

Steve Fry

Steepest Data + Prominence Discussion

From: Steve Fry <sjf@wolfenet.com>
To: Andy Martin <martin@mmsi.com>
Subject: Re: CO 100 highest, more Prominence
Date: Monday, November 30, 1998 10:27 PM

Hi Andy,

I really enjoyed the recent discussion regarding prominence. It certainly appears difficult to come up with terms and landform definitions that are universally accepted.

I used the word prominence in my late 1984/ early 1985 "Mountains Defined and Measured" exhibit at the Pacific Science Center, in Seattle. I also discussed prominence in my Jan-Feb 1987 Summit magazine article "Defining and Sizing-Up Mountains". I doubt I was the first to use the term though. The original author of "Colorado Fourteeners" has to be one of the first Americans to really popularize the term saddle drop (prominence).

In regards to big faces or steepest faces, I've also studied this aspect of mountains fairly thoroughly. I generally look at the maximum vertical drop of any portion of a face in question in either 0.1 or 1.0 horizontal miles. I first began measuring these parameters in ~ 1972. I published my first article on the subject in the April 1984, in Signpost magazine, "Washington's Steepest Mountain Faces". I listed the 20 steepest faces (maximum vertical drop - MVD) in both 0.1 and 1.0 miles. I also listed MVD's for famous mountains around the world. I used maps at the Univ. of WA map center to determine the information. Some of the data are as follows:

Maximum Vertical Drop for Selected Mountains of the World
As determined by Steve Fry (copyright Steve Fry 1984 and 1998)

Mountain	MVD .1 mile	Face	MVD 1.0 mile	Face
Mount Everest	1837 ft	SW	6627 ft	SW
K2	1500*	SSE	7400	SSE
Lhotse	2706	S	9058	S
Annapurna I	3000*	WNW	8754	WNW
Gurja Peak	2500*	S	10100	S
Mt. McKinley	1620	S	7050	S
Kilimanjaro	750	SW	4500	SW
Matterhorn	2067	SE	5365	S
Mt. Whitney	1600	E	3174	E
Mt. Rainier	1240	W	4830	NNE
Pikes Peak	1000	N	2915	N
Grand Teton	1650	N	4585	NW
Fujiyama	541	SW	3592	SE
Mt. Cook	1400	SW	5380	SE
Kinnerly Pk, MT			5370	NNW
Half Dome	2290	NW	4812	NW
El Capitan	2900	S	3654	SW
Davis Pk, WA	1830	NE	5381	NE

Notes: Data with * indicates information is approximate due to a lack of detailed topographic maps for the faces in question.

Davis Peak, USGS Diablo Dam, WA has the greatest vertical drop in one

horizontal mile in the Lower 48 States according to my measurements. Kinnerly Peak, USGS Kintla Peak, MT, is a very close second, and may upon further review either tie or exceed the steepness of Davis. I didn't measure the MVD in 0.1 miles for Kinnerly because it didn't challenge any Lower 48 or national standard.

I later republished/revised my Washington steepness data in the 1983-1990 Mountaineer Annual, in the article titled "Washington's Highest Mountains and Steepest Faces".

I consider my steepness research some of my best work, because it is a standard that can easily be applied to any landform in the world. Also, geologic and geomorphic trends were revealed by the research.

In WA almost all of the top 20 steepest faces in 0.1 mile were located in the contact zone of granitic and country rocks. Hornfels (hard, yet brittle) is the typical rock found on these faces (not granite as I expected).

Second, for the high mountains of the northern hemisphere the steepest faces are located on the southern not the northern side, e.g. Everest, K2, Lhotse, McKinley, etc. This is apparently because of the intense diurnal temperature changes on the southern sides and the presence of active glaciers. Some peaks may not fit the trend because of either regional geology or, perhaps in Annapurna's case, gross map errors. Below about 14,500 feet it appears that most of the steep faces are on the opposite side of the sun.

There is much more research that needs to be done. Some research will be thwarted until detailed maps are prepared and made available of all the world's mountain ranges.

Sincerely,

Steve Fry

> From: Andy Martin <martin@mmsi.com>
> To: sjf@wolfenet.com
> Subject: CO 100 highest, more Prominence
> Date: Sunday, November 29, 1998 7:34 PM
>
> Hi Folks + Alan - nl.348
>
> (Bob Martin)
> CO has list of 600+ highest mountains in Colorado's High Thirteeners.
> Uses 300-foot [shoulder drop] rule.
> 50+ have climbed highest 100.
>
> (Andy)
> Spoke with Bob by phone Saturday. He is having "fun" struggling
> with his new computer and email provider - "ERROR NUMBER 249"
> and that sort of stuff.
>
> He had a good question - namely what does a person have to do
> to complete the AZ counties, given that Mount Graham is
> currently off limits. Bob is somewhat of a "purist" when it
> comes to access. Generally he will try to get permission,
> and if refused, will not attempt the peak. Bob mentioned that
> The SAHC (Southern AZ Hiking Club) has Graham on one of their

lists,

> but non longer requires people to get to the summit since access
> is refused.

>

> Of course newsletter readers have batted this one around a bit.

> One opinion is that the summit must be reached, by fair means or
foul,

> to claim completion.

>

> Personally, on a peak like Graham that is not that hard of a
hike,

> I would be willing to credit the following as completion (with
> asteric and explanation note)

>

> 1. Ask permission in writing from the "owner". (Forest
> Service in this case.)

> 2. If refused, ask again in a year.

> 3. If still refused, drive to the peak and hike to

10,000'

> (the access limit, as close as you can get to the top)

>

>

> (Steve Fry - a good term for Prominence)

> In regards to the Prominence issue:

> I already e-mailed John Roper a plethora of ideas, some of them include:

>

> 1. Landform Protuberance, or simply Protuberance

> 2. Vertical Protrusiveness

> 3. Rise Above Ridgelevel (RAR)

> 4. Height Above Key Saddle (HAKS)

>

>

>

> (Alan Dawson)

> In the UK perhaps the most common term is "reascent".

> I prefer to use "drop" as it's shorter and simpler, though of course

> I also use "relative height". Another table compiler uses

> "height commanded" which is descriptive but not very snappy.

> Maybe we should agree on an international standard term. Drop?

> Cheers

>

>

> (Ron T)

> Concerning the term prominence, its very value is that it means

> prominent. Isn't that why it was chosen? Every technical term requires

> explanation. English speaking people know the words reflection, force,

> and child, but all of these things have technical definitions that

> require explanation (reflection in geometry, force in physics, and child

> in a court of law). Prominence is no different. It is one way of

> clarifying the term prominent for technical discussion, and so far it has

> proved the most fruitful. In less technical terms, prominence is the

> SUMMIT elevation reduced by BASE elevation.

> Traditional LOCAL or FACE prominence (El Cap) uses a base below the

> steepest face.

> ALL-AROUND prominence (as the British termed it for the Munros) requires

> local prominence on all sides.

> REGIONAL prominences uses a base in a set radius, county, or range.

> ABSOLUTE or GLOBAL prominence is the measure we typically employ.

>

> All four terms are meaningful technical interpretations of prominence and

> accord well with the popular conception of prominent. However, all four