

LIST OF FIGURES

FIGURES	PAGE NO
1.1. Geology and tectonic framework of the middle and Upper Ganga basin	10
1.2. Location map of the study area	14
1.3. Location map of the study area	15
1.4. Physiographical map of Bihar	18
1.5. Flowchart of methodology	27
5.1. Shifting of the Ganga river course near Ballia and Rudrapur on 1:250,000 scale from SOI to 2000 and 2004	84
5.2. Shifting of the Ganga river course near Ballia on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	86
5.3. Shifting of the Ganga river course near Rudrapur on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	88
5.4. Bankline change and erosion/deposition near Ballia and Rudrapur from on 1:250,000 scale from (SOI) to 2000 and 2004	89
5.5. Bankline change and erosion/deposition near Ballia on 1:50,000 scale from (SOI) to 2006	91
5.6. Bankline change and erosion/deposition near Rudrapur on 1:50,000 scale from (SOI) to 2006	93
5.7. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from SOI maps	94
5.8. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from IRS 1D pre-monsoon data-2000	95
5.9. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from IRS 1D post-monsoon data-2000	95
5.10. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from IRS P6 pre-monsoon data-2004	96

5.11. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from IRS P6 post-monsoon data-2004	96
5.12. Pre-monsoon satellite image showing Ganga river course near Ballia in 2006	100
5.13. Fluvio-geomorphology of the Ganga river near Ballia from IRS P6 pre-monsoon data of 2006	101
5.14. Post-monsoon satellite image showing Ganga river course near Ballia in 2006	102
5.15. Fluvio-geomorphology of the Ganga river near Ballia from IRS P6 post-monsoon data of 2006	103
5.16. Pre-monsoon satellite image showing Ganga river course near Rudrapur in 2006	105
5.17. Fluvio-geomorphology of the Ganga river near Rudrapur from IRS P6 pre-monsoon data of 2006	106
5.18. Post-monsoon satellite image showing Ganga river course near Rudrapur in 2006	107
5.19. Fluvio-geomorphology of the Ganga river near Rudrapur from IRS P6 post-monsoon data of 2006	108
5.20. Shifting of the Ganga river course near Ballia and Rudrapur on 1:250,000 scale from SOI to 2000 and 2004	114
5.21. Shifting of the Ganga river course near Patna on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	116
5.22. Shifting of the Ganga river course near Sahri on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	117
5.23. Bankline change and erosion/deposition near Patna and Sahri on 1:250,000 scale from (SOI) to 2000 and 2004	119
5.24. Bankline change and erosion/deposition near Patna on 1:50,000 scale from (SOI) to 2006	120
5.25. Bankline change and erosion/deposition near Sahri on 1:50,000 scale from (SOI) to 2006	122
5.26. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from SOI maps	123
5.27. Fluvio-geomorphology of the Ganga river near Patna and	124

Sahri on 1:250,000 scale from IRS 1D pre-monsoon data-2000	
5.28. Fluvio-geomorphology of the Ganga river near Patna and Sahri on 1:250,000 scale from IRS 1D post-monsoon data-2000	124
5.29. Fluvio-geomorphology of the Ganga river near Patna and Sahri on 1:250,000 scale from IRS P6 pre-monsoon data-2004	125
5.30. Fluvio-geomorphology of the Ganga river near Patna and Sahri on 1:250,000 scale from IRS P6 post-monsoon data-2004	125
5.31. Pre-monsoon satellite image showing Ganga river course near Patna in 2006	130
5.32. Fluvio-geomorphology of the Ganga river near Patna from IRS P6 pre-monsoon data of 2006	131
5.33. Post-monsoon satellite image showing Ganga river course near Patna in 2006	132
5.34. Fluvio-geomorphology of the Ganga river near Patna from IRS P6 post-monsoon data of 2006	133
5.35. Pre-monsoon satellite image showing Ganga river course near Sahri in 2006	134
5.36. Fluvio-geomorphology of the Ganga river near Patna from IRS P6 pre-monsoon data of 2006	135
5.37. Post-monsoon satellite image showing Ganga river course near Sahri in 2006	136
5.38. Fluvio-geomorphology of the Ganga river near Patna from IRS P6 post-monsoon data of 2006	137
5.39. Shifting of the Ganga river course near Monghyr and Bhagalpur on 1:250,000 scale from SOI to 2000 and 2004	142
5.40. Shifting of the Ganga river course near Sahri on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	144
5.41. Shifting of the Ganga river course near Sahri on 1:50,000 scale from (SOI) to 2000, 2004 and 2006	145
5.42. Bankline change and erosion/deposition near Ballia and Rudrapur from on 1:250,000 scale from (SOI) to 2000 and 2004	147
5.43. Bankline change and erosion/deposition near Monghyr on 1:50,000 scale from (SOI) to 2006	149
5.44. Bankline change and erosion/deposition near Bhagalpur on	150

1:50,000 scale from (SOI) to 2006	
5.45. Fluvio-geomorphology of the Ganga river near Ballia and Rudrapur on 1:250,000 scale from SOI maps	152
5.46. Fluvio-geomorphology of the Ganga river near Monghyr and Bhagalpur on 1:250,000 scale from IRS 1D pre-monsoon data-2000	153
5.47. Fluvio-geomorphology of the Ganga river near Monghyr and Bhagalpur on 1:250,000 scale from IRS 1D post-monsoon data-2000	153
5.48. Fluvio-geomorphology of the Ganga river near Monghyr and Bhagalpur on 1:250,000 scale from IRS P6 pre-monsoon data-2004	154
5.49. Fluvio-geomorphology of the Ganga river near Monghyr and Bhagalpur on 1:250,000 scale from IRS P6 post-monsoon data-2004	154
5.50. Pre-monsoon satellite image showing Ganga river course near Monghyr in 2006	156
5.51. Fluvio-geomorphology of the Ganga river near Monghyr from IRS P6 pre-monsoon data of 2006	157
5.52. Post-monsoon satellite image showing Ganga river course near Monghyr in 2006	158
5.53. Fluvio-geomorphology of the Ganga river near Monghyr from IRS P6 post-monsoon data of 2006	159
5.54. Pre-monsoon satellite image showing Ganga river course near Bhagalpur in 2006	161
5.55. Fluvio-geomorphology of the Ganga river near Bhagalpur from IRS P6 pre-monsoon data of 2006	162
5.56. Post-monsoon satellite image showing Ganga river course near Bhagalpur in 2006	163
5.57. Fluvio-geomorphology of the Ganga river near Bhagalpur from IRS P6 post-monsoon data of 2006	164
5.58. Shifting of the Ganga river course near Sahibganj on 1:250,000 scale from SOI to 2000 and 2004	170
5.59. Shifting of the Ganga river course near Sahibganj on 1:50,000	172

scale from (SOI) to 2000, 2004 and 2006	
5.60. Bankline change and erosion/deposition near Sahibganj on 1:250,000 scale from (SOI) to 2000 and 2004	173
5.61. Bankline change and erosion/deposition near Sahibganj on 1:50,000 scale from (SOI) to 2006	174
5.62. Fluvio-geomorphology of the Ganga river near Sahibganj on 1:250,000 scale from SOI maps	177
5.63. Fluvio-geomorphology of the Ganga river near Sahibganj on 1:250,000 scale from IRS 1D pre-monsoon data-2000	178
5.64. Fluvio-geomorphology of the Ganga river near Sahibganj on 1:250,000 scale from IRS 1D post-monsoon data-2000	178
5.65. Fluvio-geomorphology of the Ganga river near Sahibganj on 1:250,000 scale from IRS P6 pre-monsoon data-2004	179
5.66. Fluvio-geomorphology of the Ganga river near Sahibganj on 1:250,000 scale from IRS P6 post-monsoon data-2004	179
5.67. Pre-monsoon satellite image showing Ganga river course near Sahibganj in 2006	180
5.68. Fluvio-geomorphology of the Ganga river near Sahibganj from IRS P6 pre-monsoon data of 2006	181
5.69. Post-monsoon satellite image showing Ganga river course near Sahibganj in 2006	182
5.70. Fluvio-geomorphology of the Ganga river near Sahibganj from IRS P6 post-monsoon data of 2006	183
6.1. Erosion and deposition along both the banks of the Ganga river course from SOI to 2000	193
6.2. Erosion and deposition along both the banks of the Ganga river course from SOI to 2004	194