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Short communication

Evidence for pre-Variscan deformation in the Lys-Caillaouas area, Central Pyrenees, France

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The eastern Pyrenees are reported to show evidence of an angular unconformity between the Cambrian metasedimentary series of Canaveilles and Jujols and the Upper Ordovician Rabassa conglomerate (Llopis Lladó, 1965; Santanach Prat, 1972, 1974; Laumonier & Guitard, 1986; Laumonier, 1987, in press). Bedding within the Cambrian rocks trends obliquely to the lower boundary of the conglomerate (LCB). In addition, Llopis Lladó (1965) and Santanach Prat (1972, 1974) mentioned an abrupt change in orientation of δ-lineations at the LCB, i.e. a difference in orientation of intersection lineations of sedimentary bedding on the Variscan main phase schistosity. The schistosity shows no change in orientation and this implies that bedding must have been oblique to the LCB at the time of deposition of the conglomerate.

In contrast herewith from the Central Pyrenees no observations have been reported thus far that point to an angular unconformity within the Cambro-Ordovician metasediments and the upper Ordovician conglomerate is considered to there conformably overlie the older Cambro-Ordovician rocks (Zwart, 1979; Verhoef et al., 1984; André, 1985; De Bresser et al., 1986; Speksnijder, 1987).*

However, recent observations indicate other-

* Except Alonso J.L. and Garcia Sansguido J. who describe such an unconformity in the Bosost area (unpublished contribution to the 'Synthèse des Pyrénées, B.R.G.M. ed., in prep).

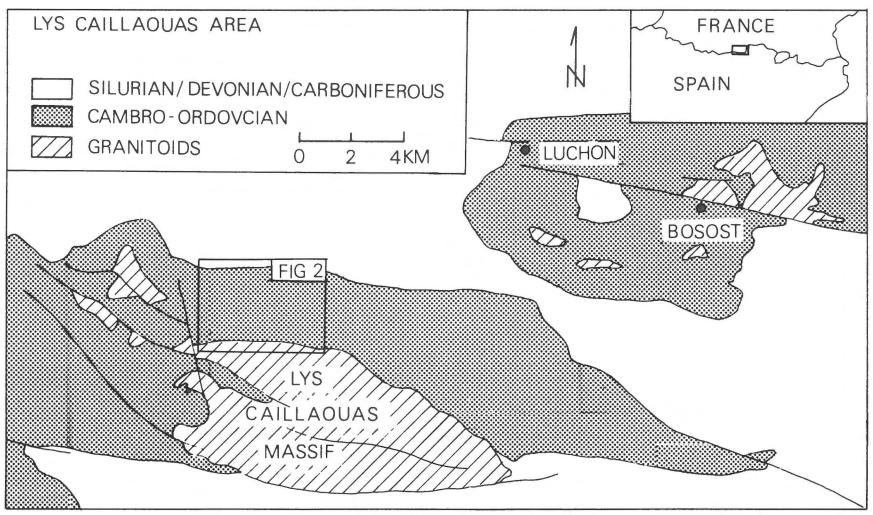

Fig. 1. Geological sketch-map of Lys Caillaouas area (after Zwart 1979) showing location of the studied area.

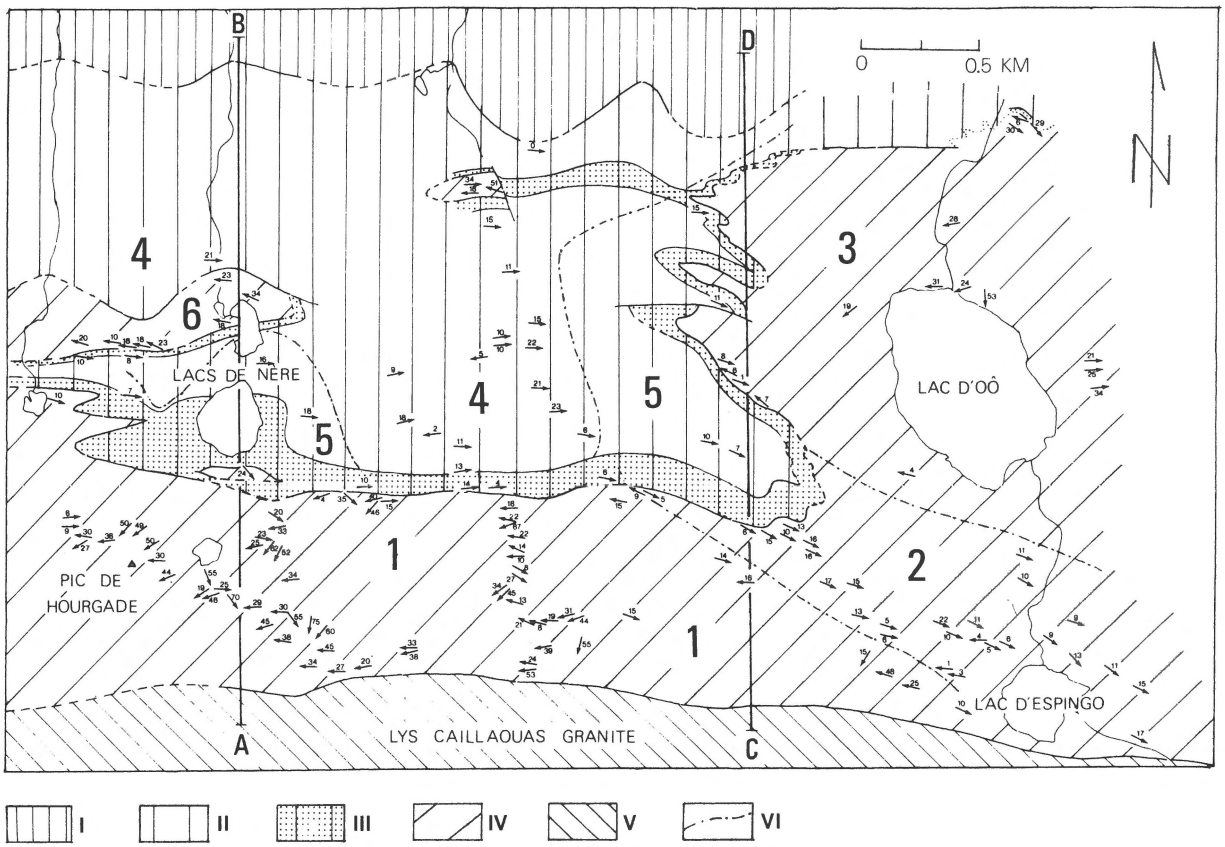

Fig. 2. Simplified geological map of the studied area showing δ-lineations within the Camboro-Ordovician rocks of the central Lys-Caillaouas area. Each arrow indicates one measurement. Numbers indicate plunge. Large numbers, 1 to 6, mark sub areas with relatively constant orientation of main phase cleavage and/or δ-lineations. Legend: I = Silurian & Devonian; II = Upper Ordovician mica schists and quartzitic marbles; III = Upper Ordovician conglomerate; IV = pre-Upper Ordovician mica schists, quartzites and quartzitic marbles; V = porphyritic biotite granite; VI = boundary between subareas with relative constant orientation of δ-lineations and/or main phase cleavage (see Fig. 4).

wise and from the distribution of δ-lineations within the Cambro-Ordovician metasediments in the Central Lys-Caillaouas area (Central Pyrenees; see Figs. 1, 2 & 3) it now appears that: (i) the orientation of δ-lineations above the LCB, i.e. in the Upper Ordovician, is reasonably constant and plunges east with a mean value of about 15 degrees (see also Fig. 4, see page 380); (ii) there is an abrupt change in orientation across the LCB while the main phase cleavage has a constant orientation; (iii) the orientation of δ-lineations below the LCB, i.e. in the pre-Upper Ordovician, shows a considerable spread.

Conclusion

Within the Central Pyrenees the spread of δ-lineations below the LCB together with a constant orientation of the main schistosity indicates a deformational event prior to the main phase deformation. Above the LCB no significant spread of δ-lineations is found. There is an abrupt change in orientation of δ-lineations across the LCB. Pre-main phase deformation therefore only affected rocks below the LCB. The conglomerate is of Upper Ordovician age. Consequently, as in the eastern Pyrenees, in the Central Pyrenees deposition of the conglomerate must have taken place after a pre-Variscan deformational event.

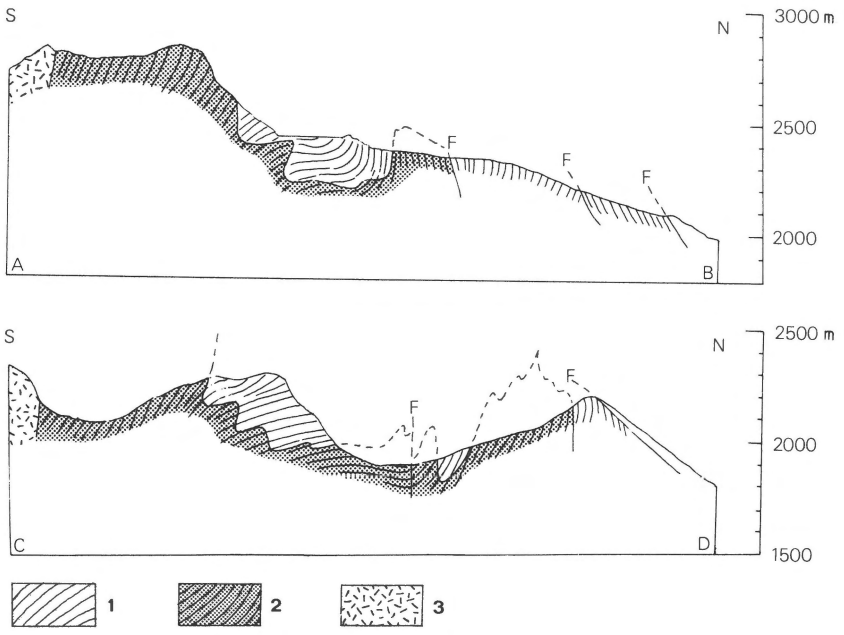

Fig. 3. Cross sections through the studied area showing main phase cleavage and folding of the lower conglomerate boundary. Both folding and cleavage are of Variscan age. Legend: 1 = Upper Ordovician; 2 = pre-Upper Ordovician; 3 = porphyritic biotite granite. See figure 2 for location of sections.

Acknowledgements

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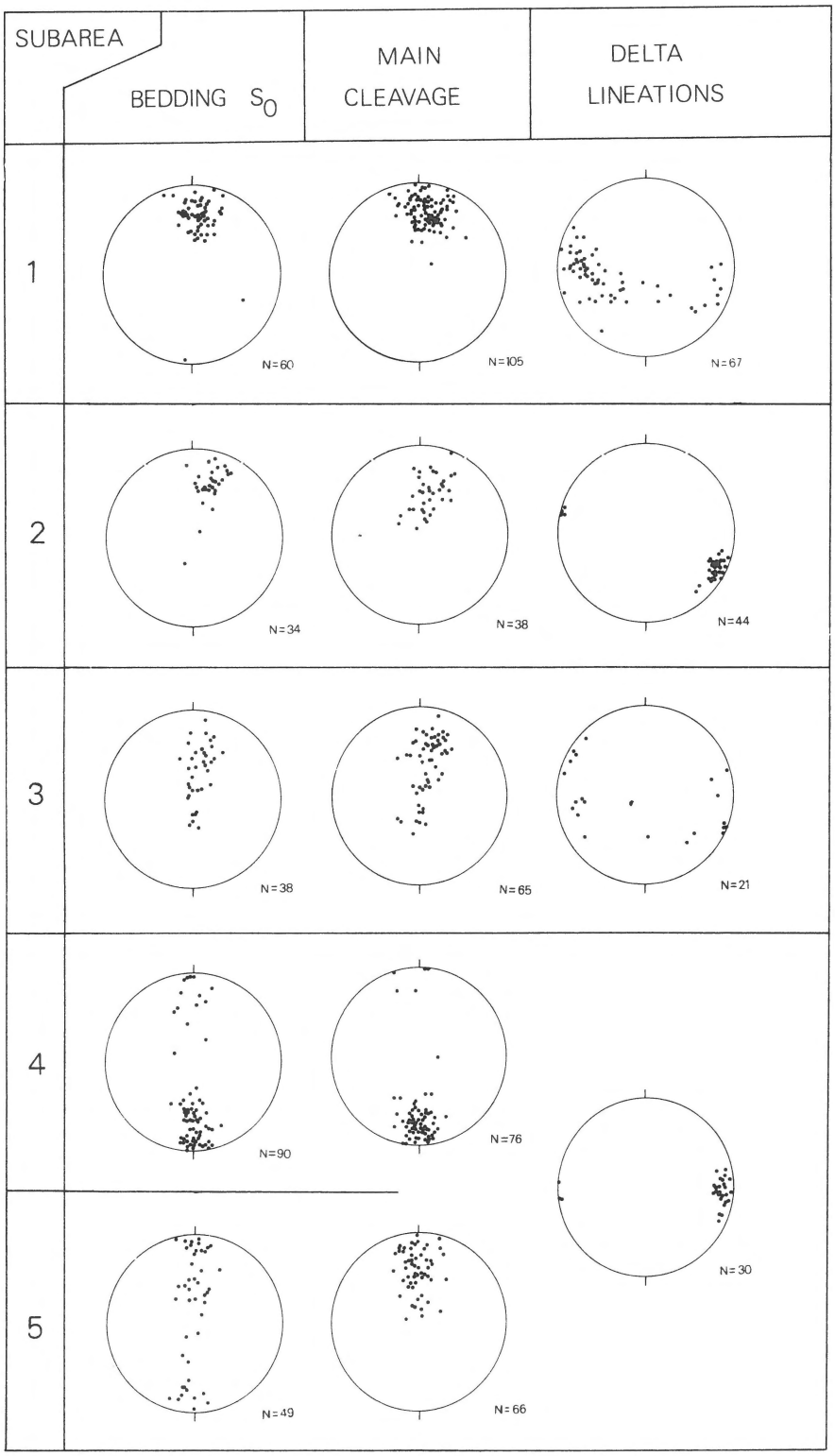

Fig. 4. Stereographic equal area projections per subarea showing poles on sedimentary bedding, poles on main phase cleavage and δ-lineations. Subareas are indicated in Fig. 2.