

MAR 110 Natural Hazards and the Oceans

Tutorial #5

Ocean Water Properties and Stratification

Instructor:

Prof. Wendell Brown

wbrown@umassd.edu

508-910-6395

SMAST-East Rm 229

TA: M.....

.....1@umassd.edu

508-910-6384

SMAST-East, Rm 222

Converting Celsius & Fahrenheit

Fahrenheit to Celsius

$$(T_{(^{\circ}\text{F})} - 32) / (1.8) = T_{(^{\circ}\text{C})}$$

For EXAMPLE: If the temperature is 63°F, then the temperature in Celsius is...

$$(63-32)/1.8 = 17^{\circ}\text{C}$$

Celsius to Fahrenheit

$$(T_{(^{\circ}\text{C})} \times 1.8) + 32 = T_{(^{\circ}\text{F})}$$

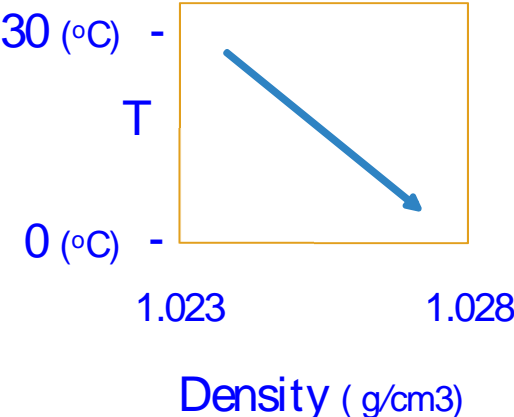
For EXAMPLE: If the temperature is 35°C, then the temperature in Fahrenheit is..

$$(35 \times 1.8) + 32 = 95^{\circ}\text{F}$$

Ocean Density depends on:

Temperature (T)

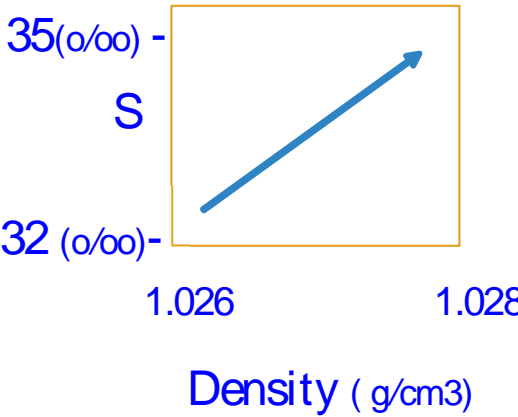
Inversely related



As Temp Decreases,
Density Increases

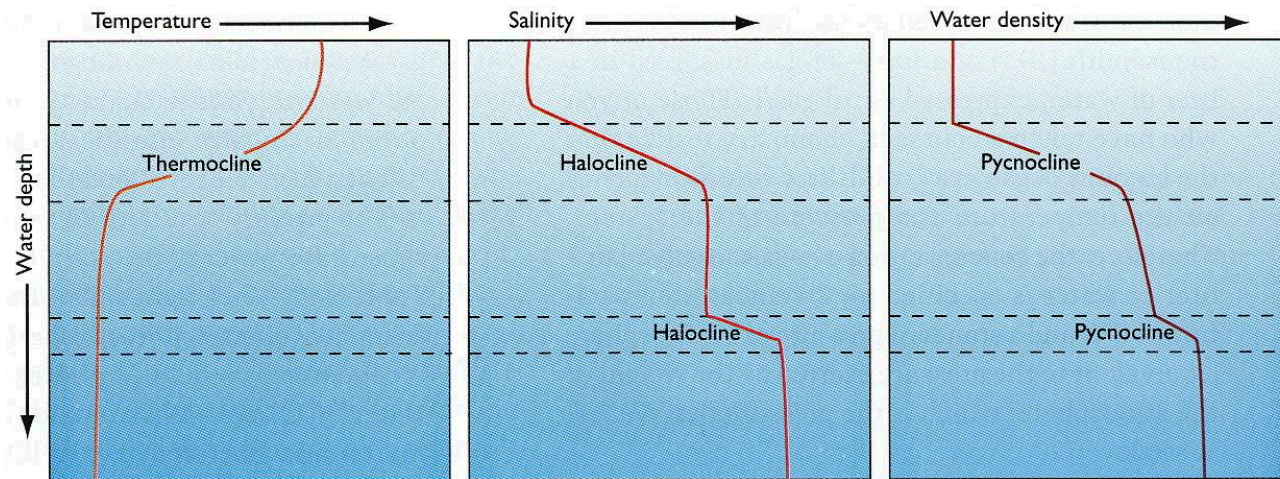
Salinity (S)

Directly related



As Salinity Increases,
Density Increases

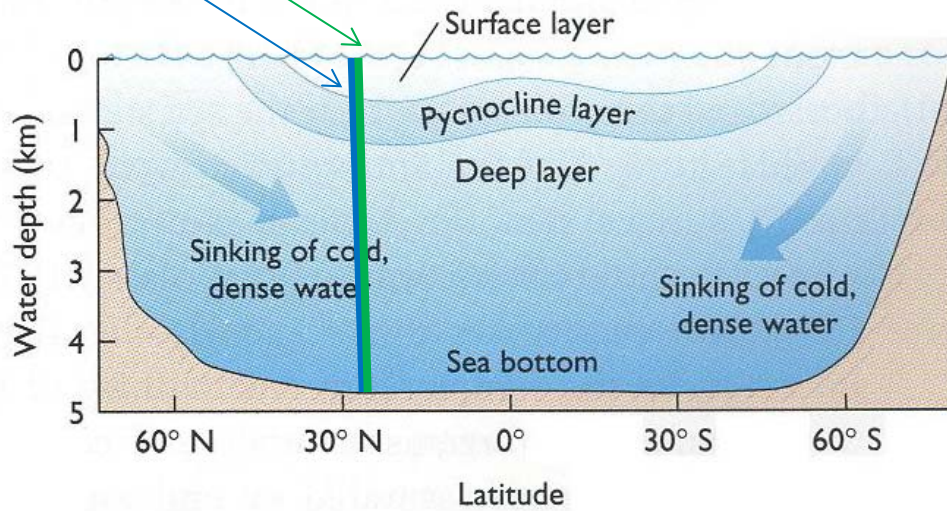
Temperature & Salinity & Density Profiles



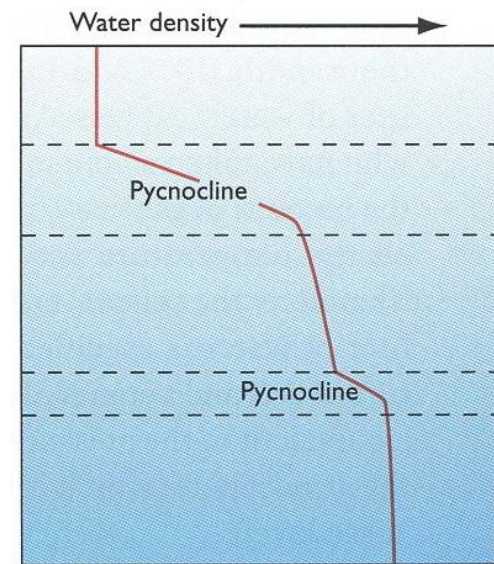
(b) THERMOCLINE, HALOCLINE, AND PYCNOCLINE

**What is a Thermocline? Halocline? Pycnocline?
When does the density of water increase?**

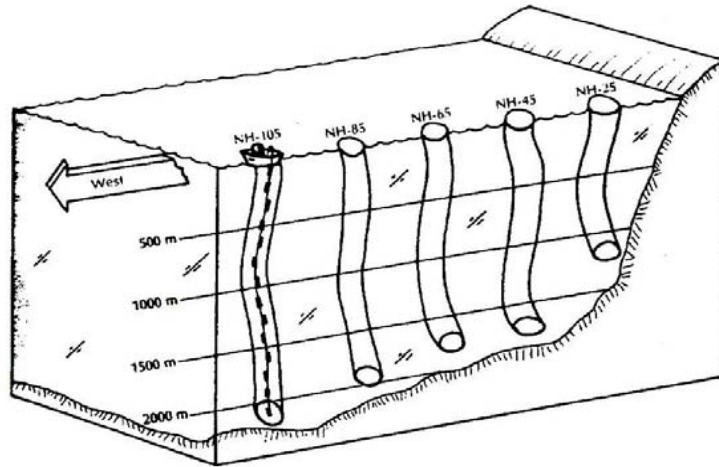
Measuring Ocean T/S Profiles



Density Profile

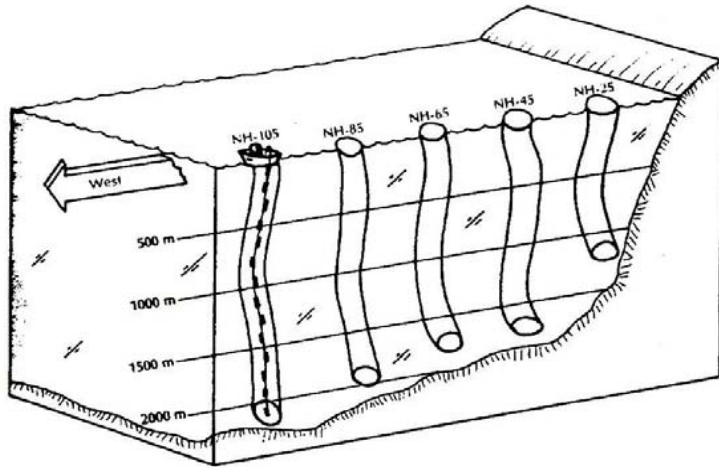


OCEAN WATER PROPERTY SURVEY

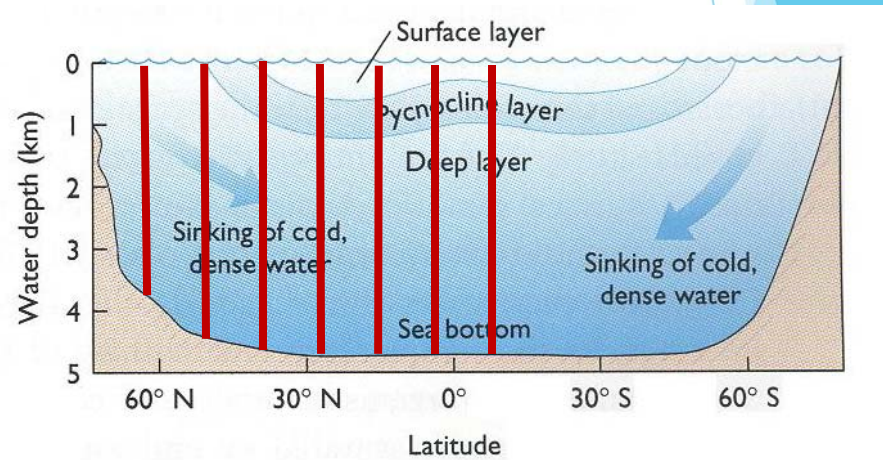


This is a set of 5 stations of **temperature, salinity & pressure** measurements down to 2000 meters

OCEAN WATER PROPERTY SURVEY

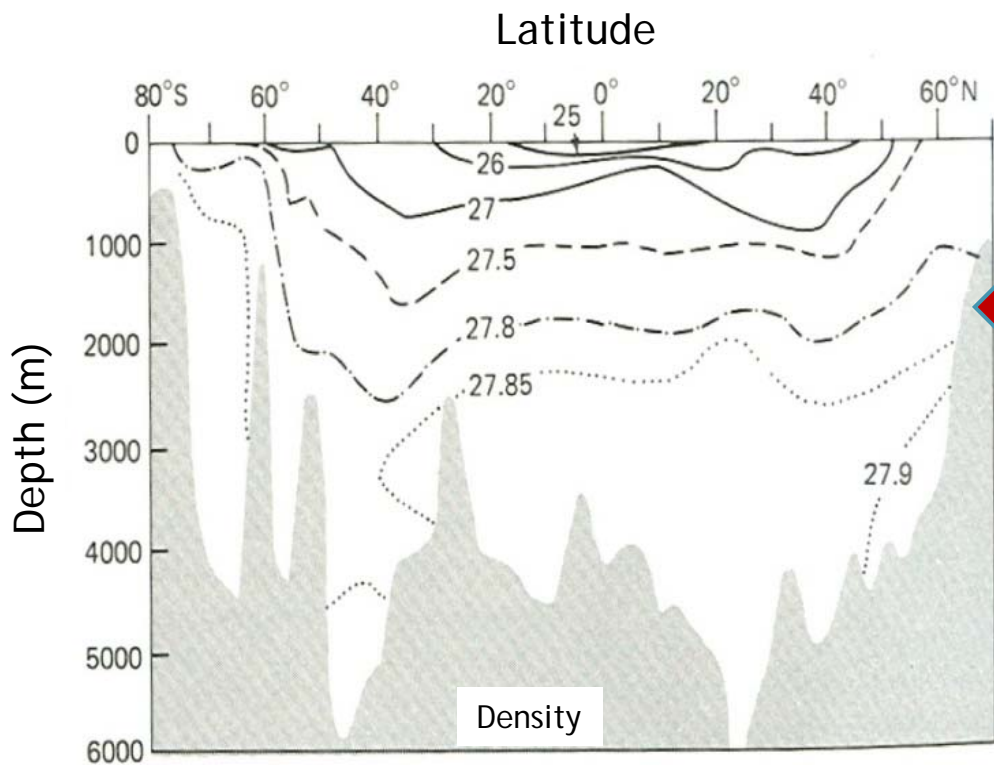


This is a set of 5 stations of **temperature, salinity & pressure** measurements down to 2000 meters



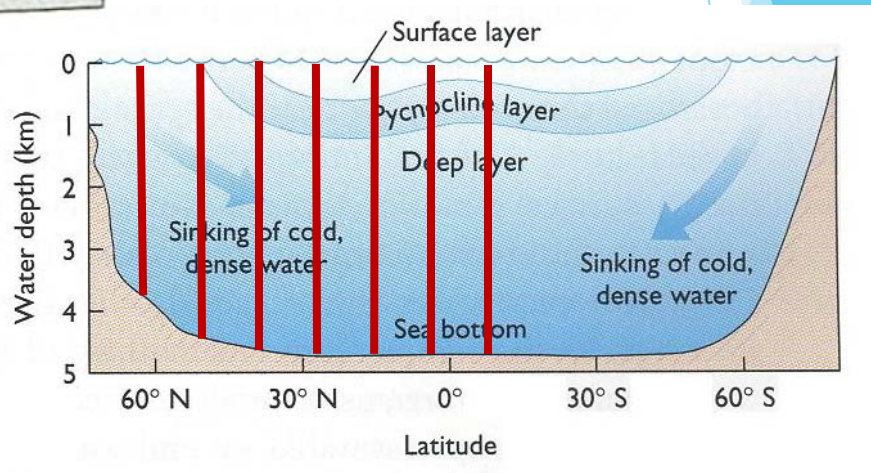
THIS HAS BEEN DONE in the **Deep Ocean**





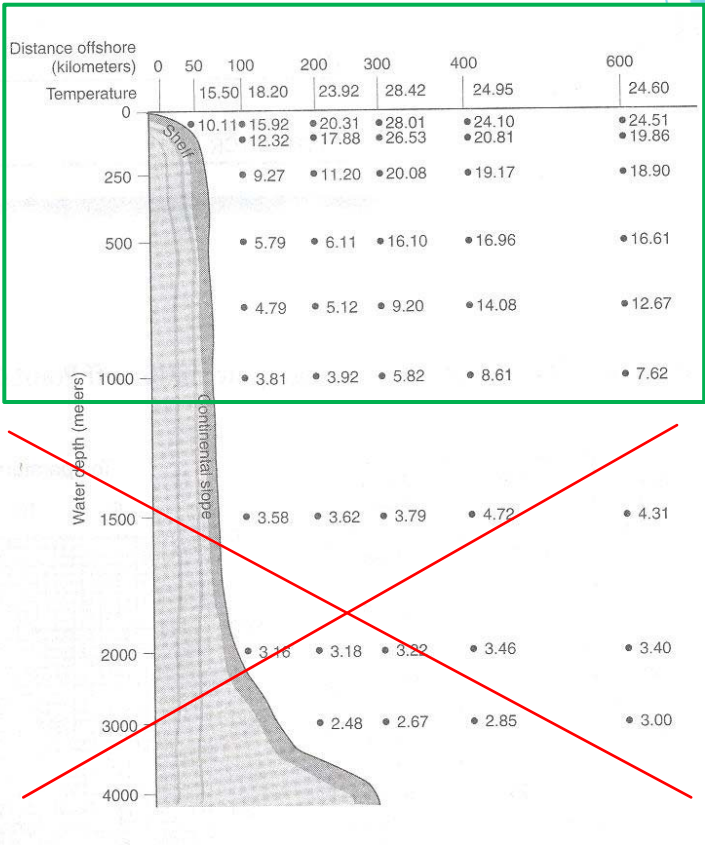
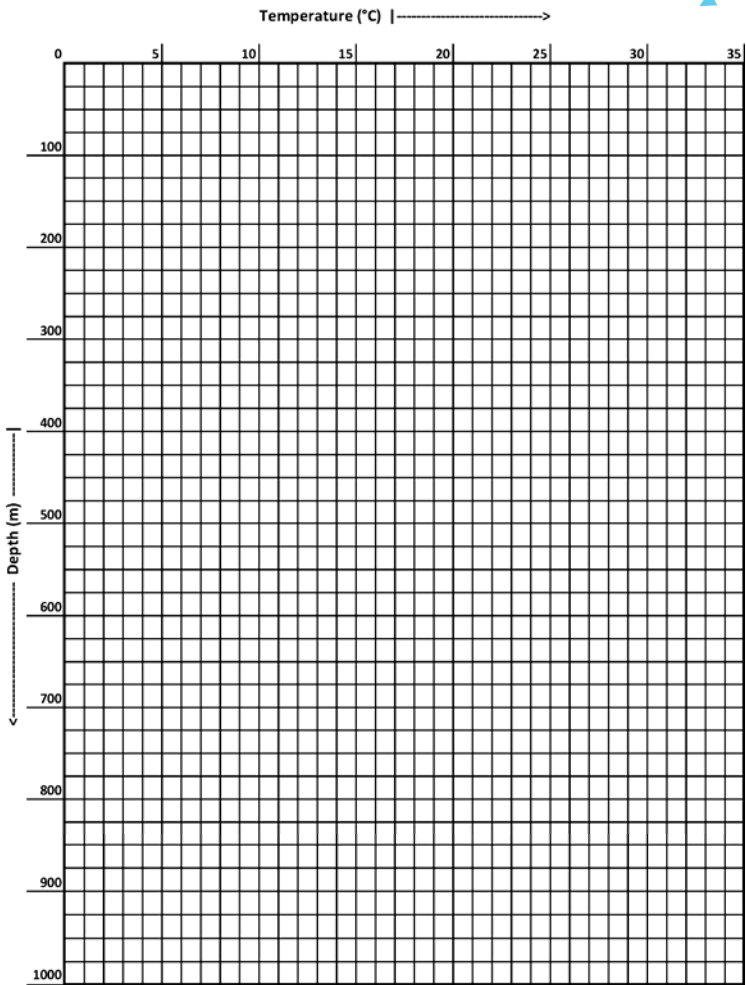
**Contoured
Density
Section**

**A series of profiles can be used
to make an
Ocean Property Section**

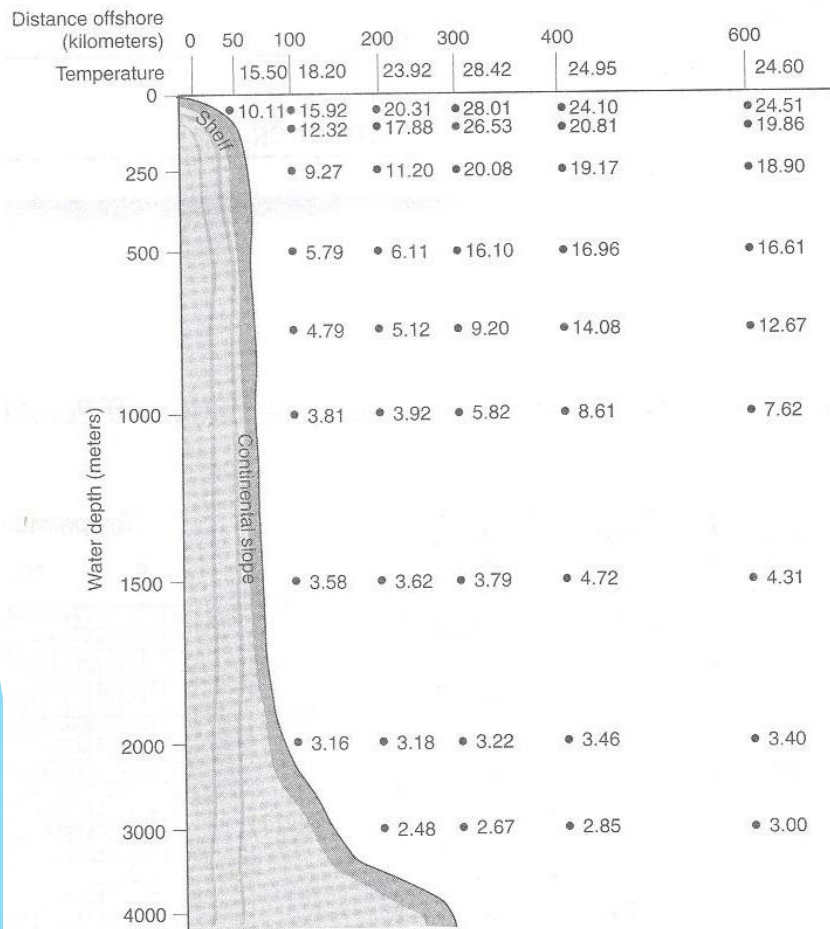


HOMEWORK ASSIGNMENT

**Plot the
Temperature Profiles
of the
TOP 1000 meters.**

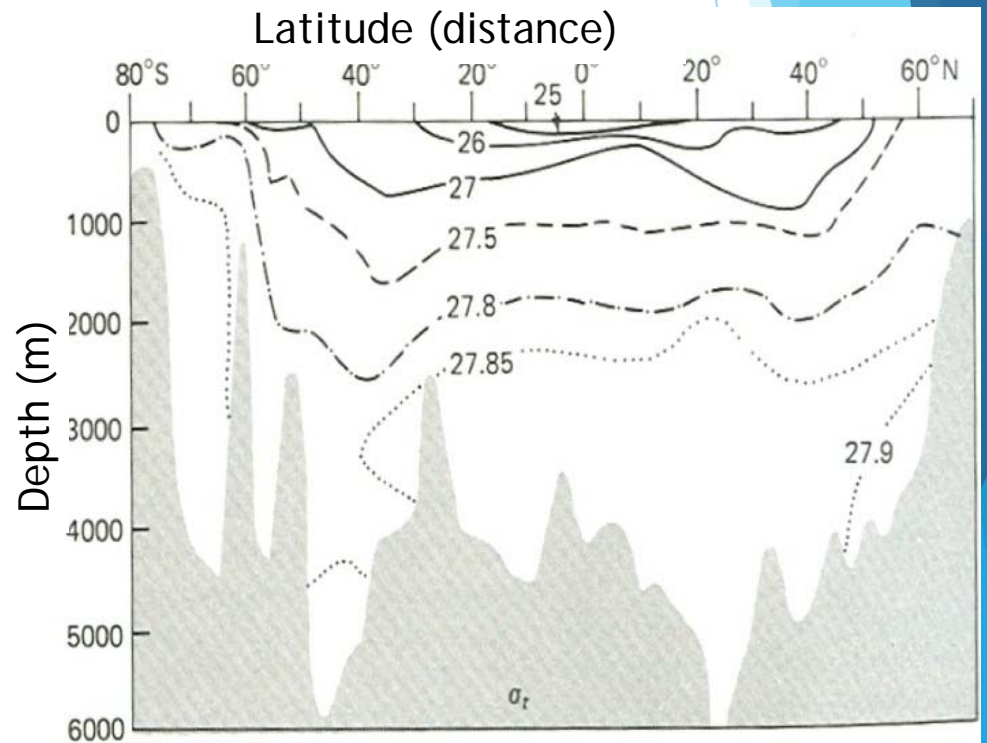


Ocean Property Sections

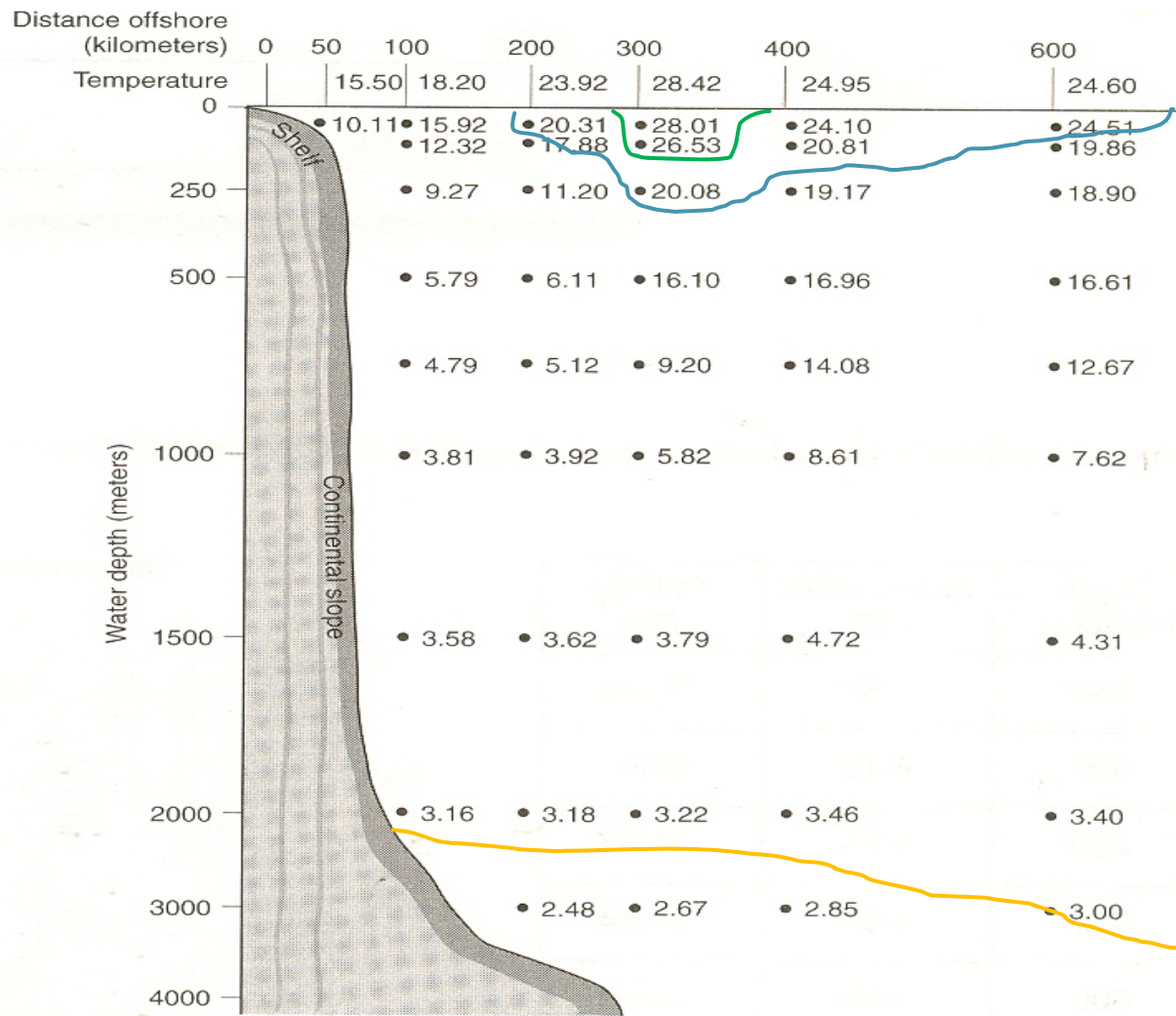


Draw the **isotherms** using the data provided.

Example ↓



Here are the drawn isotherms for 20 and 25 degrees Celcius.



Due on
October ???th