# III. Applications

As discussed in the introduction, a fleet of unmanned aerial vehicles provides the best platform in real-world applications of this methodology. This fleet will have consistent locations where the aerial vehicles will be scheduled to arrive at and depart from at specified times. Given this schedule, the goal is to not disturb the existing paths such that the side benefit of using the fleet for survey operations does not interfere with the main mission of this fleet, whatever it may be. This section will propose some potential side-benefits and applications of the proposed methodology.

## Google Maps Validation

The Google Maps application has a solution to the problem of tracking automobile traffic. The application aggregates the real-time location data generated by drivers using Google Maps or Android phones while having location services enabled \cite{barth2009googlemaps}. The methodology proposed in this paper can be used to assess and validate the accuracy of this existing system. The validated data could also be used to determine the number of users actually broadcasting their anonymous location data via Google Maps or Android.

## Ecological Observation

Another potential use case for this system is to track the regular movements of animal species. Using unmanned aerial vehicles has been shown to be a feasible non-intrusive way to survey smaller animals for various platforms \cite{mcevoy2016disturbanceEffectsSpeciesRecognition}, as satellite surveying has resolution limitations. For ecological surveillance, satellites have both a low spatial and temporal resolution: Landsat 7 requires a wait time of 16 days to revisit the same location, whose spatial resolution is such that each pixel represents 15 meters in length (a relatively high resolution) \cite{kerr2003fromSpaceToSpecies}.

## Atmospheric Survey

While the previous use case is used to validate existing data, the platform may be used to generate novel data for non-visual objects, such as air pollution. Fleet vehicles may be equipped with instrumentation designed to detect the presence of particulates. The sight parameter could be the expected size of a particulate cloud or the region of airspace for which detection will represent a cloud's presence. For this use case, the parameter has a slight change in definition from that stated in the introduction. This is due to the fact that particulate detection would occur at the exact location of the aerial vehicle, rather than at a distance via ranged vision.

This can actually also be applied to ranged vision. For example, if the ranged vision of the platform is small, but is targeting something such as algal blooms, coming into contact with the edge of a bloom could represent the centroid of it, which would be outside of the range of vision of the platform. At this scale, however, this only garners an advantage with temporal resolution. Because of this, satellite imagery appears to be a more appropriate platform for these sorts of surveys due a low minimum resolution required \cite{algalblooms}.