



## AIM-UP

### Agriculture Image Management & Unmanned Piloting

#### A Primer in Agriculture Remote Sensing Research Methods for Small Unmanned Aerial Systems

By

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## DEDICATION

This text is dedicated to the Mississippi State University College of Ag. & Life Sciences agriculture research students who labor tirelessly for their program directors. It is the authors' aim to reduce the student's workload and make their travail light by providing impactful research methods and outcomes.

The authors are encouraged by the number of students hoping to learn unmanned flight and remote sensing technologies. Overcoming the fear of flight is, alone, a daunting task. Added to a student's burden is the necessity to apply mission outcomes in a meaningful way. This text provides students with a primer in both unmanned flight technologies and imagery processing at an advanced operational level.

Flight has made lasting and impactful changes to man's understanding of the Earth over a century, but remote sensing is a contemporary and not-well documented endeavor. Remote sensing aids in understanding a rapidly changing world that increasingly compels revelation of simple truths. All existence depends on the light emitted from the Sun, and humans depend on its unwavering consistency to carry us through to another day. It is imperative, therefore, that we appreciate and travail in the light constructively and efficiently, and remain steadfast in seeking even greater truths about Earth.

The authors hold fast to the belief that we must all become "Children of the Light"! May this text help students everywhere gain insight and wisdom into the light that surrounds us all.

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Most importantly, the authors wish to thank our families for their undying commitment to our professional growth achieved only through long hours of time away from those we love. Our work would be nothing if our families did not believe in the mission first.

### ***About the Book***

This book was first imagined by Mr. Dennis Lott in 2018. Beginning in January 2020, the authors set out to fill the gap in sUAS and remote sensing textbooks for agriculture.

Chapters 1-3 cover important and detailed information about unmanned piloting, advanced sensing missions, and on-board sensor integration. The remaining chapters cover methods to process unmanned aerial imagery into analytical products for agricultural operations.

Students trained in the MSU CALS Ag. Flight Program learn far beyond what is described as necessary to certify as an FAA Remote Pilot. This text guides those students in their endeavor to achieve the highest training goals possible.

## TABLE OF CONTENTS

DEDICATION.....	ii
ACKNOWLEDGEMENTS .....	iii
About the Book.....	iii
LIST OF TABLES.....	viii
LIST OF FIGURES .....	ix
<b>CHAPTER</b>	
I. Pilot Safety and Team Behavior .....	1
Piloting Attitudes .....	1
Beneficial Pilot Attitudes .....	1
My Big Five Inventory (BFI) Personality Traits .....	3
My Hazardous Attitudes .....	6
Team Attitudes .....	7
II. Small Unmanned Aerial Systems Minimum Flight Proficiencies.....	10
Multirotor Flight .....	10
First Lessons .....	10
Second Lessons .....	10
Third Lessons .....	10
Forth Lessons .....	10
Fixed-wing Flight.....	11
First Lessons .....	11
Second Lessons .....	11
Third Lessons .....	11
Forth Lessons.....	11
III. Flight Missions Planning and Execution .....	12
1. Pre-Field Check (See Appendix B) .....	13
Overview of Flight Mission Materials .....	13
7 Days Prior to Mission.....	13
2 Days Prior to Mission.....	13
1 Day Prior to Mission.....	13
Mission Day .....	14
1 Day Post-Mission.....	15
2. Preflight Check.....	15
3. Set Mission in Mission Planner .....	15

Overview.....	15
Turning the System On.....	15
Validate Mission Planner Settings .....	15
Set up Survey .....	16
Configuring the Grid for Flight.....	16
Completing the Setup .....	17
Setting up Initial Mission Planner.....	17
Setting up the Camera Configuration.....	19
Downloading Log Files .....	19
4. Configuring MicaSense for Flight .....	20
Connect to MicaSense via WiFi.....	21
Configuring MicaSense through Wi-Fi App Service (IP Address).....	21
Settings Page - Basic Configuration .....	22
Settings Page - Advanced Configuration.....	23
Calibrate the Magnetometer (Settings Tab).....	24
Magnetic Heading Check.....	26
Magnetic Interference Check.....	27
5. Travel to Site and Set New Home Value.....	27
6. Final Write and Read of Mission .....	27
7. Confirm MicaSense Settings in Wi-Fi.....	27
8. Take Calibration Photo.....	27
9. Launch Flight .....	28
Manual Flight Mission.....	28
Preflight Check .....	28
Power On the System.....	28
Mission Planner Flight Data Page .....	28
Mission Planner Flight Plan Page.....	29
Arming and Launching.....	29
10. Take Final Calibration Photo.....	30
11. Validate Dataset.....	30
IV. Lab 1: Planning for Flight Missions.....	31
Estimating Battery Power .....	31
Voltage (V) .....	32
Amperage (A).....	32
Discharge Rate (C).....	33
Estimating Battery Power .....	33
Estimating Crop Sensing Dates.....	35
Obtaining Weather Data .....	37
Oregon State University PRISM Weather ~ <a href="http://www.prism.oregonstate.edu/recent/">http://www.prism.oregonstate.edu/recent/</a> .....	37
Formatting Weather Data for GDU Estimation.....	40
V. Lab 2: Processing Raw MicaSense® Imagery in Pix4D® .....	45

Install and Launch Pix4D® Software.....	45
Removing Unwanted Images from a Project .....	51
Calibrating Imagery.....	57
Pix4D Data Processing Reports.....	61
Post-Processing Quality Check .....	61
Reviewing the Data Outputs .....	65
VI.    Lab 3: Creating RGB Images in Pix4D .....	69
Method #1 – Incorrect Method to Create RGB Images .....	69
Merge Raw Bands for RGB Imagery .....	70
Build a Virtual Raster .....	74
Method #2 – Create Radiometrically Corrected Mosaics .....	75
Re-process the sUAS Data Without Calibration Panels.....	76
Processing & Calibration Options .....	81
Create a Radiometrically Corrected RGB Image .....	84
Alternative RGB Processing Method .....	86
VII.   Lab 4: Variable Rate Nitrogen Mapping with MicaSense® Data (Vari-Rite®).....	87
Step 1: Process the Field Dataset .....	87
Step 2: Review the MicaSense Data in ArcCatalog.....	90
Step 3: Clip Pix4D Reflectance Bands to Study Boundary .....	92
Step 4: Calculate the SCCCI VI.....	95
Step 5: Create a Study Area Grid .....	98
Step 6: Designate Statistical Reps and Treatments for Study .....	100
Step 7: Zonal Analysis by Treatment Grid .....	105
Step 8: Create Final VRN Prescription Map .....	113
VIII.  Lab 5: Structure from Motion (SfM) Sensing and Modeling .....	123
Initial Data Processing in Pix4D for 3D Surfaces .....	123
Setting Pix4D Mapper SfM Parameters for LAS Data Outputs .....	128
Completing the Data Set.....	135
Reviewing the Data.....	137
Processing Multiple Dated Datasets Workflow .....	139
Clip Contours and Symbolize .....	141
Extract by Mask the Digital Rasters .....	142
Modeling Elevation Data in 3D .....	144
IX.    Vegetation Indices and Sensitivity .....	145
Vegetation Indices (VIs).....	145
Modeling VI Sensitivity using <i>SEq</i> .....	146
SAS® Code for <i>SEq</i> Modeling .....	147
Saving Parameter Data for <i>SEq</i> Modeling .....	149

REFERENCES ..... 150

APPENDIX

A. EMERGENCY PROCEDURES ..... 152

- Loss of Aircraft Control..... 153
- Loss of Pilot Consciousness ..... 153
- Non-crewmember Intrusion into Operating Area ..... 153

B. Missions Preparation Checklist ..... 154

C. Lipo Battery Charging Exercise ..... 158

D. Calibration Issues: Taranis and ESC/Motor Calibrations..... 159

- Update SD Cards for Taranis ..... 159
- Update the Taranis Open TX Operating Software ..... 160
- Copy New SD Card Contents into the SD Card Folder..... 163
- Changing to New Quad Model (Jocko as Base)..... 164
- Bind the Taranis to the Quad..... 165
- Setting up Mode Switches ..... 165
- Radio Control Calibration..... 165
- Radio Calibration ..... 168
- Calibrate ESC in Mission Planner..... 170
- Throttle Test the Copter and Read Logs..... 171

E. Error Messages and Remedies ..... 172

- Bad Gyro Health Message..... 172
- No Link in Toughbook..... 172