Journal of Maps, 2013
http://dx.doi.org/10.1080/17445647.2012.757711

Routledge
Taylor & Francis Group

SCIENCE

Geological map of the External Ligurian Units in western Monferrato (Tertiary Piedmont Basin, NW Italy)

Andrea Festa[a]* and Giulia Codegone[a,b]

[a]*Dipartimento di Scienze della Terra, Università di Torino, Via Valperga Caluso, 35, Torino 10125, Italy;* [b]*Dipartimento di Ingegneria dell'Ambiente, del Territorio e delle Infrastrutture, Politecnico di Torino, Corso Duca degli Abruzzi, 24, Torino 10129, Italy*

(*Received 20 August 2012; Resubmitted 30 November 2012; Accepted 6 December 2012*)

The External Ligurian Units in western Monferrato (NW-Italy) have been always described as an undifferentiated chaotic complex. This map, at 1:10,000 scale, describes in detail the tectono-stratigraphic setting of these Units in the sector of the Alps–Apennines junction. Here, the External Ligurian Units represent the northwestern prolongation of the Northern Apennines and consist of a Late Cretaceous chaotic succession represented by the *Argille varicolori* and the overlaying Monte Cassio Flysch. The late Eocene–Miocene episutural succession of the Tertiary Piedmont Basin rests unconformably on the External Ligurian Units. The mapped crosscutting relationships between stratigraphic unconformities and faults allow us to describe a complex tectono-stratigraphic setting that is the product of four tectonic stages. Layer-parallel extension related to Late Cretaceous–early Eocene deformation occurred in the internal sector of the Alpine accretionary wedge and is preserved within the External Ligurian Units which is sealed by the late Eocene deposits of the Tertiary Piedmont Basin. The unconformity at the base of the Oligocene succession records the drowning of shelf sediments controlled by NW-striking left-lateral transtensive faulting. A WNW-striking and NE-verging thrust superposes the External Ligurian Units onto the late Eocene–Oligocene deposits and it is sealed by the gravitational emplacement of late Oligocene Polygenetic argillaceous breccias. Both the WNW-striking thrust and the Polygenetic argillaceous breccias are cut by NW-striking right-lateral transpressive faults that are, in turn, sealed by the Tortonian unconformity.

Keywords: External Ligurian Units; Tectono-stratigraphic evolution; Tertiary Piedmont Basin; Alps–Apennines junction; mélanges

1. Introduction

The understanding of the tectono-stratigraphic evolution of a sector is strictly related to the outcrop condition. Good outcrop condition and excellent rock exposures attract geologists with different backgrounds facilitating a complete understanding of the geology of that sector. On the contrary, a sector with poor rock exposures and very low outcrop percentage is commonly not or poorly studied with a consequent lack of geological informations on its tectono-stratigraphic evolution. In most of these cases, detailed geological mapping represents the most useful approach in covering the lack of geological information, thus in better understanding

*Corresponding author. Email: andrea.festa@unito.it