**

## O'Shaughnessy Dam at Hetch Hetchy Reservoir



Protestors had put in a simulated "crack" on the face of the dam, and inscribed the text, "Free the Rivers! - J. Muir."

# SUMMARY

- Broad-valley stage (50-10 My)
- Canyon stage (10-3 My)
- Pleistocene glaciation begins (2 My)
- Last glacial stage 30,000 years ago (Wisconsin/Tioga)
- Lake Yosemite formed by recessional moraine about 10,000 years ago
- El Capitan and Half Dome nunataks