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THE EUGANEAN HILLS: GUIDE OF THE FIELDTRIP

ABSTRACT: PELLEGRINI G.B. & SEDEA R., *The Euganean Hills: guide of the fieldtrip*. (IT ISSN 1724-4757, 2005).

The Euganean Hills are extinct subvolcanic edifices exposed by erosion, which removed most of their thick sedimentary cover and part of the underlying eruptive rocks. These Hills rise from the alluvial plain surrounding them as isolated relief south-east of Padova (North-East Italy). In the Euganean Hills outcrop Upper Jurassic to Lower Oligocene marine sediments. Volcanic rocks belong to two magmatic events of Upper Eocene (basalts) and of Lower Oligocene age (rhyolites, trachytes, latites) respectively.

In this fieldtrip are presented and discussed an up-to date illustration of the geology, of the geomorphology and of the well-known euganean hydrothermal system of Abano Terme-Montegrotto.

KEY WORDS: Regional geology, Geomorphology, Hydrothermal circulation, Euganean Hills, Italy.

RIASSUNTO: PELLEGRINI G.B. & SEDEA R., *I Colli Euganei: guida alla escursione*. (IT ISSN 1724-4757, 2005).

I Colli Euganei sono edifici subvulcanici estinti esumati dall'erosione, che ha rimosso la gran parte delle rocce sedimentarie e parte delle sottostanti rocce eruttive. Essi emergono dalla pianura alluvionale come rilievi isolati, posti a sud-est di Padova.

Nei Colli Euganei affiorano rocce sedimentarie marine di età compresa tra il Giurassico superiore e l'Oligocene inferiore. Le rocce eruttive appartengono a due eventi magmatici ascrivibili rispettivamente all'Eocene superiore (basalti) e all'Oligocene inferiore (rioliti, trachiti e latiti).

In questa escursione viene presentato e discusso un quadro aggiornato sulle caratteristiche geologiche, geomorfologiche e sulla natura delle acque del noto sistema idrotermale euganeo nelle classiche località di Abano Terme e Montegrotto.

TERMINI CHIAVE: Geologia regionale, Geomorfologia, Circolazione idrotermale, Colli Euganei.

The Euganean Hills rise from the alluvial plain surrounding them as isolated reliefs south-east of Padova (North-East Italy) (fig. 1). Alluvial deposits have occupied and submerged the lower parts of the slopes (Marinelli, 1922), separating and isolating the various «mountains»

from each other and from the highest central relief, Monte Venda (601 m). The characteristic cone shape of many hills immediately reveal their eruptive origin (Piccoli & alii, 1981). However, they are not true volcanic forms, but rather the result of the exhumation, due to erosion, of subvolcanic masses which solidified near the surface, under a sedimentary cover of mainly Cretaceous and Eocene age (*Scaglia rossa* and *Euganean Marls*). The magmatic manifestations which have dislocated, deformed and locally crossed the marine sedimentary rocks, initially subhorizontal, belong to two main intrusive events, dated respectively to the Upper Eocene (basalt) and Lower Oligocene (rhyolite, trachyte, latite). From the geological viewpoint, as demonstrated by radiometric studies, the Euganean eruptions took place over a relatively short time-span and ended in the Lower Oligocene.

The Euganean Hills are therefore extinct subvolcanic edifices exposed by erosion, which removed most of their thick sedimentary cover and part of the underlying eruptive rocks (figs. 2, 5 and 8; from Piccoli & alii, 1981, modified). Their main morphological feature is the contrast between the forms modelled in the sedimentary rocks defining the perimeter of the central part (fig. 1; from Astolfi & Colombara, 1990, modified), and those modelled in reliefs mainly composed of rocks of the eruptive cycle. The former, composed of small subhorizontal ridges or surfaces, are generally undulating, with modest gradients, and crown the main hills. The latter have conic and pyramidal forms, with steep but rounded slopes, and are often grouped in more complex and massive morphological units (e.g. Monte Grande-Monte della Madonna group) (figs. 4 and 5). However, there are several isolated cones, mainly in the peripheral area, in clear contrast with the flat alluvial plain surrounding them (fig. 3). The various gradients of the Euganean reliefs are easily explained by the different degree of resistance to weathering and erosion of the eruptive rocks, with respect to the sedimentary formations and basaltic tuff associated with them. Subaerial modelling, although acting for prolonged periods and in highly variable climatic conditions, was not completely

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