Disaster Mapping: Using UAS to Assess Hurricane Damage at Mexico Beach, FL

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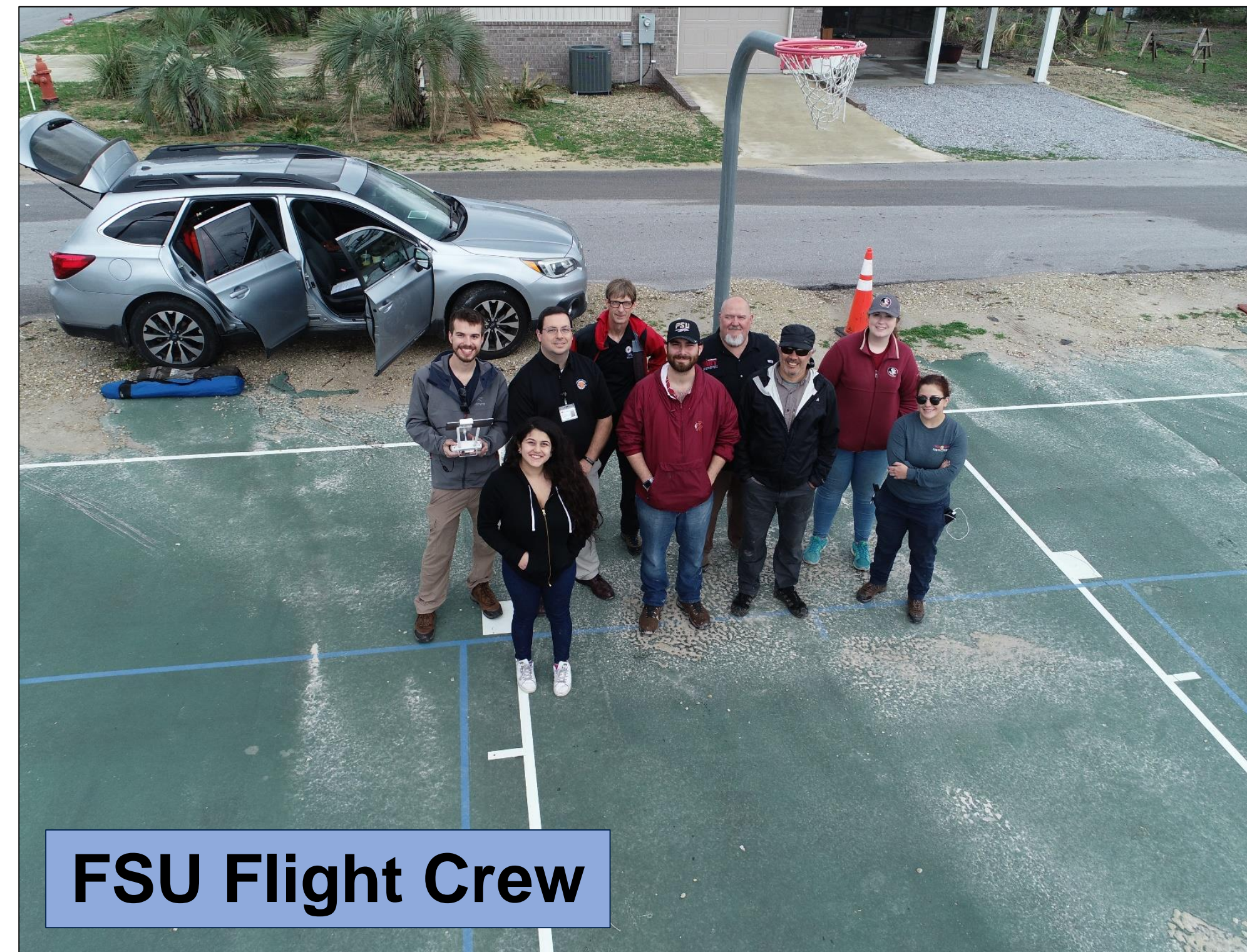### Department of Geography
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Abstract: On October 10th, 2018 Hurricane Michael made landfall in the Florida panhandle causing widespread destruction. At the time of landfall, Michael was classified as a Category 4 Hurricane will peak winds of 155mph and has been deemed the strongest storm on record to hit the Florida Panhandle region. Sitting right in the path of the storm was Mexico Beach, a small town with approximately 1,072 people as of the 2010 census, that was completely "wiped out" according to FEMA and other agencies involved in initial storm response. Immediately after the storm passed, ground teams from various Federal/State/Local agencies were put into action to assess the devastation. Aerial imagery was collected by several teams of UAS operators after landfall (when conditions were safe), which was then used to create high-resolution orthomosaic maps that could then be used to assess initial damages. Now recognizing that the reconstruction process is in full effect and building moratoriums have been lifted, UAS operators are revisiting Mexico Beach and the Bay County area to collect updated imagery for change-detection analyses. Understanding how this high-resolution imagery can be optimally integrated into the reconstruction efforts by local agencies is vitally important and has the potential for supporting a much more effective response in the wake of natural disasters.

FSU Flight Crew

Phase 1: Data Collection (*~Spring-Summer 2019*)

Phase 1a: Initial Image Collection (*March 1, 2019*)
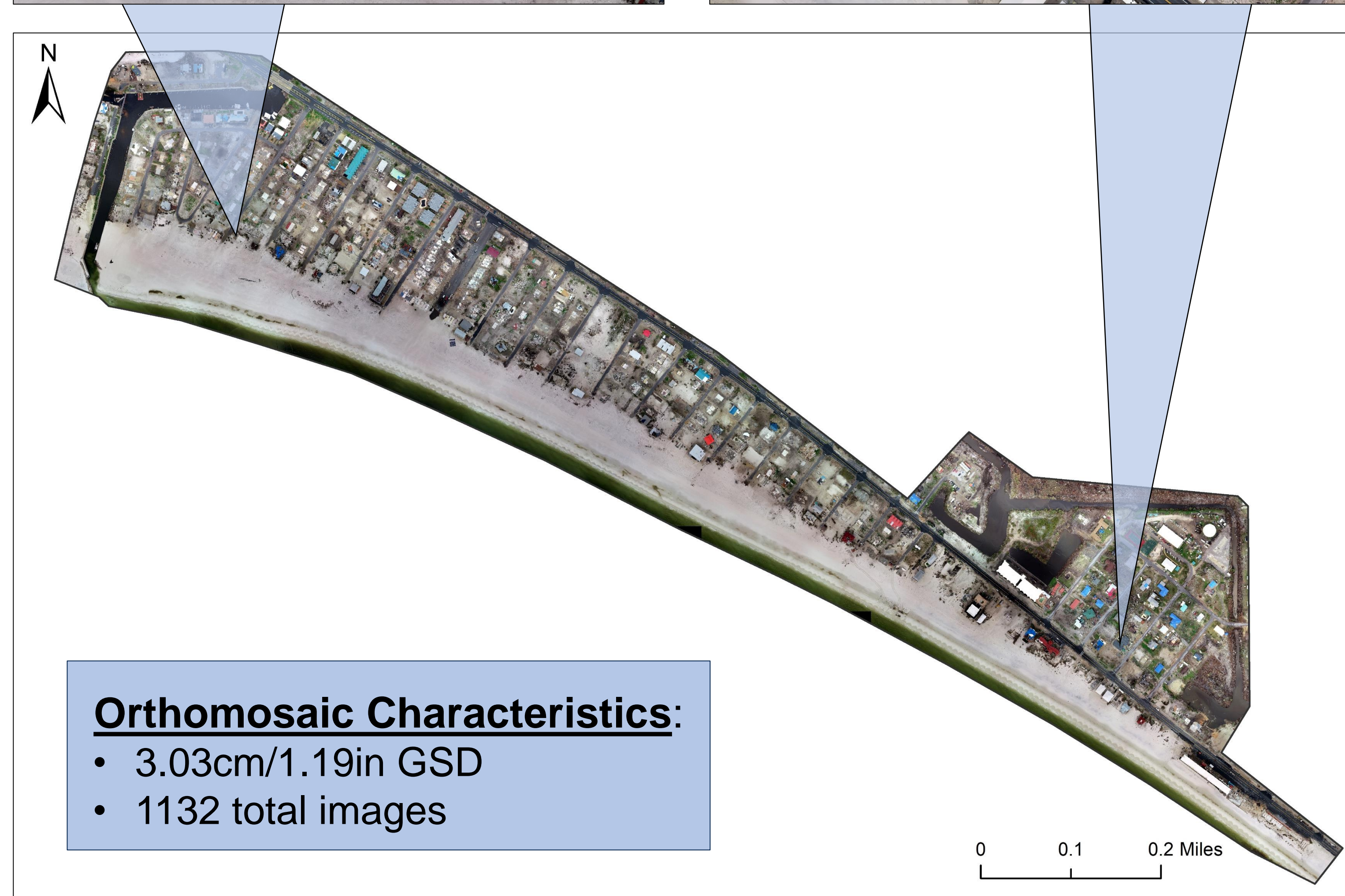
Phase 1b: Initial Image Processing (*Pix4D Mapper*)

Phase 1c: Image Collection Round #2 (*April 26, 2019*)

Phase 1d: Image Processing Round #2 (*T.B.D.*)

Phase 2: Data Analysis (*Summer-Fall 2019*)

Methods: 5 sorties were flown on **March 1, 2019**. Sorties 4 & 5 were conducted over the same down-town area. Sorties 1-4 utilized **nadir** camera orientations, Sortie 5 utilized **oblique** camera orientation. All flights were flown at 375ft AGL with 80% Frontal & 80% Side Image Overlap using *Maps Made Easy*. Two *DJI Phantom 4 Pros* were used at the same time, each conducting a separate sortie. A second round of data collection is scheduled for **April 26, 2019**, where the UAS operators will revisit Mexico Beach and collect another set of imagery.

Phase 1b: *Pix4D Mapper* Results

3D Point Cloud

3D Point Cloud

Orthomosaic Characteristics:
- 3.03cm/1.19in GSD
- 1132 total images

Flight Crew Acknowledgements:
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