

AIQUA CONGRESS IN TURIN - FIELDTRIPS
February 24th - 26th, 2015
THE PLIO-PLEISTOCENE CONTINENTAL RECORD IN ITALY:
HIGHLIGHTS ON STRATIGRAPHY AND NEOTECTONICS
In honour of Francesco Carraro

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ABSTRACT: Two field trips that followed the 2015 AIQUA Congress (Torino, February 24-26) focused on the type-area of the Villafranchian succession and on the Ivrea Morainic Amphitheatre are reported.

Keywords: Quaternary, AIQUA Congress, fieldtrip, Villafranca d'Asti, Ivrea Morainic Amphitheatre, Italy

Villafranca d'Asti trip

The first trip of the Turin AIQUA congress (February 25, 2015) has taken place in Villafranca d'Asti and surroundings. It was organized by M. Gabriella Forno and Marco Gattiglio that investigated the stratigraphy and structural setting of the "villafranchian succession", respectively. A relatively large group of researchers also contributed to the route planning: Adele Bertini (palynological analyses of the sediments), Cesare Comina (geophysical survey of the succession), Alfredo Doglione (detailed geological survey of the type-area), Andrea Irace (setting of the Pliocene-Pleistocene succession in the regional framework), Franco Gianotti

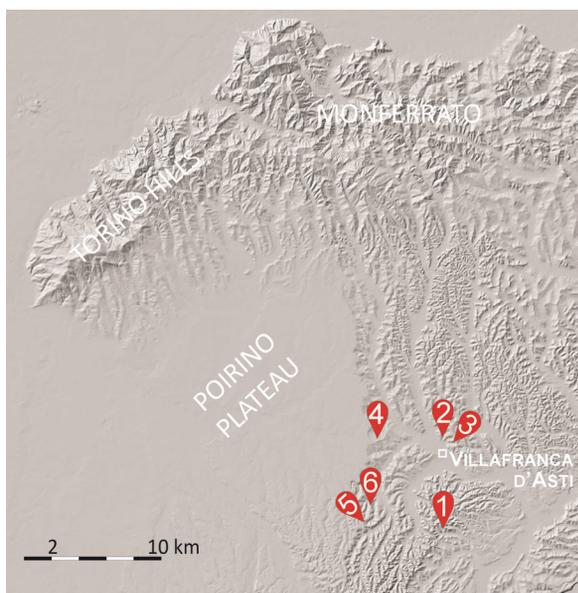


Fig. 1 - Shaded relief of the Villafranca d'Asti area and location of the field trip stops



Fig. 2 - Some conveners and attendees observe the deltaic front sand (Ferrere Unit) of the Ronco outcrop (Stop 1) (photo by F. Gianotti)

(graphic design), Edoardo Martinetto (fossil plants), Alberto Mottura and Benedetto Sala (fossil vertebrates) and Donata Violanti (marine microfossils).

The trip focused on two main topics (Fig. 1): the stratigraphy of the "villafranchian-succession" type-area, that was observed in the morning (stop 1, 2, 3), and the structural setting along the T. Traversola Deformation Zone, in the afternoon (stop 4, 5, 6).

The relaxed discussions regarding the different topics were particularly appreciated by both conveners and attendees.

The first stop focused on littoral sand (Asti Sand) and deltaic front sand (Ferrere Unit) outcropping at Ronco (San Damiano d'Asti, in SE corner of the type-area) (Stop 1). Here the sediments are particularly rich in marine fossils, also collected by the participants in the field trip.

The second stop concerned deltaic plain silt (swamp deposits rich in plant remains) and sand (in which numerous vertebrate fossils were collected over time) that are visible near Cascina San Martino



Fig. 3 - The researchers in the front of the deltaic plain silt outcrop of Cascina San Martino (Stop 2) (photo Martini)



Fig. 4 - The attentive audience (Stop 4), in the sector along the T. Traversola Deformation Zone (photo Gianotti)



Fig. 5 - The researches observe the evidence of the T. Traversola Deformation Zone (Stop 4). In the foreground the snowy scenery of the Western Alps (photo Gianotti)

(Villafranca d'Asti, in the central sector of the type-area) (Stop 2). These sediments (San Martino Unit) are cut by the Cascina Viarengo erosional surface and covered by fluvial gravel sand (Cascina Gherba Unit). This erosional surface represents an important stratigraphic discontinuity between the Lower Complex (Piacenzian) and the Upper Complex (Calabrian). The thin organic paleosols, rich in organic matter and continental molluscs, were also observed in the outcrop.

The subsequent stop was located at Cascina Gianotti (Villafranca d'Asti) (Stop 3), where the sedimentologic features of the fluvial clayey silt forming the upper body of the "villafranchian succession" (Maretto Unit), strongly weathered, has been observed.

The convivial lunch took place in the large terrace of the Taverna di San Michele, at Dusino-San Michele, overlooking the morphological scarp observed in the afternoon.

The morphology along the T. Traversola Deformation Zone was observed at Dusino-San Michele in the western edge of the type-area) (Stop 4). The high scarp located along this structure, separating the Poirino Plateau from the Asti Reliefs, resulted particularly evident during the trip because favored by the high brightness of the beautiful day. The geological evolution along the structure has been fruitfully discussed during the route. The deformation zone was reported as involved by erosional phenomena developed by the ancient trend of the Po River, responsible of the shaping of the type-area during the middle-upper Pleistocene.

Near the Villata village (Valfenera, in the SW corner of the type-area) (Stop 5) the differences in the "villafranchian succession" along the deformation zone were observed. These differences have also been re-

ported by electric tomographies. Indeed along this structure very fractured sediments were also observed, that are linked to the transcurrent movement typical of this deformation zone.

Finally, near Cascina Volpiano (Valfenera, in the SW corner of the type-area) (Stop 6) numerous close fractures developed along the deformation zone were observed. the paleosol that is preserved at the top of the Lower Complex of the "villafranchian succession" was also evident.

The organizers would like to express their sincere thanks to the participants for the attention to the different topics and for the suggestions, that may be useful to develop further research on the type-area.

Ivrea Morainic Amphitheatre

The second excursion took place on Thursday, 26th February in the Ivrea Morainic Amphitheatre (IMA) at the Aosta Valley outlet, about 30 km NNE of Turin, favored by a still sunny day. Franco Gianotti led the 22 attendees to the different sectors of the big end moraine system (Fig. 6), previously defined by Penck et al. (1894) as the most significant one in the Alpine region.

The spillway of Mazzé was the first stop (stop 1); there the subglacial melt-out till of the IMA frontal moraines outcrops. These deposits are well exposed in the deep incision of the Dora Baltea River through the amphitheatre. They have a particularly fine grain size and homogeneous lithofacies and color; furthermore they contain reworked Pliocene marine-mollusc fossils.

Then the field trip moved to the San Martino Canavese village, which is at the inner edge of the IMA western sector, to ascend the Rio Rudo fluvial incision (stop 2). There three sequences of glacial deposits spectacularly crop out; they consist of melt-out and lodgement till affected by subglacial deformation, and of glaciolacustrine fan-delta gravels and sands. Deposits are separated by paleosols and affected by thrusts induced by subglacial tectonic.

A pair of panoramic stops have allowed us to view

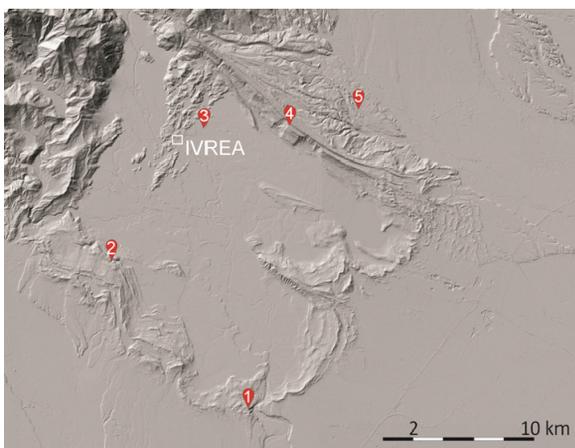


Fig. 6 – Shaded relief of the Ivrea Morainic Amphitheatre and location of the field trip stops



Fig. 7 - The Bessa Aurifodine, a very important site of geo-archaeological interest (Stop 5) (photo by Gianotti)

the internal depression of the amphitheatre (near the stop 2) and the Serra d'Ivrea giant lateral moraine, bordering the inner edge of the IMA eastern sector (stop 3).

The lunch break was in the restaurant "Della Serra" in Broglin (stop 4), placed in correspondence to a major stratigraphic boundary. The site lies in an outwash valley between two moraines of the Serra group formed during glaciations referable to the MIS 6 and MIS 2 stages respectively.

Finally the entire IMA eastern (left) valley side, in the Biella region was crossed; there the oldest IMA moraines, referred to the end of the Early Pleistocene are preserved. Lastly the group reached the last stop at the roman gold mines named the Bessa Aurifodine, a very important site of geo-archaeological interest (stop 5). In this area the river erosion demolished all the local moraines and formed an outwash plain constituting a gold placer. In the II-I century BC, under the Republic of Rome, mine exploitation produced impressive mine dumps, extended over about 10 km², made of endless accumulations of rounded cobbles, that lie on the top of a high fluvial terrace (Fig. 7), and of big anthropic alluvial fans all around the terrace.

Ms. received: May 12, 2015
Final text received: May 26, 2015