ophiolites, garnet gneiss, amphibolites and granitoids. The Frido Unit overthrust the un-metamorphosed terrains (here called Calabro-Lucano Flysch Unit) consisting of a broken formation which contains blocks of ophiolites with their sedimentary cover of Late Jurassic (Marcucci et al., 1987), pelagic sediments of Cretaceous-Eocene (Bonardi, 1988) and volcanoclastic deposits of Late Oligocene (Monaco, 1992).

Petrological data show that the Frido Unit has been undergone a HP/IT metamorphism (p=9.10 kb T=400-500) which gave glaucophane and lawsonite assemblages in the ophiolita rocks and aragonita in the calcschists, followed by a green schists facies metamorphism (P= 4 kb; T=300-350).

From structural point of view the Frido Unit show structures developed at differant structural levels indicating a progressive non-coaxial deformation. Kinematic indicators show a NNE tectonic. transport.

Our studies suggest that ophiolite-bearing terrains of the Liguride Complex outcropping in the lucanian Apennine can be considered as a remnant of an accretionary complex in which the Calabro lucann Flysch Unit represents the toe of the wedge where frontal accretion processes occur, whereas the Frido Unit is explained as due to deep duplex structures developing during continental collision processes. The polarity of tectonic transport excludes for this area the occurrence of the Europe vergining co-Alpine chain giving new evidences to consider the Liguride Complex as a suture zona between Apulian and Calabrian blocks. About the age of collision it has to be considered not older than late Oligocene. This implie that revision of the extension in space and time of the oceanic domain of the Tethys has to be done.

## PALAEOTETHYAN SUBDUCTION-ACCRETION: EVIDENCE FROM THE KARAKAYA COMPLEX, NW TURKEY

**E. A. Pickett[*], A. H. F. Robertson[*], J. E. Dixon[*], A. I. Okay[**]**

[*] Dept. Geol., Grant Institute, Univ., Edinburgh, Scotland
[**] Maden Fakultesi, I.T.U., Turkey.

Palaeotethyan ocean crust of Permo-Triassic age was destroyed by subduction prior to Mid Jurassic time. Currently one interpretation suggests southward subduction leading to suturing of Palaeotethys and the formation of a marginal basin, while another postulates mainly northward subduction beneath the Eurasian continental margin and the opening of younger Neotethyan oceanic basins to the south.

The Permo-Triassic karakaya Complex is critical to distinguish between alternative hypotheses of Palaeotethyan evolution: in a southward subduction model it is interpreted as a Palaeotethyan marginal basin, whereas in a northerly subduction model it could represent a Franciscan-type subduction-accretion complex.

Current work focuses on the Biga Peninsula, NW Turkey. Here, the Karakaya Complex forms a NNE-trending low-grade metamorphic terrane dominated by the following tectonostratigraphic units:

1. Basalt-chert-sandstone sequences ("Hodul unit"): spilitised pillow basalts and lava breccias, overlain by 10m of ribbon radiolarian chert, and passing up into terrigenous sandstone turbidites.

2. Volcaniclastic sediments and limestone blocks (also "Hodul unit"): spilitised volcaniclastic and tuffaceous rocks forming a thick pile (100s of m) capped by recrystallised limestone and associated with limestone debris flows and discrete limestone blocks.

3. Upper Permian limestone blocks in a volcanogenic matrix ("Cal unit"): fossiliferous limestone fragments and blocks up to 1km in size in a largely basic volcanic matrix with mixed volcaniclastic/terrigenous sandstones and debris flows.

4. Fine-grained, foliated metasediments ("Kalabak Formation"): phyllites, quartzofeldspathic schists, rare marbles and metabasic rocks.

The karakaya units were deformed by imbricate thrusting, folding, layerparallel extension, shearing and the development of pervasive scaly fabrics.

The above tectonostratigraphic units are unconformably overlain by a relatively undeformed, unmetamorphosed, mainly turbiditic sequence of mudstones and sandstones (over 500 m thick), passing up into Jurassic shelf carbonates ("Bilecik Limestone").

The sedimentary and structural characteristics of the Karakaya Complex suggest formation by subduction-accretion processes in an active margin setting, similar to the present-day Nankai Trough or Barbados prism. The basalt-chert-sandstone association is envisaged as a trench sequence, while the volcaniclastic-limestone unit may represent accreted oceanic seamount material. The undeformed sedimentary sequence overlying the Karakaya Complex may have formed in a fore-arc basin above the accretionary complex. By the Late Jurassic accretionary tectonics had ceased and the Karakaya Complex in this area was overlain by platform limestones along the northern margin of Neotethys.

Final ocean basin closure in this area took place in Late Cretaceous-Early Tertiary time, associated with development of an accretionary ophiolitic melange ("Cetmi Ophiolitic Melange").