

RVSM above FL410

Meteomatics' view on what is possible

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Why do we need geopotential height data



Imagine you're cruising at Flight Level 450 — where the sky is darker, the air is thin, and the Earth curves beneath you.

At this altitude, every decision matters: how high you are and how stable the atmosphere is. But how do you *know* your actual altitude in a world where air pressure is dropping exponentially, and GPS isn't enough for aircraft separation?

The answer lies in geopotential height data.

What are we doing or did already?



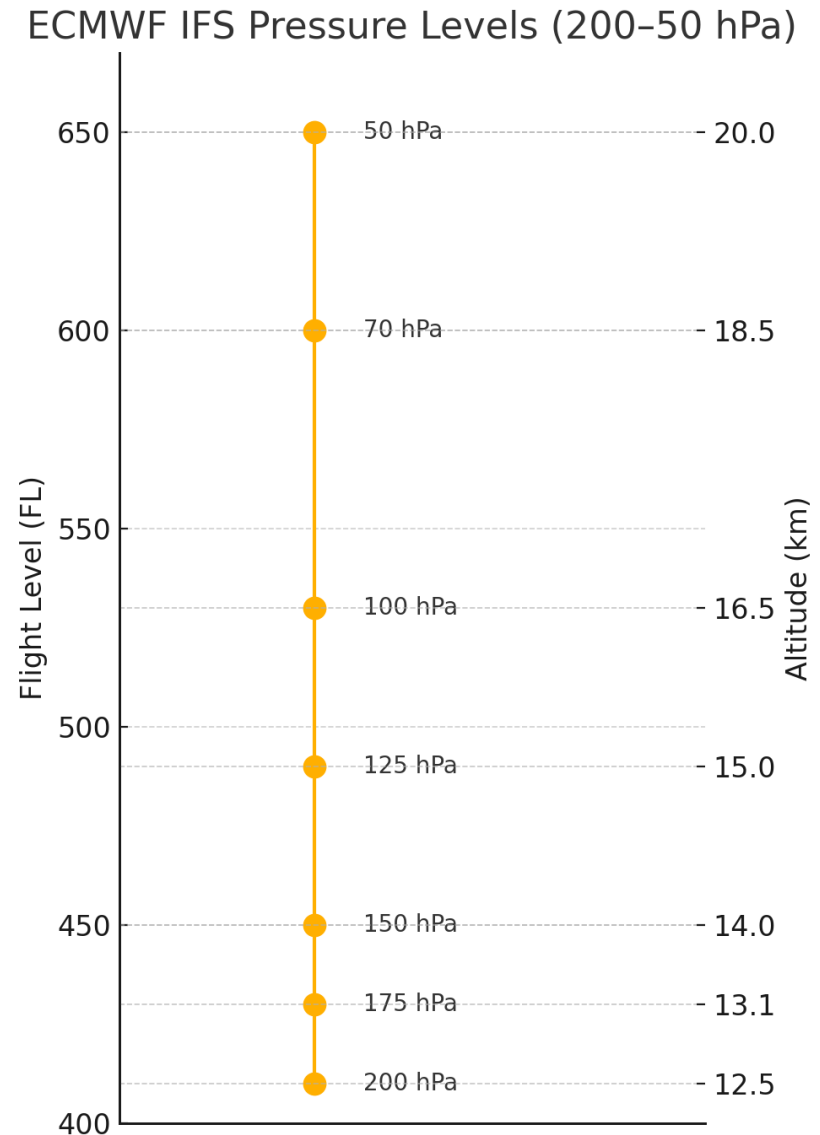
- Operational delivery: 4 times a day, Geometric Heights for FL 220– FL410
- Contract already active for several years
- Data for 3 HMU's: Geneva, Linz, Nattenheim and the European Domain
- After some time, we made correction to our calculations which improved the accuracy of the Geometric Heights significantly



- One – off delivery of data for geopotential heights for FL 180–670 (so already levels above FL410) globally
- Only wanted individual months and no operational delivery
- Compared to Eurocontrol FAA gets geopotential height instead of geometric heights
- We never got real good feedback on the data unfortunately
- Recently there were renewed discussions around continuous data delivery

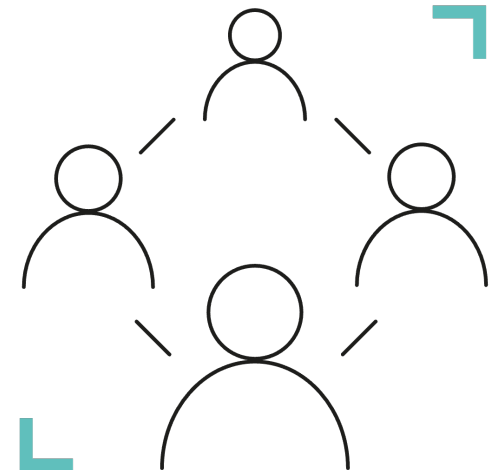
So what about above FL410?

- ECMWF IFS model is most suitable for these calculations
- Good quality model – 4 runs a day – global 0.1° resolution
- Above 150hPa less pressure levels, but still sufficient to do proper interpolation
- Especially above 150hPa (FL450) we need to do more extensive verification on the calculations to make sure they are accurate.
- Currently we ingest model levels 70 to 137 (for Eurocontrol)
- Adding 30 model levels (40 to 70) will come at additional costs, both for ECMWF data as storage and handling
- It would be helpful if Eurocontrol and FAA require the same output, for example Geometric Height or Geopotential Height
- Harmonizing Geopotential data for RVSM operations by Eurocontrol and FAA will set a standard for other ANSP's globally



Conclusion

- Some effort and costs are involved but within reasonable
- Use the same underlying weather model globally
- No blockers from a meteorological point of view
- Strong recommendation to harmonize output





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