

# WORKSHOP On SERAMAR PROJECT

SEismic Risk Assessment and Mitigation in Antakya-Maras Region  
on the Basis of Microzonation, Vulnerability and Preparedness Studies  
30 September- 2 October, 2010 HATAY

## S-wave velocity structure of the Antakya Basin

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E. Çaktı<sup>3</sup>, E. Safak<sup>3</sup>, M. Erdik<sup>3</sup>

<sup>1</sup> Istanbul University

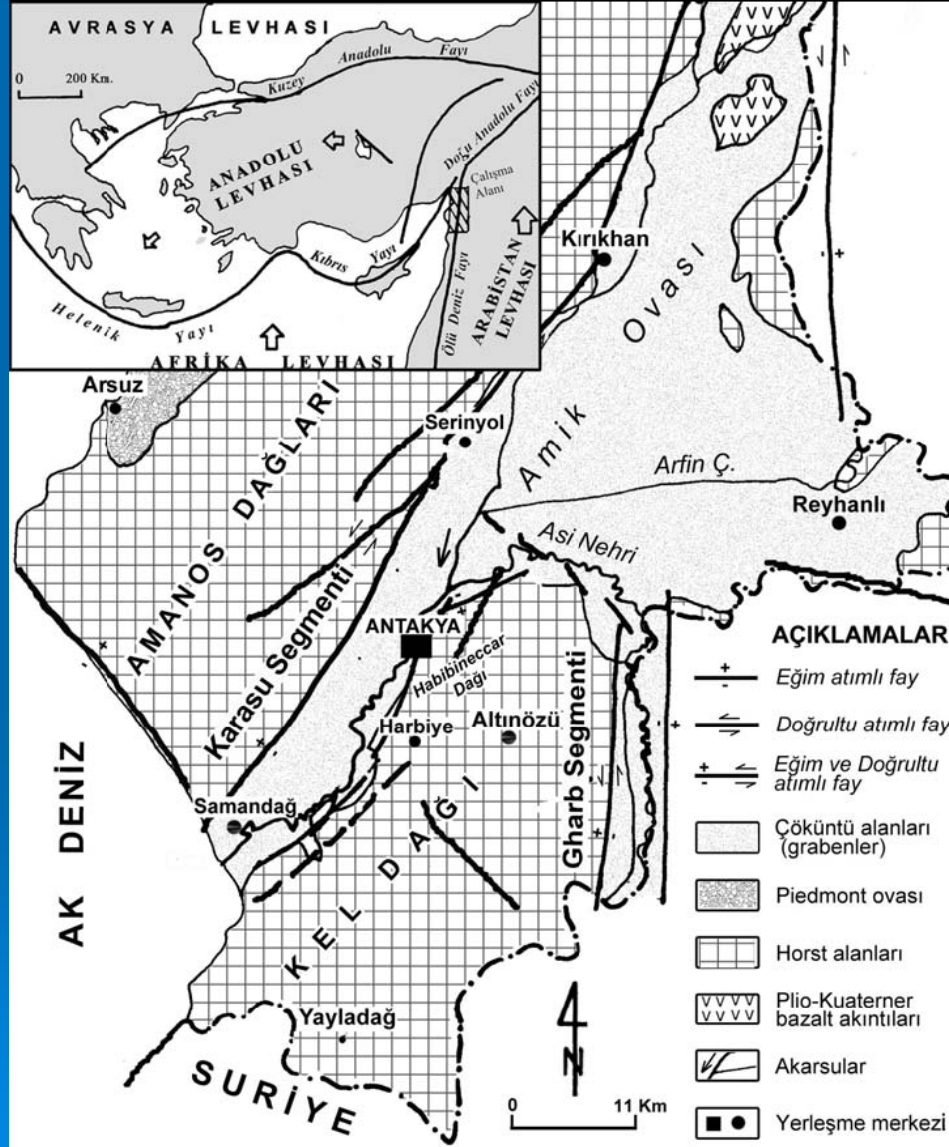
<sup>2</sup> Mustafa Kemal University

<sup>3</sup> Bogazici University

## A view from Antakya

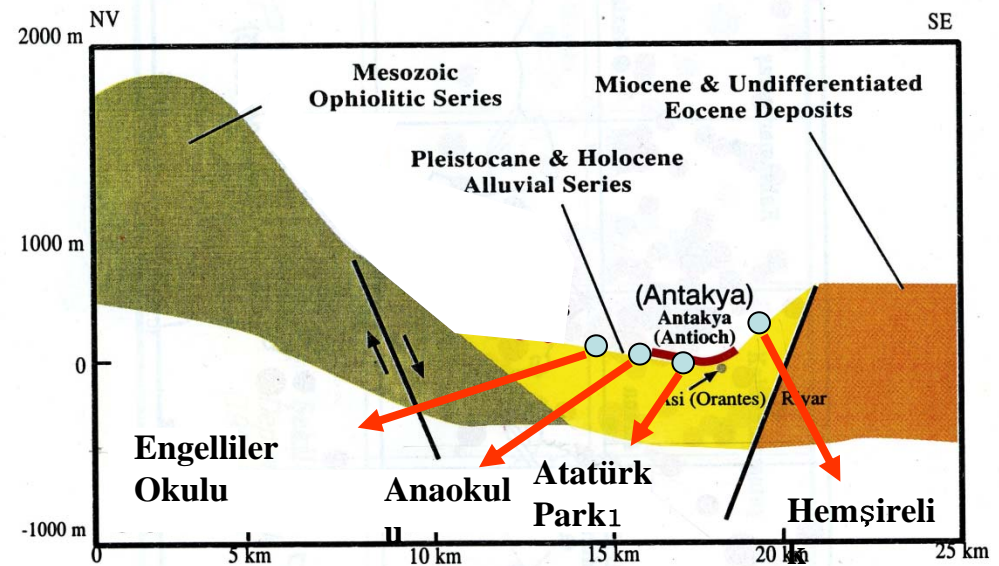


## The Tectonic of the Region



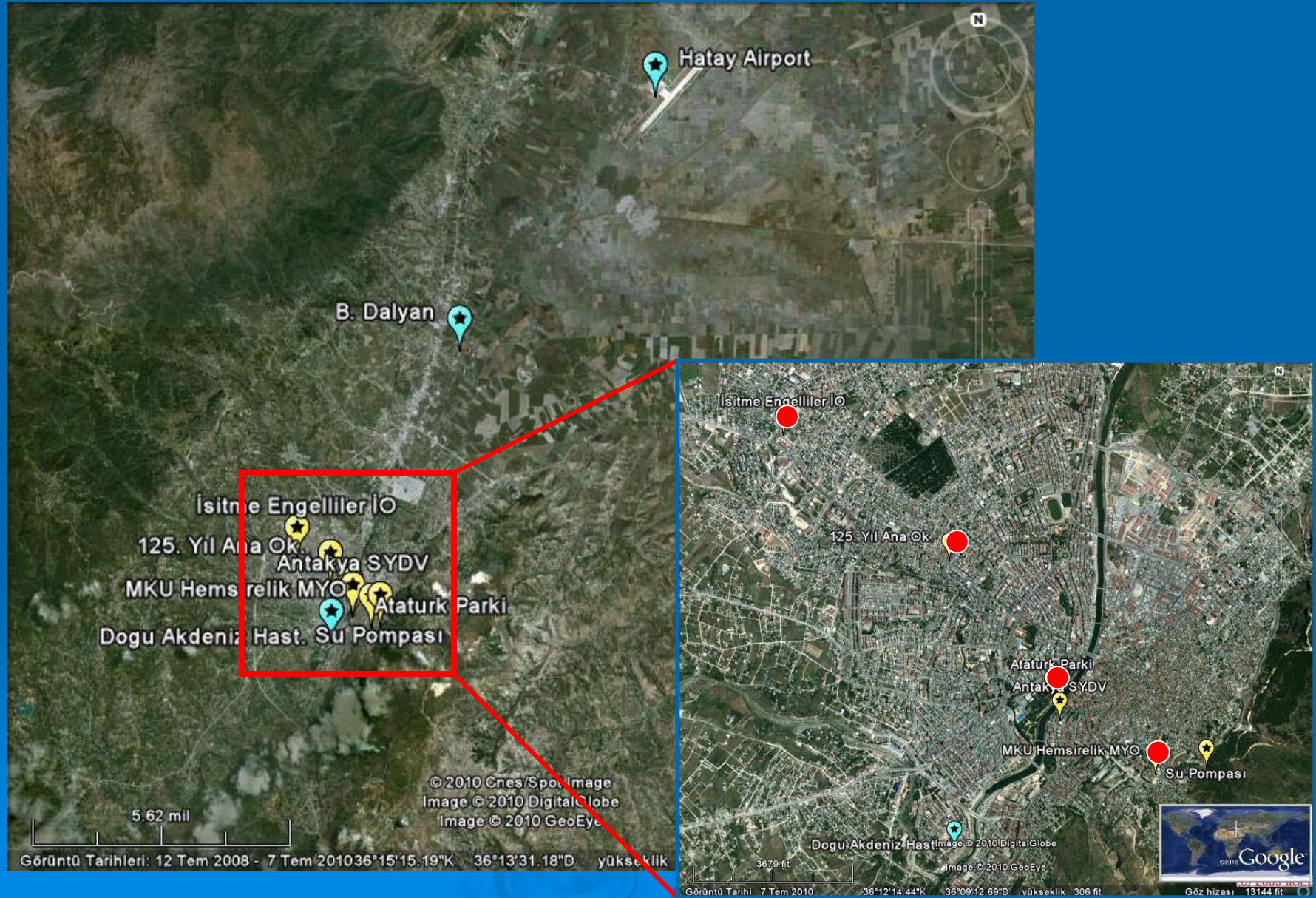
Over et.al., 2006

# Geology of the region

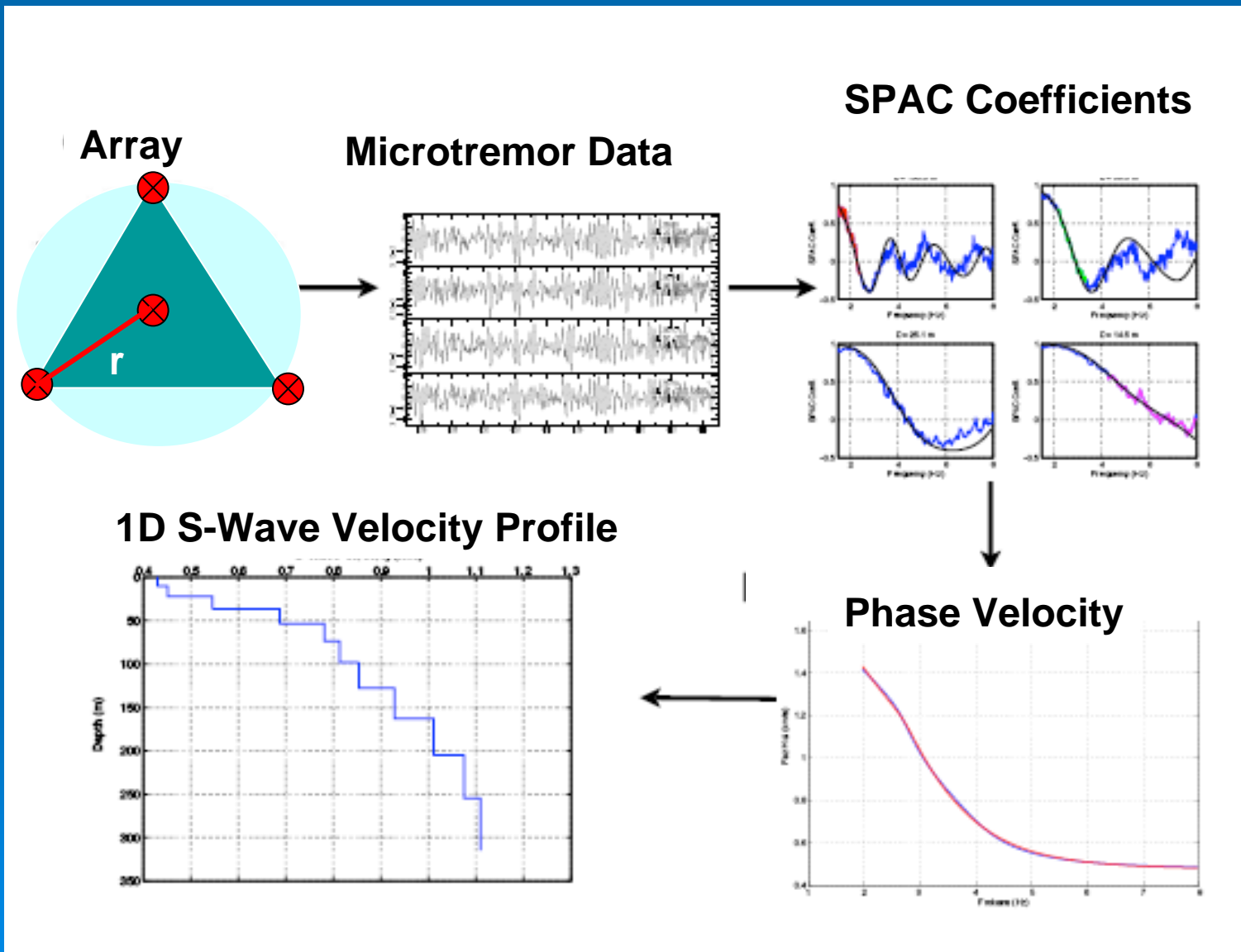


Antakya-Samandag depression zone (Erdik et.al.,1997). Blue circles show the SPAC measurement locations.

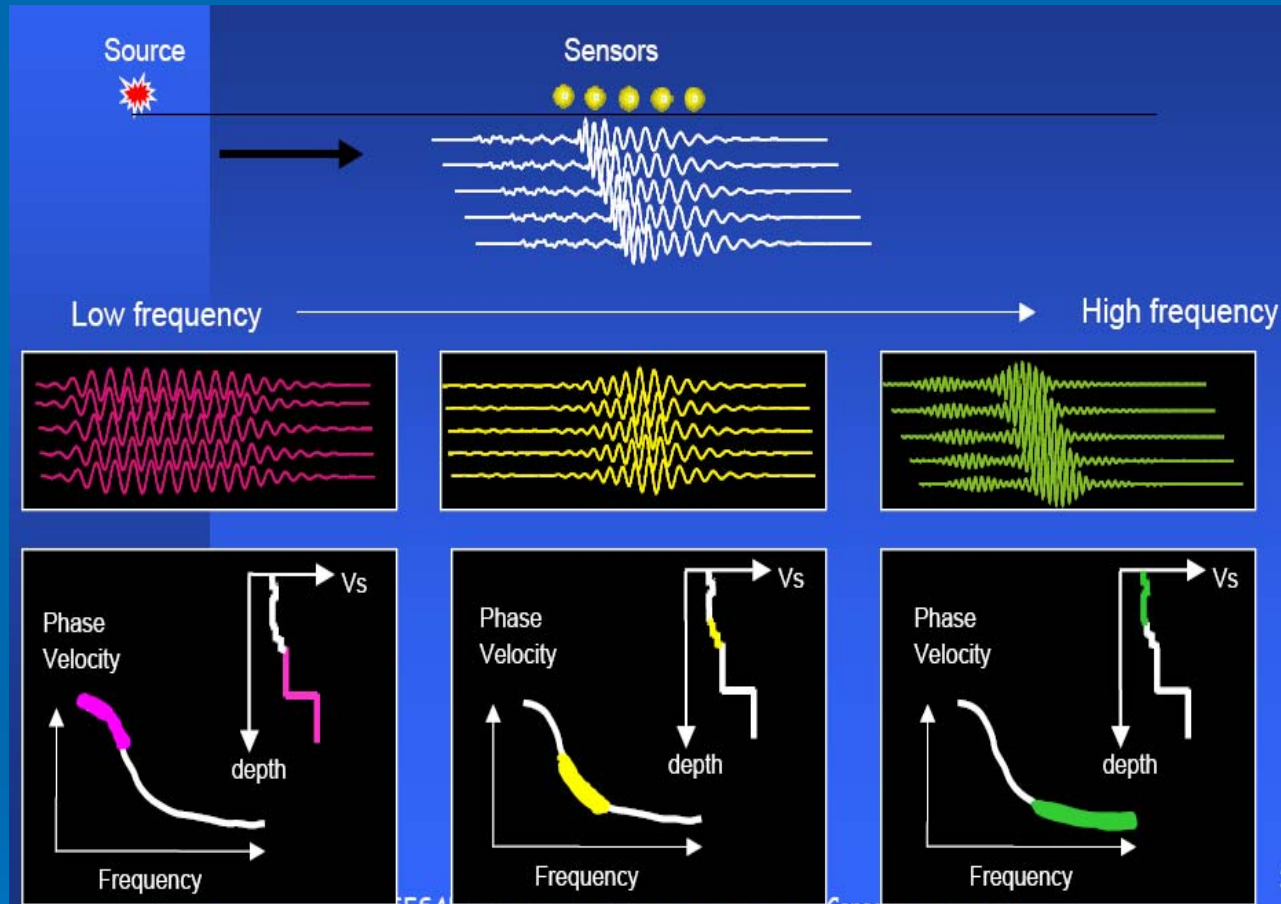
## The locations of the Measurements



# SPAC (SPatial Auto Correlation Method)



# SPAC (SPatial Auto Correlation Method)



(Özlaybey et.al.2008).

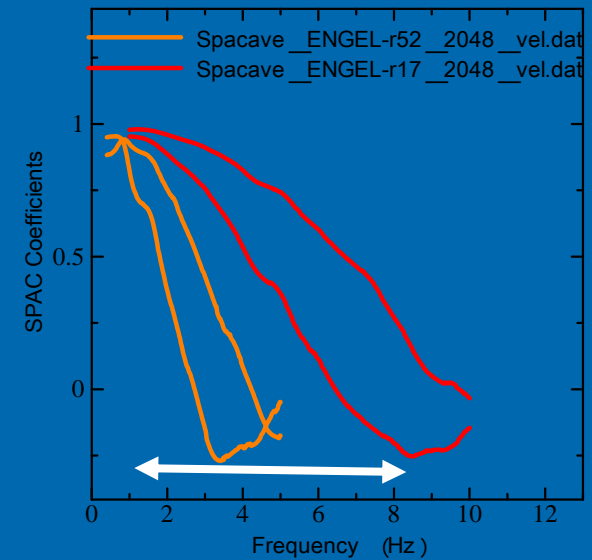
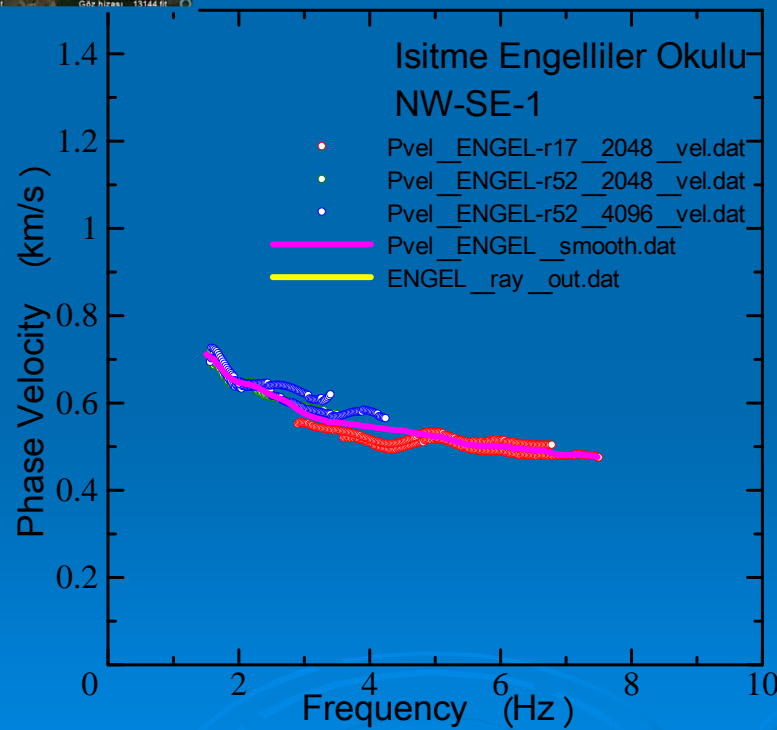
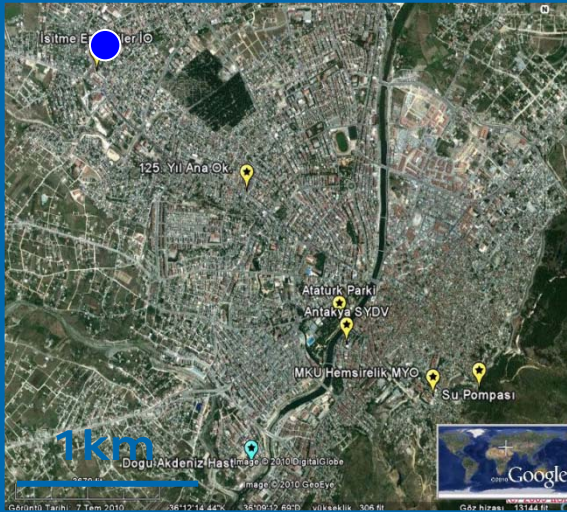
Small radius measurements carry information about upper most layers, and information about deeper parts are obtained by increasing radius.

## LOCATIONS of the MEASUREMENTS

Code	Location	Coordinates	Elevation	Array Size
1 (41_3)	Su Pompa Binası	36° 11' 42.84" N 36° 10' 10.44" E	200 m	Not performed
2 (36_2)	MKÜ Hemşirelik MYO	36° 11' 40.92" N 36° 09' 57.12" E	129m	r=17m (?) r=30m (?)
3 (36_4)	Antakya SYDV	36° 11' 53.40" N 36° 09' 39.30" E	85 m	Not performed
4 (15_6)	Kapalı Sapor Salonu (Ataturk Parkı)	36° 11' 59.64" N 36° 09' 18.18" E	85 m	r=17m ; r=40m r=52m ; r=70m r=100m
5 (19_1)	Saray Kent 125. YIL Anaokulu Binası	36° 12' 18.18" N 36° 08' 47.64" E	98 m	r=17m r=52m
6 (23_4)	Hürriyet İşitme Engelliler İlköğ. Ok.	36° 12' 35.64" N 36° 08' 07.92" E	114 m	r=17m r=52m
SW-NE-1	Doğu Akdeniz Hastanesi arkası	36° 11' 24.00" N 36° 09' 00.00" E	80 m	r=17m ; r=52m r=70m
SW-NE-2	Büyük Dalıyan	36° 16' 54.00" N 36° 12' 06.00" E	90 m	r=17m ; r=52m r=100m
SW-NE-3	Hatay Airport	36° 02' 39.00" N 36° 16' 47.00" E	80 m	r=17m ; r=52m r=100m



# İsitme Engelliler Okulu Okulu



Initial Model

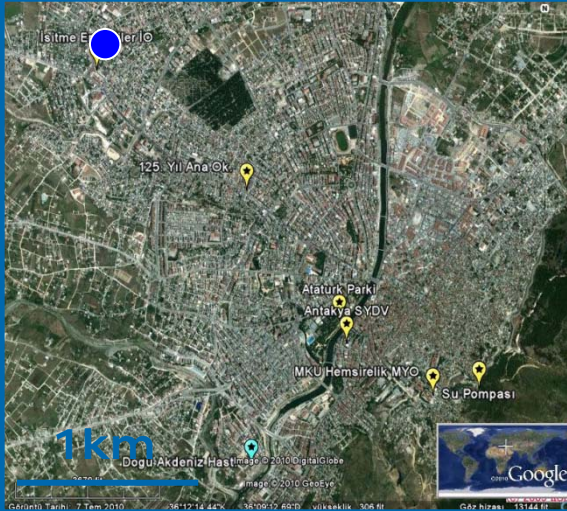
Thickness Velocity

Surface Layer

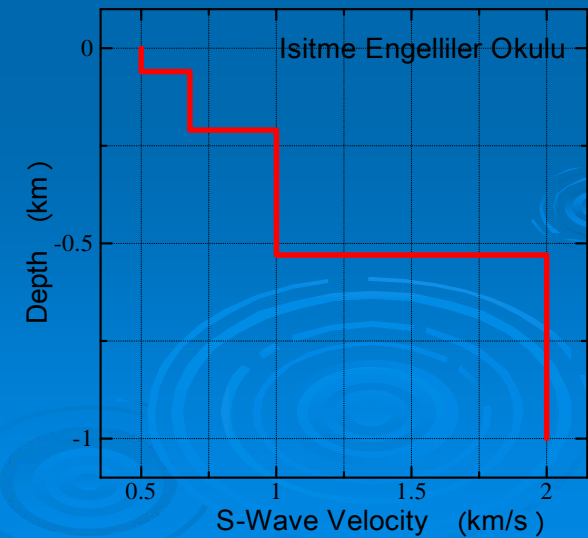
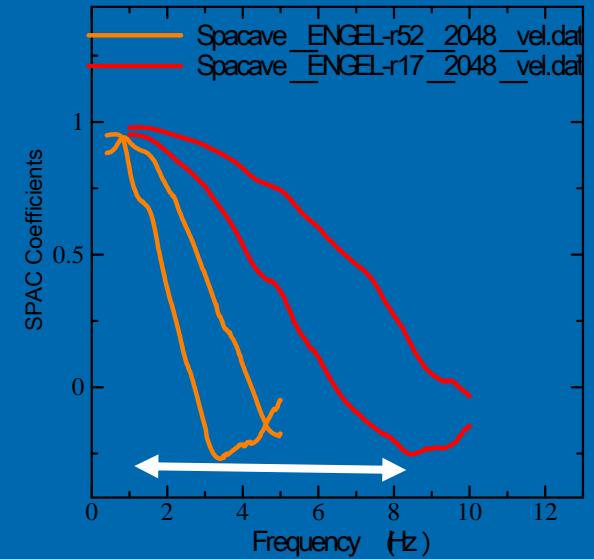
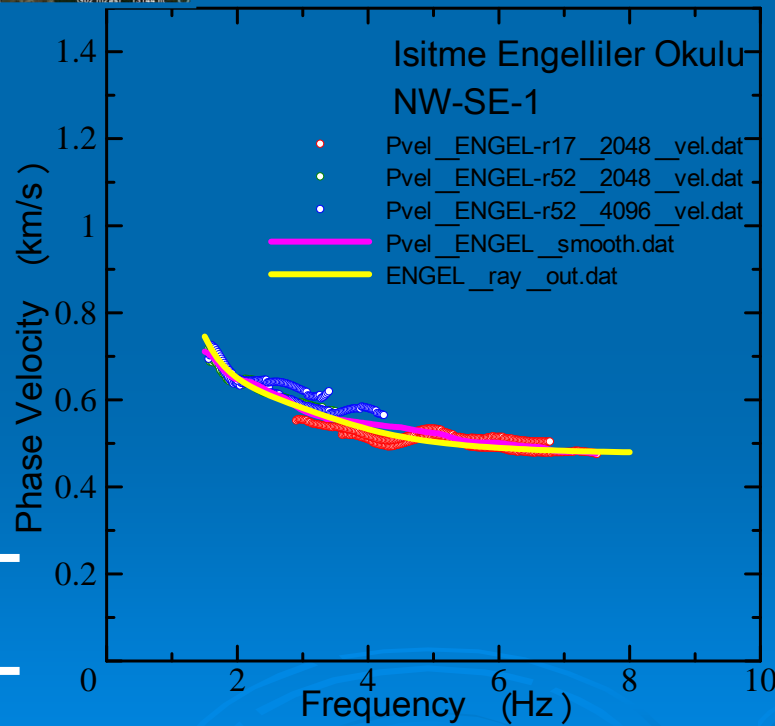
Surface Layer

Engineering Bedrock

Seismological Bedrock

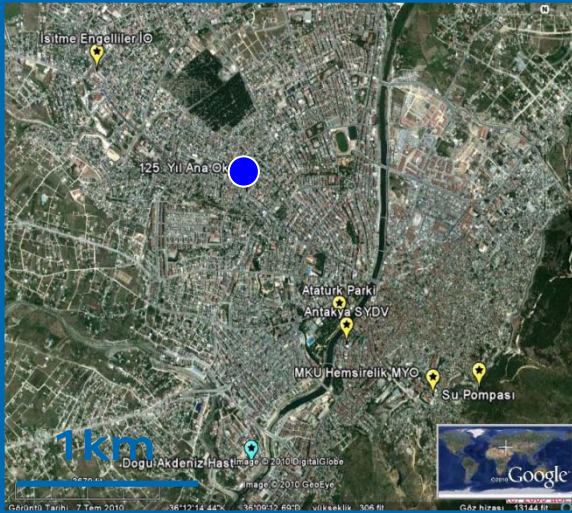


## İsitme Engelliler Okulu

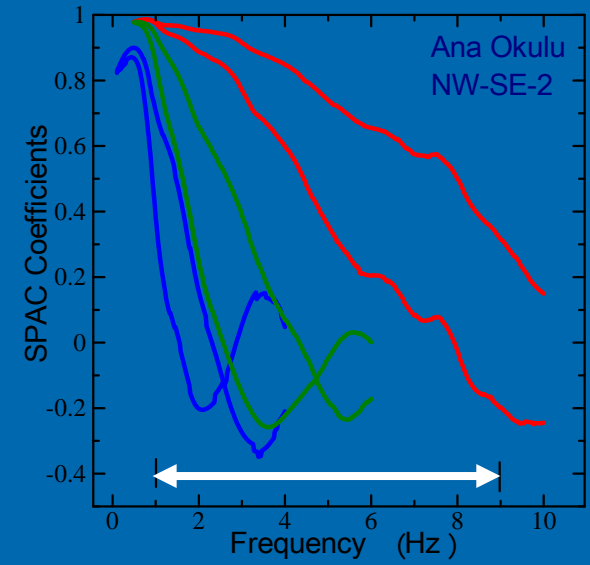
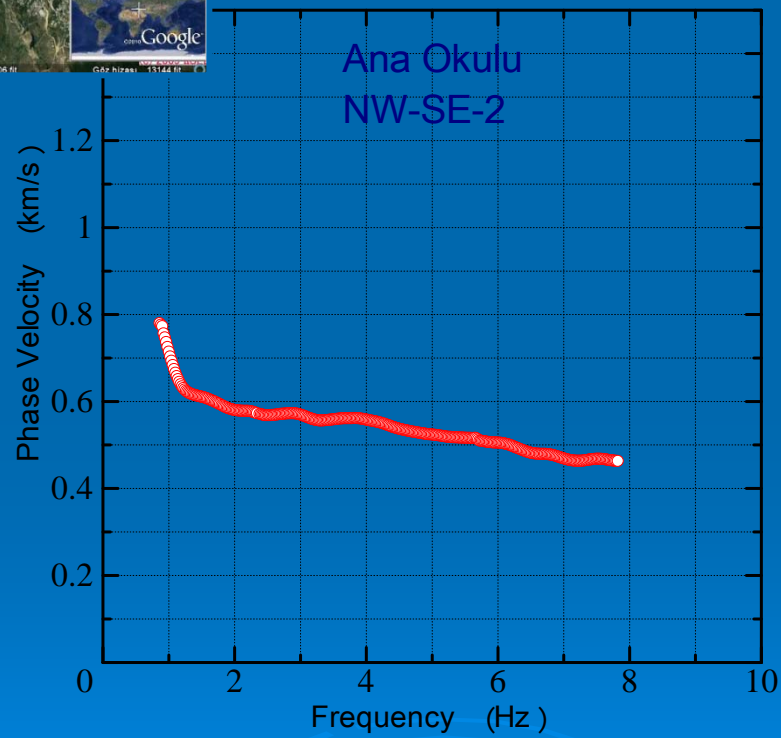


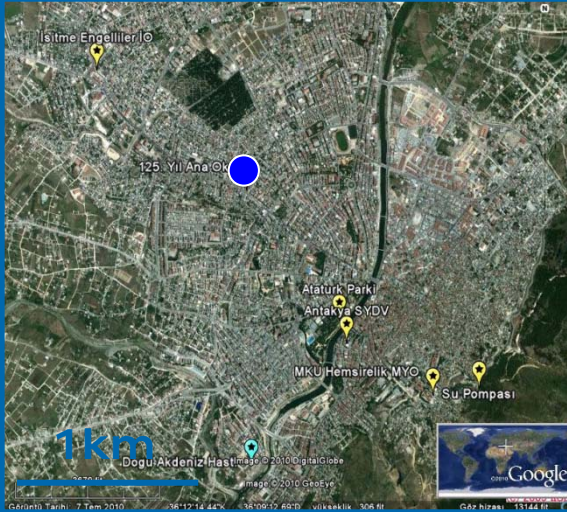
### Engelliler Okulu Thickness Velocity

55m	500m/s
100m	670m/s
320m	800m/s
-----	2000m/s

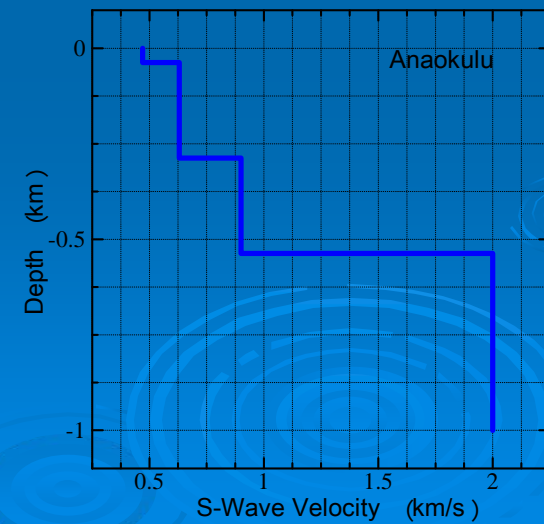
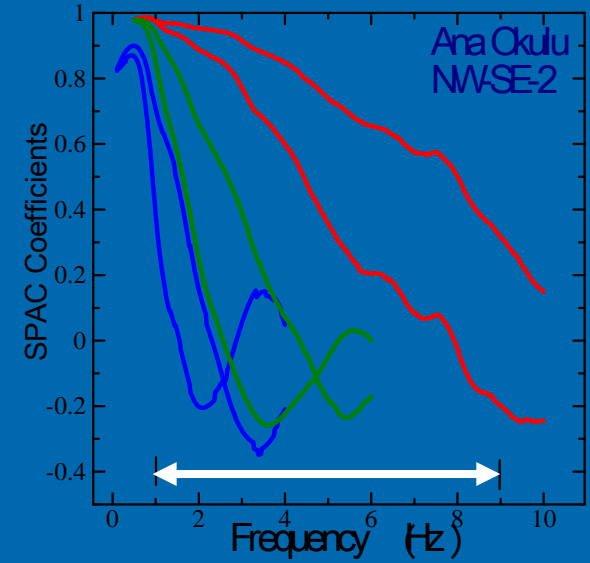
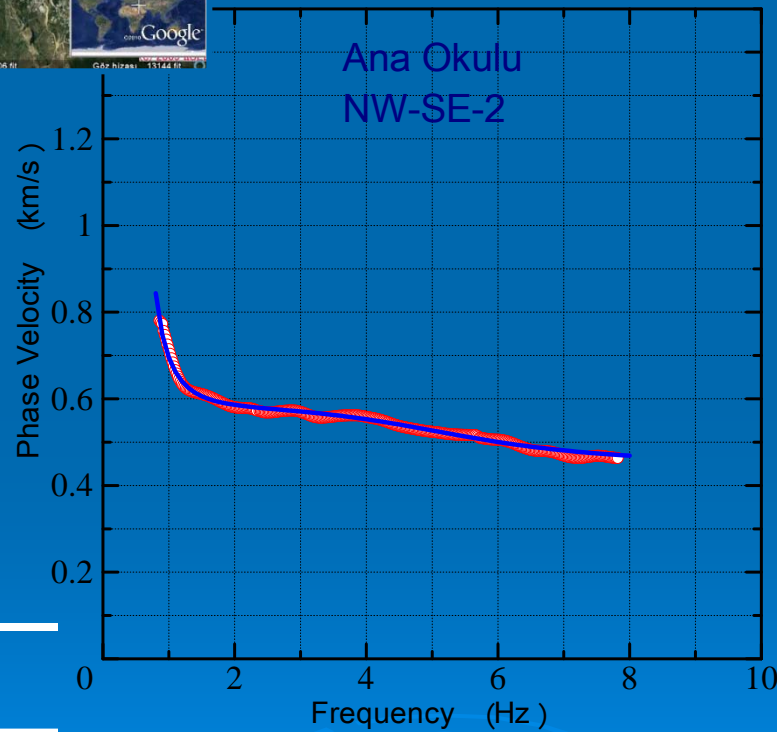


# Ana Okulu





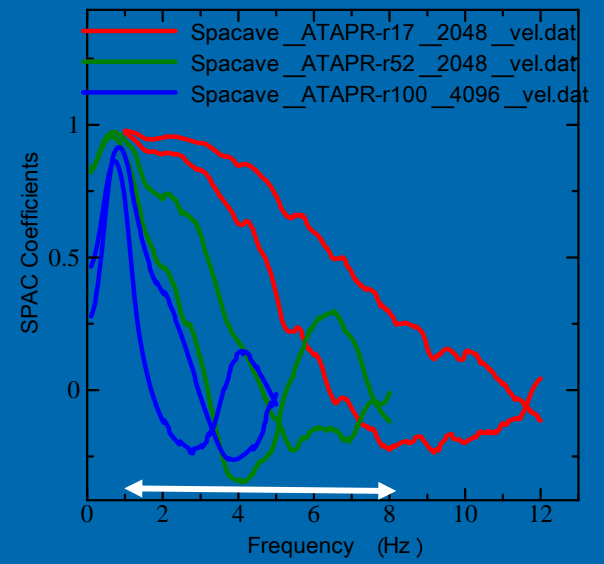
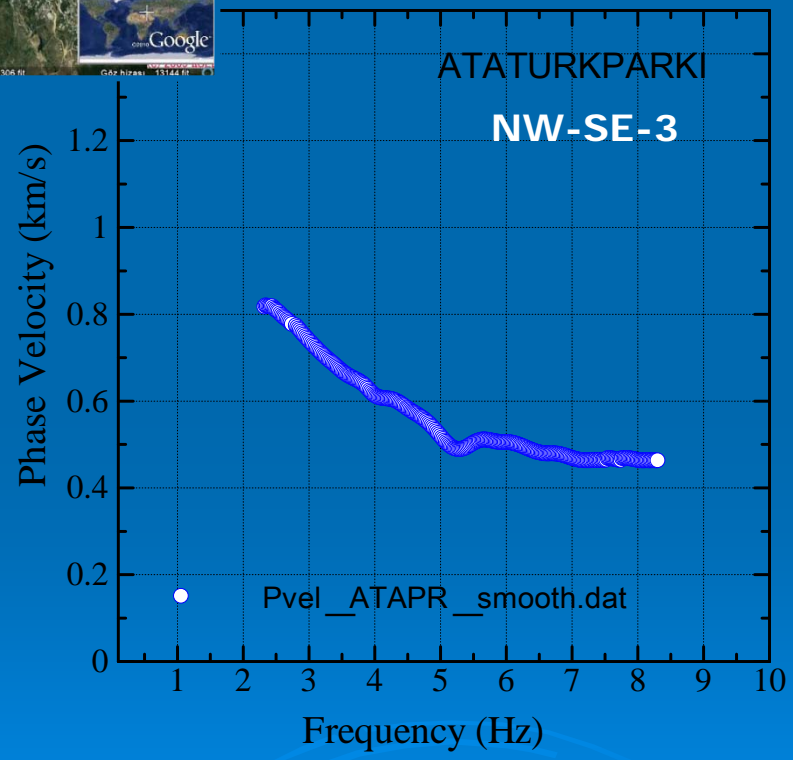
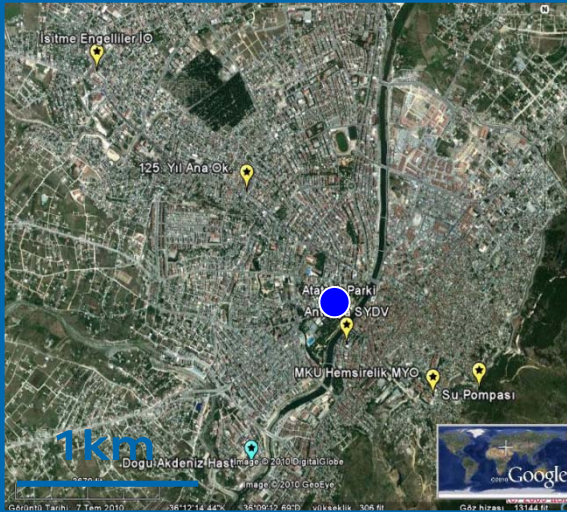
## Ana Okulu

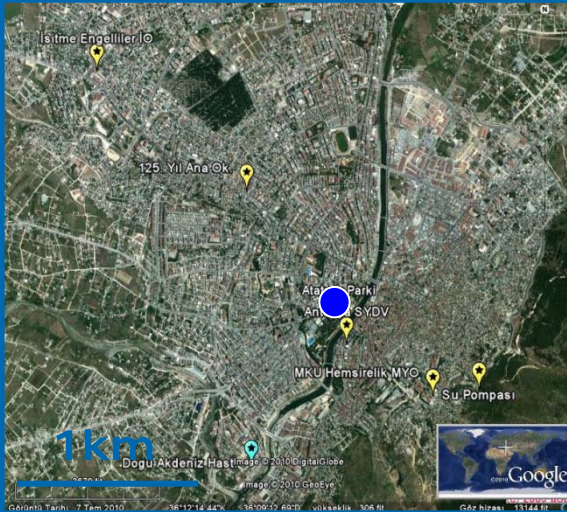


### Ana Okulu Thickness Velocity

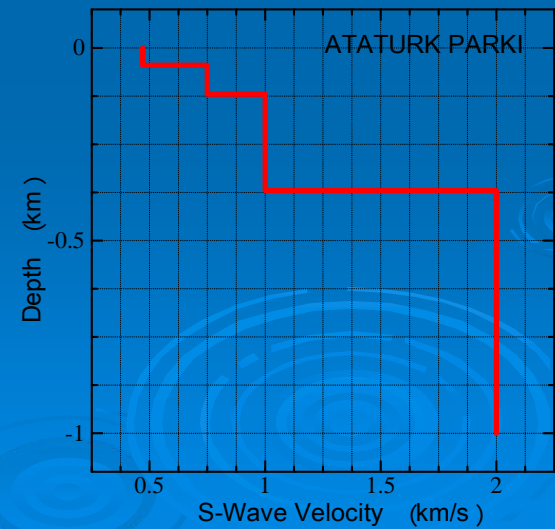
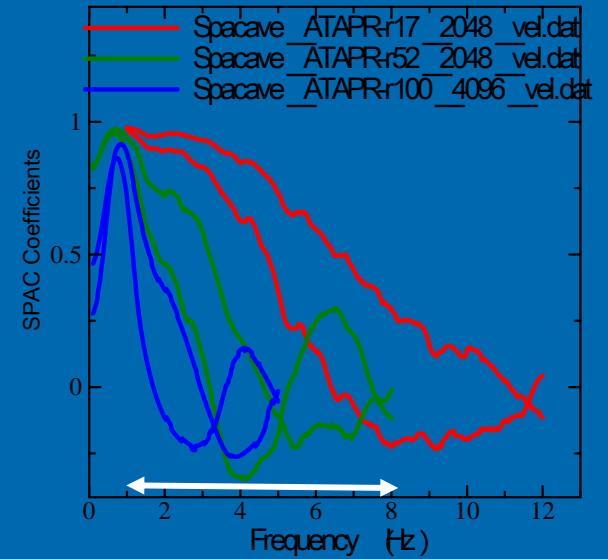
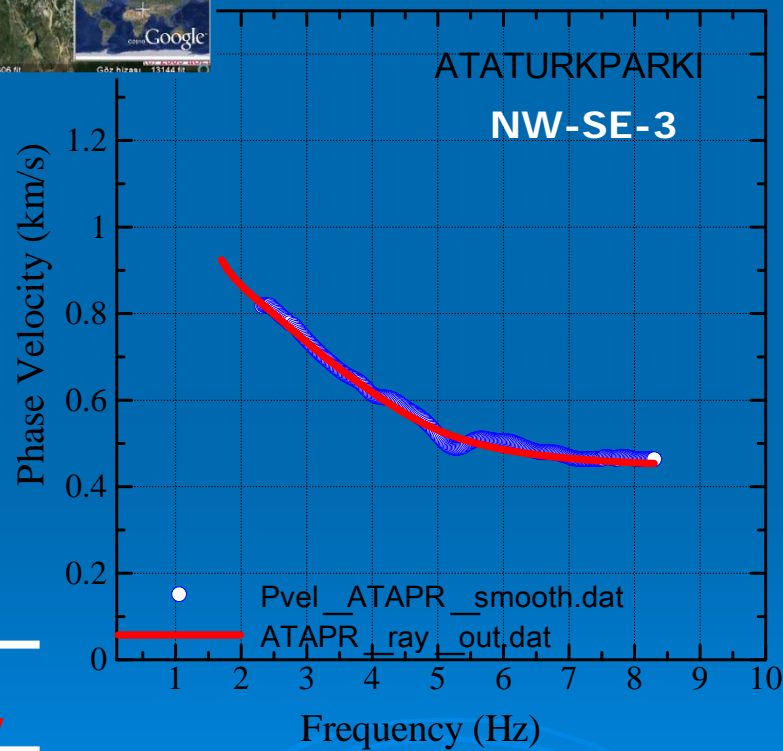
37m	470m/s
250m	630m/s
250m	900m/s
-----	2000m/s

# Ataturk Parki





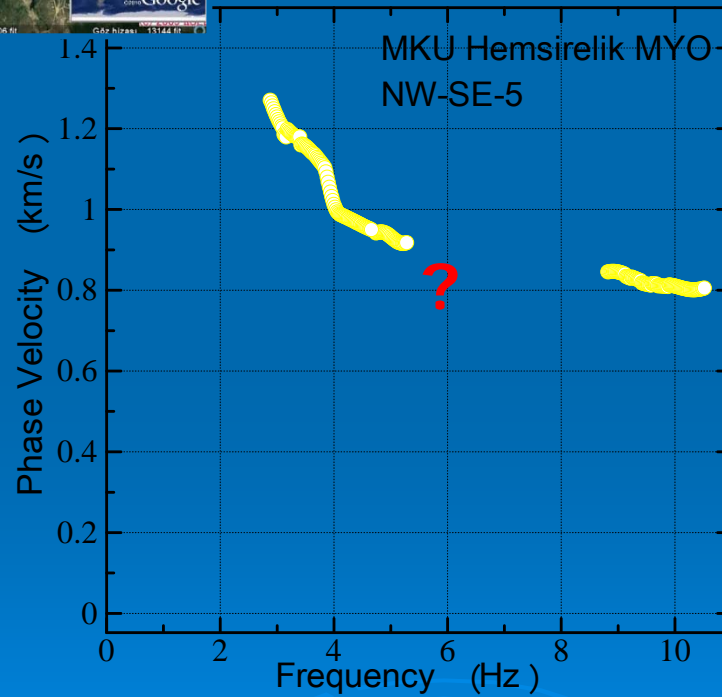
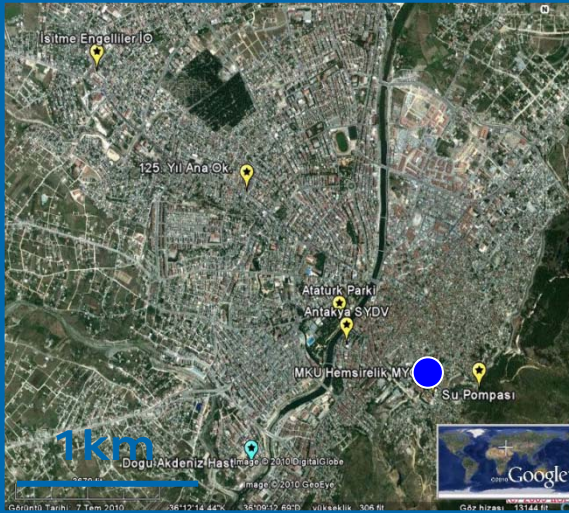
# Ataturk Parki



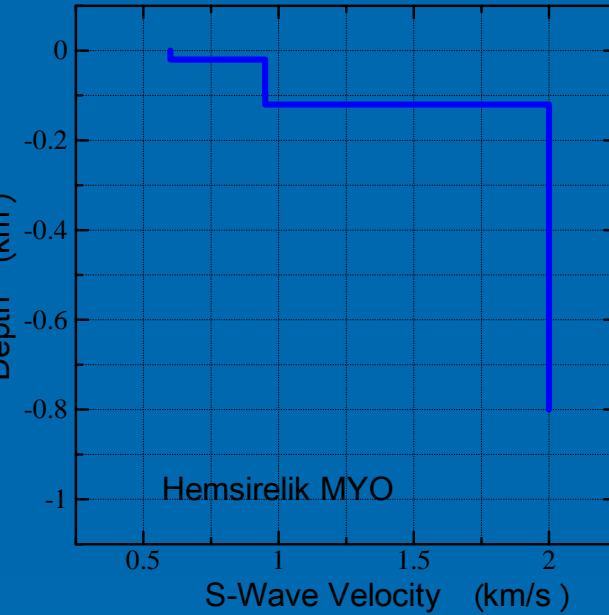
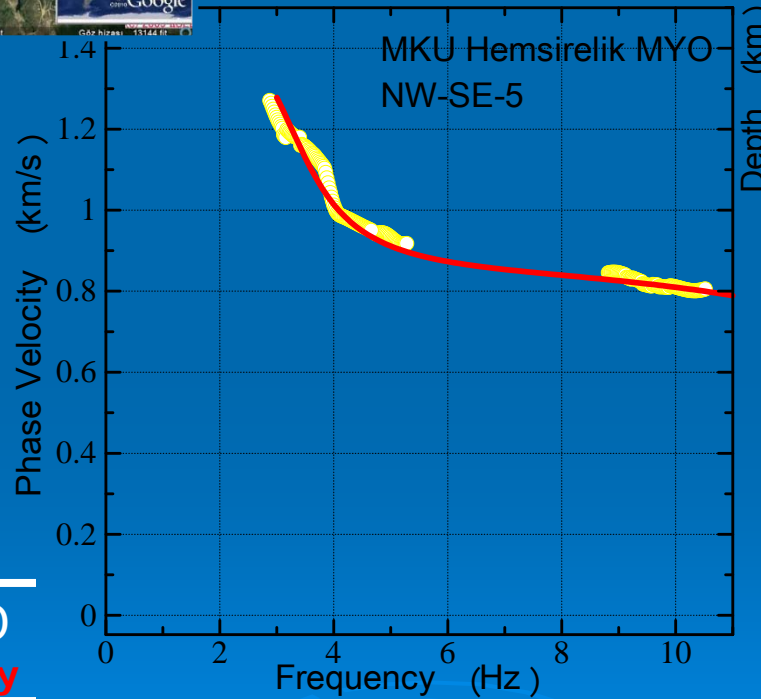
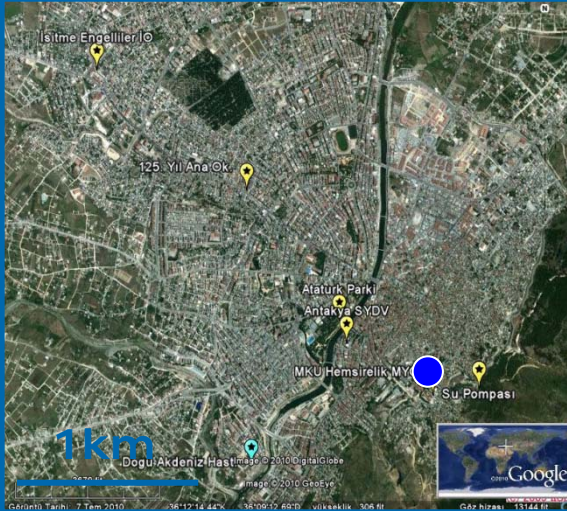
## Ataturk Parki Thickness Velocity

45m	465m/s
75m	750m/s
250m	1000m/s
-----	2000m/s

# MKU Hemsirelik MYO



MKU Hemsirelik MYO



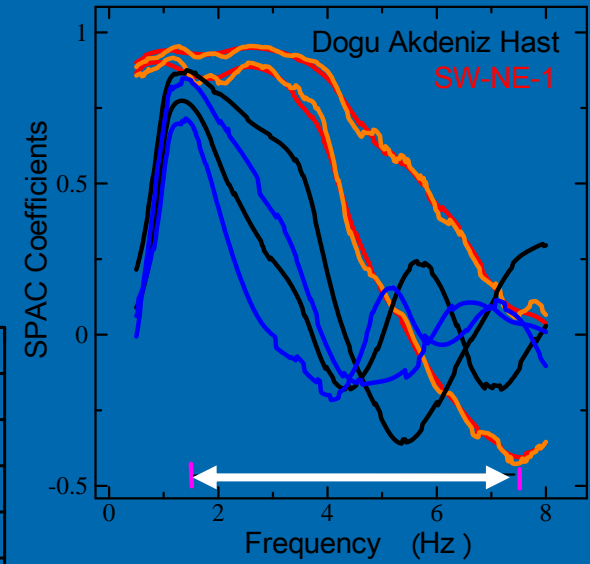
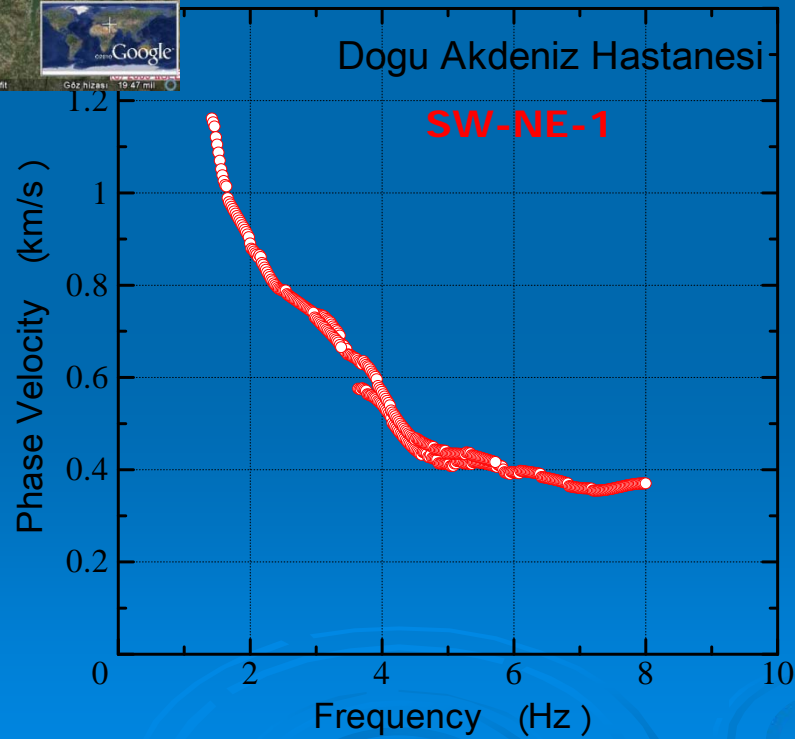
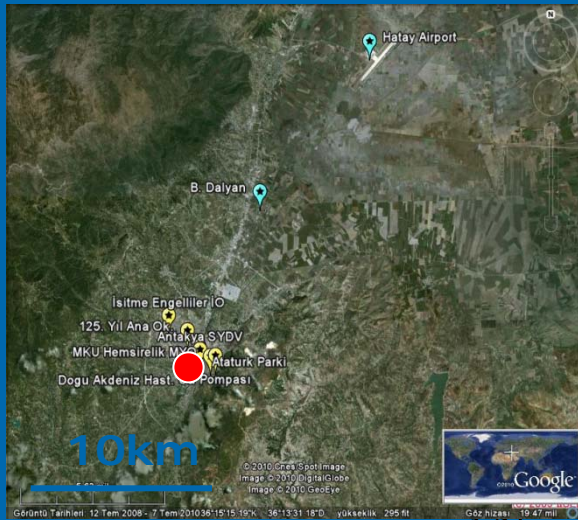
Not reliable result !  
But visual observations support the uppermost part !

Hemsirelik MYO  
Thickness Velocity

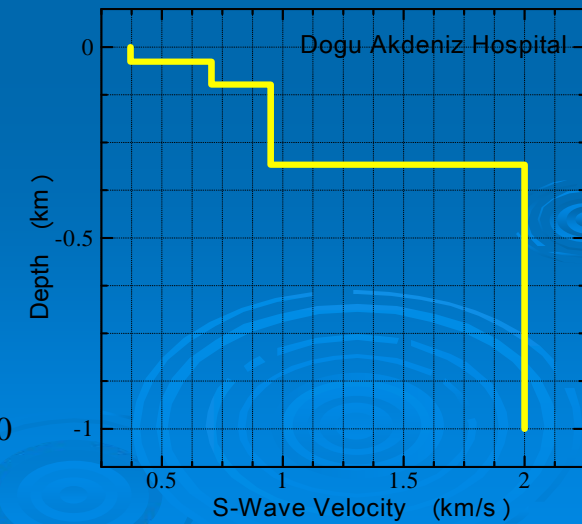
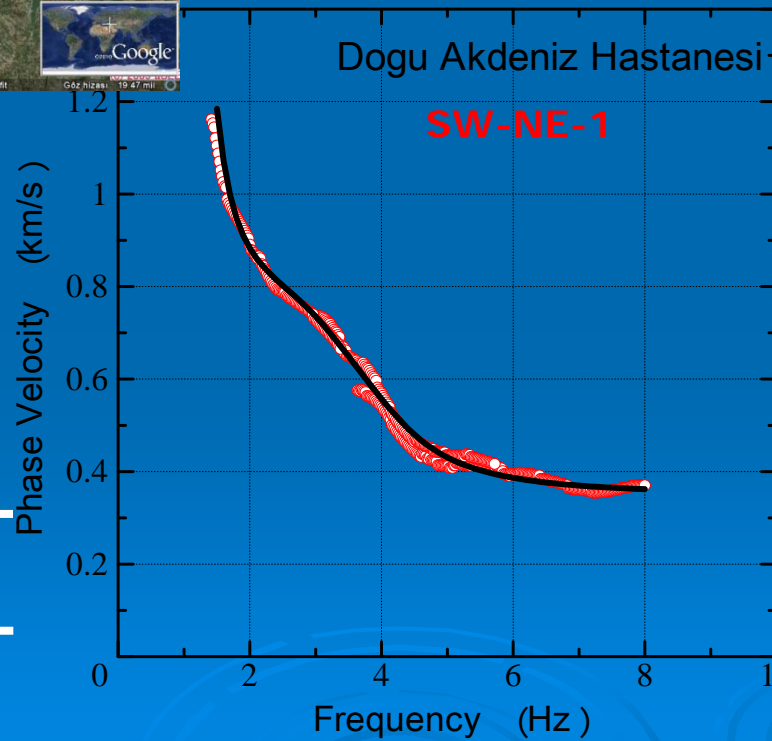
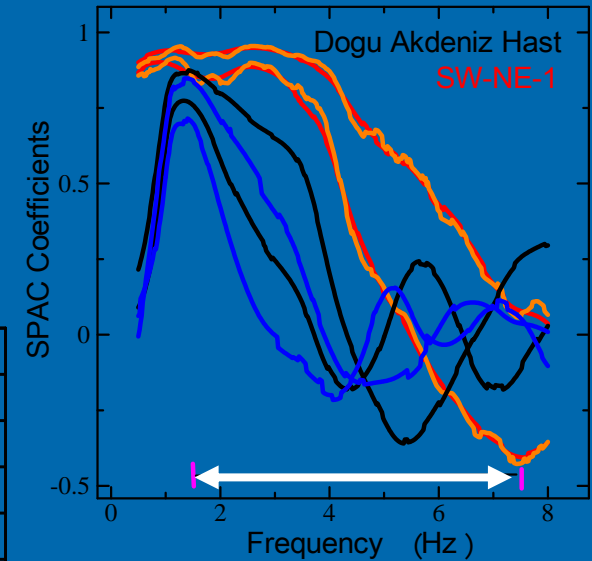
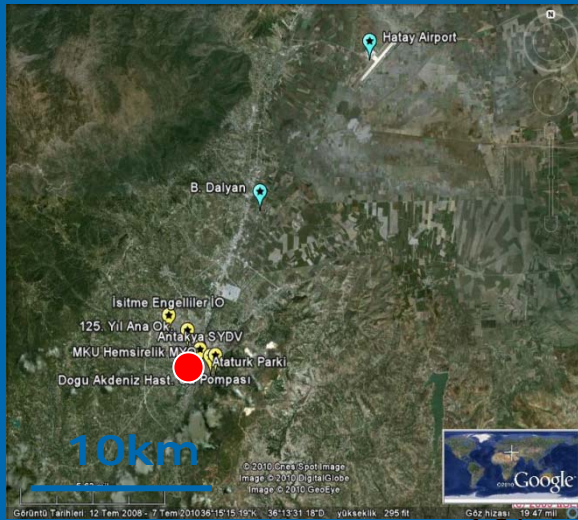
10m	600m/s
100m	945m/s
-----	2000m/s



# Dogu Akdeniz Hastanesi



# Dogu Akdeniz Hastanesi

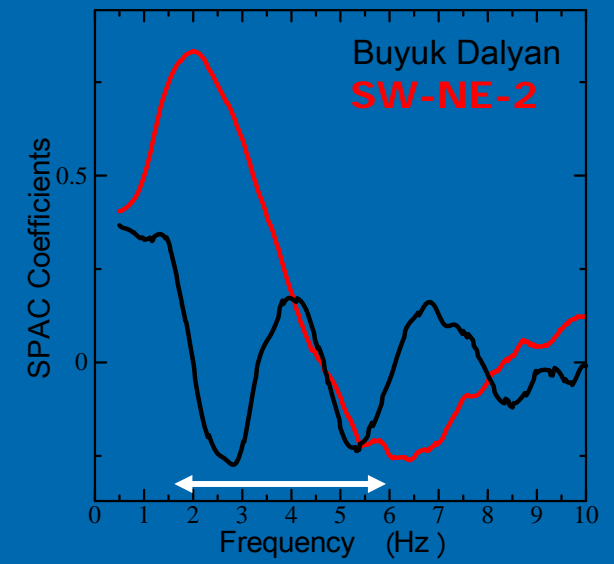
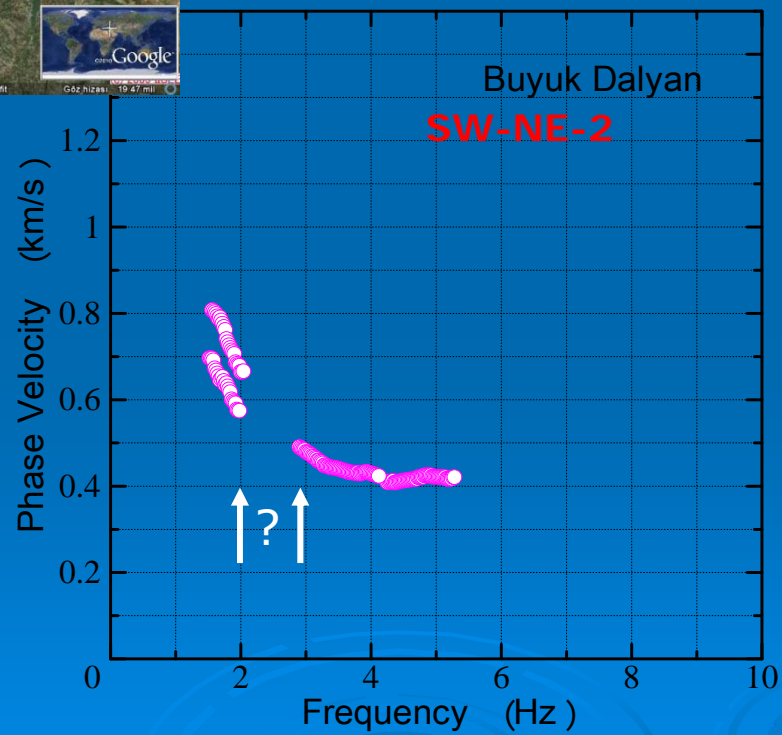
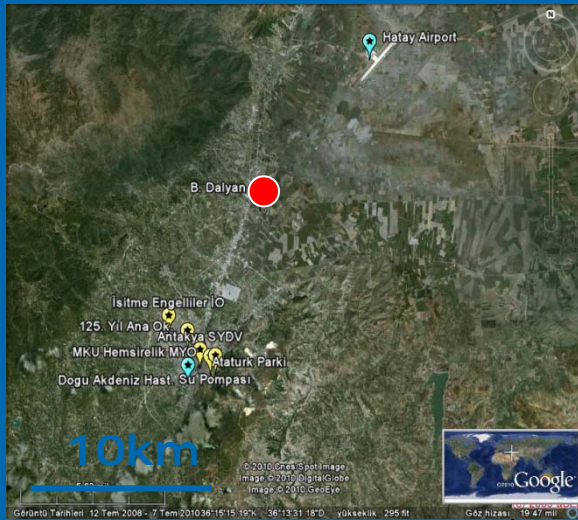


## Akdeniz Hastanesi

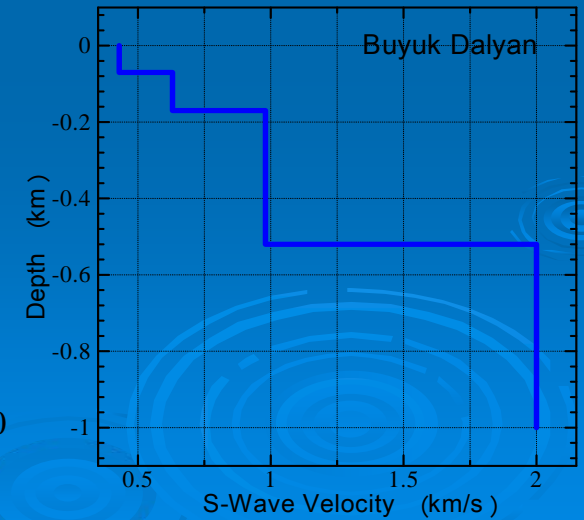
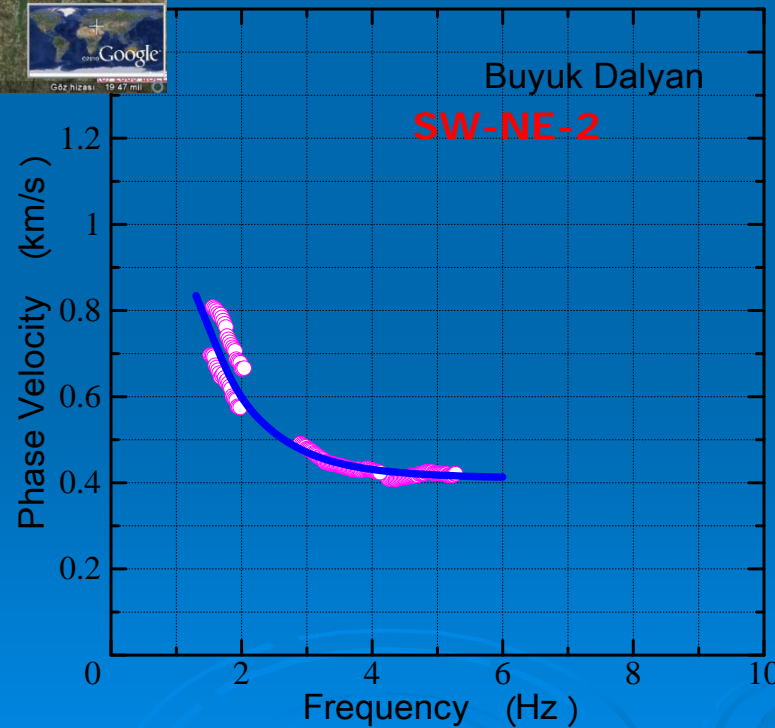
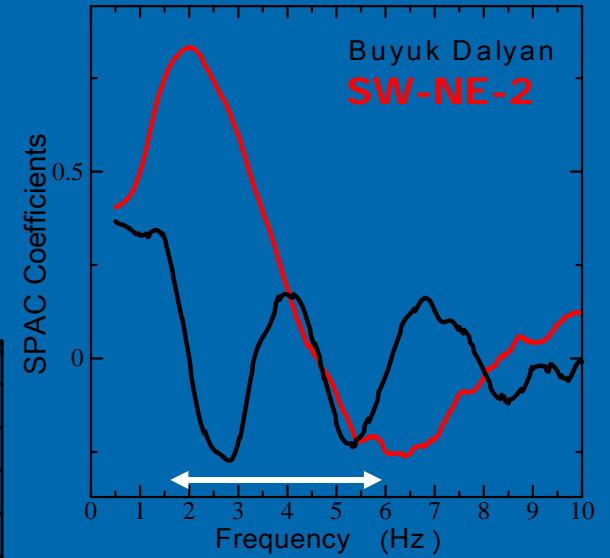
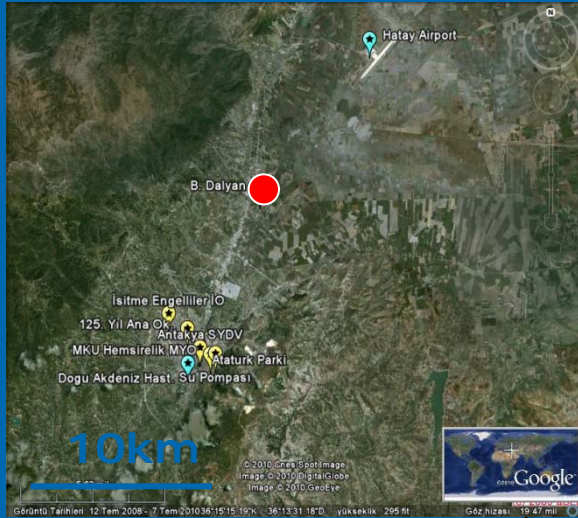
### Thickness Velocity

38m	370m/s
60m	700m/s
200m	960m/s
-----	2000m/s

# Buyuk Dalyan



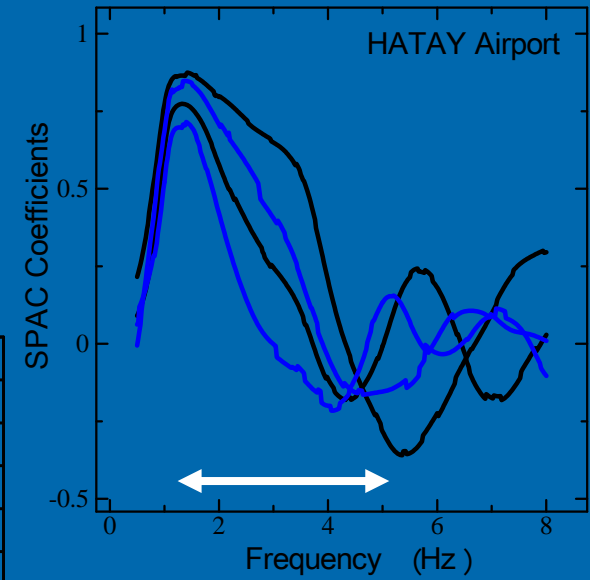
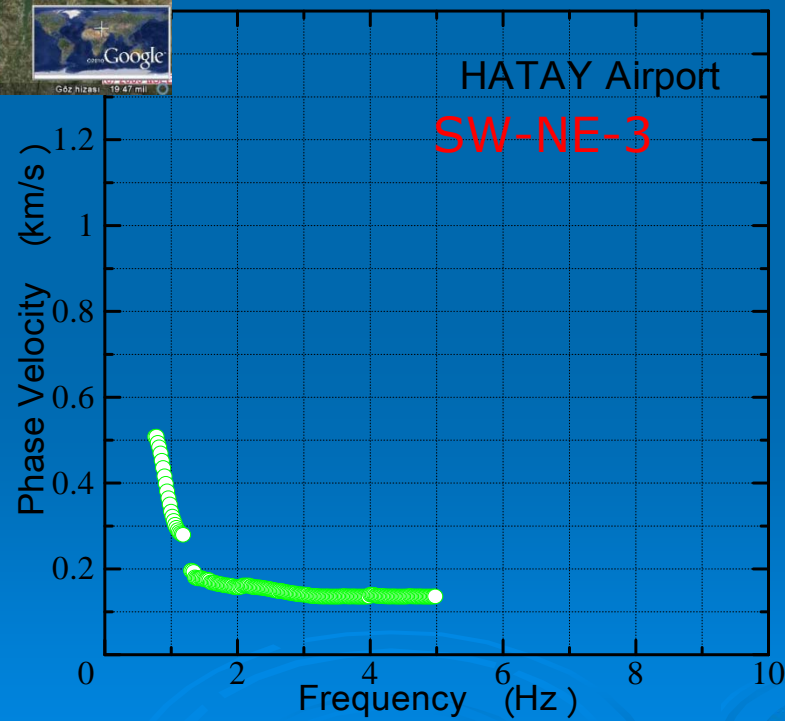
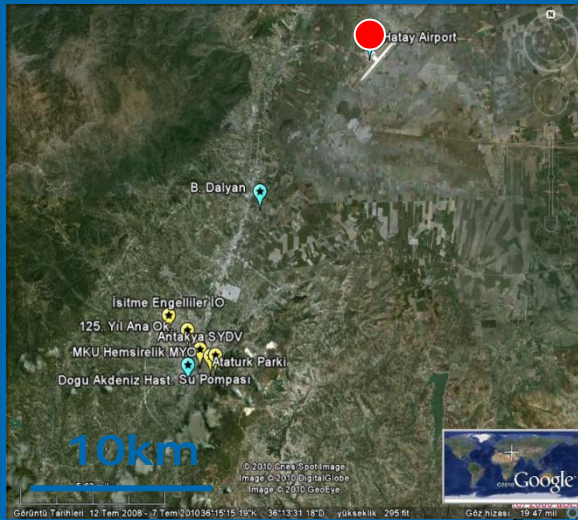
# Buyuk Dalyan



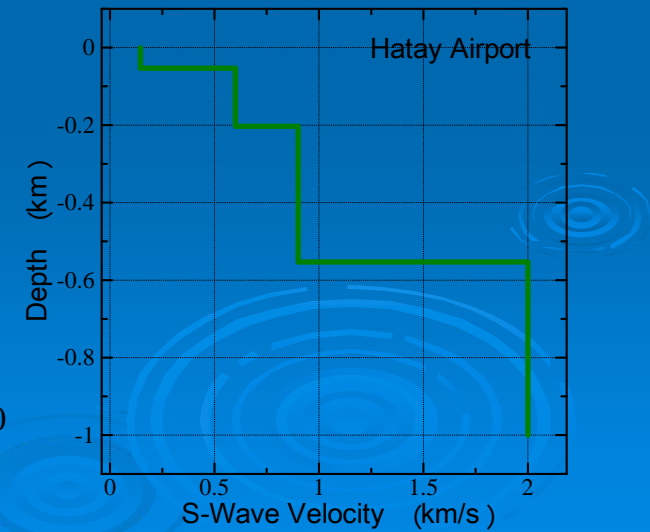
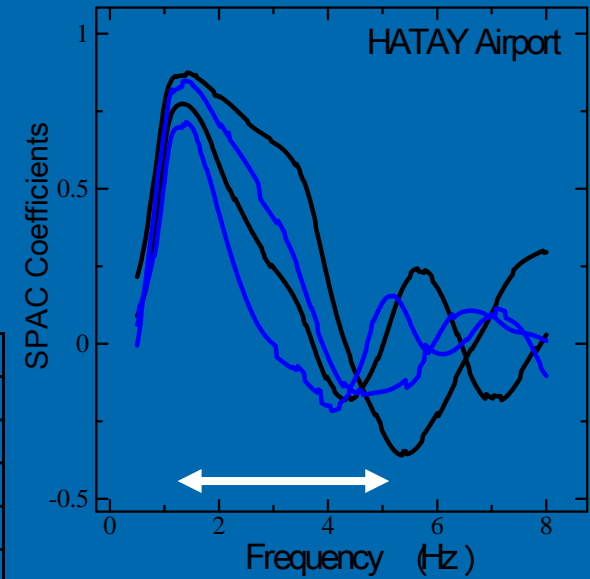
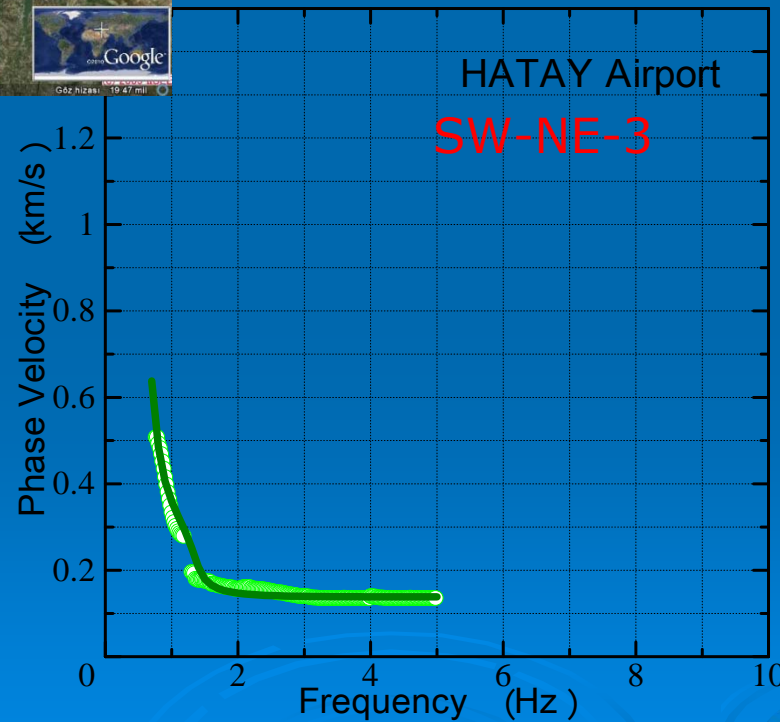
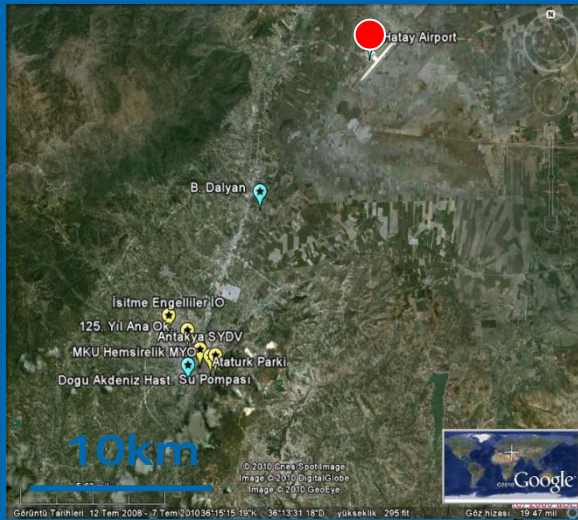
## Buyuk Dalyan Thickness Velocity

70m	480m/s
120m	630m/s
350m	980m/s
-----	2000m/s

# Hatay Airport



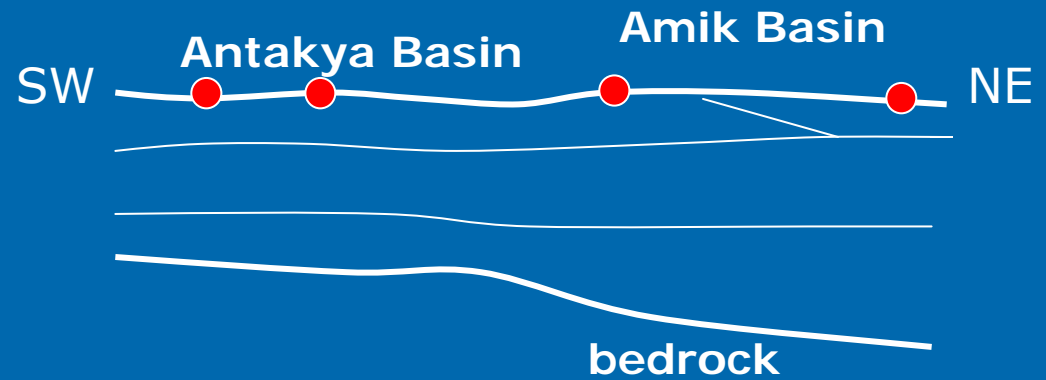
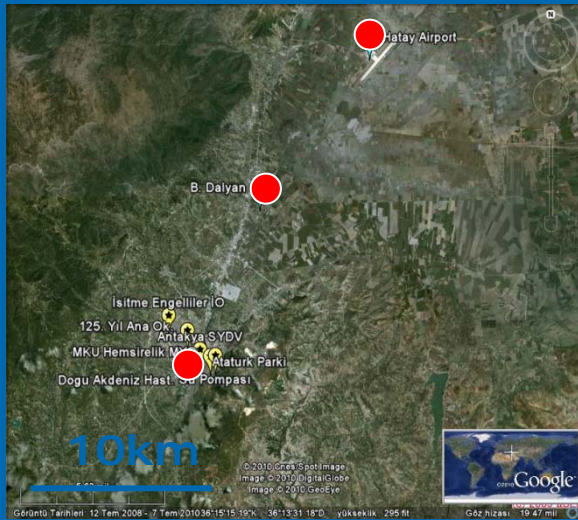
# Hatay Airport



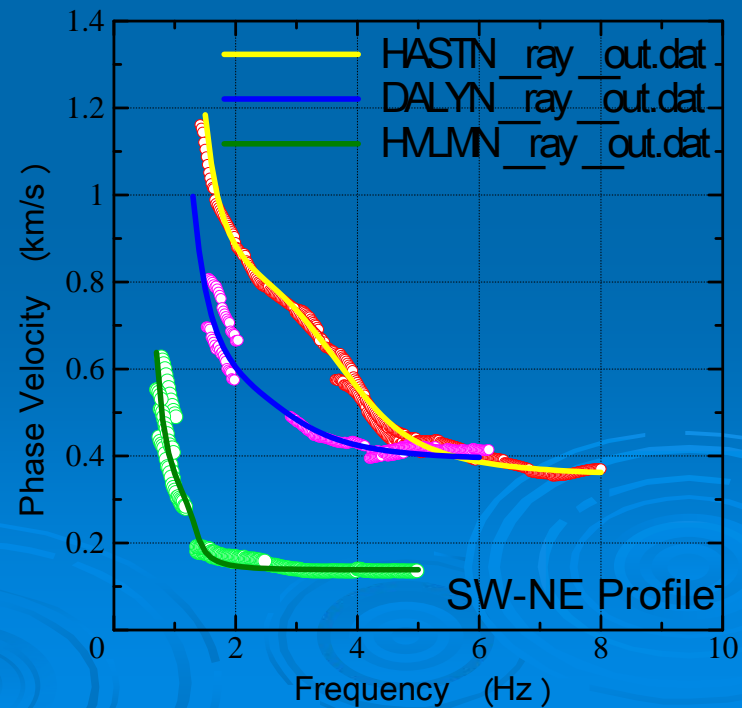
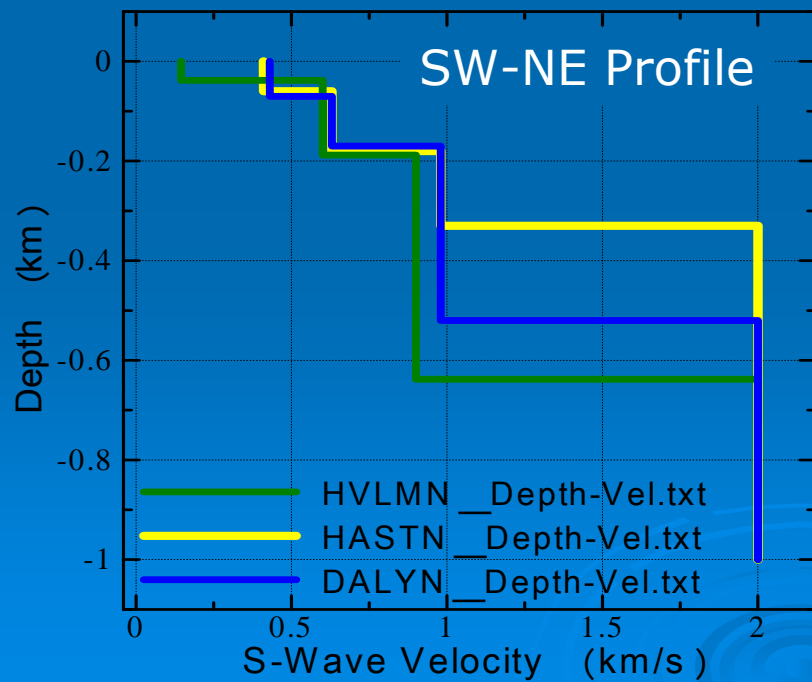
## Antakya Airport Thickness Velocity

38m	140m/s
150m	300m/s
450m	850m/s
-----	2000m/s

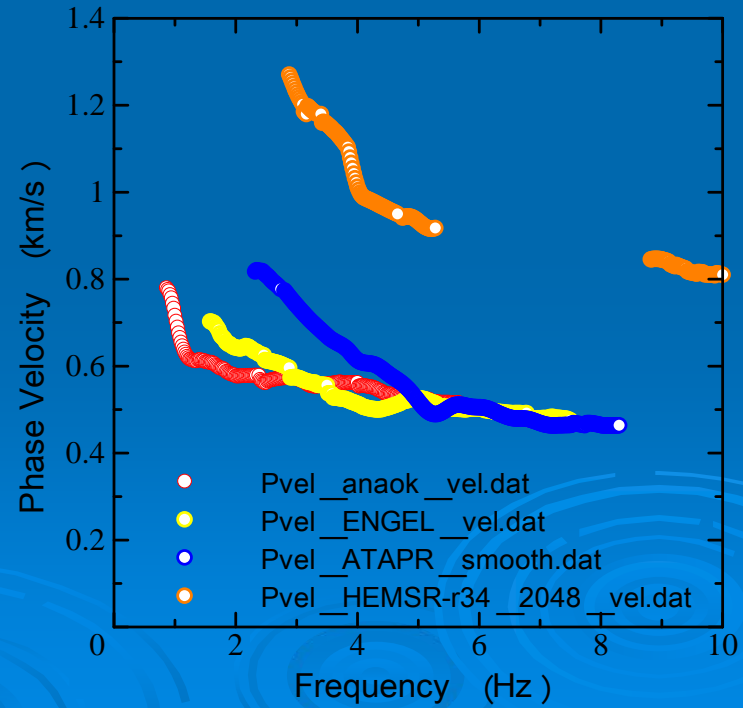
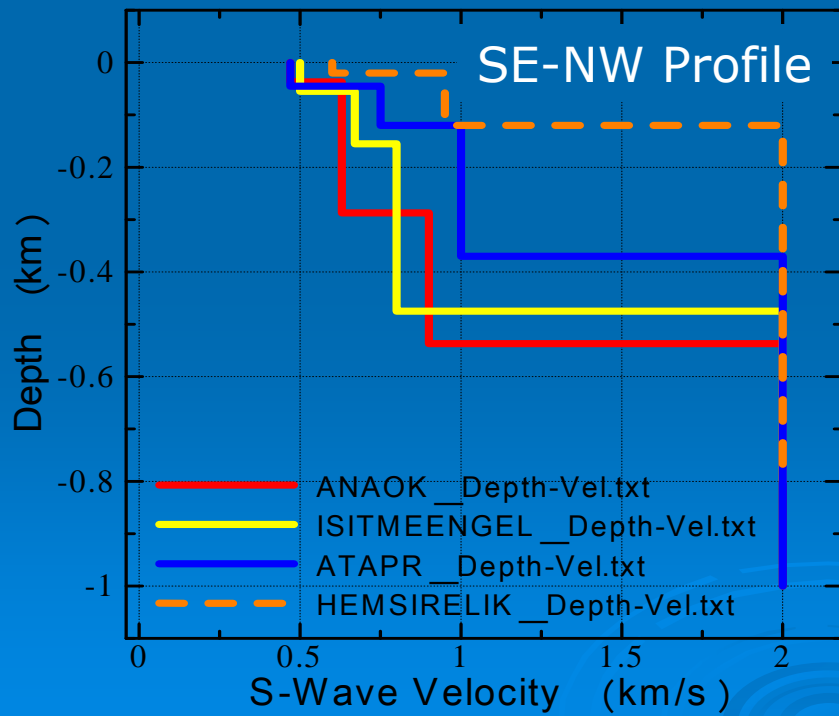
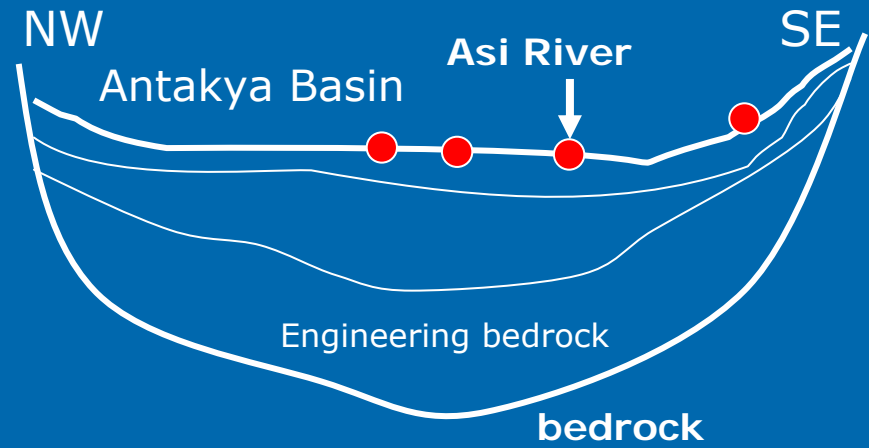
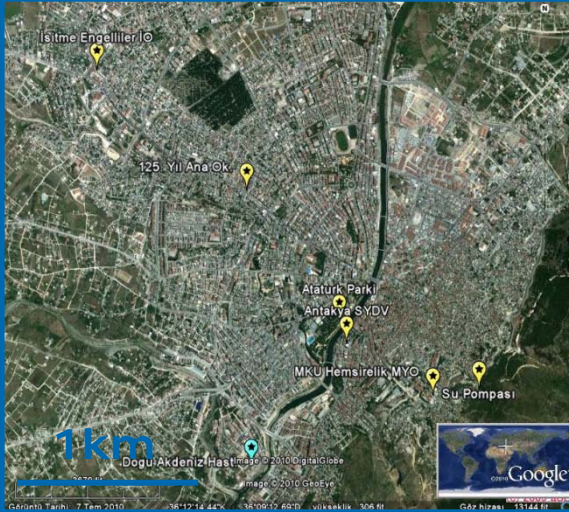
# Conclusion



- Bedrock dipping towards NE !@

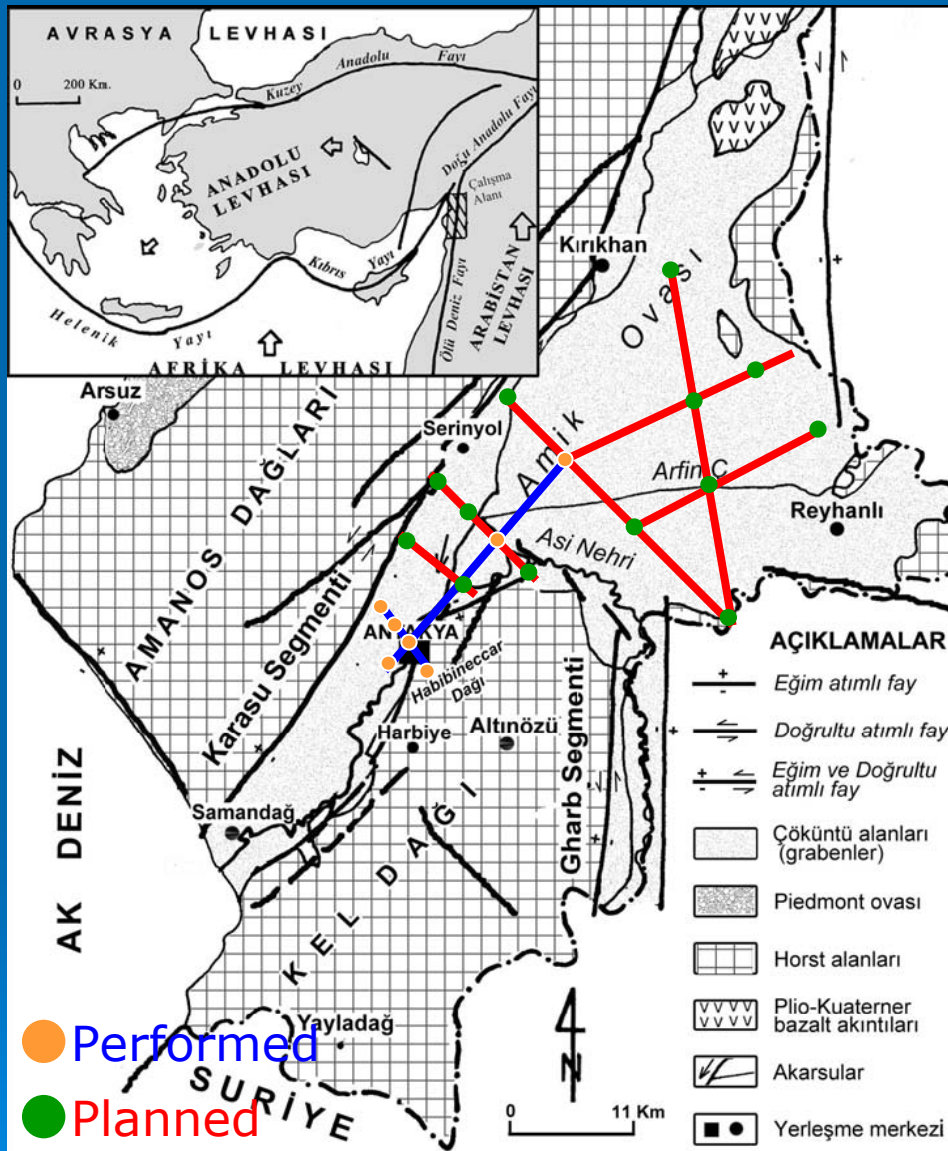


# Conclusion

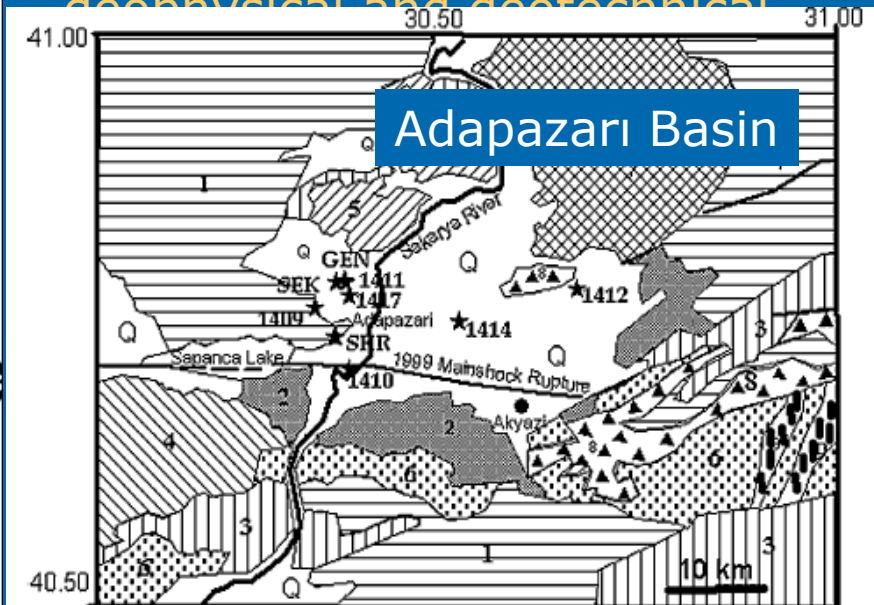




## What is next ?



The characteristics of Antakya and Amik Basins should be investigated in detail by geophysical and geotechnical



- Earthquake simulation and scenario studies based on above studies.

Unless performing these studies, "new residential areas" shouldn't be allowed !

Thank you



