

Contents at a Glance

<i>Introduction</i>	1
<i>Part I: All About Digital Maps</i>	9
Chapter 1: Getting Started with Digital Maps	11
Chapter 2: Dissecting Maps	23
<i>Part II: All About GPS</i>	49
Chapter 3: GPS Fundamentals	51
Chapter 4: Grasping Important GPS Concepts	73
Chapter 5: Selecting and Getting Started with a Handheld GPS Receiver	87
Chapter 6: Automotive GPS Receivers	113
Chapter 7: Cellphones, PDAs, and Other GPS Devices	131
Chapter 8: Geocaching	155
<i>Part III: Digital Mapping on Your Computer</i>	179
Chapter 9: Digital Mapping Hardware Considerations	181
Chapter 10: Interfacing a GPS Receiver to a Computer	189
Chapter 11: Using GPS Manufacturer Software	207
Chapter 12: Finding Places and Coordinates	225
Chapter 13: On the Road with DeLorme Street Atlas USA	237
Chapter 14: On the Ground with TopoFusion	253
Chapter 15: From the Sky with Google Earth	269
Chapter 16: Creating and Using Digital Maps with OziExplorer	285
<i>Part IV: Using Web-Hosted Mapping Services</i>	299
Chapter 17: Saving and Editing Web Maps	301
Chapter 18: Navigating Web Road Maps	313
Chapter 19: Exploring Web Topographic Maps	327
<i>Part V: The Part of Tens</i>	339
Chapter 20: Ten Great GPS and Map Web Sites	341
Chapter 21: Ten Map Printing Tips	345
Chapter 22: Ten GPS Resources for Boaters	351
<i>Index</i>	361

<http://www.pbookshop.com>

Table of Contents

<i>Introduction</i>	1
Who This Book Is For	2
Setting Some GPS Expectations	3
How This Book Is Organized	4
Part I: All About Digital Maps	5
Part II: All About GPS	5
Part III: Digital Mapping on Your Computer	5
Part IV: Using Web-Hosted Mapping Services	5
Part V: The Part of Tens	6
Icons Used in This Book	6
Some Opening Thoughts	6
<i>Part I: All About Digital Maps</i>	9
Chapter 1: Getting Started with Digital Maps	11
Amerigo Vespucci Didn't Have Maps like This	11
Static map	12
Smart map	12
Mapping Programs	13
Consumer programs	14
GIS (Geographic Information System) programs	14
Consumer versus GIS programs	14
Digital Maps in Practice	15
Mapping Software: The Essentials	16
Standalone programs	16
Programs with bundled maps	18
Web-hosted mapping services	20
Chapter 2: Dissecting Maps	23
Discovering Types of Maps	23
Land	24
Marine	26
Aeronautical	27
Figuring Out Map Projections	29
Map Datums	29
Working with Map Coordinate Systems	30
Latitude/longitude	31
Universal Transverse Mercator (UTM)	34
Township and Range	35
Measuring Map Scales	38
Deciphering Map Symbols	40

Digital Map Data.....	42
TIGER.....	42
Digital Line Graph (DLG).....	43
Elevation data.....	44
Digital Raster Graphics (DRG).....	45
Digital Orthophoto Quadrangle (DOQ).....	46
Satellite data.....	47

Part II: All About GPS 49

Chapter 3: GPS Fundamentals 51

Global Position What?.....	51
GPS Deconstructed.....	53
Eyeing satellites.....	53
GPS radio signals.....	55
Covering ground stations.....	55
GPS receivers.....	56
GPS receiver accuracy.....	58
Stuff Your GPS Receiver Can Tell You.....	59
GPS Receiver Features.....	61
Chipset.....	62
Display and output.....	62
Alarms.....	63
Built-in maps.....	63
Enhanced accuracy.....	65
Antennas.....	66
Internal storage.....	67
External storage.....	68
User interfaces.....	68
Accessory software.....	69
Accessory hardware.....	69
The Future of GPS.....	70

Chapter 4: Grasping Important GPS Concepts 73

Linking GPS, Maps, and Coordinate Systems.....	74
Dealing with Datums.....	75
Setting Waypoints.....	77
Saving waypoints.....	78
Using the waypoint list.....	80
Following Routes.....	81
Making Tracks.....	83

Chapter 5: Selecting and Getting Started with a Handheld GPS Receiver 87

Selecting a Handheld GPS Receiver.....	88
To map or not to map.....	92

GPS for athletes.....	92
Matching GPS receiver features to your activities	93
Becoming Familiar with Your New GPS Receiver	95
Powering Your GPS Receiver	97
Battery basics.....	97
Power to the people	99
Initializing Your GPS Receiver	102
Changing Receiver Settings.....	105
Using Your GPS Receiver.....	107
Coming home.....	108
How far, how fast?.....	108
Finding your ancestors	109
Simulating navigation	109
Homework assignment.....	109
And more	110
Chapter 6: Automotive GPS Receivers	113
Automotive GPS Receiver Features.....	113
Street map.....	114
Routing directions	114
POIs.....	116
Address books.....	117
Trip Log.....	117
Screens.....	117
Preferences.....	118
Entertainment features	118
Wireless.....	119
Subscription services.....	119
Voice recognition.....	120
Types of Automotive GPS Receivers.....	120
Portable navigators	121
In-dash navigators	122
Selecting an Automotive GPS Receiver.....	123
Using Your Automotive GPS Receiver	125
First things first.....	125
Mounting options.....	125
On the road.....	127
Updating maps and firmware	128
Homework assignment.....	129
Chapter 7: Cellphones, PDAs, and Other GPS Devices	131
GPS and Cellphones	131
Cellphones and Assisted GPS (A-GPS)	132
Bluetooth cellphones and GPS.....	133
Non-GPS cellphone navigation	133
Location-based services	134
Cellphones versus dedicated GPS units	135

GPS and PDAs.....	136
Choosing between a handheld GPS receiver and a PDA.....	136
Interfacing your PDA to a GPS receiver	138
Reviewing PDA mapping software	142
GPS Trackers	145
People trackers	146
Pet trackers.....	148
Vehicle and vessel trackers.....	149
GPS Data Loggers.....	150
GPS Radios.....	153
FRS radios	153
Ham radios.....	153
Marine radios	153
Chapter 8: Geocaching	155
Geocaching: The High-Tech Scavenger Hunt.....	155
Getting Started Geocaching.....	157
What you need to geocache	157
Selecting a cache to look for	160
Finding the cache.....	163
GeoJargon: Speaking the lingo.....	169
Hiding a Cache	170
Selecting a container	171
Location is everything.....	172
Stocking the cache.....	173
Submitting the cache.....	174
Maintaining the cache	175
Geocaching Etiquette.....	176
Internet Geocaching Resources.....	176
Part III: Digital Mapping on Your Computer	179
Chapter 9: Digital Mapping Hardware Considerations.....	181
Digital Mapping Software Choices.....	181
Processing Power	182
Processors	183
Memory	183
Storage Capacity.....	183
Hard drives	184
CD and DVD drives	185
Display Equipment	185
Graphics cards	186
Monitors.....	186
Printers.....	186
Communication Capabilities	187
Communication ports.....	188
Internet connection	188

Chapter 10: Interfacing a GPS Receiver to a Computer	189
About (Inter)Face: Connectivity Rules	189
Anatomy of a Link: Understanding the Interface Process	190
Untangling Cables	191
Pondering Protocols	193
Understanding Serial Ports	193
COM ports.....	194
All About USB Ports.....	196
Virtual serial ports.....	196
USB serial port adapters	197
Managing Memory	198
Transferring GPS Data.....	200
Troubleshooting Connection Problems	202
Uploading Firmware Revisions to Your GPS Receiver.....	203
Chapter 11: Using GPS Manufacturer Software	207
Understanding GPS Map Software.....	207
Some GPS map software rules of thumb.....	208
Common GPS map software features	209
Getting GPS maps.....	209
Loading maps to GPS receivers	210
Exploring Garmin Software	212
MapSource	212
Garmin map products	214
Garmin utility programs.....	215
Scouting Magellan Software	217
VantagePoint	217
National Geographic TOPO!.....	218
Magellan map products	218
Discovering Lowrance Software	219
Navigating DeLorme Software.....	221
Chapter 12: Finding Places and Coordinates	225
Finding Your Way with Online Gazetteers	225
Using the Geographic Names Information System (GNIS).....	226
Using the GEOnet Name Server (GNS)	229
Converting Coordinates.....	233
Using GeoTrans	234
Using online conversion utilities	235
Chapter 13: On the Road with DeLorme Street Atlas USA	237
Discovering Street Atlas USA Features	238
Navigating Street Atlas USA	239
Exploring the Street Atlas USA interface	239
Zooming in and out.....	240
Moving around in Street Atlas USA	241
Getting POI information	242

Finding an Address with Street Atlas USA.....	243
Getting from Here to There with Street Atlas USA.....	246
Creating a route.....	246
Getting directions.....	248
Printing and saving directions.....	248
Moving Maps with Earthmate.....	250
Other Street Navigation Software.....	251
Microsoft Streets & Trips.....	251
Garmin Mobile PC.....	252
Chapter 14: On the Ground with TopoFusion.....	253
Discovering TopoFusion.....	253
Displaying Maps and Finding Places.....	255
Navigating a TopoFusion Map.....	256
Changing the map type.....	256
Moving around in a map.....	257
Changing the map size.....	258
Planning a Trip with TopoFusion.....	258
Understanding Terrain Elevation.....	260
Displaying a 3-D map.....	260
Charting elevation profiles.....	261
Blending maps and aerial photos.....	263
Reviewing Other Topographic Map Software.....	264
DeLorme Topo USA.....	264
Maptech Terrain Navigator.....	266
National Geographic TOPO!.....	267
Chapter 15: From the Sky with Google Earth.....	269
Discovering Google Earth.....	270
Traveling the Globe.....	271
Navigation controls.....	272
Zooming in and out.....	272
Moving around.....	274
Finding places.....	274
Getting a 3-D View.....	276
Using Layers.....	277
Available layers.....	279
Turning layers on and off.....	280
Adding Placemarks.....	280
Measuring Distances.....	282
Chapter 16: Creating and Using Digital Maps with OziExplorer . . .	285
Discovering OziExplorer Features.....	285
Moving from Paper to Digital Maps.....	288
Step 1: Scan the map.....	289
Step 2: Edit the map.....	290
Step 3: Calibrate the map.....	290
Checking your work.....	297

Part IV: Using Web-Hosted Mapping Services..... 299
Chapter 17: Saving and Editing Web Maps301

Saving Maps.....	302
Save Picture As.....	302
Using the Print Screen key.....	302
Using screen capture programs.....	303
Editing a Map	305
Opening a file.....	305
Cropping	306
Using colors and fonts.....	307
Adding symbols.....	308
Selecting the right file format.....	310

Chapter 18: Navigating Web Road Maps 313

Using Street Map Web Sites	313
Listing common street map Web site features	314
Web versus PC software street maps.....	318
Reviewing Street Map Web Sites	320
MapQuest.....	322
Google Maps	324
Yahoo! Maps	324
Live Search Maps	325

Chapter 19: Exploring Web Topographic Maps327

Using Web-Hosted Topographic Maps	327
Advantages of topographic Web sites	327
Disadvantages of topographic Web sites	328
Deciding between Web-based maps and mapping programs	328
Reviewing Topographic Map Web Sites	329
Using TerraServer-USA.....	329
Using GPS Visualizer.....	334
Commercial topographic Web map sites.....	337

Part V: The Part of Tens..... 339
Chapter 20: Ten Great GPS and Map Web Sites341

Comprehensive GPS Information	341
Current GPS News and Helpful Advice	341
Technical GPS Information.....	343
Free Maps	343
Expert Desktop Mapping Guidance.....	344
Definitive Terrain Modeling Information.....	344

Chapter 21: Ten Map Printing Tips	345
Make Your Paper Count.....	345
Print in Color.....	346
Print the Scale.....	346
Print UTM Grids.....	346
Use Waterproof Paper.....	346
Waterproof Your Plain Paper.....	348
Print More Map Area.....	348
Put North at the Top.....	349
Use the Best Page Orientation.....	349
Beware of False Economy.....	350
Chapter 22: Ten GPS Resources for Boaters	351
Free Charts to Download.....	352
Free Windows Navigation Software.....	352
Commercial Navigation Software.....	354
Marine GPS and Chart Plotter Manufacturers.....	355
GPS and Marine Electronics Blogs.....	356
Marine Electronics Forums.....	357
Cruising Wikis.....	357
Nautical Chart Overlays for Google Earth.....	358
Keeping Your Handheld GPS Unit off the Bottom.....	358
Free Tide Software.....	360
Index	361