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Characteristics of Adriatic Platform and its Northeastern part

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Disintegration of the carbonate platform in area of present Dinarides commenced in Paleogene–Middle Eocene. Flysch deposits sedimented in wider parts of its area. They indicated to more intensive uplifting of the relief. These tectonic movements presented the commence of the neotectonic period. The genesis of Dinaric Structures was pursued through a few phases during Upper Paleogene, Neogene and Quaternary. Simultaneously Adriatic basin was formed. Neotectonic movements were scrutinized by determination of lithofacial relationships, sedimentary conditions and paleostructural reconstruction. Constitutive result of that research is following, the present Adriatic platform is only one part of earlier carbonate platform. Uplifting of Dinarides was consequence of their displacement and underthrusting below Dinarides. Concomitant tectonic movements were not uniformed and as consequence of that, the disintegration of its parts was continued through further period.

During last years the new data about tectonic movements were achieved by studying of geological structure by deep seismic sounding, geophysical prospecting and earthquake events. Key deep interfaces are following: basement of carbonate complex, levels of earthquake foci and Moho discontinuity.

Results of researching indicate 3 relatively separated parts of Adriatic platform: northern, middle and southern. They have different intensity of displacement, rotation and underthrusting below Dinarides. On the basis of disposable data the mechanism of tectonic movements was supposed. Deep geological structure compared with adequate data on the surface. The most active tectonic zones – belts were separated and classificated.

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Proposal of three deep drilling points in the oceanic crust of Tyrrhenian Sea

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Magmatic manifestations are a very important tracer for the understanding of the opening processes in marginal basins. The present proposals of deep drilling sites regard the areas floored by oceanic crust of Tyrrhenian sea, even though these areas are not the sole to exhibit interesting features for the investigation.

Present knowledge of direct type on nature and evolution of Tyrrhenian oceanic crust is based on recovery and analyses of samples of products of different age. The deep igneous portions of the oceanic basement might represent the initial manifestations of spreading in the Tyrrhenian bathyal plains, while the large number of volcanic reliefs and seamounts there, might represent the intermediate and/or the final manifestattions of oceanic accretion.

This oceanic crust has been drilled in three deep drilling sites located in the deep basin of Vavilov and in one located in the basin bordering the large volcanic seamount of Marsili. The drillings have shown that the initial phases of the spreading processes rejuvenated moving from west to east, i.e. the Marsili basin is atleast 2 Ma younger than the Vavilov basin.

The deepest, true part of the oceanic igneous basement has been drilled in one point of the Vavilov basin (373A) and in one of the Marsili basin (650). Two different groups of age values of the basalts from site 373A have been discussed: 7.3 (late Miocene) and 4.1 Ma (early Pliocene). It seems reasonable that only one of the two ages is the true age. Maybe the older one. The reasons of the discrepancy are to be searched in the presence of alteration in analyzed basalts, complicating the radiometric determinations, and in the poor recovery of the sediments overlying the drilled lava pile which renders the biostratigraphic dating difficult. In this case, particular care should be taken, as it has been in former investigations, in the determination of the microfaunal assemblages present in carbonate veins crossing the basalt rocks.

In the Vavilov basin, a drilling point is suggested in correspondance with the position of a positive magnetic "high" (AGIP map of the anomalies of residual magnetic field) to the SW of Vavilov volcano (with maximum intensity up to 45 nTl) and E-W elongated.

The area of this magnetic anomaly is partially covered by Messinian evaporitic deposits which are thinning to the NE. The point should be sited at a selected pinch out of the Messinian layers, so that there could be the advantage of obtaining, alone from the rock types drilled, an indication of the minimum age of the oceanic crust.

It has to be expected that MORB type tholeiites of late Miocene age are dated with large uncertainties, because of low K and young age, and it has to be reminded that probably, only the K/Ar methods can be used.

An other drilling point in the Vavilov basin is suggested in the area of the N-S trending positive magnetic anomaly (with intensity up to 65 nTl) paralleling the Vavilov volcano to the west. This site has the advantage of investigating wether this anomaly and 373A anomaly, roughly paralleling the volcano, are coeval or not.

In the Marsili basin a drill point is suggested on the centre of a positive magnetic anomaly (with intensity up to 60 nTl) sited to the ESE of Marsili volcano. The aim is to check wether it belongs to the Olduvai paleomagnetic event, like the anomaly of site 650, or not. It is important to answer this question because it provides evidence in favor or against the view point of Marsili volcano as axis of spreading.

Aside from the age, the drilled igneous samples would represent very valuable material for petrochemical and geochemical analyses. These data should be evaluated together with those obtained from the products of the seamounts.

These proposals are the result of evaluations carried out with A. A. SCHREIDER of IOAN on R/V Vityaz and in Moscow during a visit of the writer there and an exchange between the Academy of Sciences of USSR and Italian CNR.