JISITION & CREATION OF ORTHOPHOTOS UNDER ATION OF TURKISH LAND IDENTIFICATION SYSTEM

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PRESENTATION PLAN

- PROJECT BACKGROUND
- OVERALL OBJECTIVE
- PURPOSE OF LPIS PROJECT AND PROJECT SYNOPSIS
- NATURAL PARAMETERS
- TECHNICAL PARAMETERS
- ADMINISTRATIVE & LOGISTICAL PARAMETERS
- RISK ASSESMENT & MITIGATION MEASURES
- CRITICAL PLANNING

PROJECT BACKGROUND

DURING THE TRANSITION PERIOD TO EUROPEAN UNION (EU) TURKEY HAS TO ACCOMPLISH CERTAIN TASKS IN THE FIELD OF AGRICULTURE DEFINED WITH EU 'COMMON AGRICULTURAL POLICY –CAP' .

- **IN THIS REGARD , ESTABLISHING ;**
  - **« INTEGRATED ADMINISTRATION AND CONTROL SYSTEM – 'IACS'»**

AND ITS IMPORTANT COMPONENT

- **« LAND PARCEL IDENTIFICATION SYSTEM-'LPIS'»**

IS A MUST

LAND PARCEL IDENTIFICATION SYSTEM

- **LOT 1 : ACQUISITION & CREATION OF ORTHOPHOTOS UNDER DIGITIZATION OF LPIS**

Project Name	Acquisition and Creation of Orthophotos under digitization of Land Parcel Identification System
Consortium Members	Fugro Geospatial B.V.
	Aerodata International Surveys bvba,
	Mescioğlu Engineering& Consultancy Co (Local Partner)
	FM-International Oy FINMAPP
	Sinergise d.o.o,

LOT 1: ACQUISITION & CREATION OF ORTHOPHOTO UNDER DIGITIZATION OF LPIS

- LOT 1 PURPOSE :

➢ DELIVERY OF A **SEAMLESS** , **UPDATED** AND **HOMOGENEOUS** ORTHOPHOTO AND DEM DATABASE (ORTHOPHOTOS & DEM) FOR THE WHOLE COUNTRY

➢ TO BE USED AS THE BASIC SOURCE MATERIAL FOR

- ❑ **LPIS DB** GENERATION,
- ❑ OTHER RELATED PROJECTS (ENVIRONMENTAL ASSESSMENT & PROTECTION, BASIN MANAGEMENT ETC.)

LOT 1: ACQUISITION & CREATION OF ORTHOPHOTO UNDER DIGITIZATION OF LPIS

PROJECT SYNOPSIS

Project Name	Acquisition and Creation of Orthophotos under digitization of Land Parcel Identification System
Start Date	1 October 2014
Project Duration	24 months
Project Area	779,452,00 km^2

PLANNED ACQUISITION SOURCES FOR ORTHO PRODUCTION

97% → 757.000 km²

3% → 23.000 km²

Aerial Imagery

Satellite Imagery

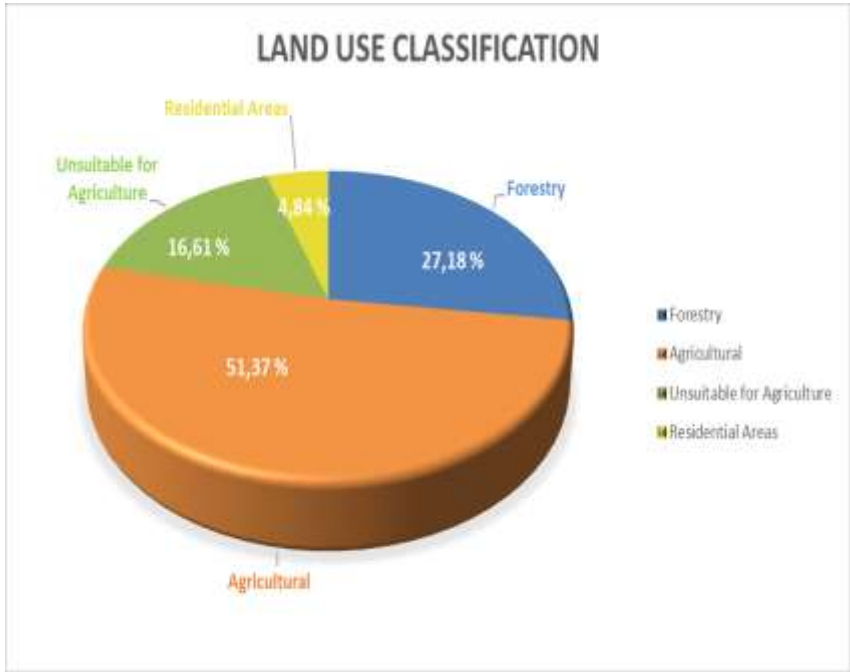
PROJECT SYNOPSIS	UNITS
NUMBER OF PHOTOGRAMMETRIC BLOCKS	67
AVERAGE BLOCK SIZE	140km*110km
APROX LENGTH OF LAND BORDERS	3000 KM
FLIGTH HEIGTH :	5500 m AGL
FORWARD&SIDE OVERLAPS:	%70±%10 & %30±%10
GSD	30CM±%10
TOTAL ESTIMATED IMAGE :	220.000
AVERAGE IMAGE PER BLOCK :	3.280
MIN IMAGE IN BLOCK	471
MAX IMAGE IN BLOCK	6.356
DIGITAL ORTHO PHOTO IN SCALE 1/5000	135.000
DIGITAL ORTHO PHOTO TILE SIZE	3,0 KM* 4,5 KM
NUMBER OF ORTHO TILES	6.000

PROJECT SYNOPSIS

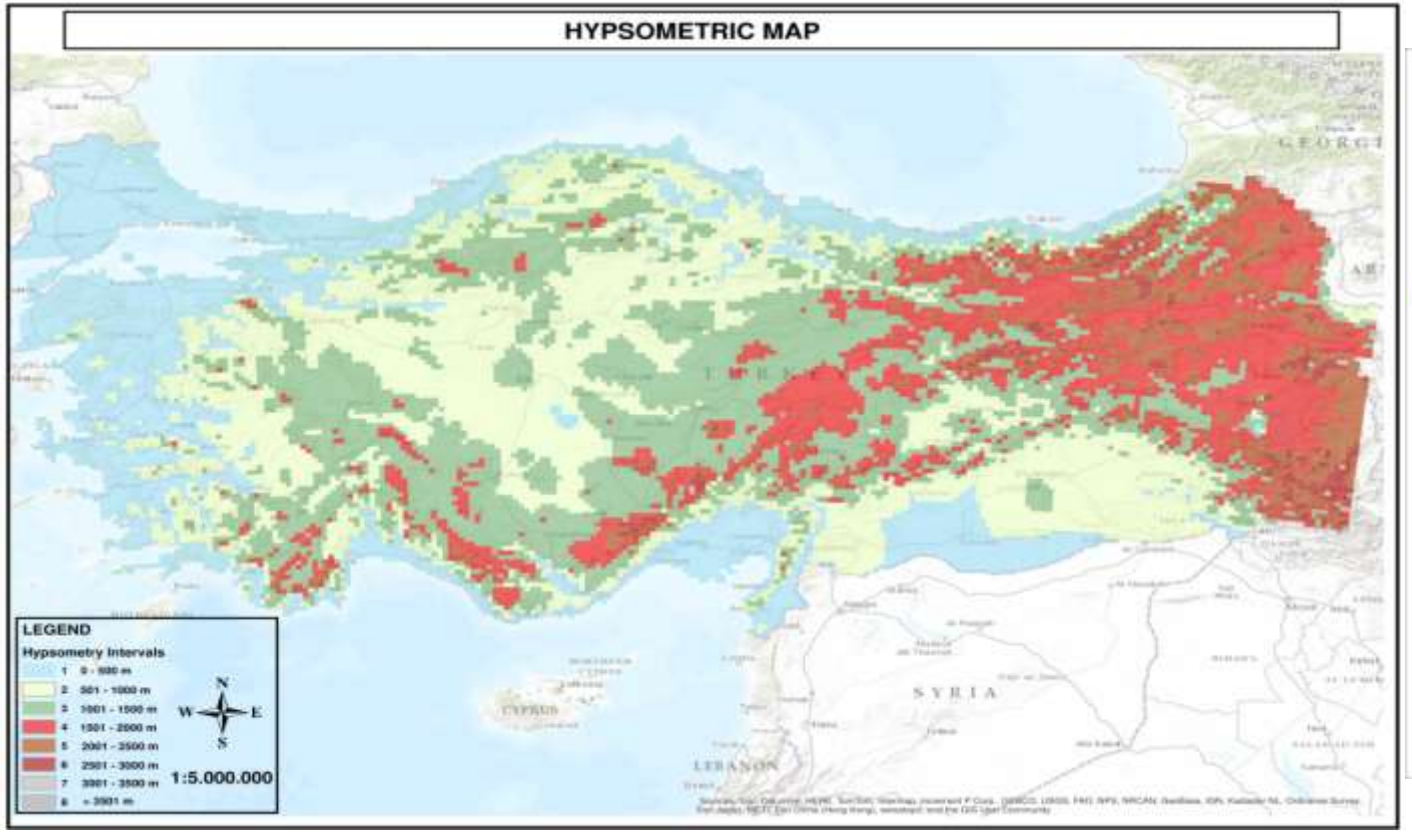
NATURAL PARAMETERS

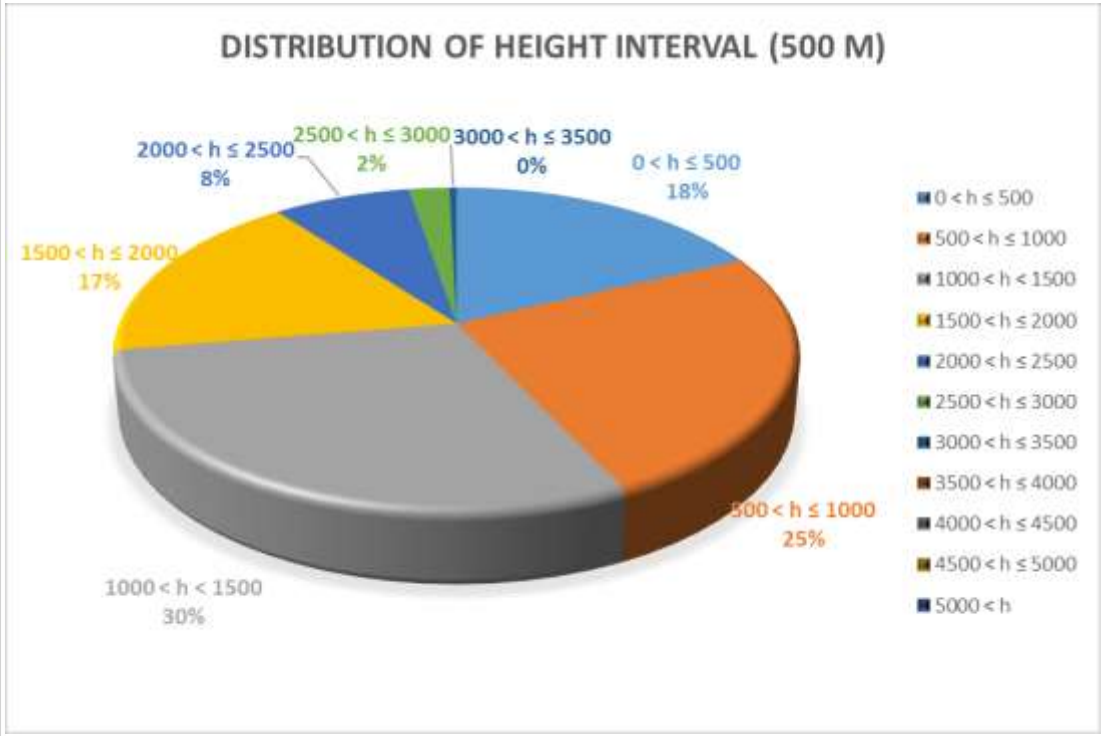
LAND USE CLASSIFICATION

Area Type	Sub-Type	Area (km2)	%	%
Forestry		211.887	27,18	27,18
Agricultural	Standing Or Cultivated	195.400	25,07	51,37
	Fallow	39.136	5,02	
	Grasslands/ rangelands	142.446	18,28	
	Unused	23.400	3,00	
Non-Agricultural		129.434	16,61	16,61
Residential Areas		37.750	4,84	4,84
Total		**779.452**	**100,00**	**100,00**

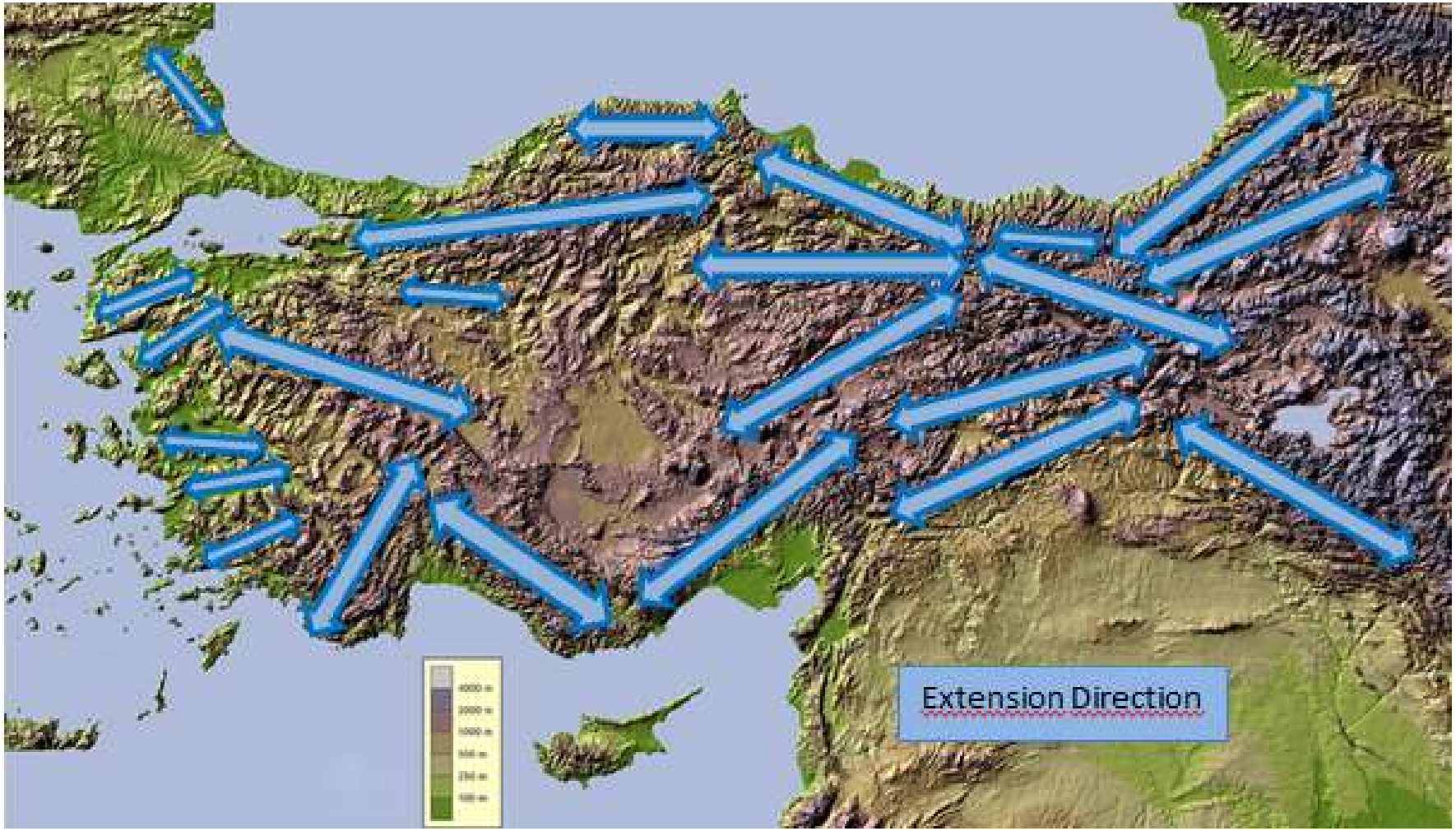


TOPOGRAPHY


HYPSOMETRIC MAP
LEGEND
Hypsometry Intervals
1 0 - 500 m
2 501 - 1000 m
3 1001 - 1500 m
4 1501 - 2000 m
5 2001 - 2500 m
6 2501 - 3000 m
7 3001 - 3500 m
8 > 3501 m
N
W
E
S
1:5.000.000
SYRIA
LEBANON
CYPRUS

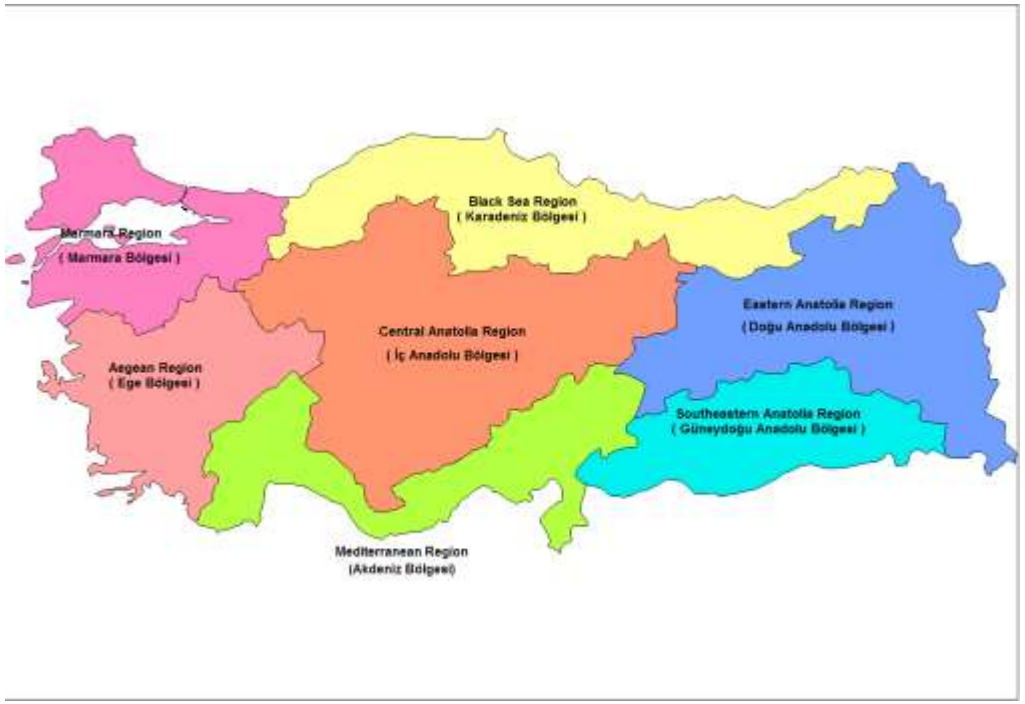

DISTRIBUTION OF HEIGHT INTERVAL (500 M)
0 < h ≤ 500
18%
500 < h ≤ 1000
25%
1000 < h < 1500
30%
1500 < h ≤ 2000
17%
2000 < h ≤ 2500
8%
2500 < h ≤ 3000
2%
3000 < h ≤ 3500
0%
0 < h ≤ 500
500 < h ≤ 1000
1000 < h < 1500
1500 < h ≤ 2000
2000 < h ≤ 2500
2500 < h ≤ 3000
3000 < h ≤ 3500
3500 < h ≤ 4000
4000 < h ≤ 4500
4500 < h ≤ 5000
5000 < h

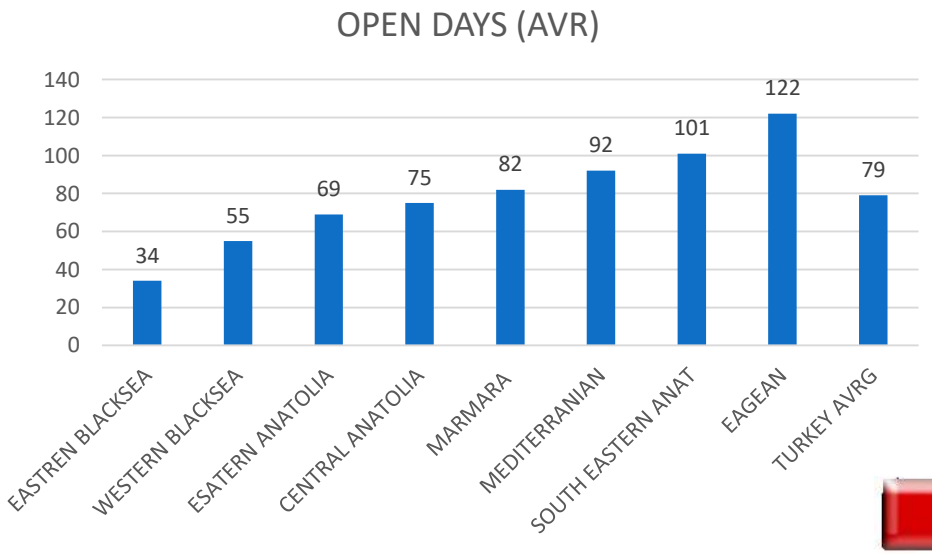
EXTENSION OF MOUNTANEOUS RANGES



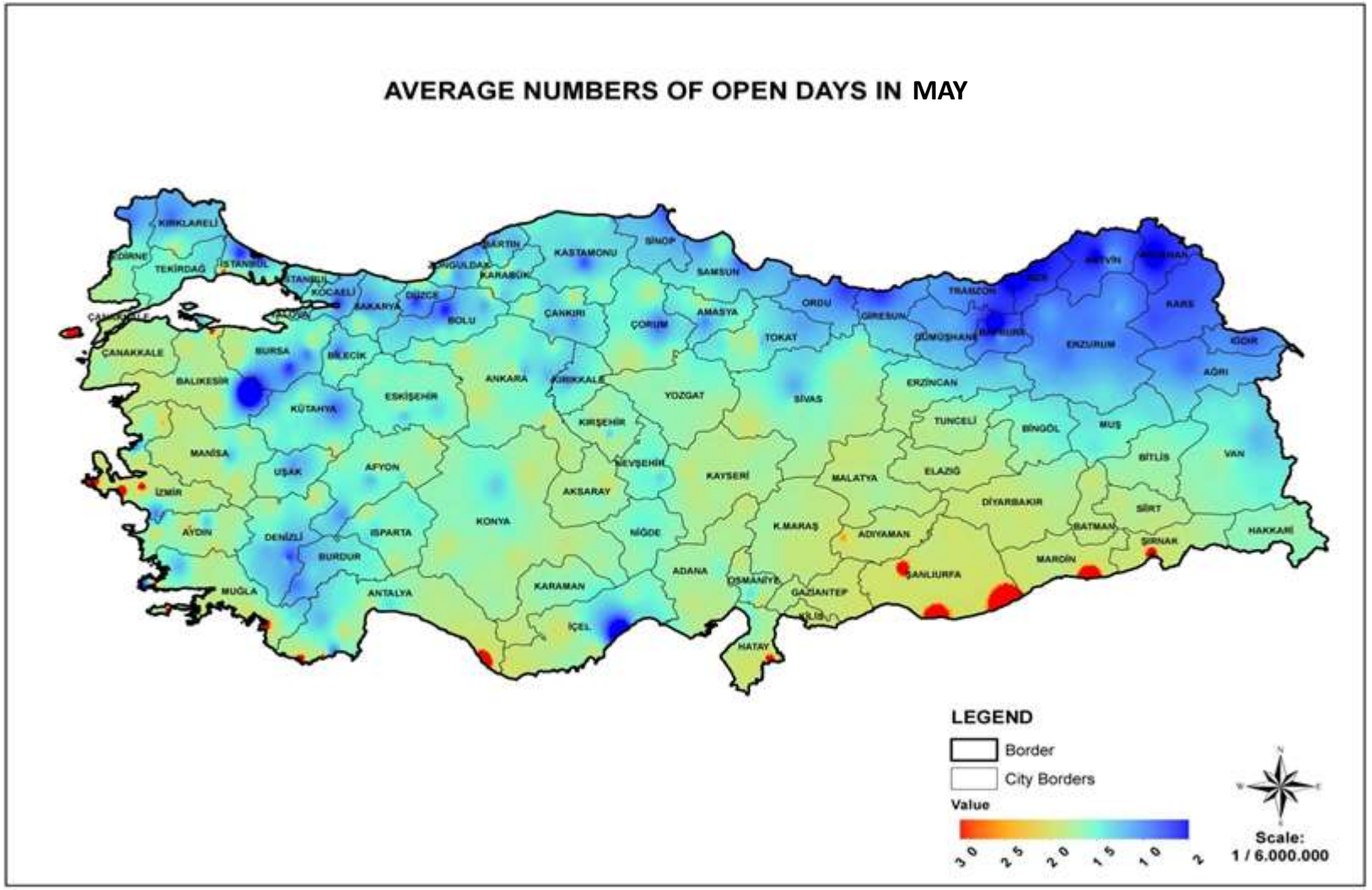
AVERAGE OPEN DAYS AS PER GEOGRAPHICAL REGIONS

GEOGRAPHICAL REGION	OPEN DAYS (AVR)	% BASED ON MIN	% BASED ON MAX
EASTREN BLACKSEA	34	1.0	0.27
WESTERN BLACKSEA	55	1,6	0.45
ESATERN ANATOLIA	69	2.0	0.57
CENTRAL ANATOLIA	75	2.2	0.61
MARMARA	82	2.4	0.67
MEDITERRANIAN	92	2.7	0.75
SOUTH EASTERN ANAT	101	3.0	0.83
EAGEAN	122	3.6	1,0
TURKEY AVRG	79	2,32	0,65

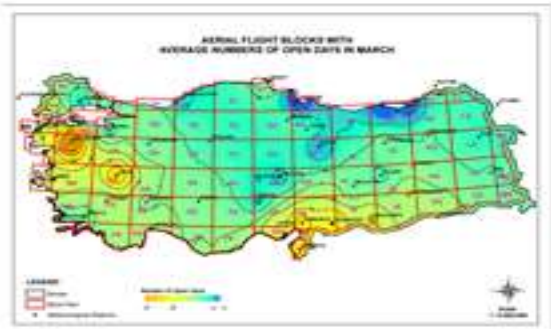


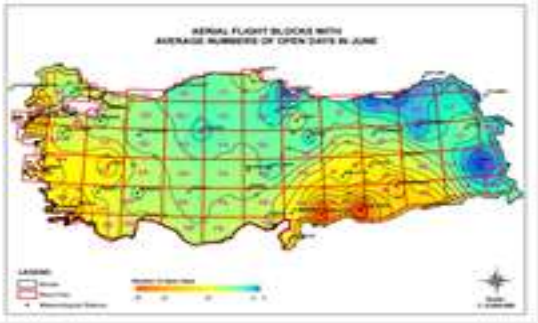


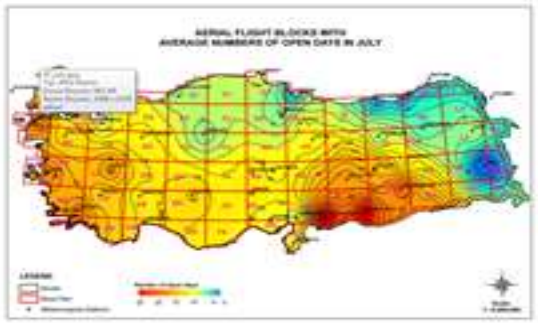
AVERAGE OPEN DAYS STATISTICS (SAMPLE: MAY)

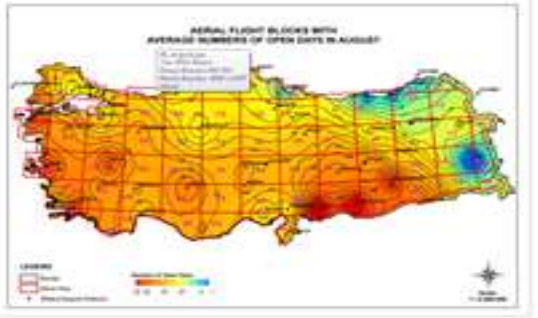


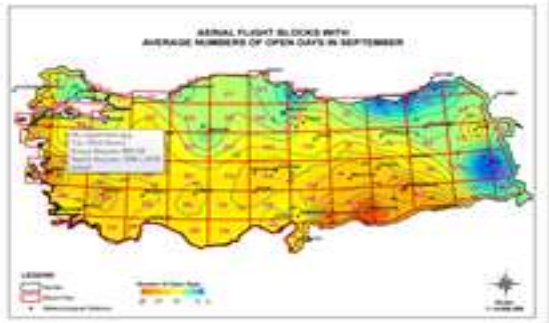
MONTHLY OPEN DAYS

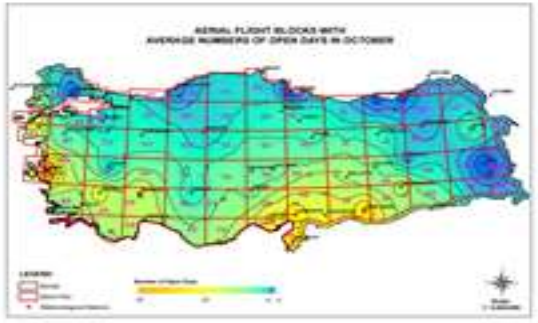








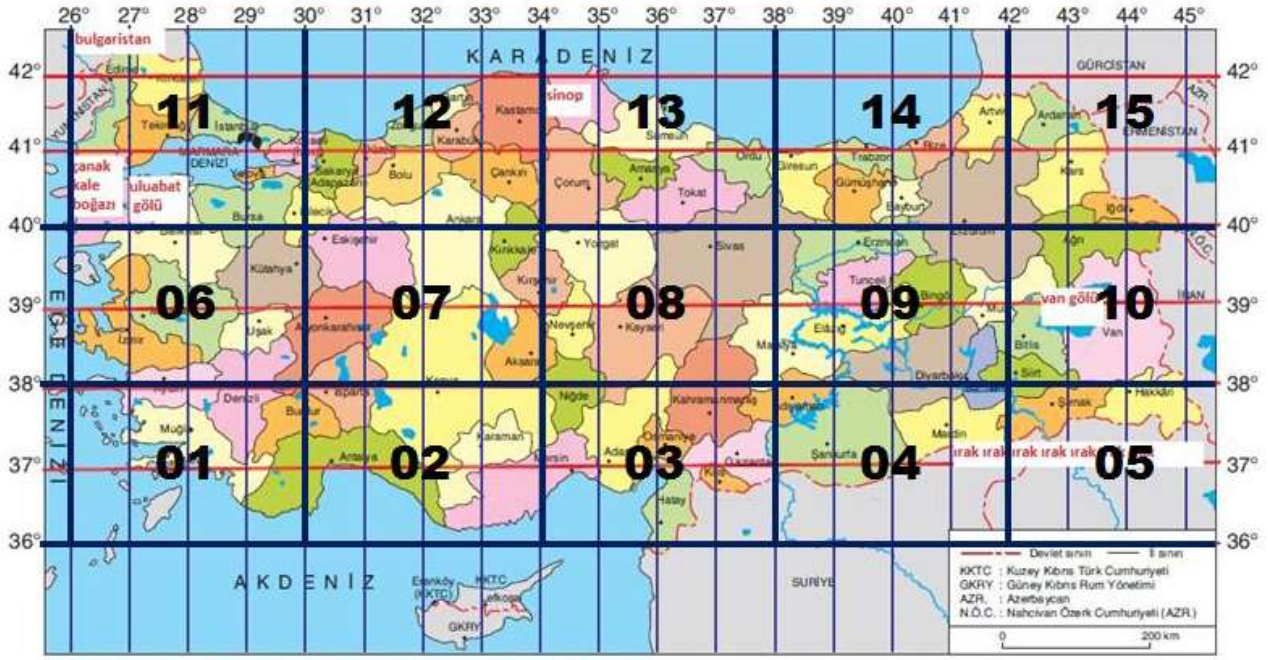




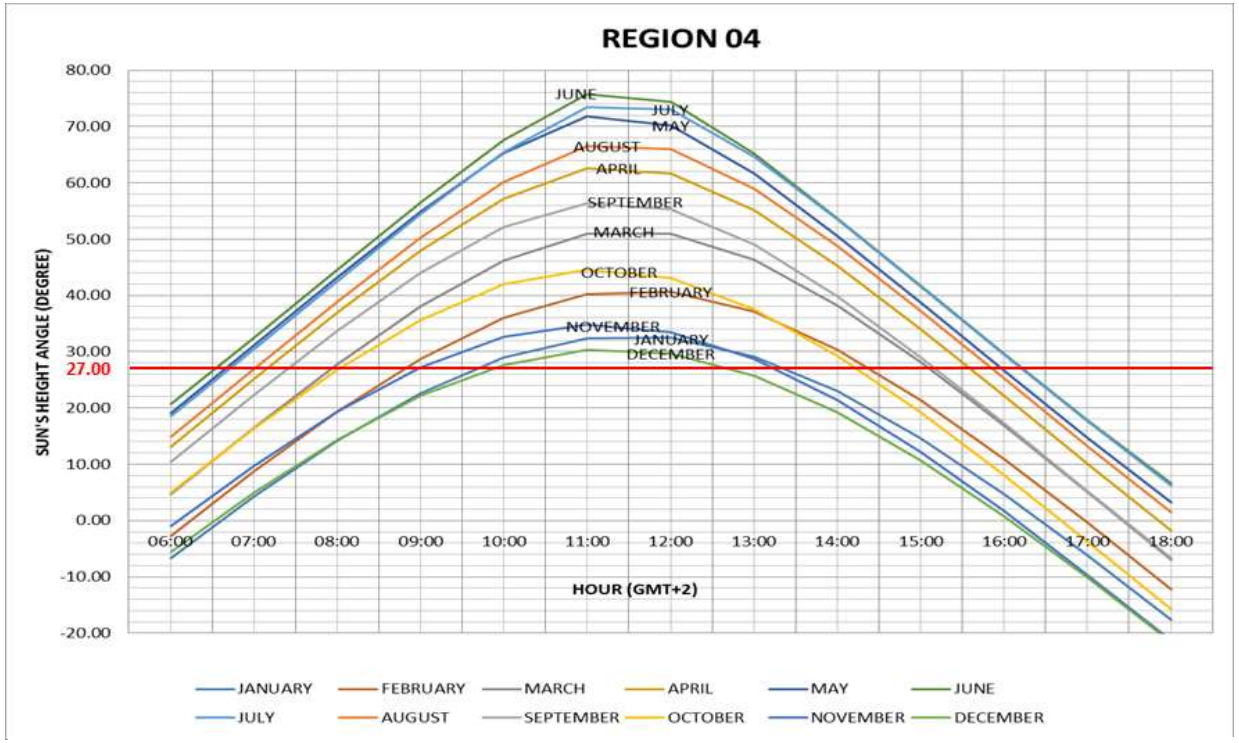
LEGEND	DAYS
	≤2
	3-5
	6-8
	9-10
	11-13
	14-15
	16-18
	19-21
	≥22

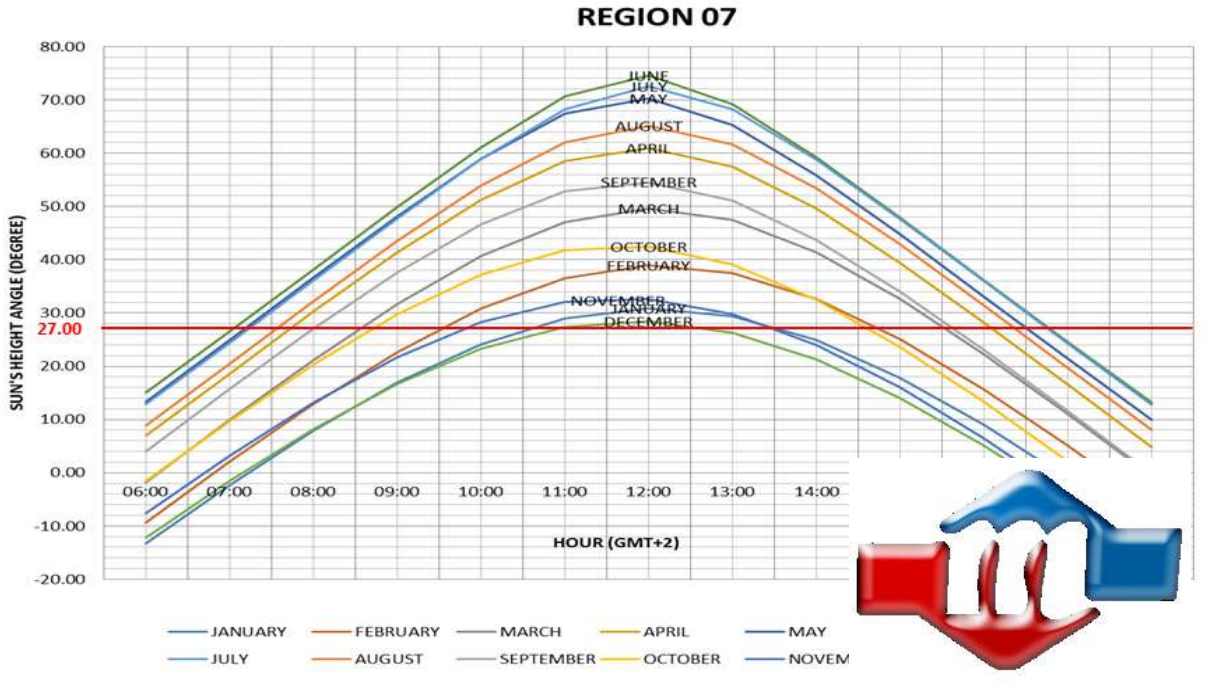
SUN HEIGHT ANGLE

SUN'S HEIGHT ANGLE DIAGRAMS REGION INDEX

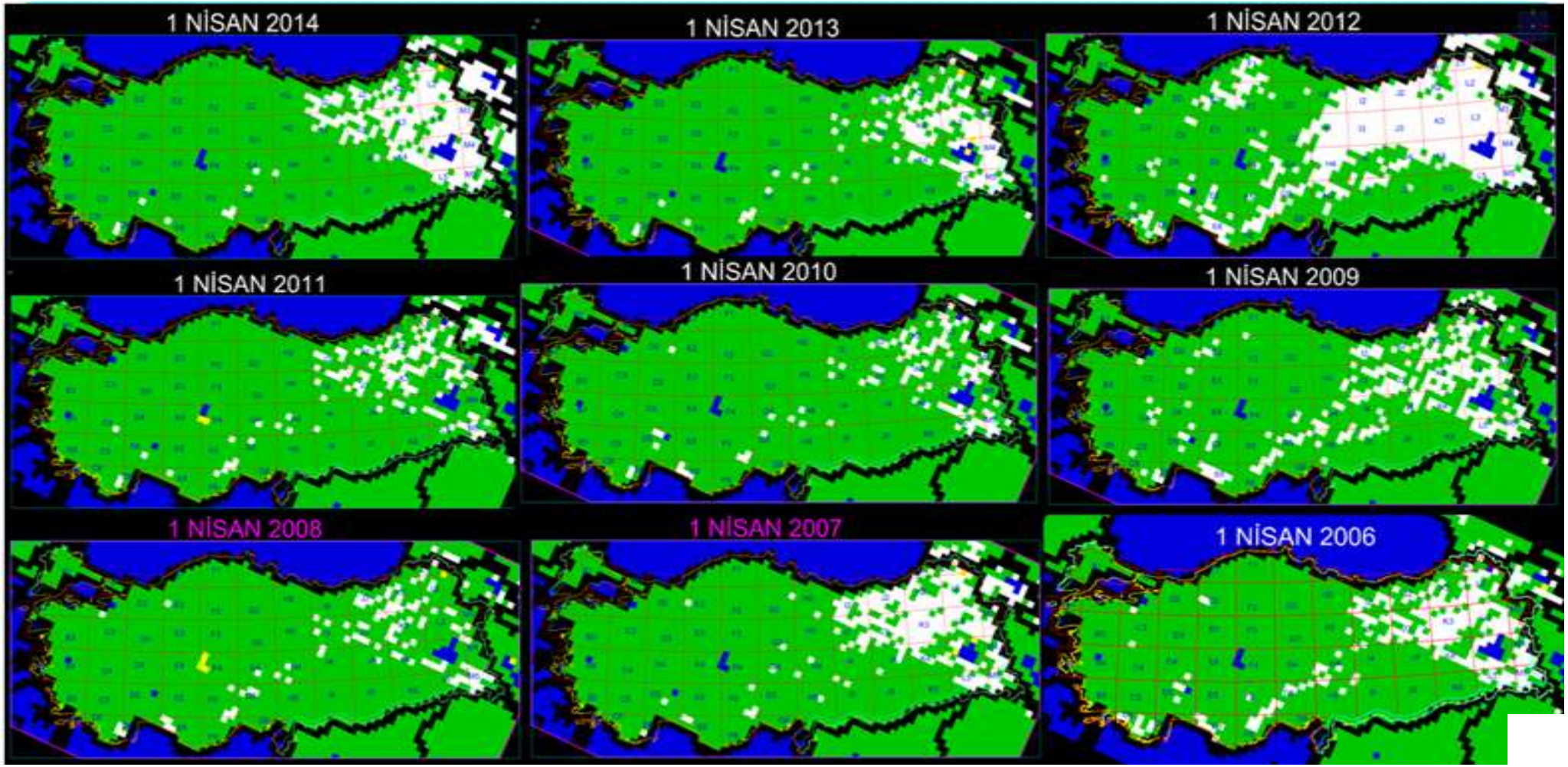


December: max 0 Hours flying per day

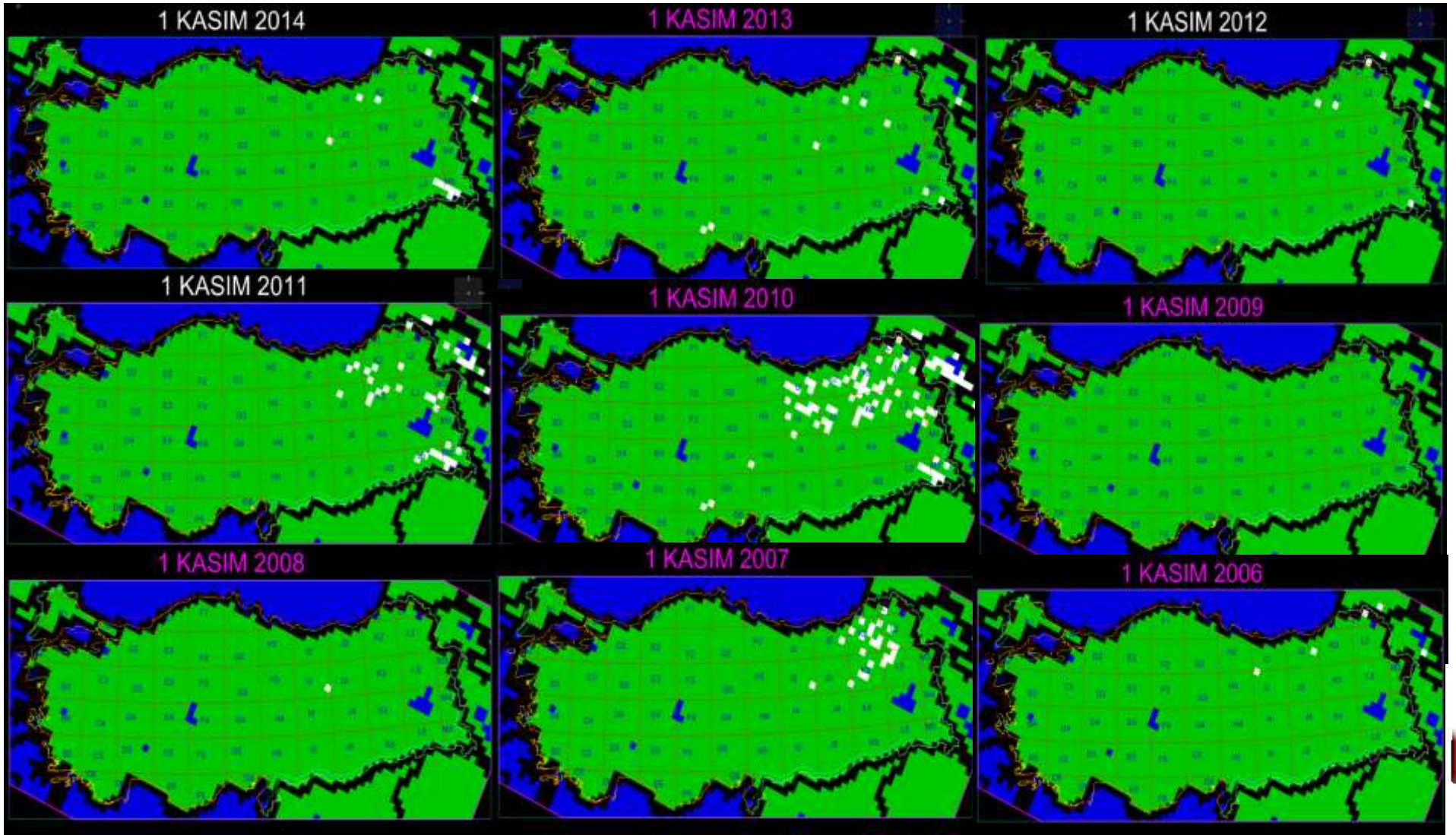




SNOW COVER BETWEEN THE YEARS 2006-2014 IN APRIL



SNOW COVER BETWEEN THE YEARS 2006-2014 IN NOVEMBER



TECHNICAL PARAMETERS

DATA MANAGEMENT & IT INFRASTRUCTURE PLANNING

- DATA LOAD ESTIMATE
- DATA STORAGE REQUIREMENTS
- DATA BACK-UP REQUIREMENTS
- DATA TRANSFER (I/O OR R/W)BANDWIDTH ESTIMATE :
  - SERVER TO SERVER (20 Gb/s)
  - SERVER TO WS (10 Gb/s)
  - SERVER TO CLIENT (1 Gb/s)
- CORE BASED CAPASITY ESTIMATES FOR THE PROCESSES
- IT INFRASTRUCTURE & OTHER SECURITY REQUIREMENTS

WORKFLOW BASED DATA INPUT/OUTPUTS

Image Acquisition	→	RAW Image + GNSS/IMU Data
Image Processing	→	Intermediate + RGBI Image Data
DSM Generation	→	Point Cloud Data (DSM)
DSM Filtering	→	DEM Data
Image Rectification	→	Ortho Images
Ortho Images	→	Block Mosaic
Tile Cutting	→	Ortho Tiles

DATA LOAD ESTIMATE

Process	Input	Output	Data Load (per Block)	Data Load (PROJECT AREA)
Flight Mission	Flight Plan	RAW Image (LVL00) + GNSS/IMU Data	2.5 TB	168.5 TB
Image Processing	*RAW Image (LVL00)*	*Intermediate Image (LVL02)*	*1.88 TB*	*125.96 TB*
Image Processing	Intermediate Image	RGBN 16bit Images (LVL03)	7.65 TB	512.66 TB
Aerial Triangulation	GNSS/IMU Data + RGBN 16bit Images (LVL03)	**Adjusted Block Projects +External Orientation**	**0.001 TB**	**0.09 TB**
Automatic DSM Generation	*RGBN 16bit Images (LVL03) + External Orientation*	*DSM Point Cloud*	*0.128 TB*	*8.58 TB*
DEM Creation	DSM/DTM	**DEM**	**0.001 TB**	**0.1 TB**
Image Rectification	RGBN 16bit Images (LVL03) + DEM	Ortho Images	*3.93 TB*	*263.31 TB*
IQC/EDIT	Ortho Images + DEM	**Ortho-DEM**	**0.001 TB**	**0.1 TB**
Final Ortho Rectification	*Ortho Images + Ortho-DEM*	*Block Ortho Mosaic*	*3.21 TB*	*215.07 TB*
Tile Cutting	Block Ortho Mosaic	**Ortho Tiles**	**3.21 TB**	**215.07 TB**
		TOTAL	22.51 TB	1509.44 TB
*** Bold Items:**	**Main Delivery Items, kept on storage system until the end of Project**			
*** Italic Items:*	*Kept until delivery approval by customer, deleted afterwards*			
*** Underlined Items:	Kept on External HDDs as offline backup until the end of Project, delivered to Customer afterwards.			

DATA LOAD SUMMARY

STORAGE EXPLANATIONS		Data Load (TB per Block)	Data Load (TB PROJECT AREA)	STORAGE TYPE	Dependency	
					Cons	3rd Party
* **Bold Items**:	Main Delivery Items, kept on storage system until the end of Project	**3,213**	**215,36**	**PERMANENT STORAGE FOR PROJECT CYCLE**		x
** *Italic Items*:	Kept until delivery approval by customer, deleted afterwards	**9,148**	**612,92**	**TEMPORARY STORAGE TILL EQC ACCEPTANCE**		x
*** Underlined Items:	Kept on External HDDs as offline backup until the end of Project, to deliver Customer afterwards.	**10,15**	**681,16**	**PROJECT CYCLE EXTERNAL STORAGE**		x
TOTAL		**22,51**	**1509,44**			

PROJECT DURATION

PROJECT DURATION OF 24 MONTH WAS

- **ONE OF THE IMPORTANT INPUT FOR WORK PROGRAMME**
- **WITH OTHER FACTS PREVIOUSLY DEFINED OR TO BE DEFINED .**

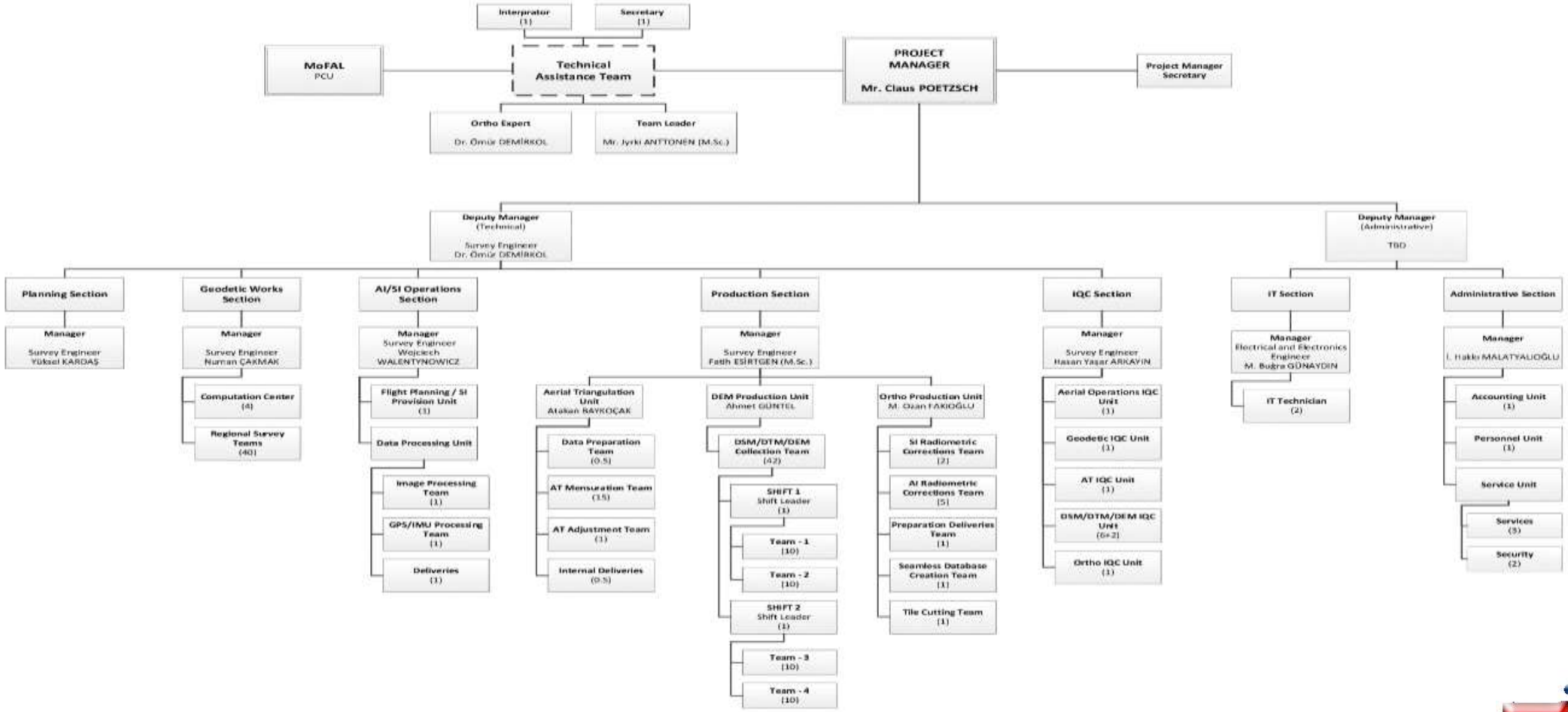
WORK PROGRAMME

	MNTH/PRJ DURATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	YEARS	2014			2015												2016								
	MNTH/YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AGS	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AGS	SEP
MAIN PROCESSES	PREPARATORY WORKS																								
	GEODETIC WORKS																								
	AERIAL PHOTOGRAPHY																								
	IMAGE PROCESSING																								
	DSM/DTM/DEM PROD																								
	ORTHO PRODUCTION																								

WORK LOAD AND MAN POWER ESTIMATES

	PRODUCTION TIMES				Dependency	
	CURRENT ESTIMATION					
MAIN PROCESS	HOURS	MONTH	DAYS	PERS REQ	Cons	3rd Part
AERIAL IMAGERY	1526				X	X
IMAGE PROCESSING	6850	8	176	5	X	
AERIAL TRIANGULATION	10866	8	176	8	X	
DSM/DTM/DEM GENERATION	67667	15	330	26	X	
OP PROD/MOSAIC/SEAM LINE EDIT/COLOR BAL/TILE CUTTING	13533	15	330	5	X	
INTERNAL QUALITY CONTROL	15012	15	330	6	X	
PROD PERS ONLY	113928	61	1342	50	X	
TECHNICAL MANAGERS		20/24		11	X	
ADMIN PERS		24		8	X	
FIELD PERS		9		66	X	
GRAND TOTAL				135		

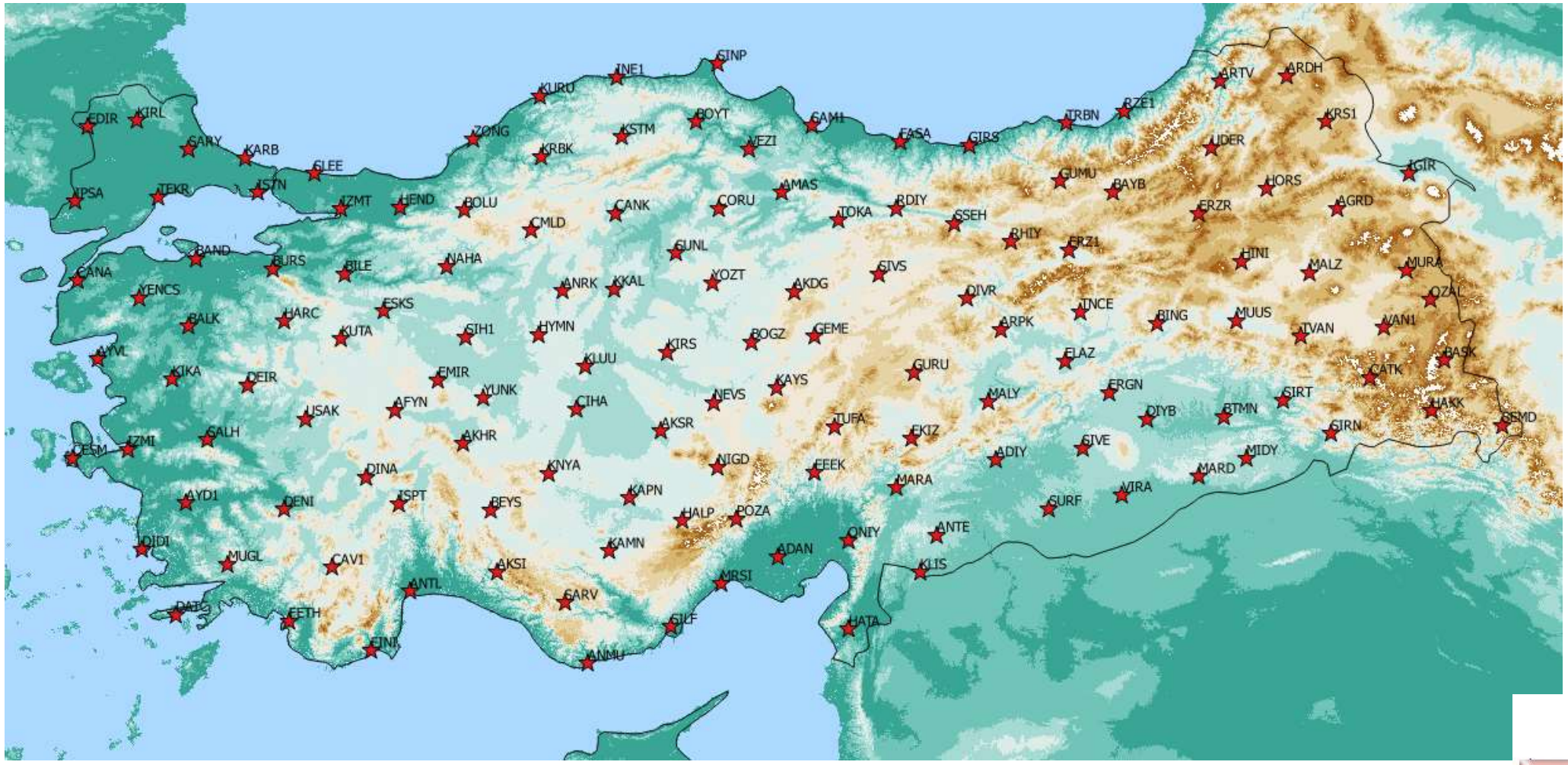
ORGANISATION



PHOTOS FROM PRODUCTION OFFICE

GEODETIC INFRASTRUCTURE

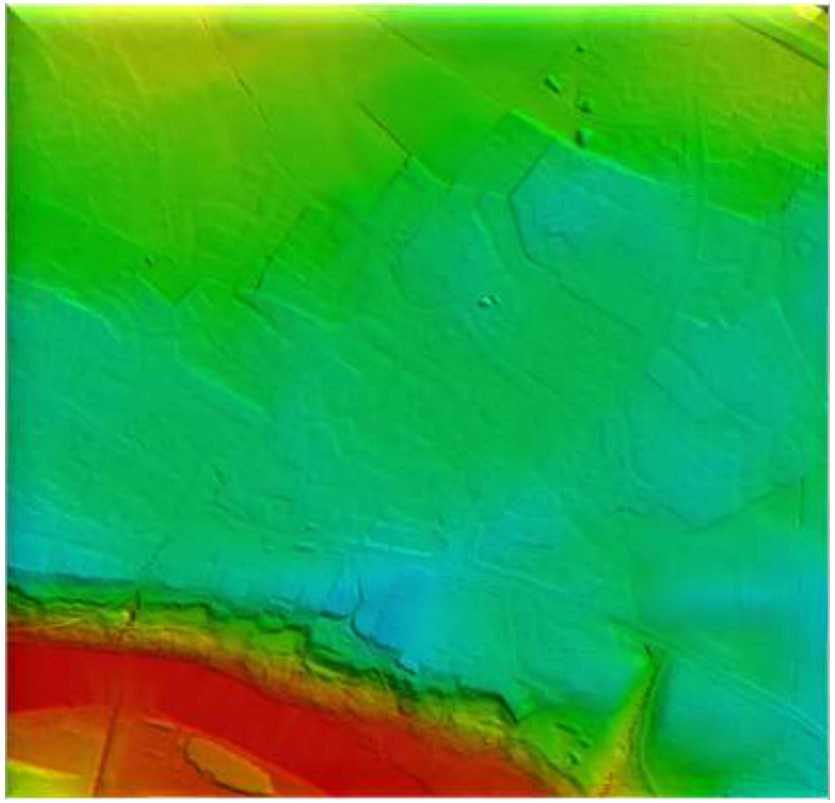
CORS-TR STATIONS AND DISTRIBUTION



DIGITAL ELEVATION DATA

DTED-LEVEL-2 DATA PROVIDED BY

GENERAL COMMAND OF MAPPING



DATA MANAGEMENT & HW&SW REQUIREMENTS & IT INFRASTRUCTURE

IMAGE PROCESSING – PROCESS

40 CORE ULTRAMAP LICENCE

WS PROCESSING TIME PER CORE

WITH 10 Gb/s Band width	INPUT		LAN	OUTPUT	LAN
1 IMAGE	WS		INPUT	WS	OUTPUT
PROCESS NAME	DATA MB	PROC m	READ s	DATA MB	WRITE s
LVL00-LVL002	803	8	2,0	600	1,5
PBCB	600	6	1,5	600	1,5
LVL02+PBCB TO LVL03	600	14	1,5	1815	4,5
LVL03	1815	1	4,5	2443	6,0
TOTAL	3818	29	9,5	5458	13,5

PROCESSING WORKSTATION CONFIGURATION

HP Z640 Workstation (2cpu, **12cores**, 24 threads)
HP Intel Xeon E5-2620 v3 2.40GHz 8GT/s 15MB Cache 1866MHz 6C
HP Intel Xeon E5-2620 v3 2.40GHz 8GT/s 15MB Cache 1866MHz 6C
HP 32GB (4x8GB) DDR4 2133MHz ECC RAM
HP NVIDIA Quadro K620 2GB
HP 256 GB SSD Drive
HP 1TB SATA III 7200rpm 6Gb/s
HP Intel X520 10GbE Dual Port Adapter
HP 925W 90% Efficient Chassis

1 IMAGE PROCESS TIME ESTIMATED WITH 1 HP 12 CORE WS

WS	CORE NO	DEDICATED CORE		PROSS TIME With 10 Core (m/image)	
		PROCESS	I/O	UCx	UCE
HP Z640	12	10	2	2,7	2,9

DAILY IMAGE PROCESSING CAPACITY WITH 4 WS

PROCESSING TIME WITH 1 WS	TOTAL. CORE WITH 4 WS	NUMBER OF IMAGE TO BE PROCESSED PER DAY	
		UCx	UCE
1440 m/Day	40	2133	1986

ASSUMPTIONS

- ACCEPTED AS 1500 IMAGE/DAY (SAFE SIDE)
- 8 MONTHS/176 Working Days
- 220.000 Image /176 ➔ 1250 Img/day expected
- 1 Block➔ 3280 Avr Image➔3280/1500➔ 2.2 day/Block
- 1 Block➔ 3280 Avr Image➔3280/1250➔ 2,6 day/Block

IMAGE PROCESSING – NETWORK

WITH 10Gb/s BAND WIDTH	WS		LAN	WS	LAN
1 IMAGE	INPUT			OUTPUT	
PROCESS NAME	DATA MB	PROC m	READ s	DATA MB	WRITE s
LVL00-LVL002	803	8	2,0	600	1,5
PBCB	600	6	1,5	600	1,5
LVL02+PBCB TO LVL03	600	14	1,5	1815	4,5
LVL03	1815	1	4,5	2443	6,0
TOTAL	3818	29	9,5	5458	13,5

I/O (R/W) PROCESS COMPARISON		LAN WITH		SAVING
		10 Gb/s	1 Gb/s	10Gb/1Gb
UCE IMAGE number	PROCESS DURATION m)	READ/ WRITE (s)	READ/ WRITE (s)	TIMES FASTER
1	29	23	123,6	5,34
220000	6.380.000	5.060.000	27.192.000	5,34
AS HOUR	106333	1406	7553	5,34
AS DAY		59/29,5	315/167,5	5,34

- TOTAL DATA READ/WRITE TIME FOR 1 IMAGE WITH ONE CORE & 10Gb/s NETWORK IS 23 SECONDS
- IT IS ~1.32% OF 29 MINUTES TOTAL PROCESSING TIME
- IT WOULD BE ~123.6 SECOND IF 1Gb/s NETWORK WAS USED (~7.1 % OF TOTAL TIME)
- FOR TWO CORE 11.5 & 61.8 SECONDS RESPECTIVELY

STORAGE SERVER

Two Storage Servers dedication ;

- S01 (Aerial Images: LVL00, LVL02, LVL03): * HP DL380p Gen9 2U Server
  * HP D6000 5U Storage (210TB)
- tho, Mosaic, Tile): * HP DL380p Gen9 2U Server
  * H)

osure

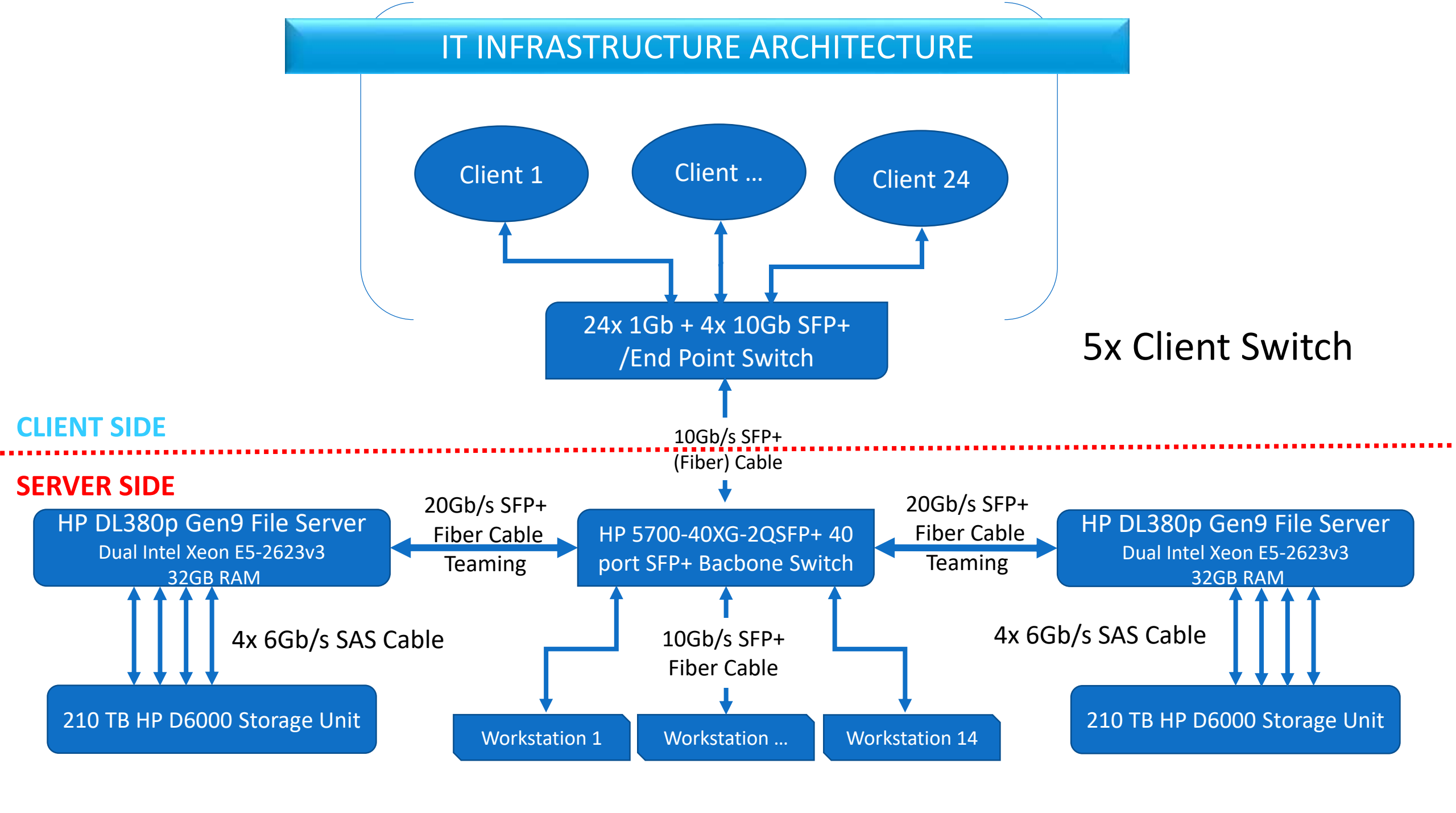
- 210 TB Storage Capacity Each
- RAID 50 Configuration
- At once , Storage system is capable of storing 22 Blocks (approximately 32.8% of total)

WS CABINET

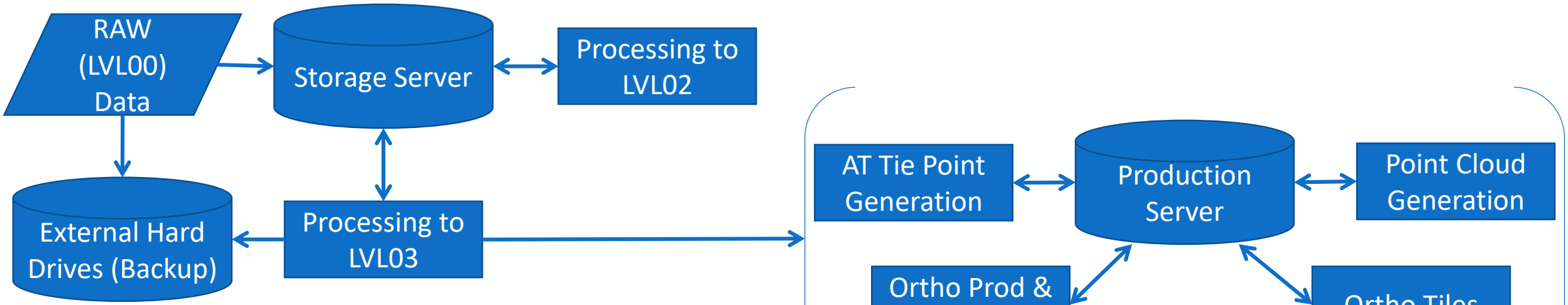
SERVER CAB.

PRODUCTION+SERVERS HW CONFIGURATION

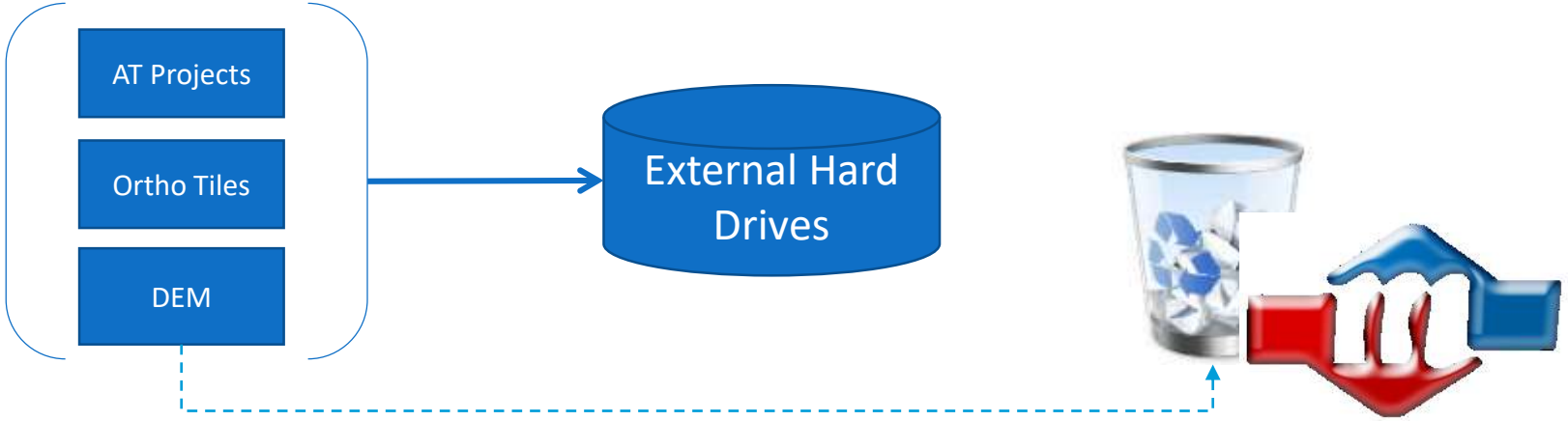
DEDICATION	SERVER	WS	PHOT WS	PC	TOTAL	Dependency	
						Cons	3rd Party
IMAGE PROCESSING		4		5	9	x	
AERIAL TRIANGULATION		4		2	6	x	
DIGITAL ELEVATION MODEL PROD.		2	8	5	15	x	
ORTHO PRODUCTION		4		4	8	x	
INTERNAL QUALITY CONTROL			2	4	6	x	
PROD MNGs+ PROD MNG				8+1	9	X	
SERVER	2				2	x	
TOTAL	2	14	10	29	55		
PLANNED HW DESIGN	SERVER SIDE		CLIENT SIDE				


IT INFRASTRUCTURE ARCHITECTURE
Client 1
Client ...
Client 24
24x 1Gb + 4x 10Gb SFP+
/End Point Switch
5x Client Switch
CLIENT SIDE
10Gb/s SFP+
(Fiber) Cable
SERVER SIDE
HP DL380p Gen9 File Server
Dual Intel Xeon E5-2623v3
32GB RAM
20Gb/s SFP+
Fiber Cable
Teaming
HP 5700-40XG-2QSFP+ 40
port SFP+ Bacbone Switch
20Gb/s SFP+
Fiber Cable
Teaming
HP DL380p Gen9 File Server
Dual Intel Xeon E5-2623v3
32GB RAM
4x 6Gb/s SAS Cable
4x 6Gb/s SAS Cable
10Gb/s SFP+
Fiber Cable
210 TB HP D6000 Storage Unit
Workstation 1
Workstation ...
Workstation 14
210 TB HP D6000 Storage Unit

DATA FLOW and BACKUP ARCHITECTURE



Backup After Product Delivery



BACKUP & DELIVERY

- EXTERNAL BACKUP
- 120x5TB = 600 TB External HDDs

- DELIVERY
- 30x3TB= 90 TB EXTERNAL HDDs

DEFINE RISKS & MITIGATION MEASURES

- THE MOST RISKY PROCESSES ARE AIR & FIELD OPERATIONS CAUSE DIRECTLY DEPEND ON SOME NATURAL PARAMETERS AND COORDINATION WITH THIRD PARTY ORGANISATIONS
- MITIGATION NEEDS A STRONG COORDINATION WITH GOVERNMENT ORGANISATIONS
- OFFICE BASED PROCESSES ARE MOSTLY CONSORTIUM DEPENDENT PARAMETERS, DECISION MAKING AND MANAGEMENT ARE EASY AND FAST

CRITICAL PLANNING

GENERAL WORKFLOW

AERIAL IMAGERY WORK FLOW

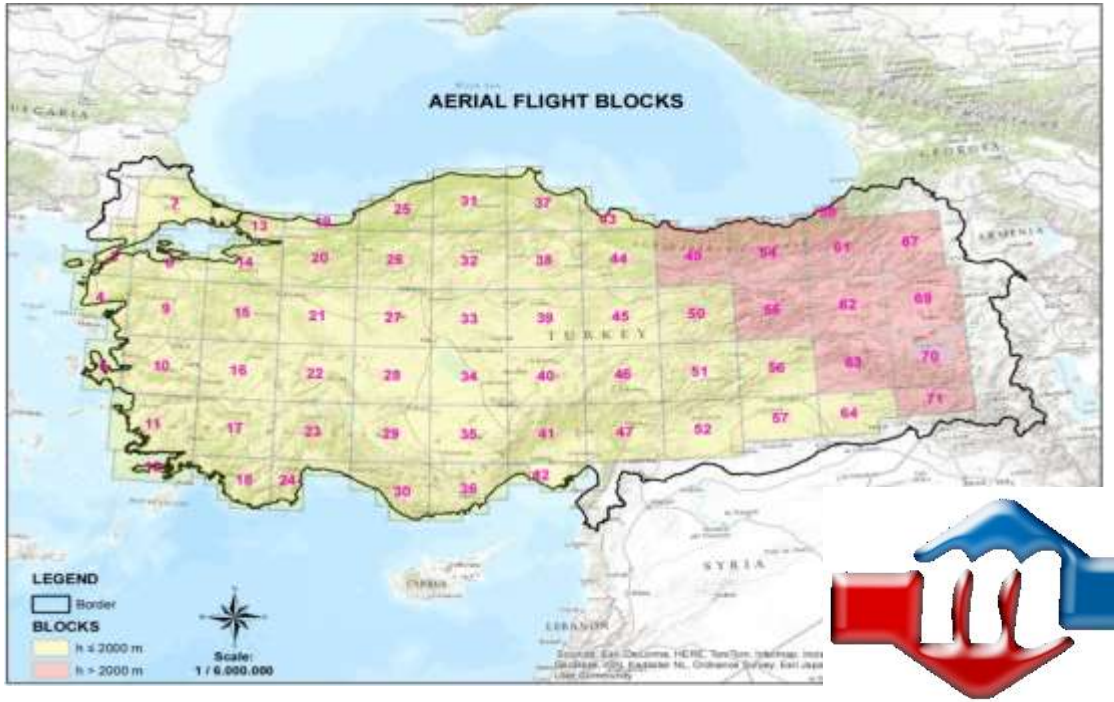
- PREPARATORY WORKS
- PHOTOGRAMMETRIC BLOCK PLANNING
- FLIGTH MISSION PLANNING
- GEODETIC WORKS
- AERIAL PHOTOGRAPHY
- IMAGE PROCESSING
- AERIAL TRIANGULATION
- DSM/DTM /DEM GENERATION
- OP PROD/MOSAIC/SEAM LINE EDIT/COLOR BAL/TILE CUTTING
- INTERNAL QUALITY CONTROLS

SATELLITE IMAGERY WORK FLOW

- PROVISION SATELLITE IMAGERY
- GEODETIC WORKS
- AERIAL TRIANGULATION
- DSM/DTM /DEM GENERATION
- OP PROD/MOSAIC/SEAM LINE EDIT/COLOR BAL/TILE CUTTING
- INTERNAL QUALITY CONTROLS

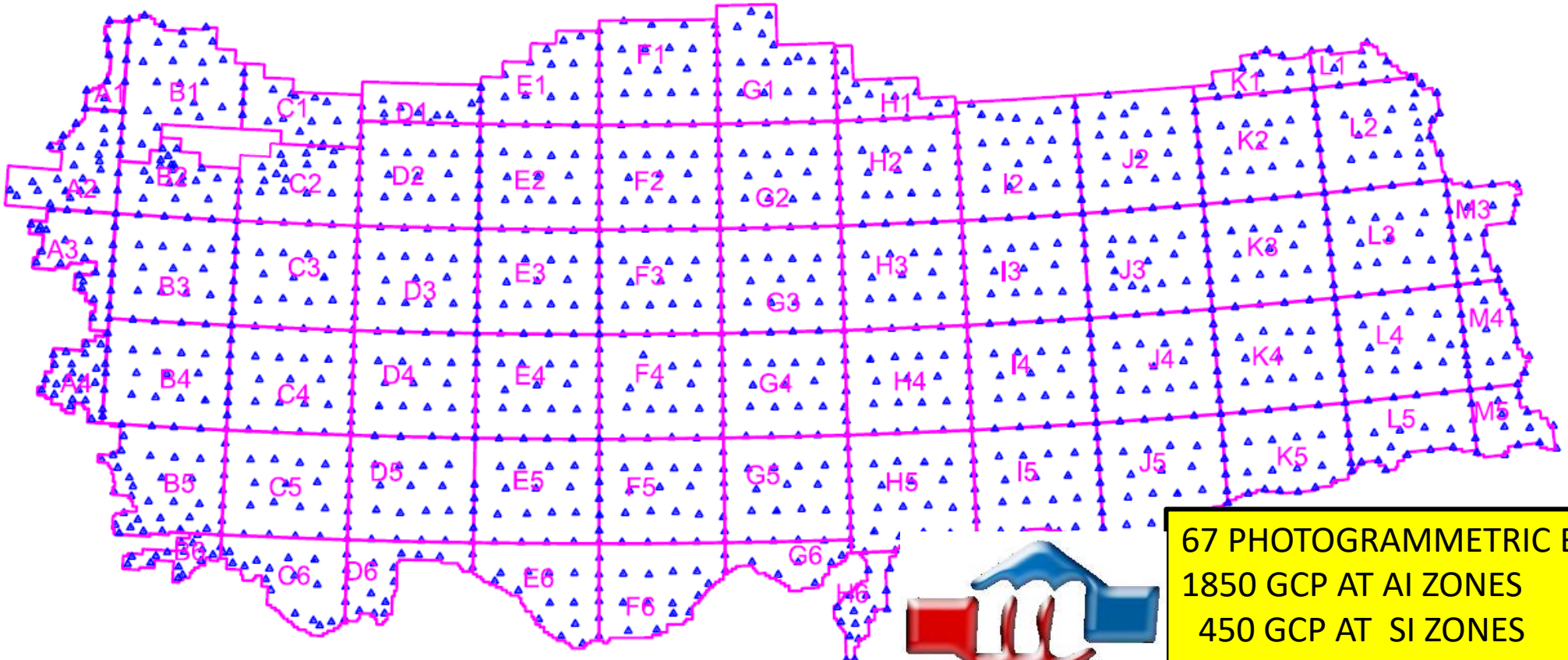
PHOTOGRAMMETRIC BLOCK PLANNING

- UTM ZONES
- PLANNED BLOCKS
  - COMPLY WITH UTM ZONES
  - COMPLY WITH IMU REFRESHMENT (21 m) DURATION (210 NAT MILE : 300 KM ➔ 140 KM LENGTH)



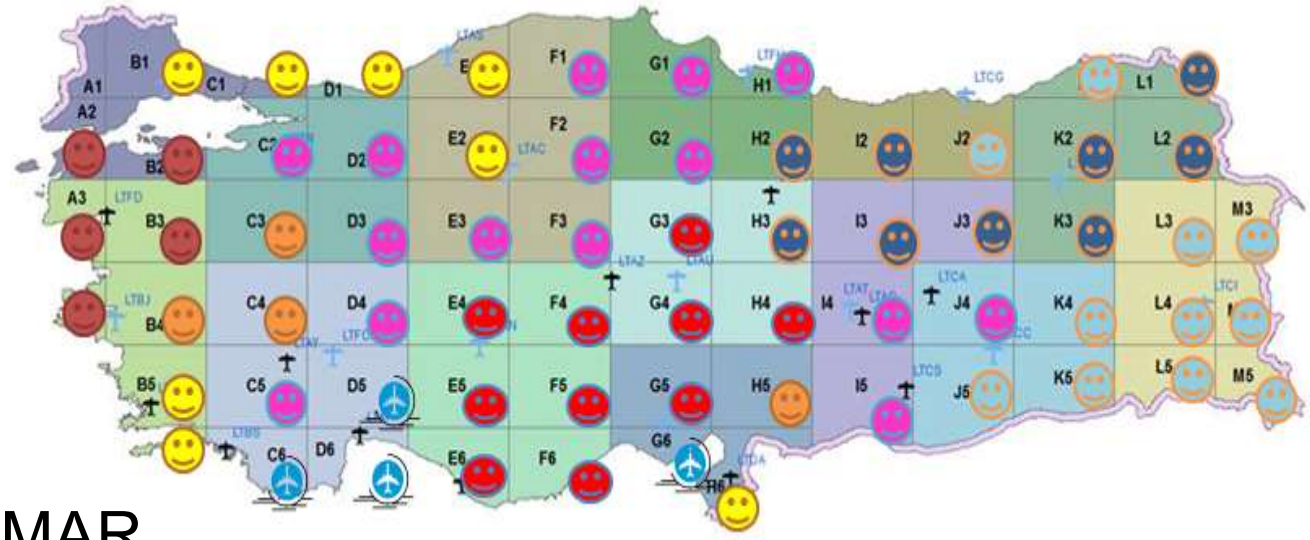
GEODETIC WORKS

PHOTOGRAMMETRIC BLOCKS & GROUND CONTROL POINTS DISTRIBUTION



67 PHOTOGRAMMETRIC BLOCKS
1850 GCP AT AI ZONES
450 GCP AT SI ZONES
TOTAL : 2300 GCP

2015 FLIGHT PLAN



MAR

APR

MAY

JUNE

JULY

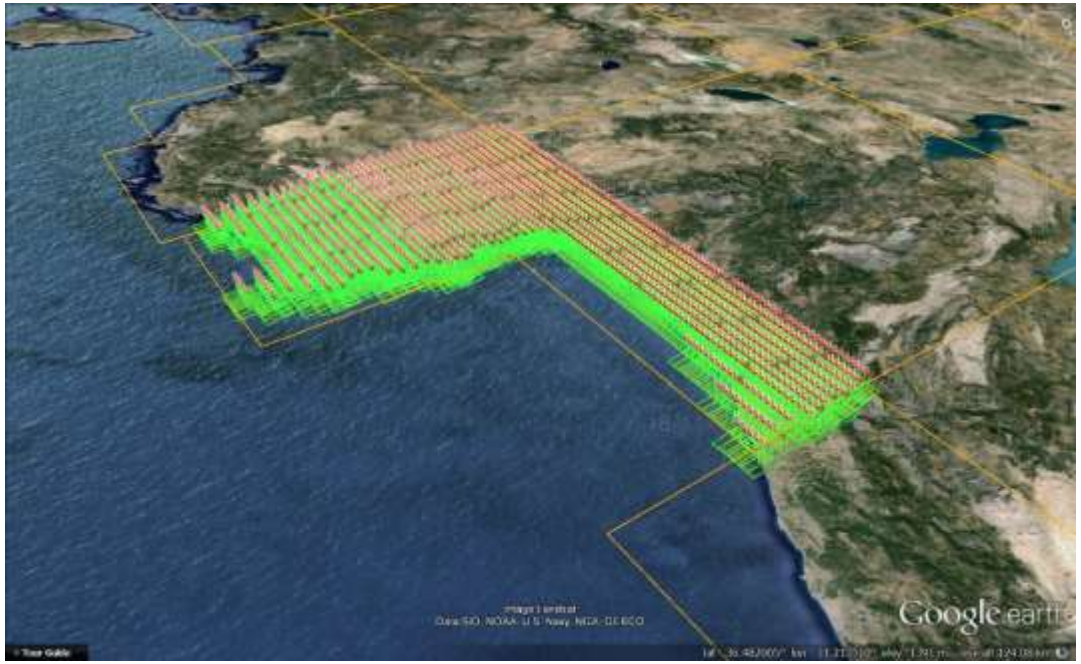
AUG

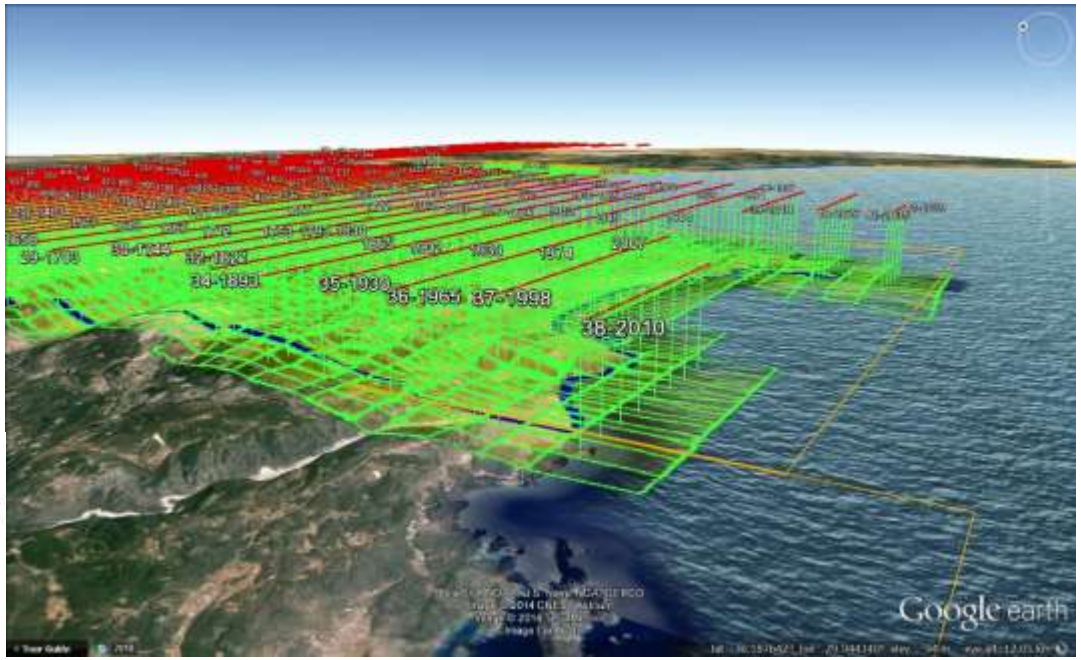
SEPT

OCT

MISSION PLANNING
&
AERIAL IMAGE ACQUSITION

- ***GSD=30 CM ,***
- ***FORWARD-SIDE OVERLAP : 70%±10% -30%±10%***
- ***ESTIMATED FLIGHT HOURS : 1500 h***
- ***AVERAGE FLIGHT DURATION*** **TAKEN AS** ***3 HOURS PER SORTIE***
- **ESTIMATED TOTAL FLIGHT HOURS 240 h/PER AIRCRAFT**
- **PLANNED AIR CRAFT 1500/240 = 6**
- **CAUSE LATE START (1 MAY 2015) TWO MORE AIRCRAFT DEDICATED :** ***TOTAL 9 AIRCRAFT***
- **AIRCRAFTS (9): AEROCOMMANDER:4, PA-31T CHEYENNE:1, BEECH B200: 3, BEECH C90A:1**





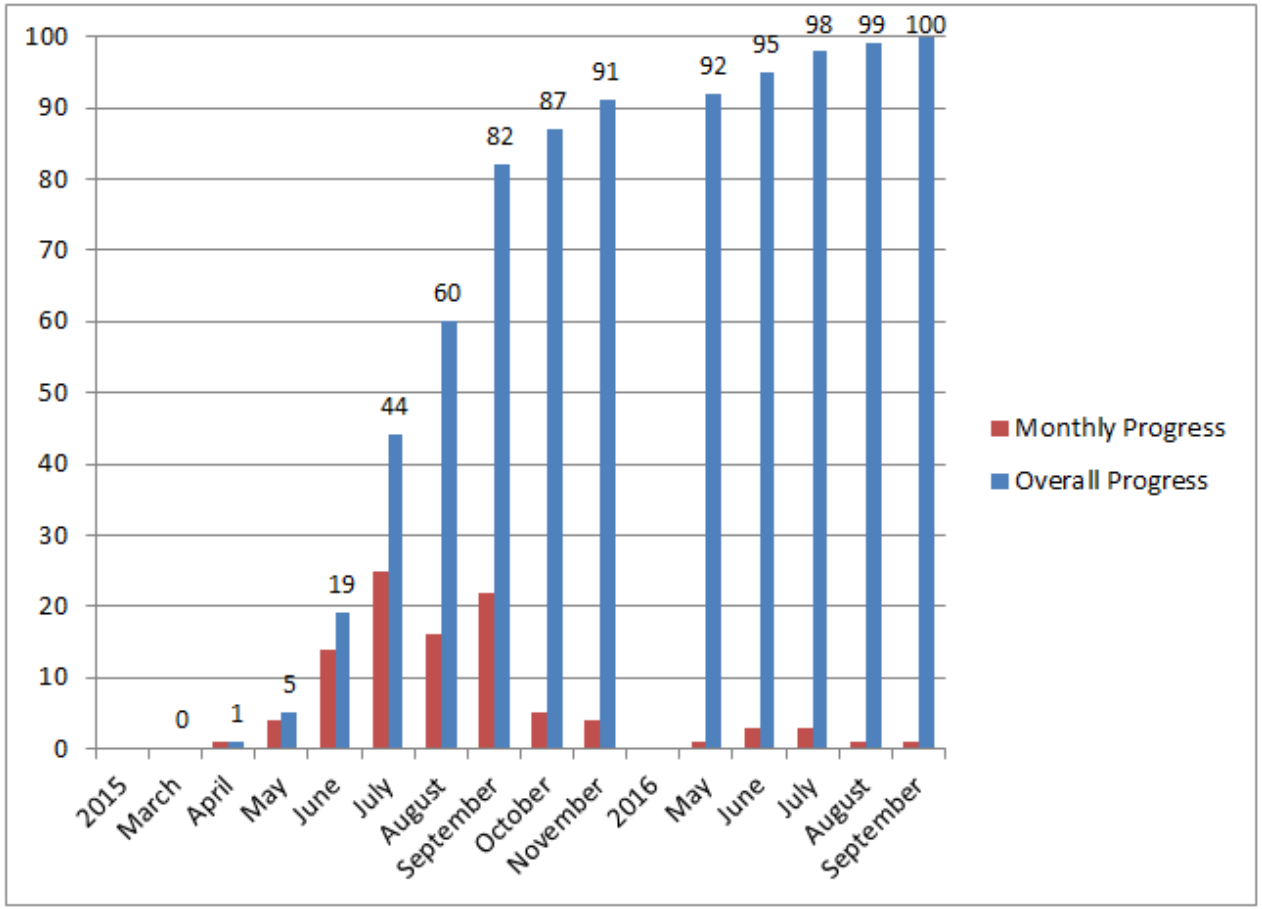
9 SURVEY AIRCRAFT

- All the aircrafts were using dual frequency GNSS receivers (storing GNSS data with 1Hz frequency) and IMU systems (storing data with minimum 200 Hz frequency) which control the camera during flight and support Image processing and Aerial triangulation. The installed GNSS/IMU systems provide positional accuracy of 20 cm RMS, 30 cm elevation and orientation of Phi/Omega angle 0.007 degree and Kappa angle 0.010 degree, in full compliance with the requirements of the ToR.

- D-IWAW, Beech Super King Air B200
  - Crew 3
  - Cruise speed 289knots
  - Service ceiling 35 000’
- N449LC, Rockwell Twin Commander 690A
  - Crew 3
  - Cruise speed 279knots
  - Service ceiling 31 000’
- D-IASC, Piper PA-31T Cheyenne 2
  - Crew 3
  - Cruise speed 212knots
  - Service ceiling 29 000’
- SE-LZX, Rockwell Twin Commander 690B
  - Crew 3
  - Cruise speed 286knots
  - Service ceiling 31 000’
- SE-LZU, Rockwell Twin Commander 690A
  - Crew 3
  - Cruise speed 279knots
  - Service ceiling 31 000’
- TC-MSS, Beechcraft C90 King Air
  - Crew 3
  - Cruise speed 226knots
  - Service ceiling 30 000’
- SE-IUV, Rockwell Twin Commander 690C
  - Crew 3
  - Cruise speed 287knots
  - Service ceiling 31 000’
- GCM 5001 & 5002, Beechcraft Super King Air B200
  - Crew 3
  - Cruise speed 289knots
  - Service ceiling 35 000’

Monthly and accumulated AI progress during the project implementation period

Month	Month progress %	Accumulated progress %
2015		
March	0	0
April	1	1
May	4	5
June	14	19
July	25	44
August	16	60
September	22	82
October	5	87
November	4	91
2016		
May	1	92
June	3	95
July	3	98
August	1	99
September	1	100



SATELLITE IMAGE ACQUISITION

- IN ADDITION
- FOR SOME BLOCKS WHERE FLIGHT CAN NOT BE ACCOMPLISHED CAUSE OF FLIGHT SAFETY AND MILITARY RESTIRICTED ZONES APPROXIMATELY 7000 KM SQR MORE SI USED : TOTAL 30000 KM SQR
- IMAGE RESOLUTION :50 CM (DIGITAL GLOBE IMAGERY WW 2, WW3, GEO EYE)

LATEST SITUATION OF SATELLITE IMAGERY

LPIS PROJECT IN NUMBERS

DEM Points in a Tile	Average DEM Points in a Block	DEM Points in the Project
540,000	470,447,761	31,520,000,000
In Text	470 million points	31.5 billion points

Average Data Amount in one Block	Total OP Amount in the Project
3,287 Gigabytes	220,231.68 Gigabytes
3.21 Terabytes	215.07 Terabytes

Total Blocks	Total Tiles	Average Tiles in Block	Tile size 13.5 km^2	Pixels in a Tile	Average Pixels in one Block	Total Pixels in the Project
67	58,370	871	13,500,000	150,000,000	130,679,933,665	8,755,555,555,556
In Text			13.5 million m^2	150 million	131 billion pixels	8.8 trillion pixels
					131,000 million	8,800 billion pixels

THANK YOU !