

Comparing Flight Simulator Flight to Real-Life Flight

By Stu Simpson

I've long been an advocate of using desktop flight simulator programs for training purposes and other aspects of real-world flying, and with good reason. Modern day home flight simulator capabilities rival, and sometimes exceed, commercial simulators, especially for VFR flying.

I've been an avid flight sim fan for over 20 years, with my preference being Microsoft's Flight Simulator series. As much as it fed my aviation addiction, I've also used MSFS countless times to help plot routes in unfamiliar territory, to get an idea of terrain and airport characteristics, and to actually transition to different airplanes.

In 2019, Doug Eaglesham, Dennis Fox and I flew to southern California and landed at El Cajon airport on the east side of San Diego. I'd flown in there many times on the simulator and so I was well prepared for the unique approach that had us flying around a mountain and onto a steep final to runway 27R. That approach would have been much more difficult without the simulator practice.

Another time I had a couple of days notice that I could fly one of Westjet Airlines' 737 simulators. I spent every spare minute in the intervening days flying the 737 model on MSFS. When I sat down in the real sim, nearly everything looked identical to what I'd been seeing on my desktop screen. It allowed me to make the very most of the limited and precious time I had in the sim. I actually "landed" the 737 successfully three times, though some of the landings would have been grounds for passenger complaints.

Perhaps the best use I've made of MS Flight Simulator is when I transitioned from my Merlin to my Cavalier. For more than 25 years I'd flown low performance ultralights with the stick in my right hand and the throttle in the left.

The Cavalier's controls are more conventional with left-hand stick and right-hand throttle. And of course, it's much more high-performance than anything I'd flown previously.

MS FSX features a model of the Extra 300 aerobatic plane. Its controls are predictably twitchy and sensitive and proper speed control is crucial on approach and landing. It proved to be an excellent platform for me to re-learn how to fly.

I spent many hours on the sim rewiring my brain to fly it with left stick/right throttle. I built the muscle memory, learned to plan for higher speeds with more responsive controls, and established habits that would allow me to safely fly the Cavalier. When it came time for Wade Miller to check me out in the Cav, everything went very smoothly because of the simulator practice. All I had to do was learn the Cavalier itself, not learn how to also fly at higher performance with control positions opposite to what I'd known for the previous quarter century. Adapting to the Cav was so much easier because of my simulator experience.

A Big Leap Forward

I recently acquired the most recent iteration of MS Flight Simulator, Flight Simulator 2020. This latest version is utterly mind-blowing in its realistic rendering of terrain and scenery. The realism is such that when I fly above familiar territory I can pick out houses of people I know. I guess it shouldn't be all that surprising since the scenery is built and rendered from aerial and satellite photography. There's lots of information online about how this process works.

Scenery in flight simulators has continually improved with each new version, but has often looked somewhat 'cartoonish' in the past, especially over less inhabited areas. That's almost completely eliminated in FS 2020. Don't get me wrong; featureless terrain is still featureless terrain no matter how it's presented. Flying to Regina in a 172 is just as boring on the simulator as it is in real life. But in FS 2020 it looks more realistically boring. And with the sim you can use the bathroom.

As I mentioned, flight sims allows a pilot to experience terrain and airports prior to flying there in real life. You might be planning a trip to Golden, BC, or to Kalispell, MT, and pondering the best routing. You might be wondering what sort of altitudes and terrain restrictions to expect in the Rogers Pass, or what it looks like approaching Medicine Hat to land there for lunch. A well-equipped flight simulator can answer those questions before you ever leave the ground.

I recently got to thinking about how realistic FS 2020's scenery is compared to what I've actually observed in flight over the years. I dug up some photos from past trips and decided to recreate these flights on FS 2020 to see how the sim scenery compares to real life.

The results, as you'll see here, are astounding.

To give you some background, FS 2020 has a model of the Cap 10B, an aerobatic airplane from France. Its performance numbers are pretty much identical to my Cavalier, so I like to fly it a lot. I also fly the Extra 300 frequently. As time goes on I'm expanding my learning curve with other airplanes in the package, too.

The images shown here compare shots from flights I've made in the Cav with screen shots I've captured on FS 2020. I've tried to set the dates, positions, altitudes, viewpoints and weather to be as similar as possible. The shots are from areas with more pronounced geographic features and scenery.

The similarities are amazing in their detail. One could be forgiven for thinking that, at a glance, some simulator screenshots are photos from real-life.

You may also notice that the mountain scenery in Canada isn't quite as sharp and detailed as it is in the US. MS recently released an update on US scenery, so hopefully, Canada's terrain will receive an upgrade, too. I can say that scenery detail in Canadian urban areas is excellent.

One other thing to note. To get the most out of FS 2020 you need a pretty capable computer. I don't know the specs on mine because my much more techno-learned son built it for me. I do know it's pretty top-of-the-line with an excellent video card. All the specs for what you need to run the sim are easily found online.

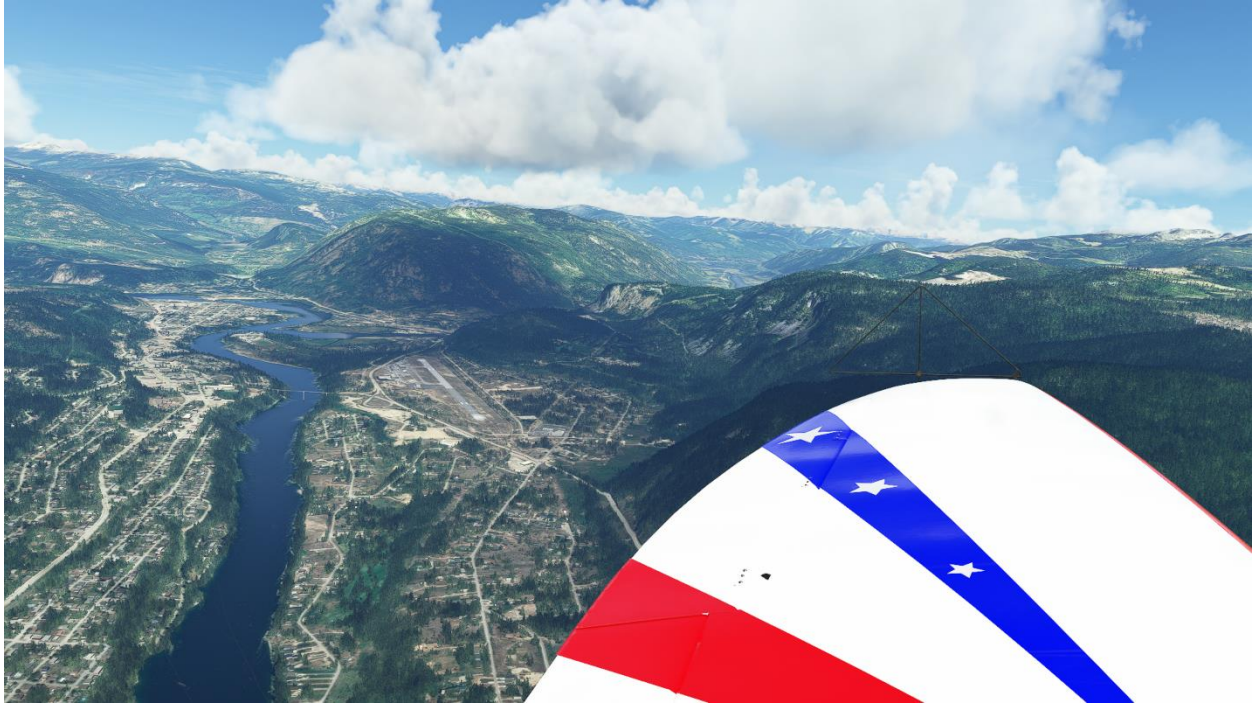
I can't comment on the scenery or performance of other simulators, such as X-Plane, because I have no experience with them. I have seen screen shots from X-Plane which look impressive, and there are some other brands out there, too. I'd be curious to know what their visual performance characteristics are like compared to real life.



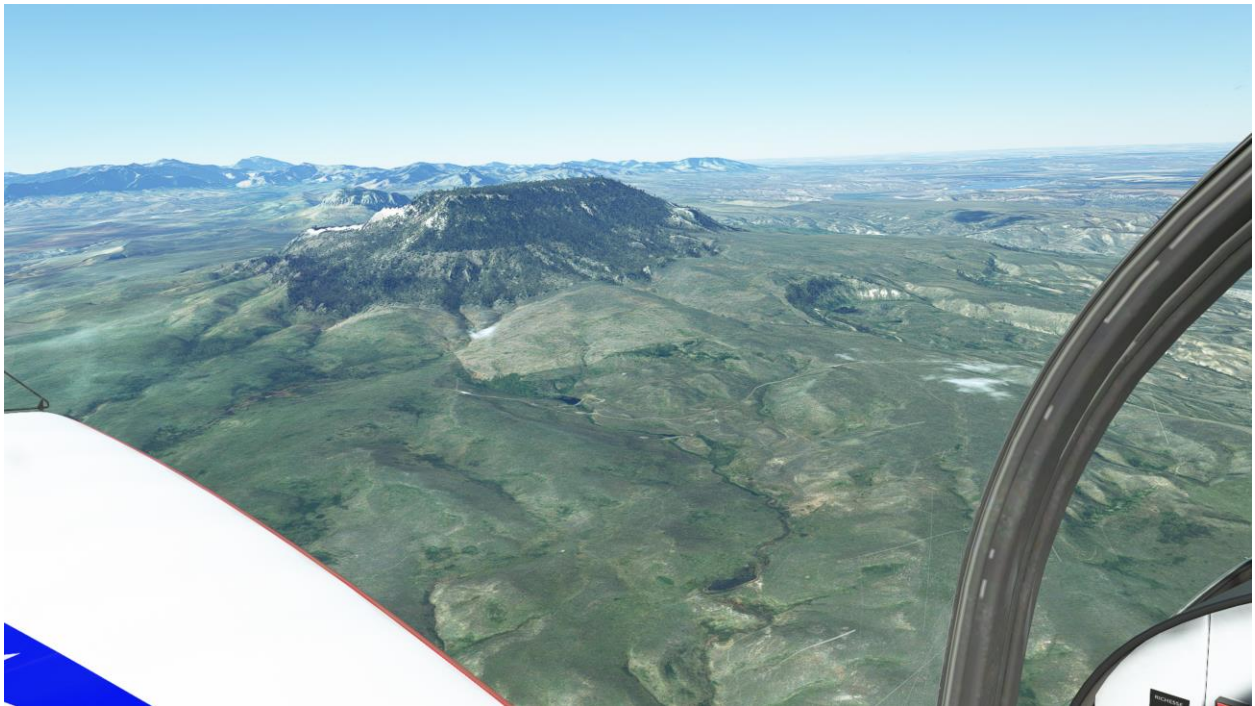
This comparison is at the south end of the Livingstone Range in southern Alberta. I'm just turning the corner from the Crowsnest Pass to go north along Highway 22. Altitude is about 7500'. The FS model is the Cap 10B.



These shots are from over top of Gate City, Virginia. The photo is from September 2014 when Bob Kirkby, Carl Forman, Al Botting and I flew to Washington, DC. From there, Botting caught a jet to home and we continued on to Nashville, TN, and beyond. The FS plane is the Extra 300.



This may be the most amazing comparison of the bunch. It's of Castlegar, BC. I'm climbing out to the southeast to clear the Bombi Summit and return to Calgary after lunch with my folks. Altitude is about 6500'. Note the incredible detail in the FS image. The FS plane is the Cap 10B.



There's more great detail in this shot of Square Butte, a tabletop mountain jutting out of Montana's prairie about 30 miles SE of Ft. Benton. The photo from the Cav is from 2017 when Bob Kirkby and I returned from Oklahoma with his newly purchased Starduster. The FS model is the Cap 10B.



Katerina Zima took this shot of the Cav against Cascade Mountain, just north of Banff. The detail in the FS mountains is less than in the US.



A pair of shots of Wyndell, BC, a tiny hamlet just north of Creston at the south end of the Kootenay Lake. Note the detail in the fields and clear-cuts. Taken during a flight Gary Abel and I made to Castlegar for lunch. The FS model is the Extra 300. I positioned the camera outside of the plane to best capture an image to match the photo I took.



A good example of how some FS Canadian mountain scenery lacks the fine detail of US mountain scenery. This is Crowsnest Mountain in southern

Alberta from about 7500' over Highway 3 and Crowsnest Lake. Gary Abel, Barry Davis and I flew down to Sparwood on a late spring morning, then back to Vulcan for lunch at the golf course.

If you ever had any doubt of the usefulness of Flight Simulator as a flight planning, scouting, or learning tool, I hope this article helps ease your trepidation. The realism of the imagery, and in most cases aircraft performance, is such that pilots can use it for all sorts of purposes to make real life flying safer.

But despite its usefulness, don't ever forget how much fun it is, too.