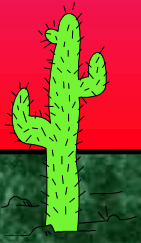


Os pontos cardiais

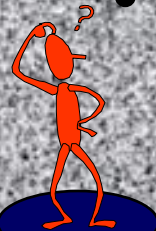
Jorge Melendez,
baseado/R. Boczko

IAG - USP

Nascer do Sol



Leste
é o ponto
onde
o Sol nasce.



Sol nascente nos inícios das estações do ano



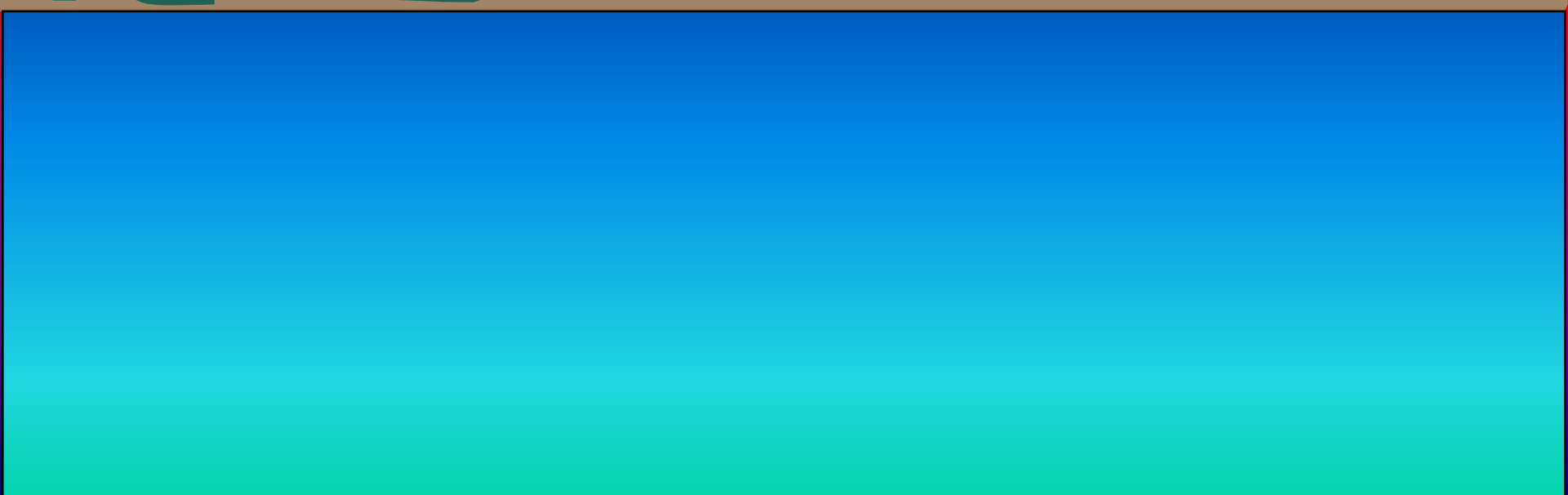
Inverno



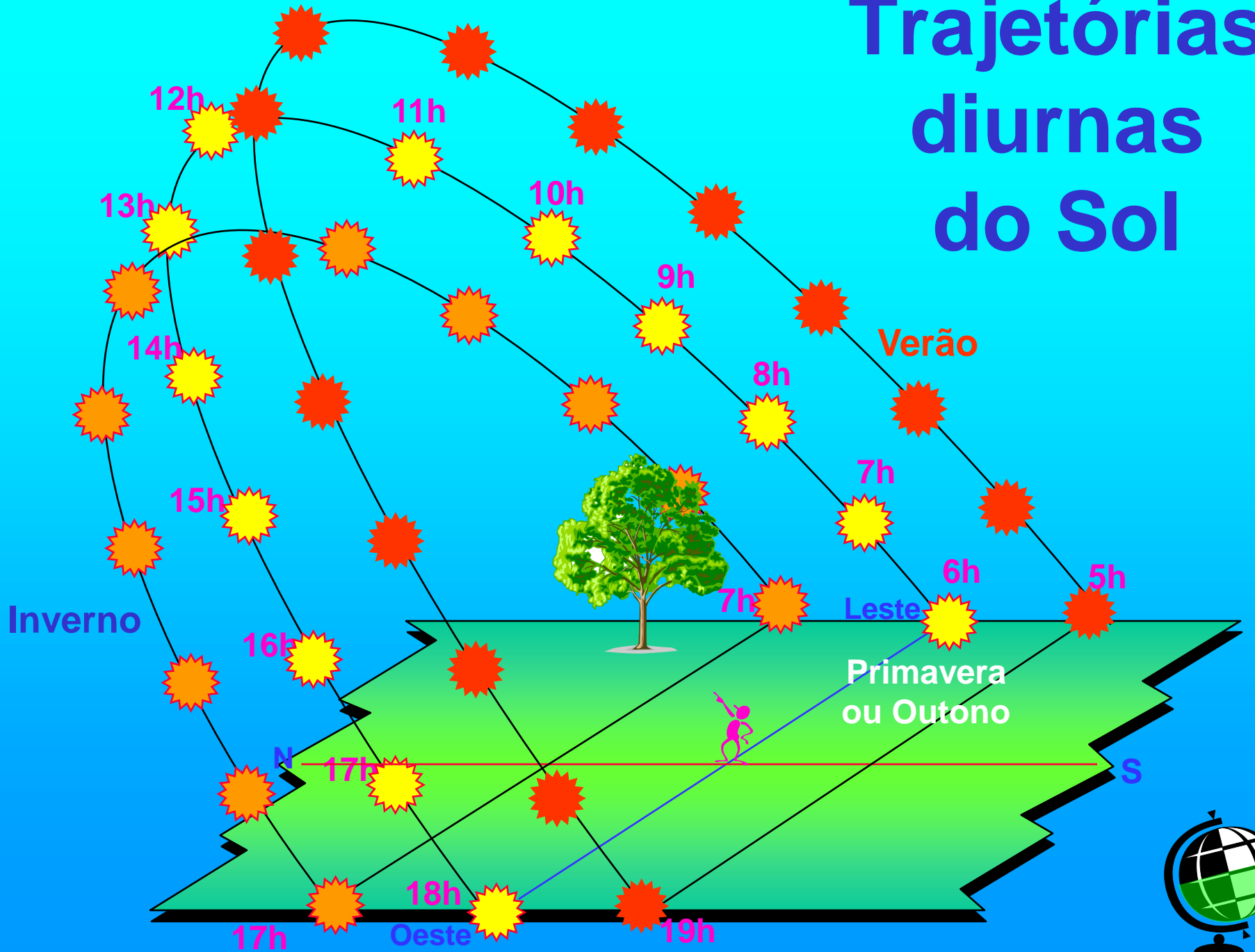
Primavera
ou Outono



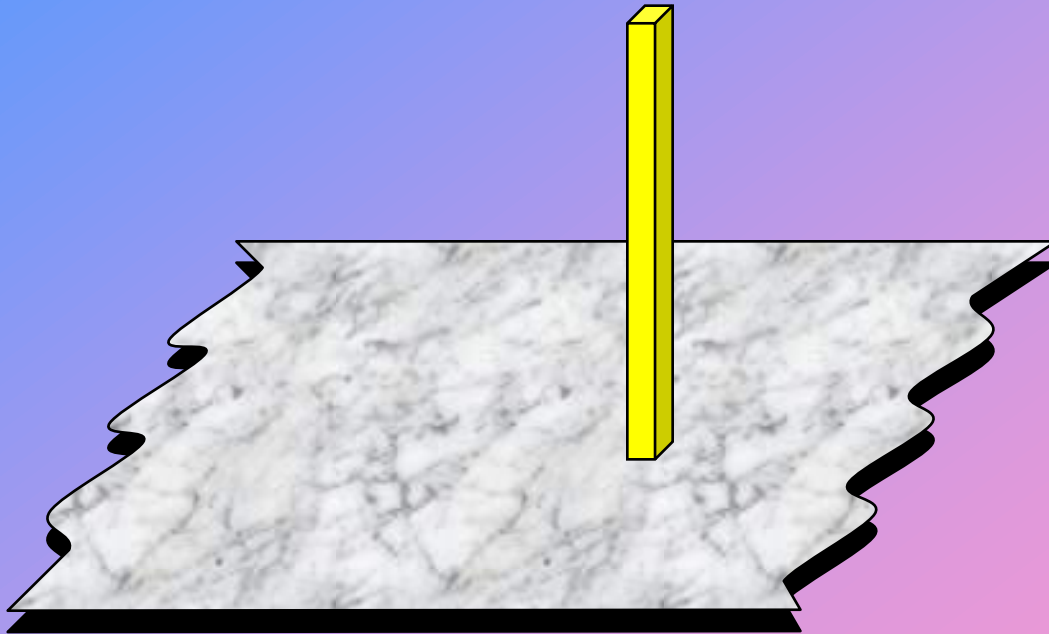
Verão



Trajetoórias diurnas do Sol



O gnômon



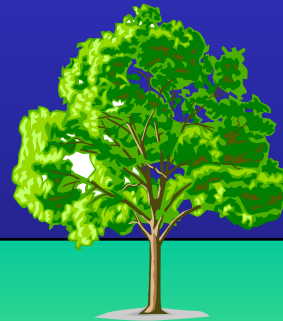
Anaximandro de Mileto (610-547 a.C.)

Sol



Gnômon

(Relógio de Sol)

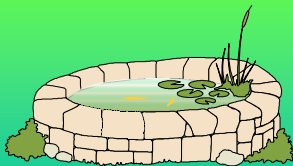


Anaximandro de Mileto
(610-547 a.C.) ...
Babilónios [~1500 a.C.?
(360°, 60', 60'')]

Gnômon



Sombra



Chão



Gnômon Inca (<1532)

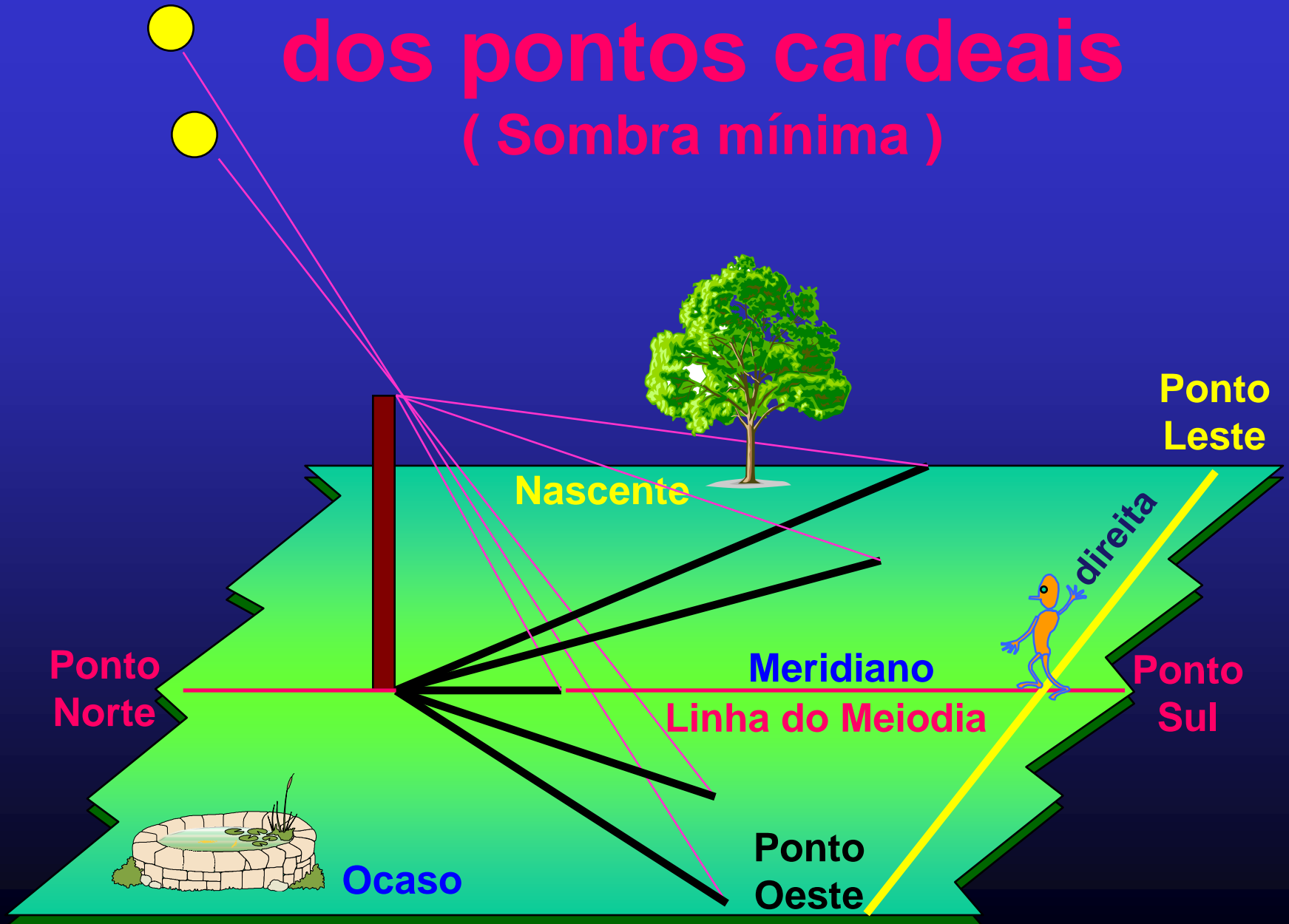
“... Para determinar o equinocio eles tem magnificas colunas de pedras erguidas nos templos do Sol ... quando a sombra cai exactamente ao longo da linha da saida à posta do Sol, e o Sol não faz sombra, eles sabem que esse dia é o equinocio” ...

Garcilaso de la Vega [1609]

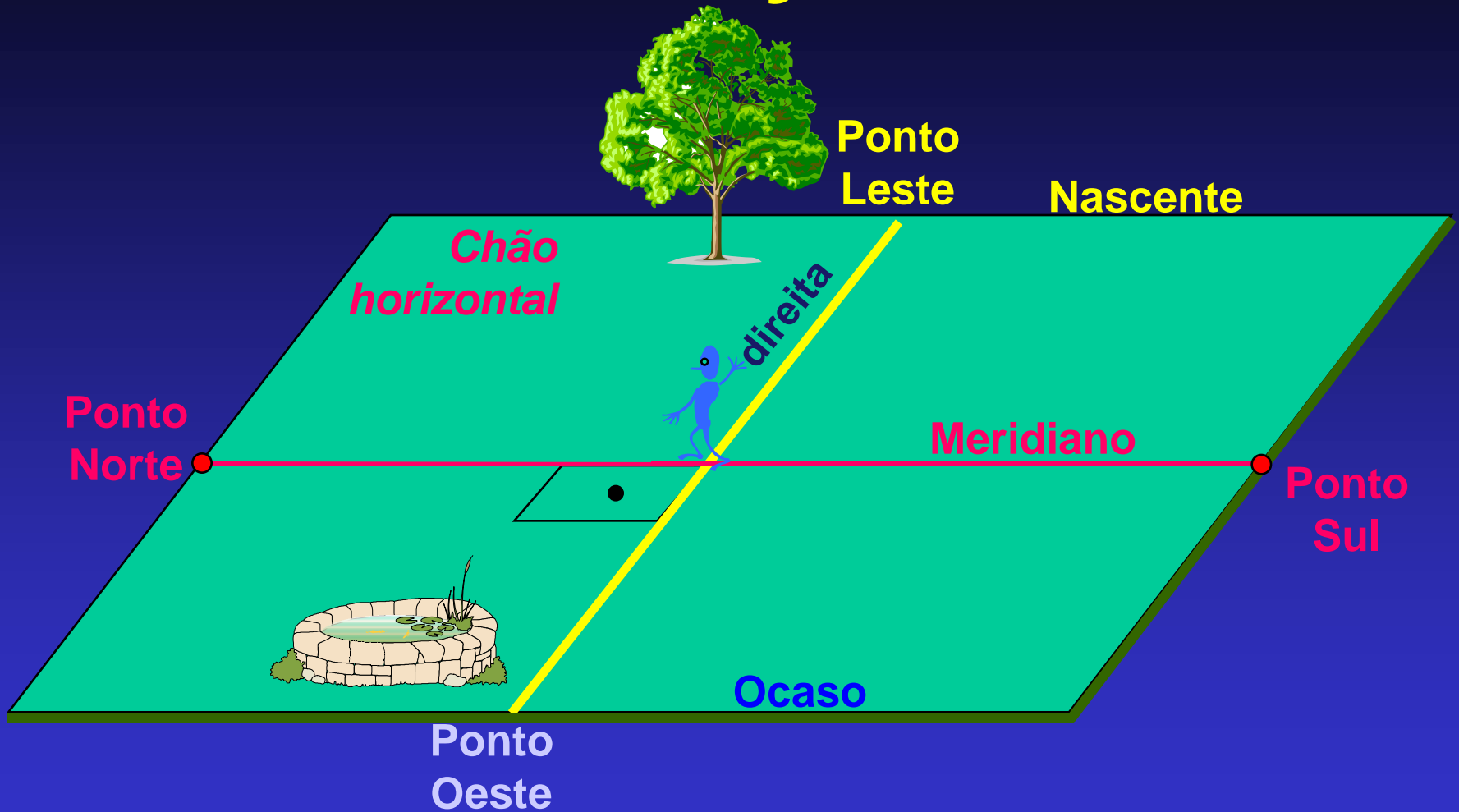


Determinação dos pontos cardeais

Determinação do meridiano e dos pontos cardeais (Sombra mínima)



Pontos ou Direções Cardeais

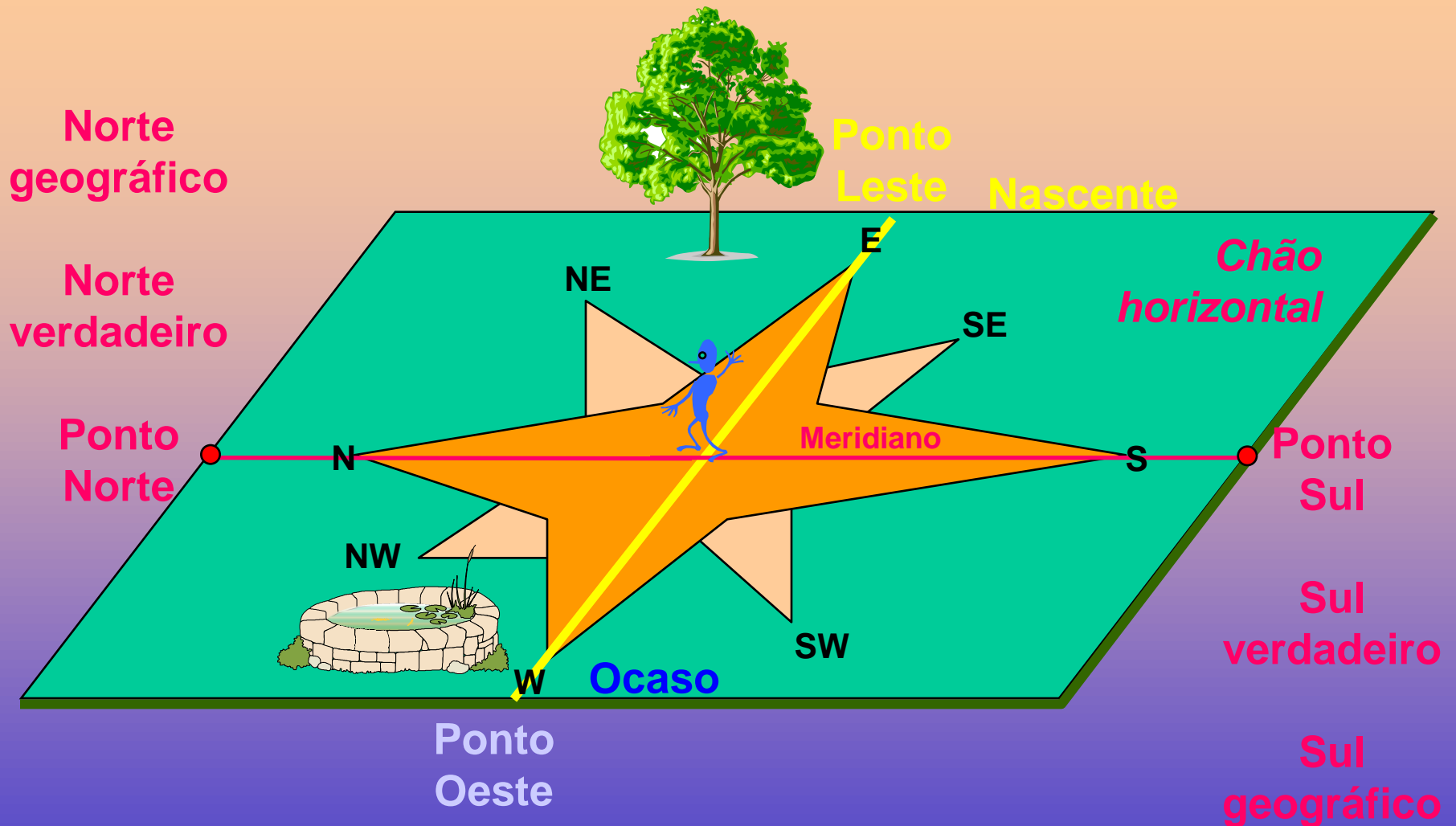


Rosa dos ventos

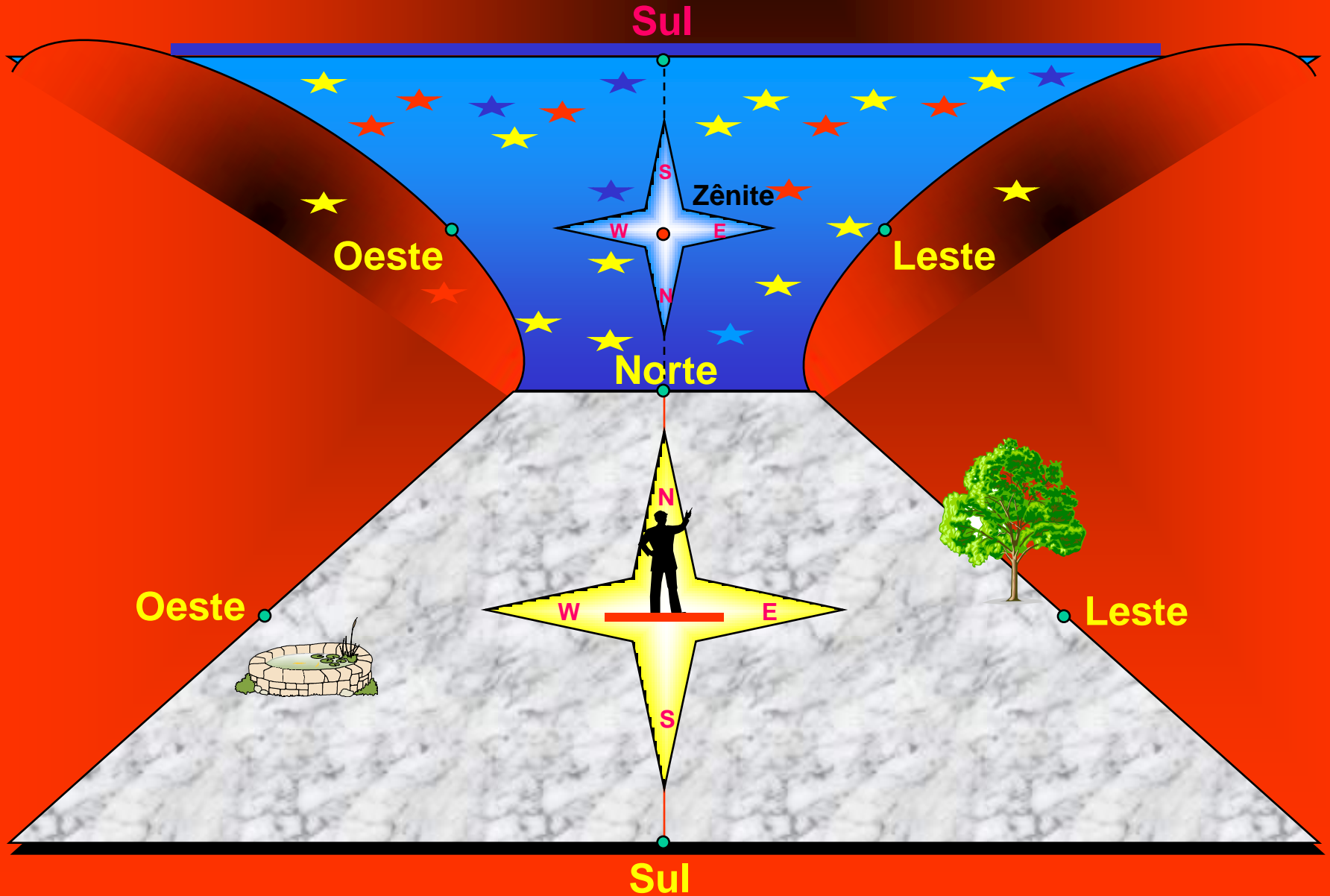


Desenhada no solo

Rosa dos ventos no chão

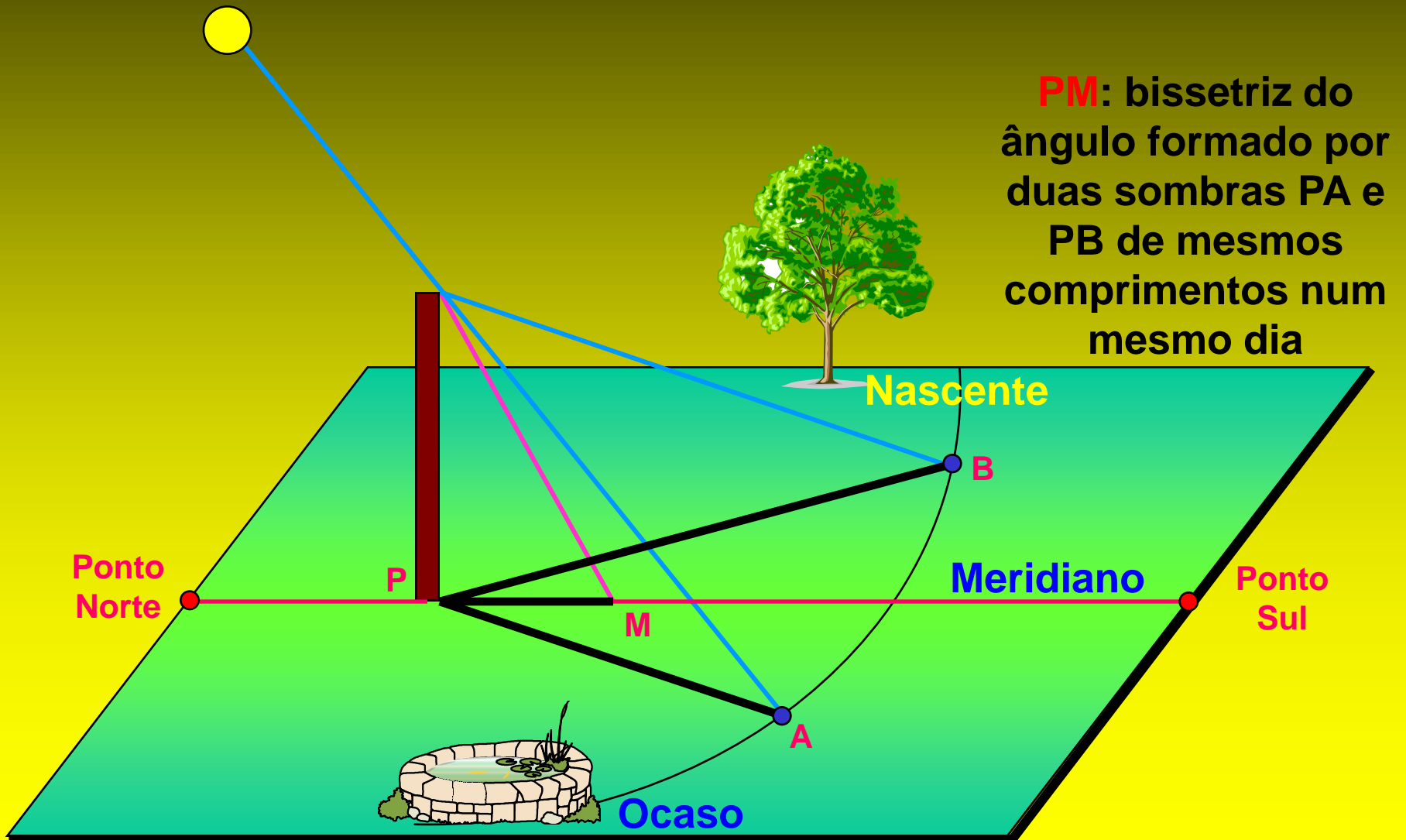


Pontos cardeais no céu



Determinação do Meridiano

(por bissetriz)



A Esfera Celeste

Movimento noturno aparente olhando ao Sul

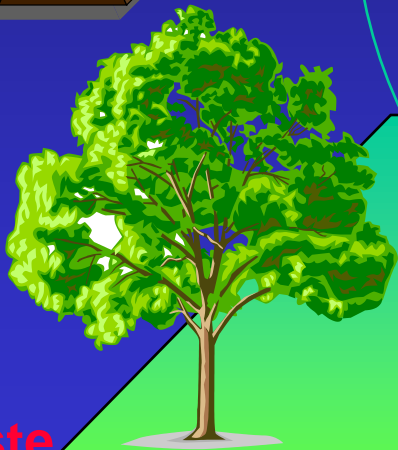
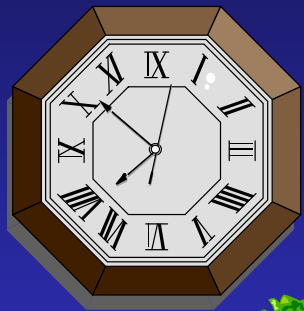
20 horas

24 horas

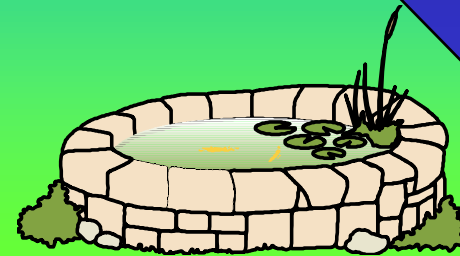
22 horas

Polo Sul

Sul



Leste



Oeste



Movimento noturno aparente olhando ao Norte desde o HS

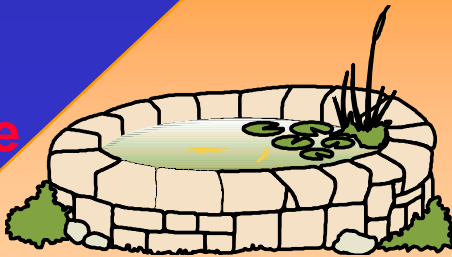


Movimento noturno aparente de uma estrela circumpolar norte



Norte

Oeste



Leste

Região polar norte



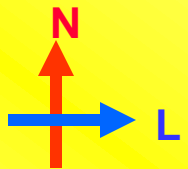
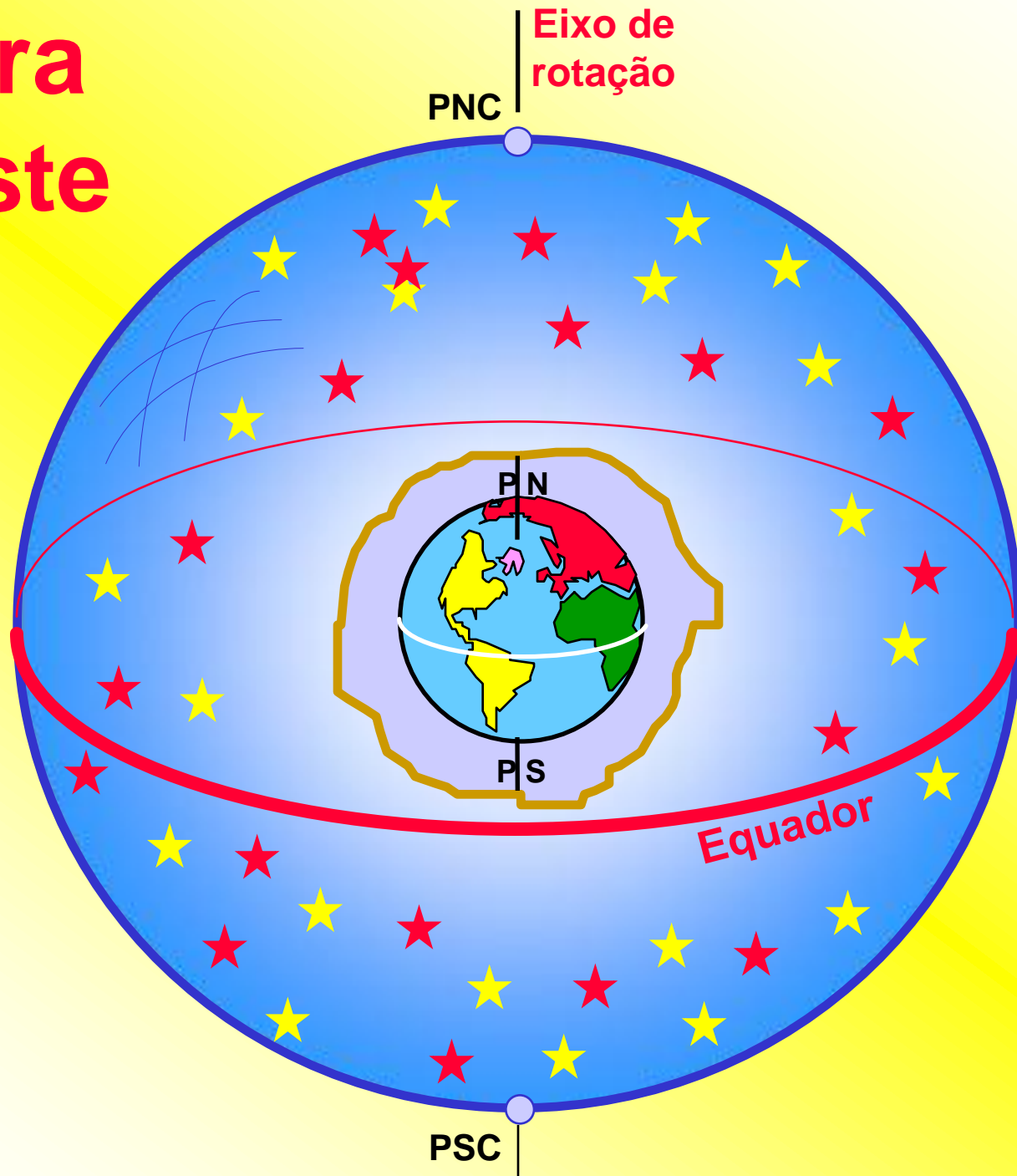
**Carros
movendo-se
à noite**

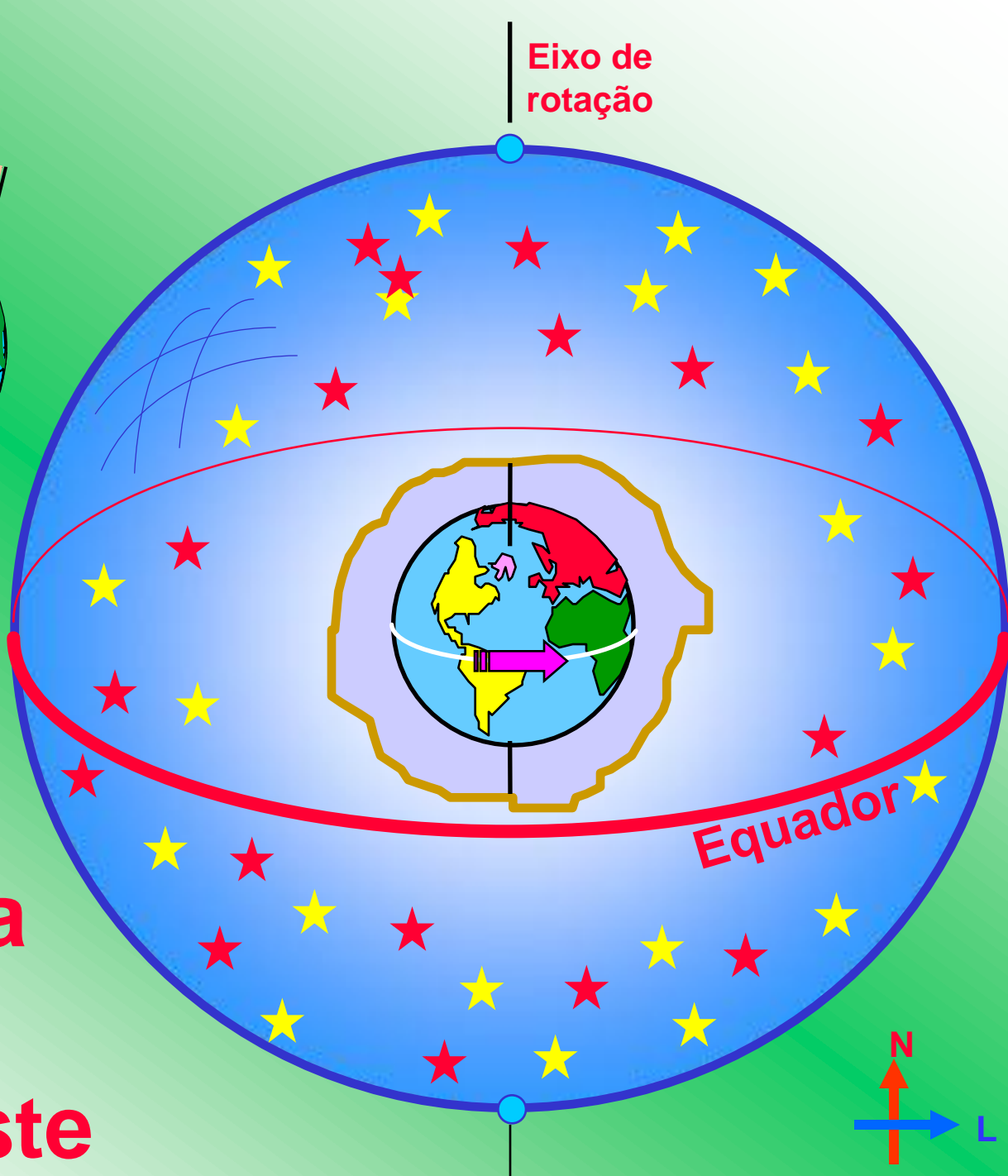


Carros movendo-se à noite



Esfera Celeste



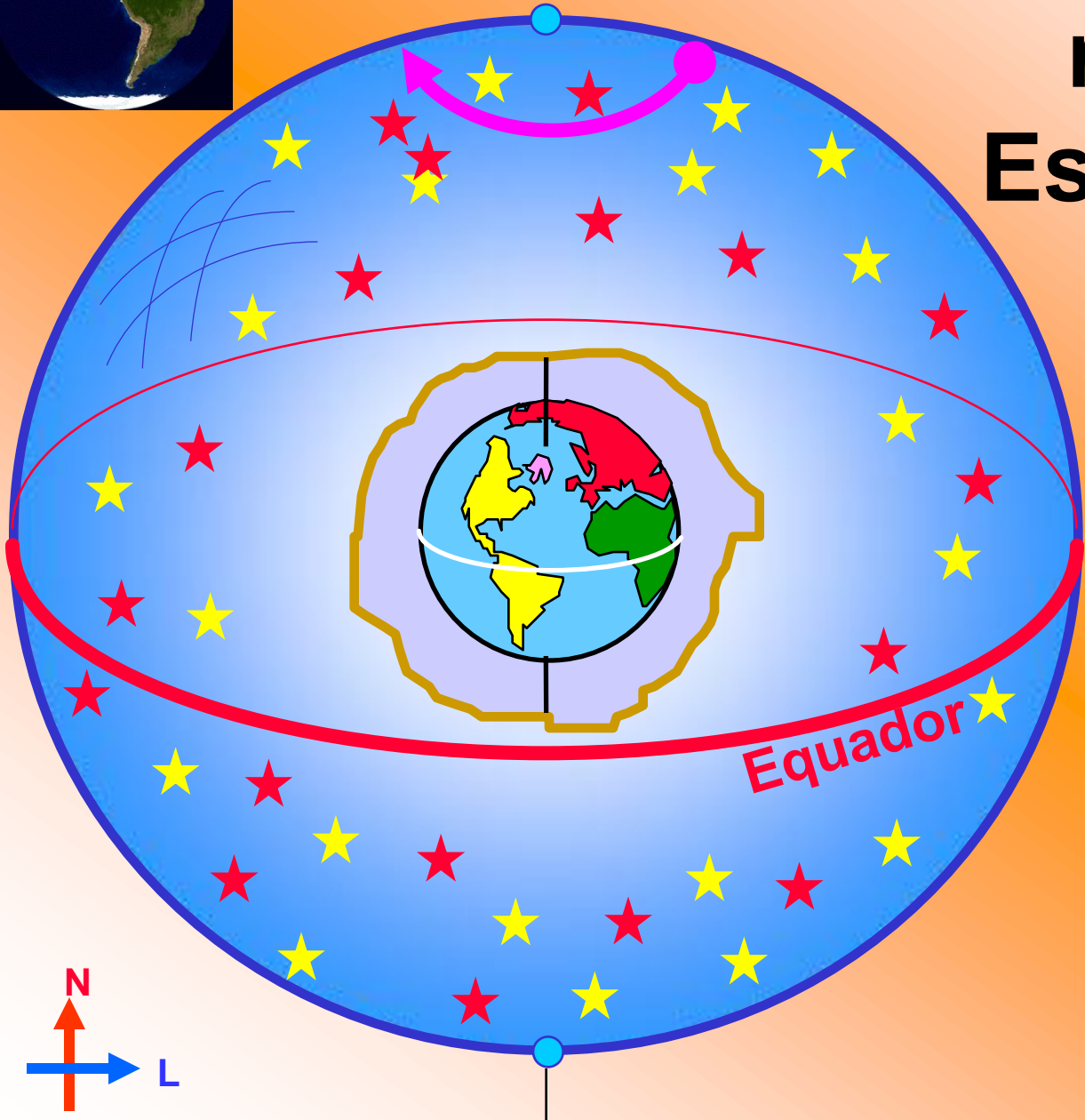


Rotação da Terra e a Esfera Celeste

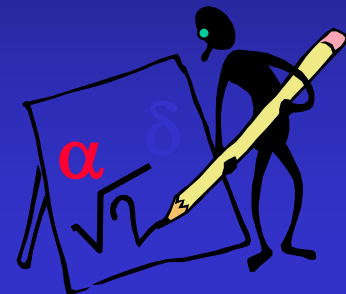
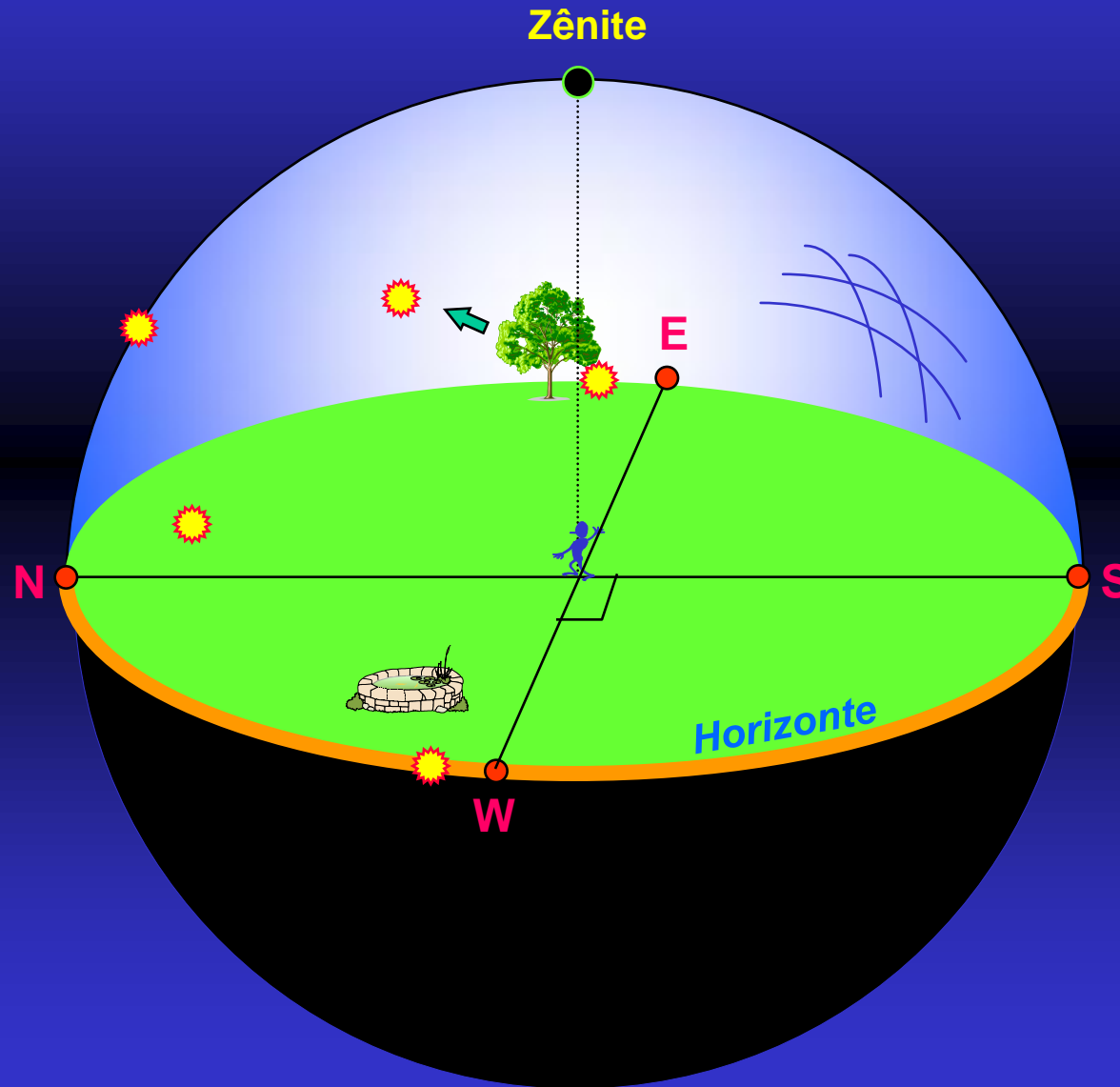
Terra “fixa” e rotação da Esfera Celeste



Eixo de rotação



Posicionar os Pontos Cardeais



**Determinação
dos pontos
cardeais
usando o
Cruzeiro do Sul**

Pontos cardeais aproximados a partir do Cruzeiro do Sul

Cabeça

Pé

Polo Sul

Do Pé da Cruz ao Polo Sul são aproximadamente 4,5 vezes o comprimento do Corpo da Cruz

Horizonte

Sul

Leste

Oeste



Film