

# How much can you gain with correction? With a GPS

Here's an example. A ride showing elevation (ascent) before and after correction. Over 8000' of gain for doing nothing! Notice the side effect of my power increasing. Naturally calculated power is affected by increased climbing whether real or not.

<b>23.7 mi</b> Distance	<b>1:45:39</b> Moving Time	<b>2,169 ft</b> Elevation (?)	
<b>193W</b> Estimated Avg Power	<b>1,225 kJ</b> Energy Output		
	<b>Avg</b>	<b>Max</b>	<a href="#">Show Less</a>
Speed	13.5mi/h	28.0mi/h	
Calories	1,366		
Temperature	66°F		
Elapsed Time	1:53:43		
Device: <a href="#">Garmin Edge 800</a>		Bike: Silky	

<b>23.7 mi</b> Distance	<b>1:45:39</b> Moving Time	<b>10,250 ft</b> Elevation	
<b>275W</b> Estimated Avg Power	<b>1,745 kJ</b> Energy Output		
	<b>Avg</b>	<b>Max</b>	<a href="#">Show Less</a>
Speed	13.5mi/h	28.0mi/h	
Calories	1,946		
Temperature	66°F		
Elapsed Time	1:53:43		
Device: <a href="#">Garmin Edge 800</a>		Bike: Silky	

# How much can you gain with correction? With an App

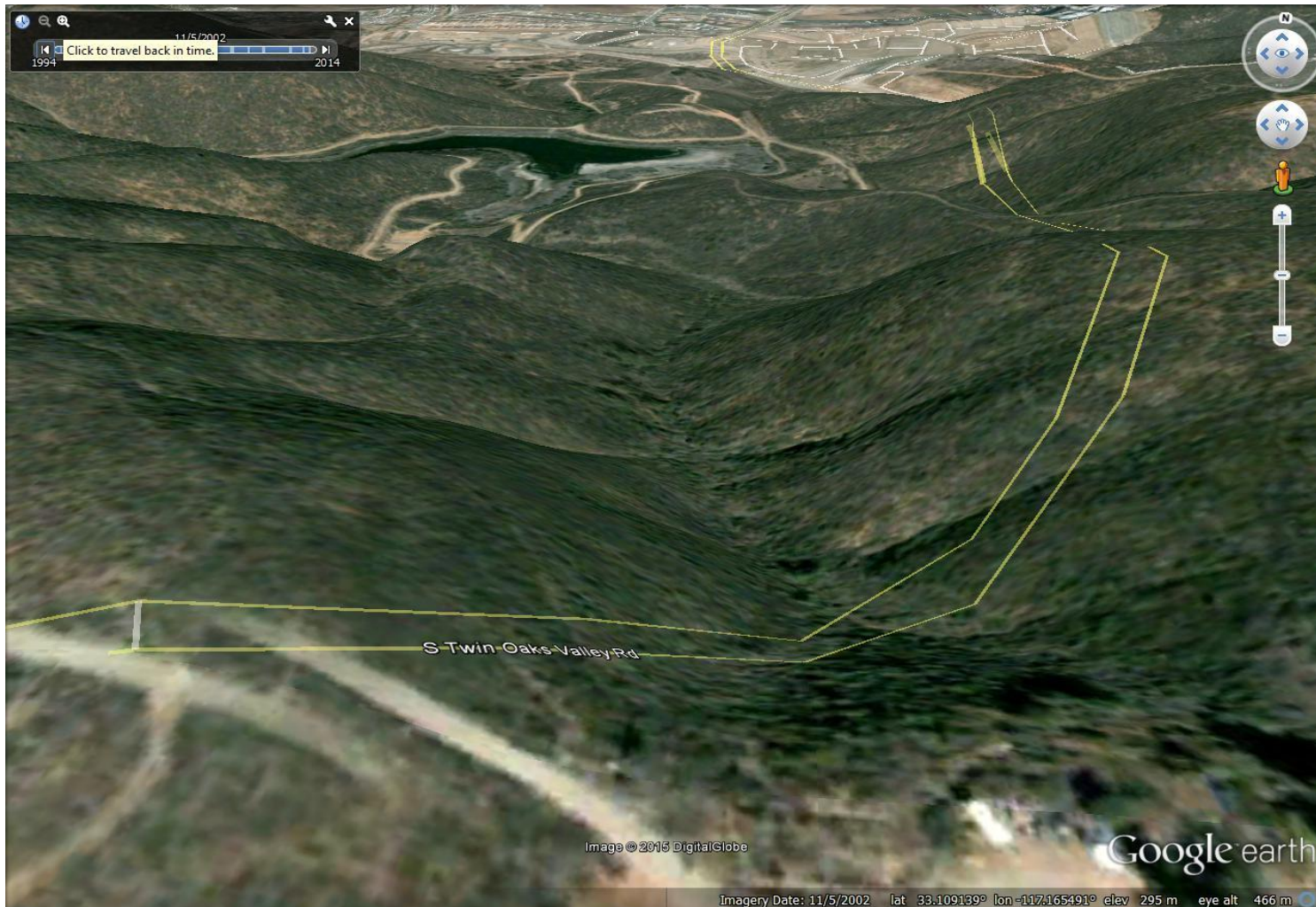
The App elevation is nearly the same as the corrected GPS - previous slide. The difference is due to the phone's GPS recording a slightly different path.

<b>23.7</b> mi Distance	<b>1:45:39</b> Moving Time	<b>2,169</b> ft Elevation (?)	
<b>193</b> W Estimated Avg Power	<b>1,225</b> kJ Energy Output		
	<b>Avg</b>	<b>Max</b>	Show Less
Speed	13.5mi/h	28.0mi/h	
Calories	1,366		
Temperature	66°F		
Elapsed Time	1:53:43		
Device: <a href="#">Garmin Edge 800</a>		Bike: Silky	

<b>26.9</b> mi Distance	<b>1:46:58</b> Moving Time	<b>12,107</b> ft Elevation	
<b>283</b> W Estimated Avg Power	<b>1,819</b> kJ Energy Output		
	<b>Avg</b>	<b>Max</b>	Show Less
Speed	15.1mi/h	42.3mi/h	
Calories	2,028		
Elapsed Time	1:49:30		
Device: <a href="#">Strava Android App</a>		Bike: Silky	

# Why does Strava get it Wrong?

Let's look at the terrain with Google Earth  
First a view of the hills before the road was built





## Why does Strava get it Wrong?

Now a modern view. Notice that Google has mapped a flat aerial photo onto the old terrain. This is not an accurate view.





# What does Strava Do?

It maps a ride onto the same terrain as Google.

Strava does it very accurately (see the GPS points) unfortunately it's not today's terrain.





# What does the road really look like?

Answer: The hills have been cut through and the gaps filled. The road is as flat as practical. There's only an easy constant grade.





# Really? What happens with a barometric GPS?

Let Google Earth show you. Below is an out-and-back ride of two people. One “corrected” his ride (blue) but forgot to tell his partner (red) to do the same. Mr. Blue accumulated elevation with (virtual) descent and ascent while his partner (red) rode a flat route (the road is flat).





# Is Google Earth a Good Tool?

Google Earth is very informative. Street View is outstanding too. Street View accurately depicts GPS positions and elevation. One can easily see what “correction” does. Below you can see that an app user (blue) gets credit for climbing the non-existent hill. The rider on the left went virtually underground to follow the old terrain.

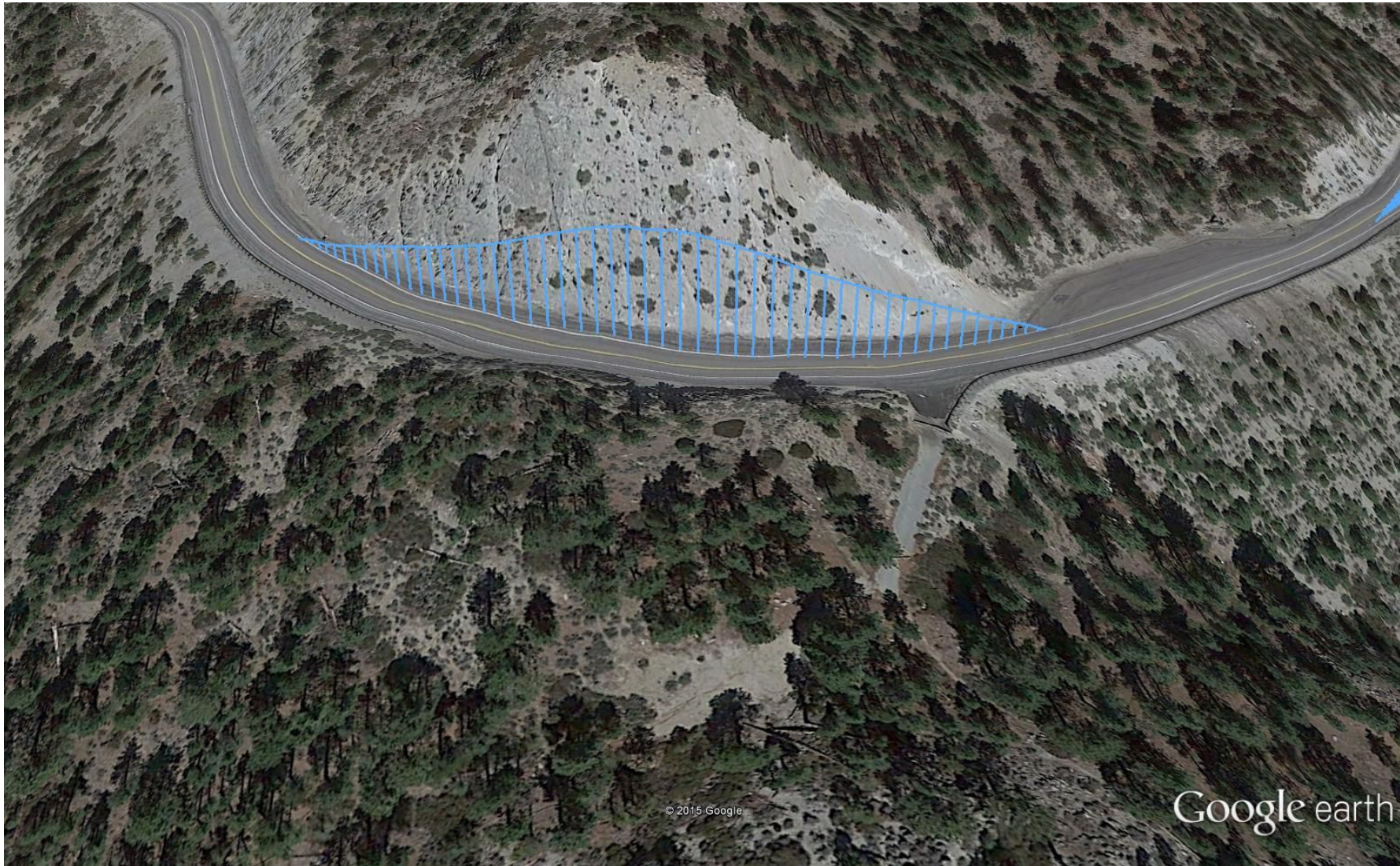




# How do I Maximize Elevation?

- Look for obviously distorted terrain (streets) on Google Earth
- On the road look for massive cuts and fills

Here's an example of a rider who added to his already big day in the Sierras by selecting correction.





**That was just one bump. Were there more?**

Many. Here I pulled the track up (yellow) to illustrate the track goes underground too.





## **Any lessons?**

- **Those who blame inaccuracy - bull\*\*\*\*.**
- **Those who blame resolution - bull\*\*\*\*.**
- **Will smoothing help? Only if two wrongs make a right.**
- **Does this happen in other countries? Yes, but time is limited**
- **What about MTB rides? Less affected by man's machines**

## **Who corrects (among GPS users)?**

- **It's a long list**
- **Sneaky ones only correct their epics (less noticeable)**

**Some fun illustrations follow, self-explanatory**

# Obvious When You Know What's Going On





# Oh Those Steep, Steep Hills are not Forgotten





# The Ghost of Terrain Past





# Cornet de Roselend (France) Street View Looking Up, Way Up

All Apps and Corrections get a nice elevation bonus

