



Istanbul Metropolitan Municipality

Disaster Prevention/Mitigation Studies for a Safer Urban Life Microzonation Projects

Mahmut BAŞ
*M.S.Geophysical Engineer
Director*

M.Özhan Yağcı
*CE,MBA
Project Coordinator*

Studies carried out by IMM

I. Risk Management

Scientific & Technical Studies, Studies for Structural Safety

II. Disaster Management

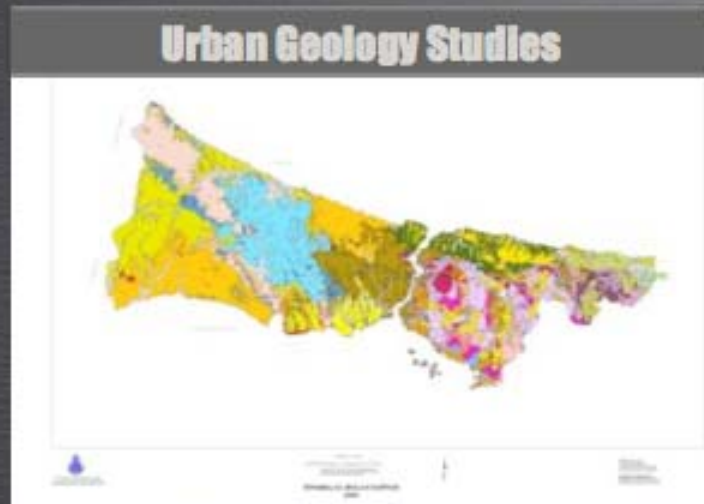
Studies for Equipments and Personnel , Communication & Information Technologies

AKOM

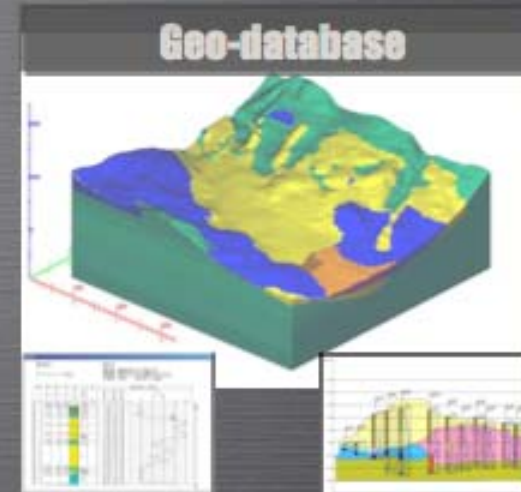


Disaster Coordination Center (AKOM) organize disaster preparedness activities of IMM, Self Diagnostic, EQ Resistant





1/5000 scale Land-use suitability, geological/geo-technical maps
1/25000 & 1/5000 scale geological studies (Whole city by Law: 5216)



to review soil investigation reports
to deliver technical/official judgement
to create geo-database for metropolitan area



to monitor micro seismic activities (IMM & BU/KOERI)
to monitor physical/chemical changes in ground water and radon gas (IMM & TUBITAK)

Current Situation

**DEFINING
THE
HAZARD** ✓

PLANNING ✓

EXECUTION !

IMM/JICA
DISASTER
PREVENTION/MITIGATION
BASIC PLAN



EARTHQUAKE
MASTER PLAN



IMPLEMENTATION
OF
PROJECTS

-MICROZONATION

-URBAN TRANSFORMATION
DISTRICT BASE PROJECTS

starting from priority
districts

building diagnosis

emergency management

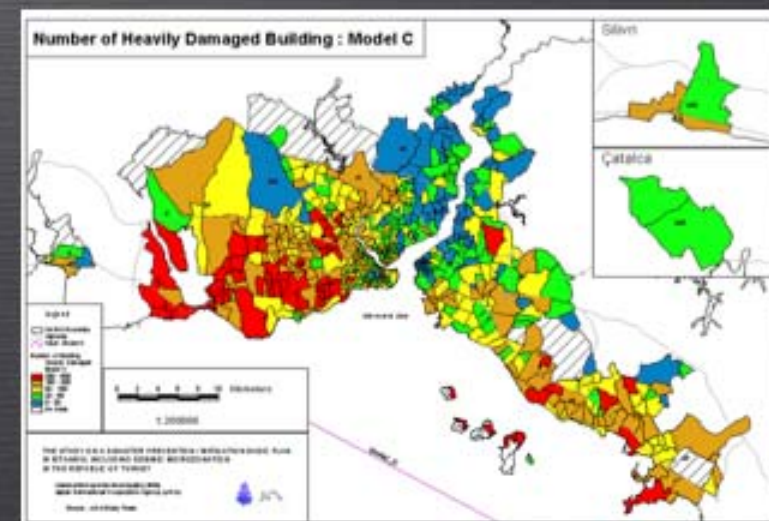
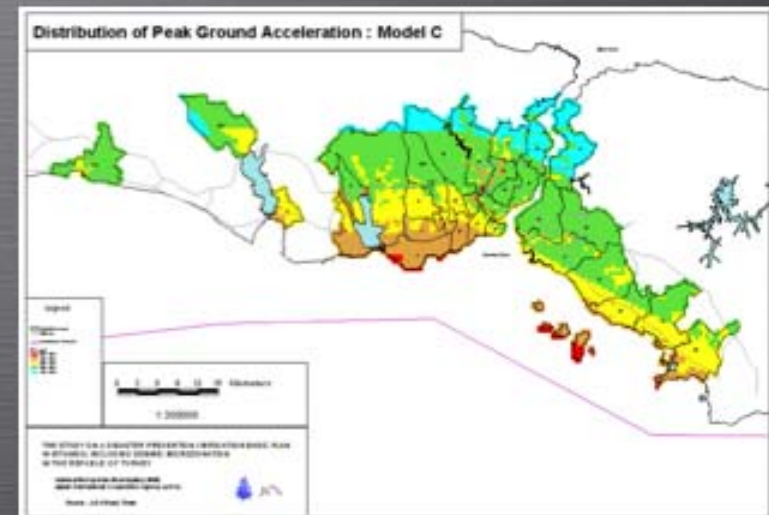


Earthquake Risk Analysis

IMM/JICA DISASTER PREVENTION/MITIGATION BASIC PLAN

Heavily Damaged Buildings	50.000-60.000
Homeless	500.000-600.000
Death Toll	70.000-90.000
Injured	135.000
Water-pipe Damages	1.000-2.000
Natural Gas SB Damages	30.000
Power Lines Damages	%3
Public Facility Damages	%8 (Heavily)
Bridges Damages(460)	20 (Heavily)
Tent requirement	300.000
TOTAL ECONOMIC LOST	40 BILION USA\$

PROPOSALS
FOR
SHORT, MEDIUM & LONG TERM MEASURES





Earthquake Master Plan



IMM & [BU, ITU, ÖDTÜ, YTU] ISTANBUL EARTHQUAKE MASTER PLAN	DISTRICTS HAVING HIGH DISASTER RISK	PILOT PROJECTS
Defining Current Situation	Eminonu	38.580 building / under screening
CE Studies (Structural Diagnosis & Retrofitting)	Fatih	
Urban Planning Studies (Construction Plans)	Beyoglu	16.030 building / screening completed
Legislative Studies	Zeytinburnu	
Financial Studies	Bakirkoy	
Educational Studies	Bahcelievler	
Social Studies	Avcilar	
Disaster & Risk Management Studies	Bayrampasa	
ROAD MAP AFTER A MULTI-DISCIPLINARY STUDY	K.Cekmece	
	Adalar	
	TOTAL RISK OF 10 DISTRICTS = 50% OF ALL EARTHQUAKE RISK IN ISTANBUL	
		SCREENING AND DIAGNOSIS WILL BE COMPLETED IN 2 YEARS



Implementation

MAHALLE BASE URBAN TRANSFORMATION PROJECTS



TEMPORARY SETTLEMENT PLANS

CREATION OF RECREATION AREAS & GREEN CORRIDORS

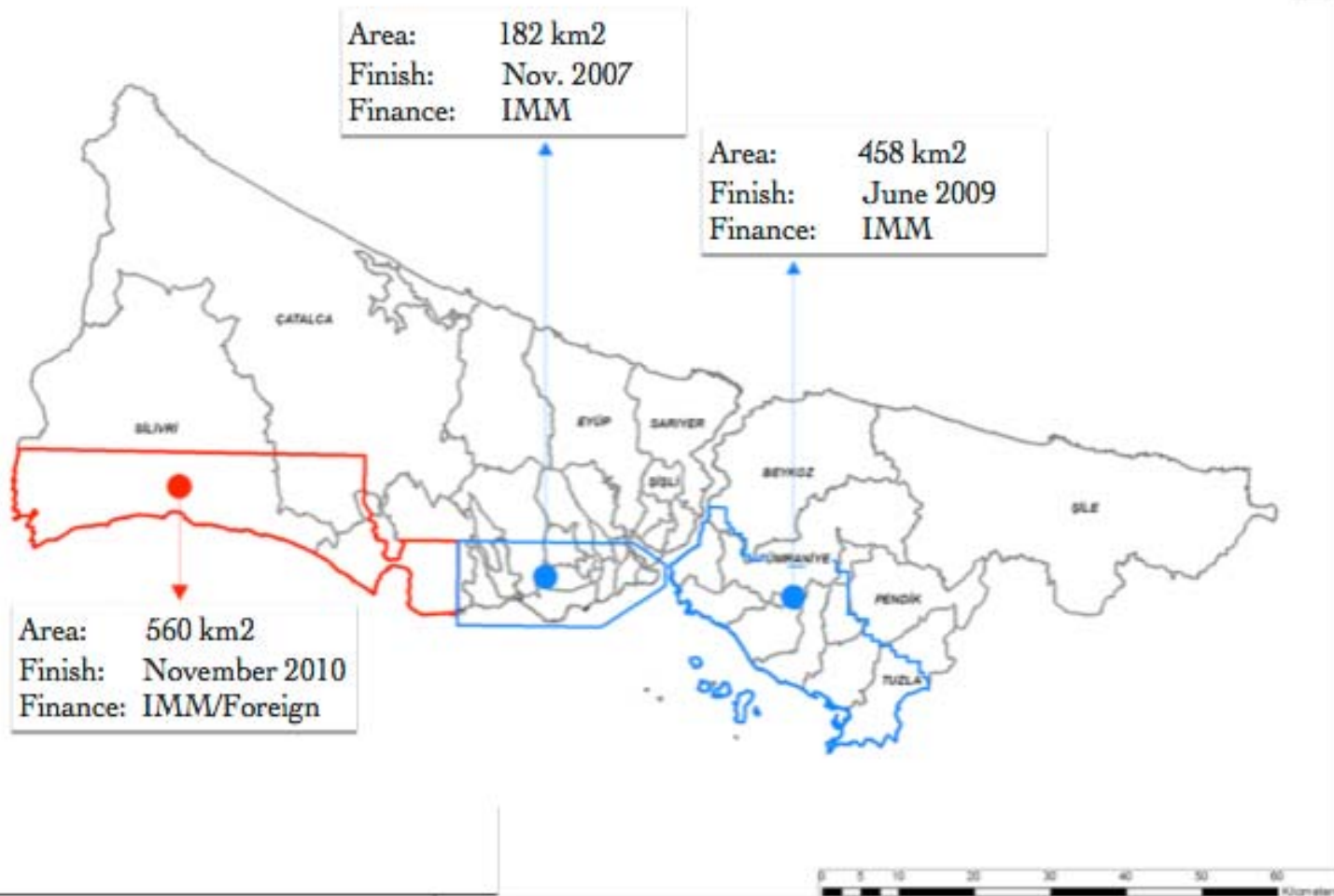
DESIGNING A SAFER URBAN ENVIRONMENT



WHAT IS MICROZONATION ?

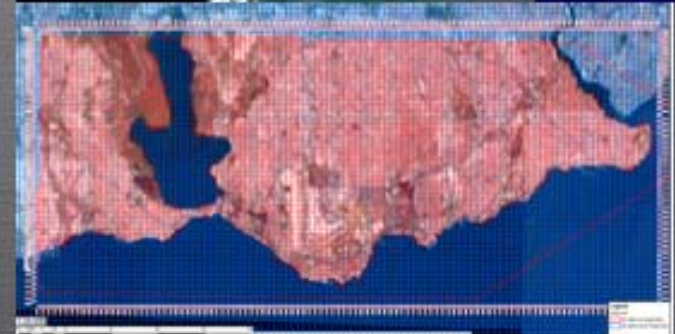
Identification of separate areas having different hazardous potential
Efficient tool to mitigate risks for hazard-related land use management

Microzonation Studies





MICROZONATION FOR EUROPEAN SIDE - SOUTH

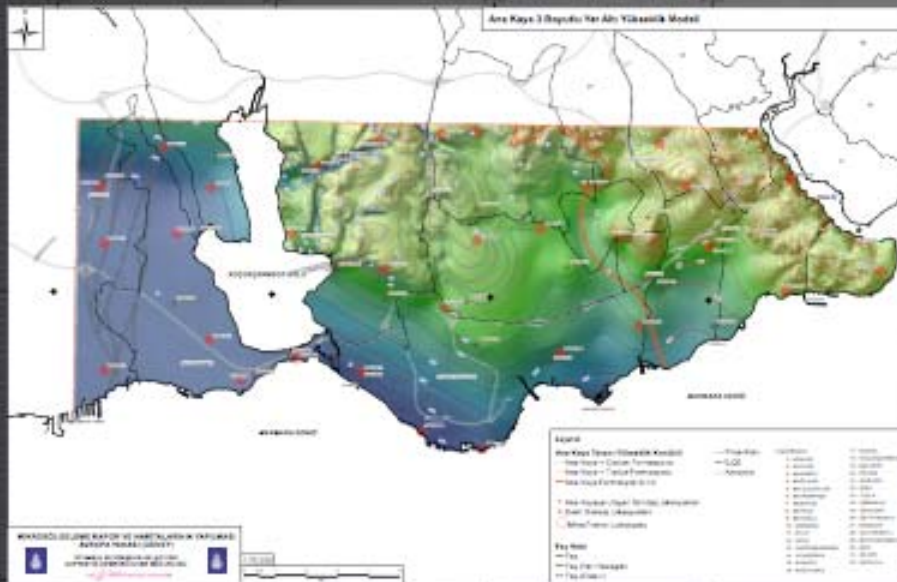


WORK ITEMS	VOLUME
DRILLING FOR 250M CELLS	2912 WELLS
DEEP WELL DRILLING	25 WELLS
DRILLING FOR LIQUEFACTION ANALYSIS	~874 WELLS(%15)
DRILLING FOR LANDSLIDE ANALYSIS	~699 WELLS(%8)
SEISMIC REFRACTION & REMI	2912 CELLS
ELECTRIC RESISTIVITY MEASUREMENTS	2912 CELLS
PS-LOGGING	207 WELLS
MICROTREMOR ARRAY MEASUREMENT	30 POINTS
SEISMIC REFLECTION	20 KM

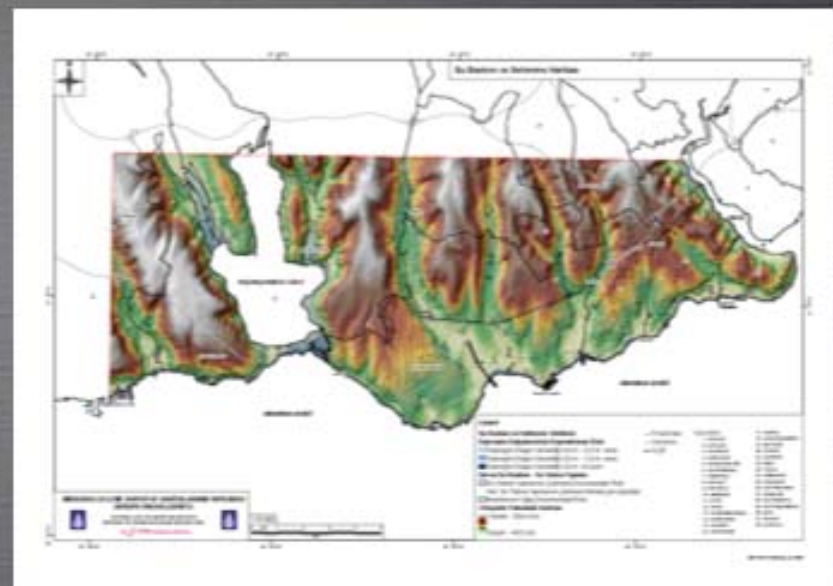
MAPS	SCALE
EARTHQUAKE HAZARD MAP (WHOLE ISTANBUL)	1/25000
TSUNAMI HAZARD MAP (WHOLE ISTANBUL)	1/2000
INCLINATION MAP	1/2000
GEOLOGY AND ENGINEERING GEOLOGY MAP	1/2000
GROUNDWATER LEVEL MAP	1/5000
MICROTREMOR MAP	1/5000
FAULTING (TECTONIC) MAP	1/5000
GROUND SHAKING (INTENSITY) MAP	1/5000
LIQUEFACTION & LANDSLIDE HAZARD MAP	1/2000
EARTHQUAKE-RELATED FLOODING MAP	1/2000
Vs (0-30M) AVERAGE SHEAR WAVE VELOCITY MAP	1/5000
SOIL CLASSIFICATION MAP	1/2000
URBAN LAND USE PLANNING MAP	1/2000



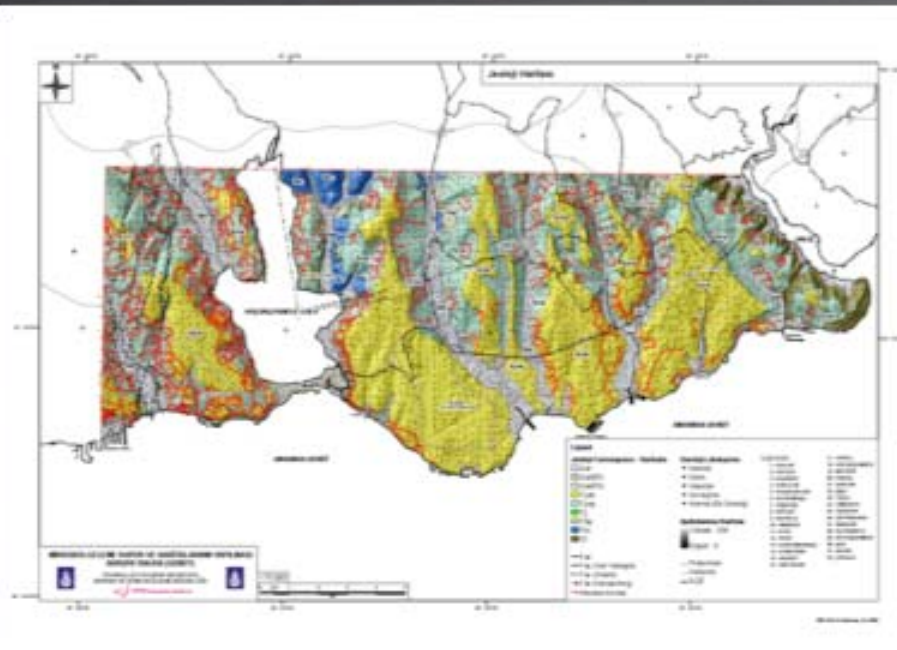
3D BEDROCK



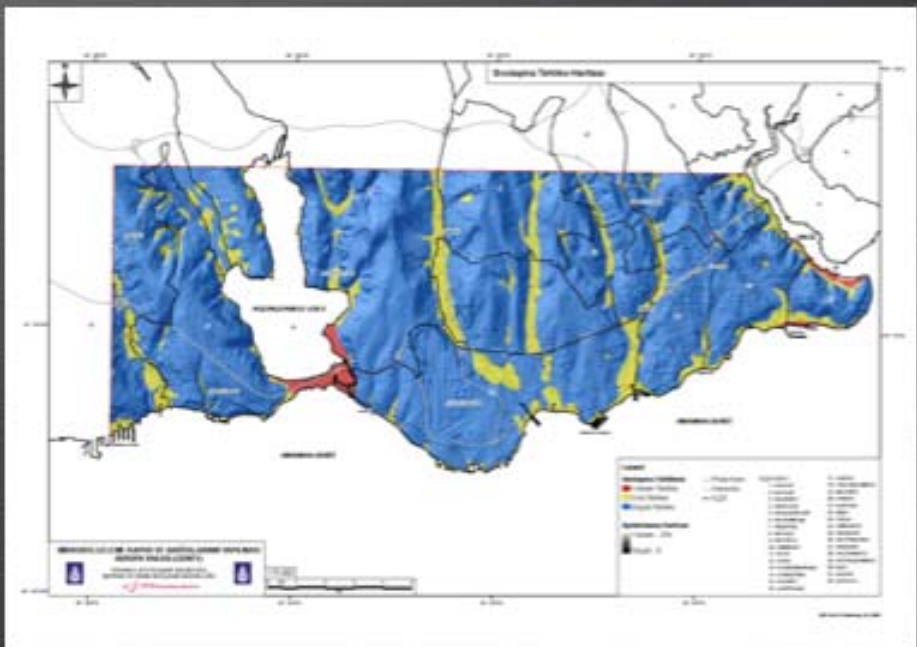
FLOODING



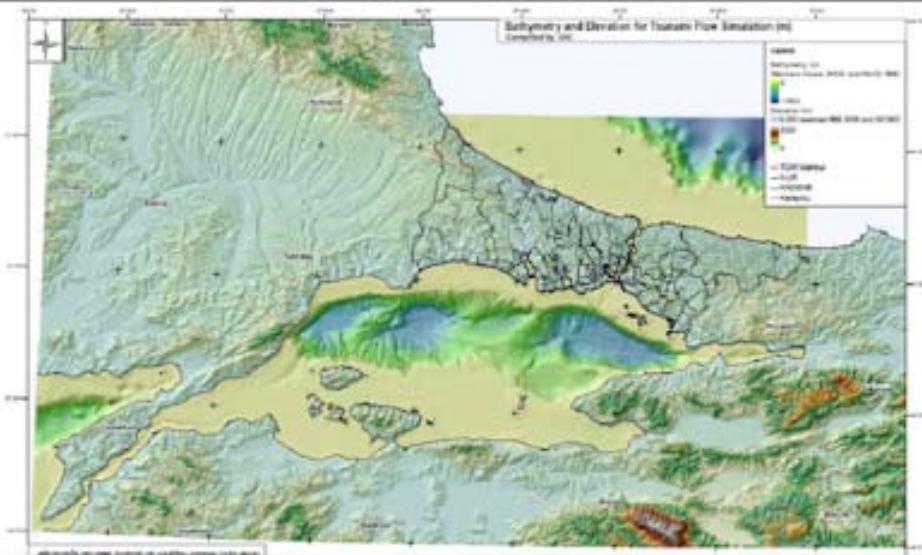
GEOLOGY MAP



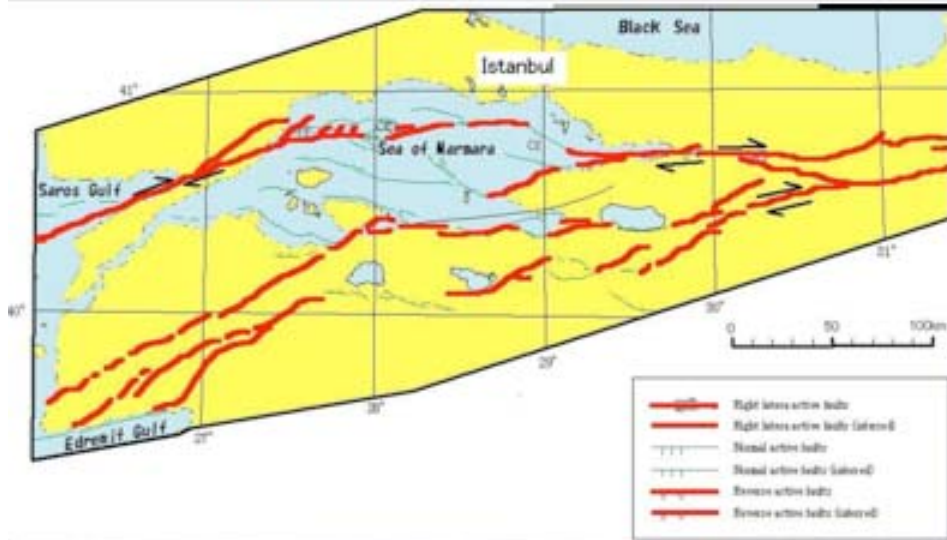
LIQUEFACTION HAZARD MAP



3D Bathymetry & Elevation



Faults in Marmara Region



Scenario earthquake: P1+P1F+QA



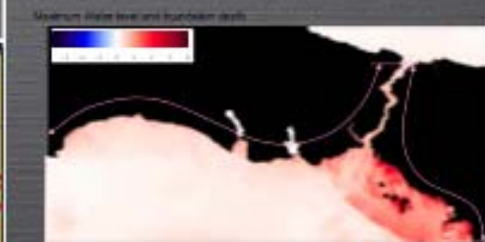
a) 150 m grid simulation



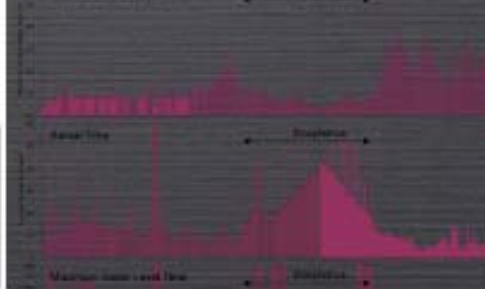
Maximum Water level and inundation depth



b) 50 m grid simulation (150 m for Marmara Sea, 50 m for coastal area)



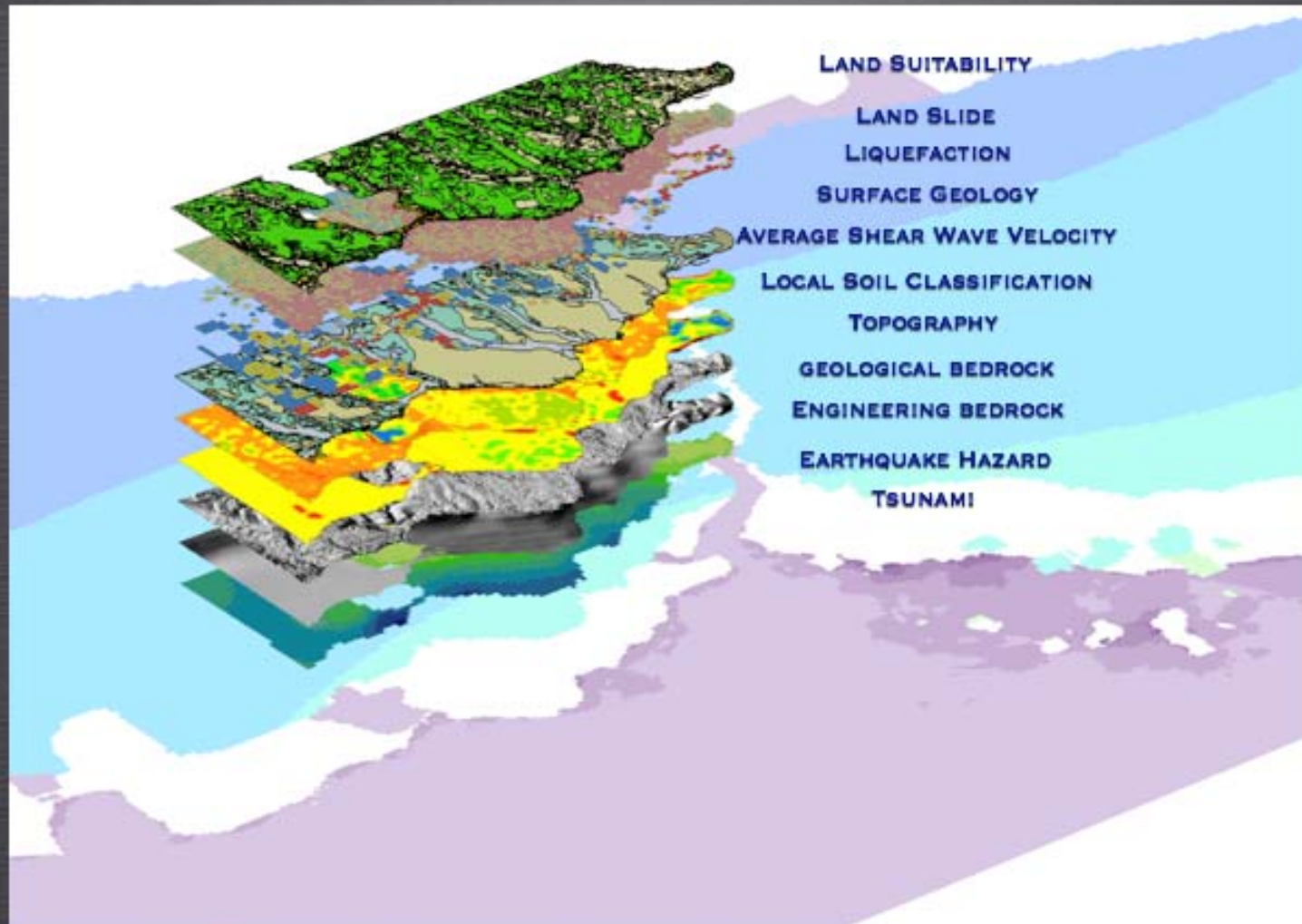
Maximum Water Level



Tsunami Hazard Map



MICROZONATION ANALYSIS LAYERS



OBJECTIVE
IS NOT
TO RESCUE PEOPLE FROM THE DEBRIS
BUT NOT
LET THEM TO STUCK UNDER IT!

