Primary Payload

The primary payload of SC-ODIN is the GOMSpace NanoCam C1U imager. This camera was designed for 1U CubeSats and will be used to take images over Namibia and Argentina. These images will then be downlinked and processed to extract AOD measurements.

Image Specifications

Images will be taken using the RAW10 lossless compression format. This format allows us to reduce the image size by 2/3 from the raw format. Each picture will be about 4.0MB in size and will have a 2048x1536 pixel resolution.

The 35mm lens offers a field of view of 10.8 degrees horizontally and 8.11 degrees vertically, allowing for an image of about 4286.52 km^2 to be taken. Additionally, the ground sample distance will be 36.92 m/pixel at 400 km of altitude. Figure Error**! No text of specified style in document.**-1 illustrates the FOV projection over the Namibian coast.

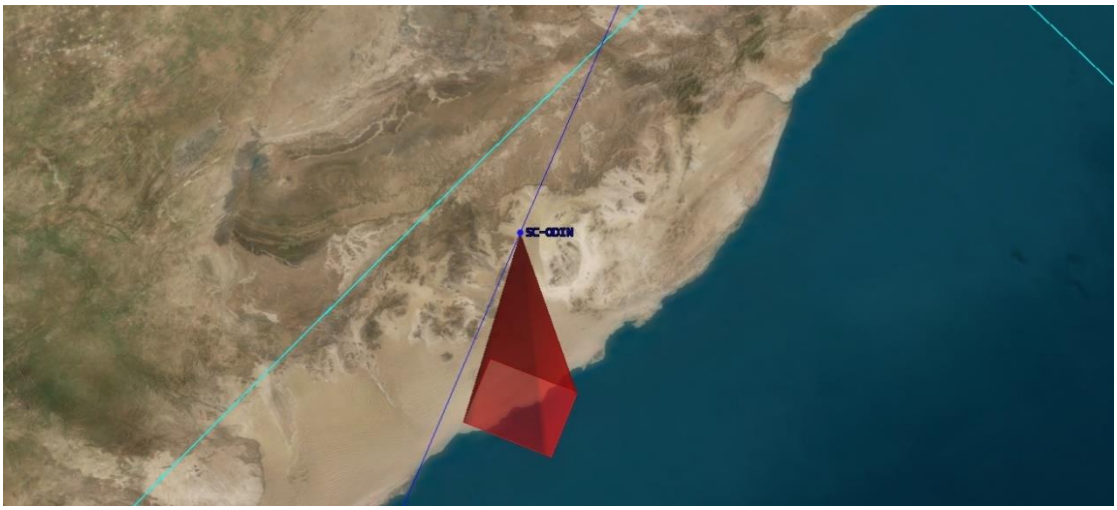

Figure** Error! No text of specified style in document.**-1 Camera FOV Projection Over the Namibian Coast

Satellite Operations

Using the API provided by GOMSpace, 5 consecutive images will be taken when passing over an imaging area. These pictures will then be compressed and stored in the camera's memory while their thumbnails will be stored on the OBC. Including thumbnails, which are about 8 times smaller than the original pictures, the imaging sequence is about 22.5 MB in size. This includes ADCS information which will be later used to process the data.

When passing over the ground station, the team will be first downlinking the thumbnails to analyze the quality of the images. Once it has been determined that the images can be used to obtain AOD measurements, the RAW10 pictures will be transferred to the OBC's storage for downlinking. Figure Error**! No text of specified style in document.**-2 provides a block diagram containing the sequence of events described in this section.

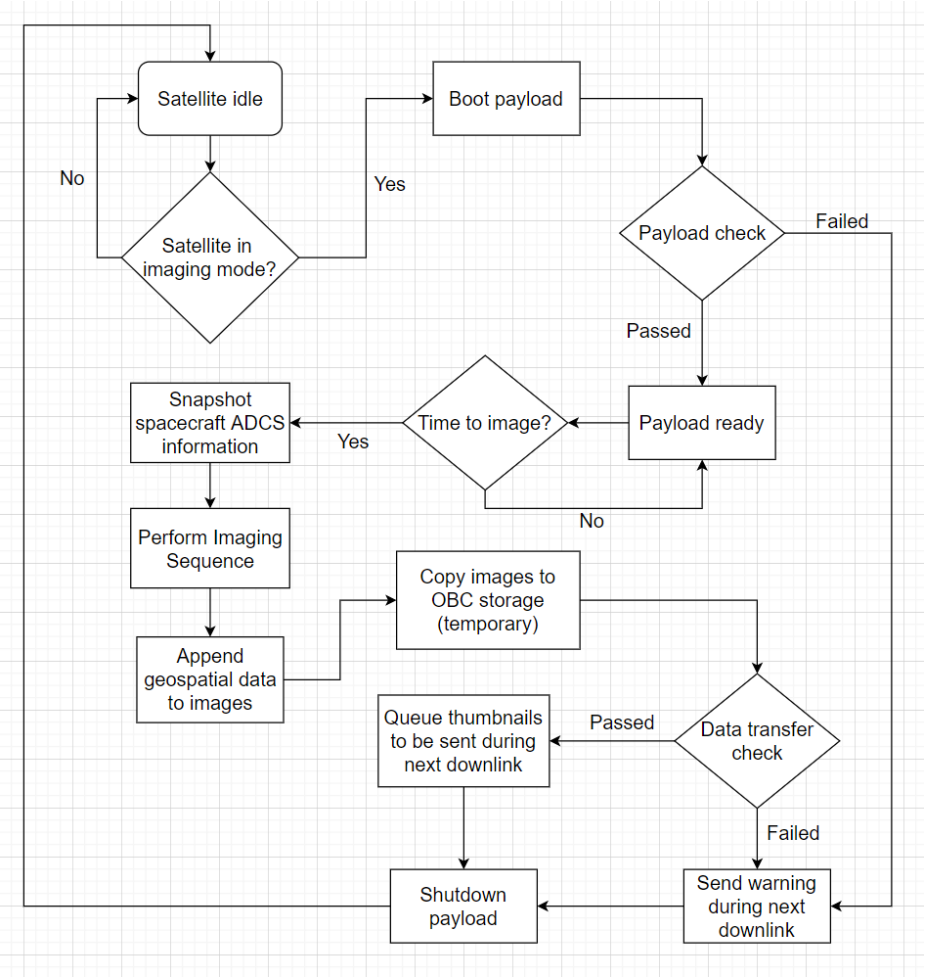

Figure** Error! No text of specified style in document.**-2 Block Diagram of Satellite Operations