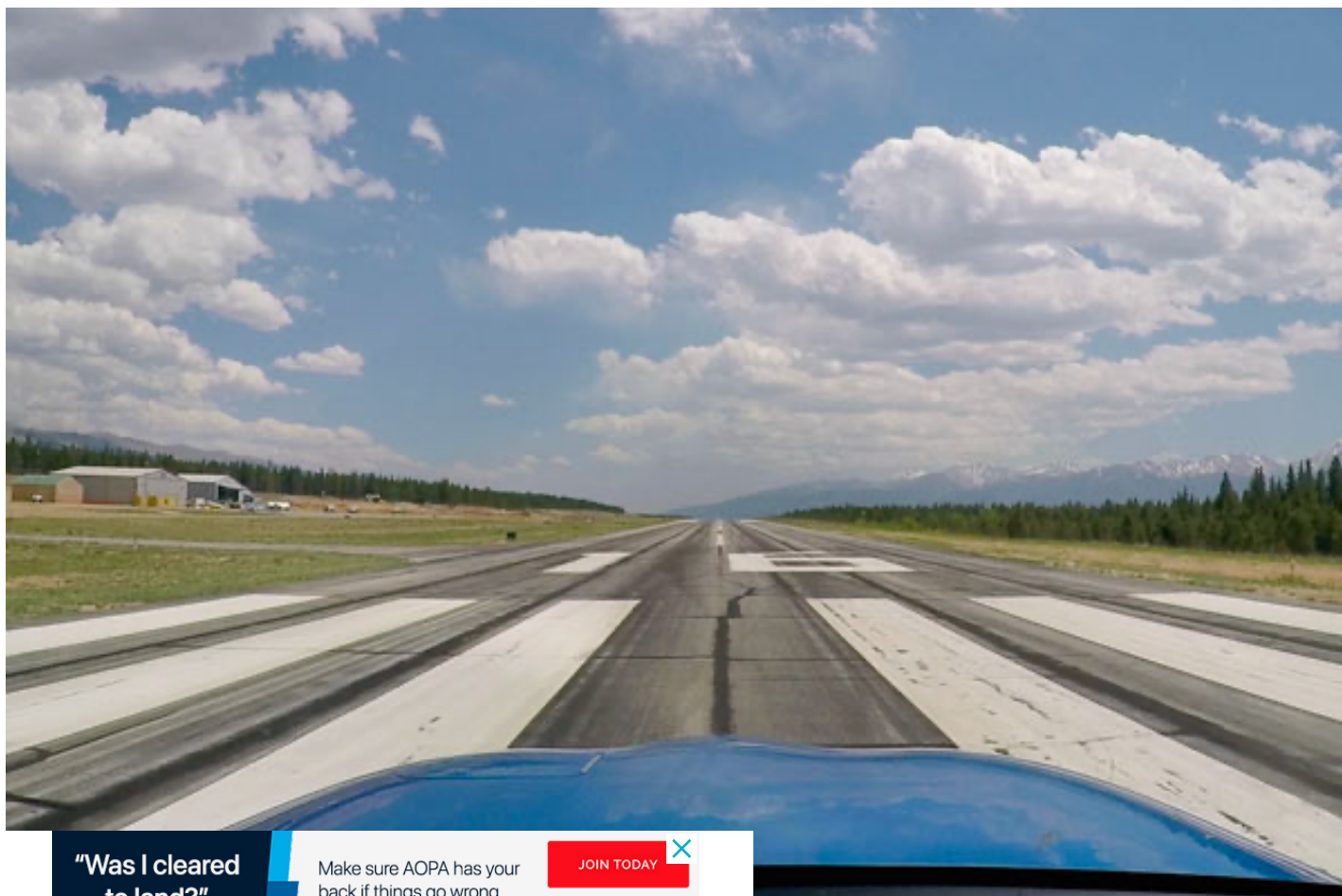




## 3 Rules-Of-Thumb For Flying In Hot Weather

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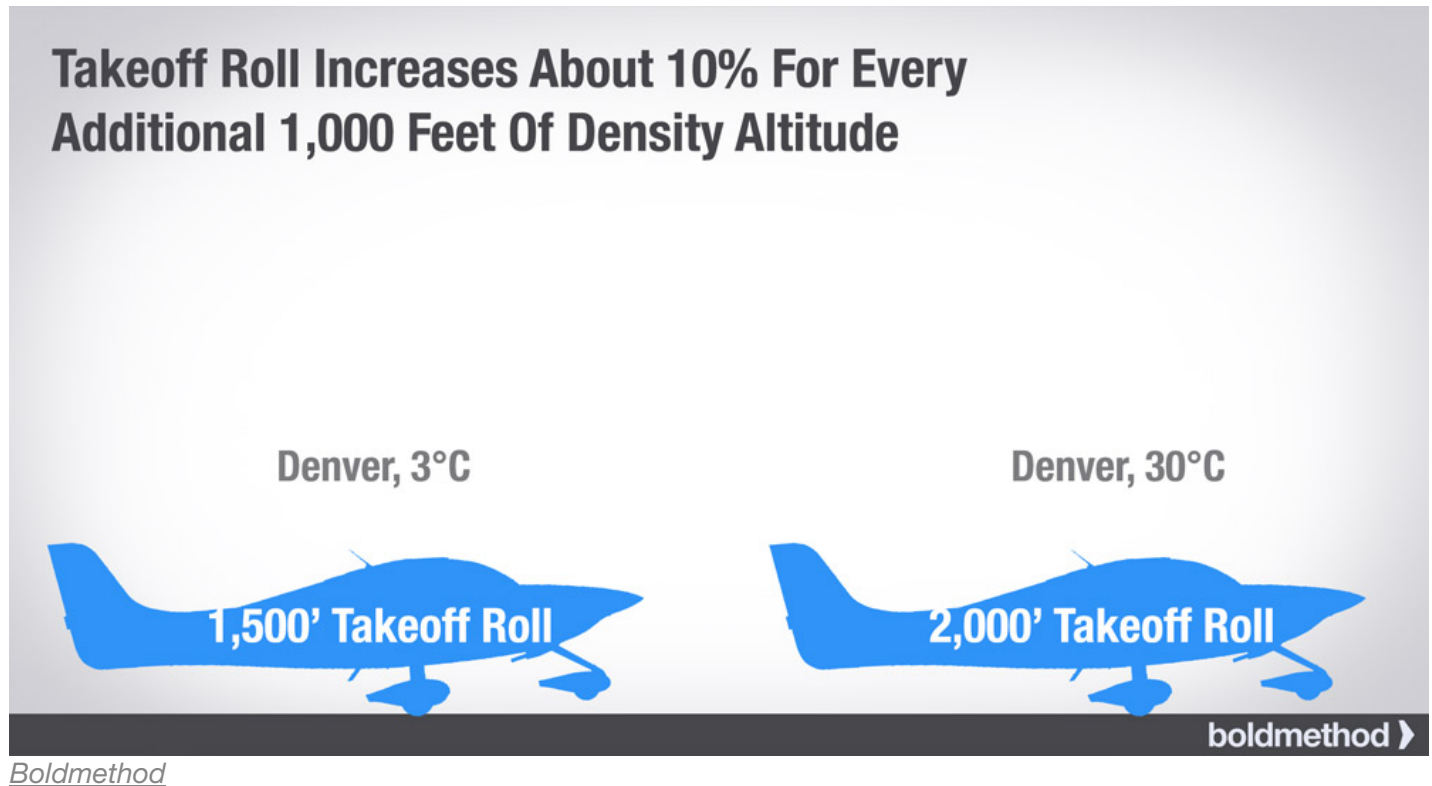
When the weather gets hot, these rules-of-thumb can help.

### 1) Takeoff roll increases about 10% for every additional 1,000 feet of density altitude

For most normally-aspirated GA airplanes, you'll add about 10% of takeoff roll for every 1,000' of DA.

If we stick with the Denver example from above, with an increase of 3,200' of density altitude, we'll increase our takeoff roll by about 32%.

So if we have a 1,500' takeoff roll on a standard day in Denver (3°C), we'll increase that roll to almost 2,000' on a 30°C day.



## 2) True airspeed increases about 2% per thousand feet of density altitude

In a 172S, your landing speed at 50 feet (roughly the threshold) is 61 KIAS. And while your indicated speed doesn't change based on [DA](#), your *true* airspeed does.

On a standard day at sea level, your indicated and true airspeed are going to basically be the same, 61 knots.

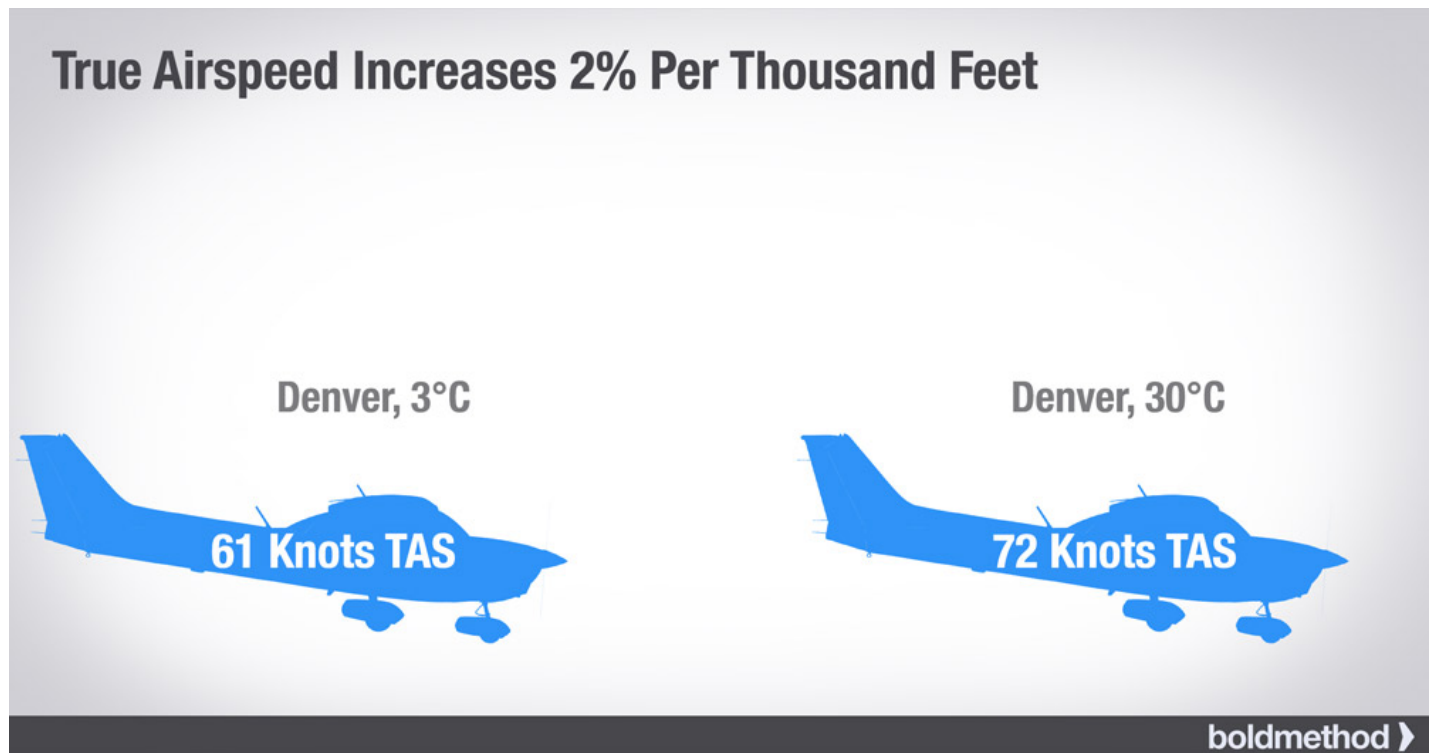
But say you're in Denver on a 30°C day. With a density altitude of 9,240', your true airspeed is going up, a lot.

If we round to 9,000' DA to make the math easy, your landing true airspeed at 50 feet is

going to be 72 knots true. (again, your airspeed indicator will read 61 knots, but you're actually going 72 knots through the air)

And that extra 11 knots can make a big difference on landing. Both on landing distance, and possibly even more importantly, controllability.

When you're landing on 8 inch tires, going faster means your plane is less controllable.



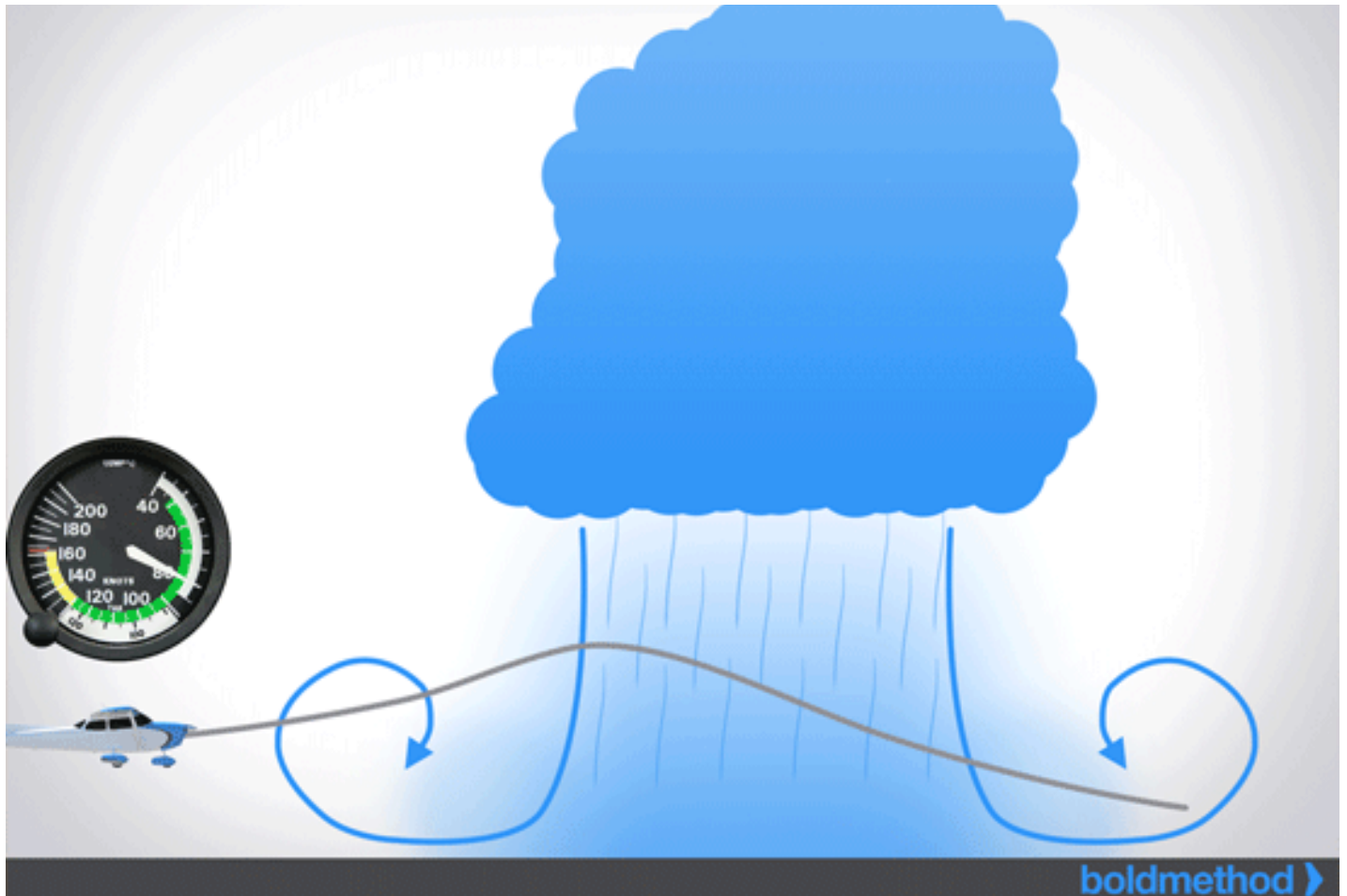
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### 3) How To Calculate Windshear

**Rule-of-thumb: the total shear is double the peak wind.** If the outflow speed of a microburst is 30 knots, you'll experience about 60 knots of shear as you cross the microburst. And it all can happen in a very short period of time.

Think about what would happen to your Cessna 172 if you went from 100 knots to 40 knots in the matter of a few seconds...





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Hot weather has a significant impact on your plane, in multiple ways. But if you know what to expect, you can mitigate the risk.

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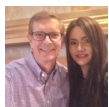
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**Rick Baron**

Also, landing distance increases 5% for every 1,000' of DA. So you might be able to land but not takeoff, that is without hitting that mountain in front of you, as lift is also reduced, your engine is not producing full power and your prop is not as effective all due to the thinner air.

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**George Bigs**

May also want to add that the climb rate is cut due lower power and hotter engines. And there is more ground turbulence due to rising hot air off blacktop (roads) and other structures. And of course there is the ever present convective buildup of clouds and rough air.

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**Colin Cutler**

Colin is a Boldmethod co-founder and lifelong pilot. He's been a flight instructor at the University of North Dakota, an airline pilot on the CRJ-200, and has directed the development of numerous commercial and military training systems. You can reach him at [colin@boldmethod.com](mailto:colin@boldmethod.com).

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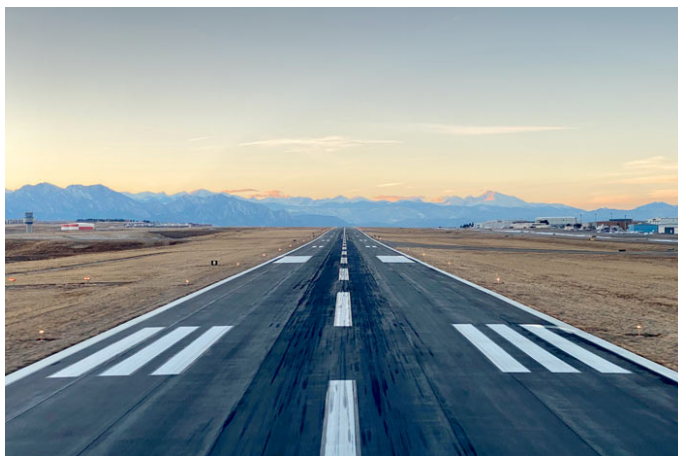
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