

COMITÉ DE MORPHOLOGIE ET GÉOLOGIE MARINES

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SEISMIC REFRACTION MEASUREMENTS IN THE WESTERN MEDITERRANEAN SEA ⁽¹⁾

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Results of seismic refraction studies conducted from the research vessels "Vema" (Lamont Geological Observatory), "Winnaretta Singer" (Musée océanographique de Monaco), and "Atlantis" and "Chain" (Woods Hole Oceanographic Institution) are presented.

Compressional velocities in excess of 7,7 km/s have been determined on four profiles located in deep water in the area bounded by the Balearic Islands, Corsica, and the southern coast of France; depth to this velocity horizon varies from 11 to 14 km. A layer having a velocity 6,5-6,8 km/s and varying in thickness from 2 to 5 km overlies this high velocity material at three refraction stations. A slightly lower velocity, 6,0 km/s, was measured on the profile extending from near Cape Antibes to Corsica. All profiles in this portion of the basin show a section 4-6 km thick having intermediate velocities in the range 2,0 to 6,0 km/s. Unconsolidated sediments (velocity less than 2,0 km/s) are less than 0,5 km thick. Clear seismic evidence of a major horizontal discontinuity is found on the eastern end of the profile extending from near Cape Corsica to the basin margin south of Nice.

The single profile in the southern portion of the basin southwest of Sardinia also shows a thick layer of intermediate velocity material overlying material having a velocity of 7,2 km/s at a depth of 10 km. A velocity of 6,8 km/s was measured at a depth of 7-8 km on a single profile south of the Balearic Islands. Another single profile located west of Oran near the extreme southwestern margin of the basin shows a velocity of 7,7 km/s at 8 km depth; this velocity measurement is, however, unreversed.

The seismic results indicate a thin crust with a correspondingly shallow mantle depth underlying the deep portions of the western Mediterranean Sea. If the intermediate velocity material were removed from the basin, the seismic section would closely resemble those observed in the deep ocean. Computations of total mass to a depth of 40 km, based on these data, when compared with the Hess typical deep ocean section, indicates approximate isostatic equilibrium in the basin.

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Intervention de M. GRINDA.

M. GRINDA, de Monaco, signale une expérience de Séismique réfraction effectuée le 11 juin 1962 à mi-distance de la Corse et de Monaco sur un profil orienté au 130 et qui grâce aux enregistrements de l'Observatoire d'Isola dans les Alpes a permis de calculer une vitesse dans le socle de 6,9 km/s.

Bien que ce résultat soit incomplet du fait qu'il n'y a pas eu de profil inverse et que l'erreur absolue sur l'heure, mal connue, rende incertain le calcul de la profondeur du socle, la concordance de la valeur trouvée avec les données de M. FAHLQUIST pour la même région, devait être remarquée.
