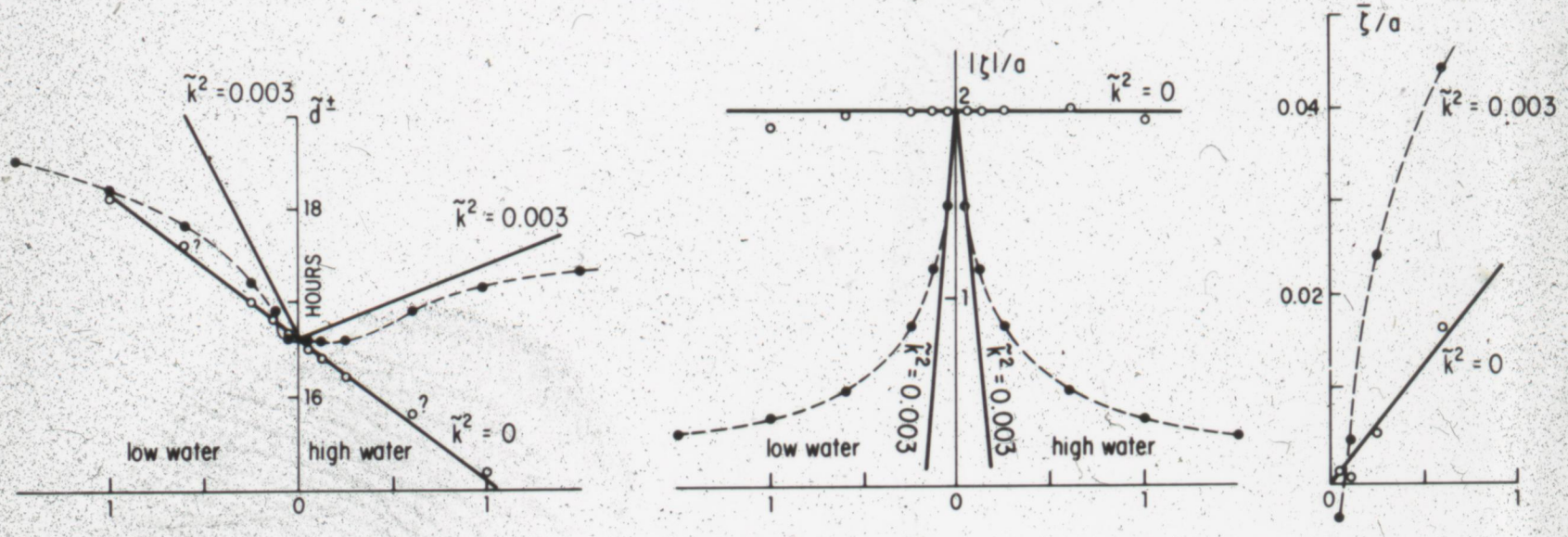
Slide images from the **Walter Munk Papers. SMC 17. Special Collections & Archives, UC San Diego.**

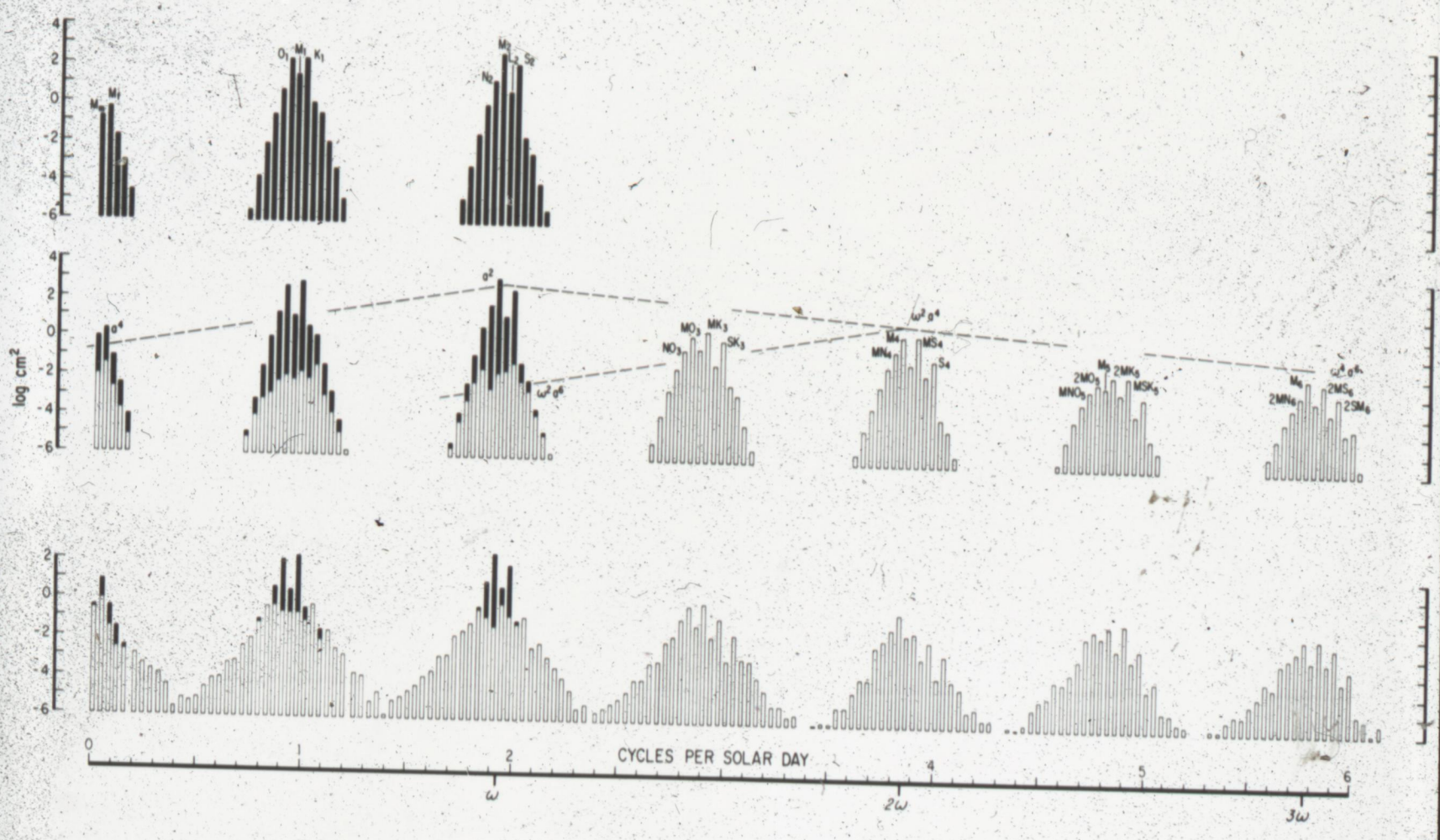
Slide groupings were determined by the original order of Walter Munk's slide collection, and a corresponding inventory. Titles and descriptions were transcribed from Munk's labels and the inventory, with some editing for consistency and clarity.

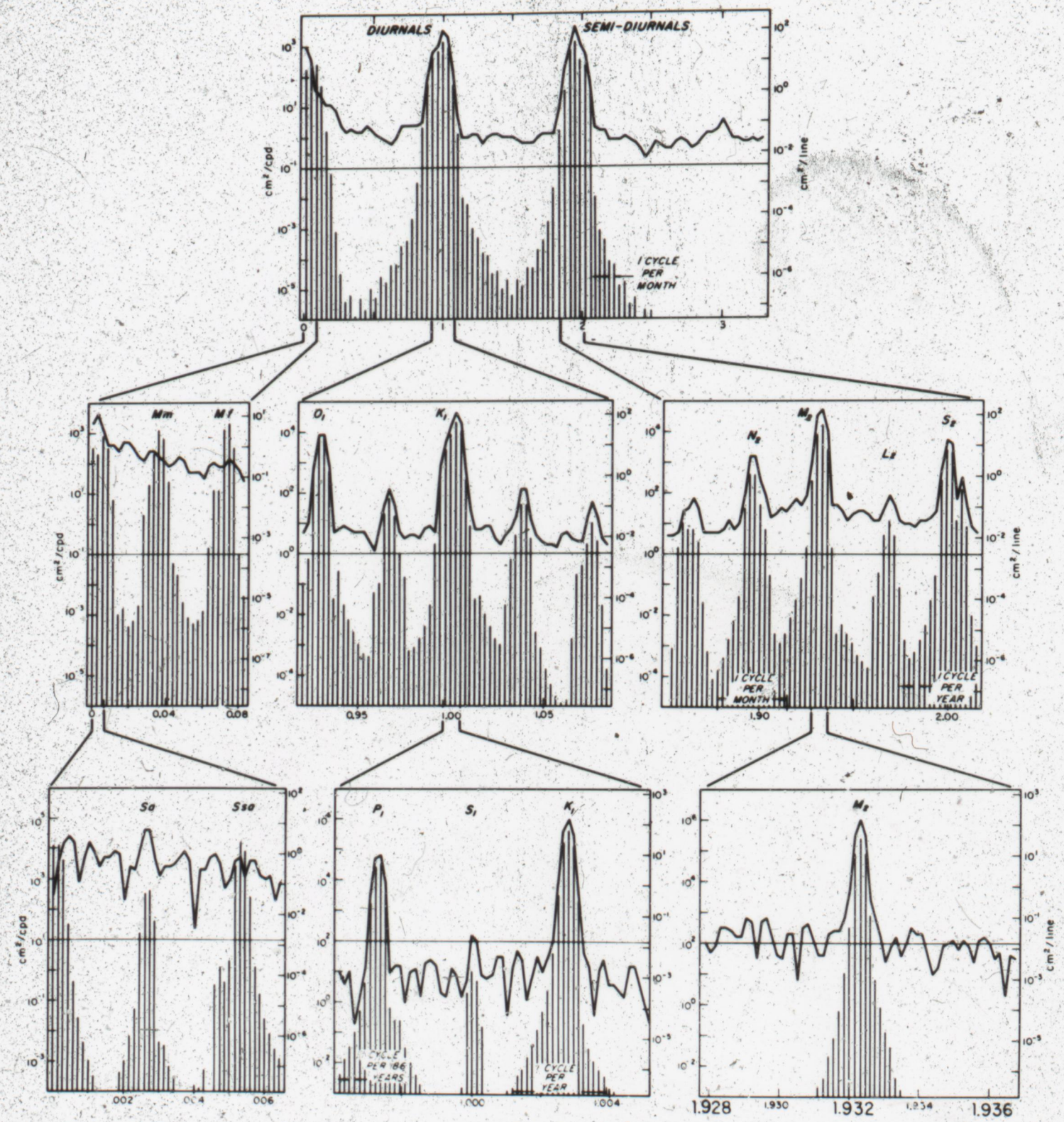
Shallow tides/Tide theory

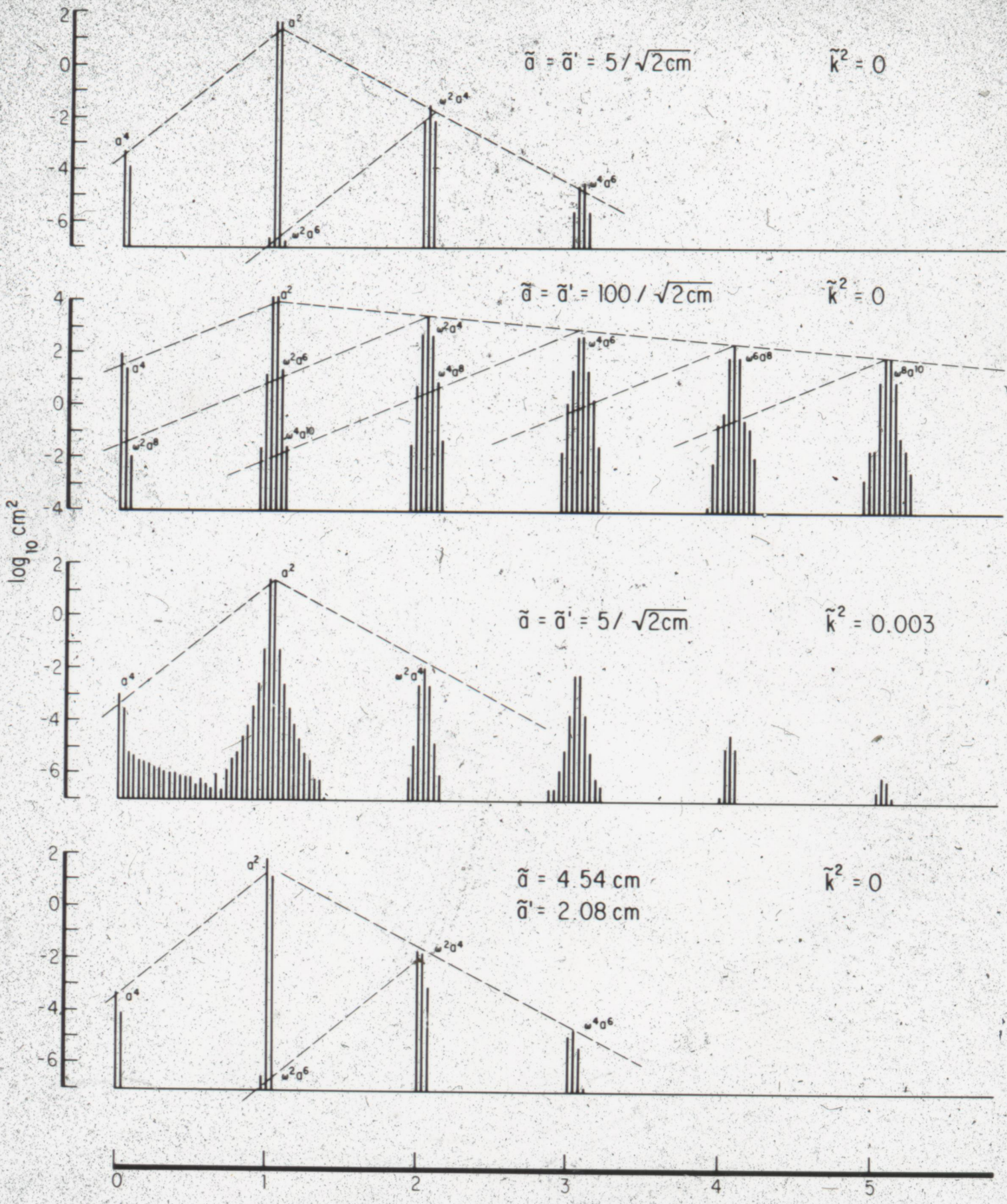
1. Incident amplitudes graph
2. Graph
3. Graph
4. Graph
5. Equations: tide potential, convolution prediction, harmonic prediction, nonlinear convolution, nonlinear harmonic
6. Graph
7. Graph
8. Graph
9. Graph
10. Graph
11. Graph
12. Graph
13. World chart of cotidal lines
14. Contours of gravitational potential, corresponding high tide



INCIDENT AMPLITUDE IN METERS


log cm²
4
2
0
-2
-4
-6
M₂
S₂
N₂
O₁
M₁
K₁
M₃
M₄
MS₄
S₄
MO₃
MK₃
NO₃
SK₃
MN₄
2MO₃
MNO₃
M₆
2MK₆
MSK₆
2MN₆
2MS₆
2SM₆
σ²
σ⁴
σ⁶
ω² σ⁴
ω² σ⁶
0
1
2
4
5
6
CYCLES PER SOLAR DAY
ω
2ω
3ω


DIURNALS
SEMI-DIURNALS
cm²/cpd
cm²/line
1 CYCLE PER MONTH
0
1
2
3
Mm
Mf
0.04
0.08
O1
K1
0.95
1.00
1.05
N2
M2
L2
S2
1 CYCLE PER MONTH
1 CYCLE PER YEAR
1.90
2.00
Sa
Ssa
.002
.004
.006
P1
S1
K1
1 CYCLE PER 186 YEARS
1 CYCLE PER YEAR
.000
.004
M2
1.928
1.930
1.932
1.934
1.936


$\tilde{a} = \tilde{a}' = 5/\sqrt{2}\,cm$
$\tilde{k}^2 = 0$
a^2
a^4
$\omega^2 a^4$
$\omega^2 a^6$
$\omega^4 a^6$
$\tilde{a} = \tilde{a}' = 100/\sqrt{2}\,cm$
$\tilde{k}^2 = 0$
$\omega^2 a^8$
$\omega^4 a^8$
$\omega^6 a^8$
$\omega^4 a^{10}$
$\omega^8 a^{10}$
$\log_{10} cm^2$
$\tilde{a} = \tilde{a}' = 5/\sqrt{2}\,cm$
$\tilde{k}^2 = 0.003$
$\tilde{a} = 4.54\,cm$
$\tilde{a}' = 2.08\,cm$
$\tilde{k}^2 = 0$
2
0
-2
-4
-6
4
0
1
2
3
4
5

TIDE POTENTIAL

$$V(\theta, \lambda, t) = \sum_{n} \left[a_n^{=}(t)\, U_n^{=}(\theta, \lambda) + b_n^{=}(t)\, V_n^{=}(\theta, \lambda) \right]$$

CONVOLUTION PREDICTION, LINEAR

$$\hat{y}(t) = \sum \left[u_0(s)\, c_0(t - s \cdot \Delta t) + u_1(s)\, c_1(t - s \cdot \Delta t) + \dots \right]$$

where $c_i = a_0^{=}, a_1^{-}, b_1^{-}, a_2^{=}, b_2^{=}, a_3^{\circ}, \dots$

HARMONIC PREDICTION, LINEAR

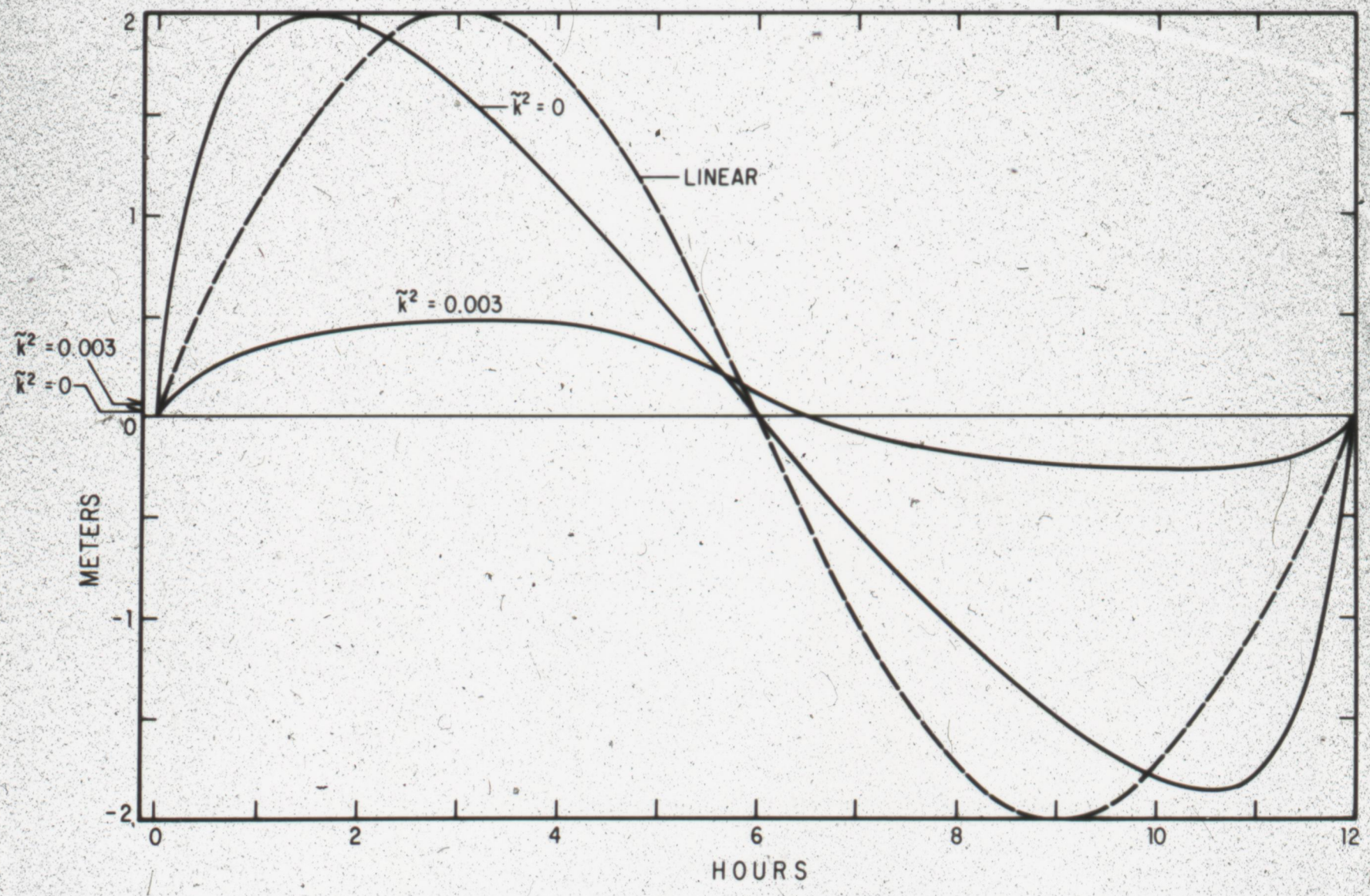
$$\hat{y}(t) = \sum_{n} \left[a_n \cos 2\pi f_n t + b_n \sin 2\pi f_n t \right]$$

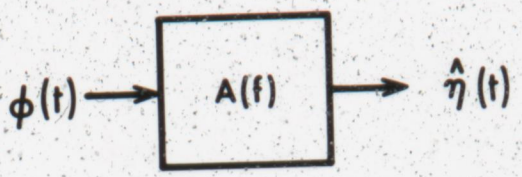
NON-LINEAR CONVOLUTION

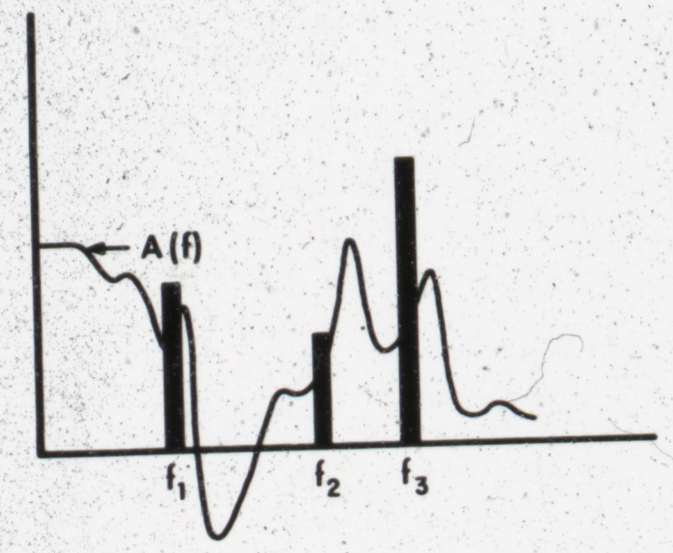
$$\hat{y}(t) = \sum_{ss'} u(s, s')\, c(t - s \cdot \Delta t)\, c(t - s' \cdot \Delta t) + \dots$$

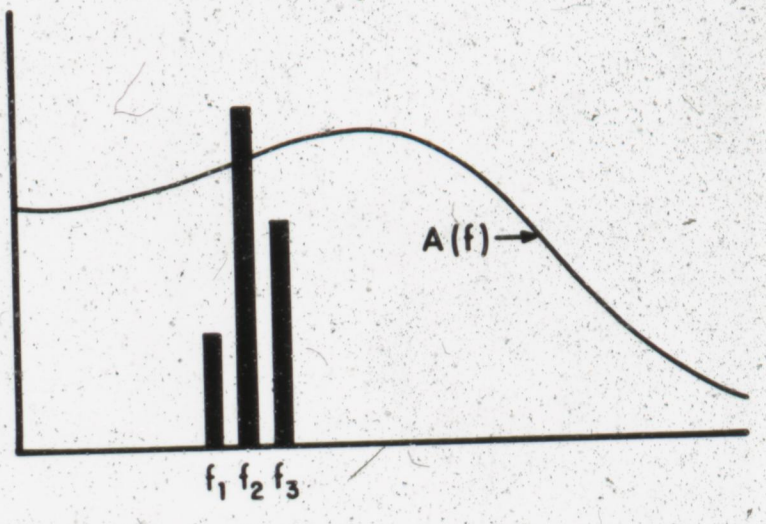
NON-LINEAR HARMONIC

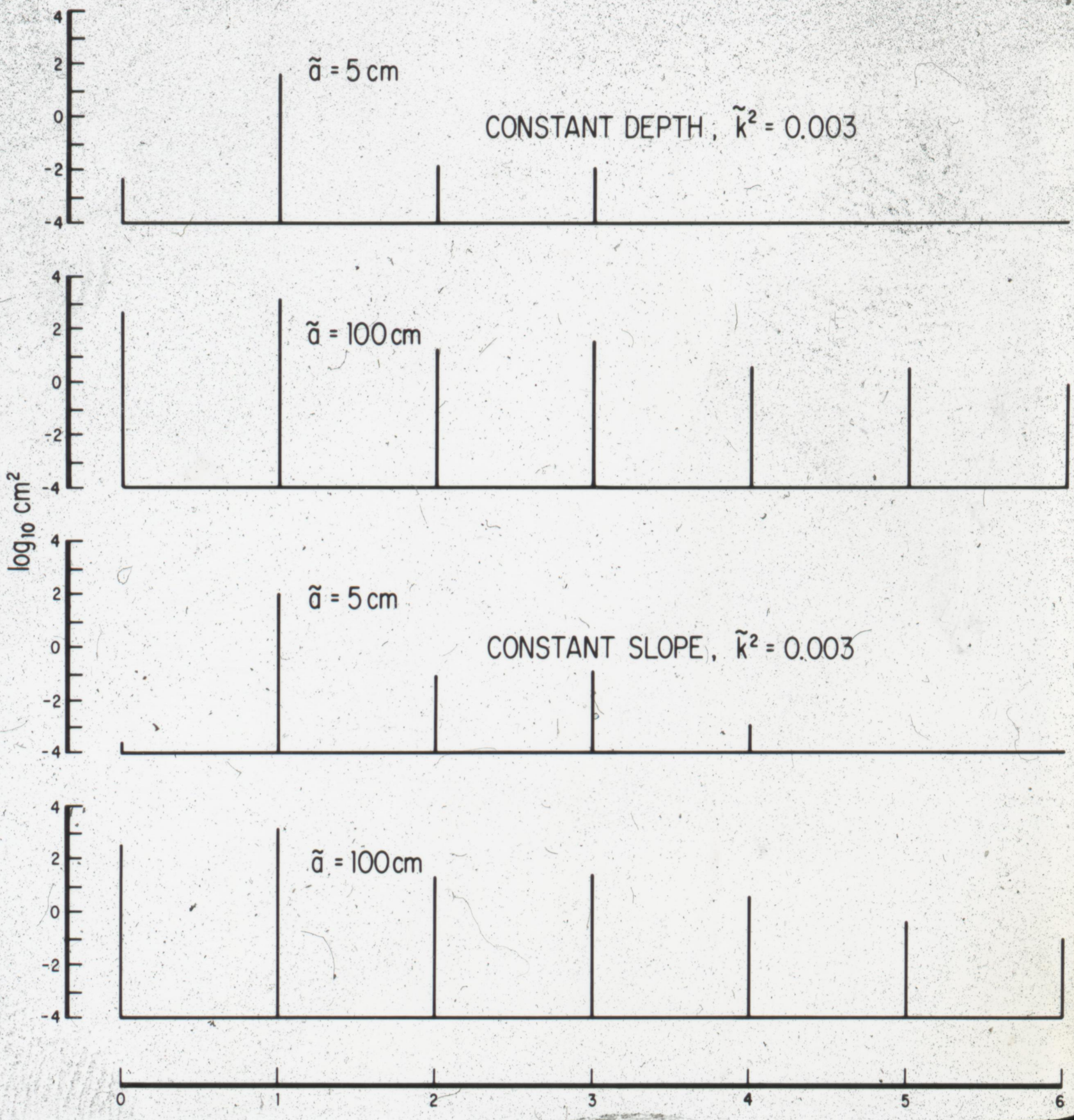
$$\hat{y}(t) = \sum \left[a_{n \pm n'} \cos 2\pi (f_n \pm f_{n'}) t + b_{n \pm n'} \sin 2\pi (f_n \pm f_{n'}) t \right.$$

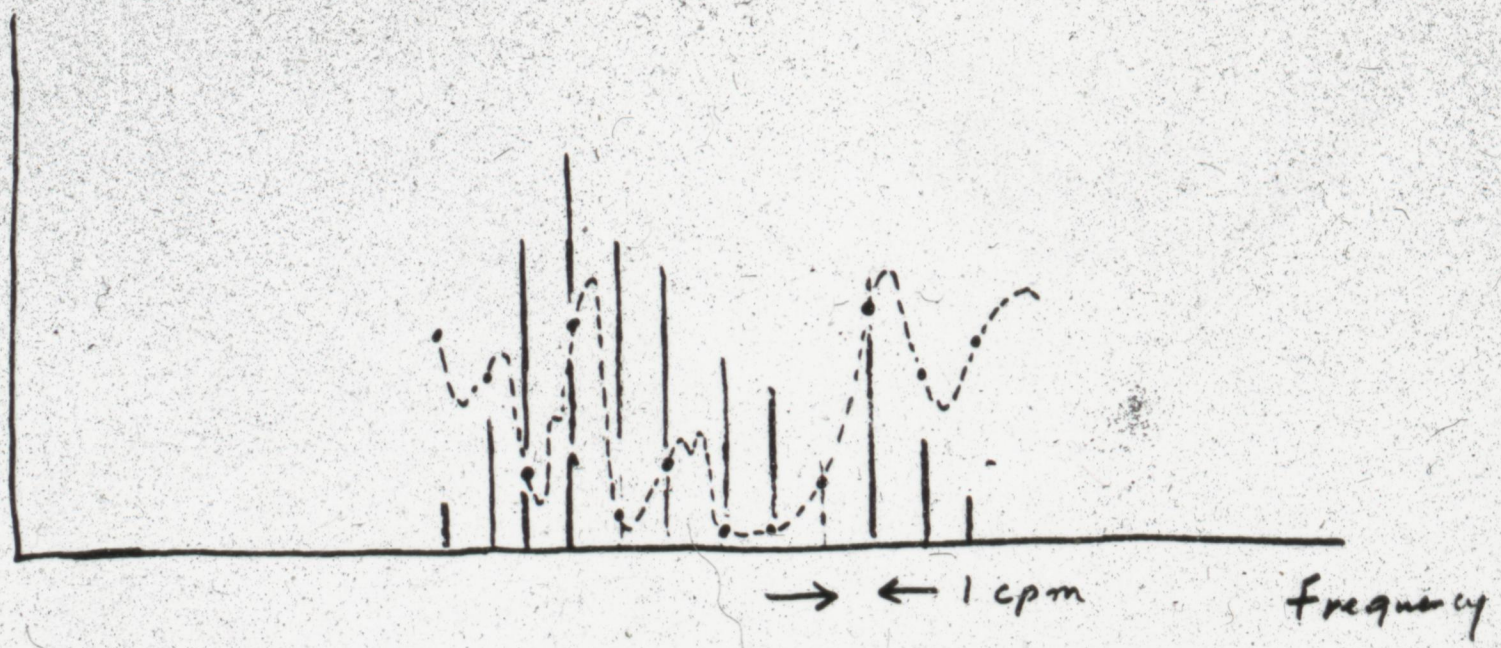

2
1
0
-1
-2
METERS
0
2
4
6
8
10
12
HOURS
$\tilde{k}^2 = 0$
LINEAR
$\tilde{k}^2 = 0.003$
$\tilde{k}^2 = 0.003$
$\tilde{k}^2 = 0$

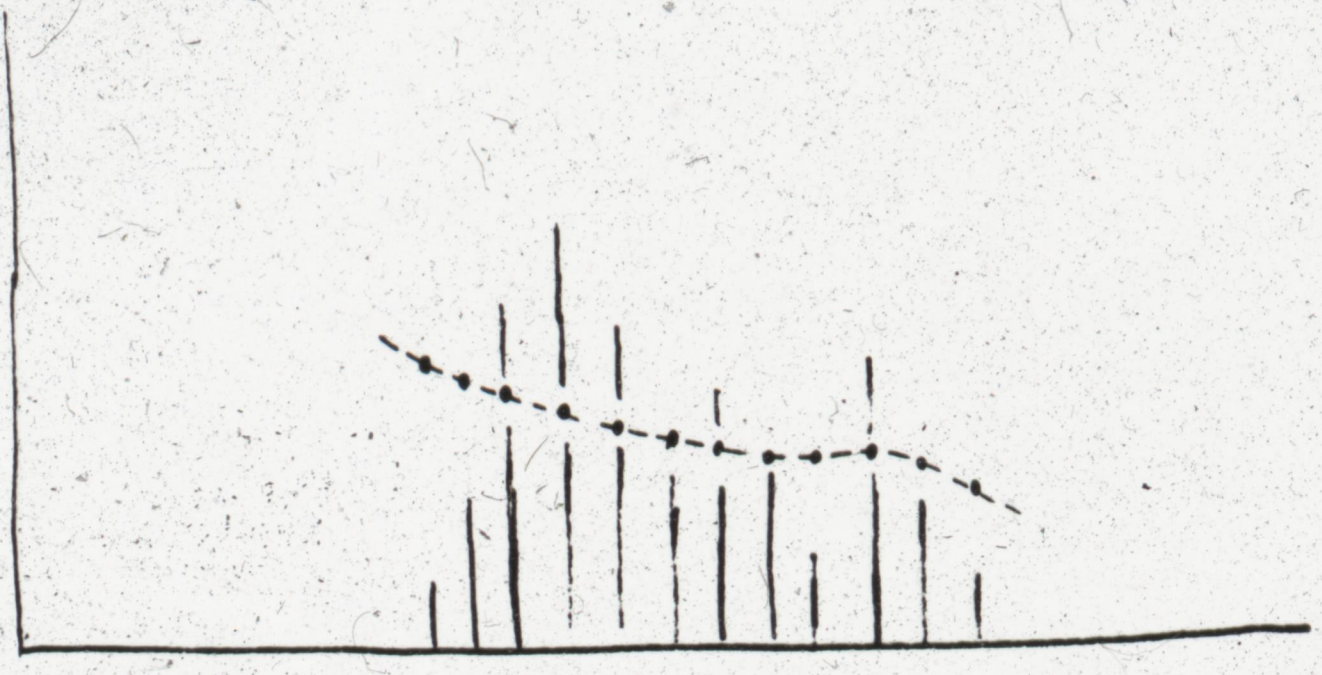

$\phi(t)$
A(f)
$\hat{\eta}(t)$

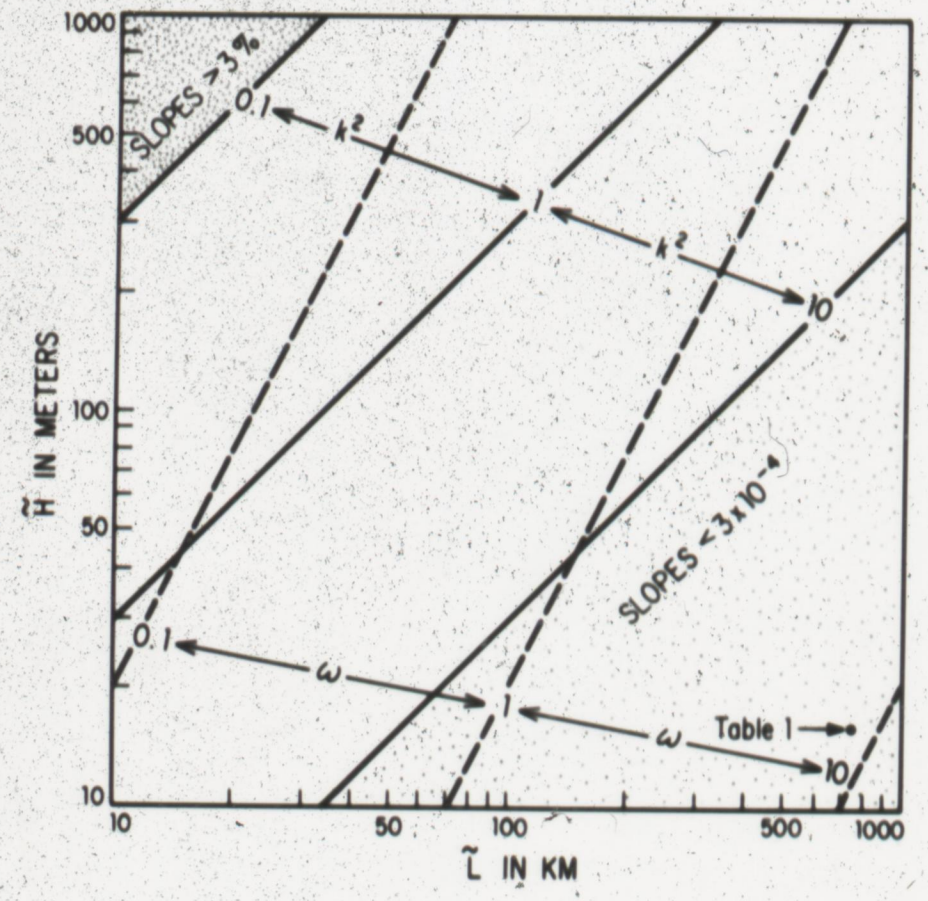

A(f)
f_1
f_2
f_3

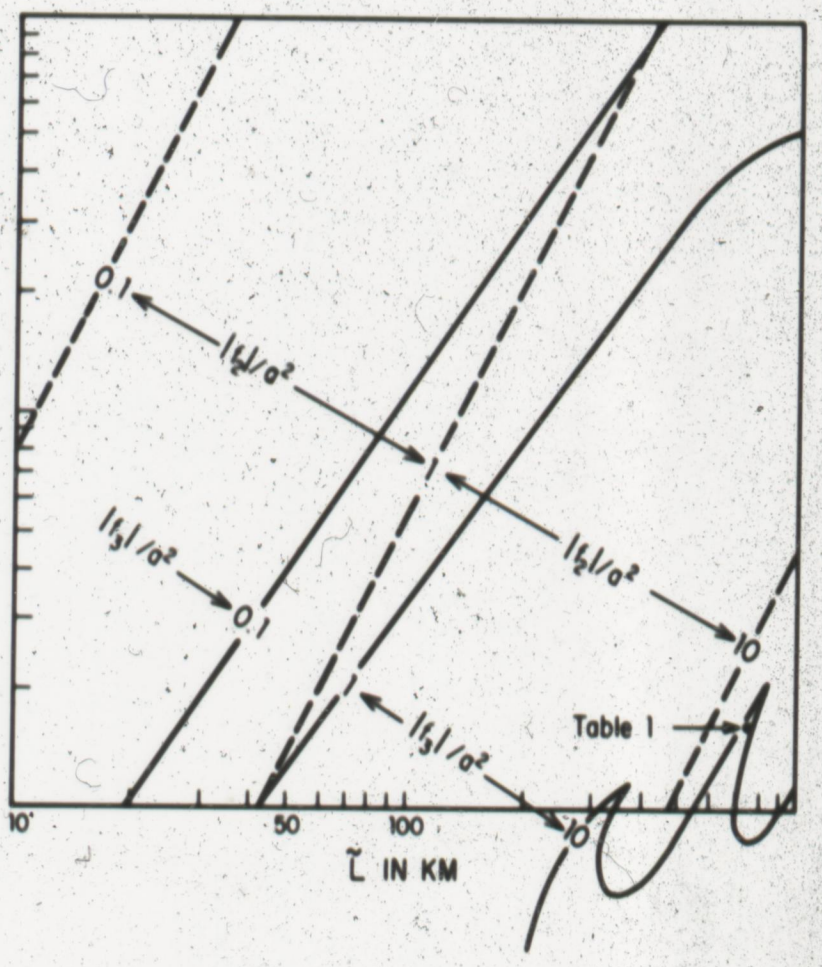

A(f)
f_1 f_2 f_3

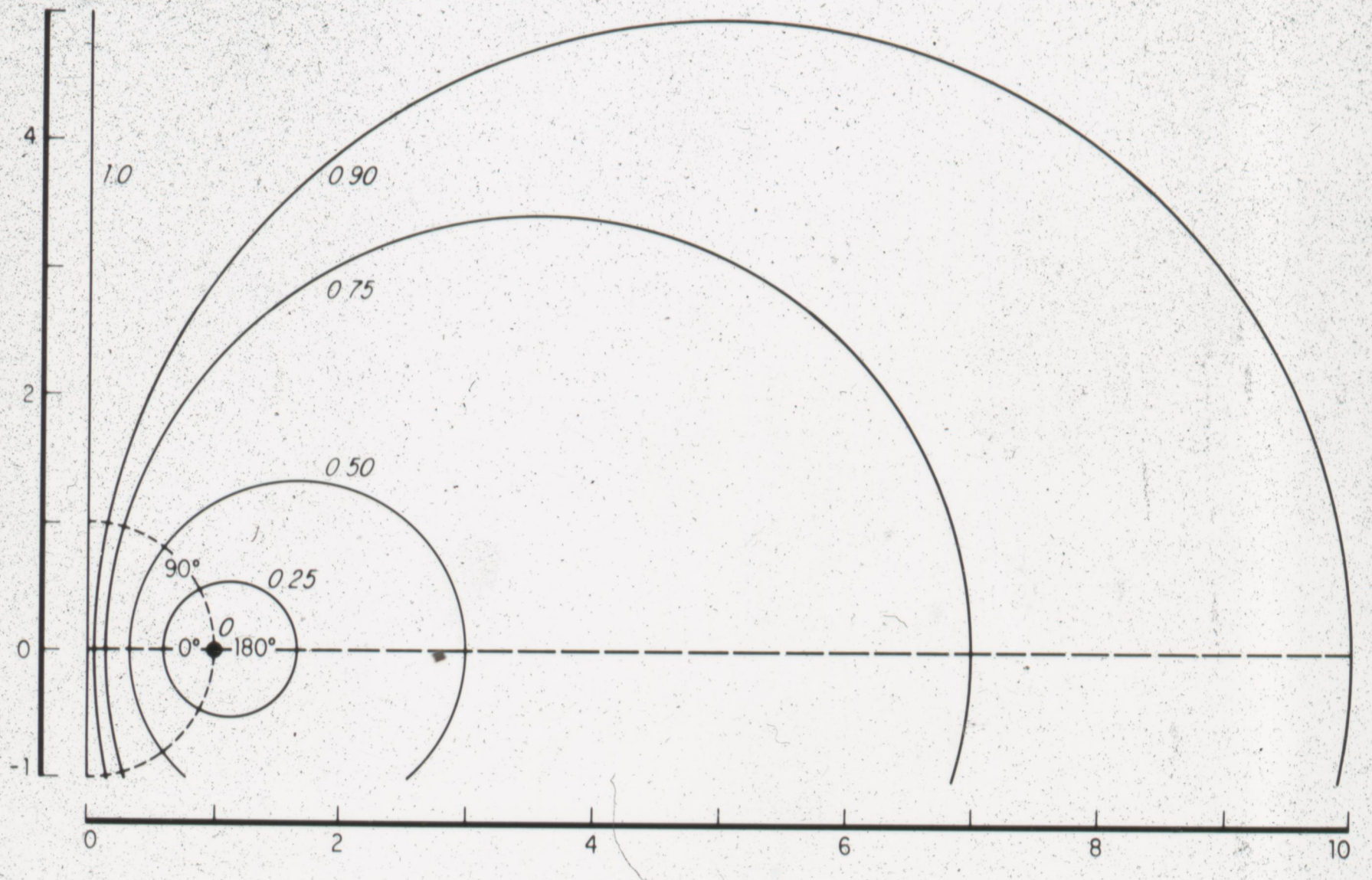

ã = 5 cm
CONSTANT DEPTH, k̃² = 0.003
ã = 100 cm
ã = 5 cm
CONSTANT SLOPE, k̃² = 0.003
ã = 100 cm
log10 cm²
4
2
0
-2
-4
0
1
2
3
4
5
6

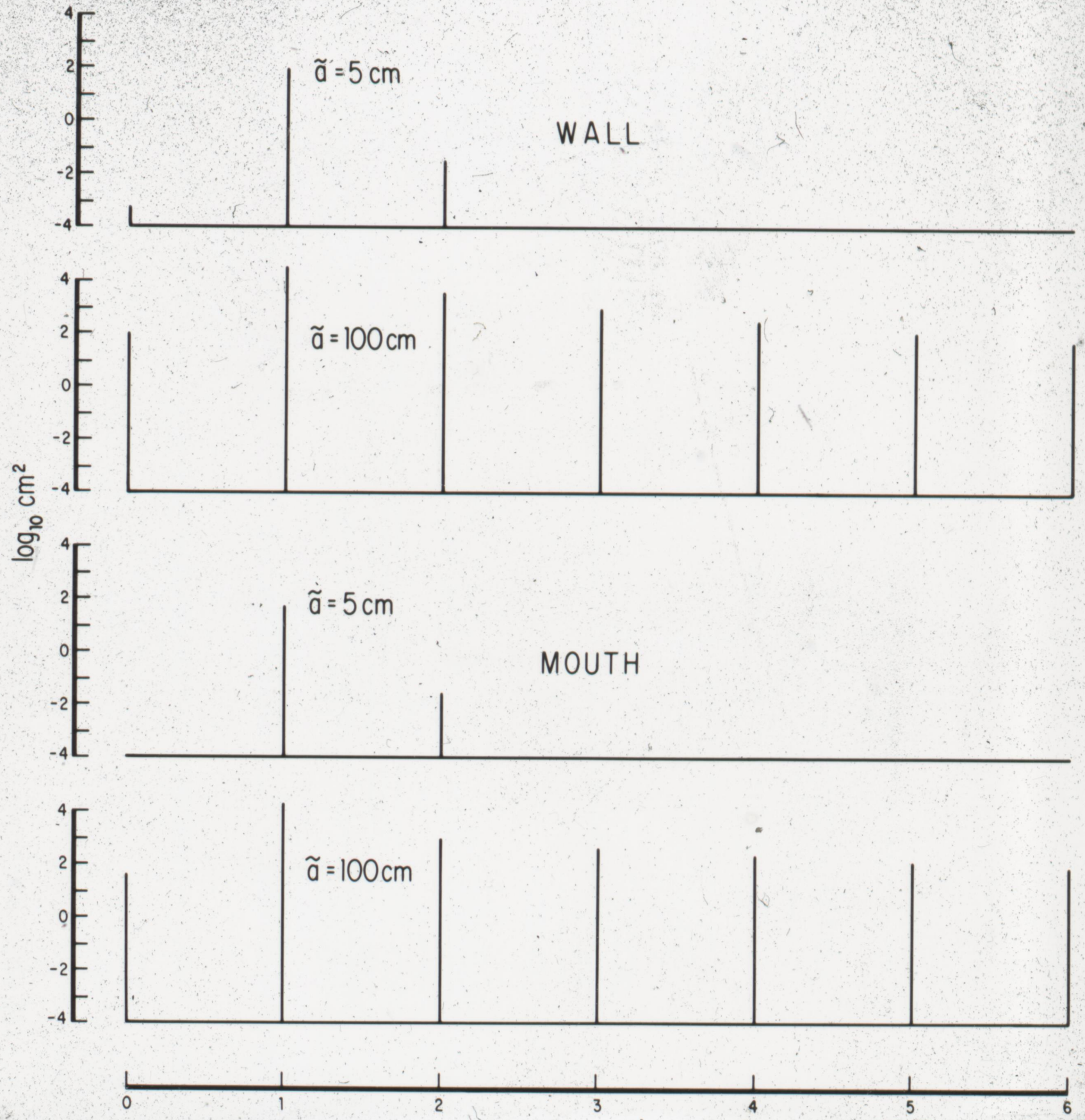

→ ← 1 cpm
frequency




1000
500
100
50
10
SLOPES > 3%
0.1
k²
1
k²
10
SLOPES < 3x10⁻⁴
0.1
ω
1
ω
Table 1
10
10
50
100
500
1000
H̃ IN METERS
L̃ IN KM


0.1
|ξ̃₂|/σ²
|ξ̃₃|/σ²
0.1
|ξ̃₂|/σ²
10
|ξ̃₃|/σ²
Table 1
10
10
50
100
L̃ IN KM


4
2
0
-1
1.0
0.90
0.75
0.50
0.25
0
90°
0°
180°
0
2
4
6
8
10


4
2
0
-2
-4
$\tilde{a}$ = 5 cm
WALL
$\tilde{a}$ = 100 cm
$\log_{10}$ cm^2
$\tilde{a}$ = 5 cm
MOUTH
$\tilde{a}$ = 100 cm
0
1
2
3
4
5
6

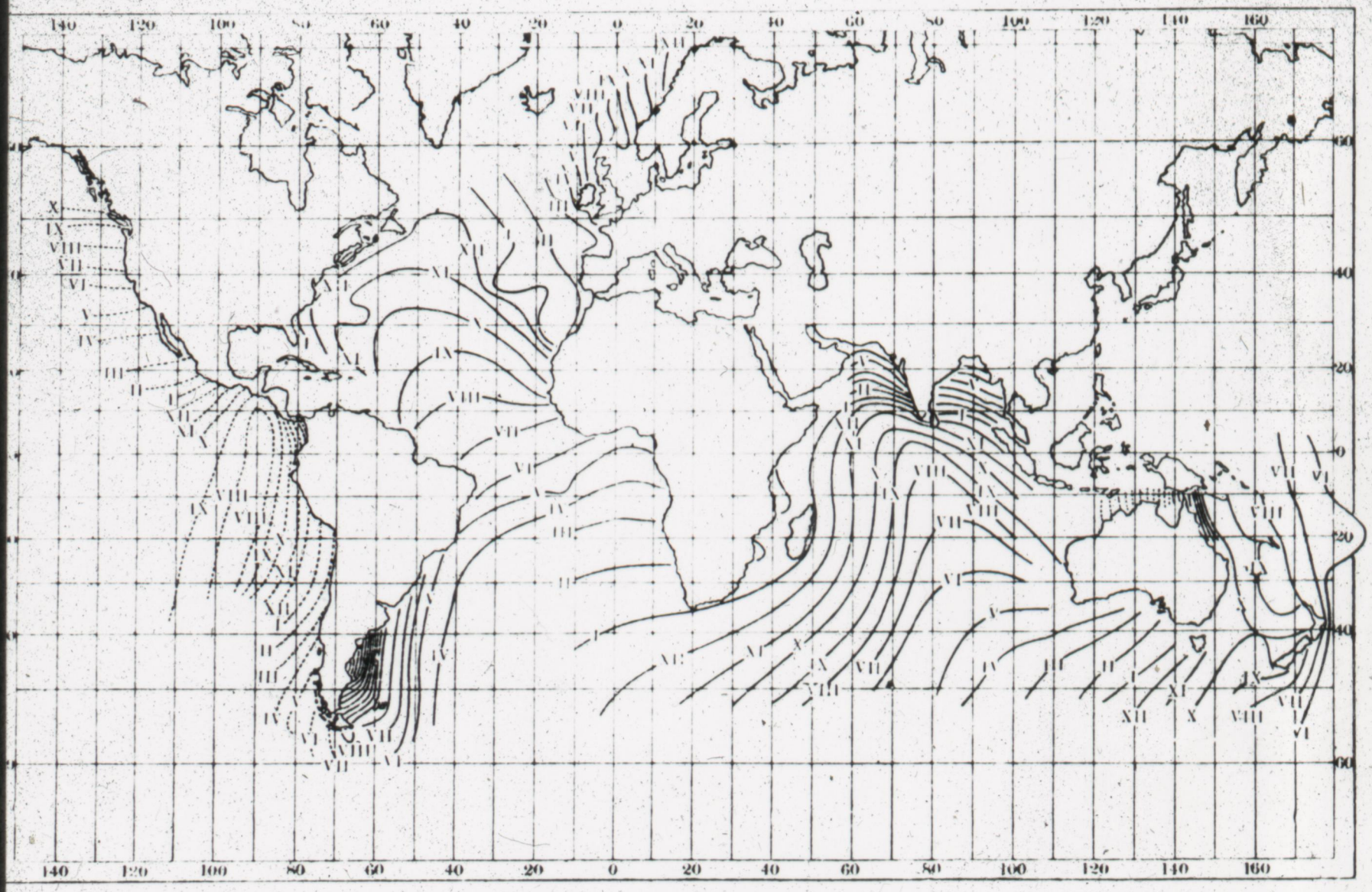
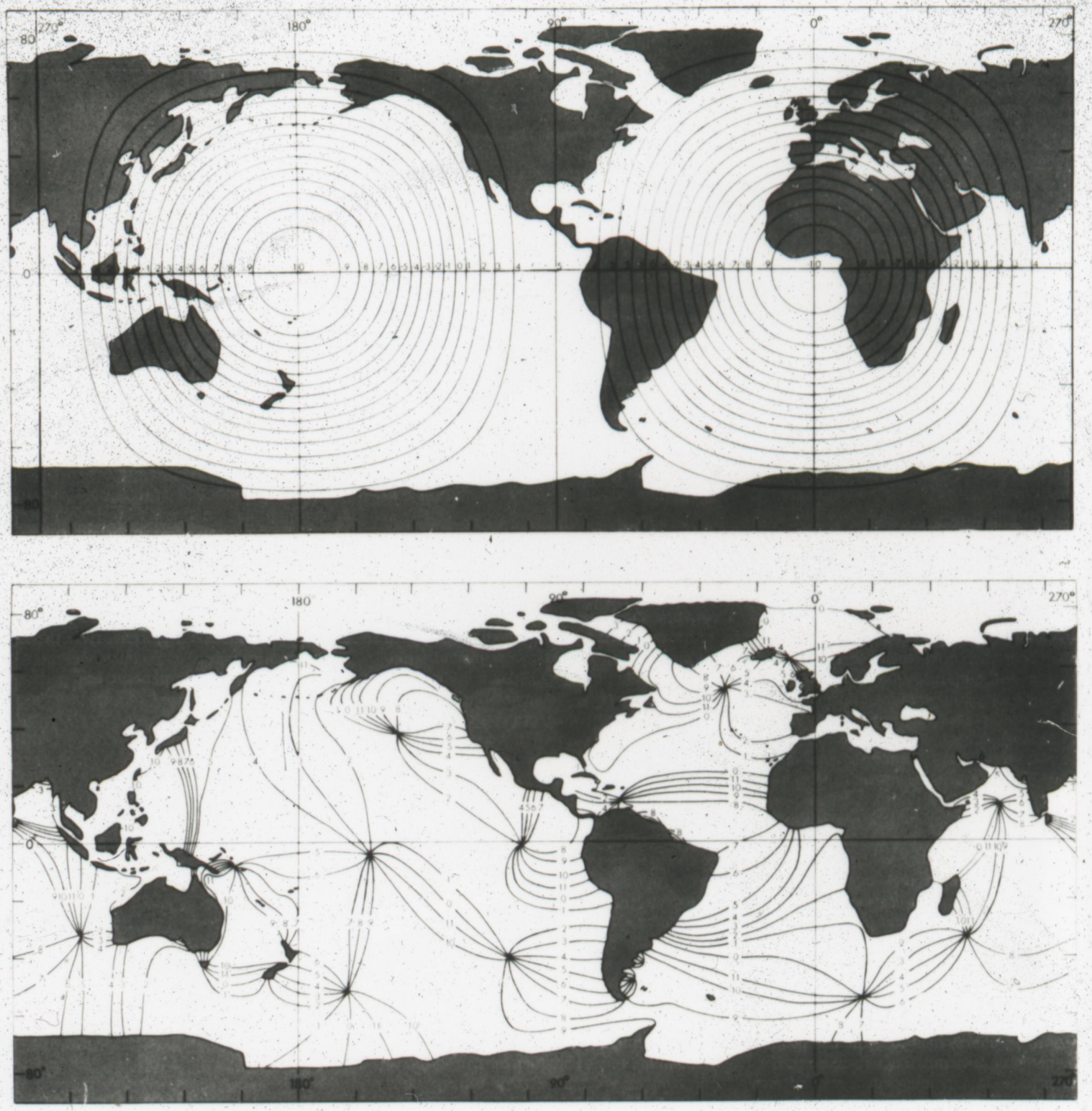


FIG. 32.—CHART OF COTIDAL LINES



CONTOURS OF GRAVITATIONAL POTENTIAL produced by a celestial body when it is above the equator at the Greenwich meridian (0 longitude) are shown in the top map. On a sphere these contours are actually circles. For the Moon 10 units represent 358 mm water; for the Sun they represent 162 mm. Contours in bottom map show positions of high tide at various hours after the situation represented in the top map, as estimated by G. Dietrich. Low tides are obtained by adding or subtracting six hours. At the nodal points, or amphidromes, some of which are conjectural, the rise and fall of the tide is zero