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SOME ALTIMETRIC SIGNATURES FROM SEASAT OVER THE MID-PACIFIC SEA--ETC(U)
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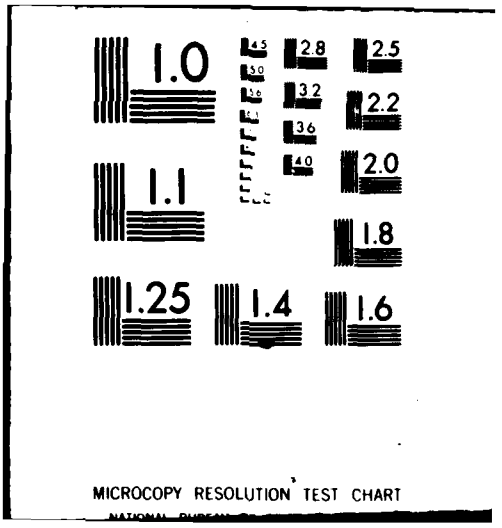
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MICROCOPY RESOLUTION TEST CHART

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Altimetric signatures from Seasat tracks in the mid-Pacific seamount range reveal that some seamount signatures are not correlated with features in the reference bathymetry.

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FOREWORD

Satellite altimetry yields information about sea surface topography. Seasat data along tracks in the mid-Pacific seamount range are investigated in this report. The correlation with published bathymetric charts is discussed, and corrections to the bathymetric chart are indicated.

Released by:

R. T. RYLAND, JR., Head
Strategic Systems Department

CONTENTS

ALTIMETRIC SIGNATURES

The high-pass filtered Seasat altimetry data in the mid-Pacific seamount range presented herein consist of altimetry averaged over 500 pulses, which yields a sample every 3.32 km along the ground tracks. These data were passed through a high-pass filter. Its frequency response function is indicated in Figure 1. The half amplitude lies at a wavelength of 200 km.

The output of the filter has been plotted along the ground tracks on a Mercator grid (Figure 2) and is suitable for overlay on a bathymetric chart[1], which is reproduced in Figure 3. Overlaying the charts reveals that the following "seamount signatures" do not correlate with the reference bathymetry:

1. Revolution 1164 and its repeat tracks: 12° 55'N 174° 8'W
2. Revolution 131: 13° 56'N 175° 15'W
3. Revolution 619: 14° 17'N 175° 28'W

The other "seamount signatures" correlate with features in the bathymetric chart.

CONCLUSION

One may conclude that there are either some uncharted seamounts in this region or that some seamounts on the bathymetric chart have been misplaced.

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[1] *Bathymetric Atlas of the North Pacific Ocean*, N. O. Pub. No. 1301-2-3, 1973.

FIGURE CAPTIONS

Figure 1. Frequency Response Curve of Digital Filter:
λ = Wavelength in km
$\omega = 2\ \pi/\lambda$

Figure 2. Band of 18 High-Pass Filtered Altimetry Tracks on a Mercator Grid:
Half Amplitude of Filter = 200 km
1m Corresponds to 1° Longitude
Positive Values to the Left
Some Editing Has Been Done to Remove Poor Data

Figure 3. Bathymetric Chart in the Region of the Mid-Pacific Seamounts
(Page 1803N in Reference 1)

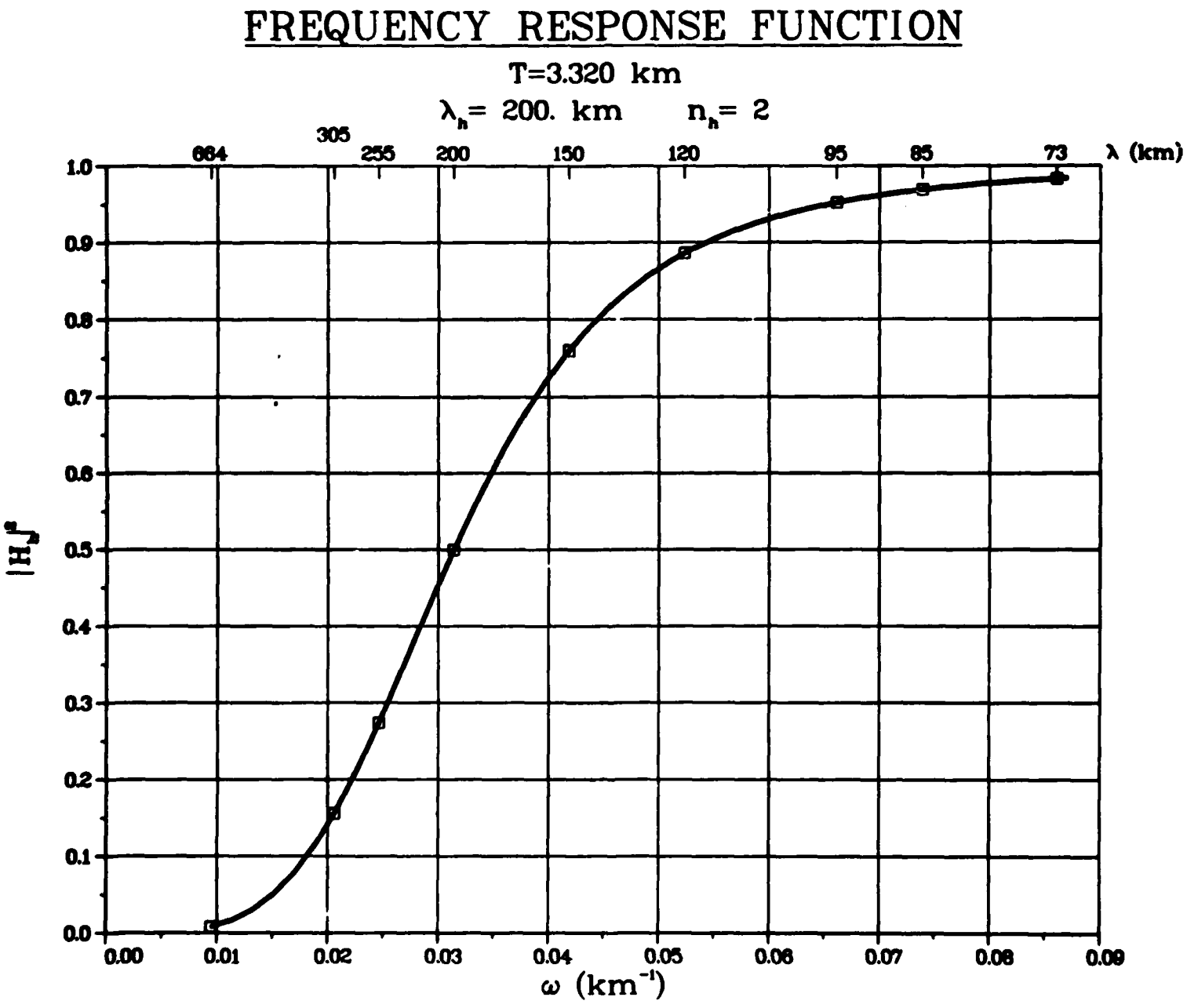
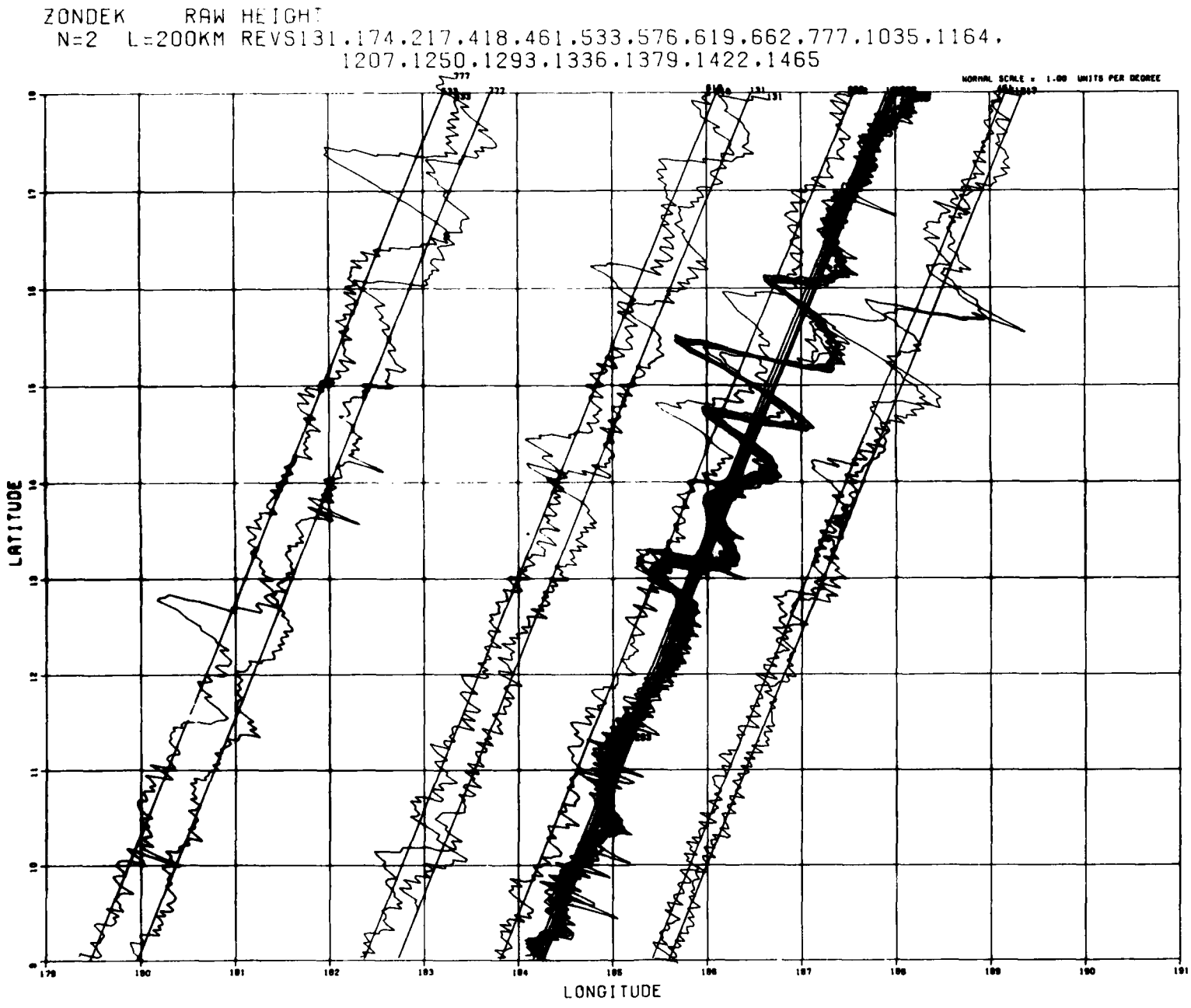

FREQUENCY RESPONSE FUNCTION
T=3.320 km
λ_h= 200. km n_h= 2
664
305
255
200
150
120
95
85
73
λ (km)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
$|H_J|^2$
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
ω (km^{-1})

Figure 1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LATITUDE
LONGITUDE

Figure 2

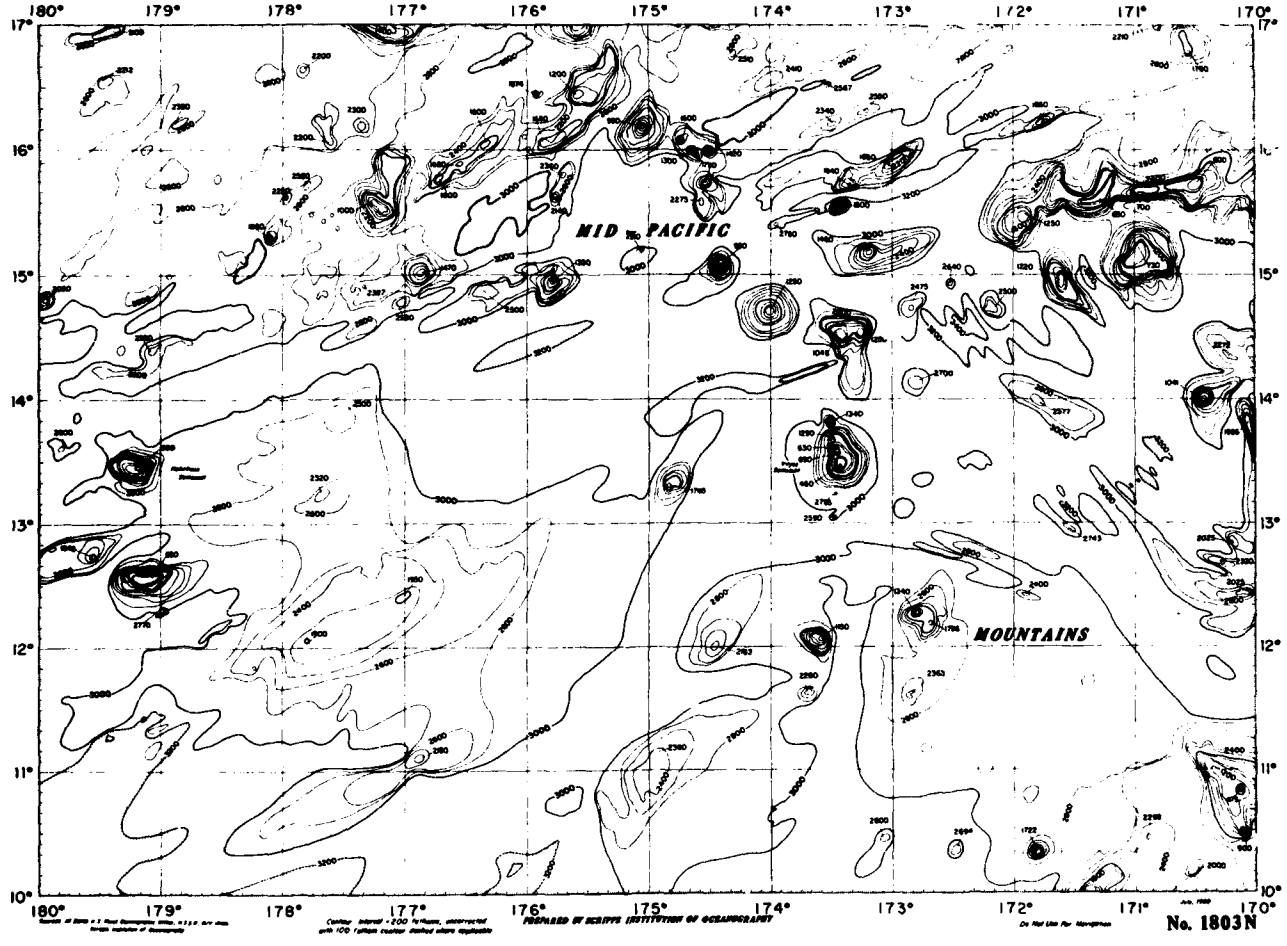

Figure 3

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