COMPACT ROUTING FOR LOW EARTH ORBIT SATELLITES

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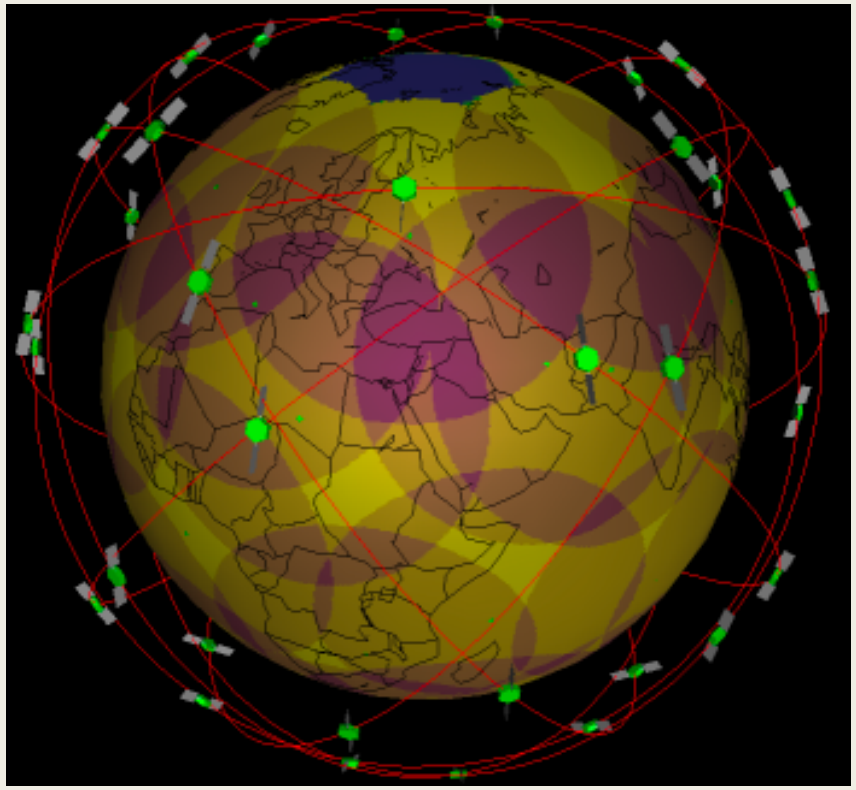
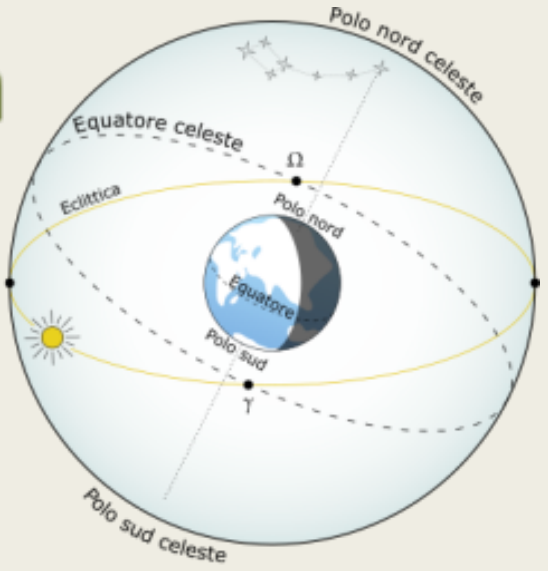
INTRODUCTION

Simulator Choice (-> if implementation section)

SaVi

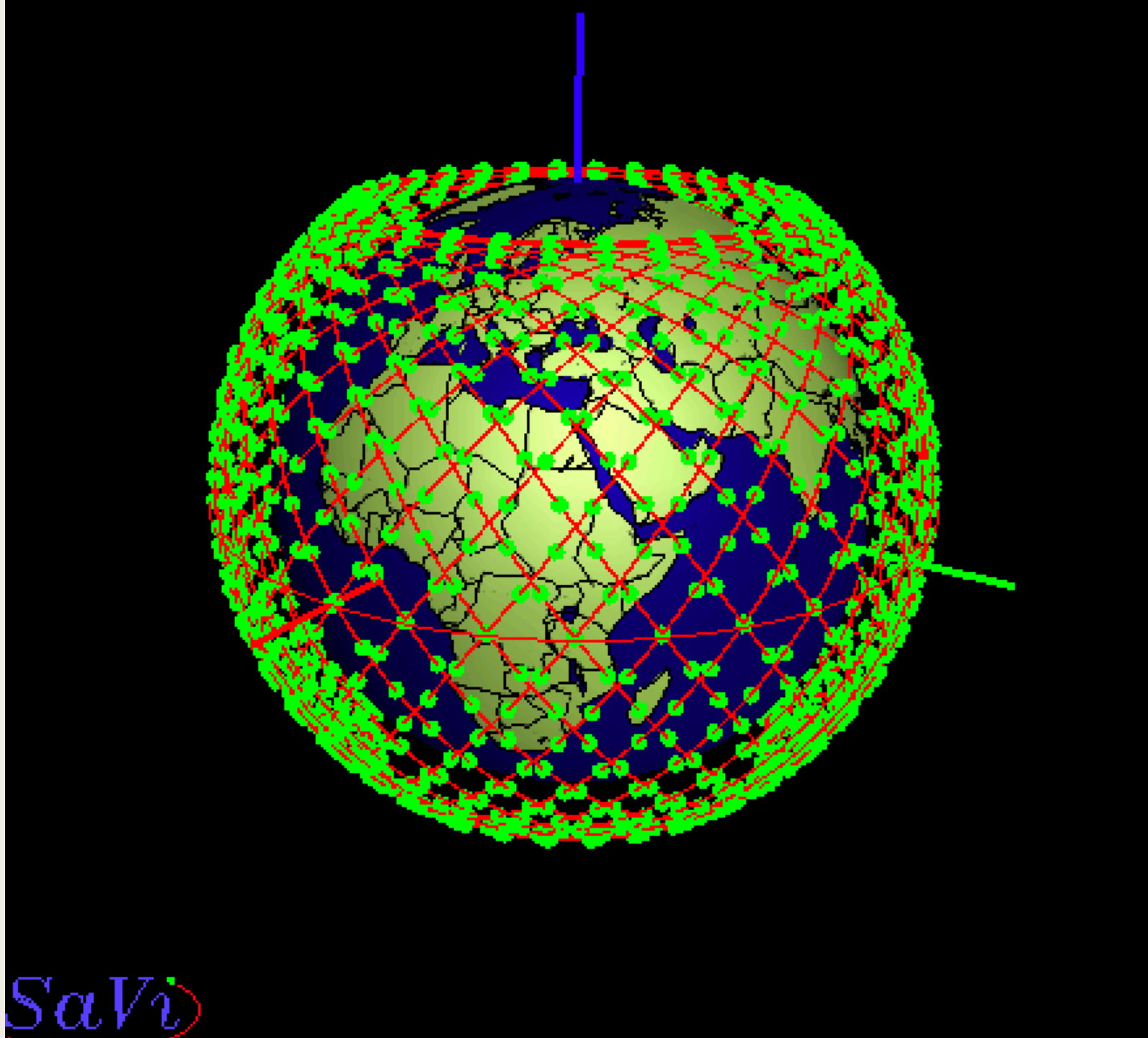


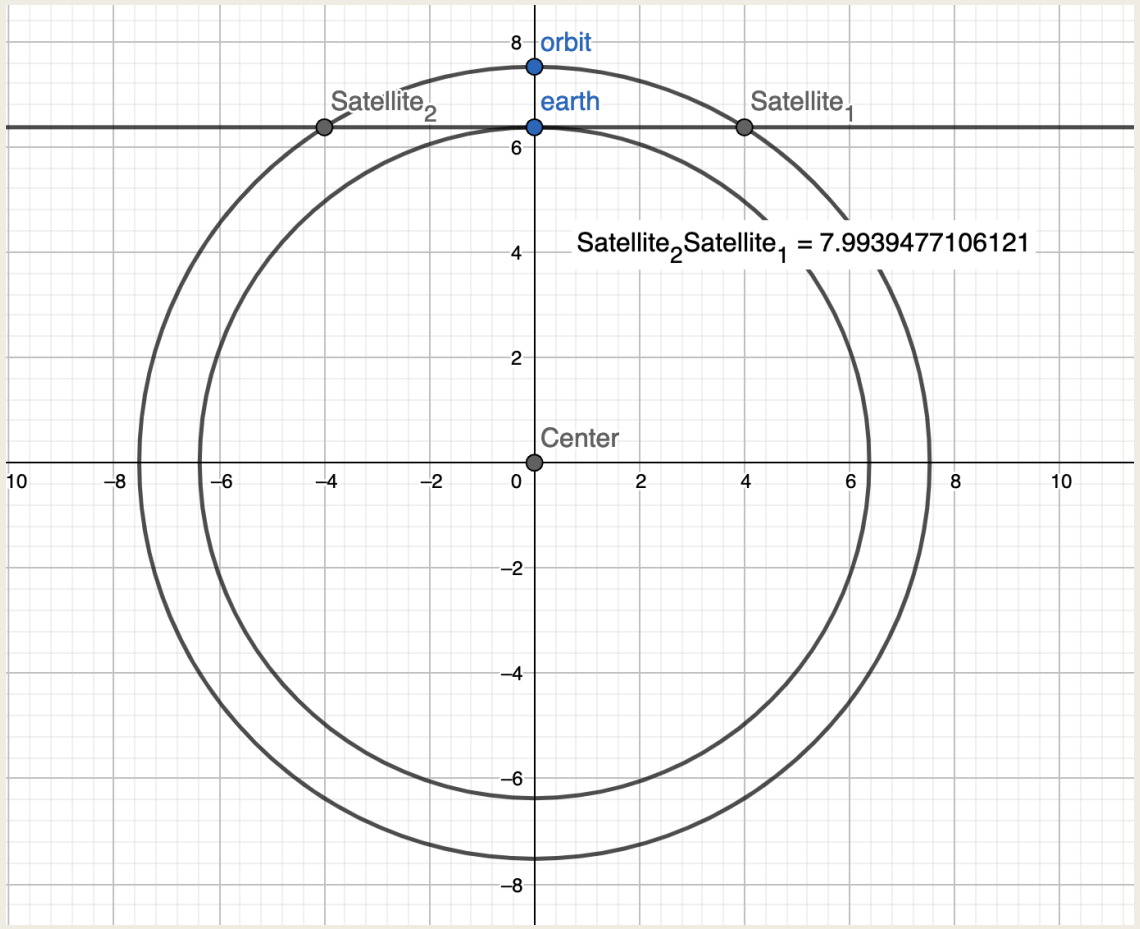
PyEphem



STARLINK
CONSTELLATION

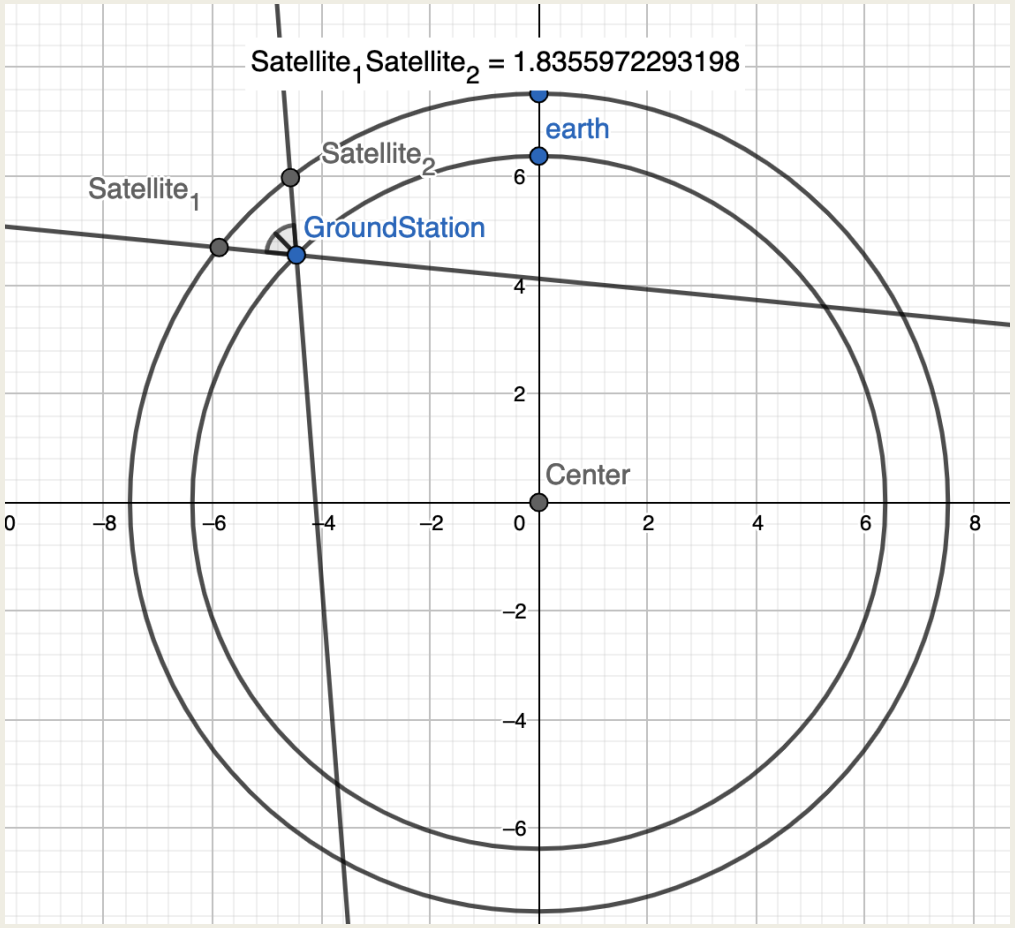
50 PLANES
32 SATS/PLANE





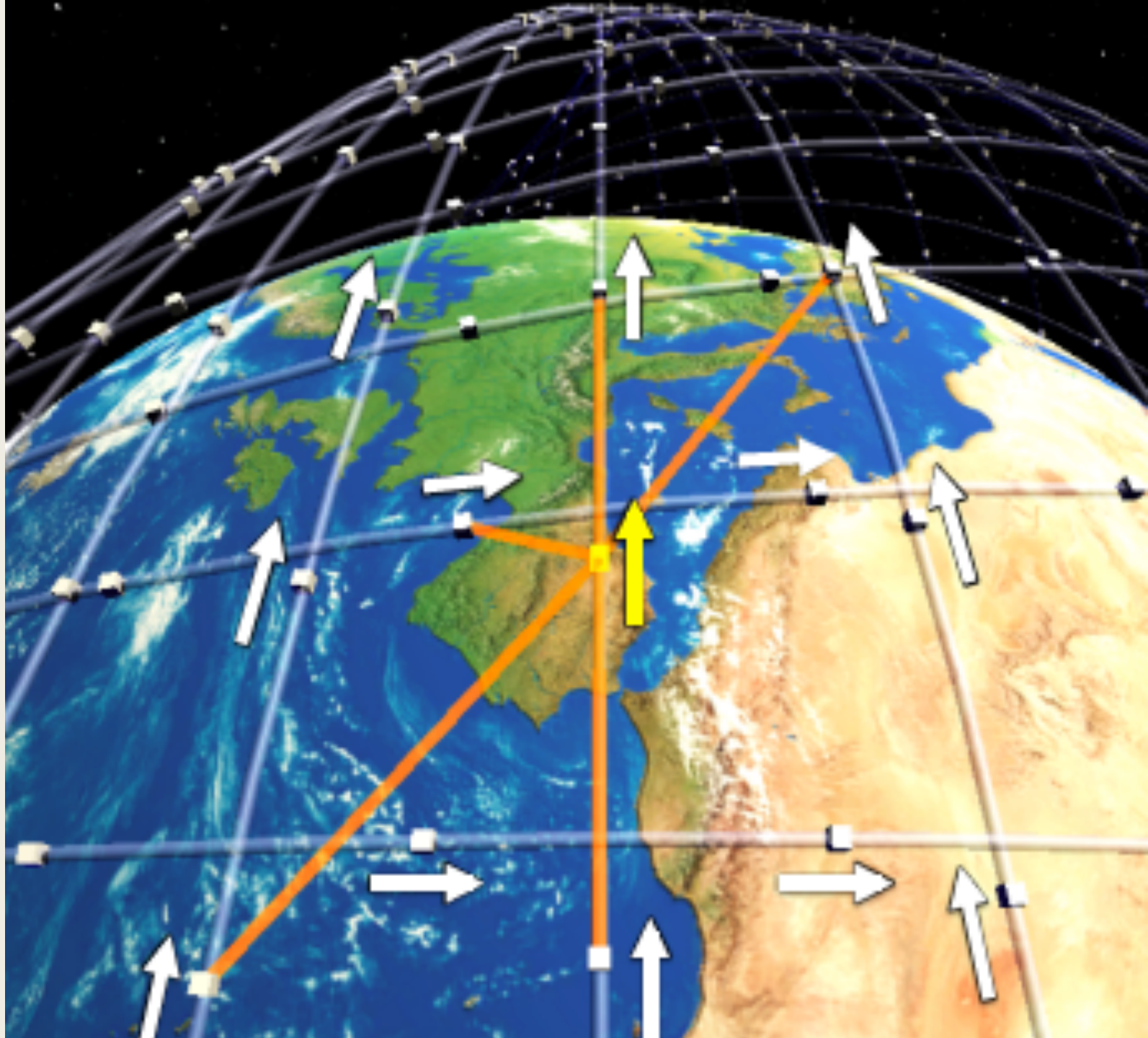
PHYSICAL LIMITATION: EARTH'S CURVE

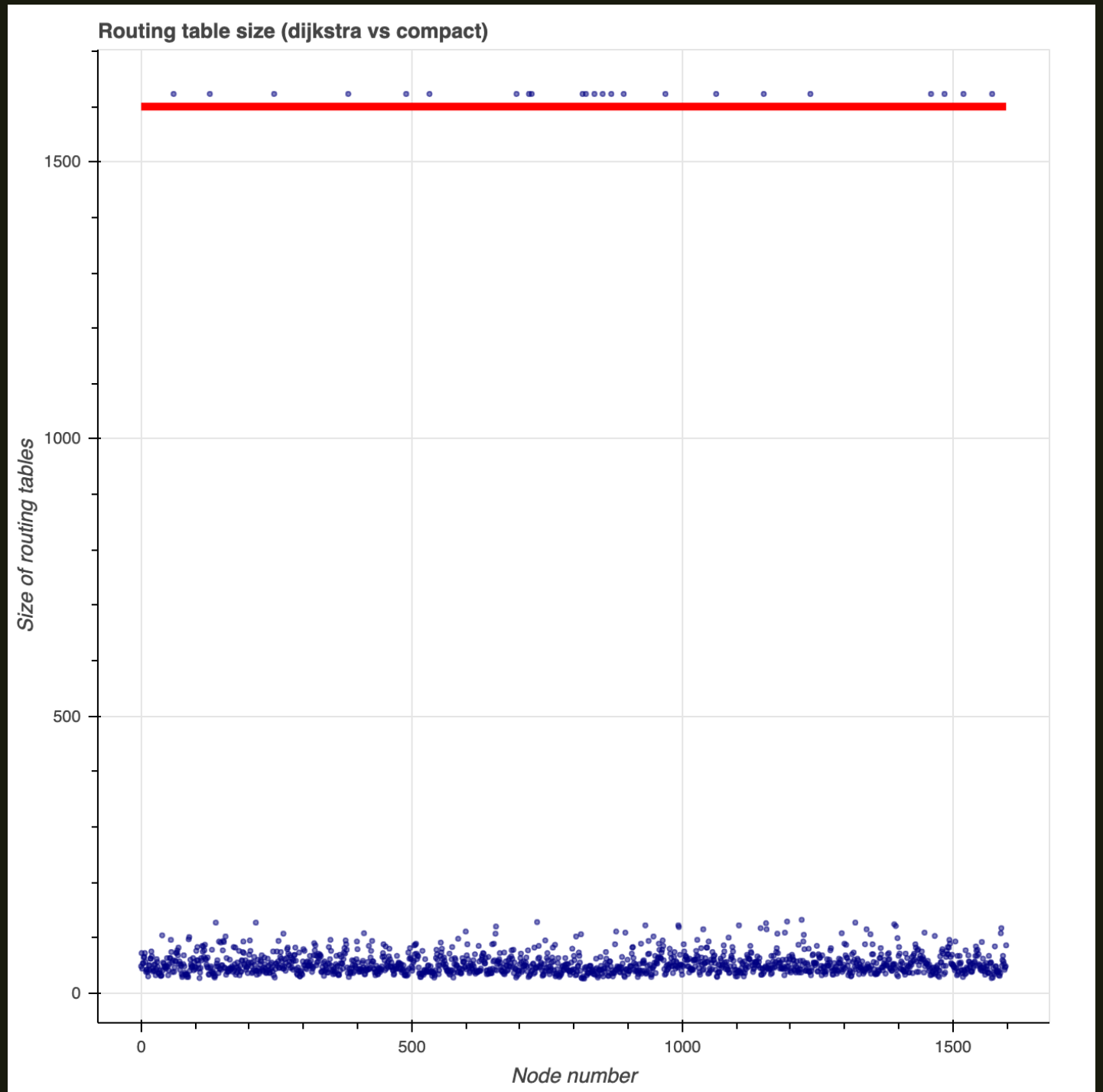
8'000 KM



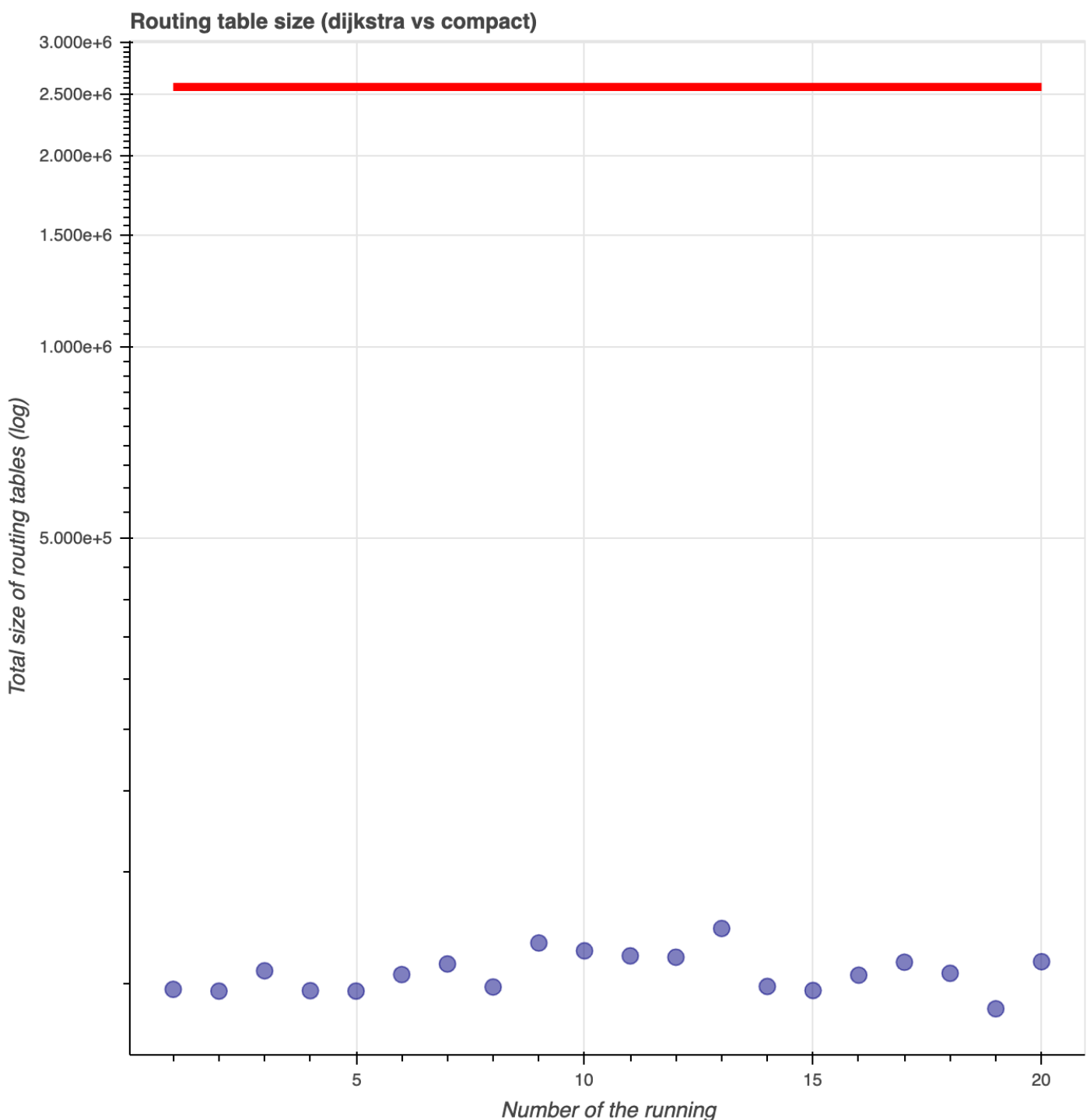
PHYSICAL LIMITATION: GROUND STATIONS ?

NETWORK LIMITATION: 5 LINKS

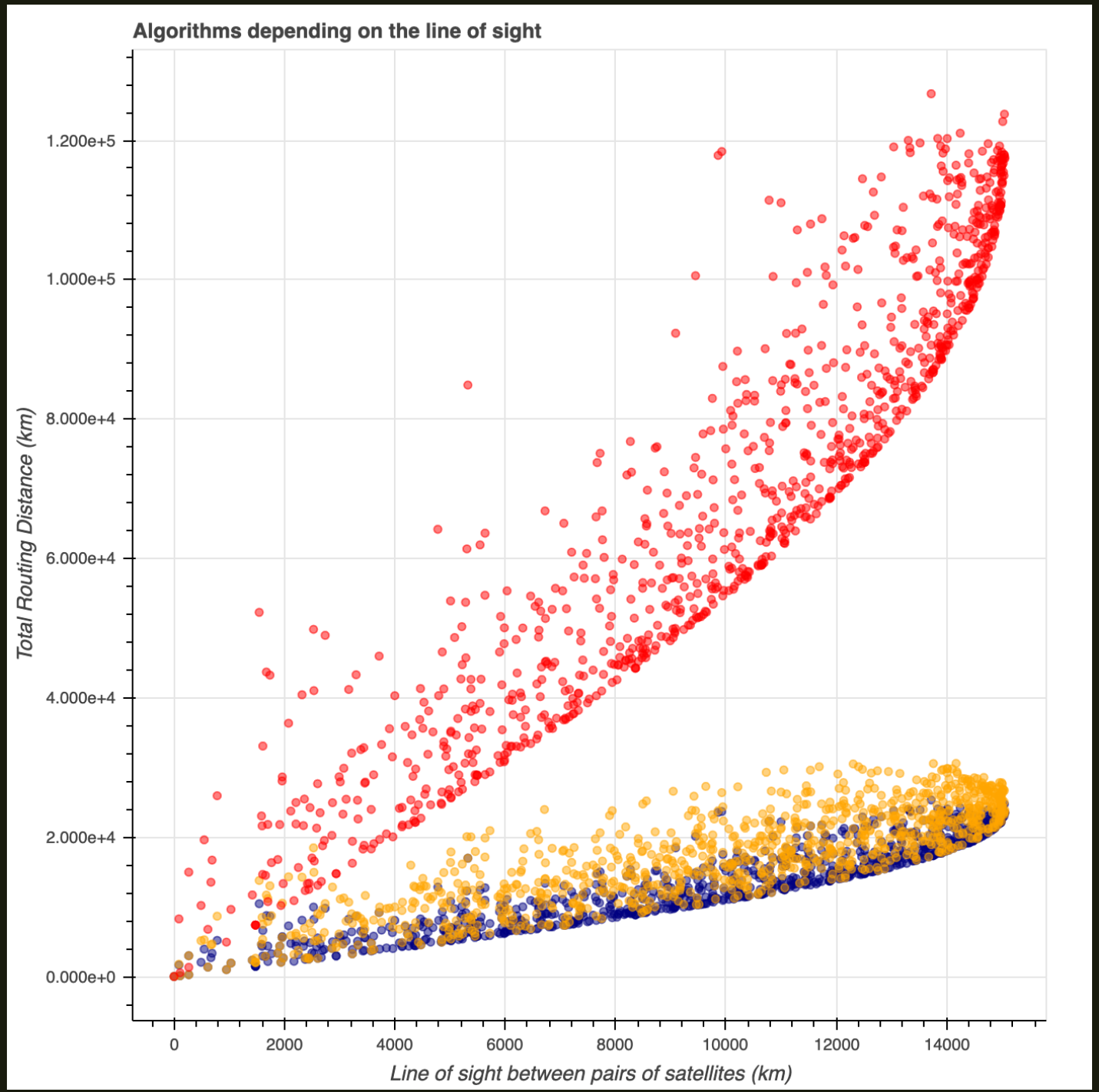




ROUTING TABLE PER NODE: 15X SMALLER



TOTAL ROUTING TABLE SIZE



ROUTING DISTANCE FOR 1000 PAIRS

Limitations

- Simulations on the entire network hard to determine
  - *Links configuration for constellation with multiple altitudes required -> FUTURE WORK, MULT. STAGES*
- Relies on the assumption the closest node will be the best (from Harvey's paper) -> FUTURE WORK
- Light speed in vacuum: 40% higher than in air:
  - *Obvious lack of performances if difference Compact/Dijkstra is high*
- Ground stations -> FUTURE WORK