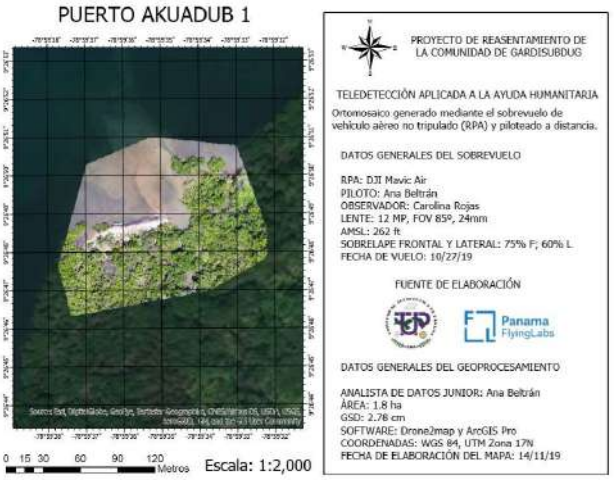
Re-location of the Gardi Subdug community due to sea level rise

Orthomosaic of a school

Orthomosaic od Gardi Subdug Island

Identified flight areas



The deliverable from Akuadub Port 1 created with the help of ArcGIS Pro

OVERVIEW	
Flying Labs	Panama Flying Labs
Geographic area	San Blas (Panamá)
Date	October - December 2019
Sector program	DevRobotics

SCOPE	
Stakeholders (clients)	Gardi Sugdub Committee, funded by the Inter-American Development Bank
Challenge	The community of Gardi Sugdub is located on an island off the Caribbean coast of Panama. Due to climate changes and rising sea levels, the island is sinking. In addition, there has been a considerable increase in the population within the island. That is why an agreement to relocate the population to the mainland was established. In order to do this, it is necessary to know the possible areas, where such relocation could be carried out. A significant number of areas to consider, relatively distant from each other and often with difficult access, poses another challenge, requiring more time and resources.
Scope	Developing a plan for the relocation of the community was the main objective of the project. Its scope included identification of the areas that would be inhabited on the mainland, as well as other areas that would be used (for example location of a new school or the ports). To do this, drones were used to capture aerial images. Further processing and analysis of the data, including the generation of orthomosaics, are intended to support the decision-making process.
Outcome	Phase 1: Recognition of the eight (8) areas to be flown over: Kantule Port, Plots, Gardi Subdug Island, School, Neighborhood, River mouth, Akuadub Port 1, Akuadub Port 2. Phase 2: Capture of drone images over each of the areas. To carry out this phase, the team had to travel to the areas of interest. These areas are mountainous and forested, so roads allowing the team to pass by car were not available all the way. For this reason, the team used a boat to reach many of the areas. Also, the fact that electricity was not available in all places and at all times, presented an additional difficulty - it limited the time in which the drone's batteries were recharged. Phase 3: Processing and analysis of the data captured. Once the image acquisition was completed, the data was processed using Pix4Dmapper software to generate orthomosaics of each of the areas.
Next steps	One of the next steps will include workshops, during which different community stakeholders will be able to use the delivered orthomosaics to plan the re-location to the identified areas.

DATA ACQUISITION	
Size of area	159.84 ha (1.5984 km2)
Drone	DJI Mavic Air
Sensor(s)	RGB camera
Flight plan software	Pix4Dcapture
Flight height	65-90 m above ground level
GSD (Accuracy)	2.81 cm/pix
Number of images acquired	1849
Number of flights	22
Time invested in data acquisition	10 hr
Georeferencing	Onboard GPS

DATA PROCESSING & ANALYSIS	
Processing software	Pix4Dmapper and Drone2map
Processing time	30 hr 17 min
Data products	Orthomosaic
Analysis tools	ArcGIS Pro
Analysis outputs	Orthomosaic
Final outputs shared with stakeholders	Orthomosaics created using ArcGIS Pro
Data sharing	Google Drive