

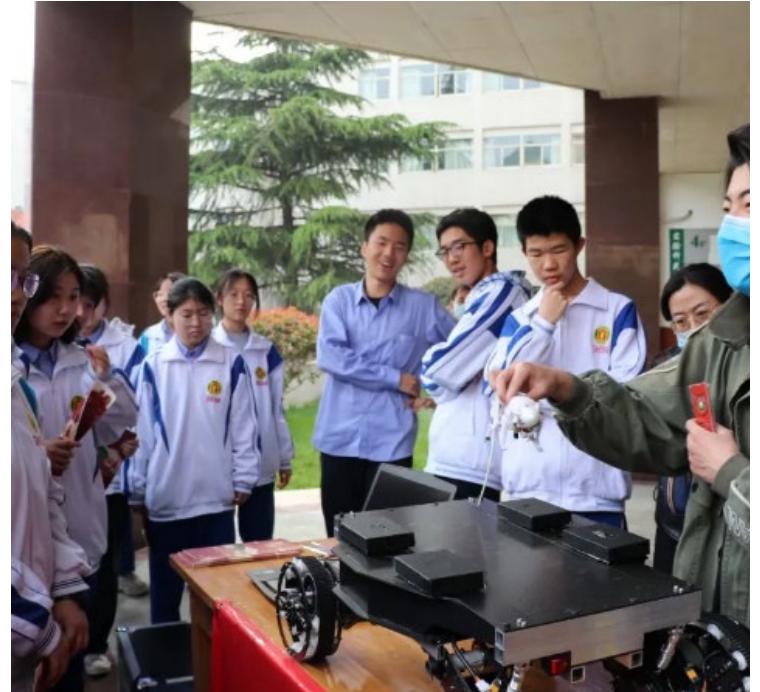


# How to make a 3D Relief Globe

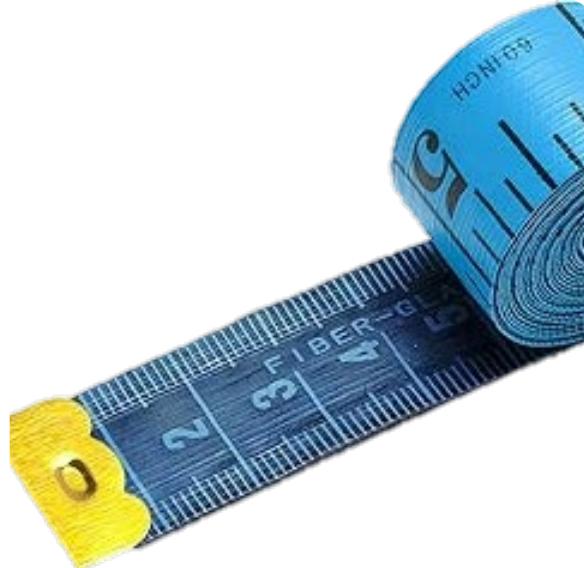
Zhaoxu Sui, NACIS, Tacoma 2024

# Background

- Place: Shandong Experimental High School Science Fair, Jinan, China
- Time: 2017



# Materials



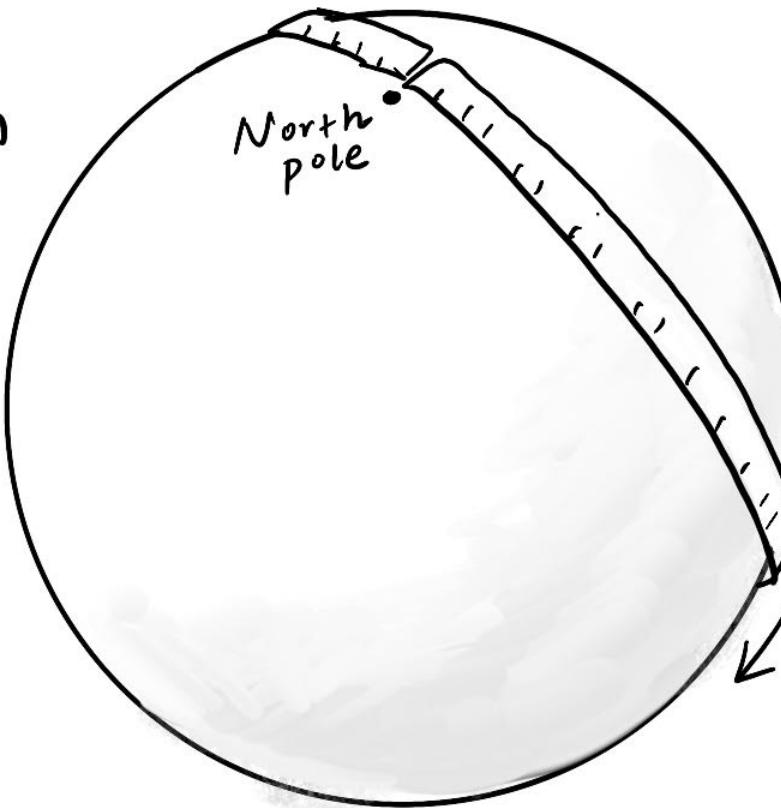
- One Big Foam Plastic Ball
- Several Modelling Clays in the following colors
  - Yellow
  - Light Green
  - Dark Green
  - Light Blue
  - Dark Blue
  - White
- One Tailor Rule
- Pen and Painting Kit





Step 1:  
Choose a random point  
as your north pole

$$\begin{aligned}\text{diameter} &= 40 \text{ cm} \\ \text{circumference} &= \pi \times 40 \text{ cm} \\ &= 126 \text{ cm}\end{aligned}$$



Step 2:  
Calculate  
the circumference of  
your ball,  
use your tailor  
ruler circling the  
ball, passing  
north pole,



Step 2:  
Calculate  
the circumference of  
your ball,  
use your tailor  
ruler circling the  
ball, passing  
north pole, until  
you reach the  
circumference length.

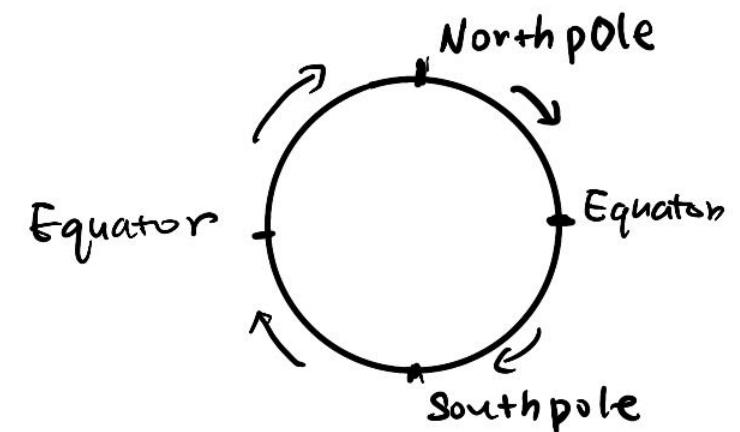
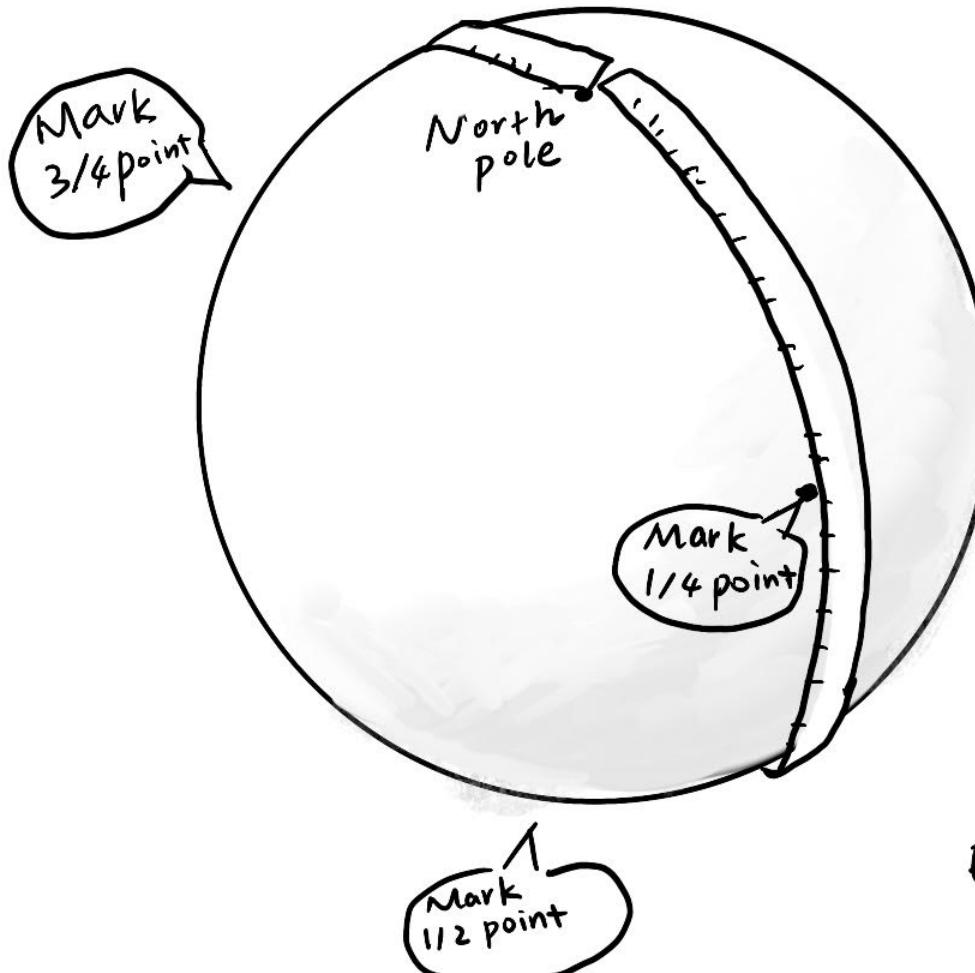
Step 3:

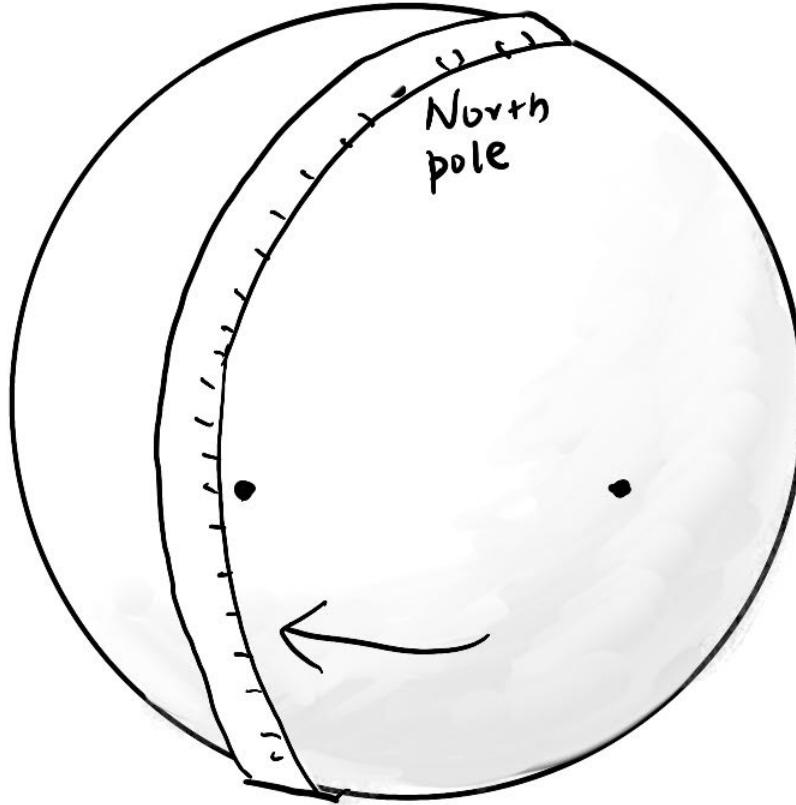
Mark

$1/4$  point (equator)

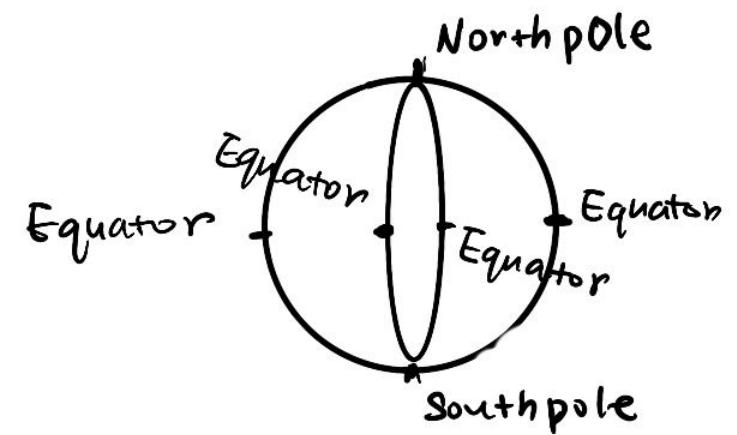
$1/2$  point (south pole)

$3/4$  point (equator)



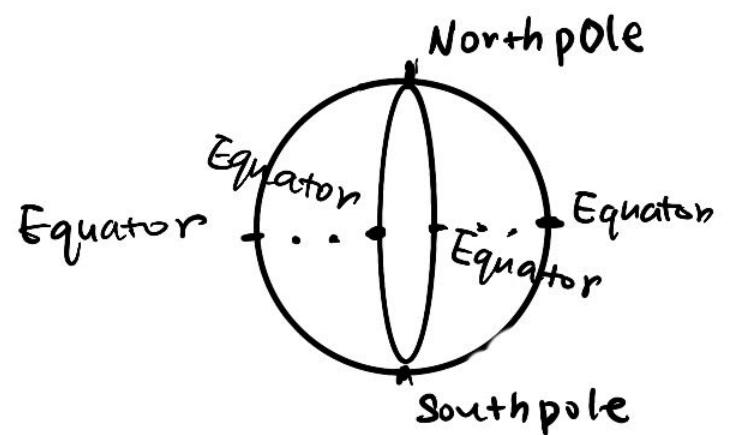


Step 4  
Repeat  
steps 2-3 in  
other directions



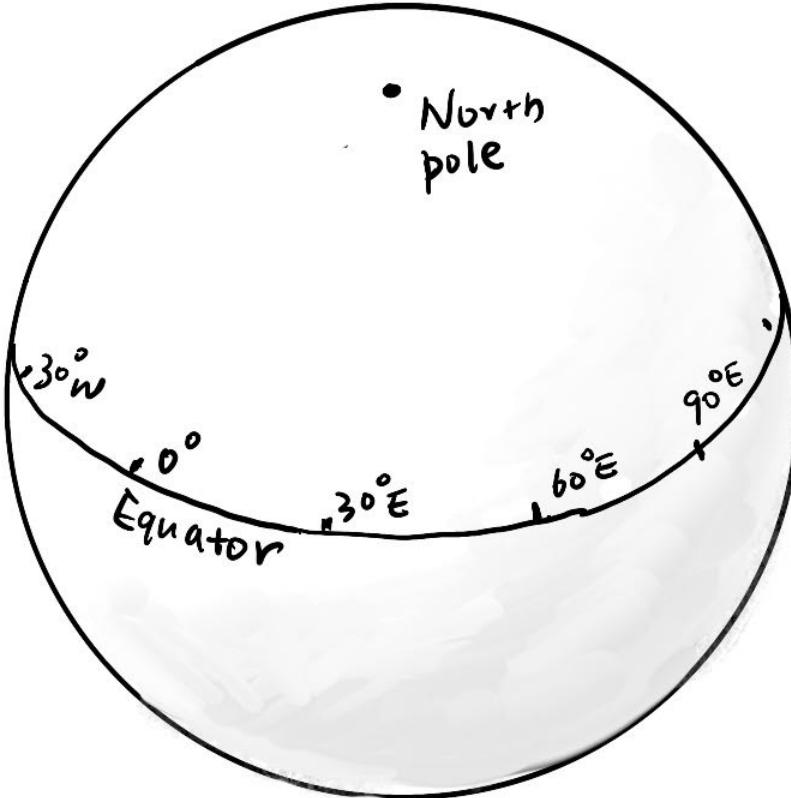


Step 4  
Repeat  
steps 2-3 in  
other directions  
until you get  
a pretty nice array  
of points along  
the equator



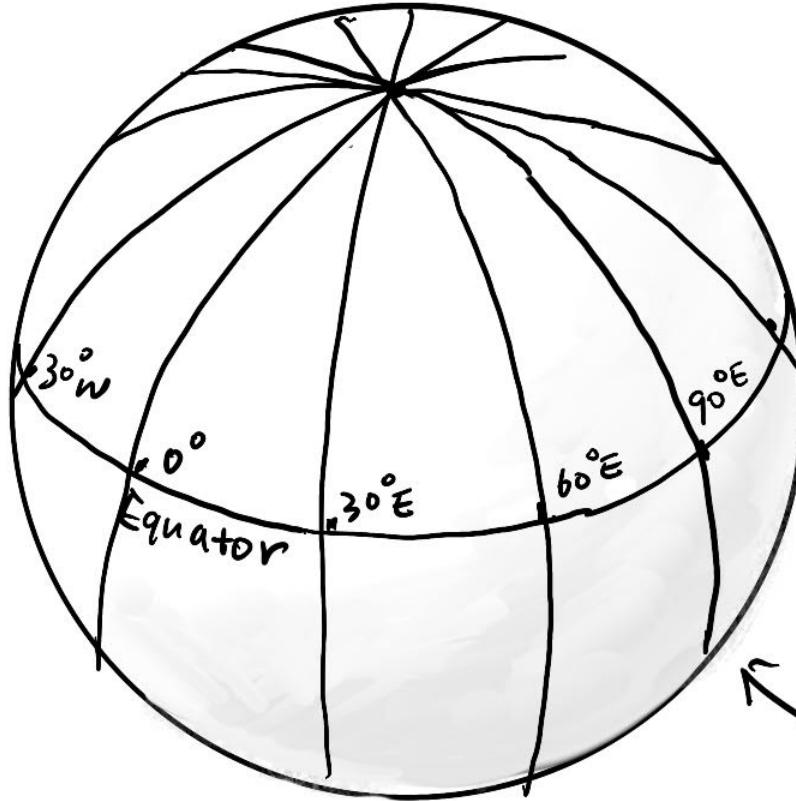


Step 4  
Repeat  
steps 2-3 in  
other directions  
until you get  
a pretty nice array  
of points along  
the equator,  
and then  
connect them!



Step 5:  
Mark breaks  
on the equator.  
by using your  
ruler, and label  
them

(Every  $30^\circ$   
means you  
have to divide  
the circumference  
by 12)

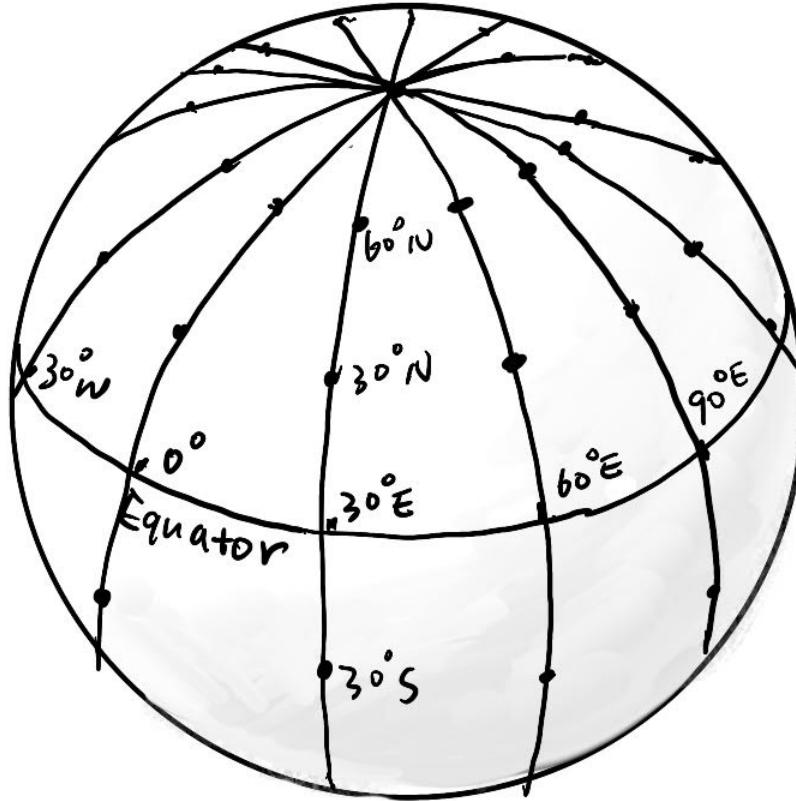


Step 6 :

Connect  
reference points  
with poles

( draw 6 big  
circles)

Yes,  
these are  
longitude  
lines.



Step 7:  
and divide  
longitude lines  
into equal  
portions, label  
breaks as  
latitudes.

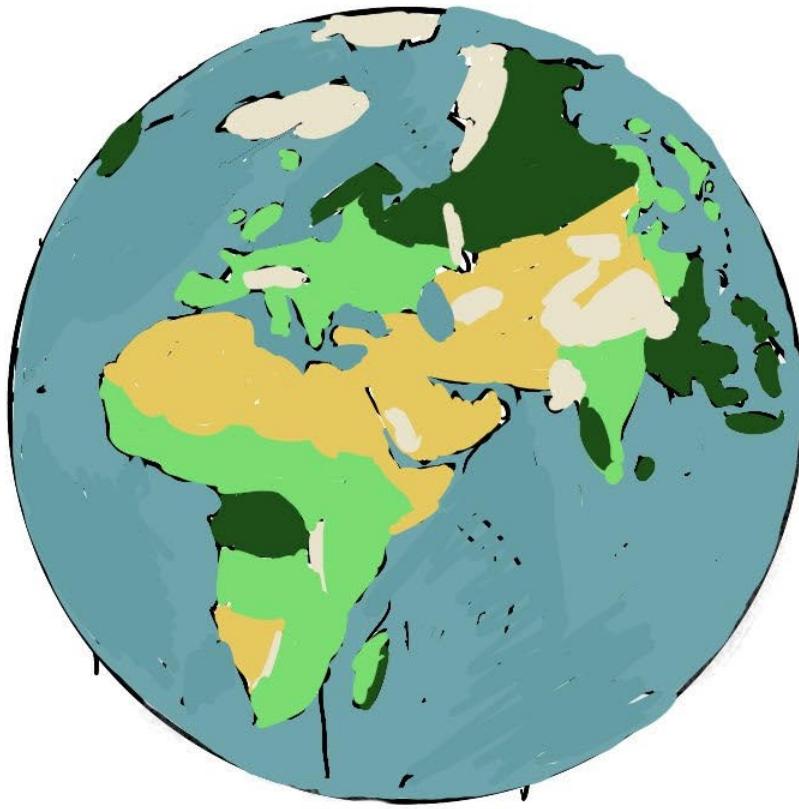


Step 8 :  
Let's draw  
coastlines are  
other import  
physical features !



Step 8 :  
Let's draw  
coastlines and  
other import  
physical features !  
Label them  
if necessary  
(like colors of clay)



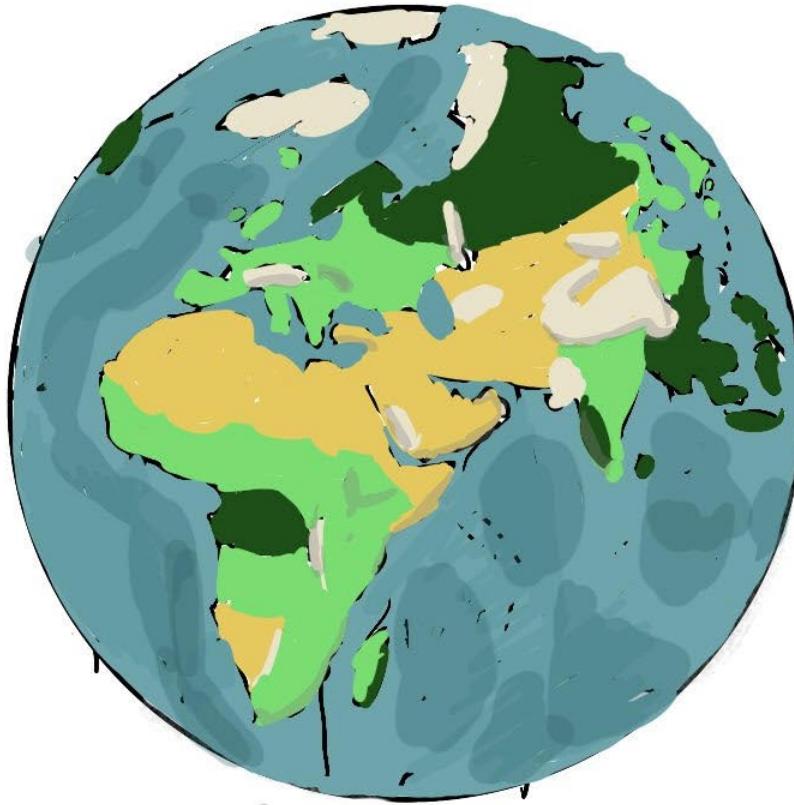


Step 9:

With those  
reference  
drawings on  
the foam  
plastic ball ...

Let's get  
some modeling  
clay on!

be aware  
of the  
elevation!



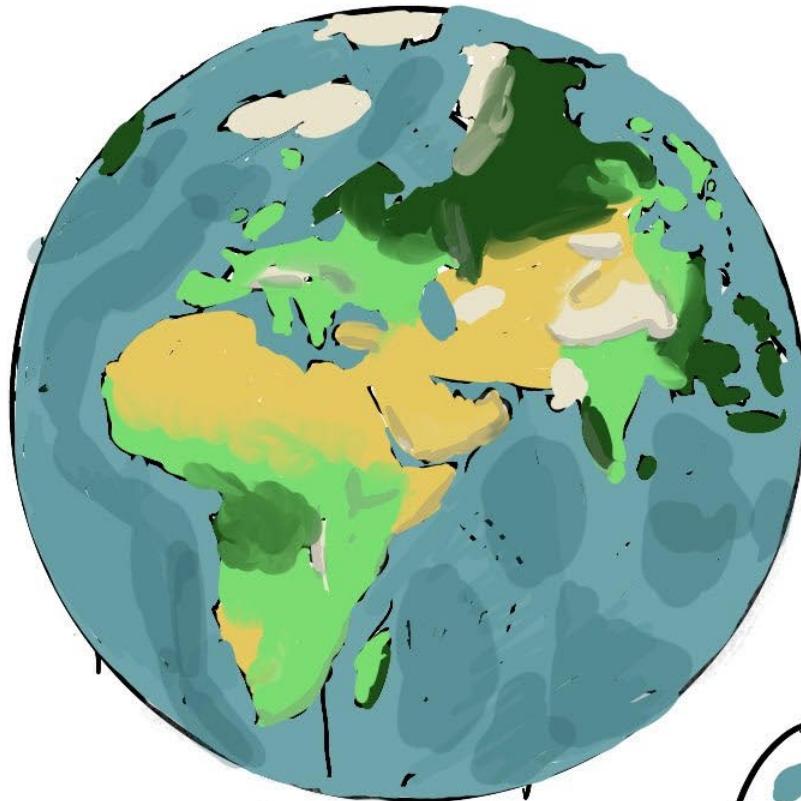
Step 9:

With those  
reference  
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the foam  
plastic ball ...

Let's get  
some modeling  
clay on!



Step 10:  
Finally...  
paint!







- Congratulations!
- You made a 3D relief Globe on yourself!
- Please scan the QR Code to see the tutorials online!



- <https://zhaoxusui.com/Globe>