Plate 1a - Geomorphological Map of the Düzce Fault

Continental deposits stratigraphy

- slope debris (Holocene-active)
- alluvial fan deposits (Holocene-active)
- colluvial deposits (Holocene-active)
- fluvial deposits (Holocene-active)
- alluvial deposits (Holocene-active)
- alluvial fan deposits (Holocene)
- alluvial deposits (Pleistocene)
- alluvial deposits (Pliocene-Pleistocene)

Bedrock stratigraphy

- andesitic-basaltic rock units (Late Lutetian-Late Eocene)
- sandstone-shale and conglomerate unit (Late Lutetian-Eocene)
- angular unconformity
- sandstone-shale unit (Early-Middle Eocene)
- angular unconformity
- sandstone-conglomerate (Maastrichtian-Paleocene)
- angular unconformity
- granitoid unit (Paleozoic-Jurassic)
- limestone-sandstone unit (Silurian-Devonian)
- sandstone-conglomerate (Ordovisian-Silurian)

(from Herece and Akay [2003])

0 0.5 1 km
1:20,000 scale

trench site

Contour interval 10 m, auxiliary contour interval 5 m. Spot image 5 m.

Structural elements

- 1999 strike-slip fault ruptures
- 1999 transtensive fault ruptures
- 1999 transpressive fault ruptures
- 1999 probable fault
- transpressive and transtensive fault
- Izmit earthquake fault ruptures (from Komut, 2005; Hartleb et al., 2002; Barka et al., 2002; Lettis et al., 2002)

Morphological elements

- river terrace
- shutter or pressure ridge (gentle/steep flank)
- peak
- saddle
- scarp base
- scarp (<3m)
- scarp (9-3m)
- scarp (>9m)
- paleosurface (Pliocene-Holocene)
- flat iron
- fluctuating lake
- perennial lake
- ponding
- artificial channel
- dry valley
- hot spring
- landslide (quiescent/post-1999 active)
- tilt

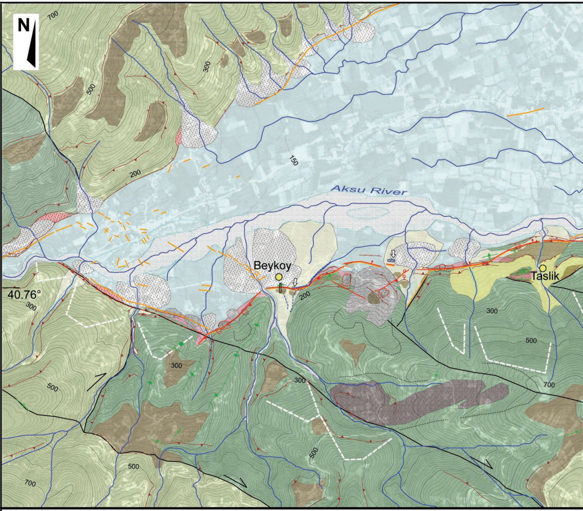
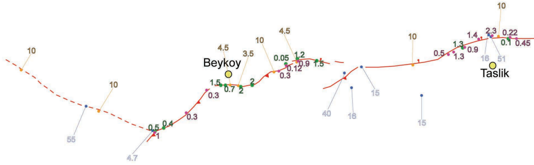

N
700
300
500
200
150
Aksu River
Beykoy
Taslik
40.76°
300
200
300
500
300
300
500
700
500
500
700

Plate 1b - Coseismic ruptures and related long-term offsets of the Düzce Fault

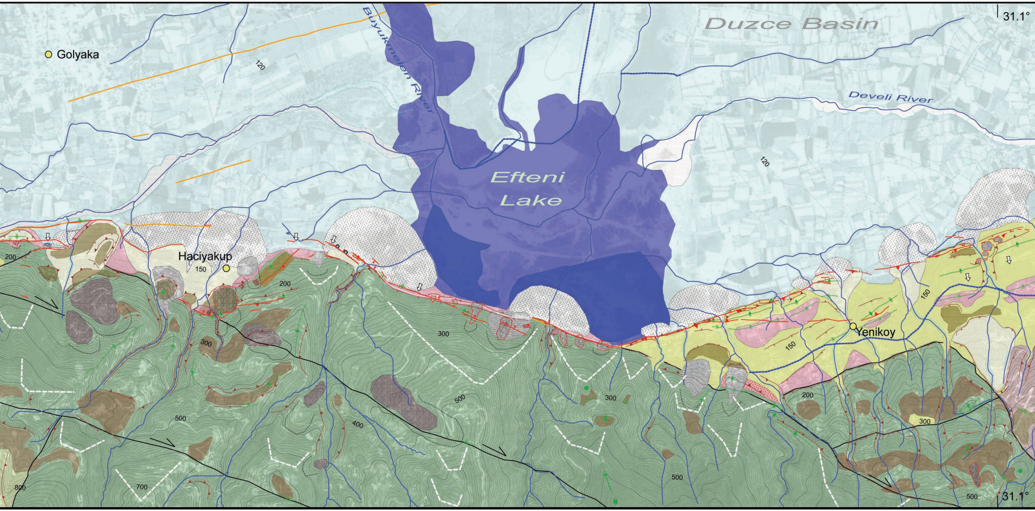
- 1999 strike-slip fault ruptures
- 1999 transtensive fault ruptures
- 1999 transpressive fault ruptures
- 1999 probable fault

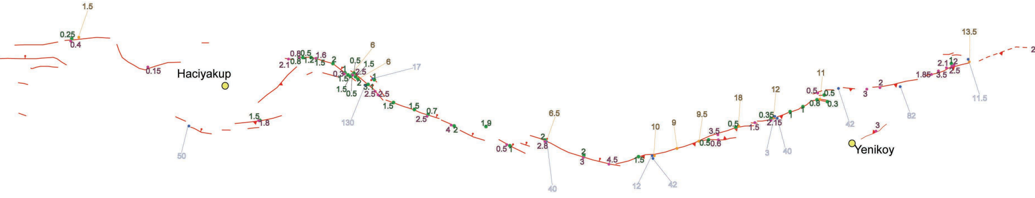
- 0.4 strike-slip offset (m)
- 0.3 dip-slip offset (m)
- 10 long-term dip-slip offset (m)
- 55 long-term strike-slip offset (m)

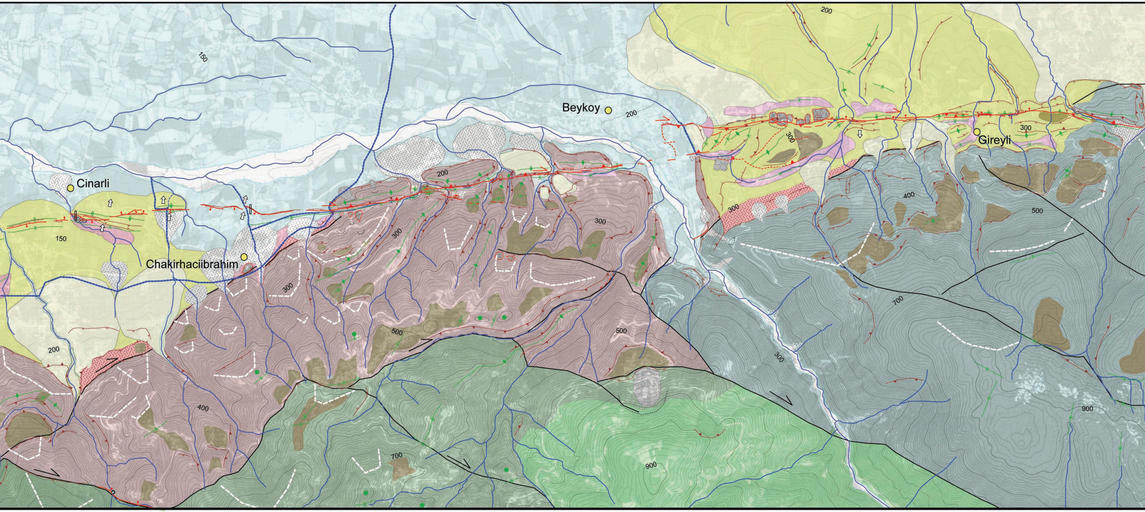
0 0.5 1 km
1:20,000 scale

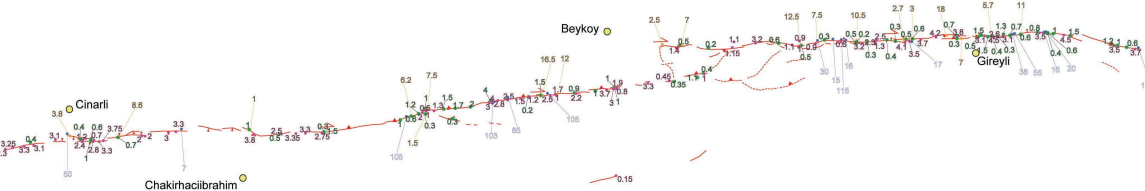

10
10
55
4.7
0.5
0.4
1
0.3
0.3
1.5
0.7
2
2
4.5
3.5
Beykoy
10
4.5
0.05
1.2
0.9
1.5
0.12
0.3
40
18
15
10
15
0.5
1.3
1.3
0.9
1.4
2.3
10
0.22
0.1
0.45
16
51
Taslik

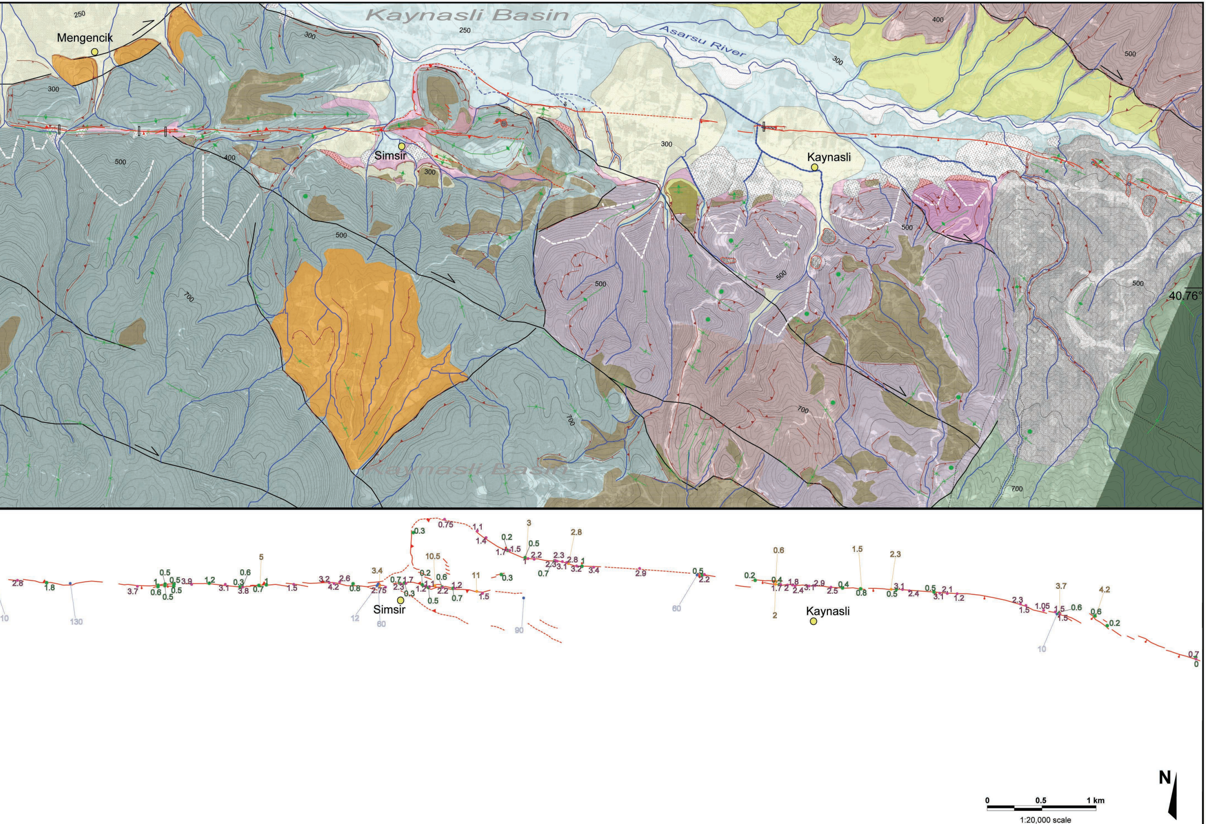
Stefano Pucci (2006),The Düzce segment of the North Anatolian Fault Zone (Turkey): Understanding its seismogenic behaviour through earthquake geology, tectonic geomorphology and paleoseismology,University of Perugia, Ph.D. Thesis


Duzce Basin
31.1°
Golyaka
Buyukmelen River
120
Develi River
Efteni Lake
Haciyakup
150
200
300
400
500
700
800
Yenikoy
31.1°


1.5
0.25
0.4
0.15
Haciyakup
50
1.5
1.8
0.8
0.5
1.6
2.1
0.8
1.2
1.5
2
6
0.5
1.5
6
17
0.3
1.5
2.5
1.5
2
3.1
1
1.5
0.5
2.5
2.5
130
1.5
1.5
0.7
2.5
4
2
1.9
0.5
1
6.5
2
2.8
40
2
3
4.5
1.5
10
12
42
9
9.5
3.5
0.5
0.6
18
0.5
1.5
12
0.35
2.15
3
40
1
1
11
0.5
0.5
0.8
0.3
42
Yenikoy
3
3
2
82
1.85
3.5
2.1
12
2.5
13.5
11.5
2


150
Beykoy
200
200
300
Gireyli
300
Cinarli
200
150
300
400
500
Chakirhaciibrahim
300
300
500
200
500
700
400
300
700
900
900


Beykoy
Gireyli
Cinarli
Chakirhaciibrahim
2.5
7
0.5
1.4
0.2
1.1
1.15
3.2
0.6
12.5
0.9
1.1
0.9
0.5
7.5
0.3
30
15
115
0.6
16
10.5
0.5
0.2
3.2
0.3
2.7
3
0.3
0.5
0.6
4.1
3.5
3.7
17
18
0.7
4.2
3.8
0.3
7
5.7
1.5
1.3
3.1
4.5
0.4
0.3
11
0.7
0.8
0.6
38
55
3.5
0.4
16
0.6
20
1
4.5
1.5
1.2
1
0.6
3.5
3.7
16.5
12
1.5
1.7
0.9
2.2
105
1
1.9
1
3.7
0.8
3
1
3.3
0.45
0.35
1.1
1
0.4
6.2
7.5
1.2
1
0.5
0.6
2
1.3
1.5
1.7
2
1
0.3
0.3
1.5
105
4
3
2.8
2.5
1.5
1.2
0.2
2.5
103
85
1
3.8
2.5
0.5
3.3
3.35
0.3
2.75
1.5
3.8
8.6
3.1
0.4
1.2
2.4
1
0.6
0.7
2.8
3.3
3.75
0.7
2
2
3.3
3
7
50
3.25
3.3
3.1
0.15


Kaynasli Basin
Mengencik
Asarsu River
Simsir
Kaynasli
Kaynasli Basin
250
300
400
500
700
40.76°
Simsir
Kaynasli
N
0
0.5
1 km
1:20,000 scale