Subject of the Paper.  The paper discusses an algorithm for computing the cheapest route of a flight between two locations with possible stops at a given set of $n$ intermediate airports. The cost of a flight from $a$ to $b$ is restricted to be a function that grows monotonically with the Euclidean distance from $a$ to $b$.

General Comment. The paper considers an interesting problem but the results presented, even if technically correct, do not seem to be mature enough to warrant publication in a journal. The following issues need to be better addressed before re-submission.

Motivation. The abstraction of problem motivating the paper seems to be far from appropriate.

From the information I have been gathering, the standard “AERODROME BILLING” model takes into account several parameters including: (i) type of airplane (which is in turn is dependent from the longest leg of the trip), (ii) time of the flight (splitting a flight in a multiple stops trip can change substantially the time of the trip), (iii) MTOW (Maximum Take-Off Weight). The authors seem to consider only the MTOW factor.

More importantly the assumption that there is a direct flight between any pair of airports yields an ideal setting that is highly unlikely to produce a result approximating at any degree a real situation. For example it is well known that a large airplane can go far but cannot land in small airports while small airplanes can land in any airport but cannot go too far. Moreover the route from $a$ to $b$ it is often different from a straight line from $a$ to $b$.

Either the assumption that there is a direct flight between any pair of airports is changed or the cost function for the flight needs to be made more general. I should at least allow to assign arbitrarily high cost to any route that needs to be excluded from the final solution. This is not allowed by the current assumption of “monotonic” cost function.

Another possibility could be to stress less the correlation with the practical problem stated in the title and recast the scheme in a more theoretical setting.

Correlation Between cheapest-path and cheapest-path map. The paper states generically that there is some correlation between cheapest-path map (Voronoi diagram of the generalized distance function) and the cheapest-path computation objective of the paper. Such correlation has not been specified in general terms but just used in the complexity analysis of their specific algorithm. In fact the lower bound $O(n^2)$ on the size of the cheapest-path map does not imply a lower bound on the information necessary to compute the cheapest-path (the proposed algorithm is in fact sub-quadratic). This is not at all surprising (as the authors state in Remark 3.2) because the Voronoi region relative the airport $a$ can be composed of $n$ non-connected components, where only the component that contains $a$ itself is really relevant to the computation of the cheapest-path. The other components of the Voronoi region would be of interest only if we considered flights that do not start from an airport.

I would suggest to remove the last section of the paper since it is not really relevant.

Cheapest-path computation. The motivation for introducing the algorithm in section 2.3 is the intricacy of the algorithm in section 2.2. Unfortunately the slower algorithm of section 2.3 does not strikes the reader for simplicity since it involves the repeated construction of multiple Voronoi diagrams and the computation of the upper envelope of a set of bivariate functions using the algorithm in [ASS96]. A detailed and self contained analysis of the data-structures used is necessary to convince the reader of such claim. This is particularly relevant since we always have available the Dijkstra algorithm which is really simple and $O(n^2)$. In other words we have on one side the algorithm of section 2.2 which is $O(n^{2.5})$ and on the other side the Dijkstra algorithm which is $O(n^2)$, extremely simple and more general (no practical limitation on the cost function). The question is: do we really need the algorithm of section 2.3 which $O(n^{2.5}+\varepsilon)$, not particularly simple and which is still restricted to the case of monotonic cost function?

In conclusion the paper discusses an interesting and challenging problem. It reports preliminary results that need to be improved substantially. The current version of the paper seems more appropriate for a conference extended abstract than for a journal publication. Nonetheless the results presented are technically correct and very promising.
I would strongly encourage the authors to revise their work and bring it to a more mature stage suitable for journal publication.