Mapping a topographic surface

THE YOUNG SURVEYOR

George Washington was (among other things) a surveyor

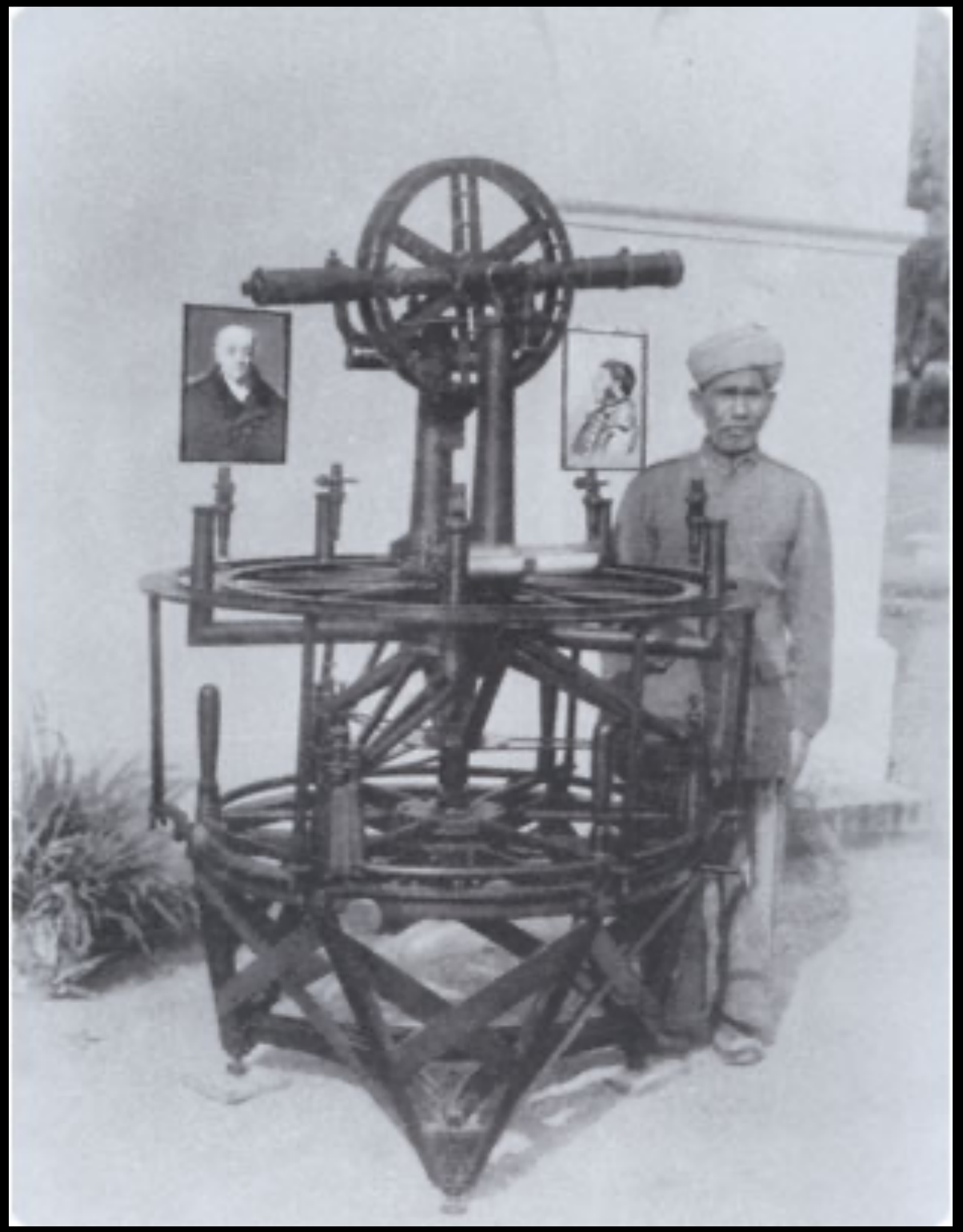

IRISH SEA
GERMAN OCEAN
ST GEORGE'S CHANNEL
CARDIGAN BAY
BRISTOL CHANNEL

W. S. Sorrell.

Fig 6. Chainman. Fig 7 Boundary Pillar Fig 8. Chainman.

Surveying in India.


INDEX CHART
GREAT TRIGONOMETRICAL SURVEY
INDIA
BAY OF BENGAL
CEYLON



The Great Trigonometric Survey of India

A New Chart
of Part of the Coast of
COREMANDELL
from Armegon to Bimlepatam

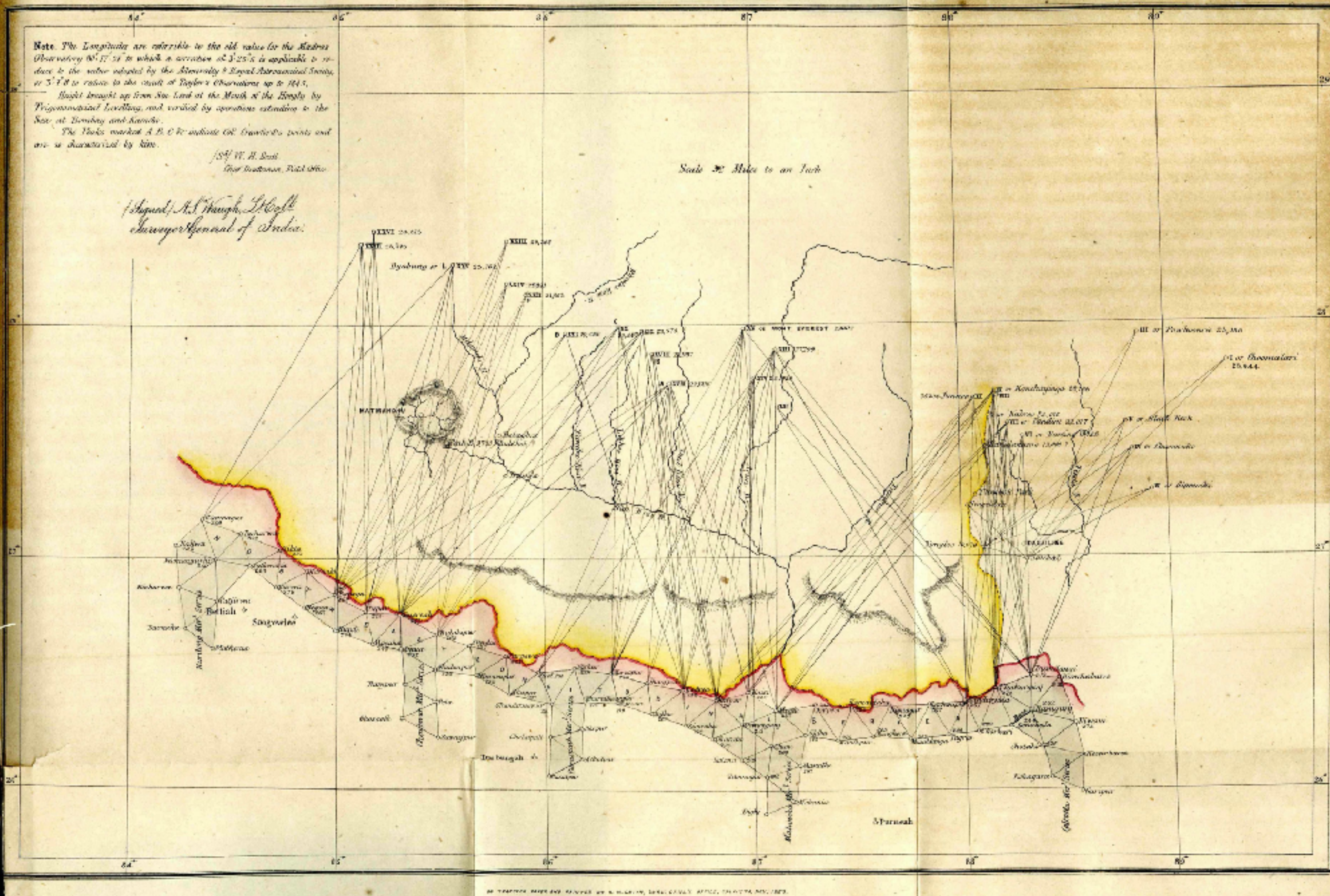
LONDON

A Scale of Twenty English Leagues

COAST OF COREMANDELL

PART OF THE

c.1710 · Samuel Thornton 6299


Note. The Longitudes are referrible to the old value for the Madras Observatory 80°17'21" to which a correction of 3'.25".5 is applicable to reduce to the value adopted by the Admiralty & Royal Astronomical Society, or 3'.7".8 to reduce to the result of Taylor's Observations up to 1843.
Height brought up from Sea Level at the Mouth of the Hoogly by Trigonometrical Levelling, and verified by operations extending to the Sea at Bombay and Kurachee.
The Peaks marked A. B. C &c. indicate Col. Crawford's points and are so characterized by him.
(Sd) W. H. Scott
Chief Draftsman, Field Office
(Signed) A. S. Waugh, Lt. Col.
Surveyor General of India.
KATMANDU
DARJILING
Bettiah
Sugowlee
Durbungah
Purneah

Shigatze or *Digurtshi*

Dayabang 23762

MOUNT EVEREST
29,002

Powhoonri

Kanchinjinga
28,156

Choomalari
23,944

Katmandu

Darjeeling

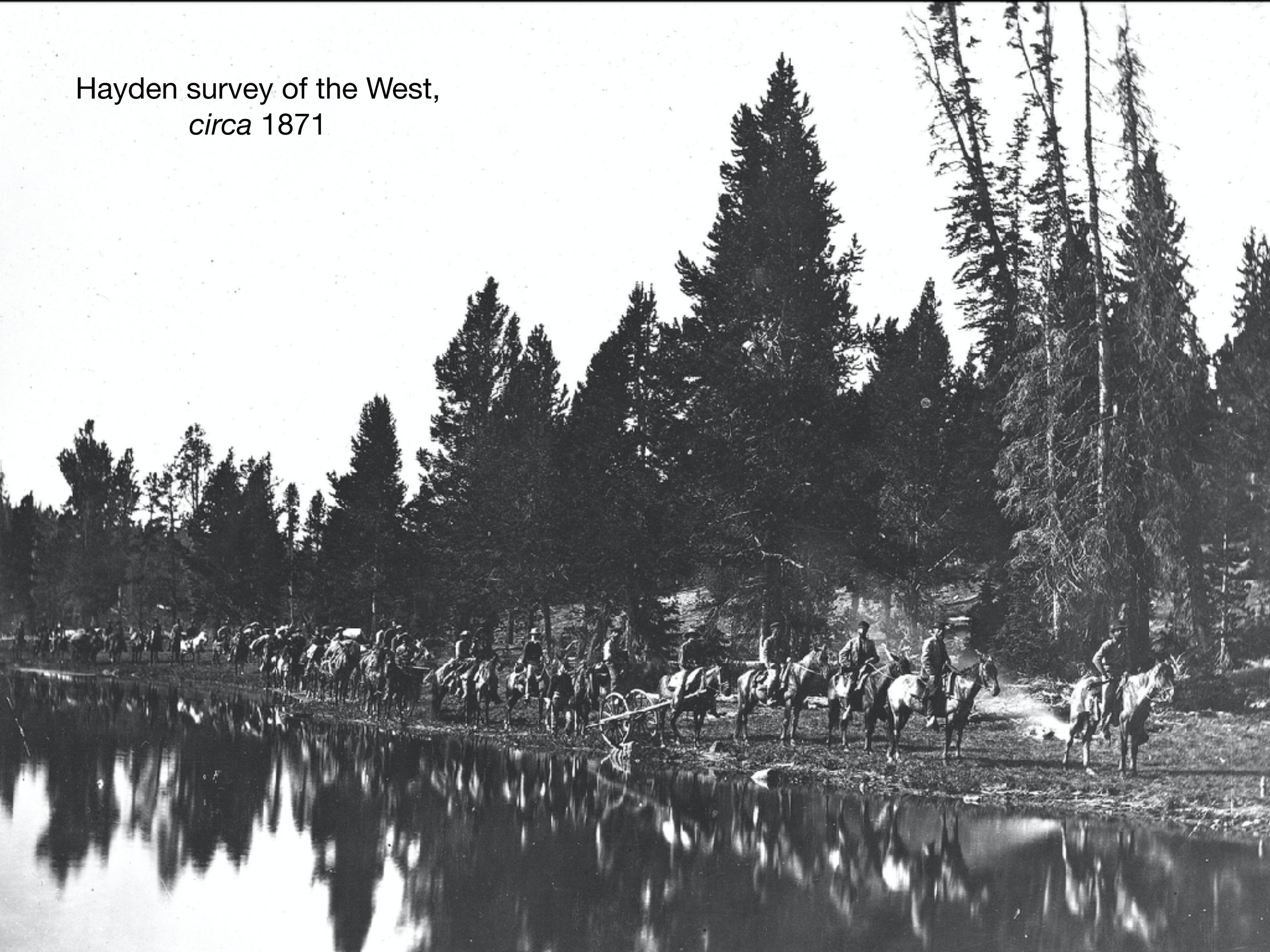
Shegowli

Sona Khoda Base

Purneah

Dinajpoor

Hayden survey of the West,
circa 1871



ncos

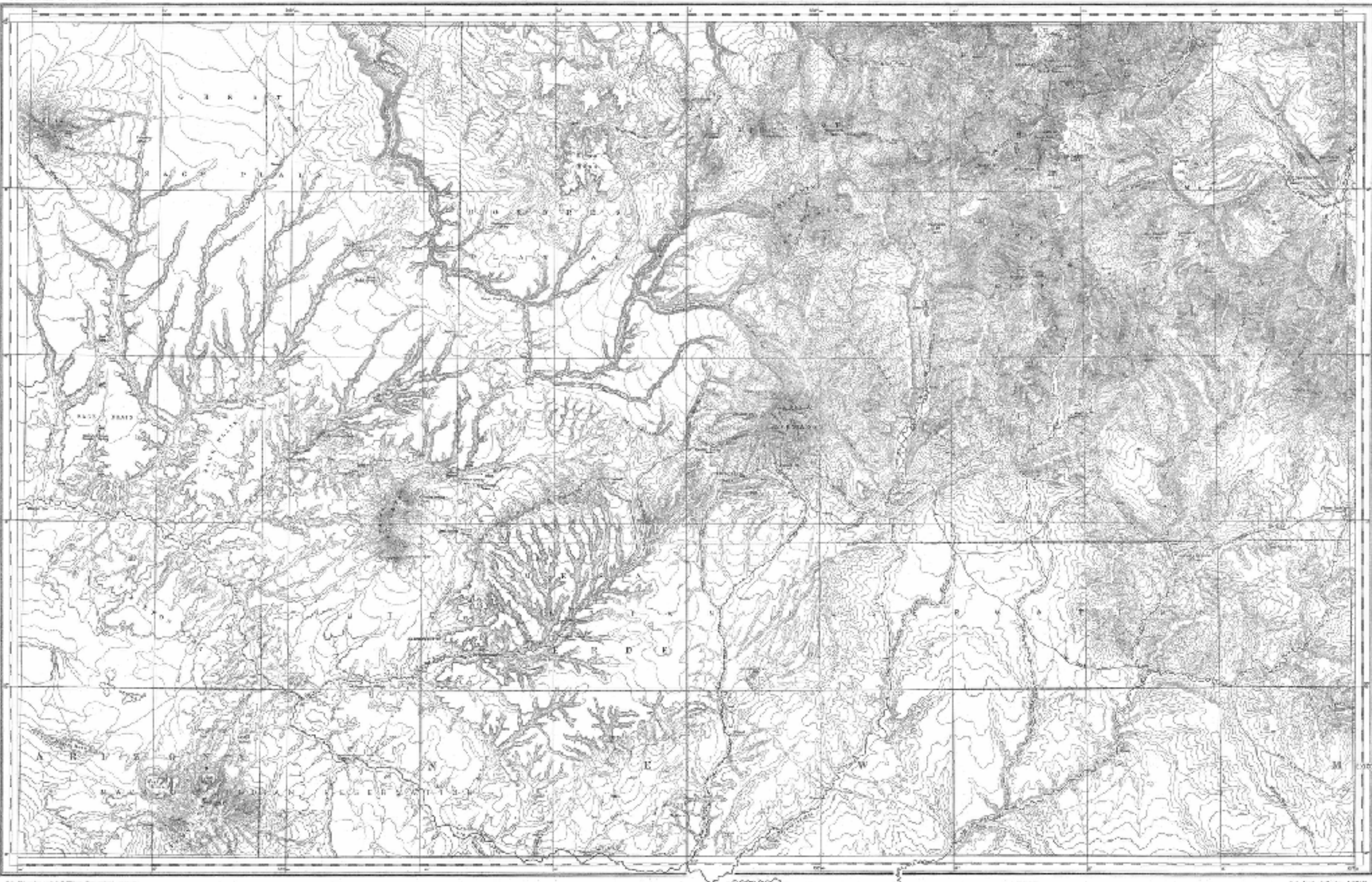
e, La Plata peak
13760 Elevation

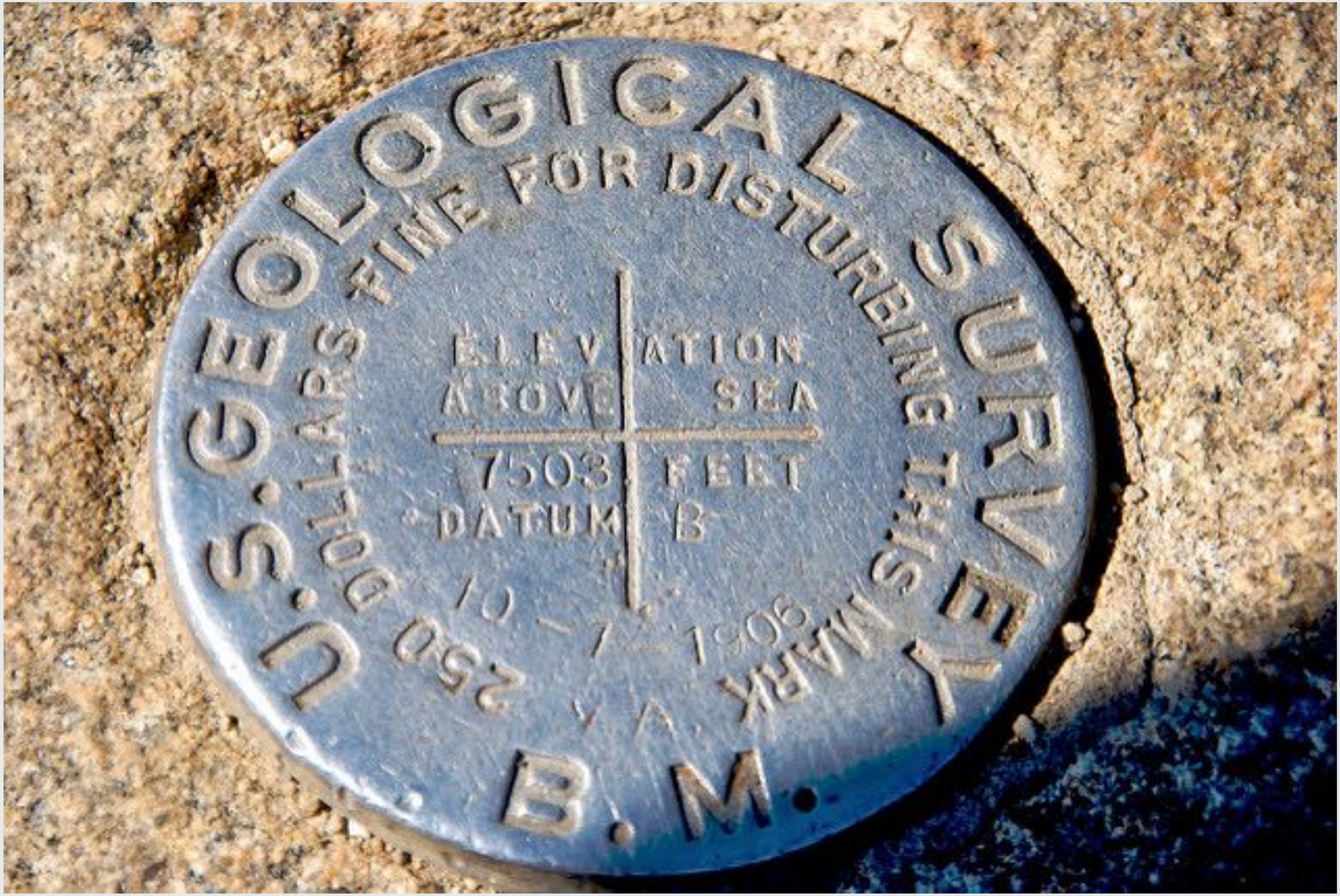
f Sentinel Rock

g, Spiller's Peak

h, h, Mei

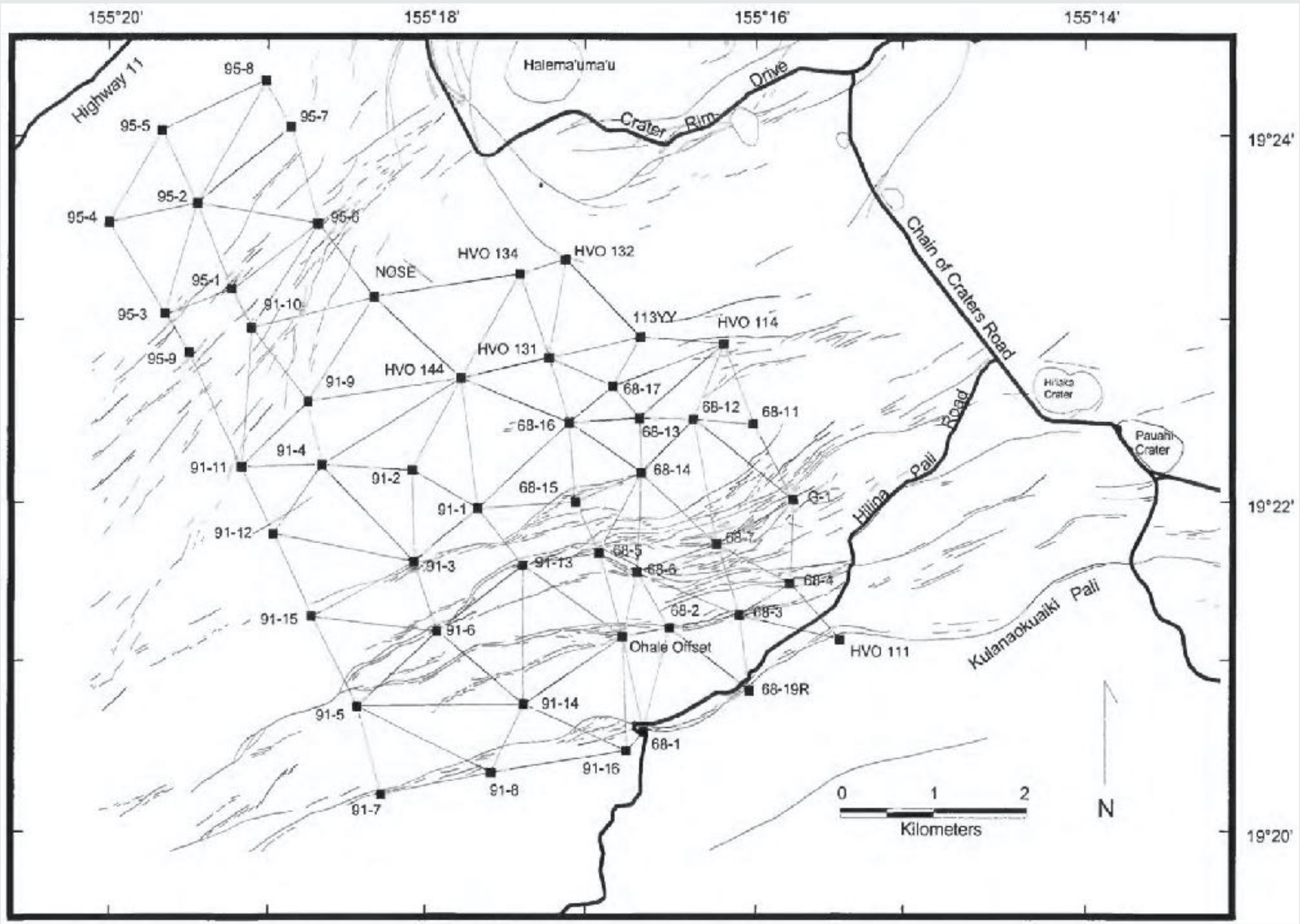
S.W. COLORADO AND PARTS OF NEW MEXICO, ARIZONA AND UTAH.





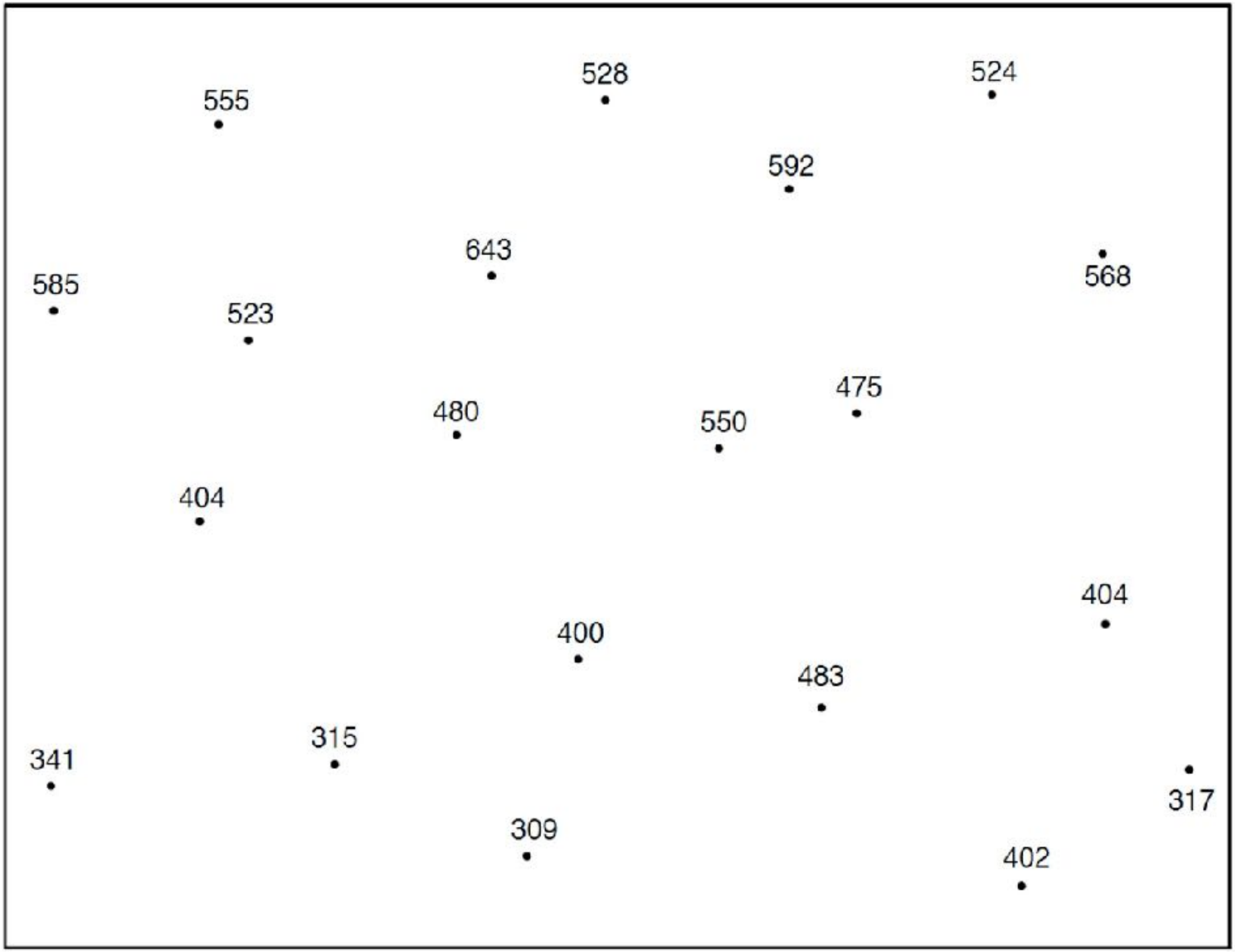
US Geological Survey benchmark, installed October 1, 1906

Using a geodimeter for repeat geodetic surveys of Mt. St. Helens, circa 1970s



EDM trilateration array, Kilauea, Hawaii, from Avery et al., 2002

Contouring Data



contour interval: 40 m

97 91 86 82 81

89 82 75 70 67

78 73 65 59 57

72 63 57 53 51

64 58 52 47 45

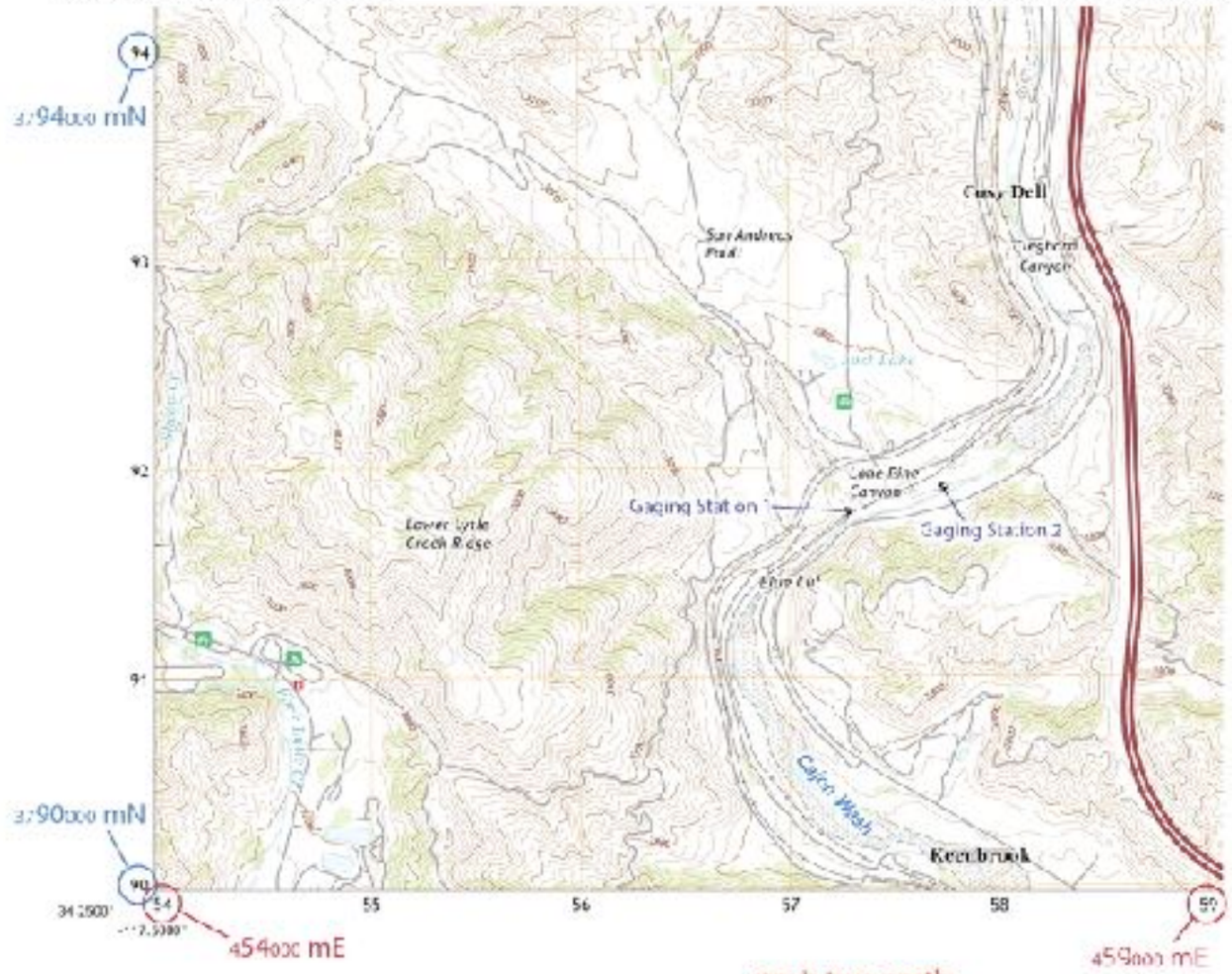
contour interval = 10 m

0 10 m

505
500
492
485
475
470
450
415
420
410
395
435
400
498
490
470
402
425
477
450
410
392
492
485
430
394
470
397
378
475
405
460
419
390
480
468
440
472
460
420
403
395
382
373

Working with a topographic map

Name (please print legibly): _____ CA_Cajon_20180913_TM



star is true north

GN = grid north

MN = magnetic north

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 10,000-meter grid Universal Transverse Mercator, Zone 11S

Part of the USGS 7.5 minute topographic quadrangle map of Cajon, CA (2018)

What is the vertical distance between two adjacent **index contours** on this map? _____ feet.

What is the **contour interval** of this map? _____ feet.

Examine the map to find the **highest** elevation. The highest elevation is between _____ and _____ feet above sea level, and is located (approximately) _____.

Examine the map to find the **lowest** elevation. The lowest elevation is between _____ and _____ feet above sea level, and is located (approximately) _____.

What is the total relief in this map area? Relief is between _____ and _____ feet.

At what angle west of true north are the yellow UTM-grid-N-S lines printed? _____°

What is the bearing (or azimuth) from Gaging Station 1 to Gaging Station 2 (Hint: a number from 0 to 360°)? _____°.

How widely spaced are adjacent yellow UTM grid lines (either the N-S or E-W lines)? _____ km

What is the distance between Gaging Station 1 and Gaging Station 2? Show your work. _____ km

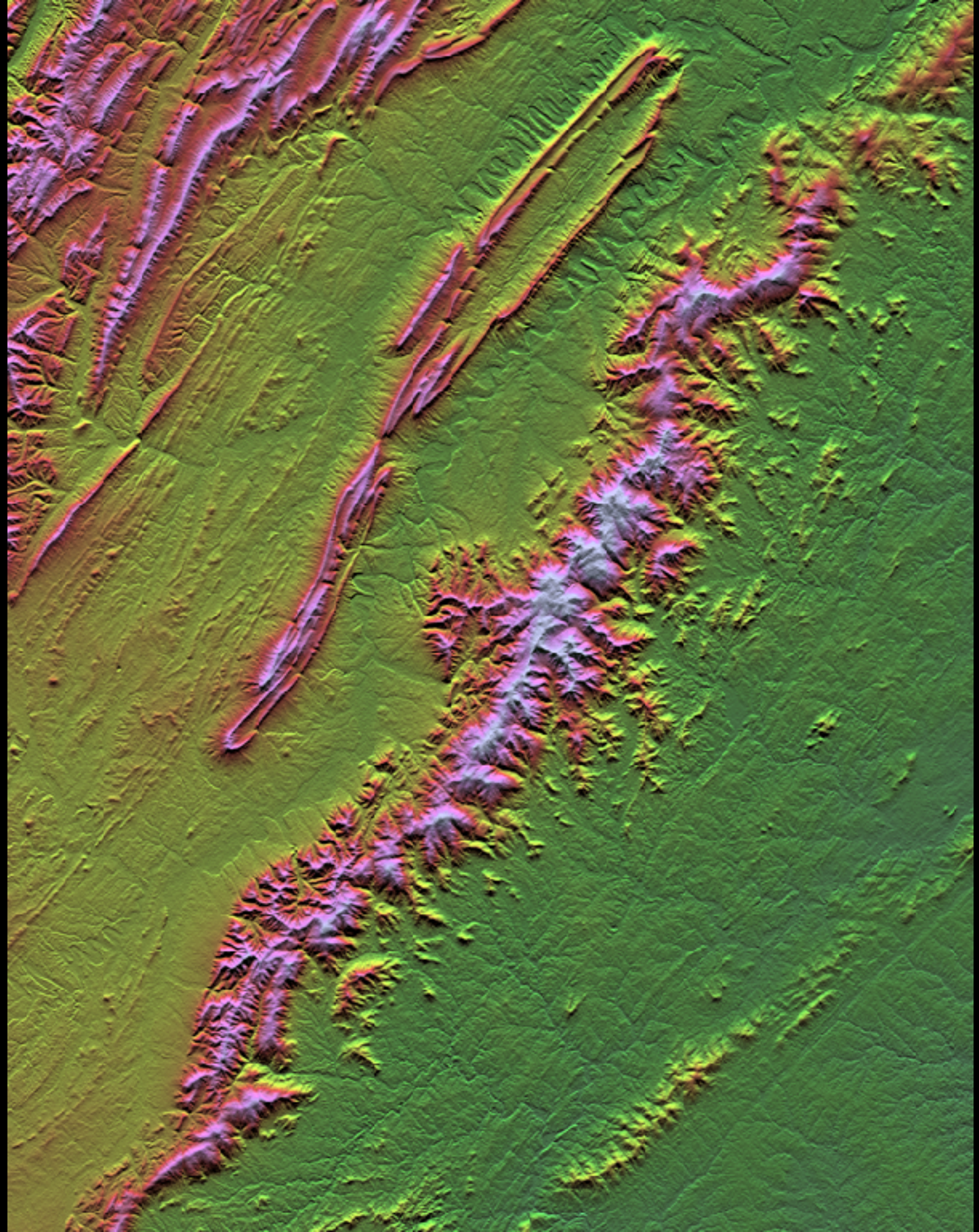
What are the UTM coordinates of Gaging Station 1 (GS1)? Zone 11S, _____mE, _____mN

GS1 is 383.6 mm from the east edge of the map (longitude -117.375°) and the map through GS1 is 482.5 mm wide. What is the longitude of GS1? _____°

The San Andreas fault zone is marked by a linear valley that extends across the map area. What is the approximate azimuth of the San Andreas fault in this map area? ~_____°

Measuring topography from an orbital platform: The Shuttle Radar Topography Mission (circa 2000)

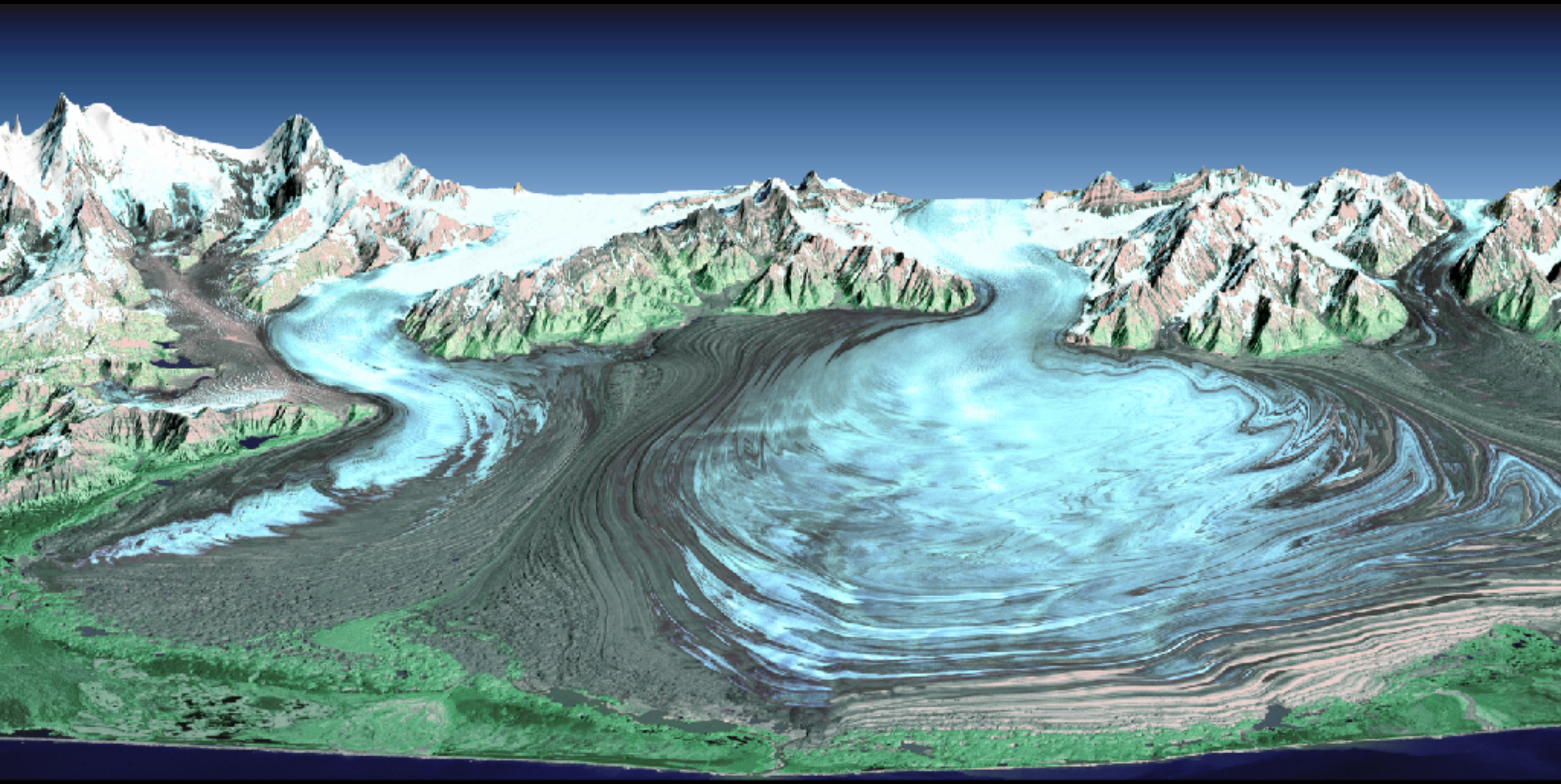
SRTM C-band
radar image
from NASA/JPL



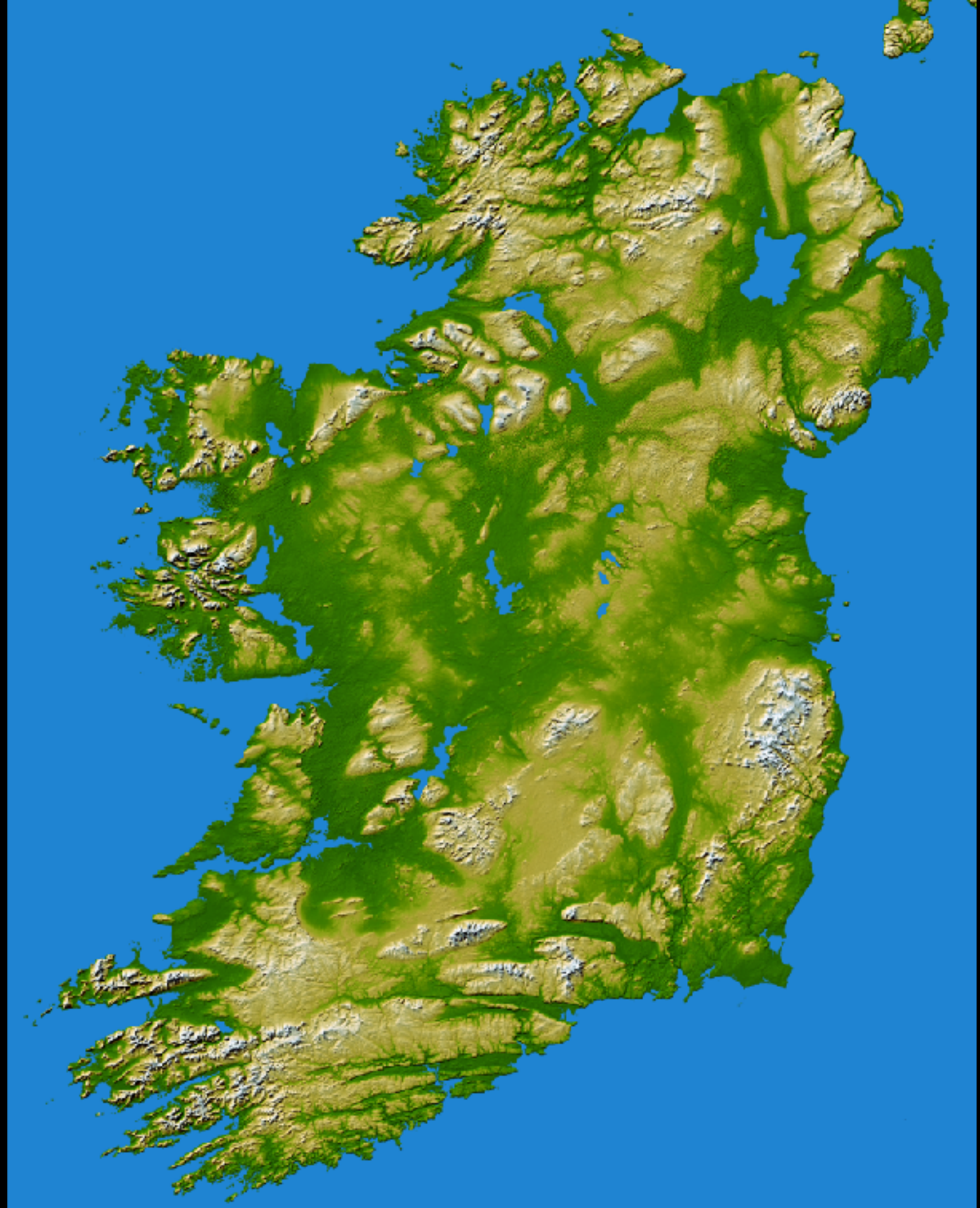
SRTM C-band radar image from NASA/JPL

SRTM C-band radar image
from NASA/JPL

SRTM C-band radar image
from NASA/JPL

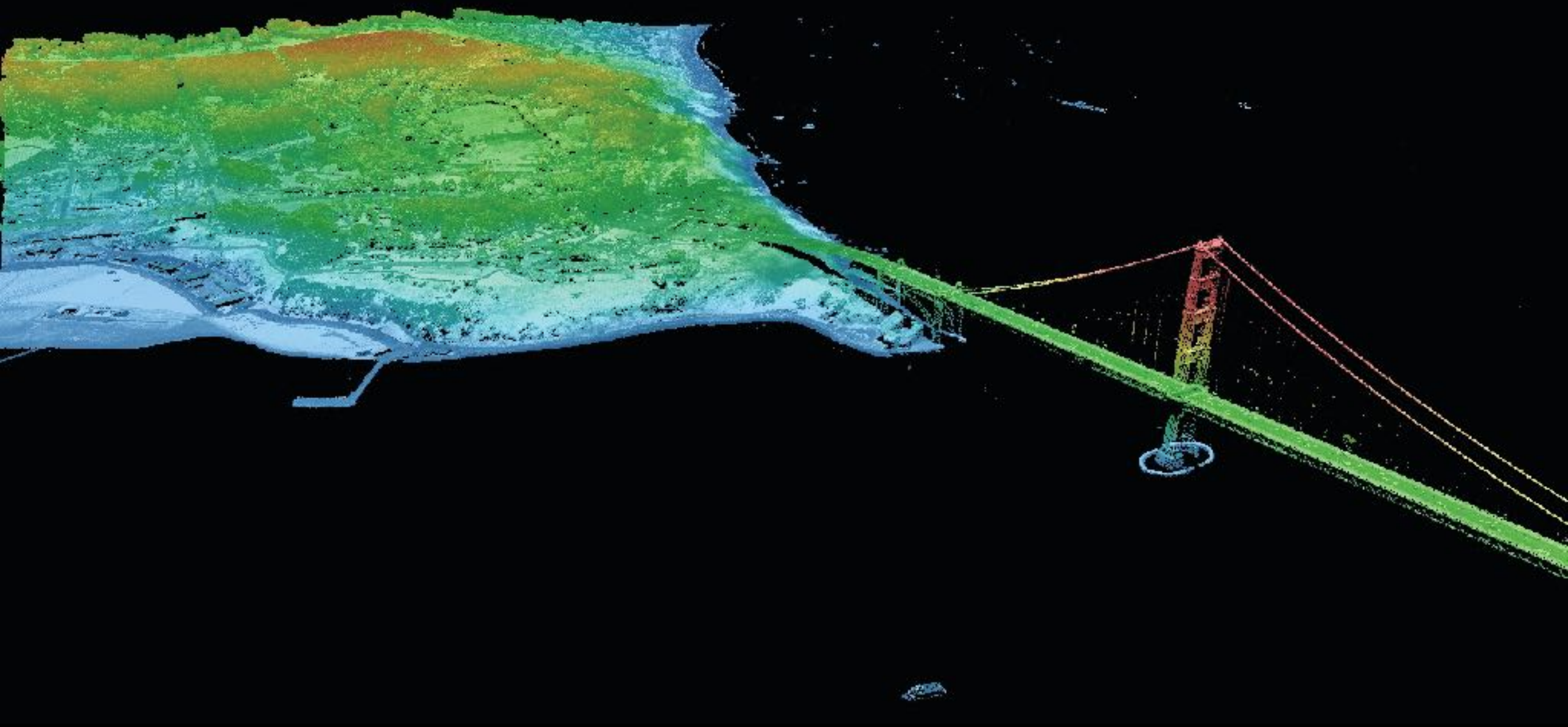


SRTM C-band radar image
from NASA/JPL



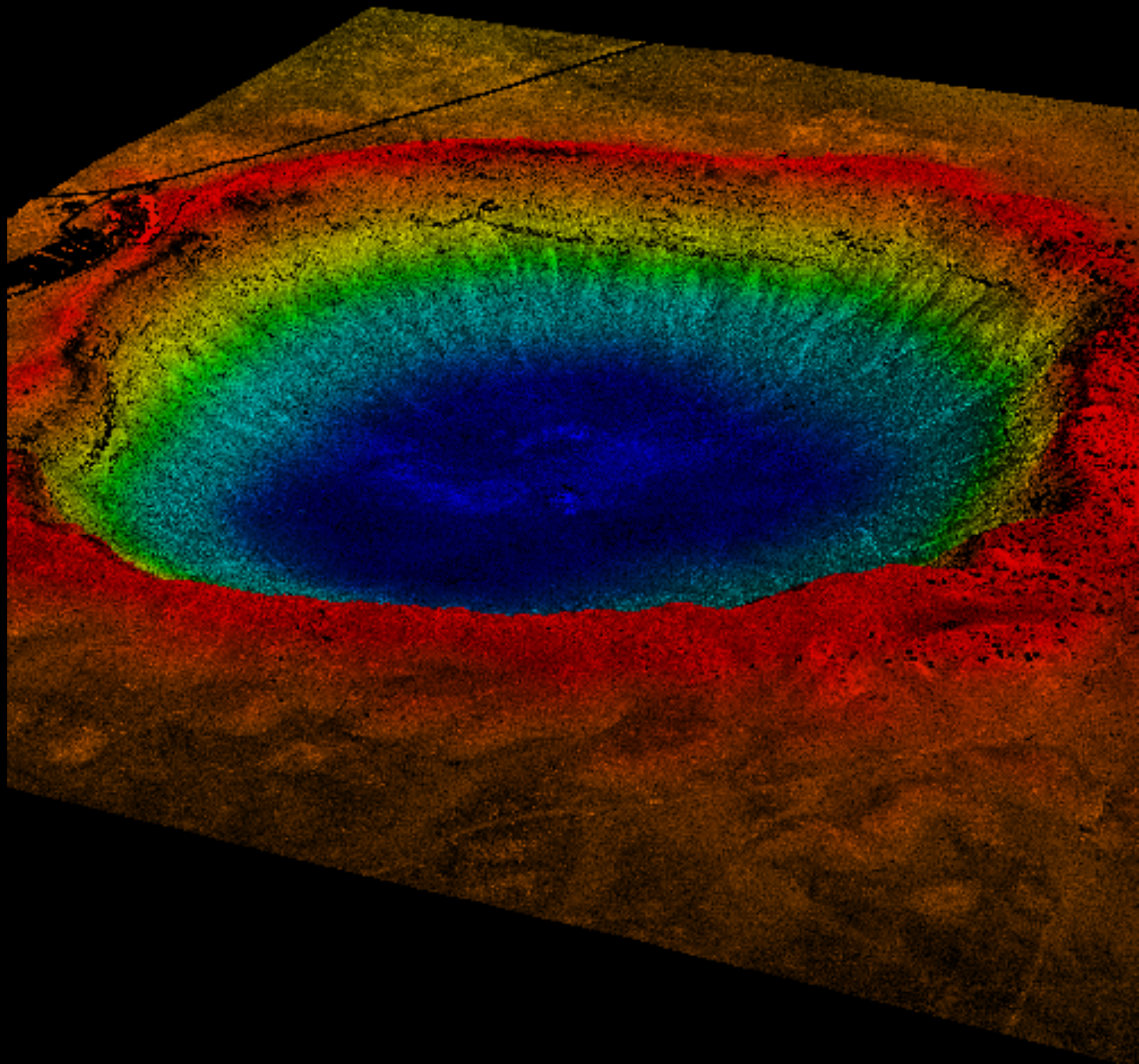
SRTM C-band radar image from NASA/JPL

LiDAR



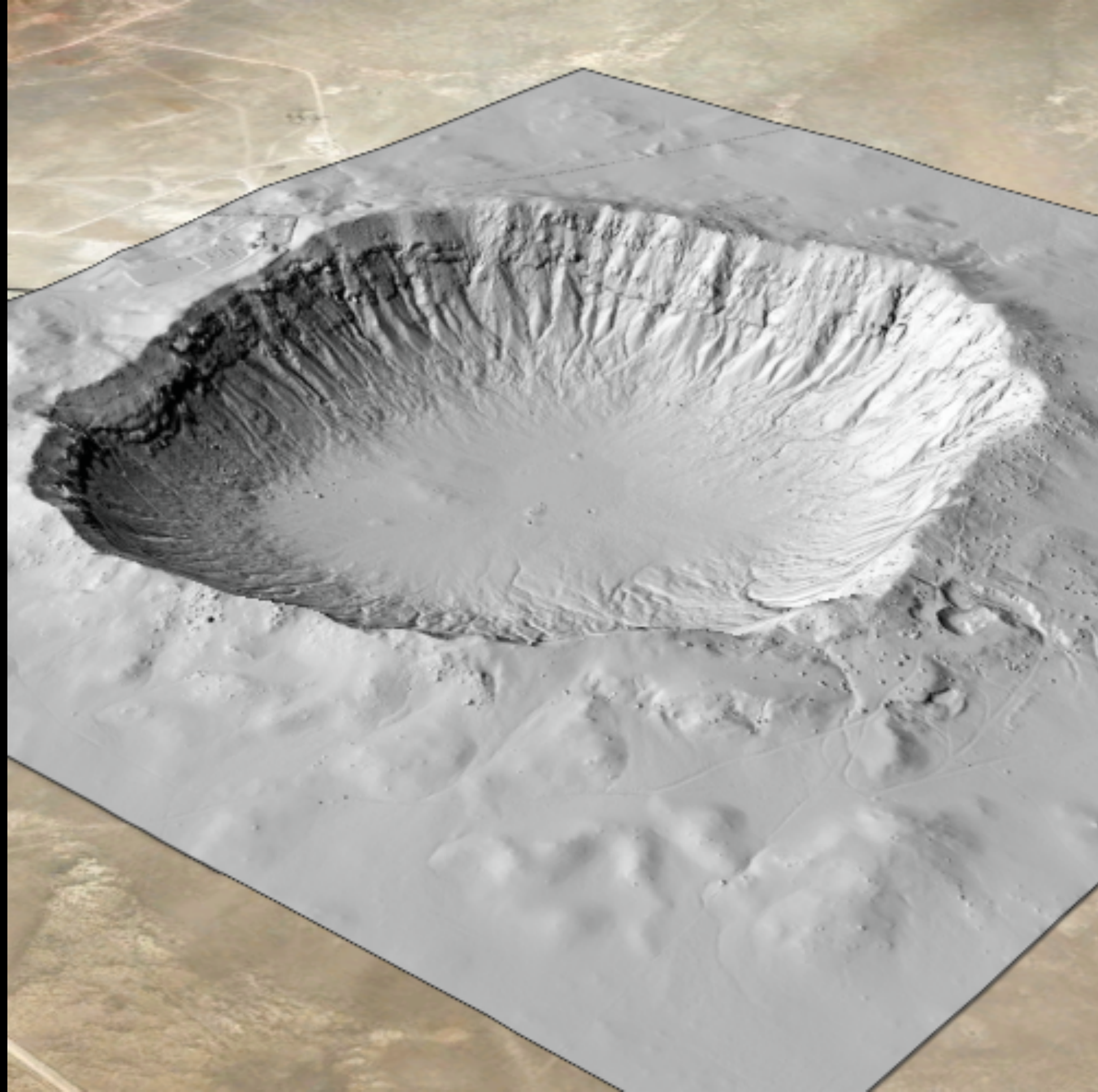
OpenTopography.org

lidar point cloud of Meteor Crater, Arizona; oblique view



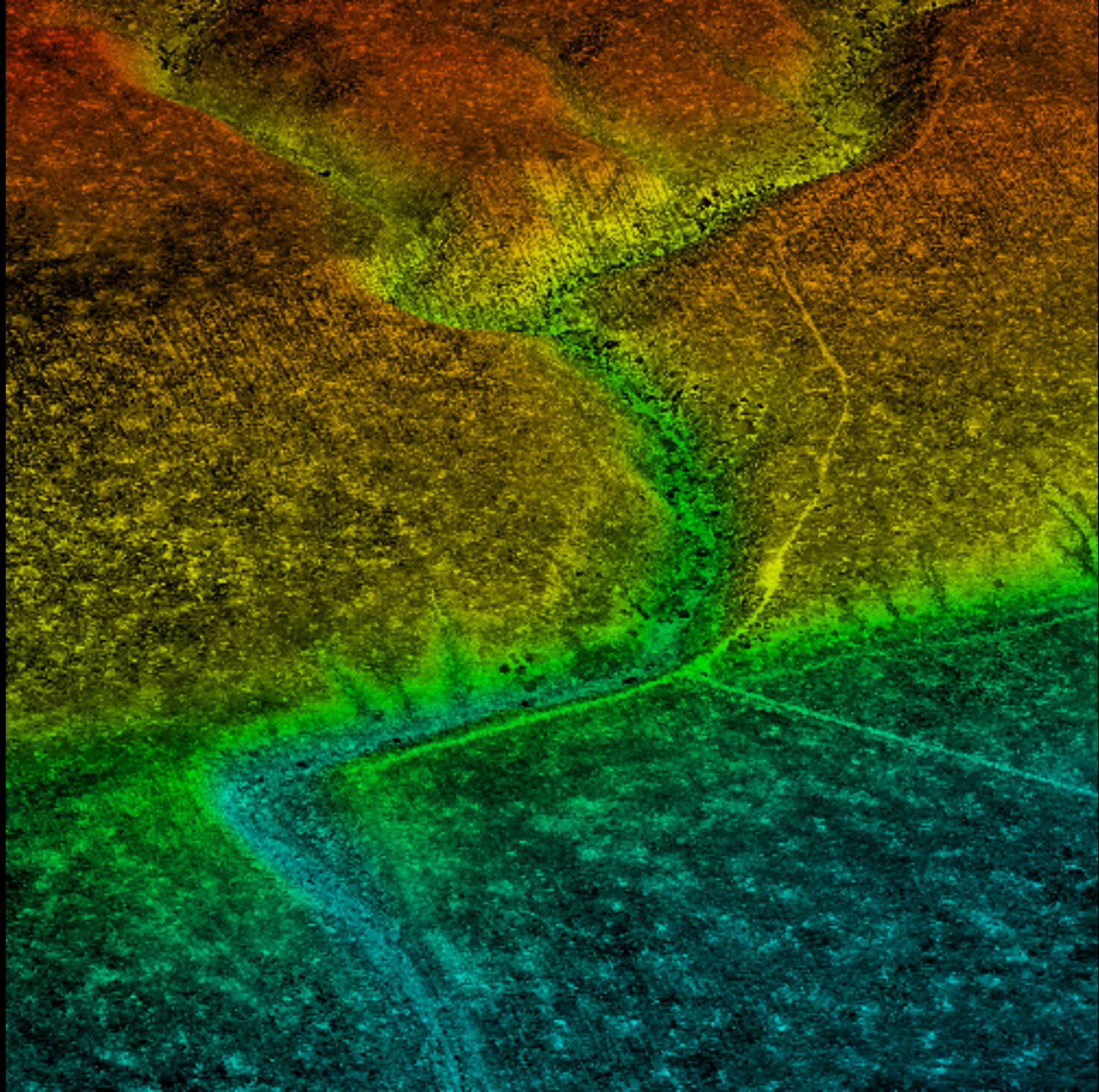
OpenTopography.org

hillshade map from bare-earth DEM derived from lidar data



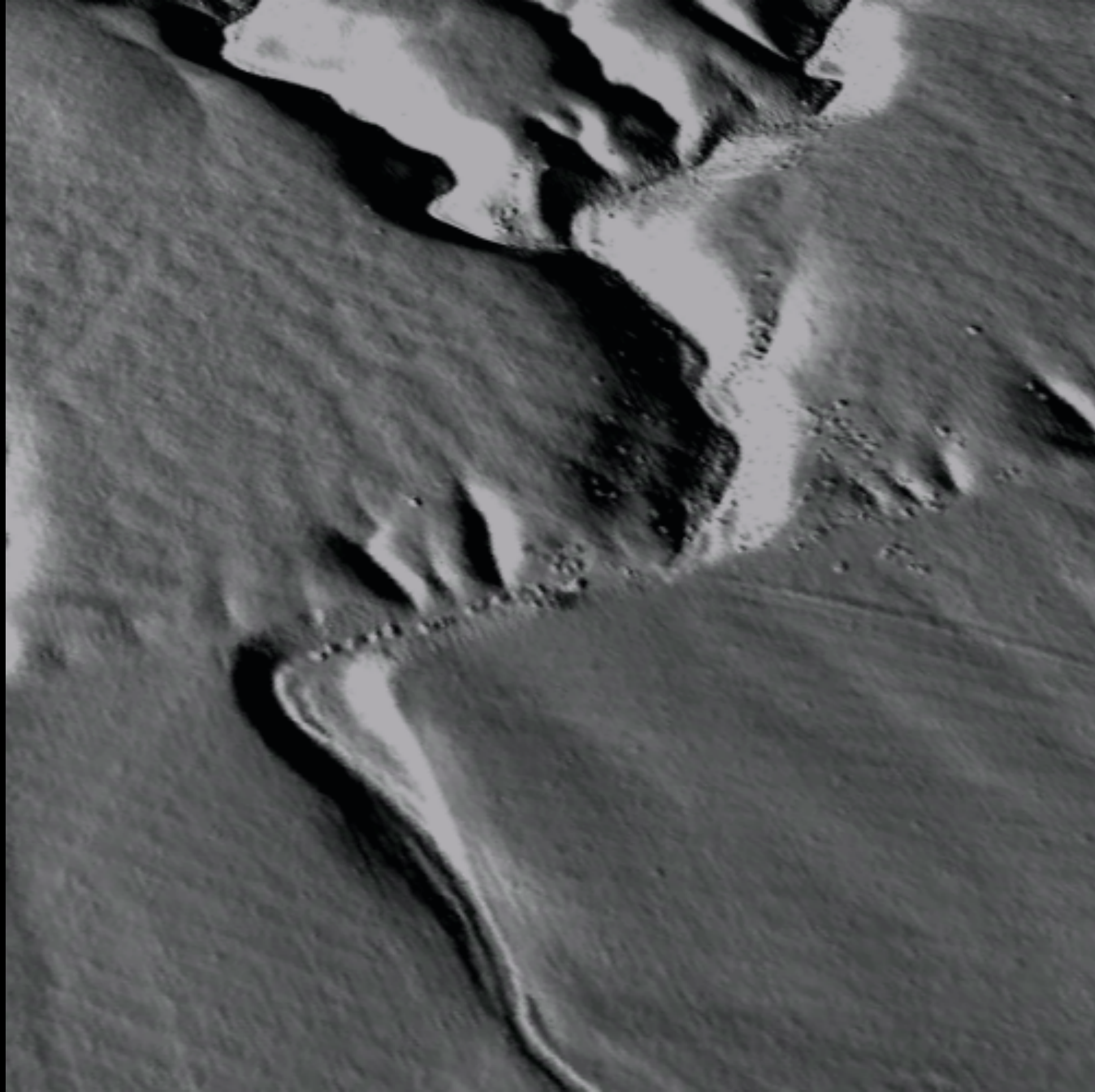
OpenTopography.org

lidar point cloud of Wallace Creek, California; oblique view



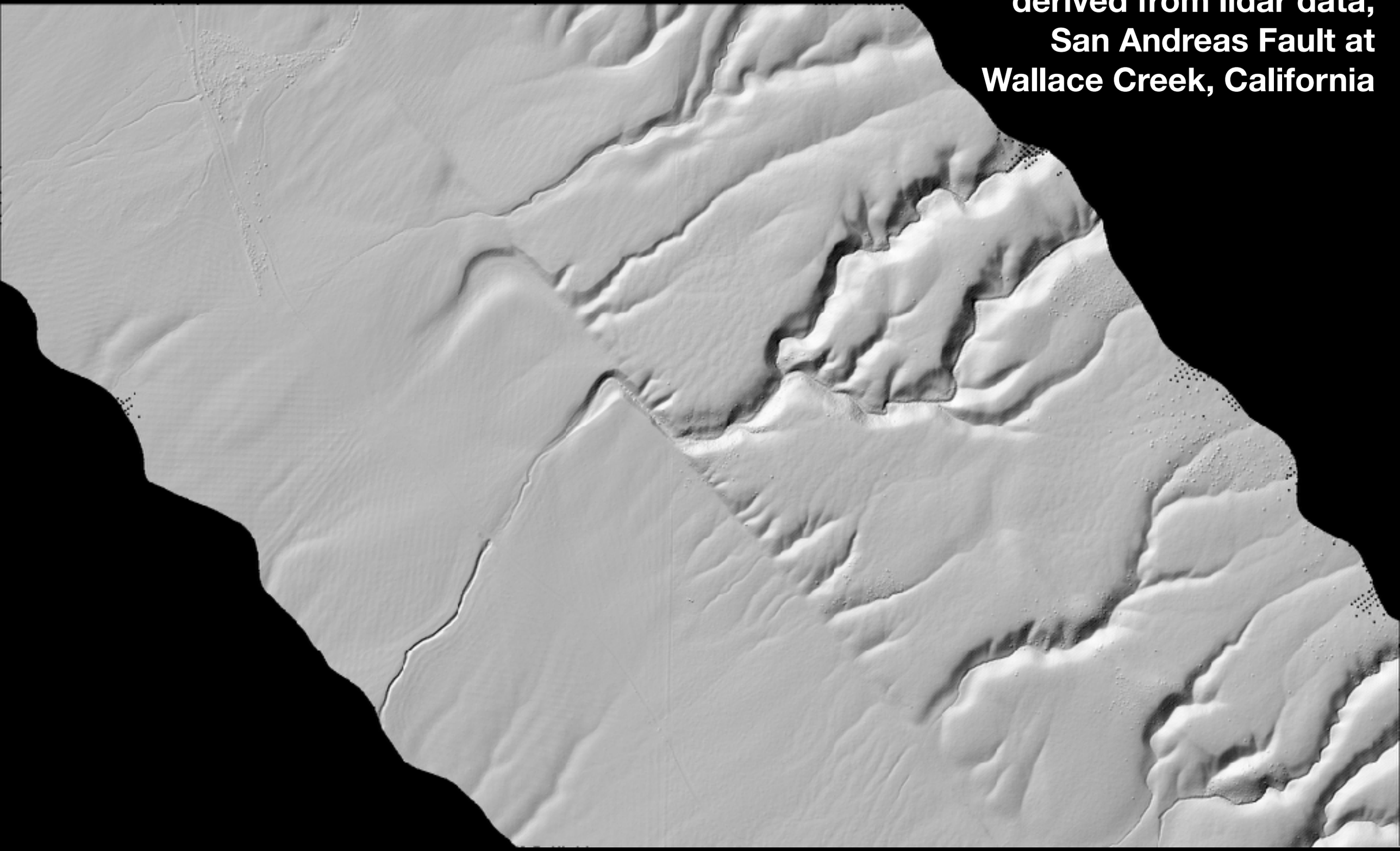
OpenTopography.org

hillshade map from bare-earth DEM derived from lidar data



OpenTopography.org

hillshade map from bare-earth DEM derived from lidar data, San Andreas Fault at Wallace Creek, California



OpenTopography.org

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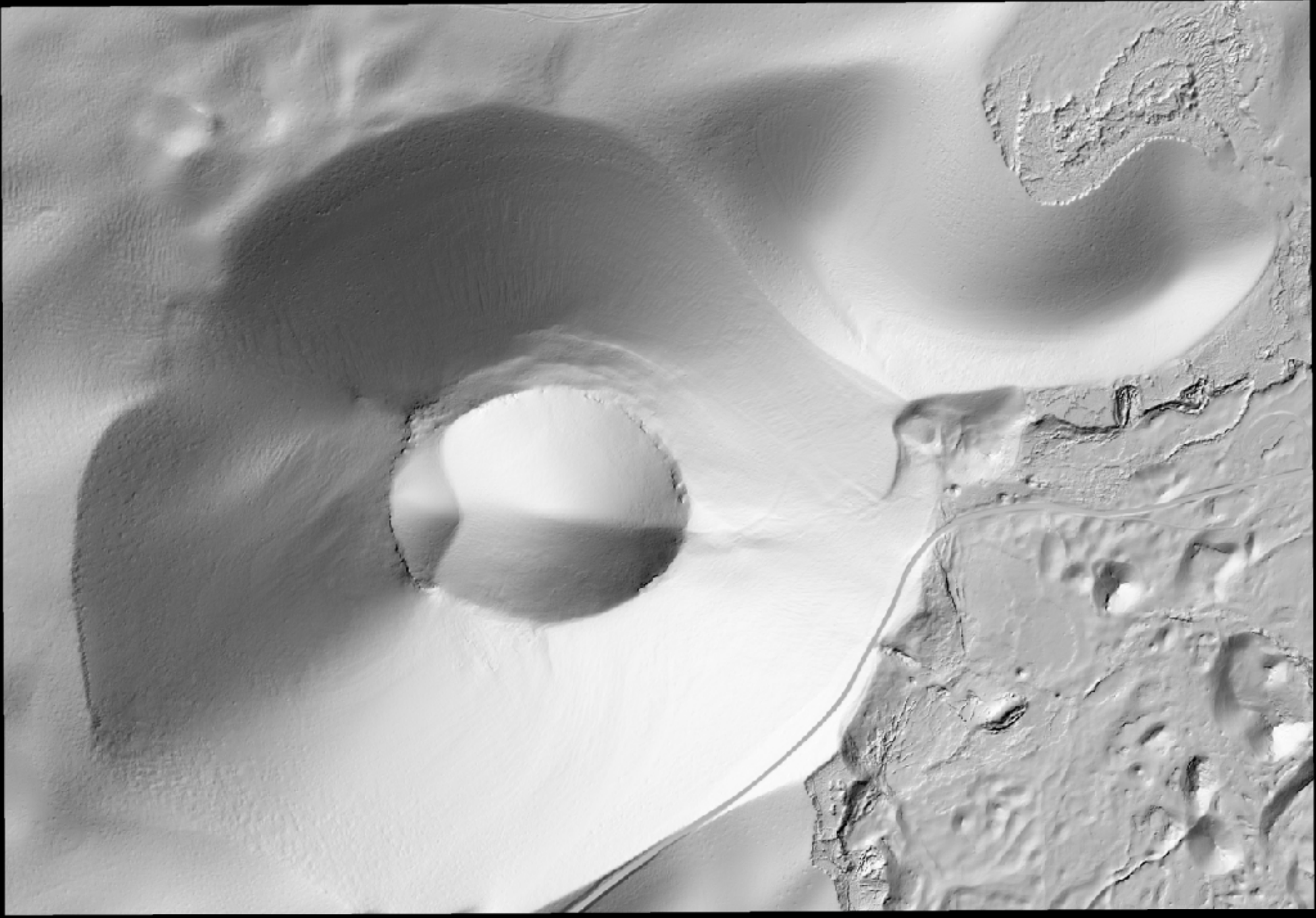
OpenTopography.org


Sunset Crater, Arizona



Differencing LiDAR surveys

InSAR

(Interferometric synthetic aperture radar)