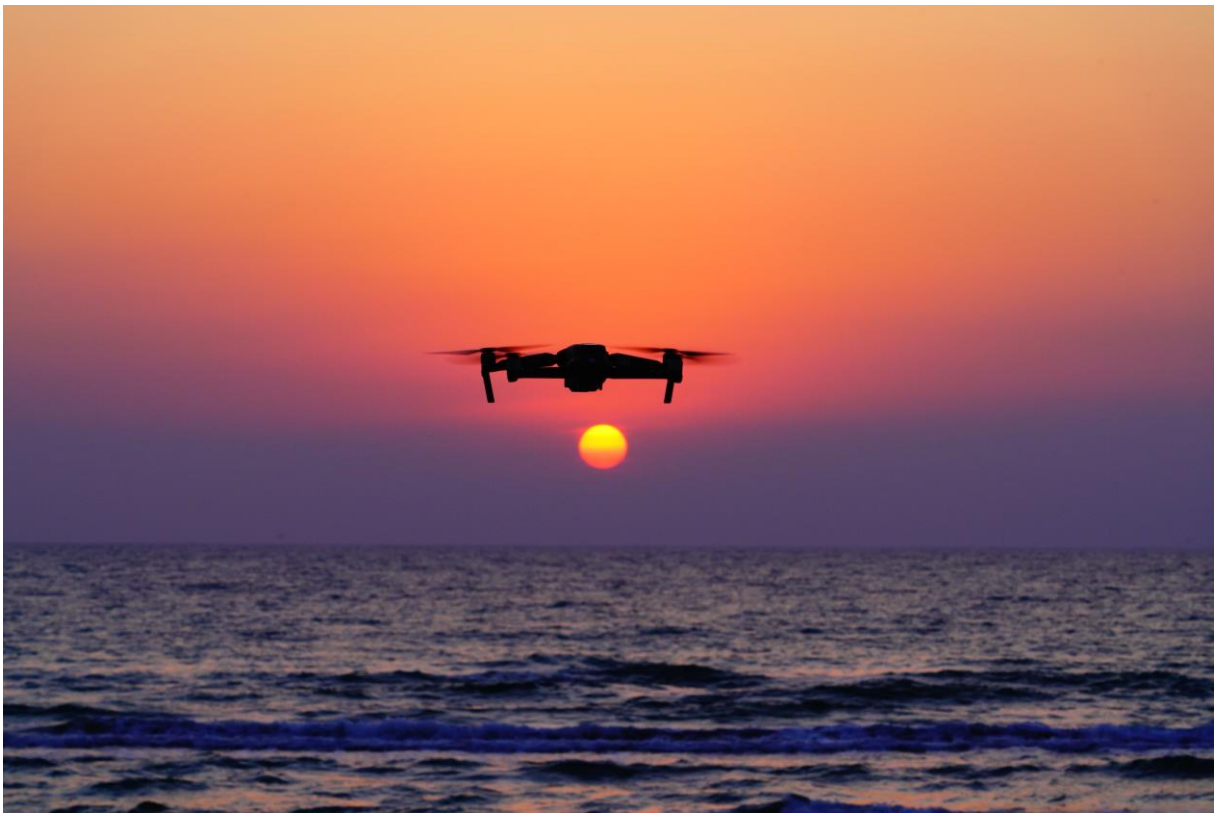
skeydrone
Enabling safe drone operations

DRONE DETECTION REPORT



REGION: Belgian Coast
PERIOD: July - August 2024

Table of Contents

1. KEY FACTS & FIGURES

An average of **18 flights per day** were detected, with daily counts ranging from **0 to 43.**

Most drone flights were detected on **Sundays,** and **between 19h and 21h.**

The average drone flight lasted **3 minutes and 55 seconds.**

The majority of detected flights were carried out with a **DJI Mini.**

The highest recorded drone flight reached **1647 feet above ground level.**

The furthest **distance** observed between the drone and its pilot was **21.031 meters.**

2. INTRODUCTION

This report offers a high-level analysis of the drone flights detected at the Belgian coast during the months of July and August 2024.

Detections were made based on SkeyDrone's Drone Detection system, i.e. a growing network of distributed sensors, placed at strategically interesting locations and capable of detecting drones by capturing the radio frequency (RF) signals they emit; both C2 link signals (communication between ground control station & drone) and Direct Remote Identification (DRI) signals.

SkeyDrone's current drone detection network at the Belgian coast covers the area between Nieuwpoort and Bredene at the west- and mid coast, and the area between Blankenberge and Knokke at the east coast.

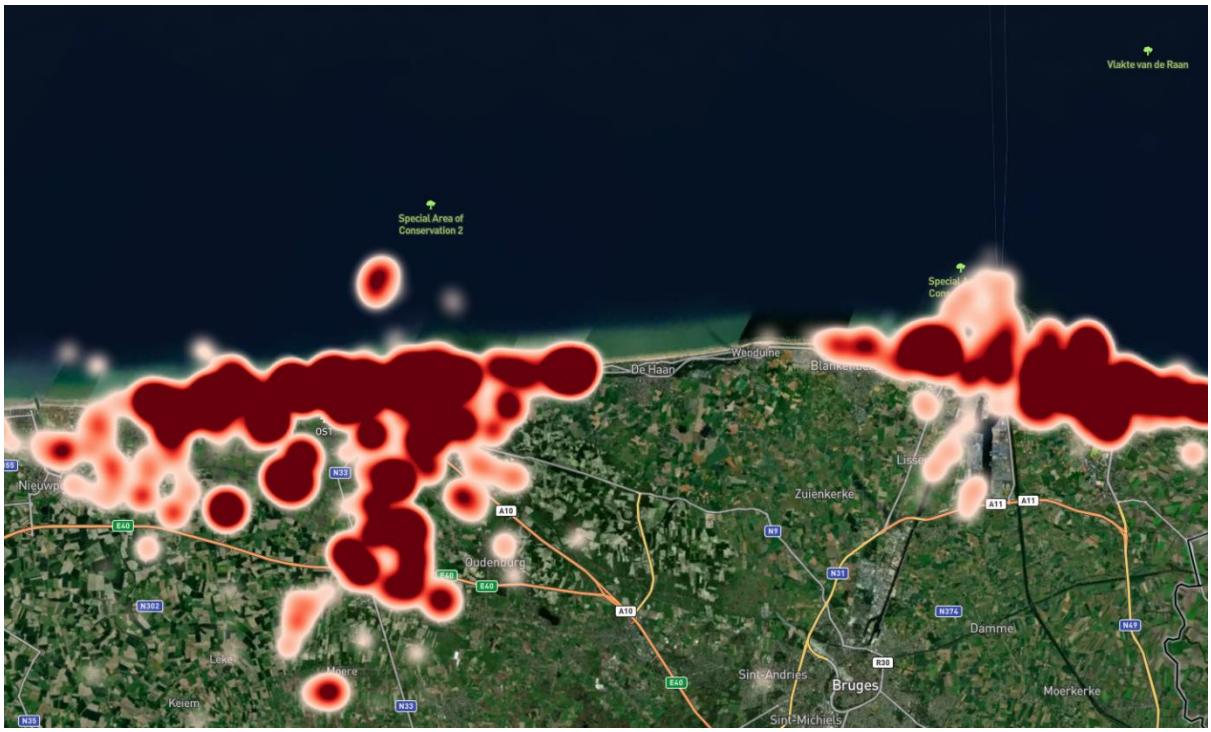


Figure 1: Heatmap of drone detections at the Belgian Coast

By providing insights into the types of drones, the frequency, time, duration, height and drone-pilot distance, as well as highlighting some hotspots, this report serves as a valuable resource for understanding the emerging landscape of drone operations at the Belgian coast, including both the opportunities and threats they induce for many public and private stakeholders.

The Belgian coast contains multiple geozones that each require a separate flight authorisation. Due to the multitude of geozones (see figure 2), this report doesn't include data about the authorisation status for any of those geozones, with the exception of a few hotspots in chapter 5. Local authorities and law enforcement bodies can request more information via communication@skeydrone.aero.

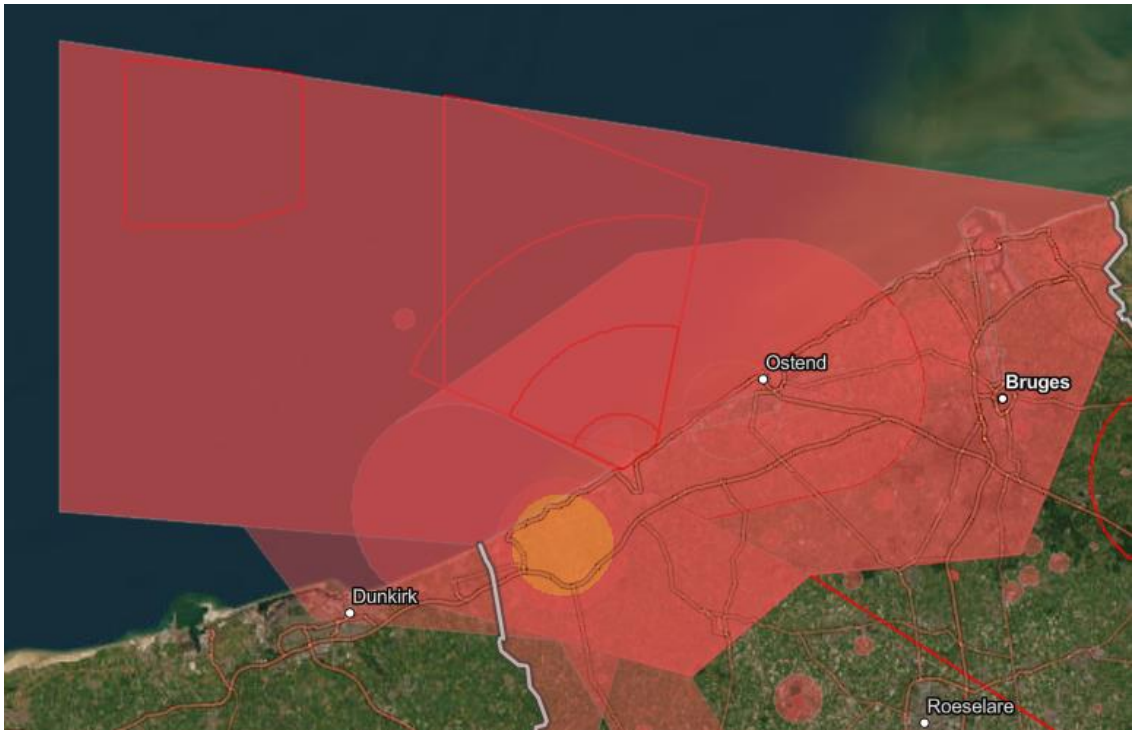


Figure 2: Geozones at the Belgian coast (screenshot from map.droneguide.be)

3. FLIGHT FREQUENCY AND DRONE TYPES

1109 drone flights were detected between 1 July 2024 and 31 August 2024, ranging from 0 to 43 flights per day, resulting in an average of 18 flights per day. In Figure 3, the wind speed per day (km/h, data from meteostat.net) is added to the right Y-axis, indicating a negative correlation between drone flights and wind speed.

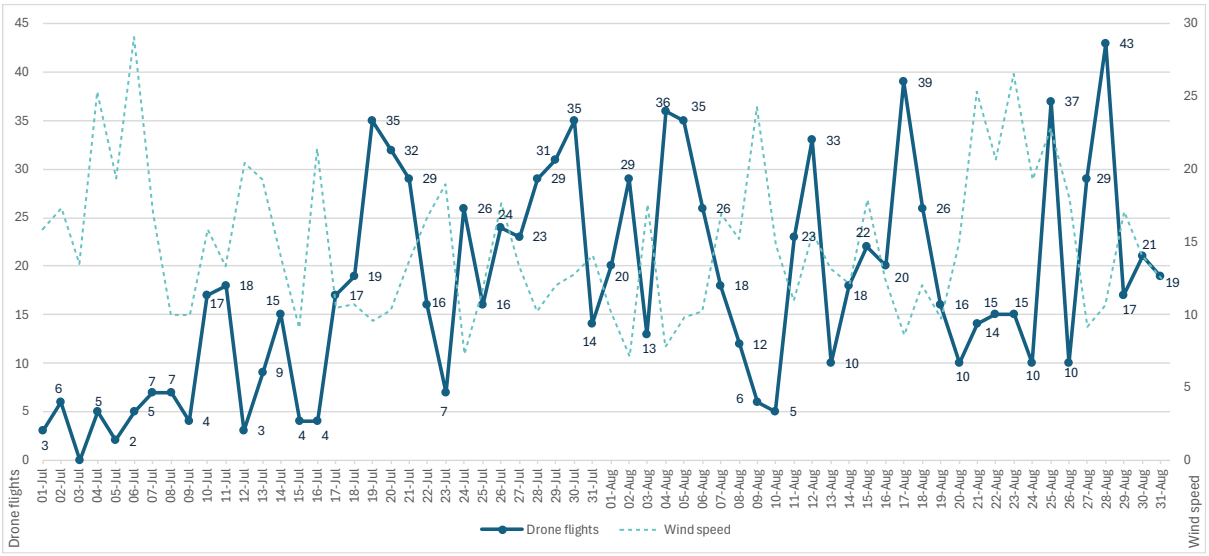


Figure 3: Drone flights per day (left Y axis), correlated with wind speed (km/h) (right Y axis)

The 1109 observed drone flights involved 502 unique drones. Among these drones, the vast majority (281) completed only one single flight. The maximum number of detected flights executed by a single drone was 22.

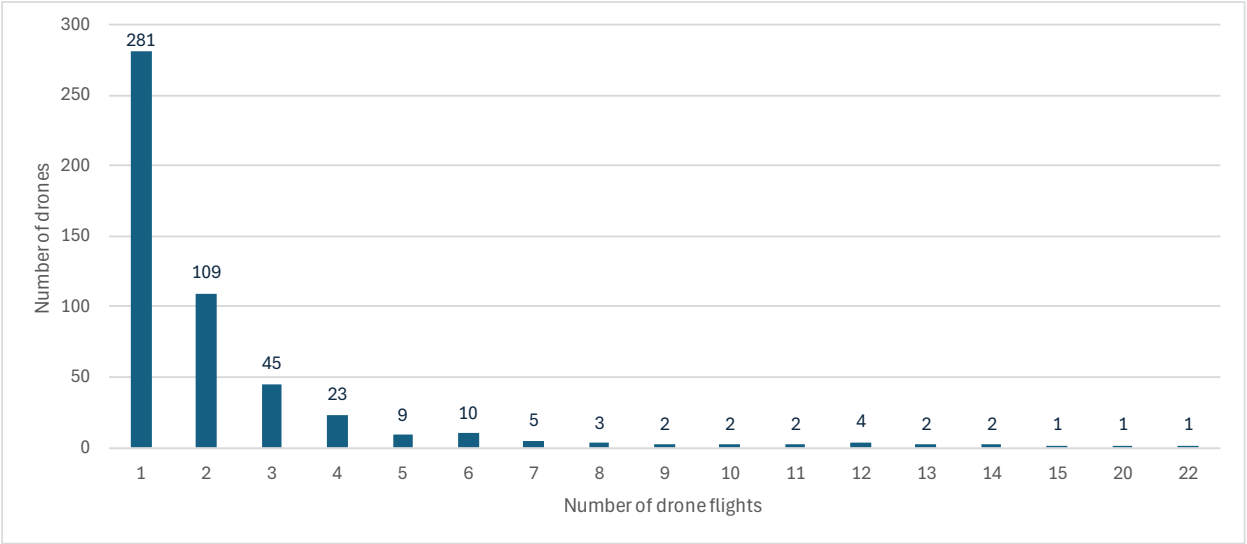


Figure 4: Number of flights executed per drone

71% of the detected drone flights were conducted using a DJI Mini, a drone weighing less than 250 grams. These lightweight drones are considered low risk and are allowed to fly over people (with the exception of assemblies of people). An additional 24% of the flights involved drones weighing between 250 and 900 grams, which are not permitted to fly over people, except unintentionally. Only 4% of the flights were performed with drones weighing more than 900 grams, typically reserved for professional use. Furthermore, 1% of the flights, totaling 12, were performed by a Nokia drone.

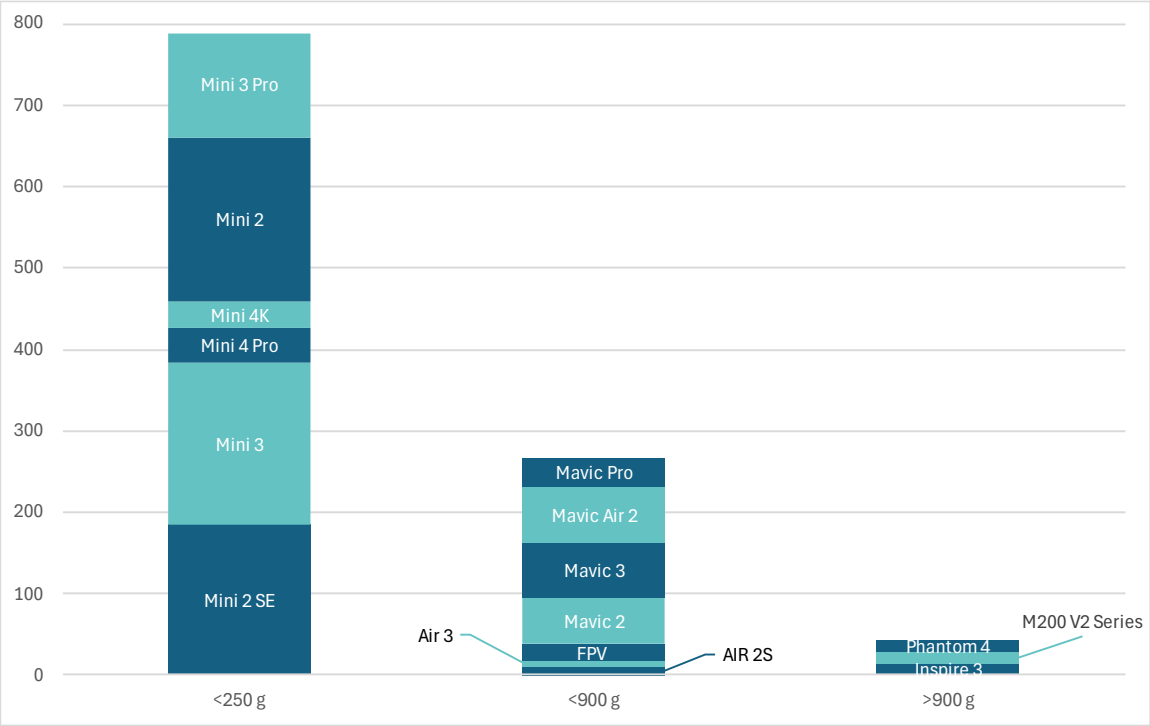


Figure 5 : Drone flights with DJI drones per weight category and model

4. FLIGHT TIME AND DURATION

Most drone flights occurred on Sundays (202), while the fewest took place on Tuesdays (131).

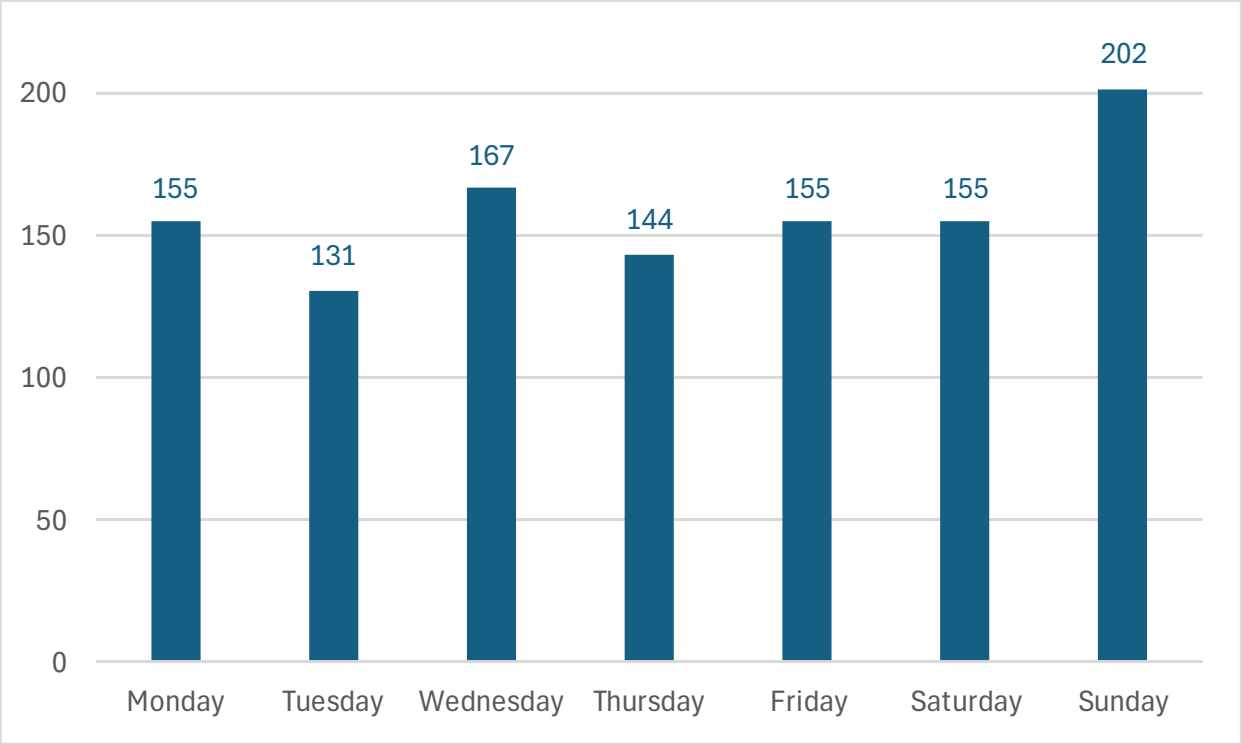


Figure 6: Detected drone flights per weekday

Flights peaked in the evening between 19h and 21h. The vast majority of detected flights took place during daylight hours, however a few flights were carried out in the dark. Drones flying at night must be equipped with a green flashing light.

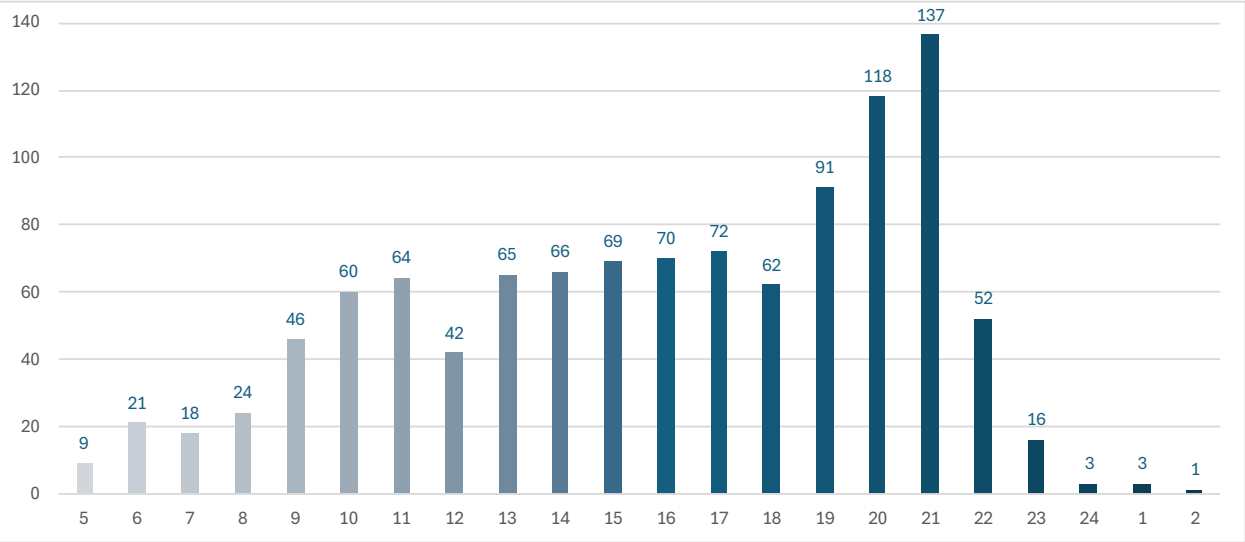


Figure 7: Detected drone flights per hour of day

The average flight duration was 3 minutes and 55 seconds. The majority of detected drone flights took less than 5 minutes. The longest drone flight lasted 56 minutes and 9 seconds. It's remarkable that the two longest flights were performed by pilots who each only carried out one single detected flight with this drone at the Belgian coast in the July-August timeframe.

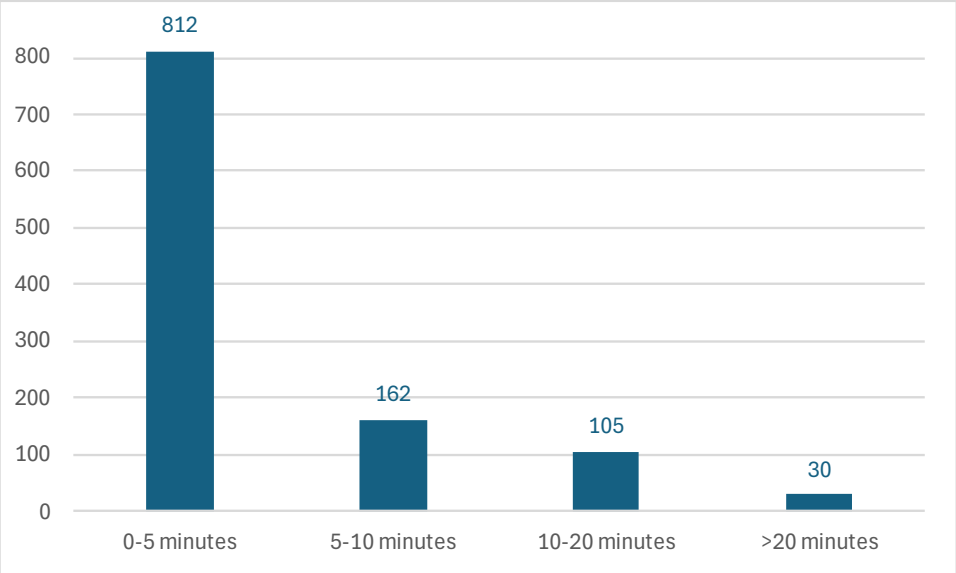


Figure 8: Drone flights by duration category

5. FLIGHT HEIGHT AND DRONE-PILOT DISTANCE

The average drone flight took place at a maximum height of 218 feet above ground level (AGL), with a distance of 428 meter between the drone and its pilot. The maximum height at which a drone was detected was at 1647 feet (500 meters) above ground level. The maximum observed distance between the drone and its pilot was 21.031 meters. This concerns a Beyond Visual Line of Sight (BVLOS) flight that was operated by professional drone operator from their control center in Oostkamp.

Open Category (or 'low risk') operations are limited both in height (max. 120 m or about 400 ft AGL) and in distance (only visual line-of-sight (VLOS) flight, typically occurring up to a range of 500 m from the remote pilot).

173 drone flights surpassed these height or distance limitations and, as a consequence, should have taken place in the Specific Category of operations, requiring - in most cases - an operational authorization from the Belgian Civil Aviation Authority.

It's remarkable that 3 out of the 4 highest flights (all above 1000 ft AGL) were carried out by pilots who only performed one detected drone flight with that drone at the Belgian coast in the July-August timeframe. Also noteworthy is the fact that the 5 flights with the furthest pilot-drone distance (between 1975 m and 3697 m, excluding the flights from the BVLOS operator) were all carried out by drones of the type DJI Mini. The DJI Mini series does not offer the Direct Remote ID capability, which is a requirement to fly BVLOS.

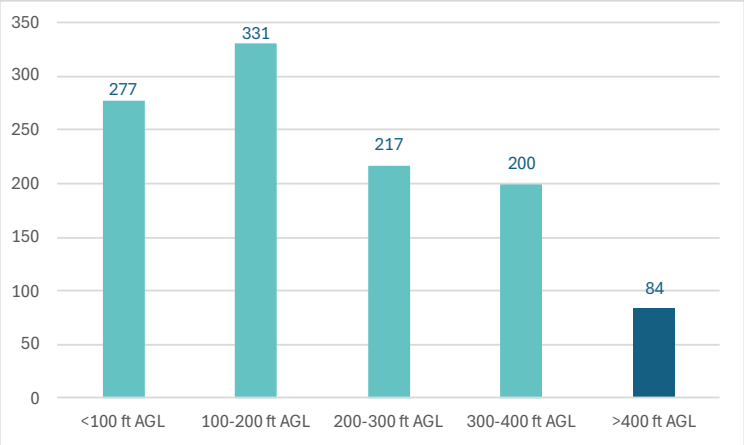


Figure 9: Drone flights per maximum height category (feet above ground level)

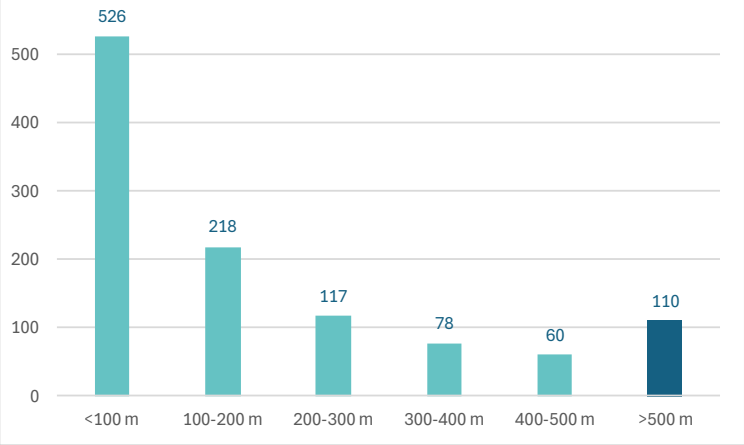


Figure 10: Drone flights per distance range between drone and pilot

6. HOTSPOTS

In this chapter we highlight a few locations at the Belgian coast where high concentrations of drones were detected. As there are many hotspots on the beach (see figure 1), we will highlight two locations with a high concentration of drone flights that received prior flight authorisation in the Drone & Aerial Activities application from skeyes, the Belgian Air Navigation Service provider.

Nudist beach Bredene

Bredene is the only Belgian seaside town to have a nudist beach. The nudist beach is located at the base of a protected dune nature reserve, guaranteeing a certain level of privacy. On the drone detection heatmap, the nudist beach lightens up as a drone hotspot. However, upon further investigation, all drone flights in this area were authorised and originate from a DJI M200 drone, a device typically used by the police. Media already reported in the past about the police patrolling in the dunes since public access is forbidden there.

Figure 11: Heatmap of nudist beach Bredene

Silt Casino Middelkerke

In March 2024, the new Silt casino complex, which includes a hotel, restaurant, and event hall, opened in Middelkerke. It represents a new architectural anchor along the Belgian coastline, with a design that seamlessly connects the building with its surrounding landscape. Therefore it might attract drone pilots seeking to captivate stunning footage. However, the majority of detected flights at this spot had received prior flight authorisation from skeyes.

Figure 12: Heatmap of Silt Casino Middelkerke

8. CONCLUSION

This report provides undeniable evidence of the growing presence of drones at the Belgian coast. While the area may attract many drone pilots wanting to capture stunning aerial footage, it also presents numerous opportunities for drones for surveillance, monitoring and rescue operations. As an exponential increase in drone traffic along the Belgian coast can be expected, it is crucial to be able to quantify and locate it effectively, especially given the presence of the Koksijde Air Base, the International Airport of Oostende and the helicopter training areas.

Our findings underscore the need for continued investments in advanced detection systems, collaboration with public authorities, and public awareness campaigns on drone legislation.

Interested to learn more about SkeyDrone's Drone Detection solution? Find more information here.

For further inquiries about this report, or to request a customized report for a specific period or region, contact communication@skeydrone.aero.