



The Power of We™

"Let's Fly" Series Montreal to Frankfurt

Data Science Technology

Python Program

Apps Intellect →

(Continued from Part 4)

FlightPath: still to fly= 467613.04 meters - still to fly= 252.49 nautics
FlightPath: passing waypoint: EVELI - alt= 11880.74 meters - alt= 38978.34 feet - distance=
2969.00 nautics - real time = 22790.00 seconds - 6.00 hours 19.00 minutes 50.00 seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 108.66 degrees to 111.39 degrees - turn step is= 3.00 degrees
FlightPath: distance to last fix= 254.435518441 nautics
FlightPath: still to fly= 252.490842029 nautics
TurnLeg: tas= 476.27 knots - radius of turn= 22838.07 meters - radius of turn= 12.33
nautics
TurnLeg: initial heading= 108.66 degrees
TurnLeg: final heading= 111.73 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 111.73 degrees
FlightPath: difference= -18.83 degrees
FlightPath: anticipated turn start from end point= 137693.83 meters

===== great circle =====
FlightPath: distance to last fix= 253.774191596 nautics
FlightPath: still to fly= 251.317244996 nautics
GreatCircleRoute: initial way-point= turn-pt-5-111.73-degrees - latitude= 52.64 degrees
- longitude = 3.40 degrees - altitudeMSL= 11880.74 meters
GreatCircleRoute: final way-point= BASNO - latitude= 52.35 degrees - longitude= 4.58
degrees - altitudeMSL= 11880.74 meters
===== end of great circle =====

FlightPath: still to fly= 379684.74 meters - still to fly= 205.01 nautics
FlightPath: passing waypoint: BASNO - alt= 11880.74 meters - alt= 38978.34 feet
- distance= 3016.48 nautics - realtime= 23145.00 seconds - 6.00 hours 25.00 minutes
45.00 seconds



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```
===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 112.32 degrees to 92.58 degrees - turn step is= -3.00 degrees
FlightPath: distance to last fix= 207.589701787 nautics
FlightPath: still to fly= 205.013357321 nautics
TurnLeg: tas= 476.27 knots - radius of turn= 13123.18 meters - radius of turn= 7.09 nautics
TurnLeg: initial heading= 112.32 degrees
TurnLeg: final heading= 90.93 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 90.93 degrees
FlightPath: difference= 36.33 degrees
FlightPath: anticipated turn start from end point= 69598.06 meters

===== great circle =====
FlightPath: distance to last fix= 204.992513797 nautics
FlightPath: still to fly= 202.48659758 nautics
GreatCircleRoute: initial way-point= turn-pt-20-90.93-degrees - latitude= 52.34 degrees -
longitude= 4.65 degrees - altitudeMSL= 11880.74 meters
GreatCircleRoute: final way-point= PAMPUS - latitude= 52.33 degrees - longitude= 5.11
degrees - altitudeMSL= 11880.74 meters
===== end of great circle =====

FlightPath: still to fly= 343153.40 meters - still to fly= 185.29 nautics
FlightPath: passing waypoint: PAMPUS - alt= 11880.74 meters - alt= 38978.34 feet -
distance= 3036.20 nautics - real time = 23295.00 seconds - 6.00 hours 28.00 minutes 15.00
seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 91.63 degrees to 127.62 degrees - turn step is= 3.00 degrees
FlightPath: distance to last fix= 188.577440062 nautics
FlightPath: still to fly= 185.288010729 nautics
TurnLeg: tas= 476.27 knots - radius of turn= 13123.18 meters - radius of turn= 7.09 nautics
TurnLeg: initial heading= 91.63 degrees
TurnLeg: final heading= 132.27 degrees
===== end of turn leg =====
```



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```
FlightPath: end of turn orientation= 132.27 degrees
FlightPath: difference= -3.18 degrees
FlightPath: anticipated turn start from end point= 823553.96 meters

===== great circle =====
FlightPath: distance to last fix= 183.874190025 nautics
FlightPath: still to fly= 179.741784888 nautics
GreatCircleRoute: initial way-point= turn-pt-38-132.27-degrees - latitude= 52.30 degrees -
longitude= 5.22 degrees - altitudeMSL= 11880.74 meters
GreatCircleRoute: final way-point= LUNIX - latitude= 52.10 degrees - longitude= 5.59
degrees - altitudeMSL= 11880.74 meters
===== end of great circle =====

FlightPath: still to fly= 298579.87 meters - still to fly= 161.22 nautics
FlightPath: passing waypoint: LUNIX - alt= 11880.74 meters - alt= 38978.34 feet -
distance= 3060.27 nautics - real time = 23473.00 seconds - 6.00 hours 31.00 minutes
13.00 seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 132.25 degrees to 128.80 degrees - turn step is= -3.00 degrees
FlightPath: distance to last fix= 166.5220932 nautics
FlightPath: still to fly= 161.220229818 nautics
TurnLeg: tas= 476.27 knots - radius of turn= 13123.18 meters - radius of turn= 7.09 nautics
TurnLeg: initial heading= 132.25 degrees
TurnLeg: final heading= 127.97 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 127.97 degrees
FlightPath: difference= 2.17 degrees
FlightPath: anticipated turn start from end point= 1206300.21 meters
```



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```
===== great circle =====
FlightPath: distance to last fix= 165.993071904 nautics
FlightPath: still to fly= 159.786151819 nautics
GreatCircleRoute: initial way-point= turn-pt-4-127.97-degrees - latitude= 52.10 degrees -
longitude= 5.58 degrees - altitudeMSL= 11880.74 meters
GreatCircleRoute: final way-point= EDUPO - latitude= 51.97 degrees - longitude= 5.85
degrees - altitudeMSL= 11880.74 meters
===== end of great circle =====

FlightPath: still to fly= 271422.58 meters - still to fly= 146.56 nautics
FlightPath: passing waypoint: EDUPO - alt= 11880.74 meters - alt= 38978.34 feet -
distance= 3074.94 nautics - real time = 23577.00 seconds - 6.00 hours 32.00 minutes 57.00
seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 128.98 degrees to 130.95 degrees - turn step is= 3.00 degrees
FlightPath: distance to last fix= 153.66874672 nautics
FlightPath: still to fly= 146.556469626 nautics
TurnLeg: tas= 476.27 knots - radius of turn= 13123.18 meters - radius of turn= 7.09 nautics
TurnLeg: initial heading= 128.98 degrees
TurnLeg: final heading= 131.11 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 131.11 degrees
FlightPath: difference= 0.38 degrees
FlightPath: anticipated turn start from end point= 6881237.27 meters

===== great circle =====
FlightPath: distance to last fix= 153.404170155 nautics
FlightPath: still to fly= 145.651085968 nautics
GreatCircleRoute: initial way-point= turn-pt-2-131.11-degrees - latitude= 51.97 degrees -
longitude= 5.84 degrees - altitudeMSL= 11880.74 meters
```



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```
BadaAircraft =====  
  
BadaAircraft: entering descent configuration - distance flown 5689679.85 meters -  
distance flown 3072.18 nautics  
BadaAircraft: alt= 11880.74 meters alt= 38978.34 feet  
BadaAircraft: tas= 245.01 m/s - tas= 476.27 knots - cas= 133.04 m/s - cas= 258.60 knots -  
mach= 0.83  
BadaAircraft: real time = 23639.00 seconds - 6.00 hours 33.00 minutes 59.00 seconds  
  
BadaAircraft =====  
  
GreatCircleRoute: final way-point= NAPRO - latitude= 51.85 degrees - longitude= 6.06  
degrees - altitudeMSL= 11656.48 meters  
  
===== end of great circle =====  
  
FlightPath: still to fly= 249700.40 meters - still to fly= 134.83 nautics  
FlightPath: passing waypoint: NAPRO - alt= 11656.48 meters - alt= 38242.57 feet -  
distance= 3086.66 nautics - real time = 23661.00 seconds - 6.00 hours 34.00 minutes 21.00  
seconds  
  
===== one Turn Leg for each fix in the list =====  
TurnLeg: turn from= 131.13 degrees to 131.34 degrees - turn step is= 3.00 degrees  
FlightPath: distance to last fix= 142.710287937 nautics  
FlightPath: still to fly= 134.827427251 nautics  
TurnLeg: tas= 469.31 knots - radius of turn= 12742.41 meters - radius of turn= 6.88 nautics  
TurnLeg: initial heading= 131.13 degrees  
TurnLeg: final heading= 132.22 degrees  
===== end of turn leg =====  
  
FlightPath: end of turn orientation= 212.78 degrees  
FlightPath: difference= 0.30 degrees  
FlightPath: anticipated turn start from end point= 8346739.31 meters
```



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```
===== great circle =====
FlightPath: distance to last fix= 142.58014185 nautics
FlightPath: still to fly= 134.824938929 nautics
GreatCircleRoute: initial way-point= turn-pt-1-132.22-degrees - latitude= 51.85 degrees -
longitude= 6.06 degrees - altitudeMSL= 11646.37 meters
GreatCircleRoute: final way-point= AMOSU - latitude= 51.64 degrees - longitude= 6.46
degrees - altitudeMSL= 10124.27 meters
===== end of great circle =====

FlightPath: still to fly= 213388.77 meters - still to fly= 115.22 nautics
FlightPath: passing waypoint: AMOSU - alt= 10124.27 meters - alt= 33215.71 feet -
distance= 3106.27 nautics - real time = 23821.00 seconds - 6.00 hours 37.00 minutes 1.00
seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 131.64 degrees to 131.64 degrees - turn step is= -3.00 degrees
FlightPath: distance to last fix= 123.029344166 nautics
FlightPath: still to fly= 115.220719703 nautics
TurnLeg: tas= 420.33 knots - radius of turn= 17788.05 meters - radius of turn= 9.60 nautics
TurnLeg: initial heading= 131.64 degrees
TurnLeg: final heading= 130.95 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 130.36 degrees
FlightPath: difference= 12.08 degrees
FlightPath: anticipated turn start from end point= 167858.45 meters

===== great circle =====
FlightPath: distance to last fix= 122.912780102 nautics
FlightPath: still to fly= 115.157561364 nautics
GreatCircleRoute: initial way-point= turn-pt-1-130.95-degrees - latitude= 51.64 degrees -
longitude= 6.46 degrees - altitudeMSL= 10115.23 meters
GreatCircleRoute: final way-point= MISGO - latitude= 51.40 degrees - longitude= 6.88
degrees - altitudeMSL= 8485.13 meters
===== end of great circle =====
```



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```
FlightPath: still to fly= 174371.89 meters - still to fly= 94.15 nautics  
FlightPath: passing waypoint: MISGO - alt= 8485.13 meters - alt= 27838.02 feet - distance=  
3127.34 nautics - real time = 24015.00 seconds - 6.00 hours 40.00 minutes 15.00 seconds
```

```
===== one Turn Leg for each fix in the list =====
```

```
TurnLeg: turn from= 131.97 degrees to 143.73 degrees - turn step is= 3.00 degrees  
FlightPath: distance to last fix= 101.914640527 nautics  
FlightPath: still to fly= 94.1532886467 nautics  
TurnLeg: tas= 365.36 knots - radius of turn= 13439.94 meters - radius of turn= 7.26 nautics  
TurnLeg: initial heading= 131.97 degrees  
TurnLeg: final heading= 144.70 degrees  
===== end of turn leg =====
```

```
FlightPath: end of turn orientation= 144.70 degrees  
FlightPath: difference= 13.17 degrees  
FlightPath: anticipated turn start from end point= 113711.55 meters
```

```
===== great circle =====
```

```
FlightPath: distance to last fix= 100.311973865 nautics  
FlightPath: still to fly= 92.5471146155 nautics  
GreatCircleRoute: initial way-point= turn-pt-16-144.70-degrees - latitude= 51.38 degrees -  
longitude= 6.90 degrees - altitudeMSL= 8360.93 meters  
GreatCircleRoute: final way-point= COLA - latitude= 50.78 degrees - longitude= 7.60  
degrees - altitudeMSL= 4899.79 meters  
===== end of great circle =====
```

```
FlightPath: still to fly= 88798.68 meters - still to fly= 47.95 nautics  
FlightPath: passing waypoint: COLA - alt= 4899.79 meters - alt= 16075.22 feet - distance=  
3173.54 nautics - real time = 24576.00 seconds - 6.00 hours 49.00 minutes 36.00 seconds
```



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```
===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 144.47 degrees to 157.10 degrees - turn step is= 3.00 degrees
FlightPath: distance to last fix= 55.76664569 nautics
FlightPath: still to fly= 47.9474510068 nautics
TurnLeg: tas= 235.55 knots - radius of turn= 5586.36 meters - radius of turn= 3.02 nautics
TurnLeg: initial heading= 144.47 degrees
TurnLeg: final heading= 158.06 degrees
===== end of turn leg =====

FlightPath: end of turn orientation= 158.06 degrees
FlightPath: difference= -18.63 degrees
FlightPath: anticipated turn start from end point= 33442.02 meters

===== great circle =====
FlightPath: distance to last fix= 55.0557826833 nautics
FlightPath: still to fly= 47.2861264601 nautics
GreatCircleRoute: initial way-point= turn-pt-11-158.06-degrees - latitude= 50.77 degrees -
longitude= 7.60 degrees - altitudeMSL= 4844.63 meters
GreatCircleRoute: final way-point= ROLIS - latitude= 50.43 degrees - longitude= 7.83
degrees - altitudeMSL= 3136.73 meters
===== end of great circle =====

FlightPath: still to fly= 46775.62 meters - still to fly= 25.26 nautics
FlightPath: passing waypoint: ROLIS - alt= 3136.73 meters - alt= 10290.99 feet - distance=
3196.24 nautics - real time = 24988.00 seconds - 6.00 hours 56.00 minutes 28.00 seconds

===== one Turn Leg for each fix in the list =====
TurnLeg: turn from= 157.45 degrees to 138.64 degrees - turn step is= -3.00 degrees
FlightPath: distance to last fix= 33.0469507404 nautics
FlightPath: still to fly= 25.2568157981 nautics
TurnLeg: tas= 165.69 knots - radius of turn= 2764.03 meters - radius of turn= 1.49 nautics
TurnLeg: initial heading= 157.45 degrees TurnLeg: final heading= 138.14 degrees
===== end of turn leg =====
```




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FlightPath: end of turn orientation= 138.14 degrees

===== great circle =====

FlightPath: distance to last fix= 32.5514278093 nautics

FlightPath: still to fly= 24.7741090209 nautics

GreatCircleRoute: initial way-point= turn-pt-11-138.14-degrees - latitude= 50.43 degrees - longitude= 7.83 degrees - altitudeMSL= 3098.02 meters

BadaAircraft =====

BadaAircraft: entering approach configuration - distance flown 5937659.19 meters - distance flown 3206.08 nautics

BadaAircraft: alt= 1597.10 meters alt= 5239.76 feet

BadaAircraft: tas= 51.13 m/s - tas= 99.39 knots - cas= 47.36 m/s - cas= 92.06 knots - mach= 0.15

BadaAircraft: realtime= 25539.00 seconds - 7.00 hours 5.00 minutes 39.00 seconds

BadaAircraft =====

BadaAircraft: distance to approach fix= 13039.43 meters - delta altitude to approach fix= -540.09 meters

BadaAircraft =====

BadaAircraft: entering landing configuration - distance flown 5949024.25 meters - distance flown 3212.22 nautics

BadaAircraft: alt= 1126.34 meters alt= 3695.29 feet

BadaAircraft: tas= 46.10 m/s - tas= 89.61 knots - cas= 43.73 m/s - cas= 85.00 knots - mach= 0.14

BadaAircraft: realtime= 25773.00 seconds - 7.00 hours 9.00 minutes 33.00 seconds

BadaAircraft =====

GreatCircleRoute: final way-point= turn-pt-78-319.64-degrees - latitude= 50.02 degrees - longitude= 8.39 degrees - altitudeMSL= 573.18 meters

===== end of great circle =====

FlightPath: still to fly= -14427.04 meters - still to fly= -7.79 nautics

FlightPath: passing waypoint: turn-pt-78-319.64-degrees - alt= 573.18 meters - alt= 1880.48 feet - distance= 3229.28 nautics - real time = 26068.00 seconds - 7.00 hours 14.00 minutes 28.00 seconds



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```
FlightPath===== add last turn =====
FlightPath: runway final heading= 69.60 degrees
TurnLeg:turnfrom= 138.95degreesto80.16degrees-turnstepis=-3.00degrees
TurnLeg:tas=94.39knots - radius of turn=2747.50 meters - radius of turn= 1.48 nautics
TurnLeg: initial heading= 138.95 degrees
TurnLeg: final heading= 69.56 degrees
FlightPath: distance still to fly= 5.42 nautics
DescentGlideSlope: airport field Elevation Above Sea Level= 110.95 meters
DescentGlideSlope: distance from RunWay - TouchDown to RunWay - End= 1490.0 meters
DescentGlideSlope: bearing from touch-down to runway end= 69.59 degrees
BadaAircraft: distance to runway touch-down= 319.07 meters - delta altitude to runway
touch-down= -11.23 meters

BadaAircraft =====
BadaAircraft: entering arrival-ground-run configuration - distance flown 5975140.53 meters -
distance flown 3226.32 nautics
BadaAircraft: alt= 112.18 meters alt= 368.05 feet
BadaAircraft: tas=37.58 m/s - tas=73.04 knots - cas=37.39 m/s - cas=72.68 knots - mach=
0.11
BadaAircraft: realtime=26394.70 seconds-7.00hours 19.00minutes54.70seconds

BadaAircraft =====
GroundRunLeg: ground run - run-way true heading= 249.6 degrees
BadaAircraft: taxi speed reached => end of simulation

FlightPath ===== delta mass status =====
FlightPath: initial mass= 120000.00 kilograms = 264554.71 pounds
FlightPath: final mass=91425.33 kilograms =201558.35 pounds
FlightPath: diff mass= 28574.67 kilograms = 62996.36 pounds
FlightPath===== delta mass status=====

simulation duration= 0.747973104302 seconds
FlightPath: final route length= 3236.58676621 nautics

=====Flight Plan End =====
```