nnects caldera remnants to contemporaneous plutons milar to those found in the Idaho batholith. In the ince Rupert section and during the early phases of trusion of the Idaho batholith, melt injection was chronous with accretion of microplates onto North erica. A history of deformation and magma placement is deduced from our composite section: 1) tectonic thickening by nappe stacking during ollision, and the injection of sills of mantle-erived magma which provided heat for crustal melting; 2) mobilization and intrusion of large volumes of ranitoid material into higher levels of the crust, ossibly accompanying extension.

SY21-15
LATE CRETACEOUS LAMPROPHYRE DYKES IN THE HINTERLAND OF THE ALPINE DEFORMATION FRONT

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Early Senonian lamprophyre dykes dissect the Southern Alps (Italy), the Bakony terrane (Hungary) and the West Carpathians (Czechoslovakia). Mineralogy and main element composition display alnoitic and carbonatitic characters, while REE distribution and metasomatized upper mantle xenoliths indicate kimberlitic affinity for the Bakony lamprophyres. The fissure eruptions carried phlogopite-bearing xenoliths from 150 km depth to the surface. Alnoitic alkali lamprophyre dykes in the West Carpathians and monchiquite dykes in the Dolomites (all of them are of the same age) display similar characters.

Dyke formation is contemporaneous with the Late Cretaceous collision of the Apulian and Brianconnais plates. Since mafic dykes are aligned parallel with the maximum principal stress, they are considered to be normal to the deformation front. As azimuths of dyke sets are almost uniform after palaeomagnetic corrections, we suggest a NW-SE directed collision front, in accordance with independent palaeogeographic reconstructions.

Parallel orientation of dykes in different wall-rocks in regions several hundred kms from the deformation front indicates a highly homogeneous stress field. It suggests, that the otherwise ductile part of the crust and upper mantle transferred the stress to the plate interior, where 150 km deep fractures opened, providing pathways to volatile-rich lamprophyre magma to escape to the surface.

SY21-16
COMPARISON OF EASTERN AND WESTERN ANATOLIAN VOLCANIC ACTIVITIES UNDER THE COMPRESSIONAL REGIME

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A widespread volcanism occurred throughout Anatolia, especially in the Eastern regions and the Aegean Sector, during the neotectonic period. The crustal evolution of these regions appear to have had a strong control on the evolution of this magmatic activity.

The collision-related volcanic activity of Eastern Anatolia began in the late Miocene and continued almost uninterruptedly into the historical times. Three distinct stages may be distinguished in this volcanism. At the initial stage alkaline rocks of basaltic to intermediate composition were formed. It was followed by a widespread intermediate (andesitic) activity of calc-alkalic nature. At the third stage basaltic suites of tholeitic and alkalic affinities were produced simultaneously.

The neotectonic-related volcanic activity in the Western Anatolia on the other hand, began in the Early Miocene. At the initial stage the tectonic regime affecting the region were compressional (palaeotectonic) and lasted to Serravalian. During this period a widespread volcanic activity producing a suite of intermediate rocks of calc-alkalic nature were formed. It was accompanied by locally-developed high level granitic magmas that produced small stocks and, associated hypabyssal and extrusive rocks.

The volcanic evolution of these two regions of Anatolia is seen to have followed different paths as a function of the tectonic style and evolutionary patterns of the regions.

SY21-17
GENESIS OF POST-COLLISION VOLCANISM IN EASTERN ANATOLIA, TURKEY

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Late Cenozoic volcanism in Eastern Anatolia extends in a broad SW-NE trending belt across the collision zone, from the foreland basin south of the Bitlis Suture Zone in the SE through the Bitlis Massif to the Kars plateau and Lesser Caucasus in the NW. Foreland volcanism is dominated by basaltic shield and fissure eruptions. These lavas are enriched in both HFS and LIL elements, have isotope ratios that are consistent with derivation from enriched lithosphere or asthenosphere coupled with variable crustal contamination. Volcanism on the Bitlis Massif comprises a SW-NE trending chain of active or recently-active volcanoes: Nemrut, Suphan and Tendurek in the south which are dominantly basic or bimodal and have mainly anhydrous crystallization assemblages; and Ararat in the north which is dominantly andesitic and is characterized by a more hydrous crystallization assemblage in which amphibole and zircon cause depletion of Zr, Y and the HREE during fractionation. Isotope and trace element systematics favour a sub-continental lithosphere source for the lavas from the southern volcanoes followed by extensive crustal contamination. By contrast, the basic lavas from Ararat have distinctly higher Sr relative to Rb, Ba and Nb indicative of a much greater subduction component in their source. Volcanism on the Kars plateau comprises a pyroclastic sequence overlain by a thick series of plateau lavas ; their isotope and trace element characteristics most resemble those of the Ararat lavas. These results suggest that re-activation of a pre-collision mantle wedge is currently restricted to the region from Ararat to the north. South of this area, the sub-continental mantle lithosphere beneath the Arabian margin was probably the main magma source, crustal contamination of the resulting magma being greater in the thickened crust of the Bitlis Massif than on the foreland.

SY21-18
^{18}O SYSTEMATICS OF AEOLIAN ARC VOLCANICS

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The Aeolian Islands define a NE-SW trending archipelago off the north coast of Sicily that comprises seven subduction-related volcanic islands of Late Cenozoic age. Calc-alkaline lavas and pyroclastics ranging from 2-pyroxene tholeiitic basalts to andesites were erupted over the interval 500-15Ka on Salina. On Vulcano, potassic lavas erupted over the past 110Ka define an older series of shoshonitic basalts to basaltic andesites and a younger series of mafic leucite basanites to high-K rhyolites. An older series of calc-alkaline to mildly shoshonitic basalts to andesites and a younger series of

ISSN 0954-4887

COPERNICUS

TERRA abstracts

Volume 1, Number 1, March 1989

EUG V
Strasbourg
20–23 March 1989

An Official Journal of the European Union of Geosciences