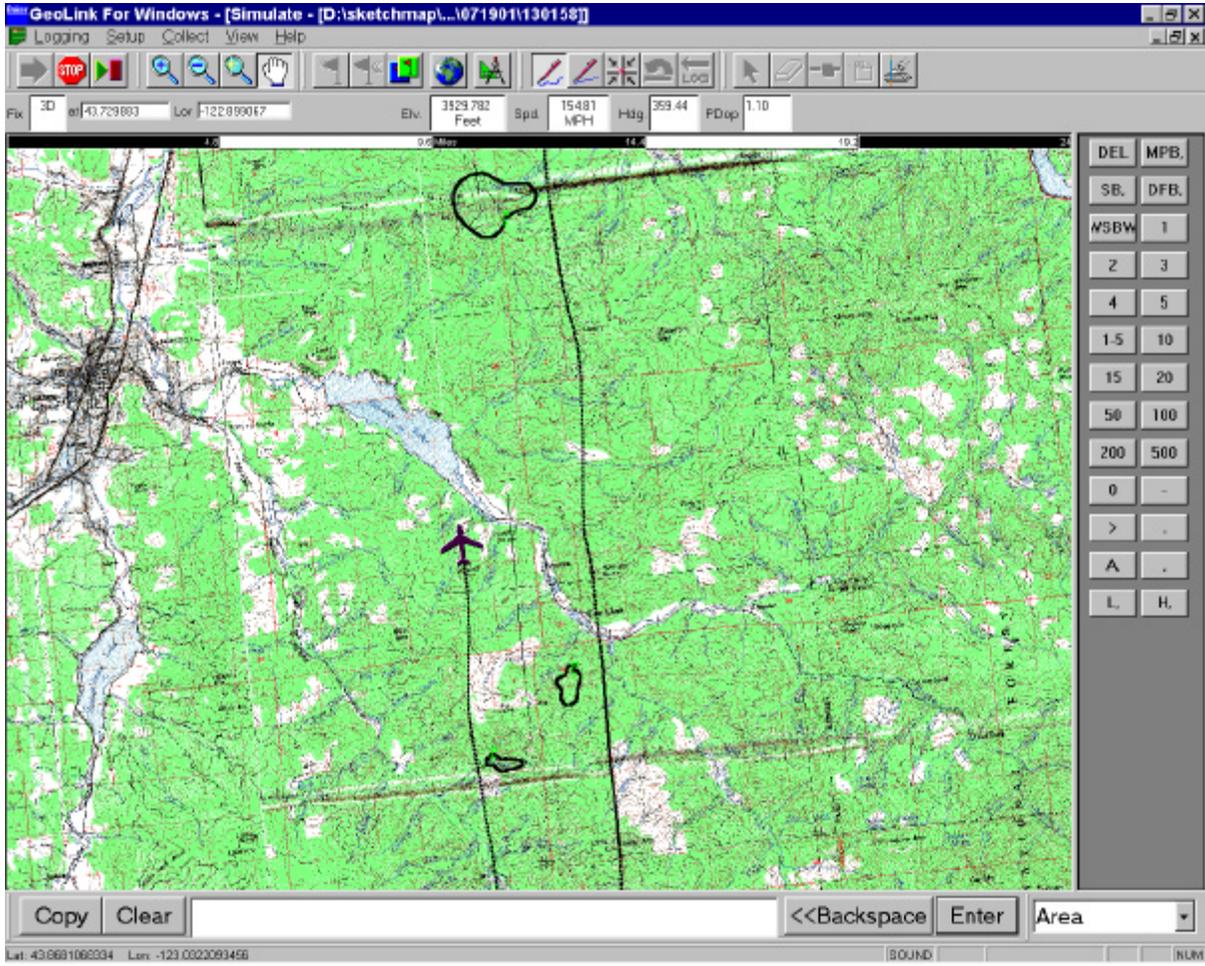


Digital Aerial SketchMapping User Guide

v. 1.0



*USDA Forest Service
Forest Health Technology and Enterprise Team
Fort Collins, CO*

*USDA Forest Service
Remote Sensing Applications Center
Salt Lake City, UT*



Note to Users:

This is version 1.0 of the Digital Aerial Sketchmapping User Guide. We hope that this guide will assist you as you setup, test, and use the digital aerial sketchmapping system. The system continues to be modified and enhanced. We expect that will continue for some time to come. It is the experience of field users that drive those changes. Please keep us informed of your experiences, both positive and negative, and contact us with your ideas for improvements. We also expect you to contact us if you have questions or problems using the system that you can't resolve through the use of this guide.

As the system and equipment change, we will update and redistribute this User Guide.

The Digital Aerial Sketchmapping Support Team

Ross Pywell, ropywell@fs.fed.us, 970.295.5848, mobile 970.481.5052

Lowell Lewis, lglewis01@fs.fed.us, 970.295.5870

J D Mullen, jmullen@fs.fed.us, 970.295.5852

Charlie Schrader-Patton, cschrader@oregontrail.net, 541.312.4291, mobile 541.419.0356

October 1, 2001

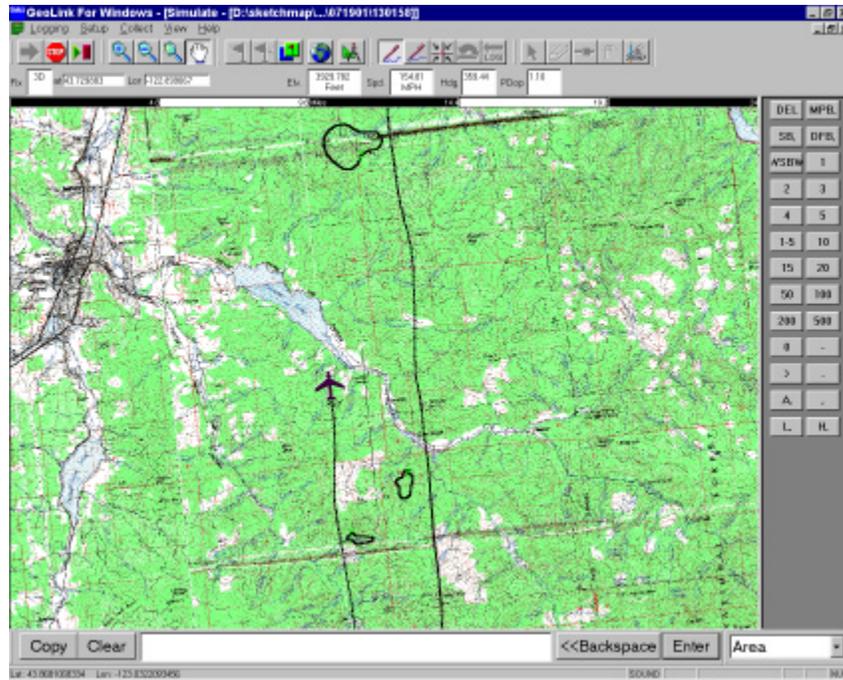
	Release Date
Table of Contents	10/03/01
INTRODUCTION	10/03/01
ORGANIZATION OF THE USER GUIDE	10/03/01
PART I: SYSTEM AND EQUIPMENT	10/03/01
Section 1.1: Equipment List	10/03/01
1.1.1 Major Hardware Components and System Overview	“
1.1.2 Specific Hardware Components (Default and Alternate)	“
1.1.3 Cables	“
Section 1.2: Preinstalled Software	10/03/01
1.2.1 Operating System	“
1.2.2 Key Programs	“
1.2.3 Other Programs	“
Section 1.3: Configuring The System Office and Aircraft Schematics (Figs. 1.3.1 – 1.3.4)	10/03/01
1.3.1 Configuring system for Office Use to simulate Aircraft Power (28V DC) using the DC Power Inverter and Breadboard	“
1.3.2 Configuring System for Office Use without the DC Power Inverter or Breadboard	“
1.3.3 Configuring System for Use in 28V DC Aircraft	“
1.3.4 Configuring System for Use in 12V DC Aircraft	“
Section 1.4: Component Setup and Calibration	10/03/01
1.4.1 Verifying Setup Status of a new/recalibrated Laptop Computer	“
1.4.2 Adjusting/Calibrating the Touchscreen Monitor Display	“
1.4.3 GPS Receiver Setup Procedures	“
1.4.4 USB Serial Port Adaptor: Edgeport/2, P/N 301-1000-02	“
1.4.5 Power Distribution Board: Gator Photo 28 / 12 “Breadboard”	“
1.4.6 Regulated DC Power Supply: IPC Model RPS-1224	“
PART II: USING GEOLINK SOFTWARE FOR D-ASM MISSIONS	10/03/01
Introduction	
Section 2.1: The GeoLink Project	10/03/01
Section 2.2: Building the Project Data Structure Recommended Data Structure for GeoLink D-ASM Missions (Fig. 2.2a)	10/03/01

Section 2.3: The Setup Menu (Setting up the GeoLink Project for D-ASM Missions)	10/03/01
2.3.1 The GPS Signal	“
2.3.2 Background Maps	“
2.3.3 Features	“
2.3.4 Target GIS	“
2.3.5 Coordinate Systems	“
2.3.6 Display → Screen	“
Section 2.4: The Process Menu (Collecting and Processing Data)	10/03/01
2.4.1 Log Mode	“
2.4.2 Simulate Mode	“
2.4.3 View/Print Maps Mode	“
2.4.4 Translate Mode	“
PART III: POST-PROCESSING D-ASM MISSION DATA	10/03/01
Introduction and General Post-Processing Steps	
Section 3.1: Post-Processing Steps	10/03/01
3.1.1 Translating GeoLink Proto-Shapefiles into ESRI Shapefiles	“
3.1.2 Building the ArcView Project (*.apr)	“
3.1.3 Preliminary Inspecting, Editing, and Cleaning Attribute Data	“
3.1.4 Changing the Position and/or Boundary of Features	“
3.1.5 Adding Features	“
3.1.6 Merging Features	“
3.1.7 Special Situations – Polygon Overlap Areas, Island and Oversize Polygons	“
3.1.8 Final Editing and Cleaning of Attribute Data	“
3.1.9 Re-Projecting Feature Shapefiles	“
APPENDICES:	
Appendix A: Background	10/03/01
Appendix B: Hardware Technical Specifications	10/03/01
Appendix C: DRG Bingo, v2.2a	10/03/01
Appendix D: GeoLink Log and Translate File Structure	10/03/01
Appendix E: Post-Processing D-ASM Data <i>Processing Complex Polygon Coverages</i>	10/03/01

Introduction

This *User's Guide* will walk you through the setup, testing, and use of the Digital Aerial Sketchmapping (D-ASM) system. It provides you with step-by-step instructions, but is not intended as a replacement for the manuals and on-line help available for the various components of the system, including the documentation for the GeoLink software.

We cannot overstate how important it is that you be familiar and comfortable working with GeoLink prior to flying a mission. The reference and user manuals that accompany Geolink software are critical to your success. We load simulation data sets on every system we ship, and you can use them to practice with GeoLink.



Using previously collected GPS files allows the aerial observer to practice with the system prior to data collection flights.

We assume either you, or members in your team, are familiar with a number of crucial concepts, specifically:

- The processes employed in manual ASM surveys, as detailed in *A Guide to Conducting Aerial Sketchmapping Surveys*, (FHTET 00-01), March, 2000.
- Setting up and maintaining PCs, the Windows Operating System, and GPS receivers
- Geographic Information Systems, particularly ESRI ArcView.

The (D-ASM) system is very much a “work in progress.” Hence, so is this *User Guide*. We will update you on changes to both the system and the manual as they arise.

You’ll find a discussion on the history of the system’s development and capabilities in Appendix A, *Background*.

Organization of the User Guide

Since the D-ASM system is a work in progress, we designed the physical layout of this manual to accommodate periodic revisions without requiring that you re-print the entire manual. There are three parts, each of which is divided into sections, and multiple appendices. Each section, in turn, contains several subsections. Subsections are short; typically one to four pages long. Within a subsection, you'll find text on one page, and all pertinent graphics, tables and figures on the same page or a facing page (e.g., text on page 2, pertinent graphics on pages 2 and 3.) Hence, you won't have to flip through pages to find the visuals that match the text.

All pages are dated by the release date and are numbered by their order in each part.

Also, we have named graphics and tables by using the subsection number that they help to explain. This allows us to simplify the manual revision process. When we make a revision, we'll send you an updated version of the Table of Contents with the new release dates for each subsection; simply download the particular part and print out the subsections that are new.

Part I: System and Equipment

Details equipment and its configuration in the Digital Aerial Sketchmapping System

1. **Equipment List**, provides a complete equipment listing with labeled sketches and photographs of each component.
2. **Preinstalled Software**, details the functionality of pertinent software on the system
3. **Configuring the System**, lists the steps required to assemble the system for an airborne mission or to simulate a mission in an office environment.
4. **Component Setup and Calibration**, offers detailed descriptions of the proper setup of each system component.

Part II: Using GeoLink Software for D-ASM Missions

Explains the use of GeoLink software as adapted to the specific needs of the digital aerial sketchmapping system.

Part III: Post-Processing D-ASM Mission Data

Explains the steps required to convert the GeoLink proto-shapefiles created during the airborne mission into properly-formatted and organized ArcView shapefiles.

Appendices:

Typically, appendices deal with background information or ancillary processes that aren't deemed critical to the understanding or functionality of the system.

While developing this system, we experimented with many different hardware and software combinations. As a result, there are different models of laptop computers, GPS receivers, operating systems, serial port duplicators, touchscreens, and their accompanying cables and connectors currently in use by the Forest Service and other cooperative agencies. Therefore, not knowing which combination of hardware and software you have makes it difficult to generalize all we have learned into this manual. At some point, we hope that further investigation and experience will allow us to implement a standard system, which in turn will enable us to simplify this manual, standardize operating procedures and purchasing, and facilitate troubleshooting and technical support.

We will strive to provide documentation that will support you in your use of a variety of components within the system, and to keep the documentation current. When significant revisions or additions have been made to the User Guide, we will notify you by E-mail. Upon receipt of notification that subsections of the manual have more current release dates, you should navigate to http://www.fs.fed.us/foresthealth/id/id_tech.html.

Then download any of the following parts of the user guide:

dasm_0110_intro.pdf,
dasm_0110_part1.pdf,
dasm_0110_part2.pdf,
dasm_0110_part3.pdf, or
dasm_0110_append.pdf,

where the year and month of release (0110) will change as required.