basaltic andesite dykes. Lavas show microlitic porphyritic, hyaloplitic, spherulitic and hyaloporphyritic textures. When petrographically examined, the samples give evidence of hydrothermal alteration or devitrification. Corroded quartz, oscillatory zoning of plagioclase phenocrysts and reverse zoning are the evidences showing thermal and compositional disequilibrium produced by magma mixing. In this paper the geochemical characteristics of volcanic rocks have been discussed. Subduction of the Neotethys under the Istanbul zone (Pontides) created a new active continental margin arc. The volcanic rocks outcropped in the north of İstanbul are included in High-alumina basalt (>17 % Al_2O_3) group firstly with this study. The petrochemical characteristics of volcanism have been defined on the analyses of 24 representative lava samples covering the whole stratigraphic sequence, the major-oxide, trace and rare earth element data. In order to beter understand the genesis of subduction-related volcanism, we also performed an electron microprobe study on phenocryst phases of two hydrous lava samples an one unhydrous olivine basalt sample (e.g., pyroxenes, amphiboles and olivine). All lava suits are calc-alkaline with arc-like signatures and characterized by LILE and LREE enrichment and N-MORB-like patterns of HFSE and HREE. Such signatures are consistent with melts being derived from a mantle that was metasomatized by slab-derived aquous fluids and silicic melts. With these features İstanbul volcanics have been attributed to crystal fractination and interaction with the subduction zone and modified mantle wedge and to be enriched mantle origin. Geochemically volcanics show negative anomalies in Nb, Ta, P and Ti typical of arc magmas. Nb-Ta-Ti depletions are evidences of aqueous fluid metasomatism since fluids were depleted in these elements due to residuel rutile in the dehyrating slab. Mantle-derived rocks have The Zr/Nb, Nb/Y, Ba/Nb and Y/Nb ratios are akin to continental margin volcanics and also Zr/Y-Zr binary diagram show that there is similarity between continental margin volcanics and İstanbul volcanics. We assume that basaltic andesite and andesite dykes to be the source of volcanic products.

Ground penetrating radar investigation of Gönen Tumulus in Isparta/Turkey

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Prior to 1940s, excavation was the only method for locating buried archaeological studies. By the middle 1950s, along with archaeological searches, geophysical methods are used very often. Geophysical methods have proven to be very useful to archaeologists in order to detect, map and study the characteristics of different types of objects and structure in the subsurface. Among these methods, ground-penetrating radar (GPR) is particularly useful, because this active electromagnetic technique is able to detect the presence of buried objects having different dielectric properties with respect to the surrounding material.

Ground-penetrating radar (GPR) is a method that is able to provide very high resolution, three-dimension information. It is a fast and effective electromagnetic (EM) method. It is based on the propagation and reflection of EM waves, it is sensitive to variations of the EM parameters in the subsoil, specially the dielectric constant and the electric conductivity. Despite its relatively low penetration depth (specially with high-frequency antennae and in moderately conductivity environments), the GPR resolution capability (also depending on frequency and soil properties) is far greater than obtained by other geophysical methods. This makes the technique suitable for high-resolution shallow studies such as archaeological applications and shallow stratigraphy mapping.

The study primarily aims at providing adequate imaging resolution of large and prominent targets of archaeological interest, such as tumuli, at all depth levels. We implemented an integrated ground-penetrating radar (GPR) technique to perform high-resolution imaging and characterization of tumuli (burial mounds).

The ancient city of Konane (Roman Conana) is located in the area around the modern village of Gönen, which lies 24 km north of Isparta in southwest Turkey. In antiquity this area was known as Pisidia. The high peaks of the Barla and Tınaz Mountains frame the valley to the north and gently descend through alluvial fans into the plain of Gönen. While many travelers have visited this area in search of ancient material, none has ever undertaken a systematic survey using the most advanced methods.

In this study in particular aims to combine an archaeological survey and the study of inscriptions with modern methods such as geophysical measurements and topographical mapping. The aim of the geophysical research at the site in Gönen (Isparta/Turkey) was to recognize the shallow soil layers and to determine and outline the existence of possible archaeological objects.

Preliminary finds suggest that the city center of Konane in the Hellenistic period may have actually been located at Kale Tepe, and only in the later Roman phase did the city move southeast, which is now under the modern town of Gonen. The preliminary archaeological data also present distinctsigns of expansion in Konane's settlement during Late Antiquity. The occupation and possibly later fortification of the Akyokuş Tepe, in conjunction with the growth of rural settlement in the western sector of the valley, invite hypotheses over the new economic outlook and demographic expansion in the region.

A landslide research at Northeastern Turkey using 2D electrical resistivity method

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Landslides are an earthflow that may occur in areas with heavy rainfall, on the banks of rivers and on mountain slopes. They may be defined as a sudden or gradual rupture of rocks or soils and their following movements down slope by power of gravity. Landslides endanger engineering structures, properties and human lives. The most important causes of landslides in northeastern Turkey are generally morphology of slopes, heavy rainfall, excavation, decomposed rocks and existence of underground water in soil material. In the study area, structurally complex volcanic and sedimentary sequences, occurred limestone, marl, claystone and tuffite, were observed. The geological units are weathered due to heavy rainfall, surface and underground waters. The weathered units as a result of increase in water movements in landslide area caused the reduction in slope stability, and hence the earthflow by power of gravity occurred. The landslide located in 7 km south from the province of Trabzon in northeastern Turkey is investigated using the two dimensional dipole dipole electrical resistivity method. The resistivity imaging produces significant results to characterize the landslides. The resistivity survey is the definition lateral extension and thickness of landslide body, the determination of a potential sliding surface, and the detection of the movement of groundwater flow and its distribution within the slip mass. The landslide having about 17° slope is approximately 120 m long, about 100 m wide, and in an environment with an altitude ranging from 150 m to 200 m. The highway and buildings in the landslide area have been largely damaged due to the landslide. The resistivity pseudosections with a dipole spacing varying from 5 to 30 m over eight profiles with the length of 100 m, five of which were oriented transversely to the landslide body, carried out during the field study. The field apparent resistivity pseudosections were inverted to obtain a true resistivity structure using an algorithm based on the finite element forward and the least-squares inversion methods. The subsurface is divided in to rectangular blocks, the number of which is less than the number of resistivity data. The inversion method adjusts the resistivity model trying to iteratively reduce the difference between the calculated and observed apparent resistivity values. A parameter mesh for the case of 21 electrodes and n-separation of 6 for the used array is used. The number of parameter layers is set equal to the maximum n-separation of the measured data set and the thickness of each layer is set as 0.5 of the inter electrode spacing for array used. The number of parameters in every layer is eleven. Note also that the