17th International Geography Olympiad
Istanbul, Turkey
10-16 August 2021

Fieldwork Exercise Part I
Tasks
Dear iGEO participant,

Before starting your virtual trip of the Sariyer district of Istanbul city, please read these guidelines.

1. You have the printed Map of the FWE-I area. Use this map to orient yourself and find the location of five topical sites. The sites are marked on the map, but not labelled.

2. The sequence of moving from one site to another is in numeric order: Site 1 (Start) → Site 2 → Site 3 → Site 4 → Site 5 (Finish).

3. The absolute height (elevation) at each site is lower than of the previous one on the route. Always go down!

4. “Leaving” one site and “arriving” at the next one, do not return. Always move forward!

5. At each site you will get tasks you need to complete. For FWE-I you can gain maximum **15 marks**.

6. You are to decide for how long you will be “staying” at each site.

7. Answers should be written in English on the Response Sheet. For answers use a pen with a dark blue tint only. Do not forget to write your participant code in the upper right corner of both pages of the Response Sheet.

8. This presentation will be stopped when **60 minutes** end, regardless of whether you have visited all five sites, or not. Deliver your Response Sheet to the supervisor of your exam immediately then.

9. Keep the Map with you, it can be used as reference for Part II of the Fieldwork exercise (FWE-II).

**Good luck!**
ARRIVING TO THE STARTING POINT
Imagine you to the Hacıosman metro station (green line), located in the Eastern Thrace, 2 km from the Bosphorus.
SITE 1. ISTANBUL HEIGHTS

Site 1 is right across the road from an unfinished building of a hotel.

Analyze the map extract and assuming that each floor of this building is 2.5 meters in height and the terrace on its roof is the same height, answer the questions from the next slide.
1.**A.** Is the absolute height (elevation) of the hotel building higher than pillars of bridges over The Bosphorus strait?

1.**B.** Estimate the difference (in meters) of the height of this building and the pillars of the highest bridge over The Bosphorus.

Write your answers on the Response Sheet and move to the next site.
SITE 2 – MEDITERRANEAN VEGETATION

Site 2 is in the middle of the Ataturk urban forest, established in 2021. This is a park with native and planted trees, developed on the unbuilt area in Sariyer district.
Be an expert in Mediterranean vegetation and answer the questions 2.A. (this slide) and 2.B. (next slide).

2.A. The Mediterranean forests, woodlands and shrubs biome is spread worldwide. Provide the common names of five different Mediterranean types of vegetation and specify the continents where each of these types is represented.
2.B. Select the species from the photos which are NOT native for the forests of modern Istanbul city area and write down on the Response Sheet the corresponding letter codes (A-F).

<table>
<thead>
<tr>
<th>A.</th>
<th>B.</th>
<th>C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quercus frainetto</td>
<td>Pinus brutia</td>
<td>Ficus carica</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.</th>
<th>E.</th>
<th>F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer mandshuricum</td>
<td>Julgans regia</td>
<td>Araucaria araucana</td>
</tr>
</tbody>
</table>

Write your answers on the Response Sheet and move to the next site.
**SITE 3 – GEOLOGY OF EASTERN THRACE**

![Image 1. Site 3.](image1.png)  ![Image 2. Rock outcrop at Site 3.](image2.png)

**Site 3** is near a rock outcrop.

3.A. Identify the exposed rock and its origin.

3.B. The chronostratigraphic chart below contains the results from drilling a geological borehole here. Which geological system (period) name is omitted in Column 1?

3.C. Match the rocks, shown on figures 3.A.-3.F. of the next slide, to the layers 2-6 in the Chronostratigraphic chart.

3.D. Identify the rock from the Figure 3 NOT found in this borehole and give their origin.

<table>
<thead>
<tr>
<th>System/Period</th>
<th>Series/Epoch</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonian</td>
<td>Middle-Upper</td>
<td>1. <em>The rock from photo on figure 2</em></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Lower-Middle</td>
<td>2. Shales with calciturbidite intercalations</td>
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<td></td>
<td>?</td>
<td>3. Limestones (biogenic)</td>
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<tr>
<td>Ordovician</td>
<td>Middle</td>
<td>4. Laminated grey shales with quartz arenite lenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>5. Quartz arenites</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>6. Lensoidal conglomerates- sandstone shale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.</td>
<td>B.</td>
<td></td>
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<tr>
<td>C.</td>
<td>D.</td>
<td></td>
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<tr>
<td>E.</td>
<td>F.</td>
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</table>

Write your answers on the Response Sheet and move to the next site.

Figure 3. Rocks
Site 4 is located on the dam over a small river running through the Ataturk urban forest. Consult the map extract on the next page and circle on the printed map the catchment area of this river.

**4.A.** Estimate the annual runoff of this river (m$^3$).

**4.B.** In urban households equipped with water pipe and sanitation systems, the water consumption norm per capita is 150 liters. How many people could hypothetically get all the water they need from this river? (provide a number)

**4.C.** Why in real life, is this number much lower, and what are the options for make it closer to the hypothetic number?
Write your answers on the Response Sheet and move to the next site.
Site 5 corresponds to the spot marked with ‘X’ on the map extract in the Response Sheet.

5.A. Mark Spot ‘Y’ on this fragment, which is located 40 meters from Spot X on a bearing of 60 degrees (in azimuth 60 degrees).

5.B. Estimate the steepness of the slope (inclination angle in degrees) between spots X and Y.

5.C. Which types of mass wasting (slope movement) represent danger for building on slopes with similar steepness near the Ataturk Urban Forest:
   a) avalanche, b) creep, c) lahar, d) landslide, e) rock-fall, f) solifluction?

Write your answers on the Response Sheet and move to the next slide.
CONCLUDING QUESTION

Near the Ataturk urban forest several traditional rural style houses can be found. Until 1937, there was a settlement here, named Çamlıtepe Village.

• Which features of this geographical location have benefited the development of this settlement?
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contribution: Mikhail Drugov Natalia Frolova, Oxana Klimanova,
Alexander Zherenkov

Sources of images and data:

Photos: E. Artvinli, A. Naumov
Site 2. “Quercus frainetto, botanical Garden in Poznań” by Radomil is licensed under CC BY-SA 3.0. Файл:Quercus frainetto RB2.JPEG — Википедия (wikipedia.org)
Site 4. Mean annual runoff map, 1 : 10 000 000.
Unit circle angles.svg