Table of Contents

CHAPTER 1 N-AWIPS Overview 1-1

1.1 GEMPAK Overview 1-1
1.1.1 GEMPAK Programs 1-2
1.1.2 GEMLIB Library 1-2
1.1.3 GEMPAK Graphics Software 1-3
1.2 GUI Programs Overview 1-3
1.3 Document Overview 1-3

CHAPTER 2 N-AWIPS User Interface 2-1

2.1 GEMPAK User Interface 2-1
2.2 GUI Programs 2-3

CHAPTER 3 GEMPAK Variables 3-1

3.1 ADDSTN 3-1
3.2 AFOSFL 3-1
3.3 AIRM 3-1
3.4 ANLYSS 3-2
3.5 AREA 3-2
3.6 ATCF 3-4
3.7 AWPSFL 3-5
3.8 BND 3-5
3.9 BORDER 3-7
3.10 BOUNDS 3-7
3.11 BUFRFIL 3-8
3.12 CBTOP 3-8
3.13 CENTER 3-8
3.14 CINT 3-9
3.15 CLEAR 3-10
3.16 CLRBAR 3-10
3.17 CNTR 3-11
3.18 CNTRFL 3-12
3.19 CNTRPRM 3-12
3.20 COLORS 3-12
3.21 COLUMN 3-15
3.22 COMPRESS 3-15
3.23 CONTUR 3-15
3.24 CPYFIL 3-15
3.25 CSIG 3-16
3.26 CTLFLG 3-17
3.27 CTYPE 3-17
3.28 CURVE 3-18
3.29 CXSTNS 3-18
3.30 DATOUT 3-19
3.31 DATTIM 3-19

3.32 DELTAN 3-21
3.33 DELTAX 3-21
3.34 DELTAY 3-21
3.35 DELZ 3-21
3.36 DEVICE 3-21
3.37 DITHER 3-25
3.38 DTAAREA 3-25
3.39 ECHO 3-26
3.40 EXTEND 3-26
3.41 FAXFIL 3-27
3.42 FHOUR 3-27
3.43 FILTER 3-27
3.44 FILTYP 3-27
3.45 FINT 3-28
3.46 FLINE 3-28
3.47 FXYTBL 3-29
3.48 GAMMA 3-29
3.49 GAREA 3-29
3.50 GBDIAG 3-30
3.51 GBFILE 3-31
3.52 GBTBLS 3-31
3.53 GCENTER 3-31
3.54 GDATTIM 3-32
3.55 GDEFIL 3-33
3.56 GDFILE 3-34
3.57 GDNUM 3-34
3.58 GDOUTF 3-35
3.59 GDPFUN 3-35
3.60 GFUNC 3-35
3.61 GGLIMS 3-35
3.62 GLEVEL 3-36
3.63 GPACK 3-36
3.64 GPARM 3-37
3.65 GPOINT 3-44
3.66 GRDAREA 3-45
3.67 GRDHDR 3-46
3.68 GRDLBL 3-46
3.69 GRDNAM 3-47
3.70 GSKIP 3-47
3.71 GSPACE 3-47
3.72 GUESS 3-48
3.73 GVCORD 3-48
3.74 GVECT 3-48
3.75 HILO 3-48
3.76 HISTGRD 3-50
3.77 HLSYM 3-50

3.78 HRCN 3-51
3.79 IDNTYP 3-52
3.80 IJSKIP 3-53
3.81 IMCBAR 3-54
3.82 IMJM 3-56
3.83 INDXFL 3-56
3.84 INFO 3-56
3.85 INTERP 3-57
3.86 ISIG 3-57
3.87 KEYCOL 3-58
3.88 KXKY 3-59
3.89 LAT 3-59
3.90 LATLON 3-59
3.91 LEVELS 3-60
3.92 LINE 3-61
3.93 LOCI 3-62
3.94 LON 3-62
3.95 LSTALL 3-62
3.96 LTNG 3-63
3.97 LUTFIL 3-64
3.98 MAP 3-64
3.99 $MAPFIL 3-65
3.100 MARKER 3-70
3.101 MAXGRD 3-70
3.102 MAXTOP 3-70
3.103 MESO 3-71
3.104 MIXRLN 3-71
3.105 MRGDAT 3-71
3.106 MXDPTH 3-72
3.107 NCON 3-72
3.108 NDVAL 3-73
3.109 NPASS 3-73
3.110 NTRACE 3-73
3.111 OUTFIL 3-74
3.112 OUTPUT 3-74
3.113 PANEL 3-74
3.114 PDSEXT 3-75
3.115 PDSVAL 3-76
3.116 PIXRES 3-77
3.117 PLUS 3-77
3.118 POSN 3-77
3.119 PRECSN 3-77
3.120 PROJ 3-78
3.121 PTYPE 3-81
3.122 QCNTL 3-81
3.123 QSCT 3-82

3.124 RADDUR 3-83
3.125 RADFIL 3-83
3.126 RADFRQ 3-83
3.127 RADINFO 3-83
3.128 RADIUS 3-83
3.129 RADMODE 3-84
3.130 RADPARM 3-84
3.131 RADTIM 3-84
3.132 RCMFIL 3-84
3.133 REFVEC 3-84
3.134 REGION 3-85
3.135 $RESPOND 3-85
3.136 ROTATE 3-85
3.137 RTRAJ 3-86
3.138 SATFIL 3-86
3.139 SCALE 3-86
3.140 SEARCH 3-87
3.141 SFEFIL 3-87
3.142 SFFILE 3-87
3.143 SFFSRC 3-88
3.144 SFOUTF 3-88
3.145 SFPARM 3-89
3.146 SFPRMF 3-99
3.147 SHAPE 3-100
3.148 SHIPFL 3-101
3.149 SKIP 3-101
3.150 SKPMIS 3-102
3.151 SNBUFR 3-103
3.152 SNEFIL 3-103
3.153 SNFILE 3-104
3.154 SNOUTF 3-104
3.155 SNPARM 3-104
3.156 SNPRMF 3-109
3.157 SOURCE 3-110
3.158 SPLINE 3-110
3.159 SQUALL 3-110
3.160 STATION 3-110
3.161 STNCOL 3-111
3.162 STNDEX 3-111
3.163 STNFIL 3-112
3.164 STNPLT 3-113
3.165 STNTYP 3-114
3.166 STREAM 3-114
3.167 STRMID 3-115
3.168 SVRL 3-116
3.169 SYSTEM 3-117

3.170 TAXIS 3-117
3.171 TCMG 3-118
3.172 TEXT 3-118
3.173 THTALN 3-120
3.174 THTELN 3-120
3.175 TILT 3-120
3.176 TIMSTN 3-121
3.177 TITLE 3-121
3.178 TOPOFL 3-122
3.179 TRACE 3-122
3.180 TROPHT 3-123
3.181 TRPINT 3-123
3.182 TSTEP 3-123
3.183 TVS 3-123
3.184 TXTFIL 3-124
3.185 TXTLOC 3-124
3.186 TYPE 3-125
3.187 UKAFIL 3-126
3.188 VCOORD 3-126
3.189 VERCEN 3-126
3.190 VGFILE 3-127
3.191 WARN 3-128
3.192 WATCH 3-129
3.193 WAVLEN 3-130
3.194 WAVSPD 3-130
3.195 WCN 3-130
3.196 WEIGHT 3-131
3.197 WIND 3-131
3.198 WINPOS 3-132
3.199 WMOHDR 3-132
3.200 WOU 3-133
3.201 WSTM 3-133
3.202 XAXIS 3-134
3.203 YAXIS 3-134

CHAPTER 4 GEMPAK Programs..... 4-1

4.1 ACPROF 4-1
4.2 BUFRENC 4-4
4.3 CPCGSTN 4-5
4.4 GD2NDFD 4-7
4.5 GDBIINT 4-11
4.6 GDCFIL 4-13
4.7 GDCNTR 4-16
4.8 GDCROSS 4-22
4.9 GDDELT 4-26
4.10 GDDIAG 4-28

4.11 GDEDIT 4-31
4.12 GDGRIB 4-34
4.13 GDGSFC 4-43
4.14 GDINFO 4-45
4.15 GDLIST 4-47
4.16 GDMAP 4-49
4.17 GDMOD 4-52
4.18 GDOBSCNT 4-55
4.19 GDOMEG 4-56
4.20 GDPLOT 4-58
4.21 GDPLOT2 4-62
4.22 GDPROF 4-68
4.23 GDRADR 4-72
4.24 GDSTAT 4-75
4.25 GDSTREAM 4-77
4.26 GDTHGT 4-80
4.27 GDTOPO 4-83
4.28 GDTSER 4-85
4.29 GDVINT 4-88
4.30 GDWIND 4-92
4.31 GPANOT 4-95
4.32 GPBOX 4-97
4.33 GPCLEAR 4-98
4.34 GPCLOSE 4-99
4.35 GPCOLOR 4-100
4.36 GPEND 4-101
4.37 GPFAX 4-102
4.38 GPFRONT 4-104
4.39 GPKGRF 4-106
4.40 GPLTLN 4-109
4.41 GPMAP 4-111
4.42 GPNEXR2 4-116
4.43 GPNIDS 4-118
4.44 GPRCM 4-121
4.45 GPTCWW 4-126
4.46 GPTEXT 4-128
4.47 GPTPC 4-130
4.48 GPTRAJ 4-132
4.49 GPVAD 4-135
4.50 GPWARN 4-137
4.51 GRPHGD 4-141
4.52 NAGRIB 4-145
4.53 NAMSND 4-151
4.54 NDFDG2 4-160
4.55 NEX2GINI 4-164
4.56 NEX2IMG 4-167

4.57 NEXR2RHI 4-170
4.58 OABOX 4-173
4.59 OABSFC 4-175
4.60 OABSND 4-179
4.61 OAGRID 4-183
4.62 SECTOR 4-186
4.63 SFCFIL 4-188
4.64 SFCHCK 4-191
4.65 SFCNTR 4-193
4.66 SFDELT 4-197
4.67 SFEDIT 4-198
4.68 SFGRAM 4-200
4.69 SFL604 4-204
4.70 SFLIST 4-206
4.71 SFMAP 4-208
4.72 SFMOD 4-212
4.73 SFSTNS 4-214
4.74 SFVGSF 4-216
4.75 SNCFIL 4-218
4.76 SNCROSS 4-220
4.77 SNCROSS2 4-225
4.78 SNDELT 4-231
4.79 SNEDIT 4-232
4.80 SNHODO 4-236
4.81 SNLIST 4-238
4.82 SNMAP 4-241
4.83 SNMOD 4-245
4.84 SNPROF 4-248
4.85 SNSTNS 4-252
4.86 SNTSER 4-254
4.87 VG2UKA 4-257

CHAPTER 5 Graphical User Interface Programs 5-1
5.1 AFOS 5-1
5.2 NALARM 5-1
5.3 NMAP/NMAP2 5-2
5.4 NSAT (depricated) 5-2
5.5 NSHARP 5-3
5.6 NTRANS 5-3
5.7 NWX 5-4

CHAPTER 6 GEMPAK Real-time Decoders 6-1
6.1 DECODER Common Characteristics 6-1
6.2 DCACARS (Unidata) 6-3
6.3 DCACFT 6-4
6.4 DCAIRM 6-4

6.5 DCCSIG 6-5
6.6 DCFFG 6-7
6.7 DCGMOS 6-7
6.8 DCGRIB (Unidata) 6-8
6.9 DCGRIB2 (Unidata) 6-8
6.10 DCHRCN 6-10
6.11 DCISIG 6-12
6.12 DCLSFC 6-13
6.13 DCMETR 6-14
6.14 DCMSFC 6-14
6.15 DCNCON 6-15
6.16 DCNCPROF (Unidata) 6-16
6.17 DCNEXR2 (Unidata) 6-17
6.18 DCNLDN (Unidata) 6-18
6.19 DCNMOS 6-19
6.20 DCPROF (Unidata) 6-19
6.21 DCRDF 6-20
6.22 DCREDBOOK (Unidata) 6-20
6.23 DCSCD 6-21
6.24 DCSHEF VERSION 2 6-22
6.25 DCSTORM (Unidata) 6-28
6.26 DCSUOMI (Unidata) 6-28
6.27 DCSVRL 6-29
6.28 DCTAF 6-30
6.29 DCTROP (Unidata) 6-31
6.30 DCUAIR 6-32
6.31 DCWARN 6-33
6.32 DCWATCH (Unidata) 6-34
6.33 DCWCN 6-34
6.34 DCWOU 6-36
6.35 DCWSTM 6-38
6.36 DCWTCH 6-39
6.37 DCXMOS 6-40

APPENDIX A GEMPAK PARAMETERS A-1
TEMPERATURE PARAMETERS A-1
MOISTURE PARAMETERS A-3
HEIGHT PARAMETERS A-5
PRESSURE AND ALTIMETER PARAMETERS A-6
WINDS A-8
LIFTED CONDENSATION LEVEL (LCL) A-10
STABILITY INDICES A-10
CLOUD PARAMETERS A-15
WEATHER CODES A-19
STATION PARAMETERS A-22
MODEL OUTPUT STATISTICS A-23

TERMINAL AERODROME FORECAST (TAF) PARAMETERS A-28
MARINE PARAMETERS A-30
AIRCRAFT PARAMETERS A-32
MISCELLANEOUS PARAMETERS A-35
SPACING PARAMETERS A-37

APPENDIX B1 GRID DIAGNOSTIC FUNCTIONS B1-1
SCALAR OUTPUT GRID B1-3
VECTOR OUTPUT GRID B1-11

APPENDIX B2 GRID DIAGNOSTIC EQUATIONS B2-1

APPENDIX C SYMBOLS, LINES, and MARKERS C-1
SYMBOLS C-1
LINE TYPES C-20
MARKERS C-22

APPENDIX D GEMPAK Tutorial D-1

APPENDIX E Restore Files and Scripts E-1
Restore Files E-1
Restore Files for Program Examples E-1
Metafile Generation Restore Files E-1
EZ Script Restore Files E-1
Metafile Generation Scripts E-2
EZ Scripts E-2
VERTICAL Scripts E-3
List of scripts and descriptions E-3
HPC Scripts E-10
Data Plotting GEMPAK scripts E-10
Additional GEMPAK scripts E-12
Local Product Metafiles E-12
Command Station Models E-13
Command Legend E-14
Model Diagnostic [md] GEMPAK script series E-15