

Group 1.

Transfer of heat and kinetic energy

All quantities in the boxes shall be noted.

Date: 19.03.15	Weather: 4
Time: 9:40	State of Sea: 1
Station: Malmøykalven	Beaufort Wind Force: 0-1

Shortwave radiation Q_s

Quanta irradiance in air $Q_q(\text{air})$ ($\mu\text{mol m}^{-2} \text{s}^{-1}$) = 147	Corrected $Q_q(\text{air}) = 147 \cdot 1.13 = 166.11$
$Q_s = 166.11 \cdot 0.15 = 83.055$	

Longwave (infrared) radiation Q_b $Q_b \approx -(143 - 0.9t_w - 0.46e_a)(1 - 0.1C) [\text{W m}^{-2}] = -19.31$

t_w ($^{\circ}\text{C}$) = 0.6 5.1
e_a (%) = 91%
C (oktas) = 8

Secchi disk depth D

$$Z(1\%) \approx 2.0 \cdot D =$$

$D =$

Heat conduction Q_h

$$Q_h \approx -1.88 V (t_w - t_a) [\text{W m}^{-2}] = -14.382$$

V (m s^{-1}) = 1.7
t_a ($^{\circ}\text{C}$) = 0.6
t_w ($^{\circ}\text{C}$) = 5.1

$Q_{\text{heat, total}}$

$$Q_{\text{heat, total}} \approx Q_s + Q_b + Q_h = 83.055 + (-19.31) + (-14.382) = 49.363$$

Kinetic energy Q_{kin}

$$Q_{\text{kin}} = \rho_{\text{air}} c_d V^3 = 0.006387$$

$\rho_{\text{air}} \approx 1.3 \text{ kg m}^{-3}$, $c_d \approx 1 \cdot 10^{-3}$, V is the wind speed in m s^{-1} .

Gruppe 2

Transfer of heat and kinetic energy

All quantities in the boxes shall be noted.

Date: 19.03.15	Weather: 2
Time: 10.25	State of Sea: 1
Station: Geitholmen	Beaufort Wind Force:

Shortwave radiation Q_s

Quanta irradiance in air $Q_q(\text{air})$ ($\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$) = 182	Corrected $Q_q(\text{air}) = 0.5 \times 182 = 91 \text{ W m}^{-2}$
$Q_s = 1.13 \times Q_q = 102.83 \text{ W m}^{-2}$	

Longwave (infrared) radiation Q_b $Q_b \approx -(\underbrace{143 - 0.9t_w - 0.46e_a}_{95.72})(1 - 0.1C) [W m^{-2}] = -86.148 \text{ W m}^{-2}$

t_w ($^{\circ}\text{C}$) = 5.0
e_a (%) = 93
C (oktas) = 8

Secchi disk depth D

$Z(1\%) \approx 2.0 \cdot D = 20$ (sammelsin ved floarsens-målinsone)

$D = 10$

Heat conduction Q_h

$Q_h \approx -1.88 V (t_w - t_a) [W m^{-2}] = -13.2352 \text{ W m}^{-2}$
(varretag)

V (m s^{-1}) = 1.6
t_a ($^{\circ}\text{C}$) = 0.6
t_w ($^{\circ}\text{C}$) = 5.0

$Q_{\text{heat, total}}$

$Q_{\text{heat, total}} \approx Q_s + Q_b + Q_h = 3.4468 \text{ W m}^{-2}$

Kinetic energy Q_{kin}

$Q_{\text{kin}} = \rho_{\text{air}} c_d V^3 = 0.0053248 \text{ kJ s}^{-3}$
skal være W m^{-2}

$\rho_{\text{air}} \approx 1.3 \text{ kg m}^{-3}$, $c_d \approx 1 \cdot 10^{-3}$, V is the wind speed in m s^{-1} .

$\text{kJ m}^{-2} \text{ m}^3 \text{ s}^{-3} = \text{kJ s}^{-3}$

Gruppe 2

DATE: 19.03.2015 HRS: 09.38

STATION: Malmerhalven POSITION:

WEATHER: 2 SEA: 1

WIND FORCE: WIND DIRECTION:

DEPTH	TEMP	SALINITY		DEPTH	TEMP	SALINITY	
0	5,2	27,2		19			
1				20	8,5	31,0	
2	5,2	27,25		25	9,0	31,3	
3				30	9,1	31,5	
4	5,3	27,5					
5							
6	5,4	27,5					
7							
8	5,5	27,8					
9							
10	5,5	27,9					
11							
12	5,6	28,25					
13							
14	5,9	28,5					
15							
16	6,6	29,1					
17							
18	7,4	30,0					

Gruppet
Malmøy-
kalven

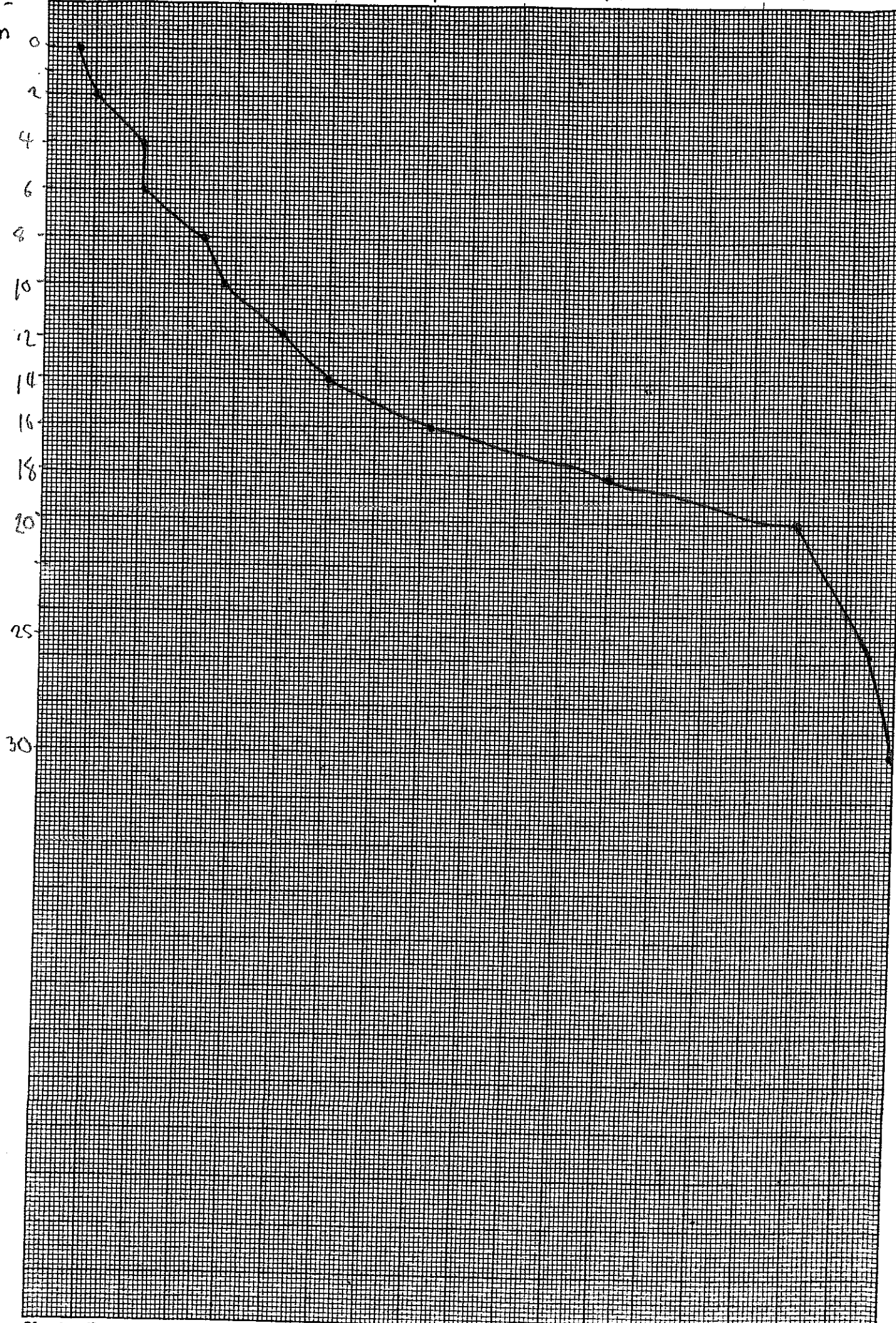
27

28

29

30

31



Grupper 2

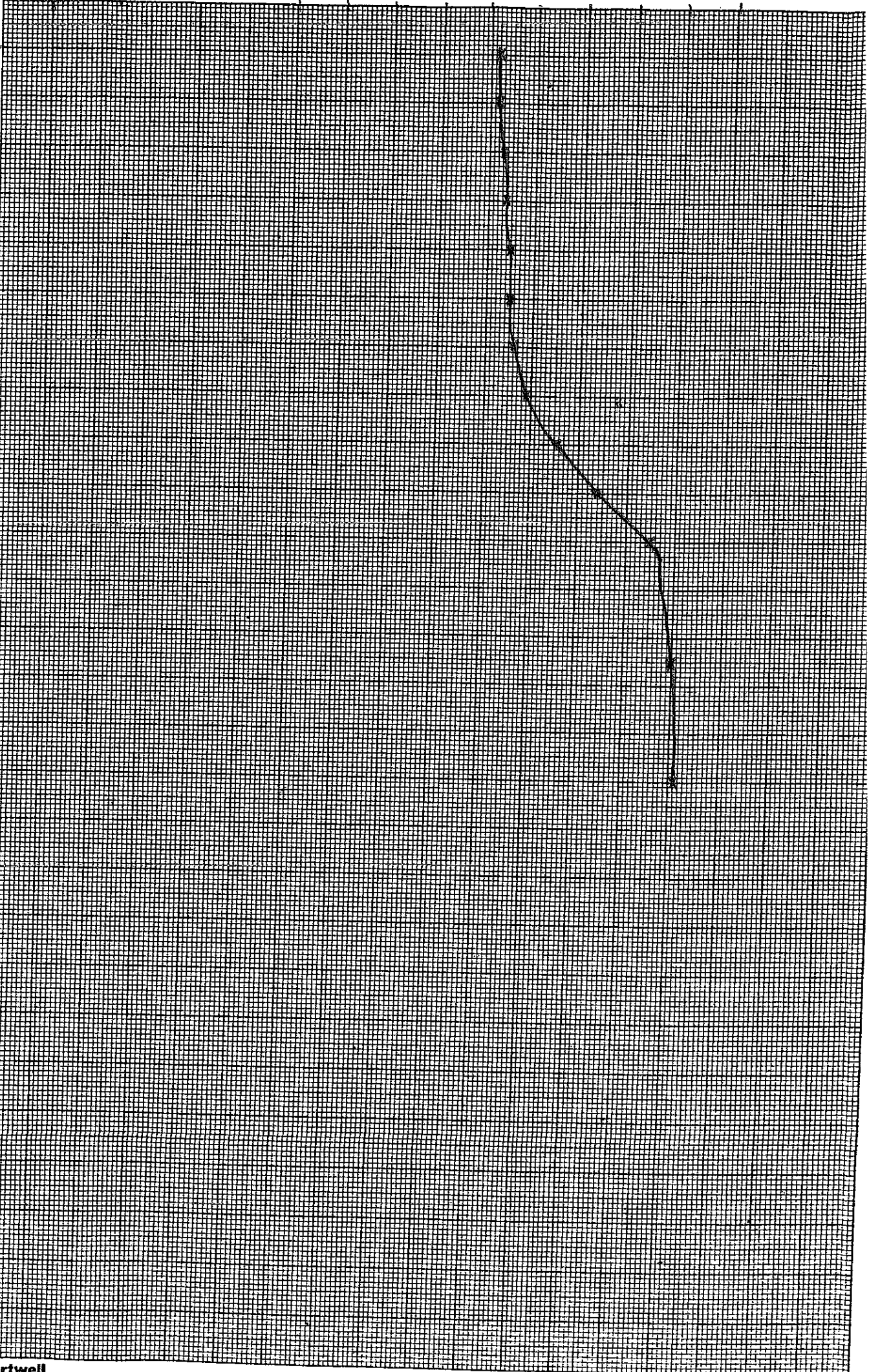
Temperatur

1 2 3 4 5 6 7 8 9 10

Malmøykollen

Dybde

0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30



Group 1 Geitholmen 0 2 4 6 8 10 Temp (°C) Group 1 Geitholmen

