COMITÉ DE MORPHOLOGIE ET GÉOLOGIE MARINES

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GRAVITY, MAGNETIC AND DEPTH MEASUREMENTS IN THE LIGURIAN SEA

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One of the most detailed surveys carried out by R/V « Aragonese » was completed in the Ligurian Sea in March, 1963. The track chart is shown in figure 1. The average spacing between adjacent profiles is 5 miles.

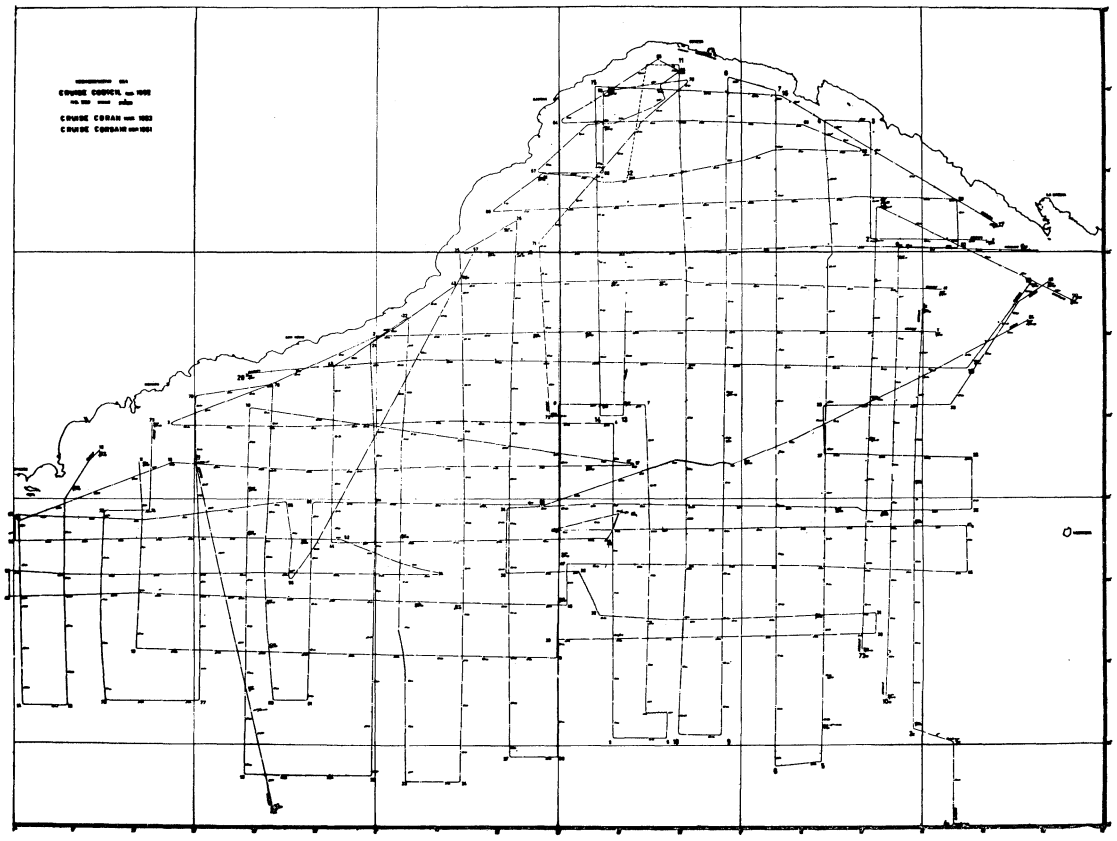
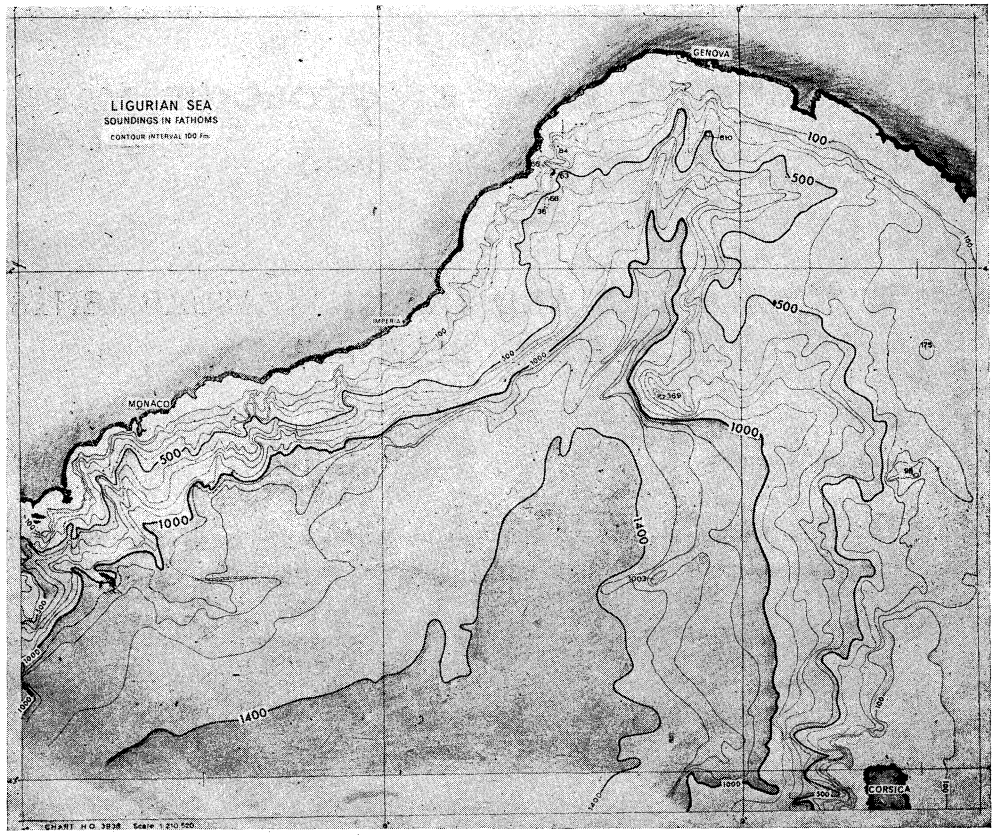
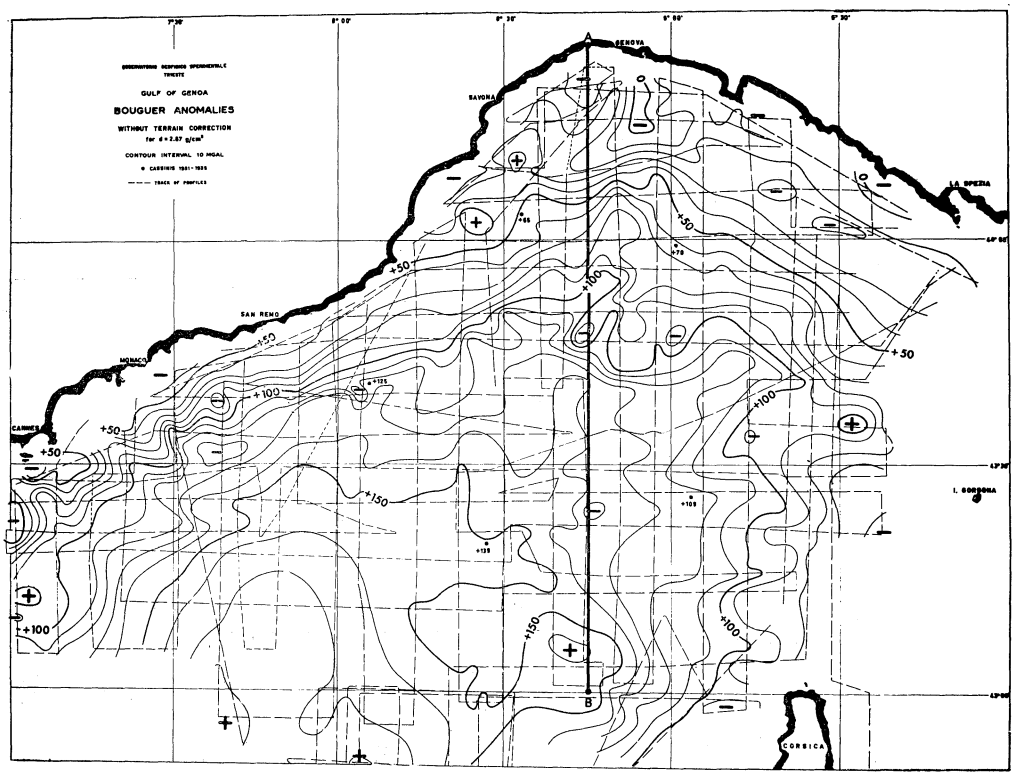


FIG. 1. — *Track chart of R/V « Aragonèse » in the Ligurian Sea.*

The RANA radio navigation system operated by the Musée océanographique at Monaco, was kindly loaned to us for part of the cruise. It suffered various operational failures but, during periods of proper functioning, provided very accurate positions within a range of about 100 miles from the transmitters.


LIGURIAN SEA
SOUNDINGS IN FATHOMS
CONTOUR INTERVAL 100 Fm
GENOVA
MONACO
CORSICA
100
500
1000
1400
CHART H.O. 3938 Scale 1:210 520


GULF OF GENOA
BOUGUER ANOMALIES
WITHOUT TERRAIN CORRECTION
CONTOUR INTERVAL 10 MGAL
GENOVA
SAVONA
LA SPEZIA
SAN REMO
MONACO
CORSICA
I. GORGONA
A
B
+50
+100
+150

The bathymetric map prepared from this survey is shown in figure 2 and the gravity Bouguer map is shown in figure 3. Also shown in figure 3 is the position of profile AB which runs from the northern coast down to the latitude of Cape Corse.

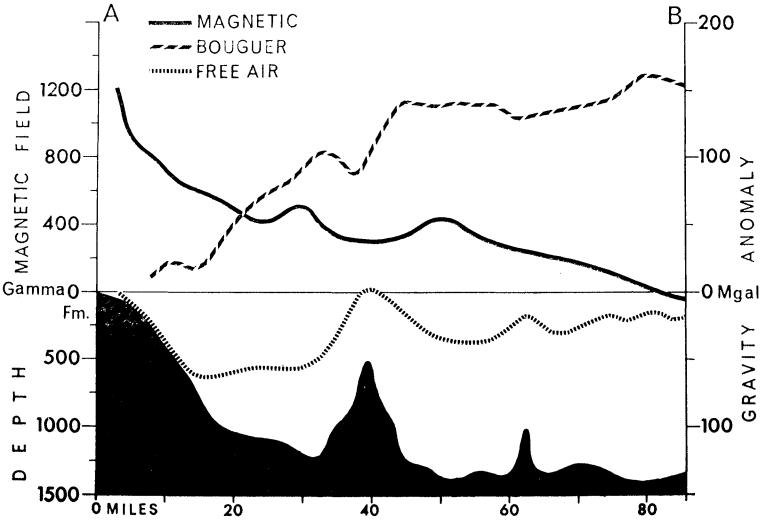


FIG. 4. — *Profile AB showing bathymetry, gravity Bouguer and Free-Air anomaly and total magnetic field.*

Figure 4 presents the magnetic field and gravity (Free-Air and Bouguer) along this profile.

The magnetic field shows little irregularity and, if the normal gradient in the field is removed, the only significant feature of the profile is an increase in the field over the continental slope.

The free-air gravity values follow the bathymetry quite closely and this is reflected in the Bouguer anomaly which rises from zero near the coast to 150 mgal over the deepest part of the profile. This behaviour is in broad agreement with the results of seismic refraction experiments in the Alps and in the Ligurian Sea which show that the Mohorovicic discontinuity must rise from a depth greater than 40 kms below the Alps to a possible depth of 13 km in the deep part of the Ligurian Sea (D. FALQUIST - private communication).

FIG. 2 (ci-contre, en haut). — *Bathymetric chart of the Ligurian Sea. The soundings have been corrected for the velocity of sound in sea water* (Matthew's tables). Contour interval 100 fathoms.

FIG. 3 (ci-contre, en bas). — *Chart of the Bouguer anomaly in the gravity field.* Contour interval 10 mgal. Note profile AB.