Annot Fieldtrip

Confined deep-marine systems of the Alpine foreland basin and the Bouma Sequence: Grès d'Annot Basin, SW Alps. Fieldtrip leaders: *Gillian Apps, Stan Stanbrook and Lawrence Amy*

This fieldtrip will focus on the Grès d'Annot, an Eocene-Oligocene deep-marine succession deposited within the topographically-complex Alpine foreland basin. The Grès d'Annot was studied by Arnold Bouma and others in the late fifties and sixties, inspiring the development of the Bouma sequence. Since then, the Grès d'Annot has acted as a natural laboratory for deep-marine sedimentologists, largely due to its exceptional exposure around the south-east of France. We will visit various classic Grès d'Annot outcrops on this three-days fieldtrip, spanning different sub-basins exposed across the Alpine foreland basin.

Day 1 – Braux, Annot and St Benoit localities. On the first day, we will drive from Nice to Annot to study the proximal Annot sub-basin within the Alpine foreland. At Braux, we will get an overview of the basin stratigraphy and walk through a classic basin margin succession, from thin-bed turbidites to hybrid flow deposits, and discuss the sediment gravity flow interaction with topography. We will then climb up to the sandstone cliffs of Les Scafferels and Chambre du Roi near the village of Annot, which displays features typical of a proximal submarine fan, with amalgamated sandstones displaying different facies associations, where we can discuss what happens at the base of a steep slope entry into a confined basin, debating the significance and implications for sand transport down the Annot system. Time permitting, we will finish the day at Saint-Benoît, where we see the impact of extensional faulting on turbidite deposition.

Day 2 – Chalufy (weather permitting) locality. We will travel farther down-dip into the Trois-Évêchés sub-basin. We will undertake a moderately strenuous hike (~1 hour) to a viewpoint of the famous Chalufy exposure, which has been studied extensively as a classic example of onlap against a deep-marine basin margin. Here we will discuss what drives different seismic-scale onlap geometries, and what depositional features and post-depositional modifications may be typical of deep-marine basin margins.

Day 3 –Peïra Cava sub-basin. On the last day, we will drive east to the Peïra Cava sub-basin and examine the exposures of the Grès d'Annot that inspired Arnold Bouma to develop the Bouma sequence in the 1960s. We will see the full basin-fill section, from the transgression at basin initiation, through the Grès d'Annot succession from base-of-slope facies, upwards to the final Schistes à Blocs Formation, signalling the death of this sub-basin, as the alpine nappes advanced across the foreland.

The famous Chalufy onlap at the southern end of Trois-Évêchés. Deep-marine sandstone packages onlap the pale blue, fine-grained basin margin.