

# *The VLIR IUC–Mekelle metadatabase*

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## **Introduction**

This metadatabase aims to be used by VLIR IUC-Mekelle researchers and students, in order to make a choice of cartographic documents to be used in their study. The documents are digitally stored on CDs, which number is indicated. You can use for free the CDs to print out the documents by yourself or by your technical services. Our Geological Department is also able to make your printouts at a cost of €60/m<sup>2</sup> drawing. To obtain a CD or to order your printout, you can contact:

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## **1. Aerial photos 1994**

[See annex 1 for coverage](#)

flight	first number	last number	number of photographs	CD nr
Eth 94 R-2 25 09-01-94	762	744	19	1
Eth 94 R-2 26 09-01-94	798	781	18	1
Eth 94 R-2 27 09-01-94	835	818	18	1+2
Eth 94 R-3 28 10-01-94	885	855	31	2
Eth 94 R-6 29 14-01-94	922	892	31	3
Eth 94 R-7 30 17-01-94	934	928	7	3
Eth 94 R-7 30 17-01-94	959	937	23	3+4
Eth 94 R-9 31 22-01-94	996	973	24	4
Eth 94 R-6 32 14-01-94	1040	1017	24	4+5
Eth 94 R-8 33 21-01-94	1084	1061	24	5
Eth 94 R-8 34 21-01-94	1122	1111	12	6
Eth 94 R-7 30 17-01-94	935	936	2	22

## **2. Aerial photos 63 64 65**

[See annex 2 for coverage](#)

flight	BOX	first number	last number	number of photographs	CD		
9nov64 R-113 1	1	11186	11158	29	7	collated	<b>FLIGHT PLAN</b>
8dec64 R-129	1	12067	12039	29	7+8	collated	<b>FLIGHT PLAN</b>
20nov64 R-124	2	11802	11798	5	8		
8nov64 R-17	2	1791	1773	19	8+9		
8nov64 R-17	2	1691	1675	17	8+9		
17feb65 R-151	2	14222	14203	20	9+10		
24oct65 R-125	3	18451	18427	25	10		
4may65 R-181	3	18062	18031	32	10+11		
7may65 R-182	3	18129	18106	24	11+12		
17oct65 R-184	3	18257	18233	25	12		
18nov63 R-6	4	1000	990	11	13		

21jan64 R-48	4	5271	5261	11	13		
11dec63 R-19	4	2168	2158	11	13		
27jan64 R-51	4	5590	5579	12	13+14		
11dec63 R-19	5	2380	2370	11	14		
11dec63 R-19	5	2310	2301	10	14		
9nov64 R-113 2	5	11104	11076	29	14+15	collated	<b>FLIGHT PLAN</b>
27jan64 R-48	5	5195	5186	10	15	collated	
27jan64 R-54	5	5789	5779	11	15	collated	

### **3. Topomaps 1 50,000**

[See annex 3 for coverage](#)

name	from lat. N	to lat. N	from long. East	to long. East	CD
Abyi Adi	13° 30'	13° 45'	39° 00'	39° 15'	16
Adigrad	14° 15'	14° 30'	39° 15'	39° 30'	16
Agula	13° 30'	13° 45'	39° 30'	39° 45'	17
Chemo	13° 30'	13° 45'	38° 30'	38° 45'	61
Dela (1)	13° 00'	15° 15'	39° 15'	39° 30'	17
Fireweyni (Sink.)	14° 00'	14° 15'	39° 30'	39° 45'	21
Fiyel Wiha	13° 15'	13° 30'	38° 30'	38° 45'	61
Gijet	13° 15'	13° 30'	39° 00'	39° 15'	17
Guya	13° 30'	13° 45'	38° 45'	39° 00'	61
Hawzen	13° 45'	14° 00'	39° 15'	39° 30'	18
Koneba	13° 45'	14° 00'	39° 45'	40° 00'	18
Kwiha	13° 15'	13° 30'	39° 30'	39° 45'	18
Lugda	13° 30'	13° 45'	39° 45'	40° 00'	19
Nebelet	14° 00'	14° 15'	39° 15'	39° 30'	38
North Mekele	13° 30'	13° 45'	39° 15'	39° 30'	20
South Mekele	13° 15'	13° 30'	39° 15'	39° 30'	20
Werei	13° 45'	14° 00'	39° 00'	39° 15'	20
Wikro	13° 45'	14° 00'	39° 30'	39° 45'	21
Yechla	13° 15'	13° 30'	13° 15'	13° 30'	61

### **4. Topomaps 1 250,000**

[See annex 4 for coverage](#)

name	from lat. N	to lat. N	from long. East	to long. East	CD
Adi Ar'kay	13° 00'	14° 00'	37° 30'	39° 00'	16
Adigrat	14° 00'	15° 00'	39° 00'	40° 30'	19
Mek'elè	13° 00'	14° 00'	39° 00'	40° 30'	19

### **5. Geological maps**

[See annex 5 for coverage](#)

name	from lat. N	to lat. N	from long. East	to long. East	CD
Fireweyni (Sink.)	14° 00'	14° 15'	39° 30'	39° 45'	21
Wikro	13° 45'	14° 00'	39° 30'	39° 45'	21
Ziwai, 1:250,000	7° 00'	8° 30'	38° 00'	39° 30'	23
Adigrad, 1:250,000	14° 00'	15°00'	39° 00'	40° 30'	24
Mekele, 1:250,000	13° 00'	14° 00'	39° 00'	40° 30'	25
Ethiopia, 1:2,000,000	4°	18°	33° 30'	48° 00'	26
Ethiopia, 1:2,000,000	4°	18°	33° 30'	48° 00'	37
Melele outlier, Western Sheet, 1:100.000 Cooperazione Italiana	13° 30'	14° 00'	39° 00'	39° 42'	39

## **6. Other maps**

Map	title	scale	CD
Asmera	Land use and land cover	1:1,000,000	36
Mekele	Hydrogeology	1 250,000	36
Geba	hydrography: several maps		39

## **7. Satellite imagery**

Name of document	localisation details	CD	Date & content	Link to information - photo
Landsat TM imagery N-37-10-Mekele channels 742	Northern basin limit not visible	26	1. software: PCI Image handler. must be installed by running it 2. N-37-10 Mekele. Full resolution of Landsat TM imagery in channnals 742 year 1986? 3. scans of geological map1:2,000,000	
TM imagery N-37-10-Mekele channels 742	Northern basin limit OK but not NE	27	1. Ilwis 2. Landsat TM Tigray 742	
Landsat in tiff format	Complete Geba basin	28	three geotiff mosaics on the base of 4 Landsat images from 27-1 and 5-2-2000: 321(vis.), 457 (NIR), PAN	
Landsat in tiff format	Complete Geba basin	29	three geotiff mosaics on the base of 4 Landsat images from 27-1 and 5-2-2000: 321(vis.), 457 (NIR), PAN	

ETM+ p 169 - r51 – 7x ETM earthsat orthorectified	SCENE_CENTER_LAT = +13.0167811 SCENE_CENTER_LON = +38.6216263 Ras dashen + lower Geba	30	01/27/2000	See 7.1 <a href="#">p169r051_7x20000127_met</a>
ETM+ p169 – r51 – 7x ETM earthsat orthorectified	SCENE_CENTER_LAT = +14.4592161 SCENE_CENTER_LON = +38.9406692 northern & western	31	01/27/2000	See 7.2 <a href="#">p169r050_7x20000127_met</a>
ETM+ p 168 – r50 – 7x ETM earthsat orthorectified	Red Sea and Danakil at north side of image	32	02/05/2000	
ETM+ p 168 – r51 – 7x ETM earthsat orthorectified	SCENE_CENTER_LAT = +13.0167234 SCENE_CENTER_LON = +40.1731811 Mekelle and Danakil	33	02/05/2000	See 7.3 <a href="#">p168r051_7x20000205_met</a>
TM5 p 168 – r 50 TM earthsat orthorectified	Red Sea and Danakil at north side of image	34	01/05/1986	See 7.4 <a href="#">Photo 34 Coverage</a>
TM5 p 168 – r 51 TM earthsat orthorectified	Danakil	34	01/05/1986	See 7.4 <a href="#">Photo 34 Coverage</a>
MSS 1 p181 – r 50 TM earthsat orthorectified	Tigray (whole Geba) and Danakil	34	02/11/1972	See 7.4 <a href="#">Photo 34 Coverage</a>
TM5 p 169 – r 50	Tigray (whole Geba) and Danakil	35	22/11/1984	See 7.5 <a href="#">Photo 35 Coverage</a>
TM5 p 169 – r 51	Ras Dashen and lower part of Geba	35	22/11/1984	See 7.5 <a href="#">Photo 35 Coverage</a>
ERS 2 SAR 47040-3321	Northern part of Mekele outlier and Sinkanet and Asbi plateaus	40	19/04/2004	
ERS 2 SAR 47047-3339	Sw corner of Mekele outlier	41	19/04/2004	
ERS 2 SAR 42269-3321 unformatted	Western part of Danakil and rift shoulder	42	05/05/2004	
ERS 2 SAR 47269-3339	Sudan-Ethiopia	43	05/05/2004	
ETM + (Landsat 7) 169/51/	SW corner of Mekele outlier, Ras Dashen massif and region to the S	44	04/12/2002	
ASAR Wide Swath	Geba catchment	45	24/05/2004	
ENVISAT MERIS FR	Southern corner of Geba	46	09/09/2003	
ENVISAT MERIS FR	Southern corner of Geba	47	08/03/2004	
ENVISAT MERIS FR	Northern Ethiopia	51	09/09/2003	

ENVISAT MERIS FR	Northern Ethiopia	52	08/03/2004	
ASAR Swath 6	Geba catchment	53	12/7/2005	
ASAR Swath 2	N Geba catchment	54	16/7/2005	
ASAR Swath 2	S Geba catchment	55	16/7/2005	
ASAR Swath 6	Geba catchment	56	16/8/2005	
ASAR Swath 2	N Geba catchment	57	20/8/2005	
ASAR Swath 2	S Geba catchment	58	20/8/2005	
ASAR Swath 4	Geba catchment	59	23/8/2005	
ASAR Swath 6	Geba catchment	60	20/9/2005	

## **7.1 p169r051\_7x20000127\_met.txt**

```

GROUP = METADATA_FILE
  PRODUCT_CREATION_TIME = 2002-12-04T10:23:20Z
  PRODUCT_FILE_SIZE = 651.2
  STATION_ID = "EDC"
  GROUND_STATION = "EDC"
GROUP = ORTHO_PRODUCT_METADATA
  SPACECRAFT_ID = "Landsat7"
  SENSOR_ID = "ETM+"
  ACQUISITION_DATE = 2000-01-27
  WRS_PATH = 169
  WRS_ROW = 051
  SCENE_CENTER_LAT = +13.0167811
  SCENE_CENTER_LON = +38.6216263
  SCENE_UL_CORNER_LAT = +13.9500721
  SCENE_UL_CORNER_LON = +37.9639304
  SCENE_UR_CORNER_LAT = +13.7056111
  SCENE_UR_CORNER_LON = +39.6370966
  SCENE_LL_CORNER_LAT = +12.3236065
  SCENE_LL_CORNER_LON = +37.6130050
  SCENE_LR_CORNER_LAT = +12.0821501
  SCENE_LR_CORNER_LON = +39.2731828
  SCENE_UL_CORNER_MAPX = 388084.500
  SCENE_UL_CORNER_MAPY = 1542448.500
  SCENE_UR_CORNER_MAPX = 568888.500
  SCENE_UR_CORNER_MAPY = 1515259.500
  SCENE_LL_CORNER_MAPX = 349182.000
  SCENE_LL_CORNER_MAPY = 1362727.500
  SCENE_LR_CORNER_MAPX = 529729.500
  SCENE_LR_CORNER_MAPY = 1335652.500
  BAND1_FILE_NAME = "p169r051_7t20000127_z37_nn10.tif"
  BAND2_FILE_NAME = "p169r051_7t20000127_z37_nn20.tif"
  BAND3_FILE_NAME = "p169r051_7t20000127_z37_nn30.tif"
  BAND4_FILE_NAME = "p169r051_7t20000127_z37_nn40.tif"
  BAND5_FILE_NAME = "p169r051_7t20000127_z37_nn50.tif"
  BAND61_FILE_NAME = "p169r051_7k20000127_z37_nn61.tif"
  BAND62_FILE_NAME = "p169r051_7k20000127_z37_nn62.tif"
  BAND7_FILE_NAME = "p169r051_7t20000127_z37_nn70.tif"
  BAND8_FILE_NAME = "p169r051_7p20000127_z37_nn80.tif"
GROUP = PROJECTION_PARAMETERS
  REFERENCE_DATUM = "WGS84"
  REFERENCE_ELLIPSOID = "WGS84"
  GRID_CELL_ORIGIN = "Center"
  UL_GRID_LINE_NUMBER = 1
  UL_GRID_SAMPLE_NUMBER = 1
  GRID_INCREMENT_UNIT = "Meters"
  GRID_CELL_SIZE_PAN = 14.250
  GRID_CELL_SIZE_THM = 57.000

```

```

        GRID_CELL_SIZE_REF = 28.500
        FALSE_NORTHING = 0
        ORIENTATION = "NUP"
        RESAMPLING_OPTION = "NN"
        MAP_PROJECTION = "UTM"
    END_GROUP = PROJECTION_PARAMETERS
    GROUP = UTM_PARAMETERS
        ZONE_NUMBER = +37
    END_GROUP = UTM_PARAMETERS
    SUN_AZIMUTH = 136.2945339
    SUN_ELEVATION = 46.7104327
    QA_PERCENT_MISSING_DATA = 66
    CLOUD_COVER = 0
    PRODUCT_SAMPLES_PAN = 17184
    PRODUCT_LINES_PAN = 15126
    PRODUCT_SAMPLES_REF = 8592
    PRODUCT_LINES_REF = 7563
    PRODUCT_SAMPLES_THM = 4296
    PRODUCT_LINES_THM = 3782
    OUTPUT_FORMAT = "GEOTIFF"
END_GROUP = ORTHO_PRODUCT_METADATA
GROUP = L1G_PRODUCT_METADATA
    BAND_COMBINATION = "123456678"
    CPF_FILE_NAME = "L7CPF20000101_20000331_10"
    GROUP = MIN_MAX_RADIANCE
        LMAX_BAND1 = 191.600
        LMIN_BAND1 = -6.200
        LMAX_BAND2 = 196.500
        LMIN_BAND2 = -6.400
        LMAX_BAND3 = 152.900
        LMIN_BAND3 = -5.000
        LMAX_BAND4 = 241.100
        LMIN_BAND4 = -5.100
        LMAX_BAND5 = 31.060
        LMIN_BAND5 = -1.000
        LMAX_BAND61 = 17.040
        LMIN_BAND61 = 0.000
        LMAX_BAND62 = 12.650
        LMIN_BAND62 = 3.200
        LMAX_BAND7 = 10.800
        LMIN_BAND7 = -0.350
        LMAX_BAND8 = 243.100
        LMIN_BAND8 = -4.700
    END_GROUP = MIN_MAX_RADIANCE
    GROUP = MIN_MAX_PIXEL_VALUE
        QCALMAX_BAND1 = 255.0
        QCALMIN_BAND1 = 1.0
        QCALMAX_BAND2 = 255.0
        QCALMIN_BAND2 = 1.0
        QCALMAX_BAND3 = 255.0
        QCALMIN_BAND3 = 1.0
        QCALMAX_BAND4 = 255.0
        QCALMIN_BAND4 = 1.0
        QCALMAX_BAND5 = 255.0
        QCALMIN_BAND5 = 1.0
        QCALMAX_BAND61 = 255.0
        QCALMIN_BAND61 = 1.0
        QCALMAX_BAND62 = 255.0
        QCALMIN_BAND62 = 1.0
        QCALMAX_BAND7 = 255.0
        QCALMIN_BAND7 = 1.0
        QCALMAX_BAND8 = 255.0
        QCALMIN_BAND8 = 1.0
    END_GROUP = MIN_MAX_PIXEL_VALUE
    GROUP = PRODUCT_PARAMETERS
        CORRECTION_METHOD_GAIN_BAND1 = "CPF"
        CORRECTION_METHOD_GAIN_BAND2 = "CPF"
        CORRECTION_METHOD_GAIN_BAND3 = "CPF"
        CORRECTION_METHOD_GAIN_BAND4 = "CPF"
        CORRECTION_METHOD_GAIN_BAND5 = "CPF"
        CORRECTION_METHOD_GAIN_BAND61 = "CPF"
        CORRECTION_METHOD_GAIN_BAND62 = "CPF"
        CORRECTION_METHOD_GAIN_BAND7 = "CPF"
        CORRECTION_METHOD_GAIN_BAND8 = "CPF"
        CORRECTION_METHOD_BIAS = "IC"
        BAND1_GAIN = "H"
        BAND2_GAIN = "H"

```

```

BAND3_GAIN = "H"
BAND4_GAIN = "L"
BAND5_GAIN = "H"
BAND6_GAIN1 = "L"
BAND6_GAIN2 = "H"
BAND7_GAIN = "H"
BAND8_GAIN = "L"
BAND1_GAIN_CHANGE = "0"
BAND2_GAIN_CHANGE = "0"
BAND3_GAIN_CHANGE = "0"
BAND4_GAIN_CHANGE = "0"
BAND5_GAIN_CHANGE = "0"
BAND6_GAIN_CHANGE1 = "0"
BAND6_GAIN_CHANGE2 = "0"
BAND7_GAIN_CHANGE = "0"
BAND8_GAIN_CHANGE = "0"
BAND1_SL_GAIN_CHANGE = "0"
BAND2_SL_GAIN_CHANGE = "0"
BAND3_SL_GAIN_CHANGE = "0"
BAND4_SL_GAIN_CHANGE = "0"
BAND5_SL_GAIN_CHANGE = "0"
BAND6_SL_GAIN_CHANGE1 = "0"
BAND6_SL_GAIN_CHANGE2 = "0"
BAND7_SL_GAIN_CHANGE = "0"
BAND8_SL_GAIN_CHANGE = "0"
END_GROUP = PRODUCT_PARAMETERS
GROUP = CORRECTIONS_APPLIED
STRIPING_BAND1 = "NONE"
STRIPING_BAND2 = "NONE"
STRIPING_BAND3 = "NONE"
STRIPING_BAND4 = "NONE"
STRIPING_BAND5 = "NONE"
STRIPING_BAND61 = "NONE"
STRIPING_BAND62 = "NONE"
STRIPING_BAND7 = "NONE"
STRIPING_BAND8 = "NONE"
BANDING = "N"
COHERENT_NOISE = "N"
MEMORY_EFFECT = "N"
SCAN_CORRELATED_SHIFT = "N"
INOPERABLE_DETECTORS = "N"
DROPPED_LINES = Y
END_GROUP = CORRECTIONS_APPLIED
END_GROUP = L1G_PRODUCT_METADATA
END_GROUP = METADATA_FILE
END

```

## **7.2 p169r050 7x2000127 met.txt**

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GROUP = METADATA_FILE
PRODUCT_CREATION_TIME = 2002-12-04T10:23:11Z
PRODUCT_FILE_SIZE = 654.3
STATION_ID = "EDC"
GROUND_STATION = "EDC"
GROUP = ORTHO_PRODUCT_METADATA
SPACECRAFT_ID = "Landsat7"
SENSOR_ID = "ETM+"
ACQUISITION_DATE = 2000-01-27
WRS_PATH = 169
WRS_ROW = 050
SCENE_CENTER_LAT = +14.4592161
SCENE_CENTER_LON = +38.9406692
SCENE_UL_CORNER_LAT = +15.3928399
SCENE_UL_CORNER_LON = +38.2784486
SCENE_UR_CORNER_LAT = +15.1471592
SCENE_UR_CORNER_LON = +39.9656173
SCENE_LL_CORNER_LAT = +13.7669601
SCENE_LL_CORNER_LON = +37.9238827
SCENE_LR_CORNER_LAT = +13.5235261
SCENE_LR_CORNER_LON = +39.5955246
SCENE_UL_CORNER_MAPX = 422569.500
SCENE_UL_CORNER_MAPY = 1701906.000
SCENE_UR_CORNER_MAPX = 603744.000
SCENE_UR_CORNER_MAPY = 1674831.000
SCENE_LL_CORNER_MAPX = 383667.000

```



```

SCENE_LL_CORNER_MAPY = 1522213.500
SCENE_LR_CORNER_MAPX = 564442.500
SCENE_LR_CORNER_MAPY = 1495110.000
BAND1_FILE_NAME = "p169r050_7t20000127_z37_nn10.tif"
BAND2_FILE_NAME = "p169r050_7t20000127_z37_nn20.tif"
BAND3_FILE_NAME = "p169r050_7t20000127_z37_nn30.tif"
BAND4_FILE_NAME = "p169r050_7t20000127_z37_nn40.tif"
BAND5_FILE_NAME = "p169r050_7t20000127_z37_nn50.tif"
BAND61_FILE_NAME = "p169r050_7k20000127_z37_nn61.tif"
BAND62_FILE_NAME = "p169r050_7k20000127_z37_nn62.tif"
BAND7_FILE_NAME = "p169r050_7t20000127_z37_nn70.tif"
BAND8_FILE_NAME = "p169r050_7p20000127_z37_nn80.tif"
GROUP = PROJECTION_PARAMETERS
    REFERENCE_DATUM = "WGS84"
    REFERENCE_ELLIPSOID = "WGS84"
    GRID_CELL_ORIGIN = "Center"
    UL_GRID_LINE_NUMBER = 1
    UL_GRID_SAMPLE_NUMBER = 1
    GRID_INCREMENT_UNIT = "Meters"
    GRID_CELL_SIZE_PAN = 14.250
    GRID_CELL_SIZE_THM = 57.000
    GRID_CELL_SIZE_REF = 28.500
    FALSE_NORTHING = 0
    ORIENTATION = "NUP"
    RESAMPLING_OPTION = "NN"
    MAP_PROJECTION = "UTM"
END_GROUP = PROJECTION_PARAMETERS
GROUP = UTM_PARAMETERS
    ZONE_NUMBER = +37
END_GROUP = UTM_PARAMETERS
SUN_AZIMUTH = 137.5390773
SUN_ELEVATION = 45.8008678
QA_PERCENT_MISSING_DATA = 66
CLOUD_COVER = 0
PRODUCT_SAMPLES_PAN = 17152
PRODUCT_LINES_PAN = 15226
PRODUCT_SAMPLES_REF = 8576
PRODUCT_LINES_REF = 7613
PRODUCT_SAMPLES_THM = 4288
PRODUCT_LINES_THM = 3807
OUTPUT_FORMAT = "GEOTIFF"
END_GROUP = ORTHO_PRODUCT_METADATA
GROUP = L1G_PRODUCT_METADATA
    BAND_COMBINATION = "123456678"
    CPF_FILE_NAME = "L7CPF20000101_20000331_10"
GROUP = MIN_MAX_RADIANCE
    LMAX_BAND1 = 191.600
    LMIN_BAND1 = -6.200
    LMAX_BAND2 = 196.500
    LMIN_BAND2 = -6.400
    LMAX_BAND3 = 152.900
    LMIN_BAND3 = -5.000
    LMAX_BAND4 = 241.100
    LMIN_BAND4 = -5.100
    LMAX_BAND5 = 31.060
    LMIN_BAND5 = -1.000
    LMAX_BAND61 = 17.040
    LMIN_BAND61 = 0.000
    LMAX_BAND62 = 12.650
    LMIN_BAND62 = 3.200
    LMAX_BAND7 = 10.800
    LMIN_BAND7 = -0.350
    LMAX_BAND8 = 243.100
    LMIN_BAND8 = -4.700
END_GROUP = MIN_MAX_RADIANCE
GROUP = MIN_MAX_PIXEL_VALUE
    QCALMAX_BAND1 = 255.0
    QCALMIN_BAND1 = 1.0
    QCALMAX_BAND2 = 255.0
    QCALMIN_BAND2 = 1.0
    QCALMAX_BAND3 = 255.0
    QCALMIN_BAND3 = 1.0
    QCALMAX_BAND4 = 255.0
    QCALMIN_BAND4 = 1.0
    QCALMAX_BAND5 = 255.0
    QCALMIN_BAND5 = 1.0
    QCALMAX_BAND61 = 255.0

```

```

        QCALMIN_BAND61 = 1.0
        QCALMAX_BAND62 = 255.0
        QCALMIN_BAND62 = 1.0
        QCALMAX_BAND7 = 255.0
        QCALMIN_BAND7 = 1.0
        QCALMAX_BAND8 = 255.0
        QCALMIN_BAND8 = 1.0
    END_GROUP = MIN_MAX_PIXEL_VALUE
    GROUP = PRODUCT_PARAMETERS
        CORRECTION_METHOD_GAIN_BAND1 = "CPF"
        CORRECTION_METHOD_GAIN_BAND2 = "CPF"
        CORRECTION_METHOD_GAIN_BAND3 = "CPF"
        CORRECTION_METHOD_GAIN_BAND4 = "CPF"
        CORRECTION_METHOD_GAIN_BAND5 = "CPF"
        CORRECTION_METHOD_GAIN_BAND61 = "CPF"
        CORRECTION_METHOD_GAIN_BAND62 = "CPF"
        CORRECTION_METHOD_GAIN_BAND7 = "CPF"
        CORRECTION_METHOD_GAIN_BAND8 = "CPF"
        CORRECTION_METHOD_BIAS = "IC"
        BAND1_GAIN = "H"
        BAND2_GAIN = "H"
        BAND3_GAIN = "H"
        BAND4_GAIN = "H"
        BAND5_GAIN = "H"
        BAND6_GAIN1 = "L"
        BAND6_GAIN2 = "H"
        BAND7_GAIN = "H"
        BAND8_GAIN = "L"
        BAND1_GAIN_CHANGE = "0"
        BAND2_GAIN_CHANGE = "0"
        BAND3_GAIN_CHANGE = "0"
        BAND4_GAIN_CHANGE = "-"
        BAND5_GAIN_CHANGE = "0"
        BAND6_GAIN_CHANGE1 = "0"
        BAND6_GAIN_CHANGE2 = "0"
        BAND7_GAIN_CHANGE = "0"
        BAND8_GAIN_CHANGE = "0"
        BAND1_SL_GAIN_CHANGE = "0"
        BAND2_SL_GAIN_CHANGE = "0"
        BAND3_SL_GAIN_CHANGE = "0"
        BAND4_SL_GAIN_CHANGE = "-"
        BAND5_SL_GAIN_CHANGE = "0"
        BAND6_SL_GAIN_CHANGE1 = "0"
        BAND6_SL_GAIN_CHANGE2 = "0"
        BAND7_SL_GAIN_CHANGE = "0"
        BAND8_SL_GAIN_CHANGE = "0"
    END_GROUP = PRODUCT_PARAMETERS
    GROUP = CORRECTIONS_APPLIED
        STRIPING_BAND1 = "NONE"
        STRIPING_BAND2 = "NONE"
        STRIPING_BAND3 = "NONE"
        STRIPING_BAND4 = "NONE"
        STRIPING_BAND5 = "NONE"
        STRIPING_BAND61 = "NONE"
        STRIPING_BAND62 = "NONE"
        STRIPING_BAND7 = "NONE"
        STRIPING_BAND8 = "NONE"
        BANDING = "N"
        COHERENT_NOISE = "N"
        MEMORY_EFFECT = "N"
        SCAN_CORRELATED_SHIFT = "N"
        INOPERABLE_DETECTORS = "N"
        DROPPED_LINES = Y
    END_GROUP = CORRECTIONS_APPLIED
    END_GROUP = L1G_PRODUCT_METADATA
    END_GROUP = METADATA_FILE
    END

```

### **7.3 p168r051 7x2000205 met.txt**

```

    GROUP = METADATA_FILE
        PRODUCT_CREATION_TIME = 2003-04-04T16:36:07Z
        PRODUCT_FILE_SIZE = 649.5
        STATION_ID = "EDC"
        GROUND_STATION = "SGS"
    GROUP = ORTHO_PRODUCT_METADATA

```

```

SPACECRAFT_ID = "Landsat7"
SENSOR_ID = "ETM+"
ACQUISITION_DATE = 2000-02-05
WRS_PATH = 168
WRS_ROW = 051
SCENE_CENTER_LAT = +13.0167234
SCENE_CENTER_LON = +40.1731811
SCENE_UL_CORNER_LAT = +13.9507015
SCENE_UL_CORNER_LON = +39.5153402
SCENE_UR_CORNER_LAT = +13.7049878
SCENE_UR_CORNER_LON = +41.1888454
SCENE_LL_CORNER_LAT = +12.3232157
SCENE_LL_CORNER_LON = +39.1630770
SCENE_LR_CORNER_LAT = +12.0822149
SCENE_LR_CORNER_LON = +40.8261455
SCENE_UL_CORNER_MAPX = 555664.500
SCENE_UL_CORNER_MAPY = 1542334.500
SCENE_UR_CORNER_MAPX = 736725.000
SCENE_UR_CORNER_MAPY = 1516171.500
SCENE_LL_CORNER_MAPX = 517731.000
SCENE_LL_CORNER_MAPY = 1362300.000
SCENE_LR_CORNER_MAPX = 698763.000
SCENE_LR_CORNER_MAPY = 1336308.000
BAND1_FILE_NAME = "p168r051_7t20000205_z37_nn10.tif"
BAND2_FILE_NAME = "p168r051_7t20000205_z37_nn20.tif"
BAND3_FILE_NAME = "p168r051_7t20000205_z37_nn30.tif"
BAND4_FILE_NAME = "p168r051_7t20000205_z37_nn40.tif"
BAND5_FILE_NAME = "p168r051_7t20000205_z37_nn50.tif"
BAND61_FILE_NAME = "p168r051_7k20000205_z37_nn61.tif"
BAND62_FILE_NAME = "p168r051_7k20000205_z37_nn62.tif"
BAND7_FILE_NAME = "p168r051_7t20000205_z37_nn70.tif"
BAND8_FILE_NAME = "p168r051_7p20000205_z37_nn80.tif"
GROUP = PROJECTION_PARAMETERS
    REFERENCE_DATUM = "WGS84"
    REFERENCE_ELLIPSOID = "WGS84"
    GRID_CELL_ORIGIN = "Center"
    UL_GRID_LINE_NUMBER = 1
    UL_GRID_SAMPLE_NUMBER = 1
    GRID_INCREMENT_UNIT = "Meters"
    GRID_CELL_SIZE_PAN = 14.250
    GRID_CELL_SIZE_THM = 57.000
    GRID_CELL_SIZE_REF = 28.500
    FALSE_NORTHING = 0
    ORIENTATION = "NUP"
    RESAMPLING_OPTION = "NN"
    MAP_PROJECTION = "UTM"
END_GROUP = PROJECTION_PARAMETERS
GROUP = UTM_PARAMETERS
    ZONE_NUMBER = +37
END_GROUP = UTM_PARAMETERS
SUN_AZIMUTH = 133.2700146
SUN_ELEVATION = 48.1988543
QA_PERCENT_MISSING_DATA = 66
CLOUD_COVER = 0
PRODUCT_SAMPLES_PAN = 17160
PRODUCT_LINES_PAN = 15106
PRODUCT_SAMPLES_REF = 8580
PRODUCT_LINES_REF = 7553
PRODUCT_SAMPLES_THM = 4290
PRODUCT_LINES_THM = 3777
OUTPUT_FORMAT = "GEOTIFF"
END_GROUP = ORTHO_PRODUCT_METADATA
GROUP = L1G_PRODUCT_METADATA
    BAND_COMBINATION = "123456678"
    CPF_FILE_NAME = "L7CPF20000101_20000331_11"
GROUP = MIN_MAX_RADIANCE
    LMAX_BAND1 = 191.600
    LMIN_BAND1 = -6.200
    LMAX_BAND2 = 196.500
    LMIN_BAND2 = -6.400
    LMAX_BAND3 = 152.900
    LMIN_BAND3 = -5.000
    LMAX_BAND4 = 241.100
    LMIN_BAND4 = -5.100
    LMAX_BAND5 = 31.060
    LMIN_BAND5 = -1.000
    LMAX_BAND61 = 17.040

```

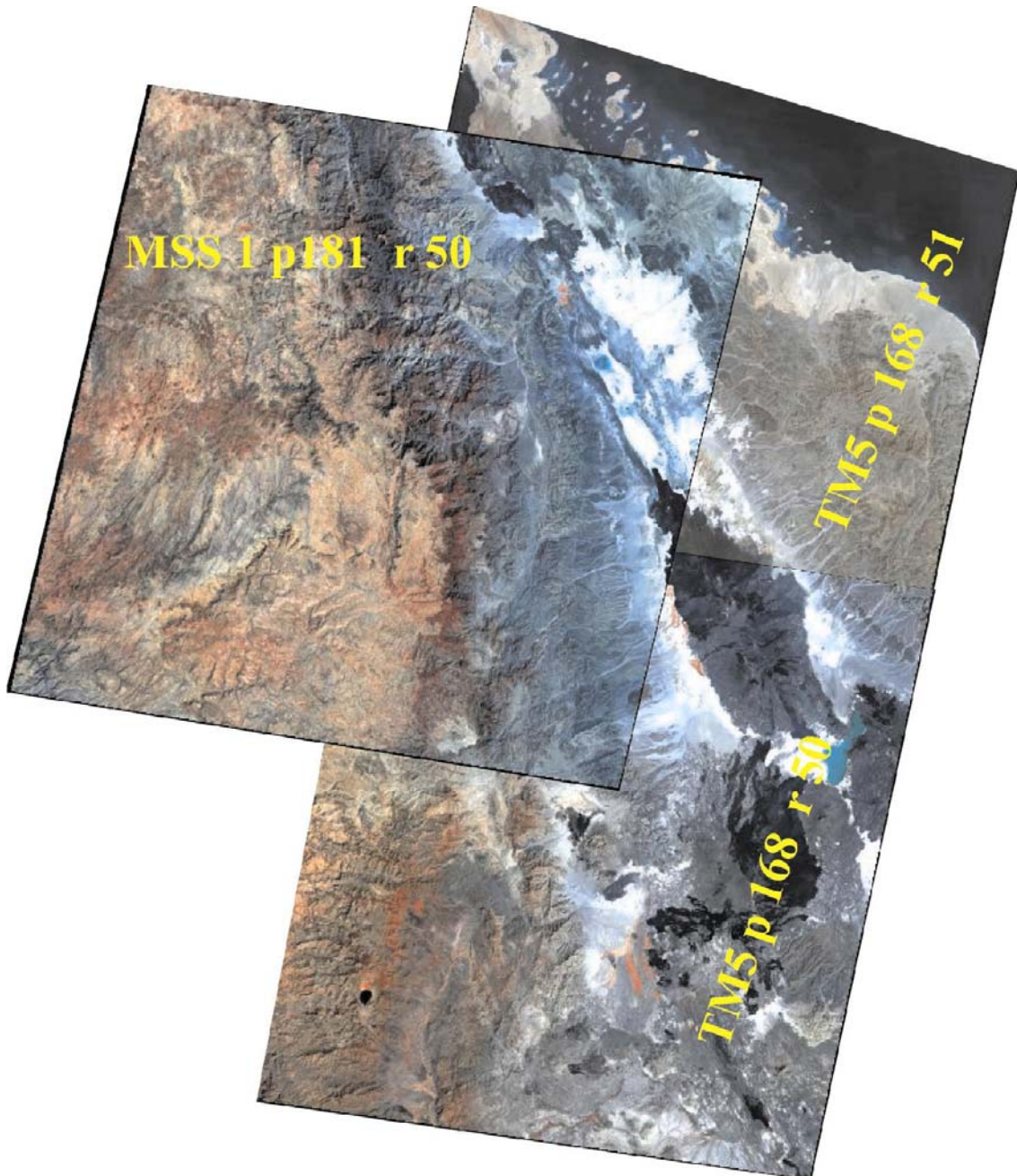
```

LMIN_BAND61 = 0.000
LMAX_BAND62 = 12.650
LMIN_BAND62 = 3.200
LMAX_BAND7 = 10.800
LMIN_BAND7 = -0.350
LMAX_BAND8 = 243.100
LMIN_BAND8 = -4.700
END_GROUP = MIN_MAX_RADIANCE
GROUP = MIN_MAX_PIXEL_VALUE
QCALMAX_BAND1 = 255.0
QCALMIN_BAND1 = 1.0
QCALMAX_BAND2 = 255.0
QCALMIN_BAND2 = 1.0
QCALMAX_BAND3 = 255.0
QCALMIN_BAND3 = 1.0
QCALMAX_BAND4 = 255.0
QCALMIN_BAND4 = 1.0
QCALMAX_BAND5 = 255.0
QCALMIN_BAND5 = 1.0
QCALMAX_BAND61 = 255.0
QCALMIN_BAND61 = 1.0
QCALMAX_BAND62 = 255.0
QCALMIN_BAND62 = 1.0
QCALMAX_BAND7 = 255.0
QCALMIN_BAND7 = 1.0
QCALMAX_BAND8 = 255.0
QCALMIN_BAND8 = 1.0
END_GROUP = MIN_MAX_PIXEL_VALUE
GROUP = PRODUCT_PARAMETERS
CORRECTION_METHOD_GAIN_BAND1 = "CPF"
CORRECTION_METHOD_GAIN_BAND2 = "CPF"
CORRECTION_METHOD_GAIN_BAND3 = "CPF"
CORRECTION_METHOD_GAIN_BAND4 = "CPF"
CORRECTION_METHOD_GAIN_BAND5 = "CPF"
CORRECTION_METHOD_GAIN_BAND61 = "CPF"
CORRECTION_METHOD_GAIN_BAND62 = "CPF"
CORRECTION_METHOD_GAIN_BAND7 = "CPF"
CORRECTION_METHOD_GAIN_BAND8 = "CPF"
CORRECTION_METHOD_BIAS = "IC"
BAND1_GAIN = "H"
BAND2_GAIN = "H"
BAND3_GAIN = "H"
BAND4_GAIN = "L"
BAND5_GAIN = "H"
BAND6_GAIN1 = "L"
BAND6_GAIN2 = "H"
BAND7_GAIN = "H"
BAND8_GAIN = "L"
BAND1_GAIN_CHANGE = "0"
BAND2_GAIN_CHANGE = "0"
BAND3_GAIN_CHANGE = "0"
BAND4_GAIN_CHANGE = "0"
BAND5_GAIN_CHANGE = "0"
BAND6_GAIN_CHANGE1 = "0"
BAND6_GAIN_CHANGE2 = "0"
BAND7_GAIN_CHANGE = "0"
BAND8_GAIN_CHANGE = "0"
BAND1_SL_GAIN_CHANGE = "0"
BAND2_SL_GAIN_CHANGE = "0"
BAND3_SL_GAIN_CHANGE = "0"
BAND4_SL_GAIN_CHANGE = "0"
BAND5_SL_GAIN_CHANGE = "0"
BAND6_SL_GAIN_CHANGE1 = "0"
BAND6_SL_GAIN_CHANGE2 = "0"
BAND7_SL_GAIN_CHANGE = "0"
BAND8_SL_GAIN_CHANGE = "0"
END_GROUP = PRODUCT_PARAMETERS
GROUP = CORRECTIONS_APPLIED
STRIPING_BAND1 = "NONE"
STRIPING_BAND2 = "NONE"
STRIPING_BAND3 = "NONE"
STRIPING_BAND4 = "NONE"
STRIPING_BAND5 = "NONE"
STRIPING_BAND61 = "NONE"
STRIPING_BAND62 = "NONE"
STRIPING_BAND7 = "NONE"
STRIPING_BAND8 = "NONE"

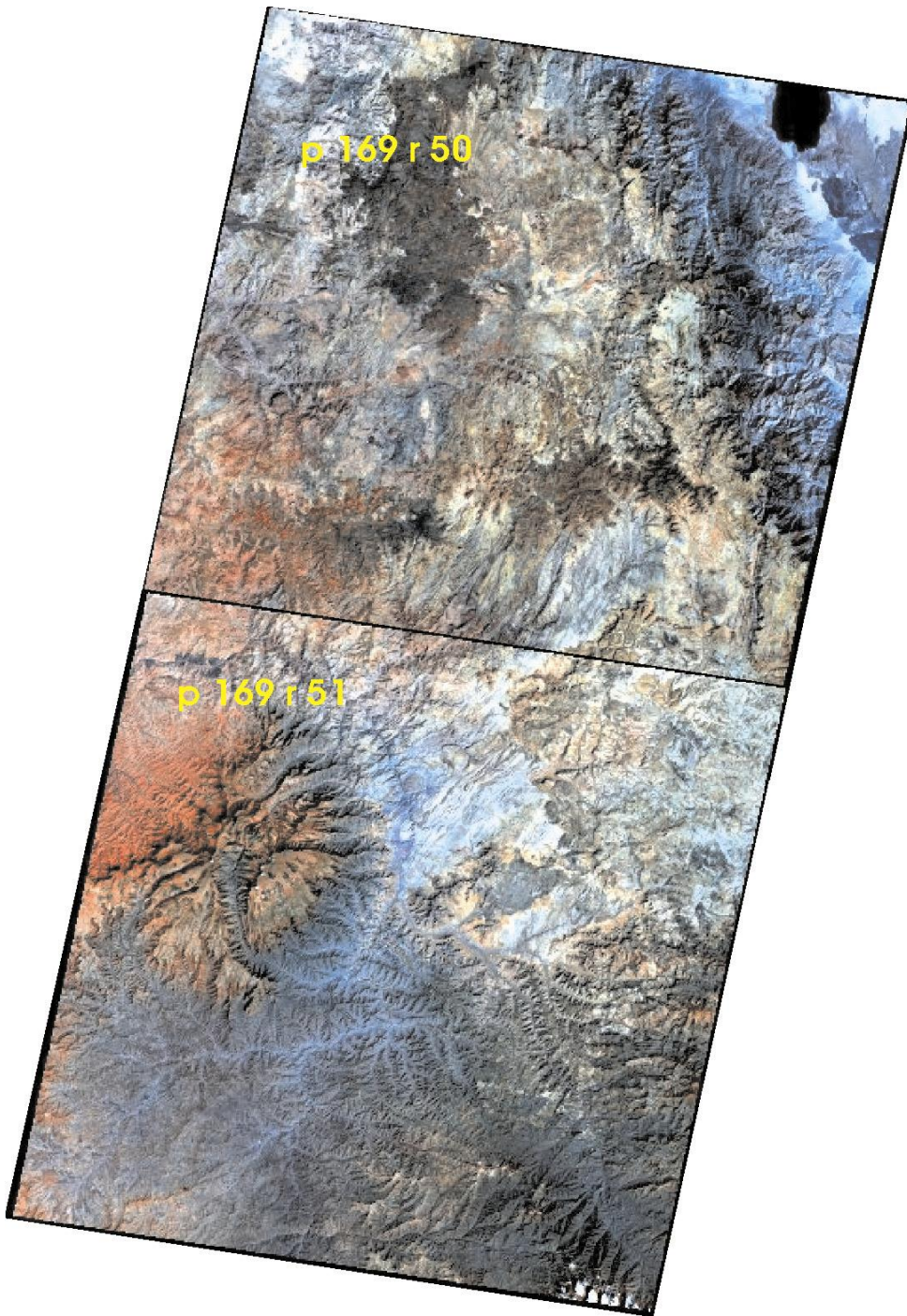
```

```
BANDING = "N"  
COHERENT_NOISE = "N"  
MEMORY_EFFECT = "N"  
SCAN_CORRELATED_SHIFT = "N"  
INOPERABLE_DETECTORS = "N"  
DROPPED_LINES = Y  
    END_GROUP = CORRECTIONS_APPLIED  
END_GROUP = L1G_PRODUCT_METADATA  
END_GROUP = METADATA_FILE  
END
```

## 7.4 photo 34



**7.5 photo 35**



## 8. meteo and hydrology

<b>Nature of information</b>	<b>CD</b>
meteo and hydrology	63
rainfall at Hagere selam	63
Climdata December 2005	63
Geba basin meteo and discharge Jan 2006 1.zip	63
Geba basin meteo and discharge Jan 2006 2.zip	63
Geba basin meteo and discharge Jan 2006 3.zip	63
Geba basin meteo and discharge Oct 2005 zip	63
Geba stream flow data	63
Dolo discharge & sed conc	64
Genfel discharge & sed conc	64
Gheba Mekele discharge & sed conc	64
Gheba discharge & sed conc	64
Ilala discharge & sed conc	64
Inclosure Gheba discharge	64
Metera discharge & sed conc	64
Suluh discharge & sed conc	64

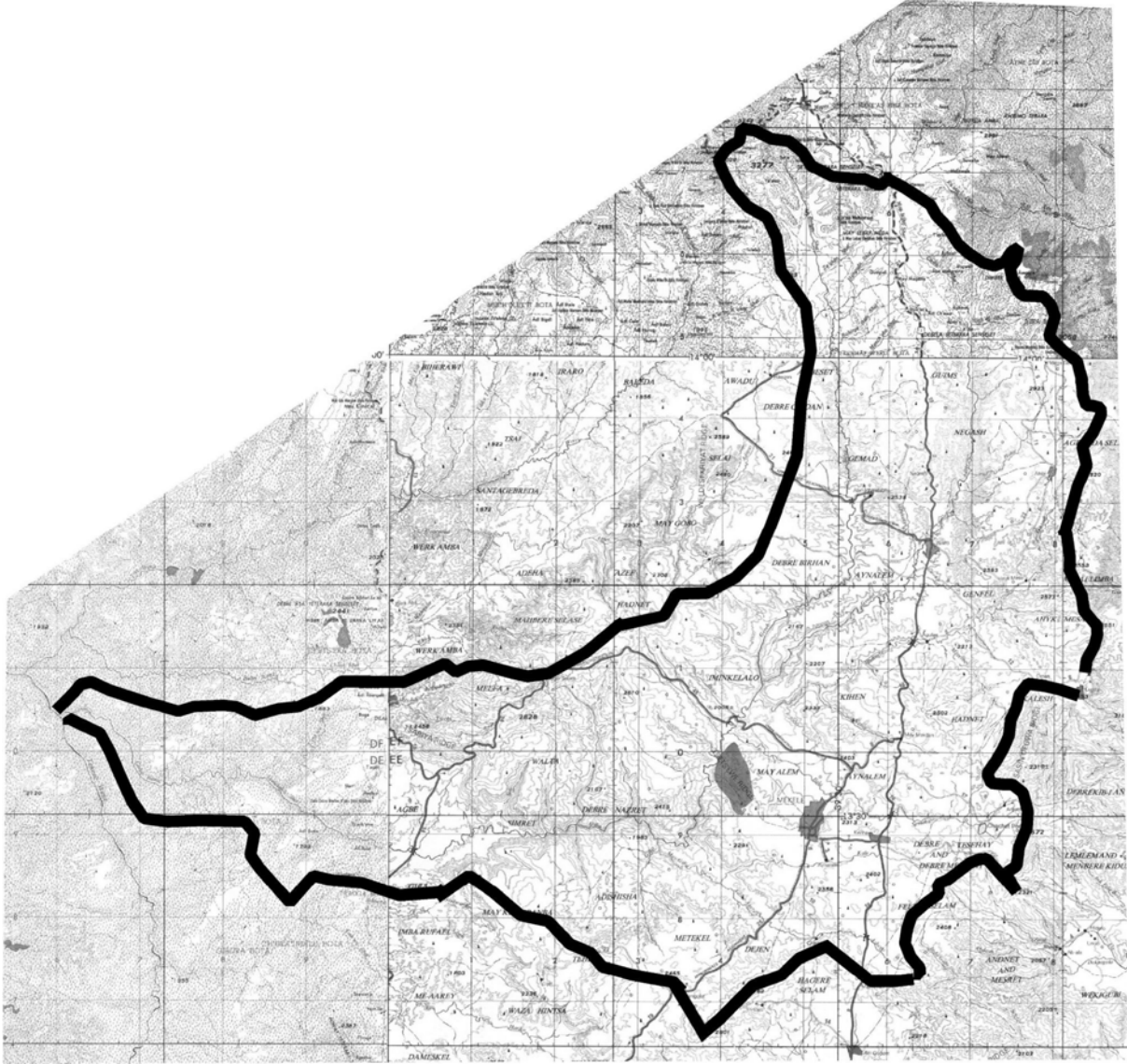
## 9. Other documents

<b>Nature of information</b>	<b>CD</b>
meteorological data Geba basin	48
hydrographs Geba basin	48
FAO land and water digital media series 2 The soil and terrain database for northeastern Africa	49

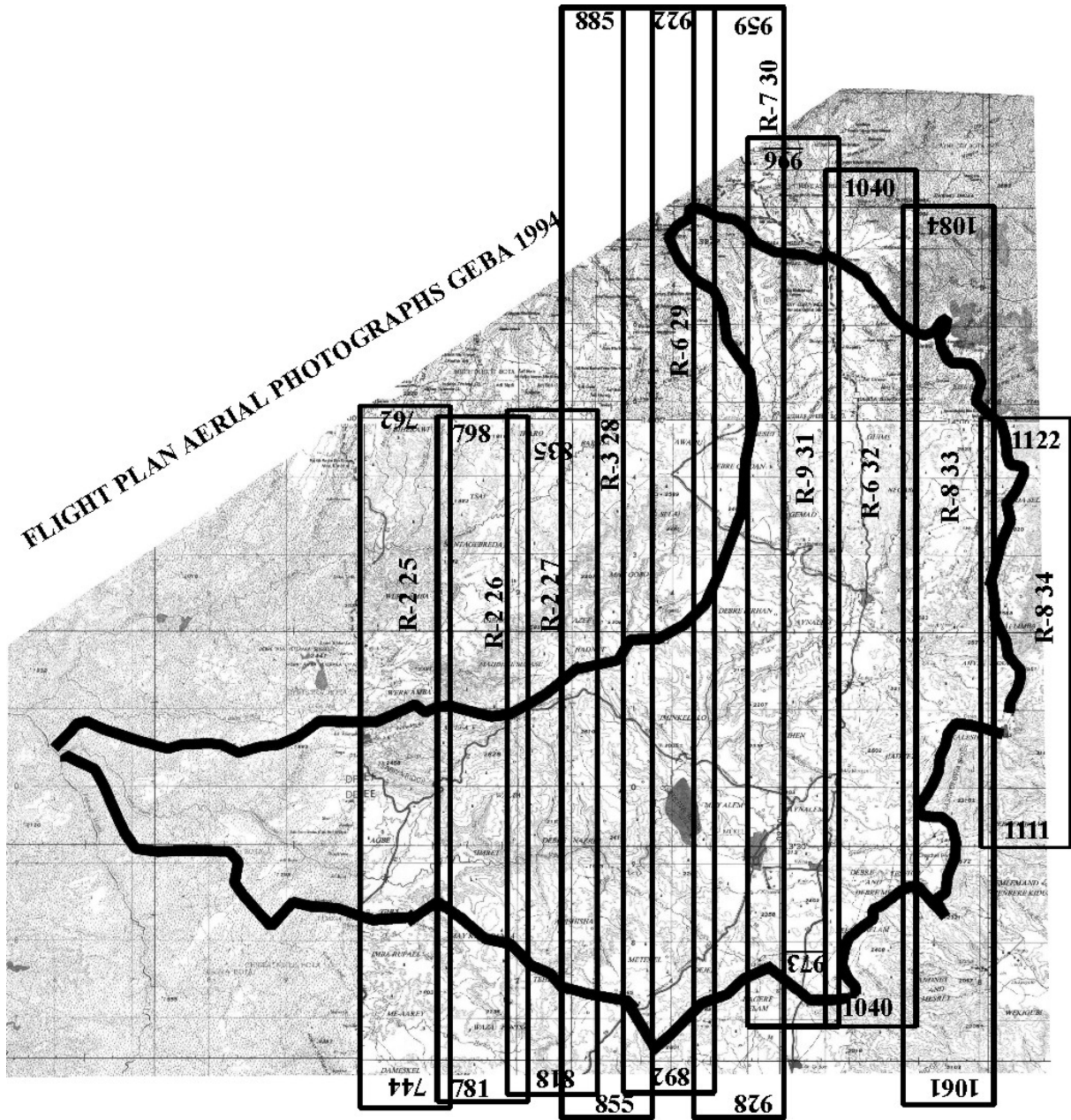
Mulat Getnet Asfaw: Groundwater recharge and water balance assessment in Geba basin, Tigray, Ethiopia. MSc thesis september 2005, VUB IUPWARE	50
Solomon teledetection work, start 2006	62



**Annex 0 : Geba op topo 250 bijgesneden ZW2**

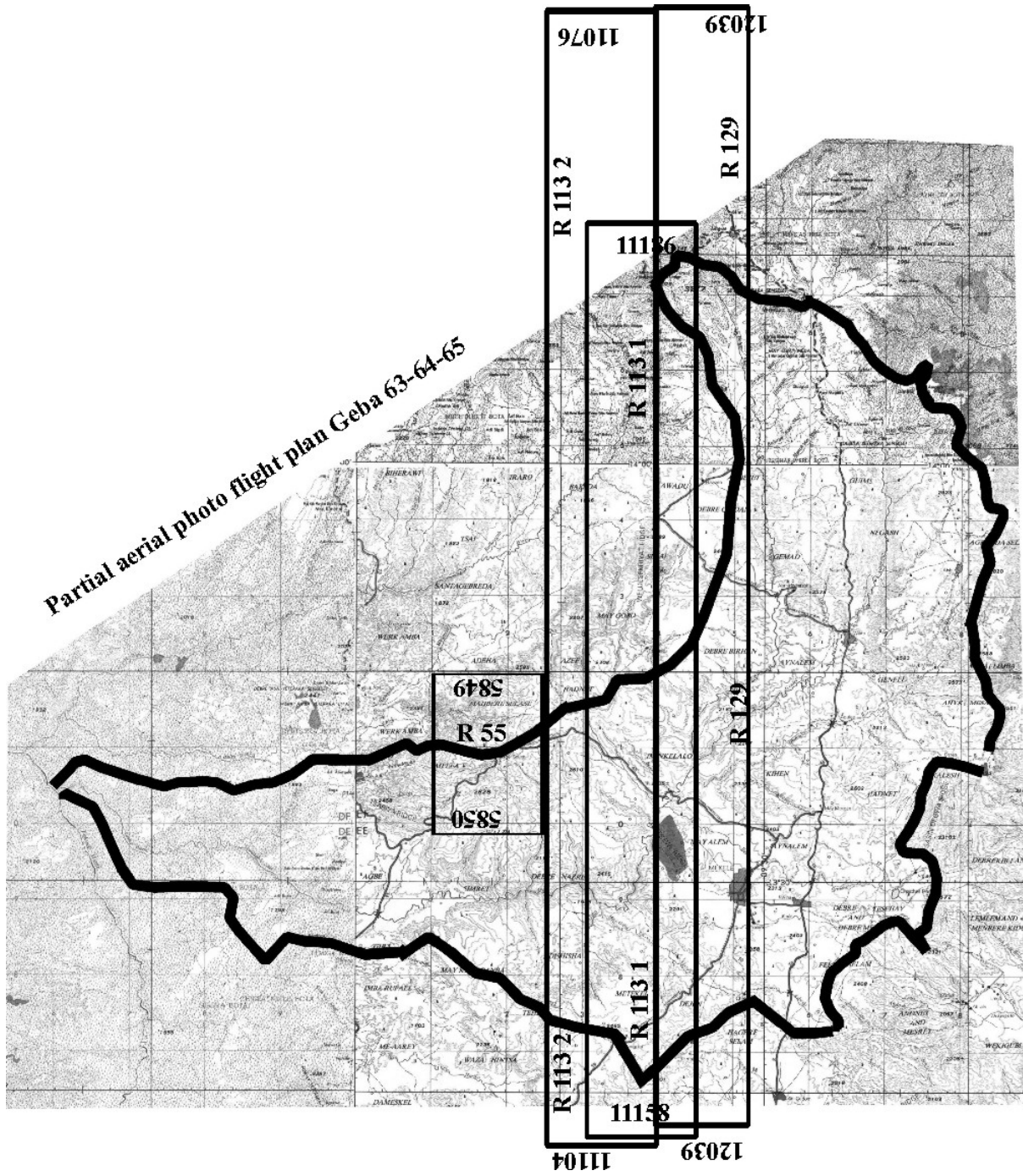


**Annex 1 : Flight plan 1994 light**



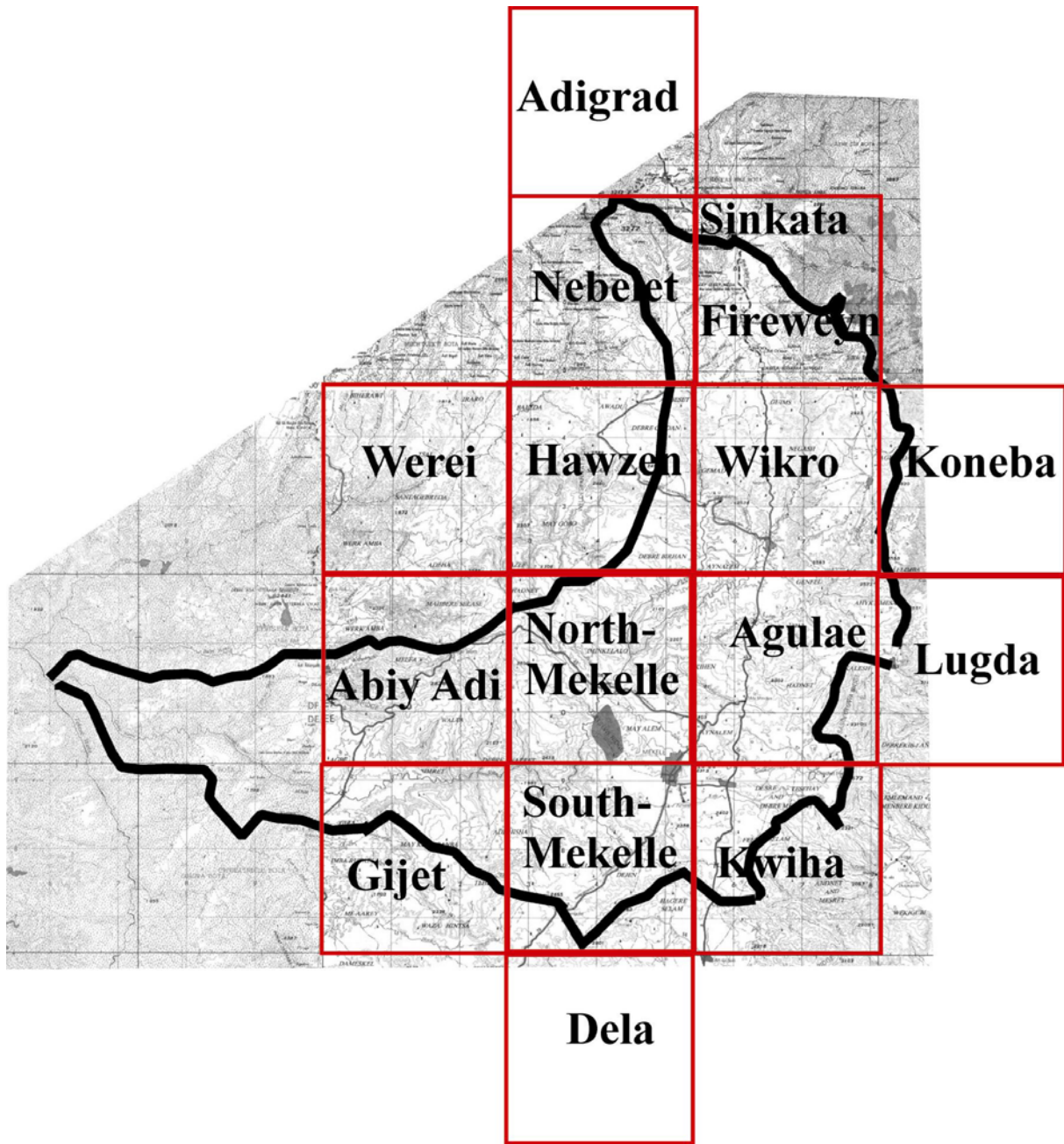
[Back to Aerial Photos 1994](#)

**Annex 2 : Flight plan 63 64 65 light**



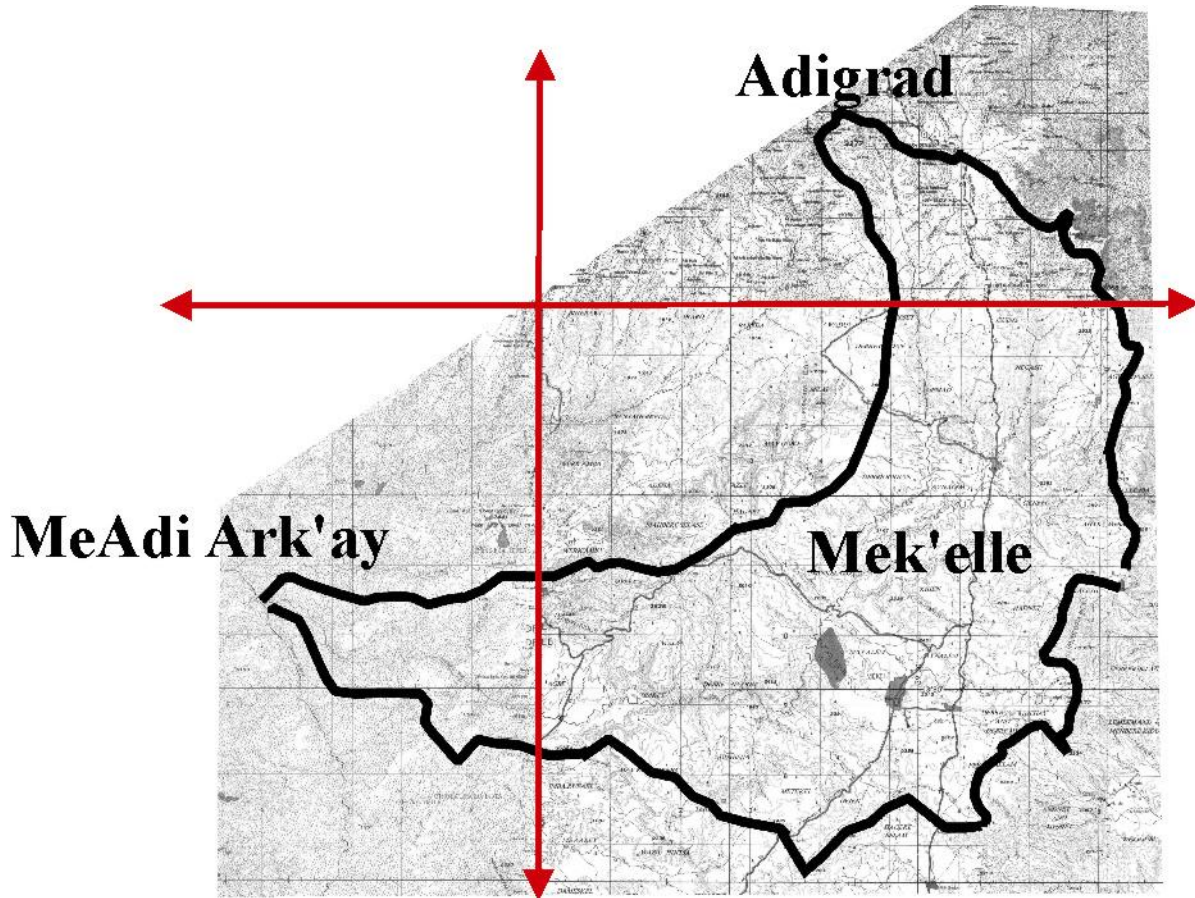
[Back to Aerial photos 63 64 65](#)

**Annex 3 : topo 50 000 coverage Geba basin**



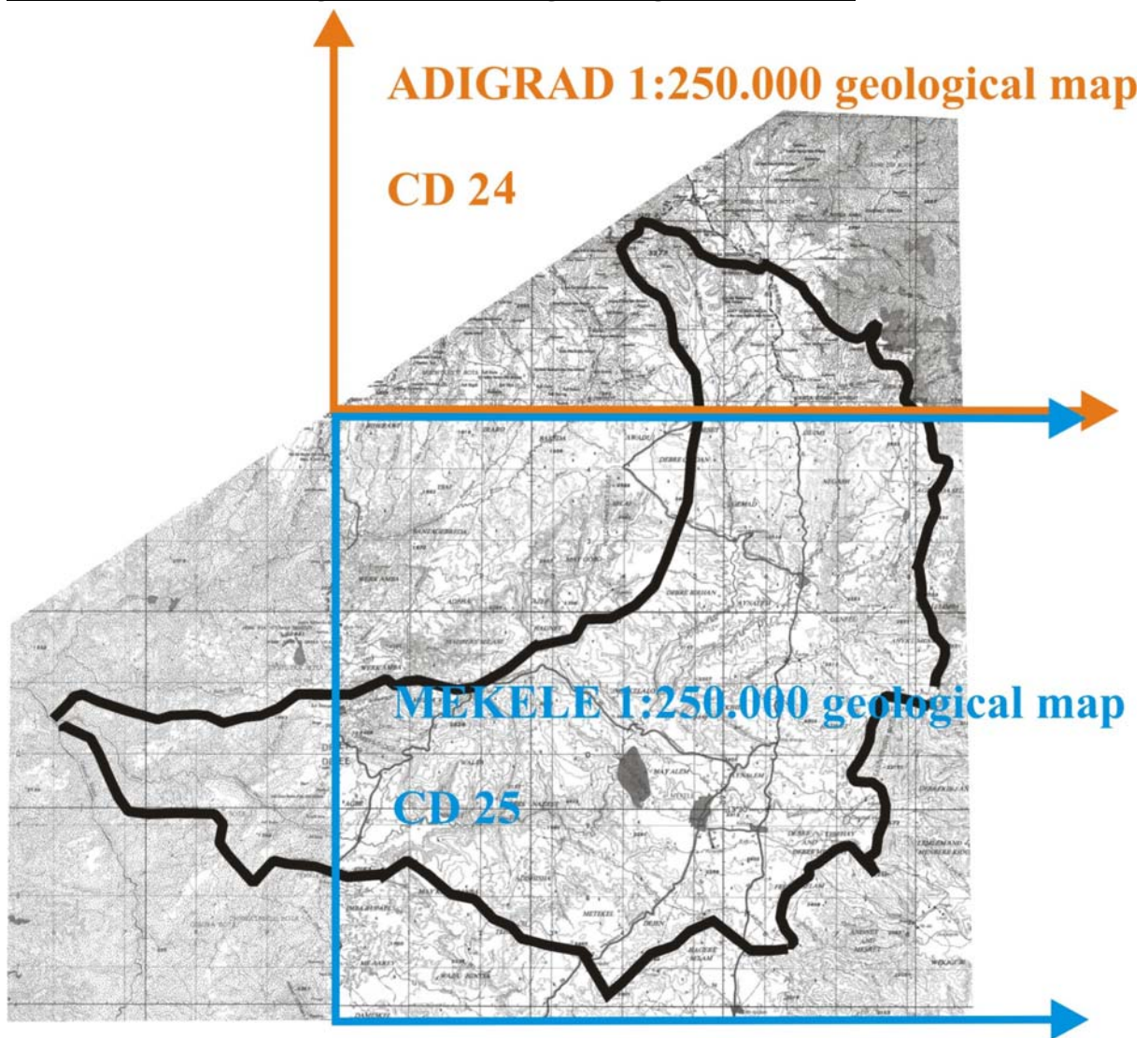
[Back to Topomaps 1 50,000](#)

**Annex 4 : topo 250 000 coverage Geba basin.jpg**



[Back to Topomaps 1 250,000](#)

**Annex 5 : Geological coverage of geba basin**



[Back to Geological maps](#)