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Appendix for Route Packing: Geospatially-Accurate Visualization of Route Networks

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In this appendix, we provide a case study of using the Route Packing technique in the aviation domain for a flight planning scenario¹. The existing prevalent tools in this domain primarily support the visualization of one flight path at once. Using our shifted and packed tapered lines for direction, and concentric rings for stops, our technique enables the comparison of multiple flight paths. Figure 1 shows an example of displaying 12 flight routes from the Montgomery Field (KMYF) airport to the San Luis Obispo (KSBP) airport, overlaid on a instrument flight rules (IFR) enroute low altitude chart. These 12 paths—obtained through the FltPlan.com website [1]—are historical flight plans filed by other pilots.

Based on Figure 1, we can observe three major patterns: travel over sea, travel along the coast, or travel along an inland route. Using Route Packing, pilots can compare the advantages and disadvantages of multiple flight paths, as well as the frequency of travel among pilots that have recently filed a flight plan. For example, when zoomed in, it is easy to identify that seven of the 12 prior flight plans fly over the Seal Beach (SLI) very high-frequency omnidirectional range (VOR), which informs the end-user that the SLI VOR has been a preferred navigation aid of pilots between KMYF and KSBP.

Route Packing technique can be integrated with other data sources. For example, temporary flight restrictions (TFRs) and inclement weather could be displayed simultaneously with the array of routes to identify which routes would best avoid the obstacles.

REFERENCES

- [1] Flight Plan LLC, “Flight planning and flight tracking,” 2013, <https://www.fltplan.com/>, accessed April 2017.

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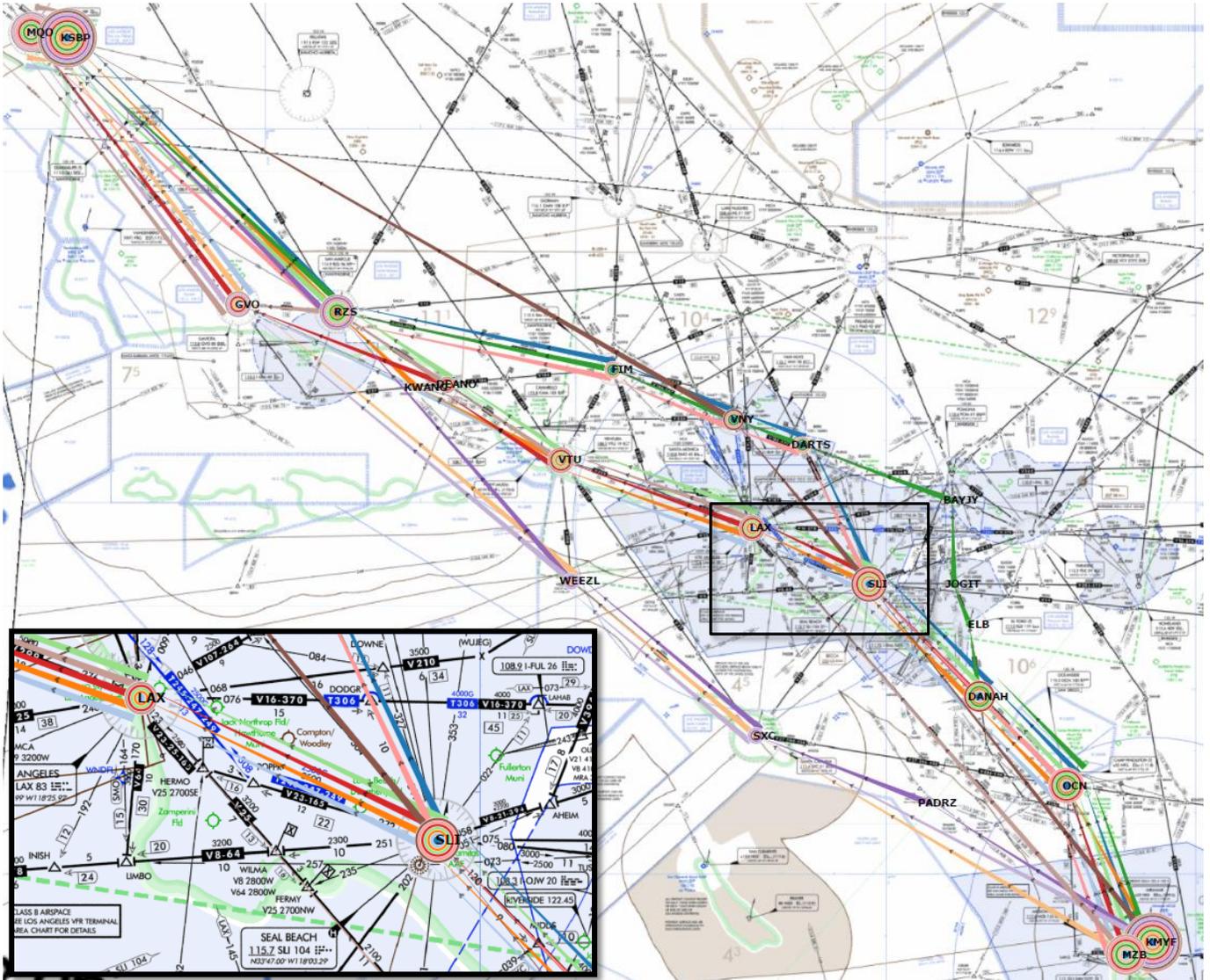


Fig. 1. 12 flight routes from the Montgomery Field (KMYF) airport to the San Luis Obispo (KSBP) airport.