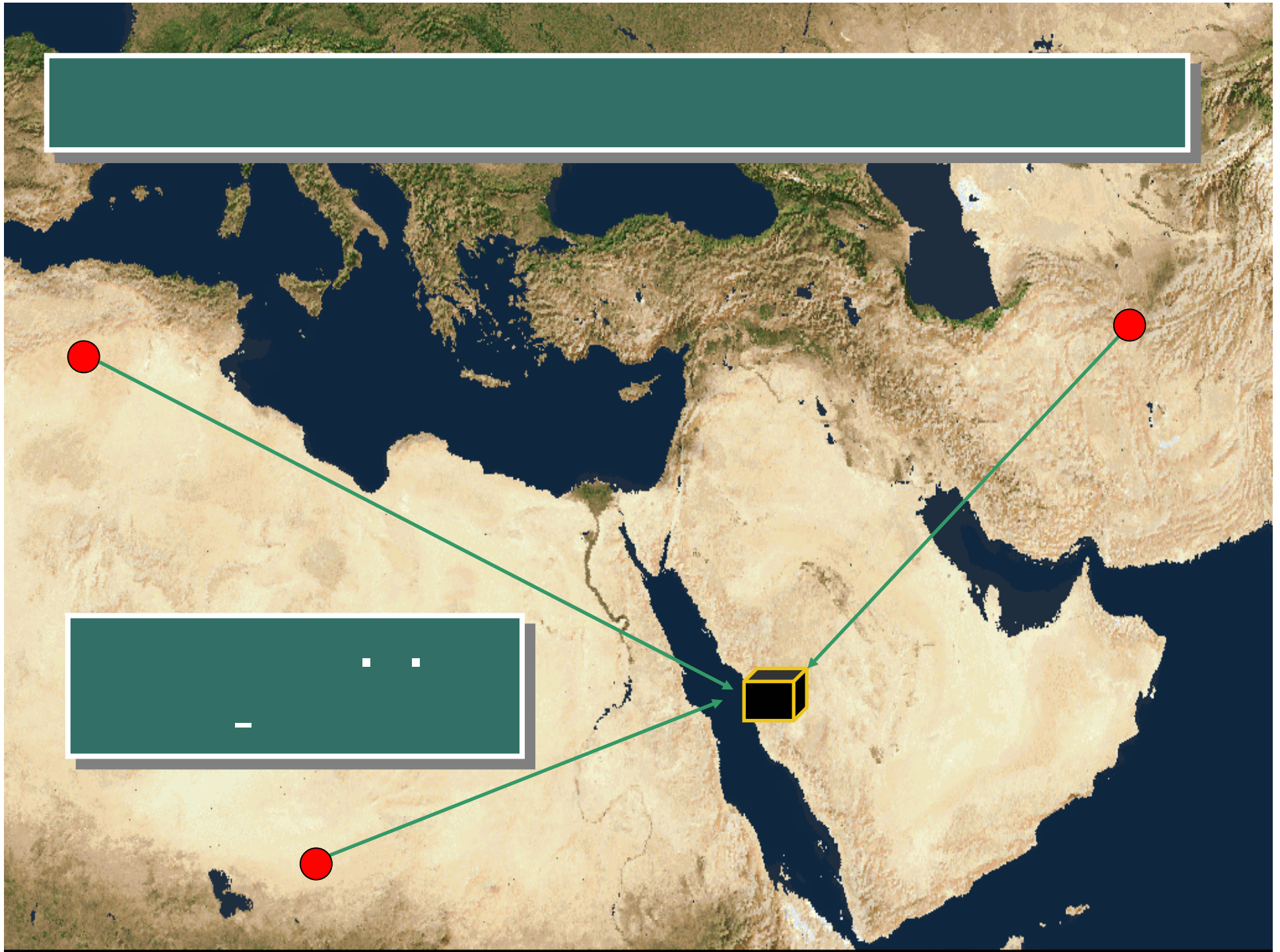
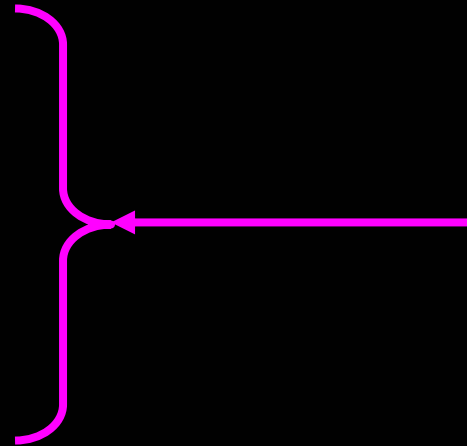
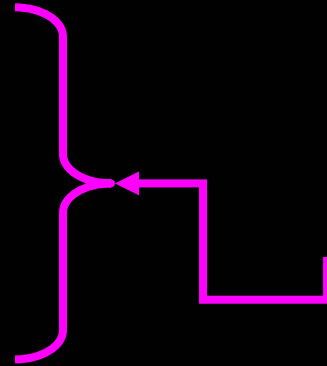
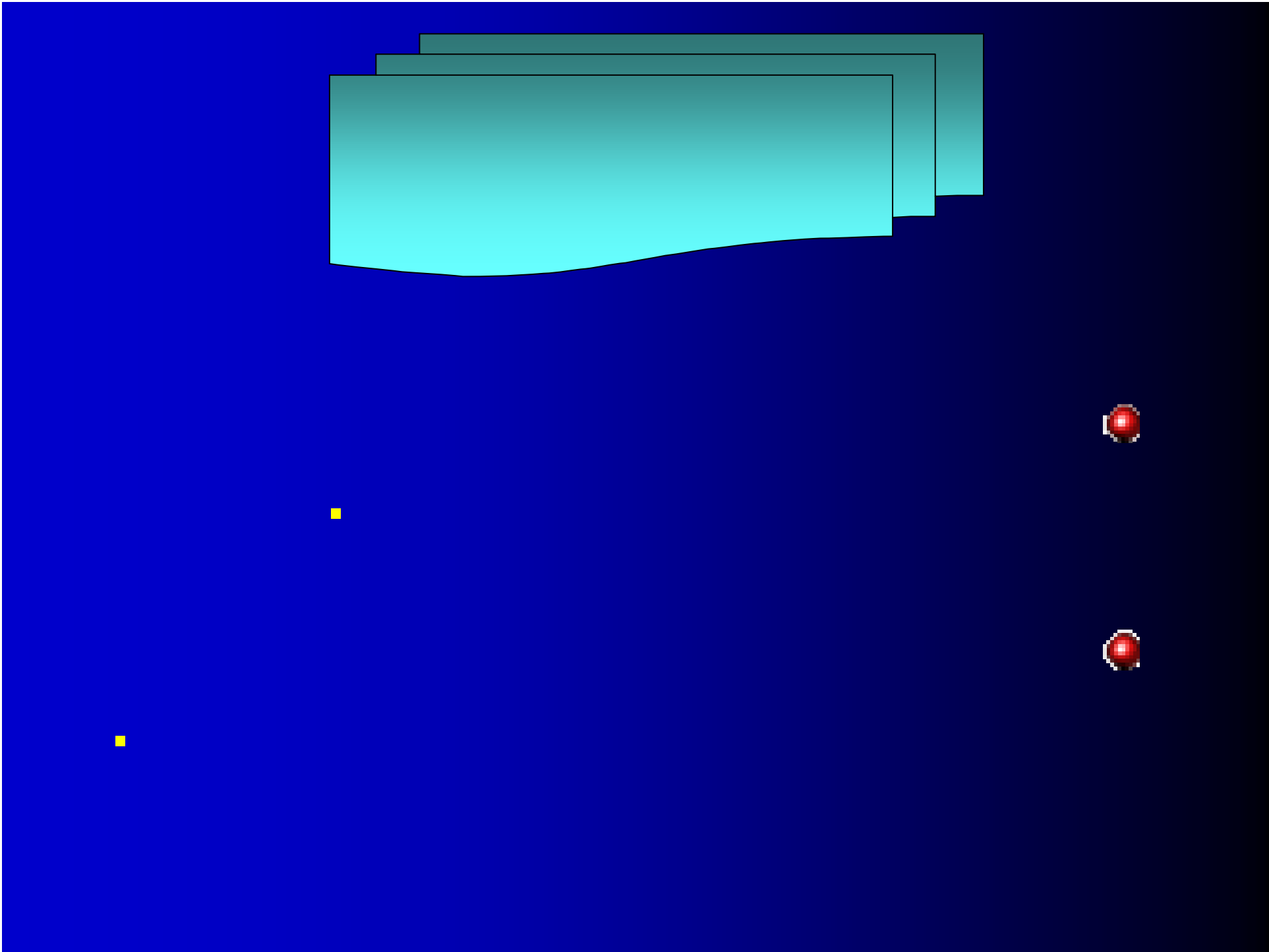




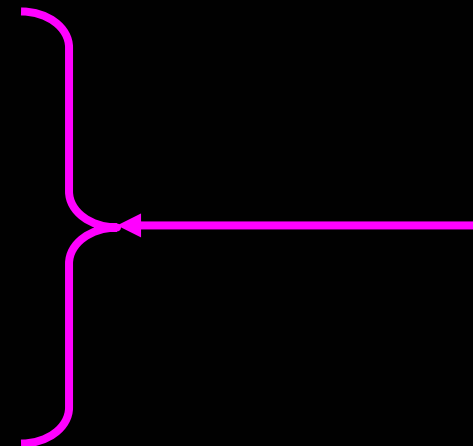
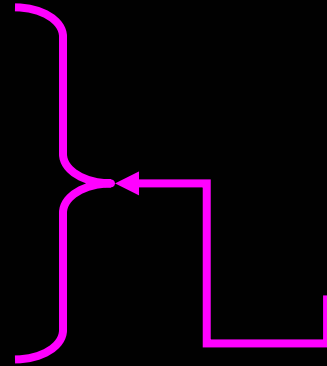
تمهيد

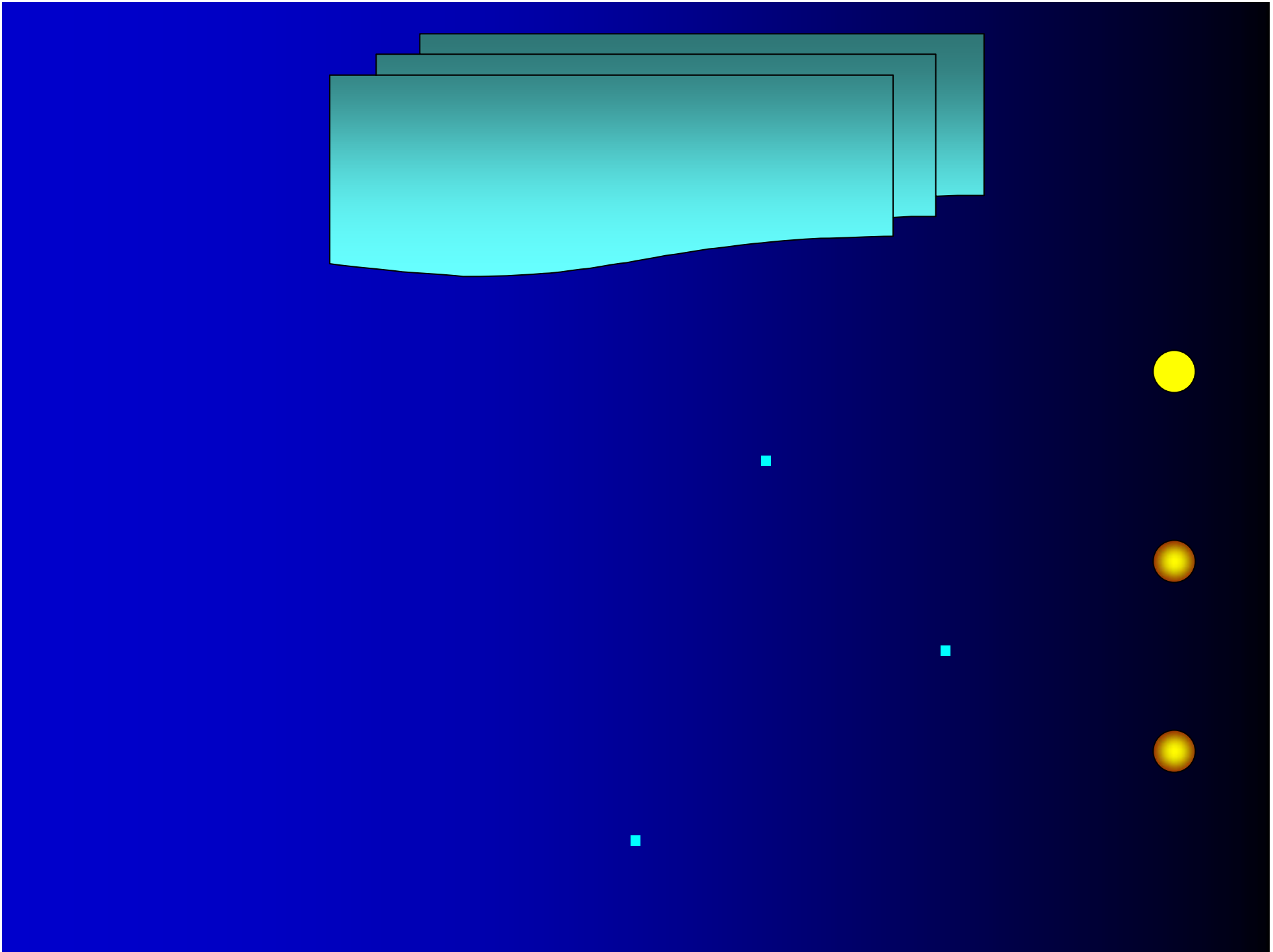
أهمية الموضوع

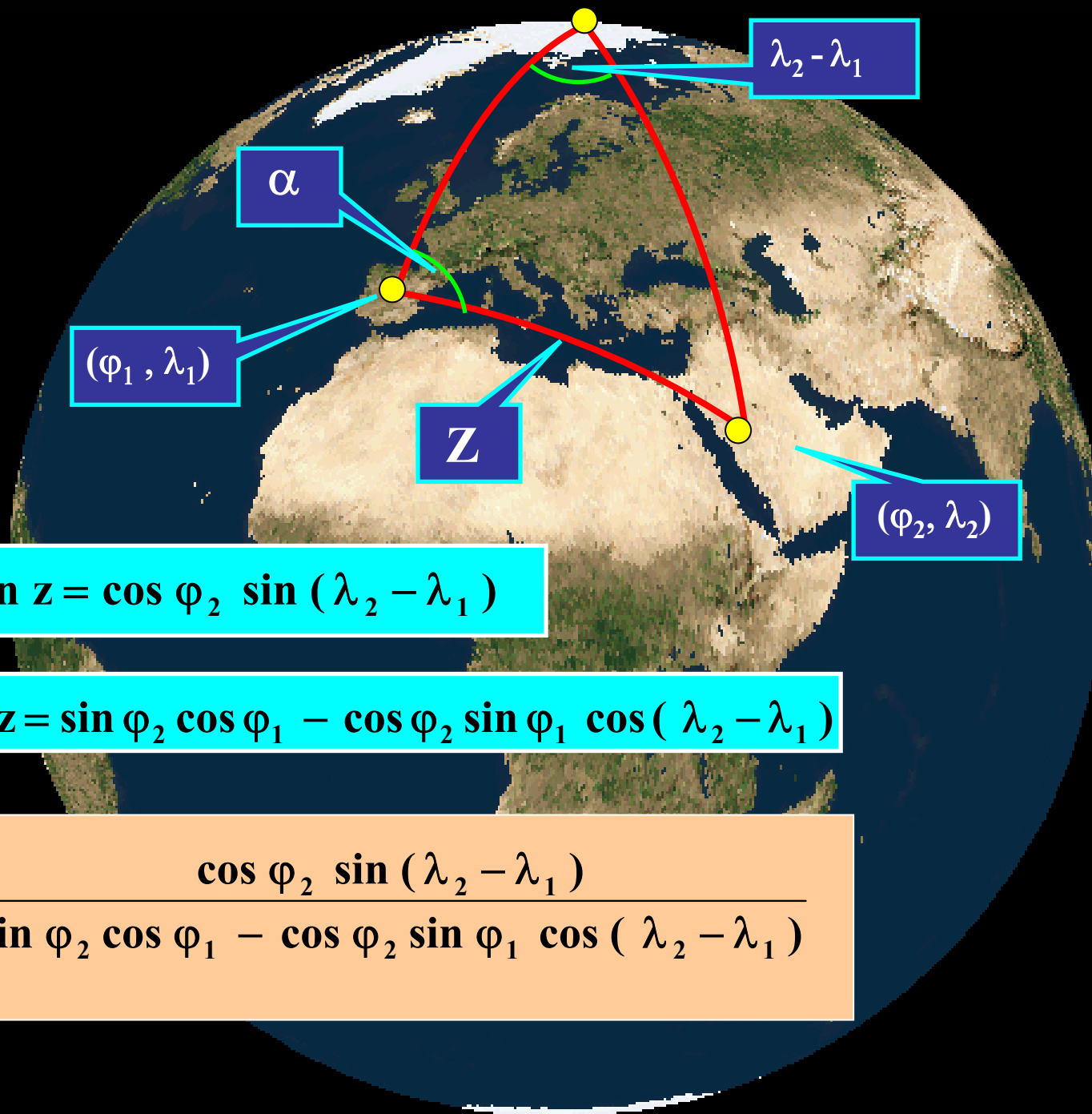




تمهيد أهمية الموضوع







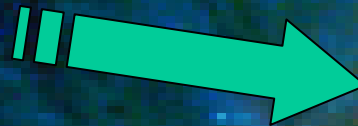
$$\sin \alpha \sin z = \cos \varphi_2 \sin (\lambda_2 - \lambda_1)$$

$$\cos \alpha \sin z = \sin \varphi_2 \cos \varphi_1 - \cos \varphi_2 \sin \varphi_1 \cos (\lambda_2 - \lambda_1)$$

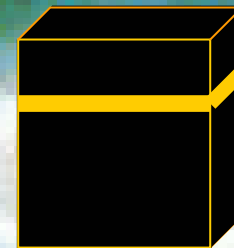
$$\operatorname{tg} \alpha = \frac{\cos \varphi_2 \sin (\lambda_2 - \lambda_1)}{\sin \varphi_2 \cos \varphi_1 - \cos \varphi_2 \sin \varphi_1 \cos (\lambda_2 - \lambda_1)}$$

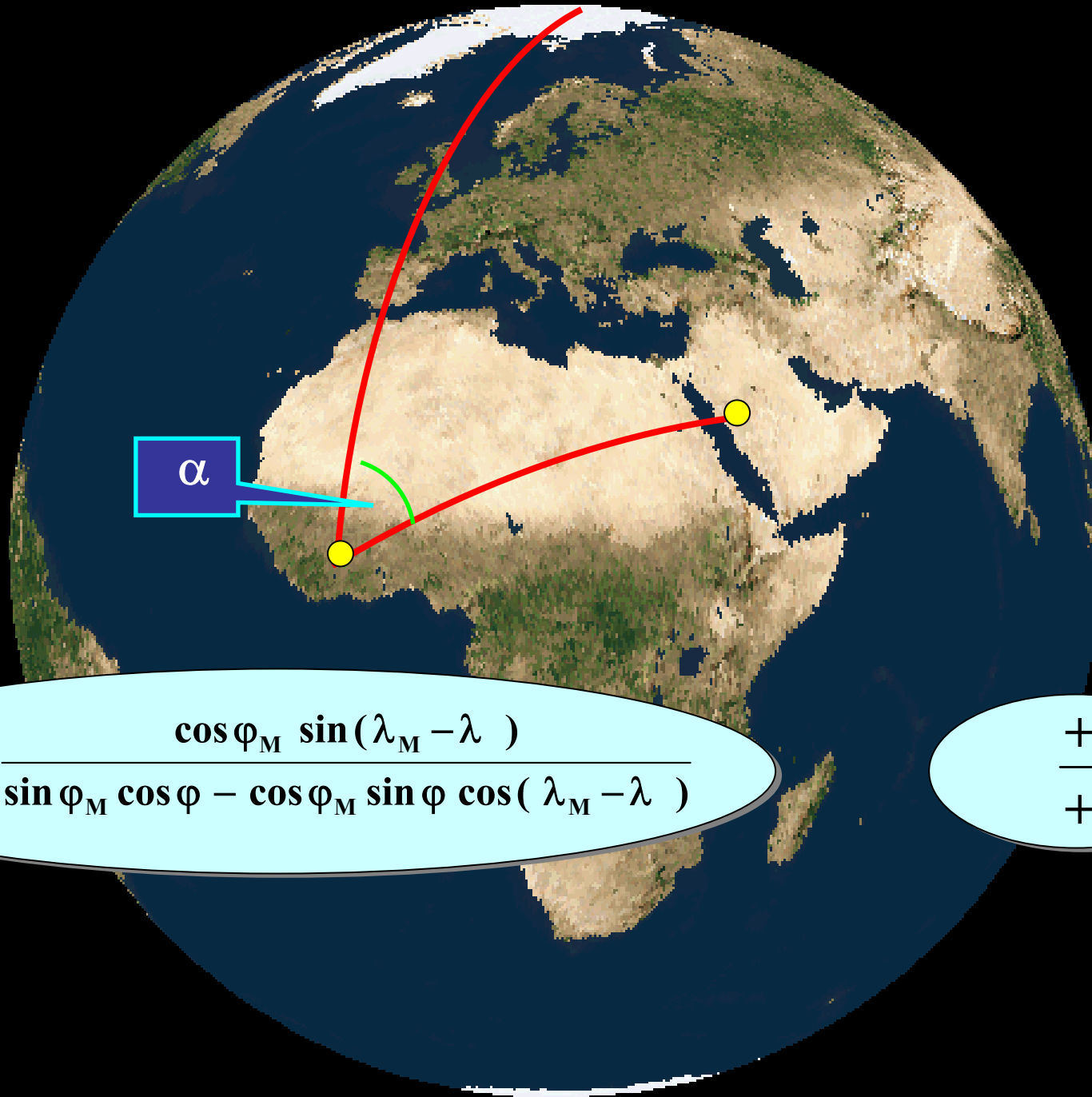
$$\operatorname{tg} \alpha = \frac{\cos \varphi_{\mathrm{M}} \sin (\lambda_{\mathrm{M}} - \lambda)}{\sin \varphi_{\mathrm{M}} \cos \varphi - \cos \varphi_{\mathrm{M}} \sin \varphi \cos (\lambda_{\mathrm{M}} - \lambda)}$$

φ, λ
Location



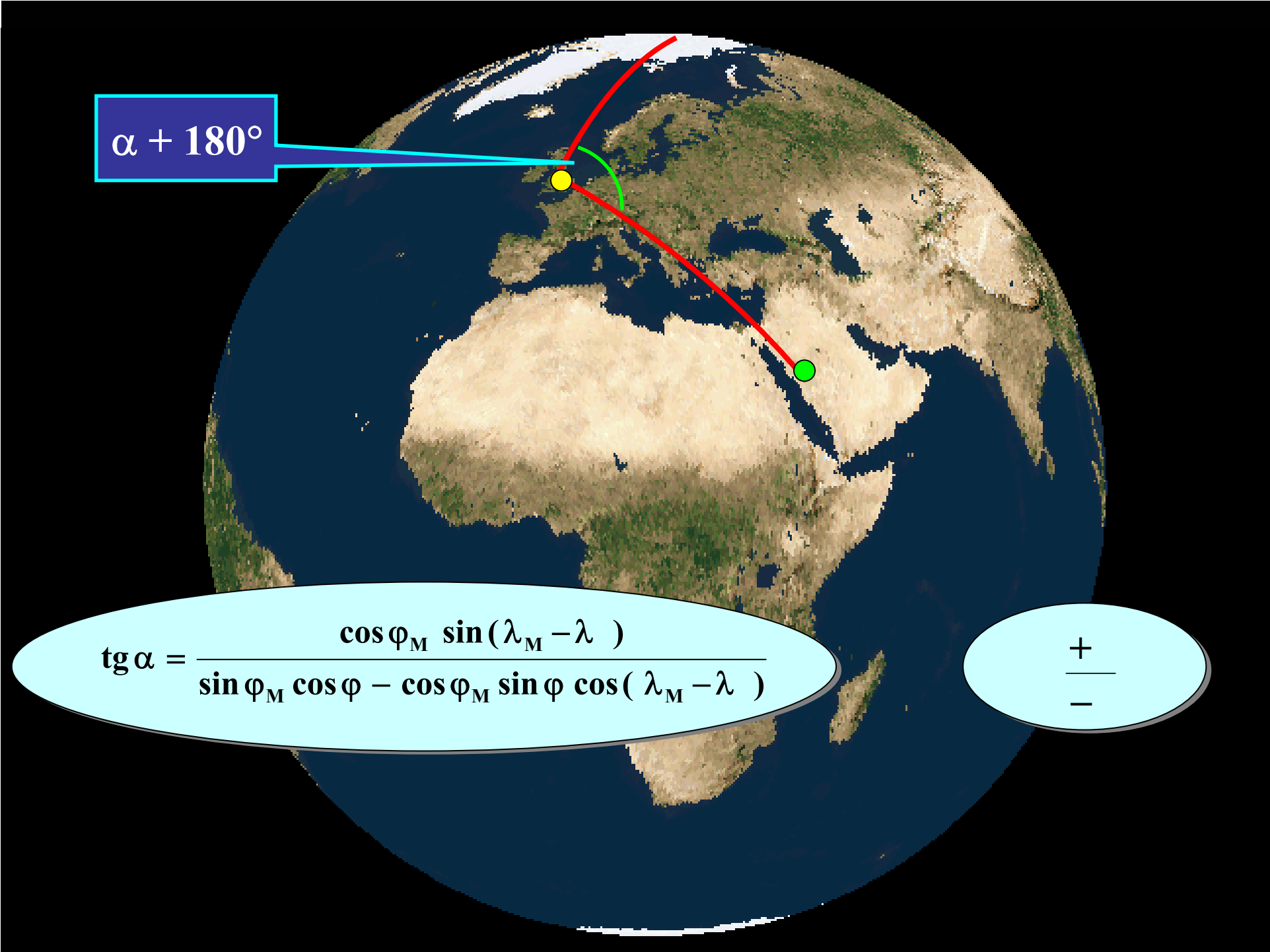
$\varphi_{\mathrm{M}}, \lambda_{\mathrm{M}}$





$$\operatorname{tg} \alpha = \frac{\cos \varphi_M \sin (\lambda_M - \lambda)}{\sin \varphi_M \cos \varphi - \cos \varphi_M \sin \varphi \cos (\lambda_M - \lambda)}$$

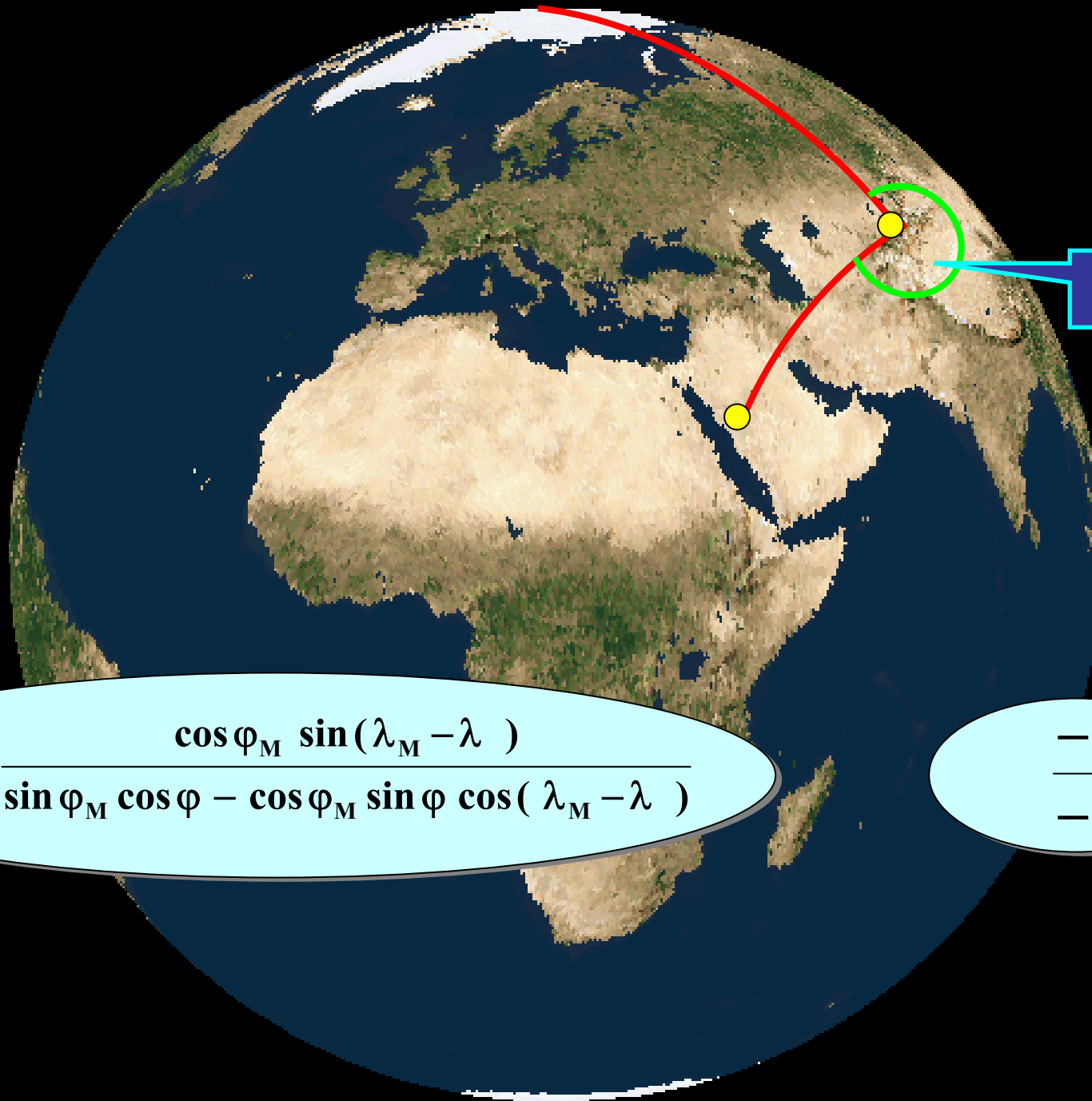
$$\frac{+}{+}$$



$\alpha + 180^\circ$

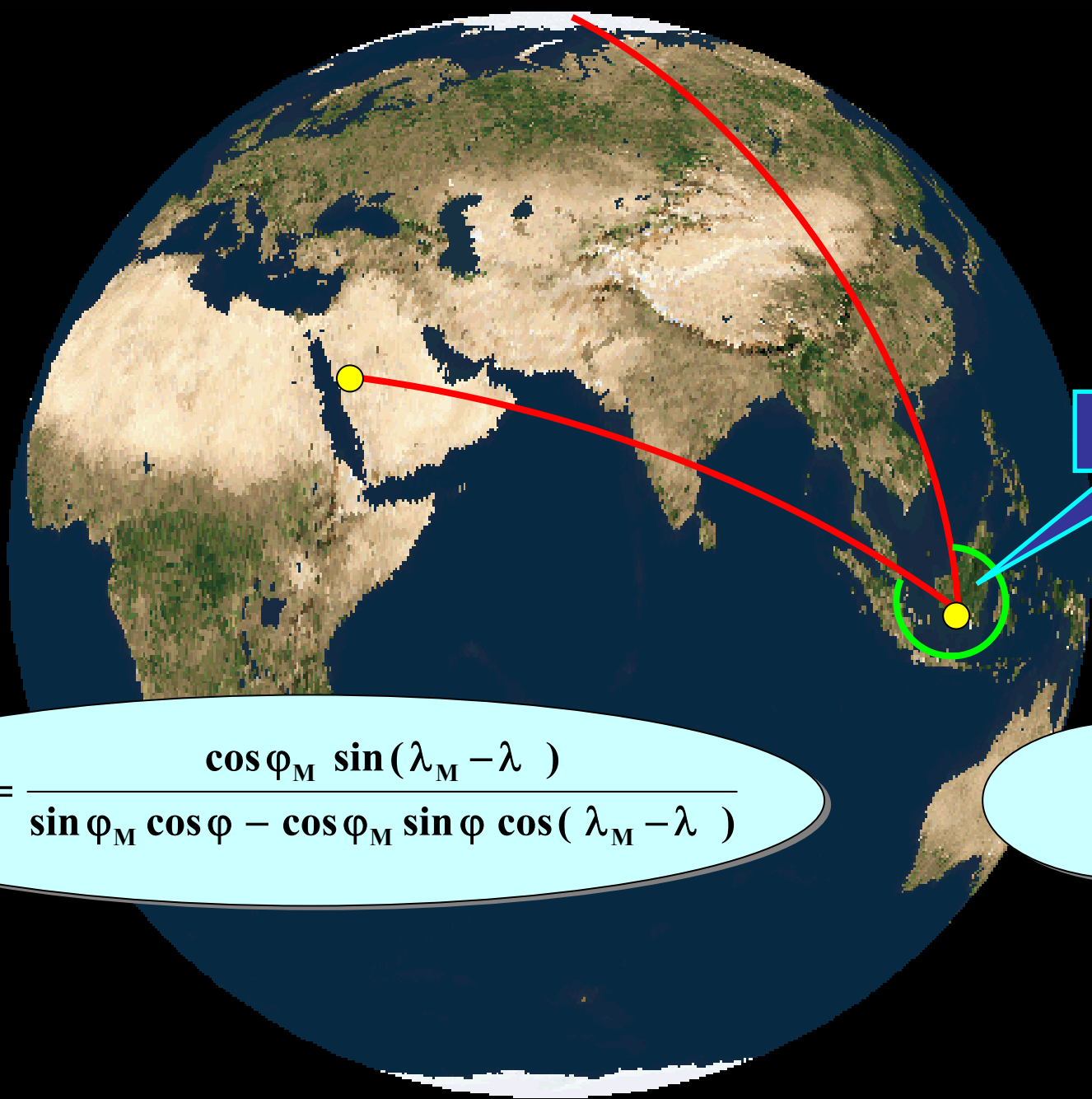
$$\operatorname{tg} \alpha = \frac{\cos \varphi_M \sin (\lambda_M - \lambda)}{\sin \varphi_M \cos \varphi - \cos \varphi_M \sin \varphi \cos (\lambda_M - \lambda)}$$

$\frac{+}{-}$



$$\operatorname{tg} \alpha = \frac{\cos \varphi_M \sin (\lambda_M - \lambda)}{\sin \varphi_M \cos \varphi - \cos \varphi_M \sin \varphi \cos (\lambda_M - \lambda)}$$

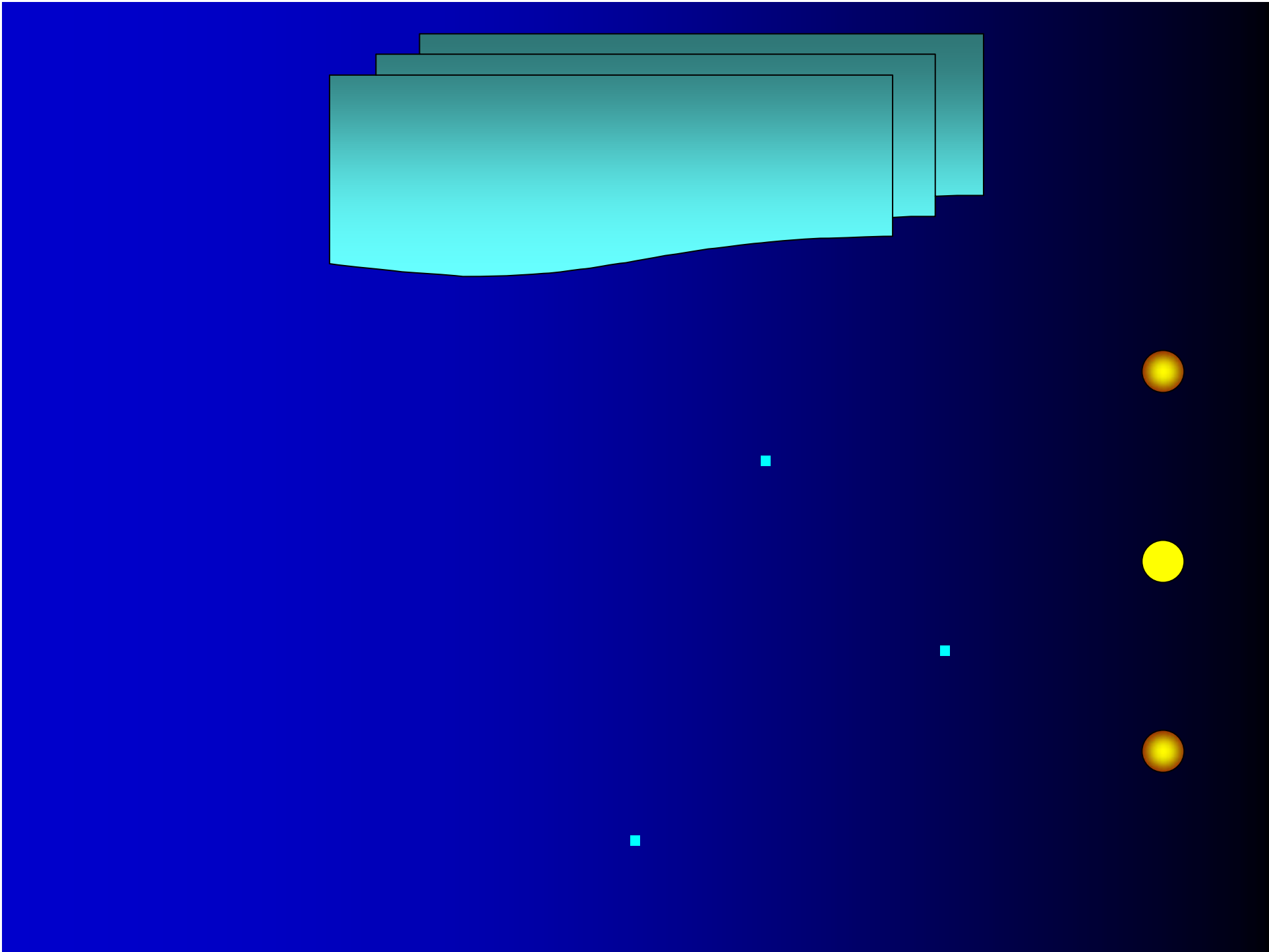
—
—
—



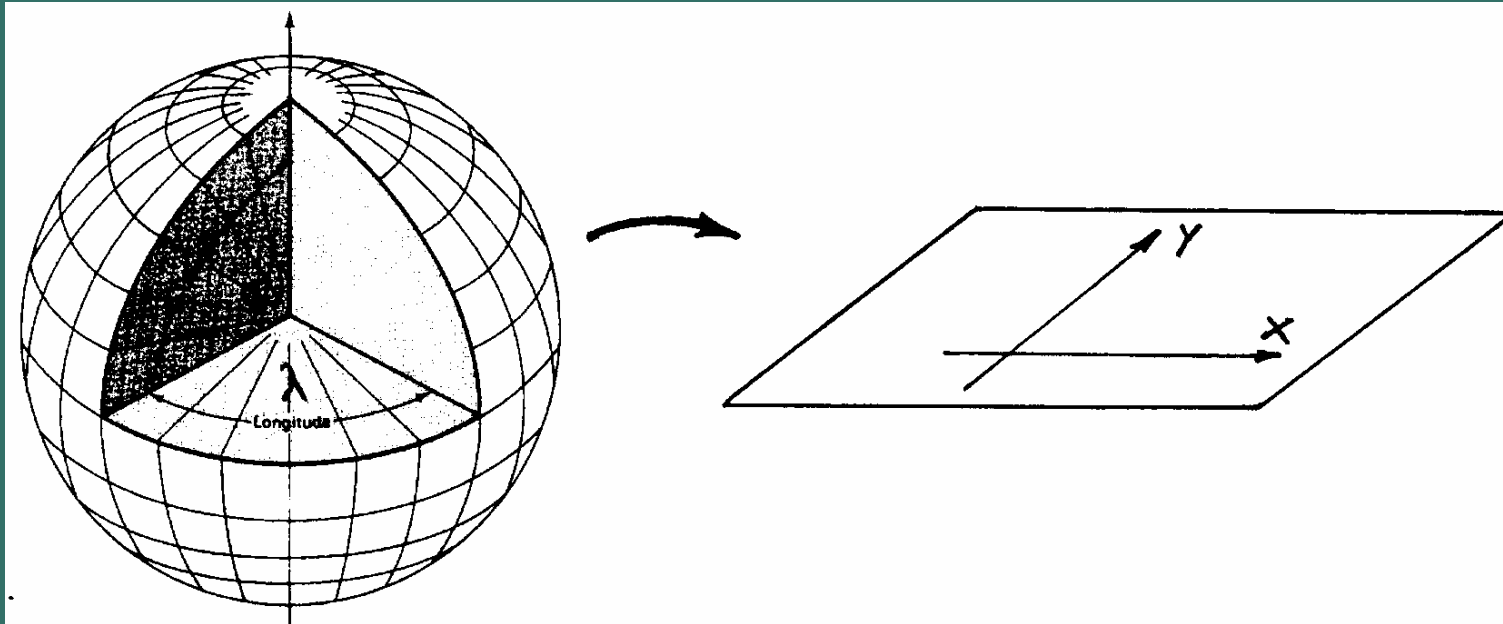
$$\operatorname{tg} \alpha = \frac{\cos \varphi_M \sin (\lambda_M - \lambda)}{\sin \varphi_M \cos \varphi - \cos \varphi_M \sin \varphi \cos (\lambda_M - \lambda)}$$

$360^\circ - \alpha$

—
—
+

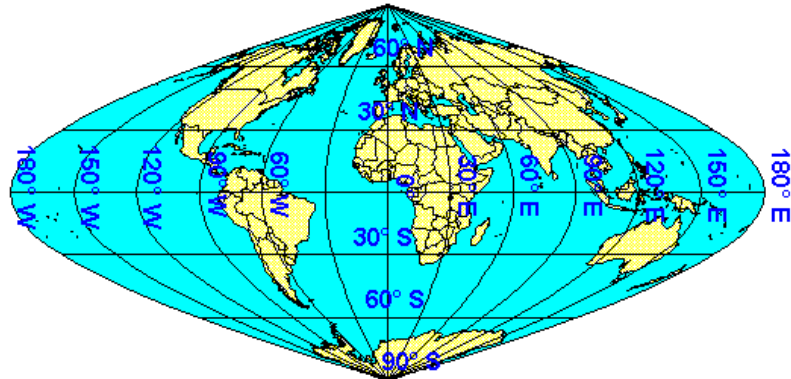


■
■

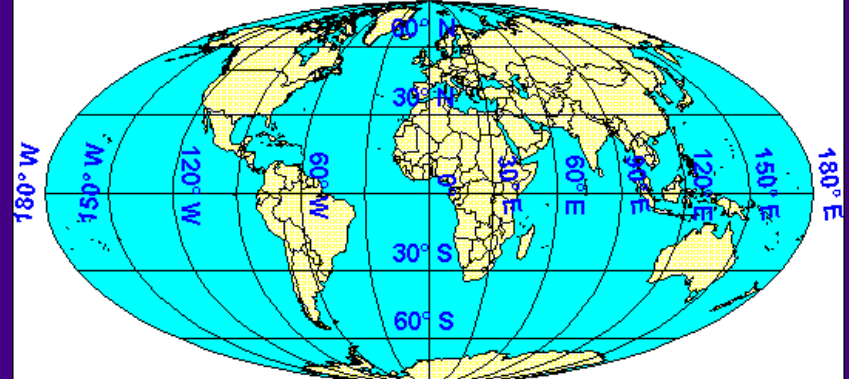




Peter H. Dana 9/20/94

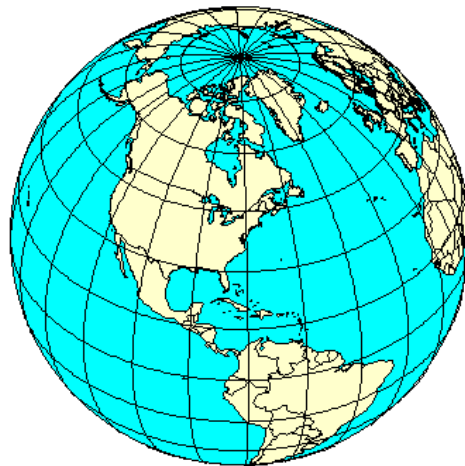


Sinusoidal Equal-Area



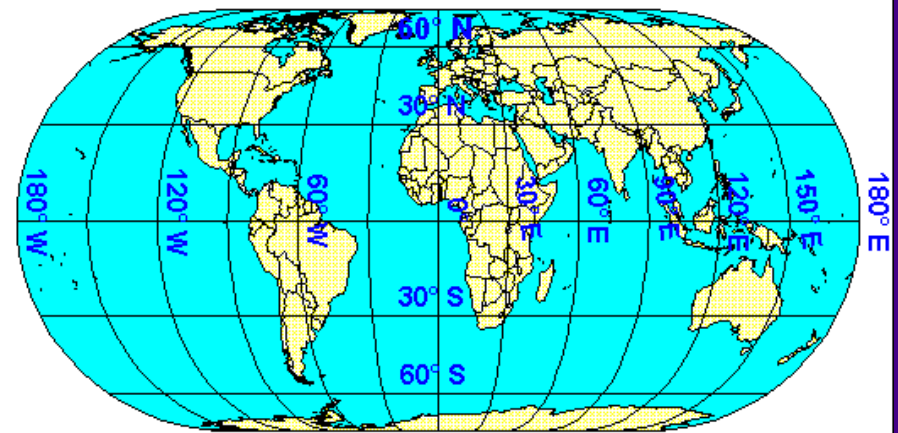
Mollweide Equal-Area

Peter H. Dana 11/08/98



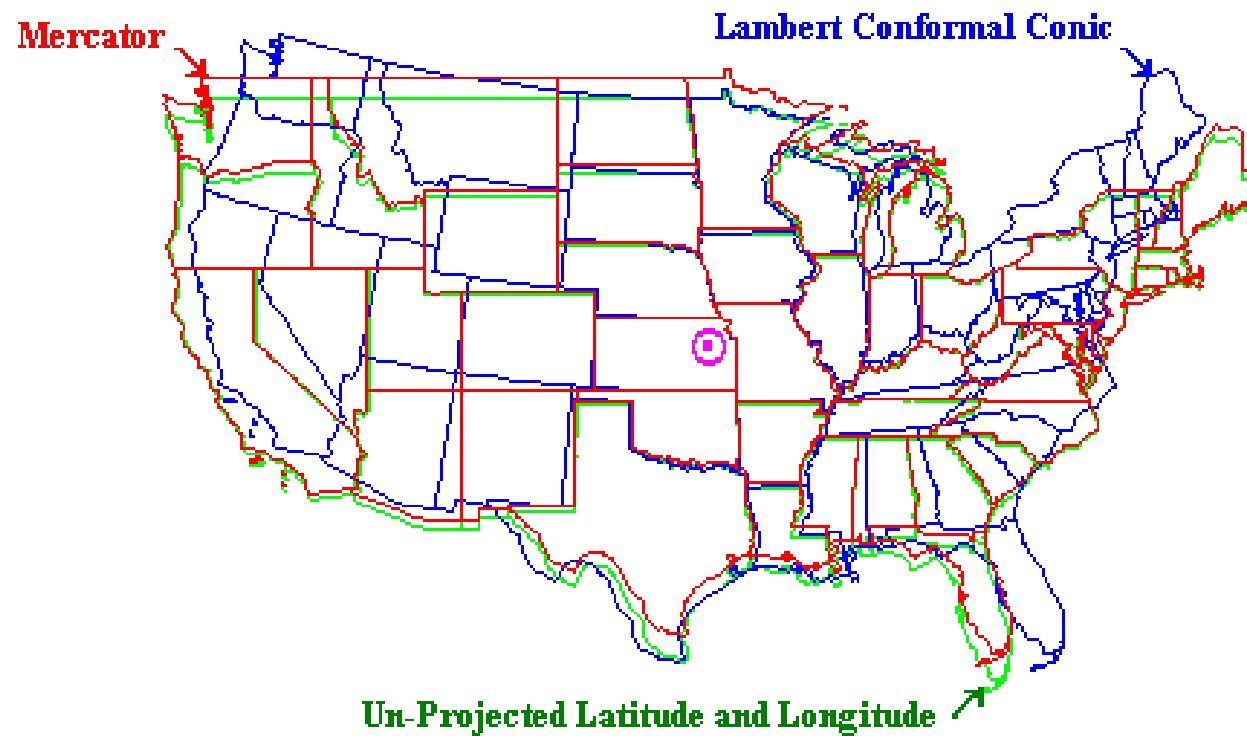
Orthographic Projection
Centered on Washington, DC

Peter H. Dana 9/20/94



Eckert IV Equal Area

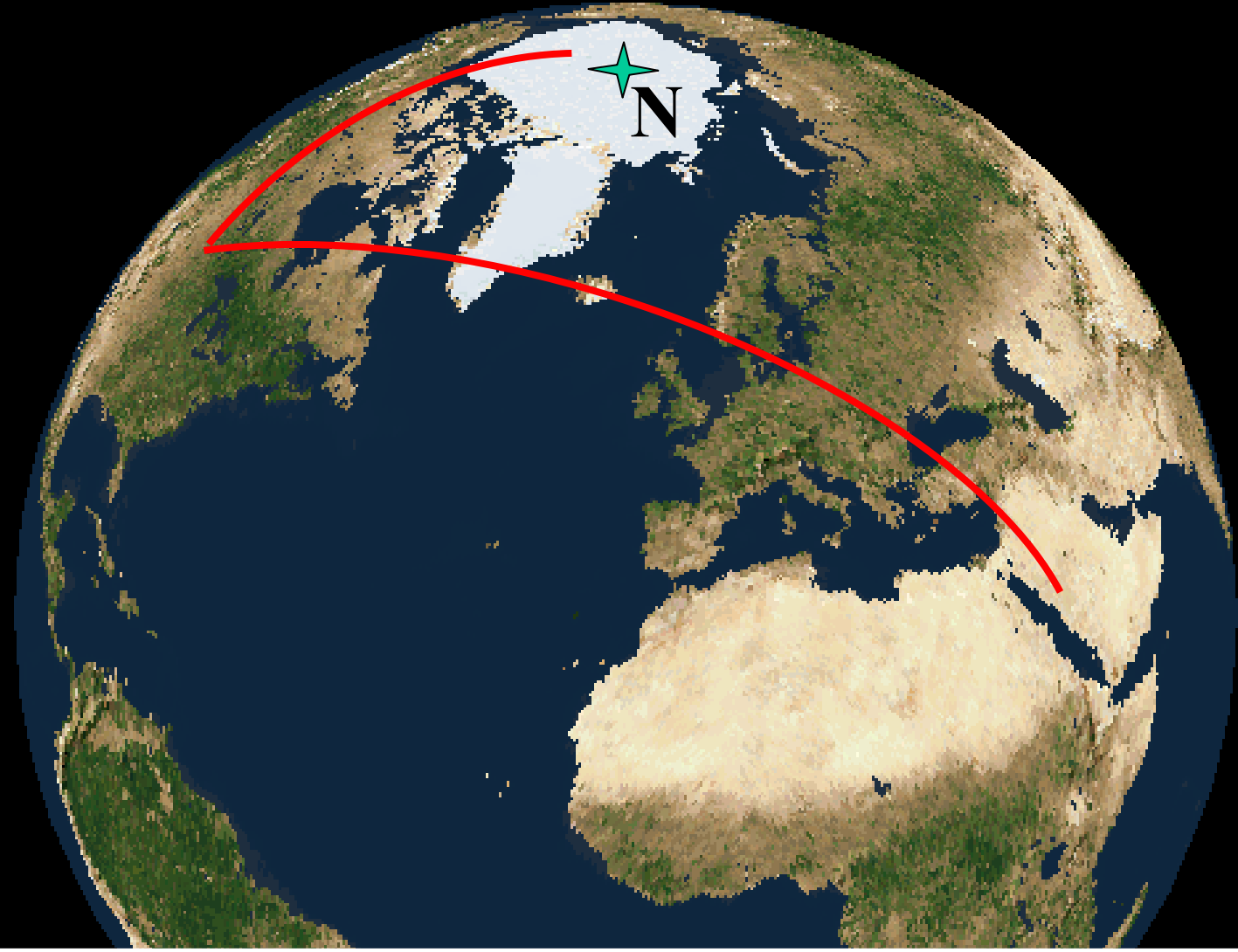
Three Map Projections Centered at 39 N and 96 W



Peter H. Dana 6/23/97



لا يصح استخدام الخرائط لتعيين الاتجاه نحو مكة
لأن الخرائط مشوهة ولا توجد خارطة تطابق الواقع بالمطلق

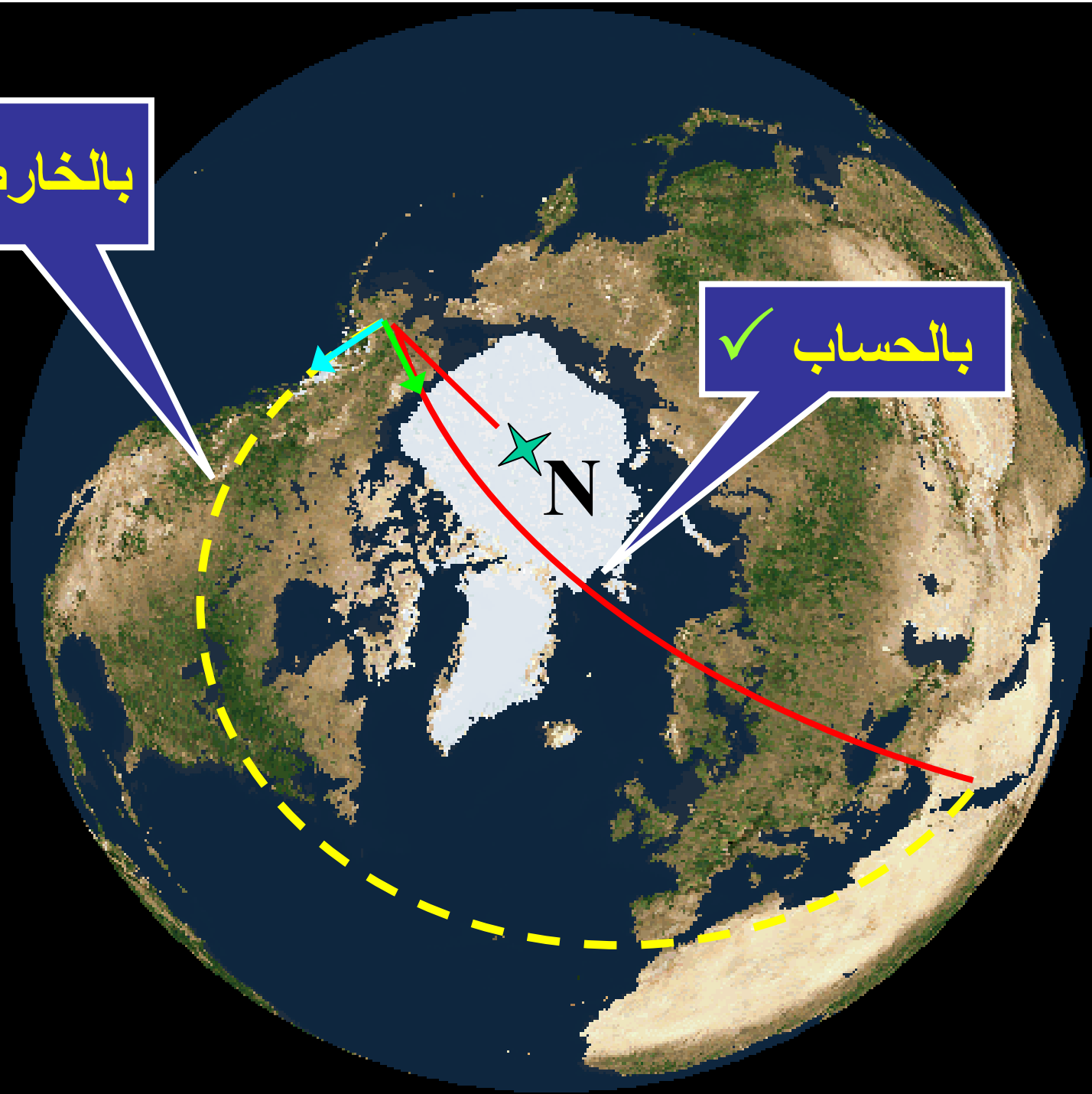


لا يمكن الحكم على السميت من خلال الموقع بالنسبة لمكة

بالخارطة x

✓ بالحساب

N

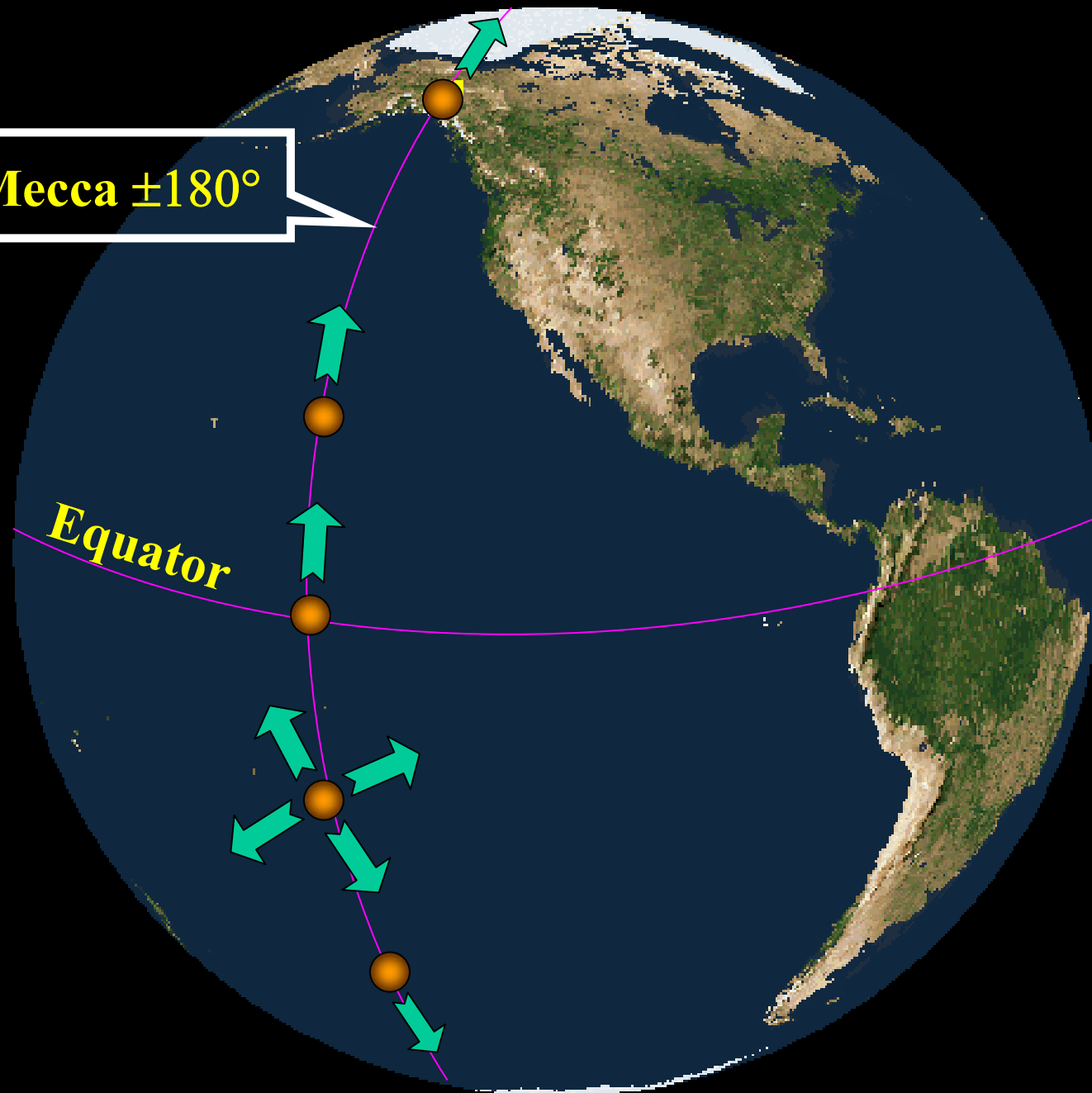




Nadir of
Mecca

Mecca $\pm 180^\circ$

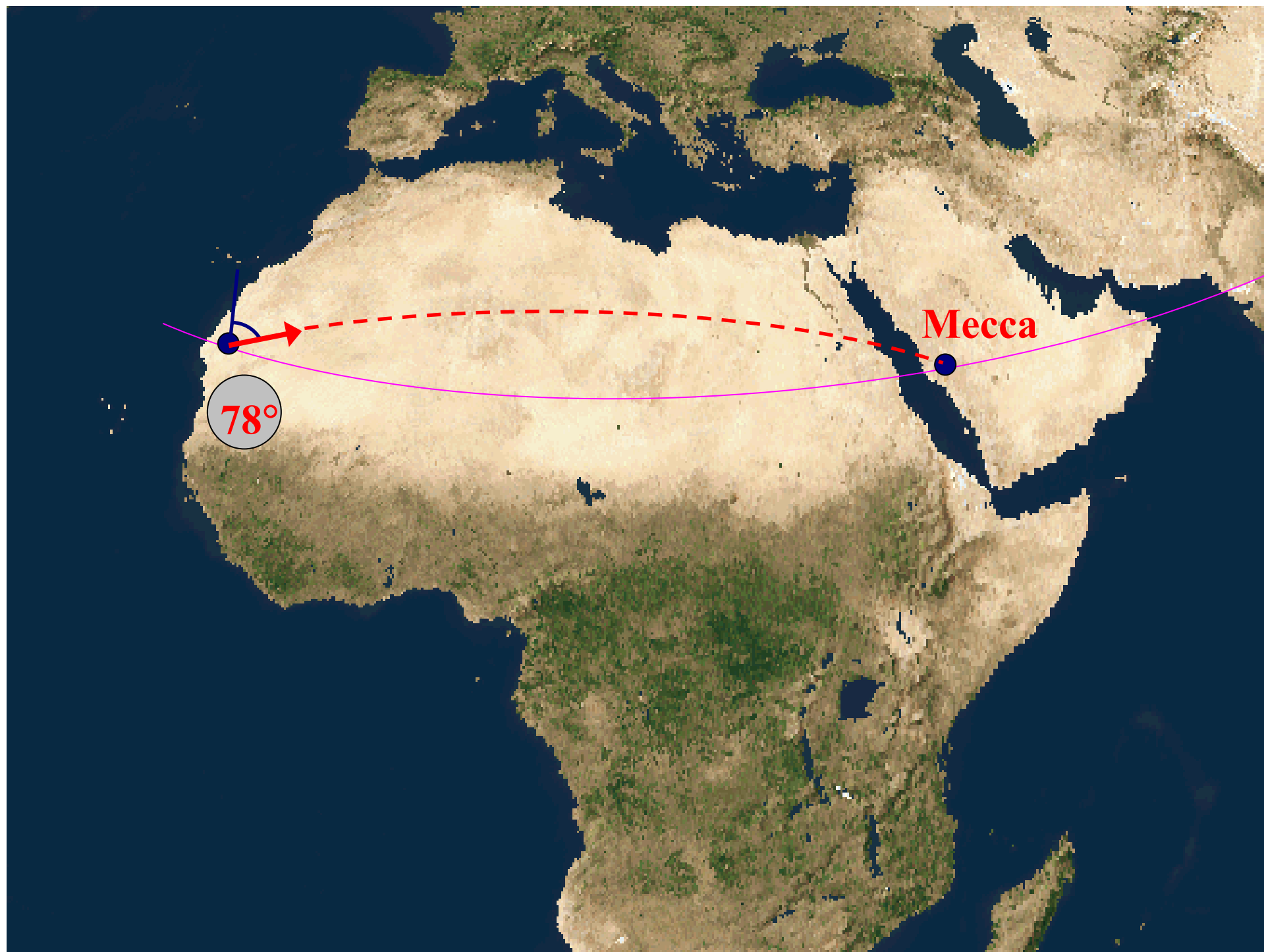
Equator

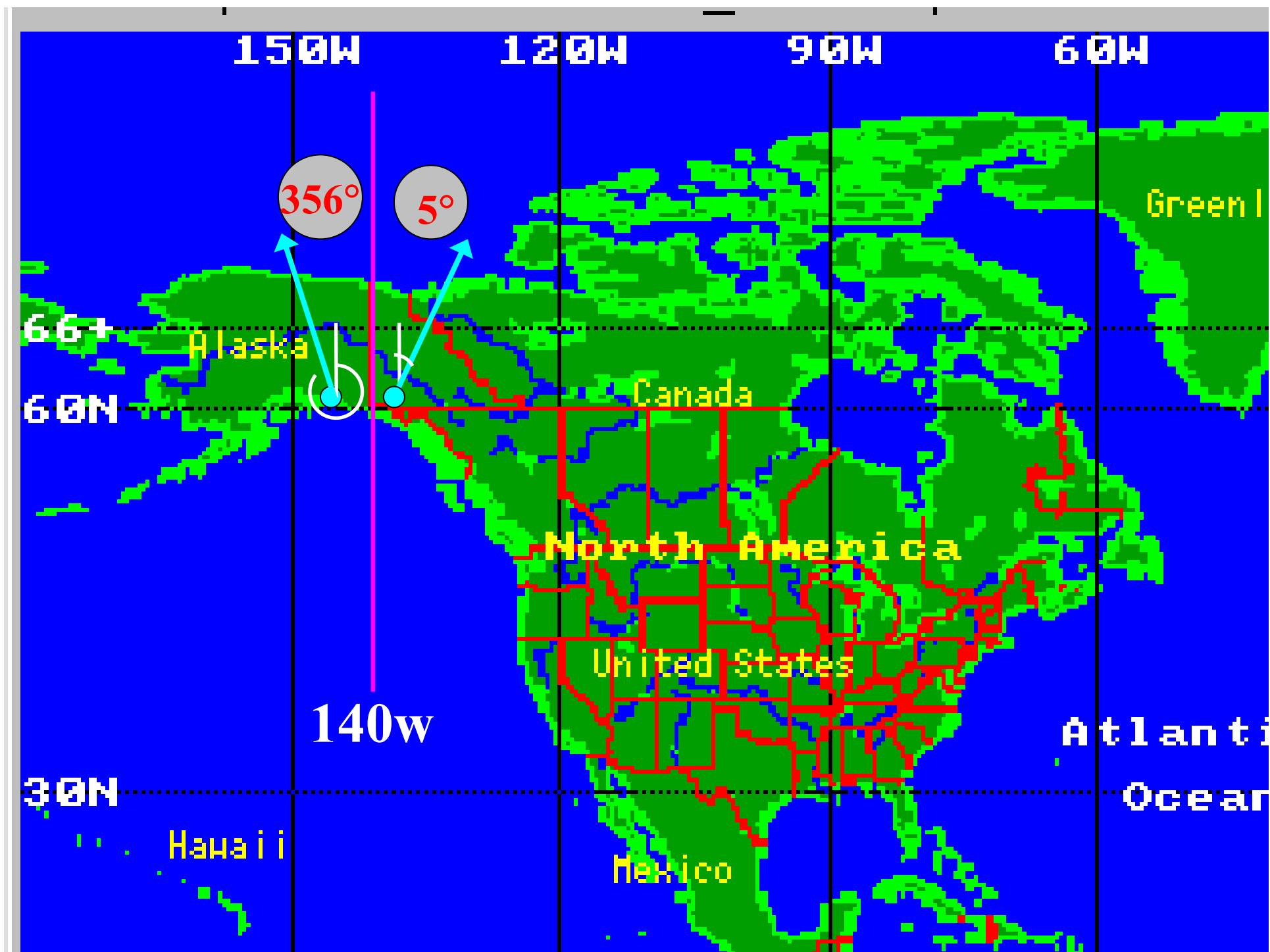


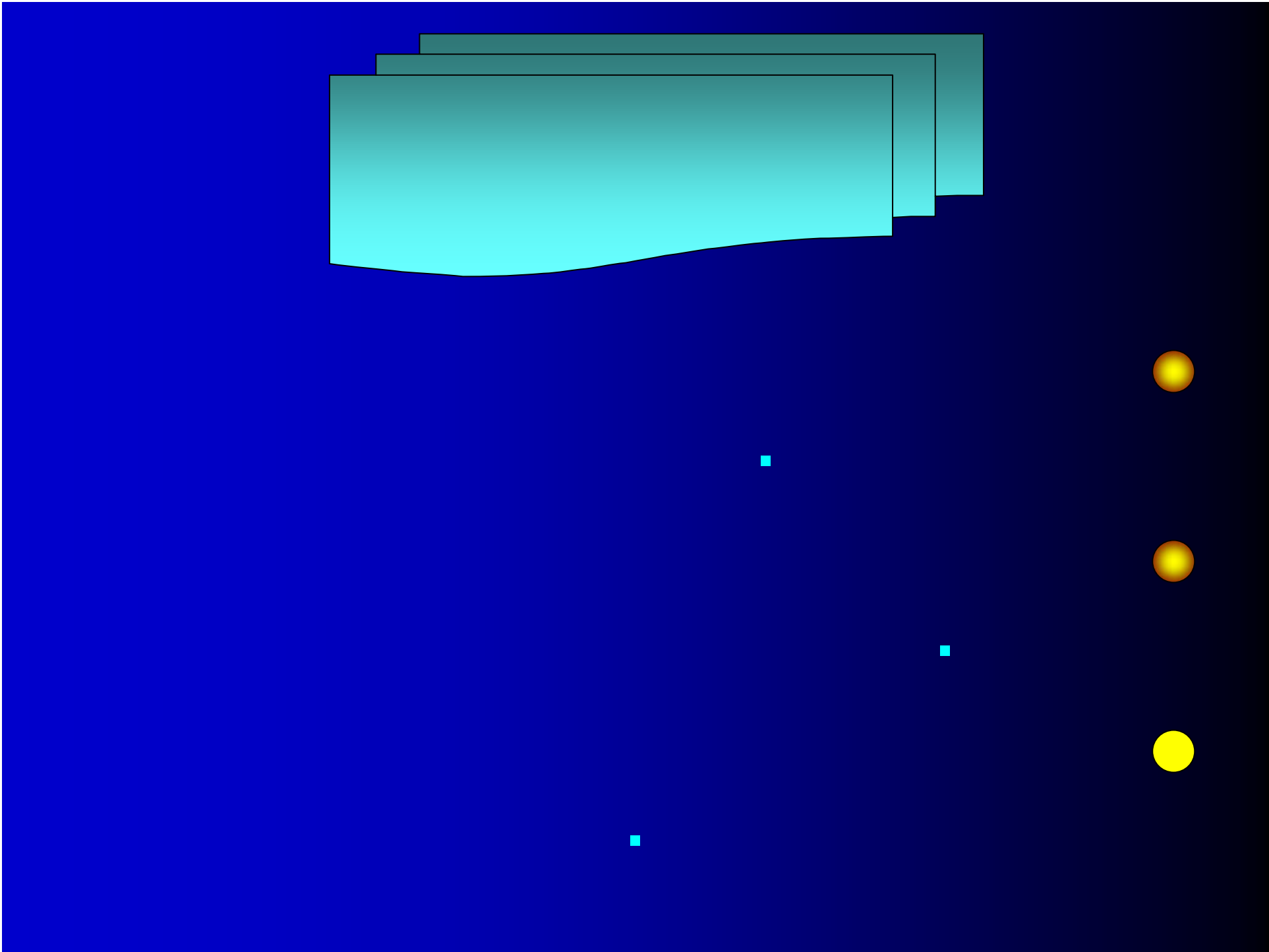


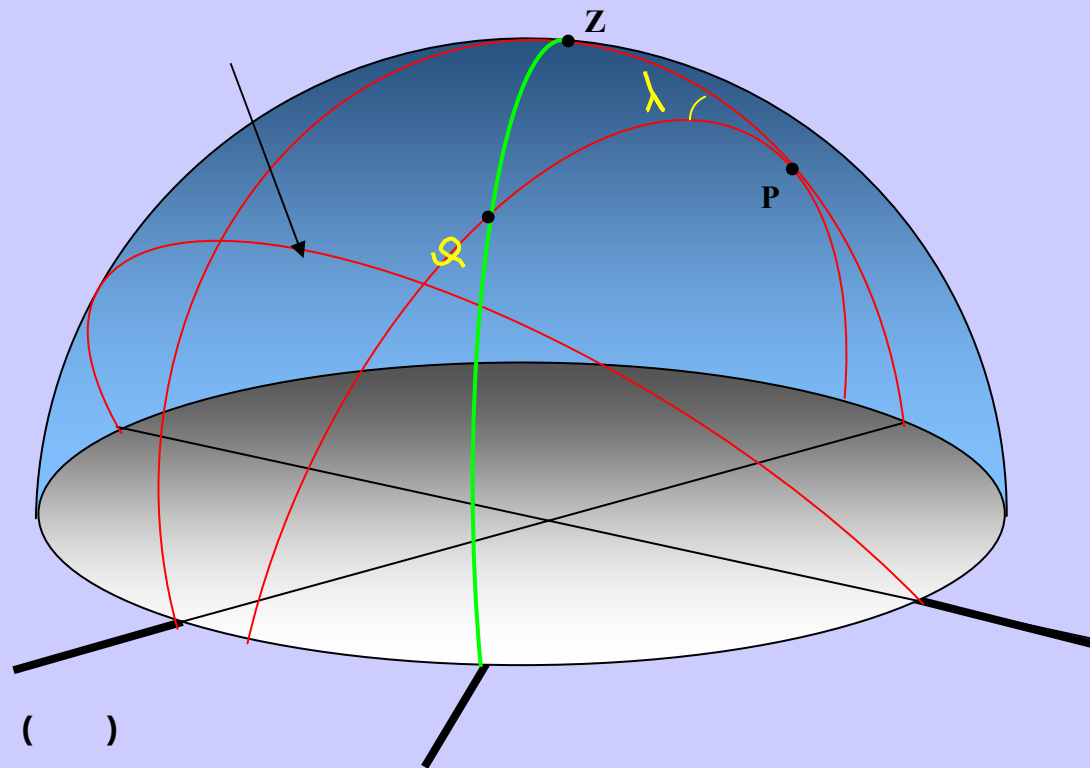


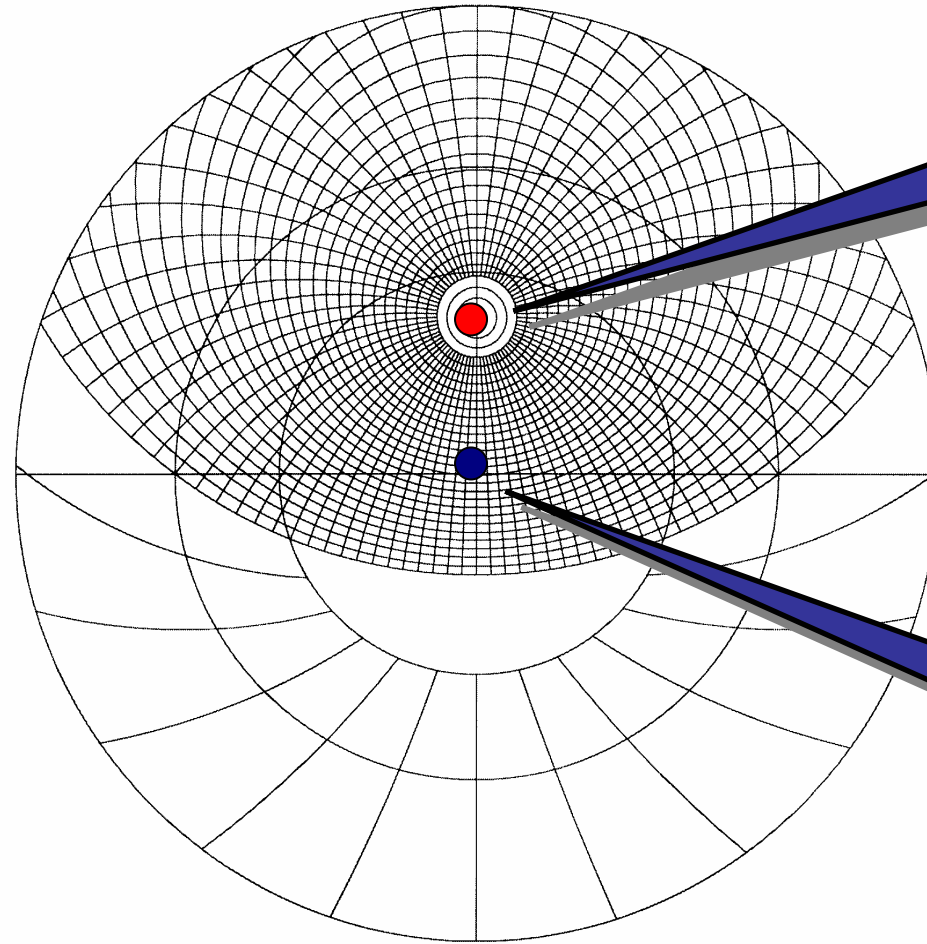












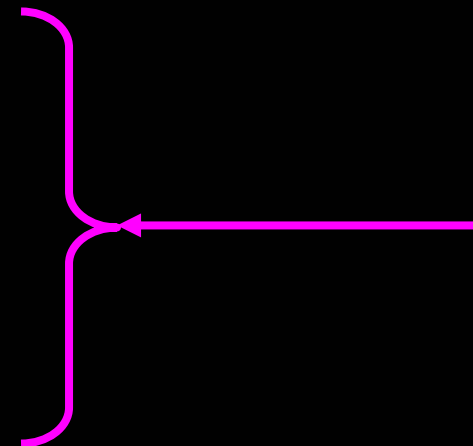
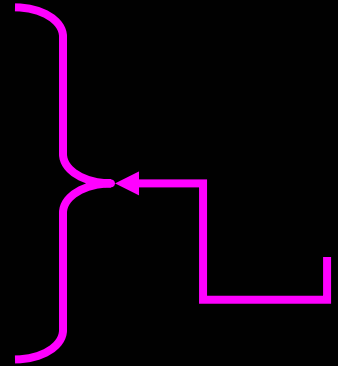
نقطة السميت

القطب الشمالي

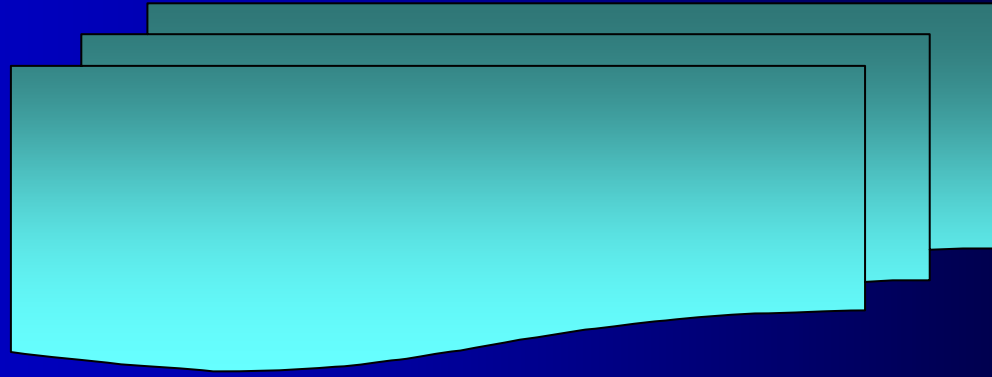
وجه الاسطرلاب



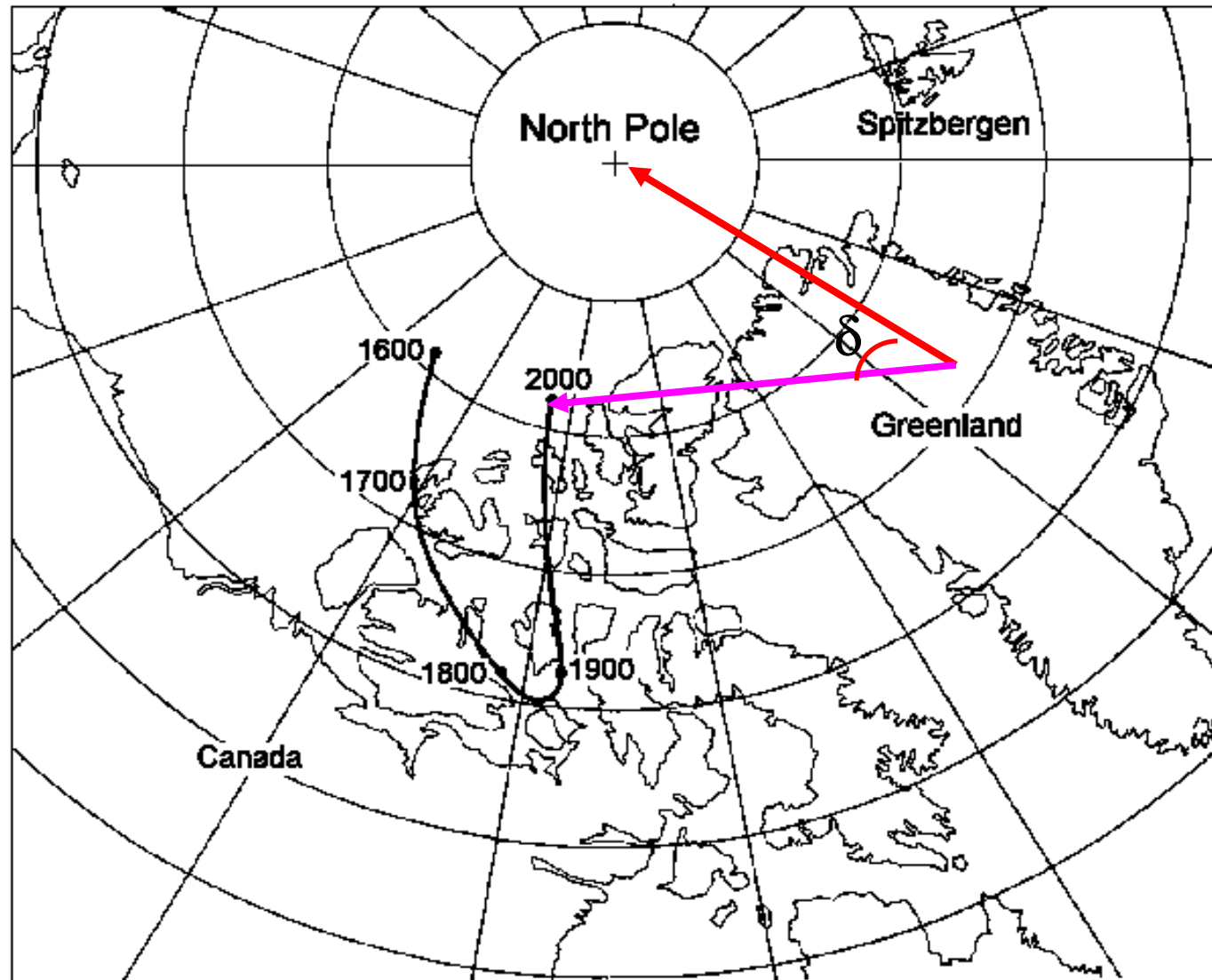
تمهيد أهمية الموضوع

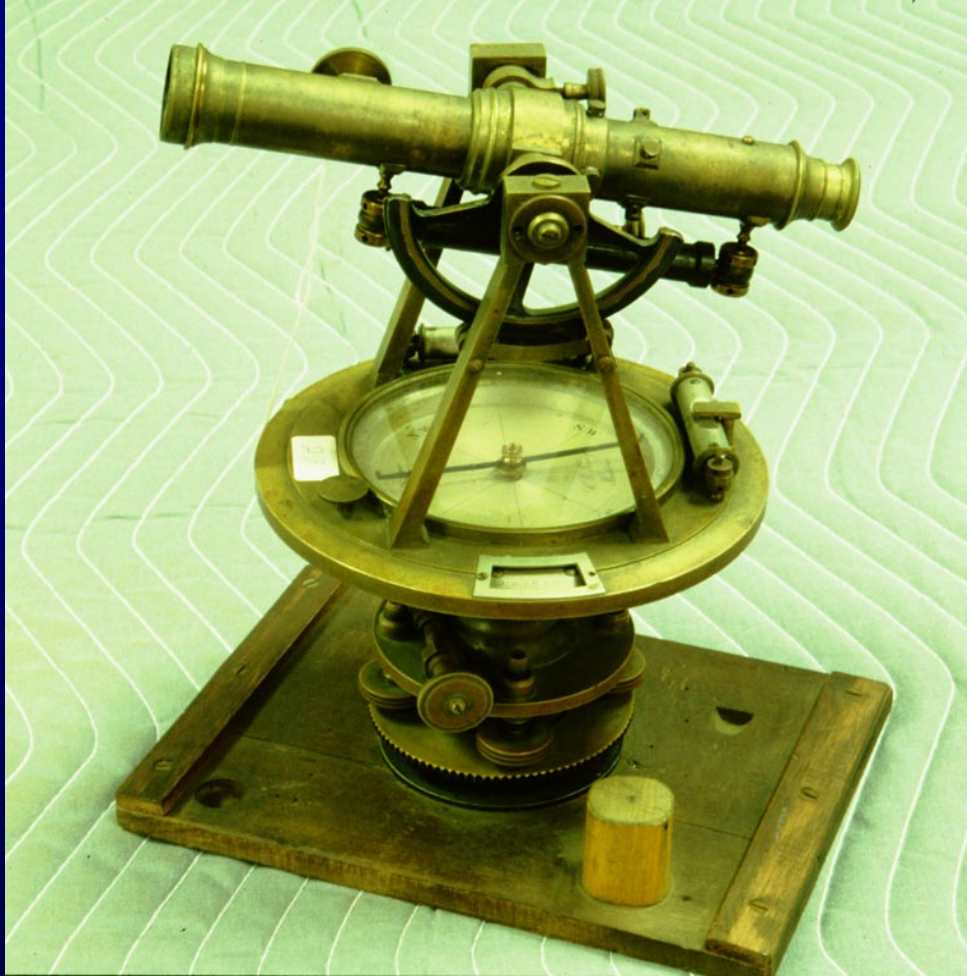


.GPS



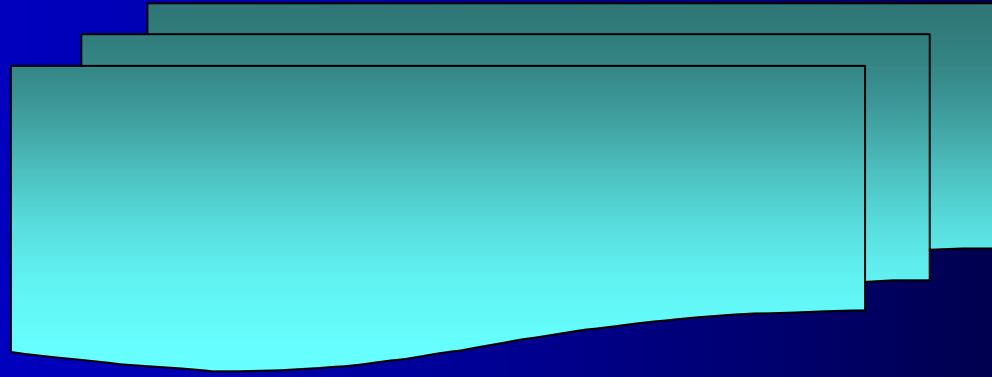


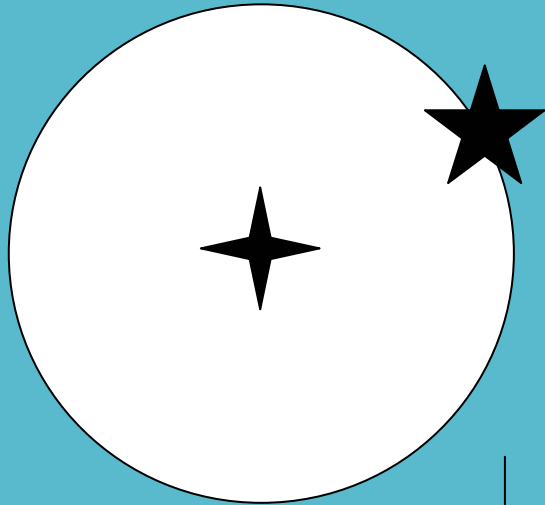




بوصلة
مرتبطة بمنظار

.GPS





$$T = 2(M + 1.2) + \frac{D + \lambda}{15} + GMT + 12$$

$$PD = -62' \sin(15 T)$$

(-) M

(-) D

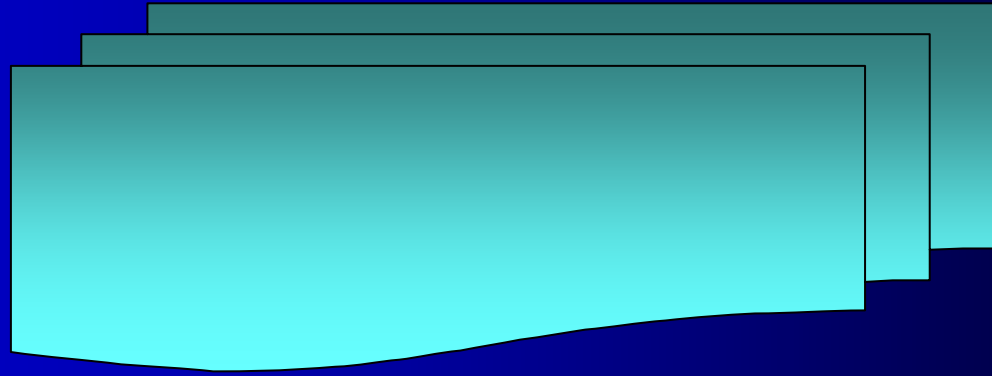
GMT

()

$$\alpha^* = \alpha_1 + \frac{PD}{60}$$



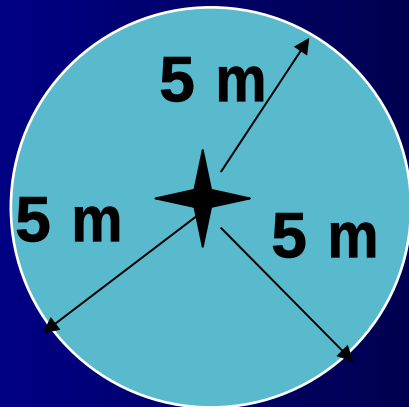
.GPS



GPS

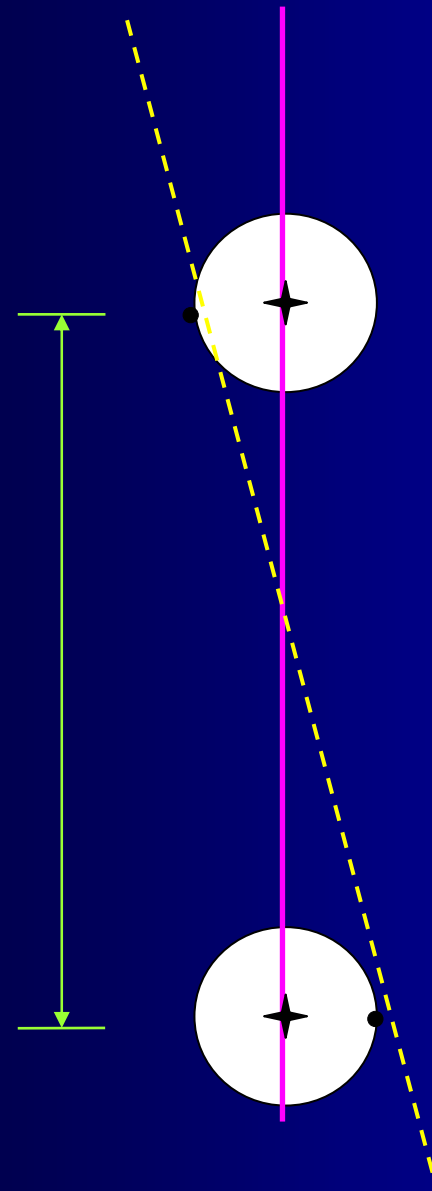


خطأ استخدام GPS

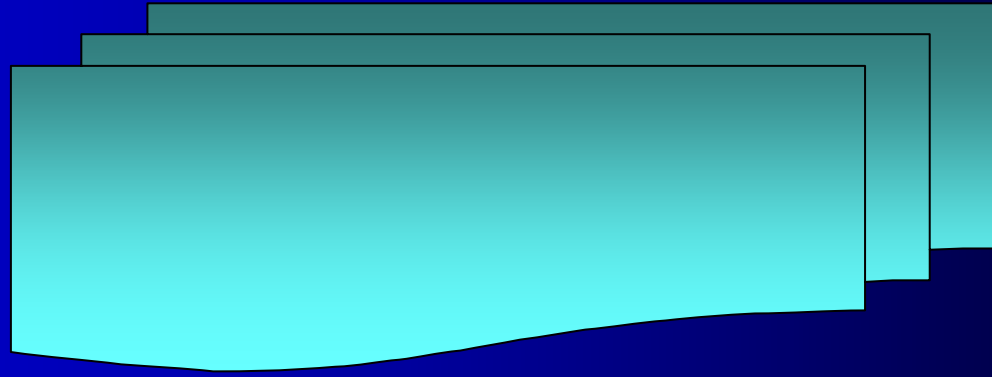


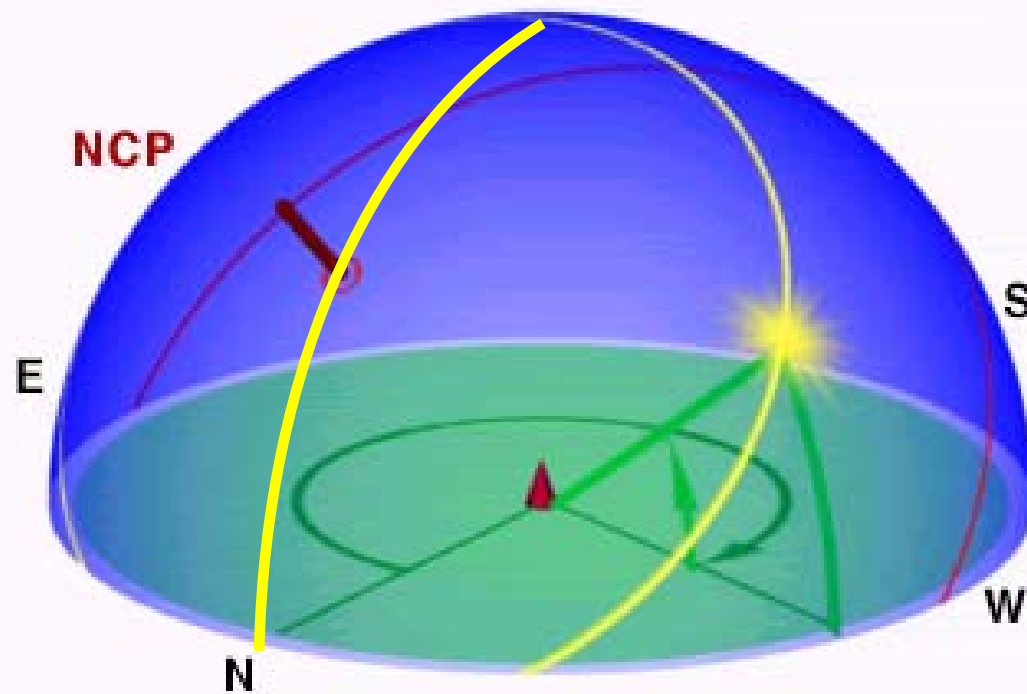
$$\text{Error} \cong \frac{5\sqrt{2}}{D}$$

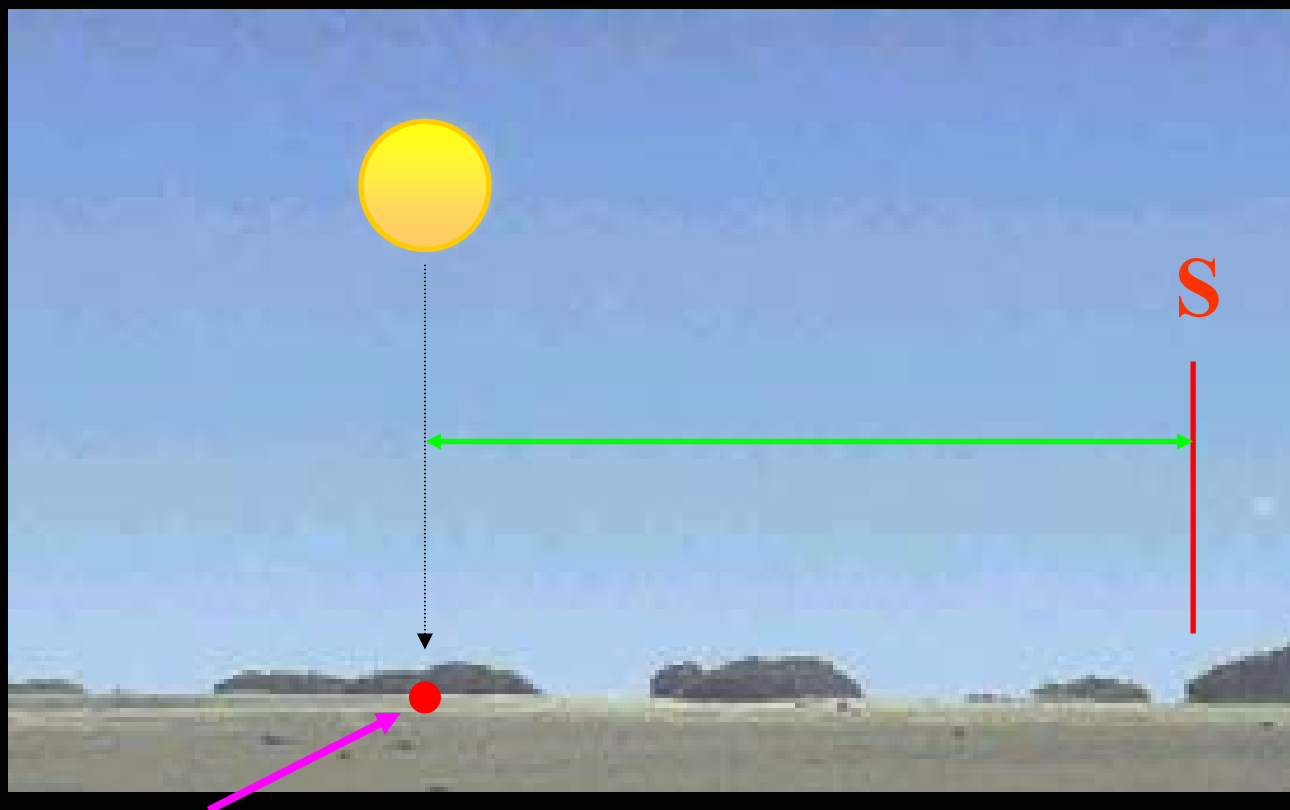
D

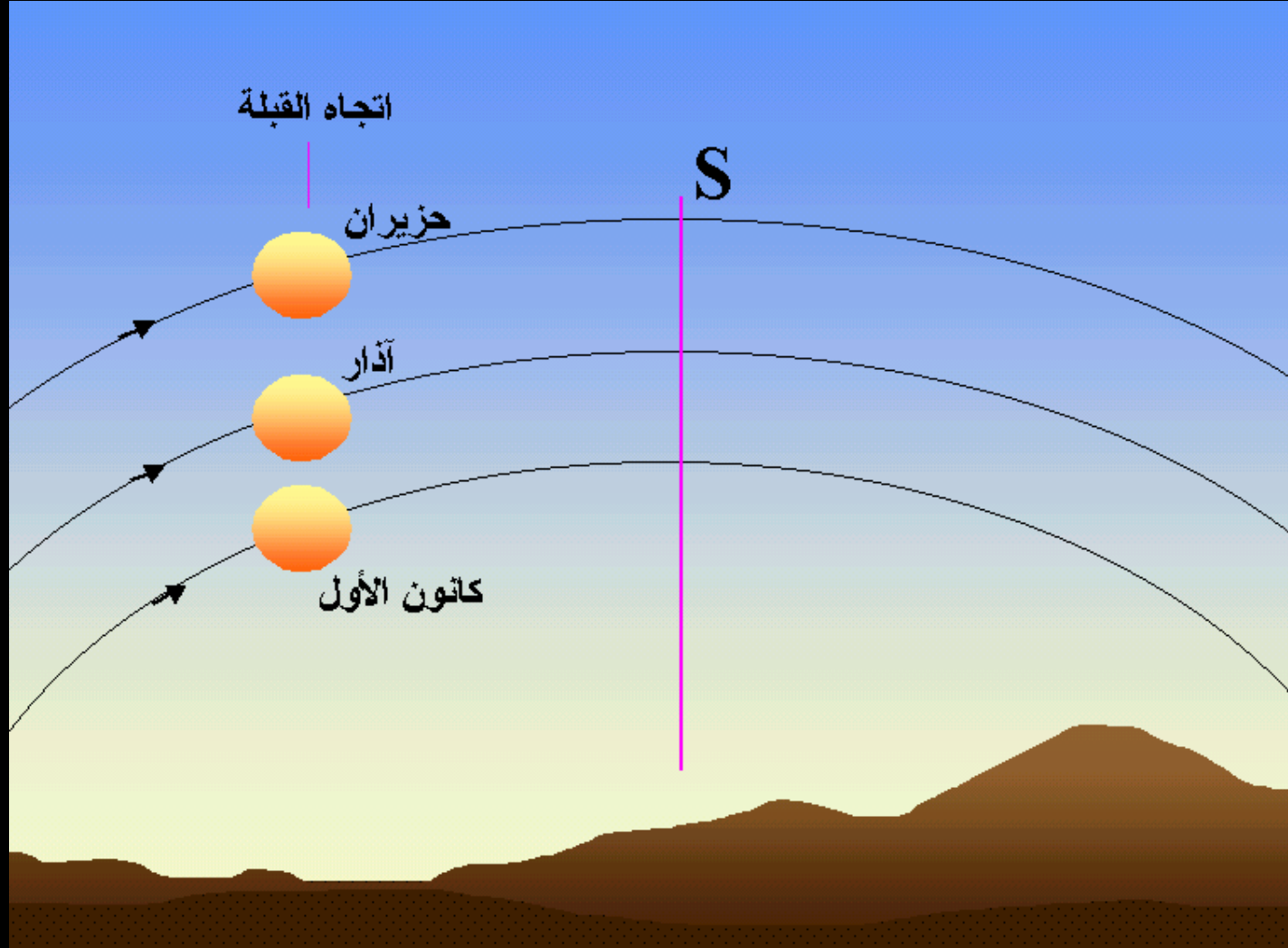


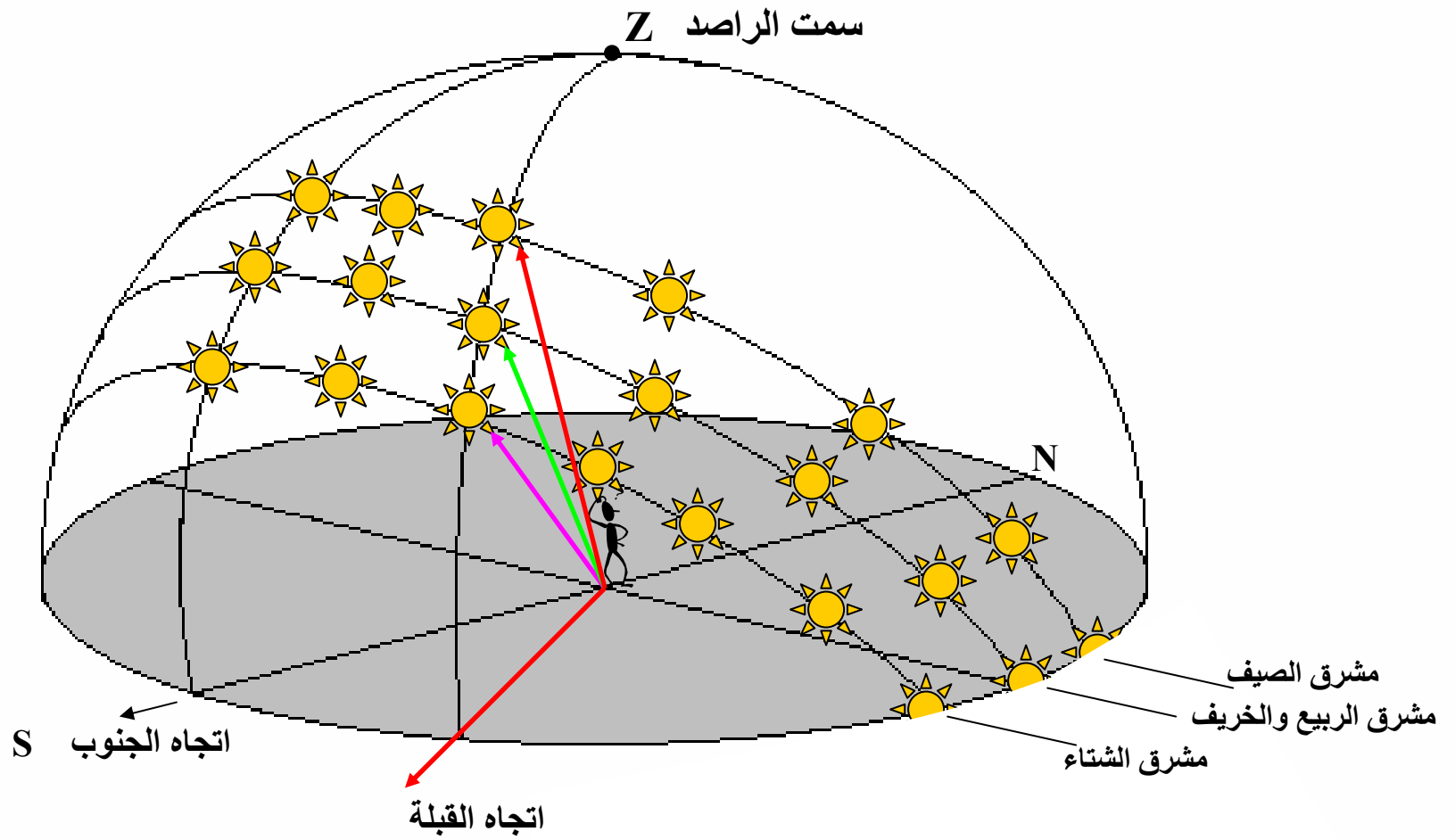
.GPS



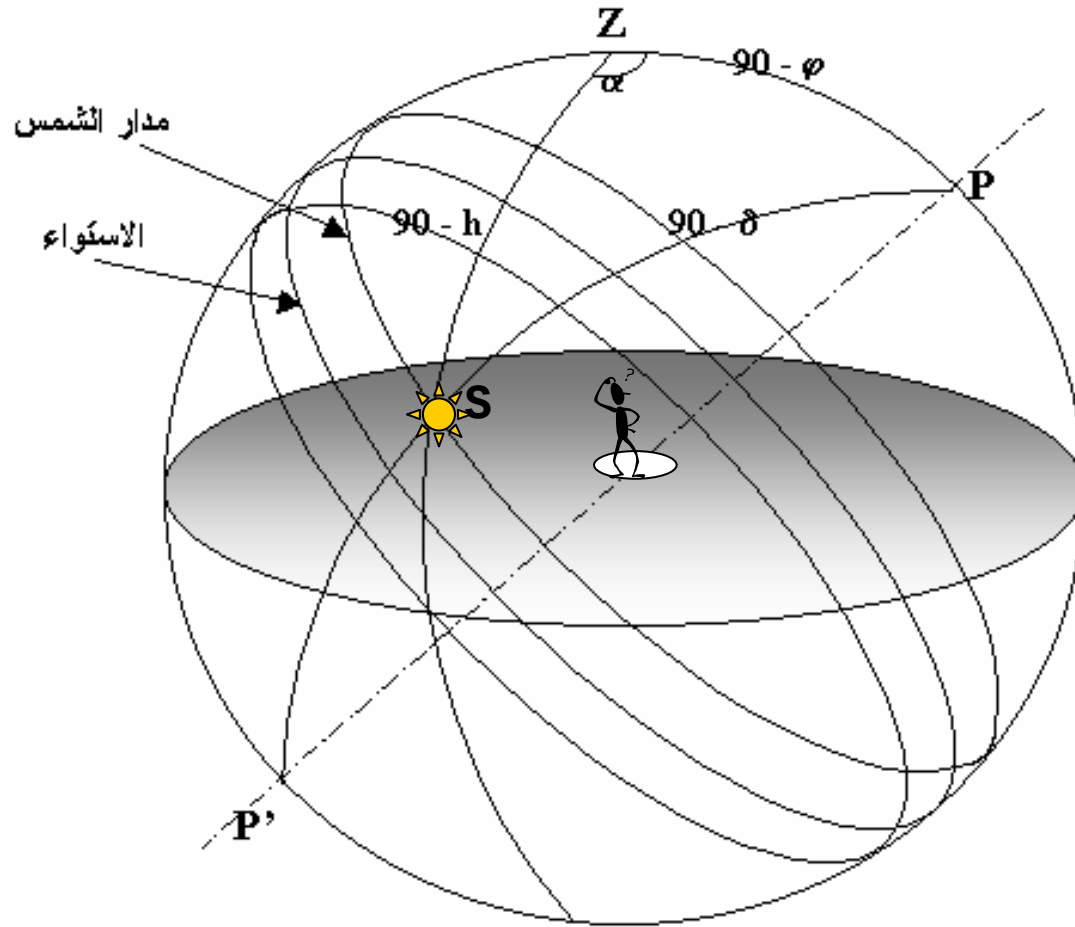


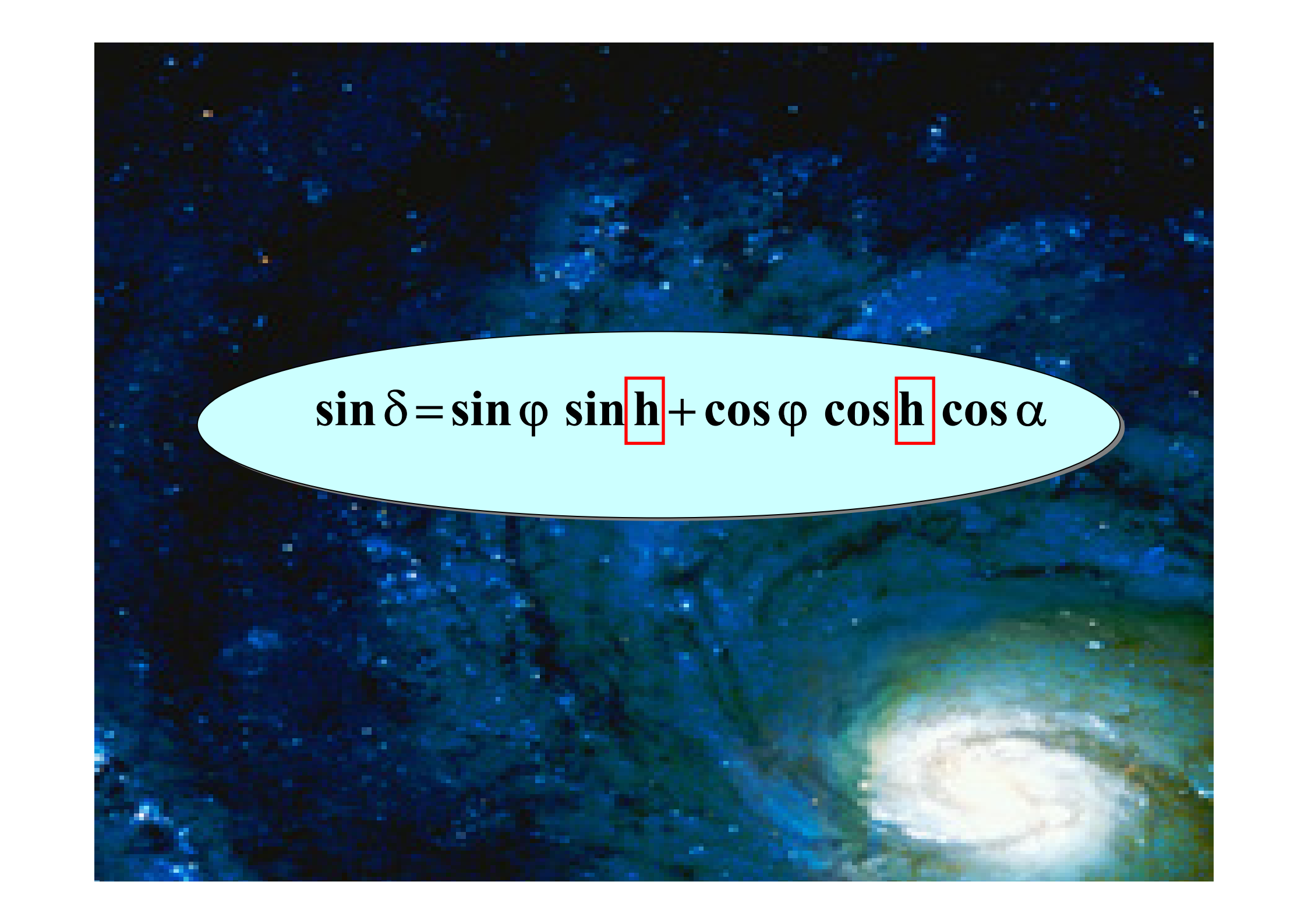


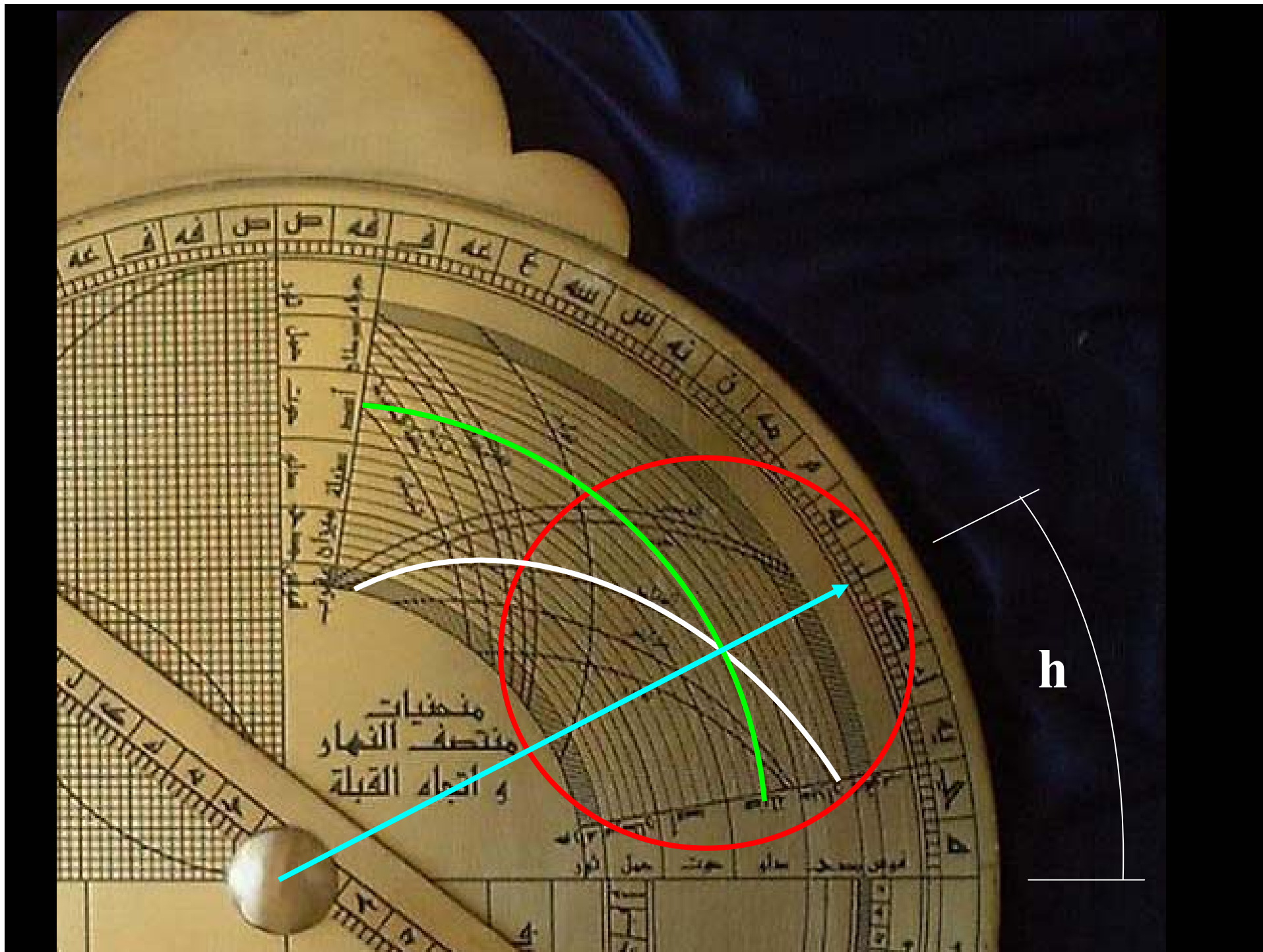




المثلث الكروي ZPS يربط بين انحراف الشمس وارتفاعها



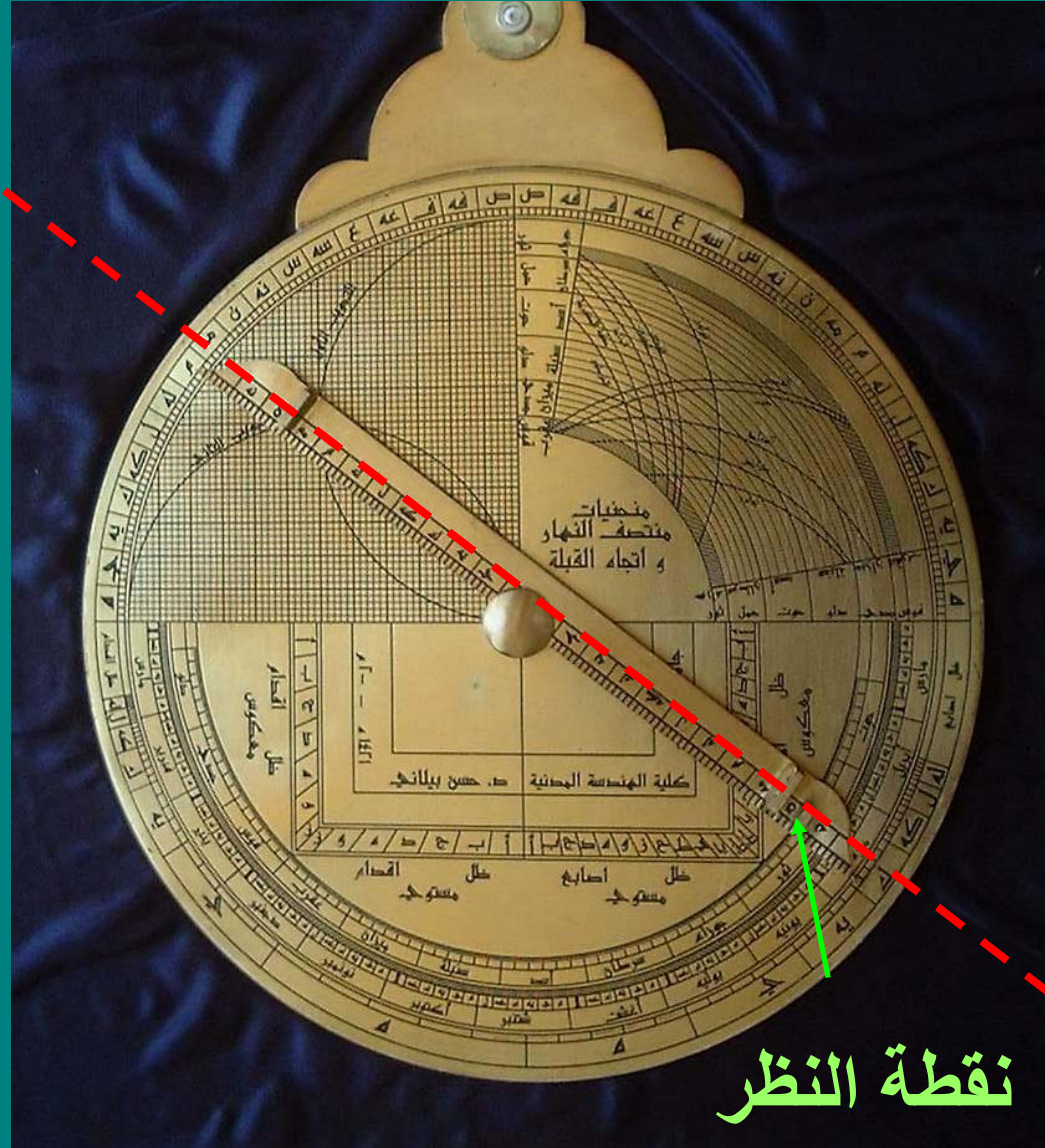

$$\sin \delta = \sin \varphi \sin h + \cos \varphi \cos h \cos \alpha$$



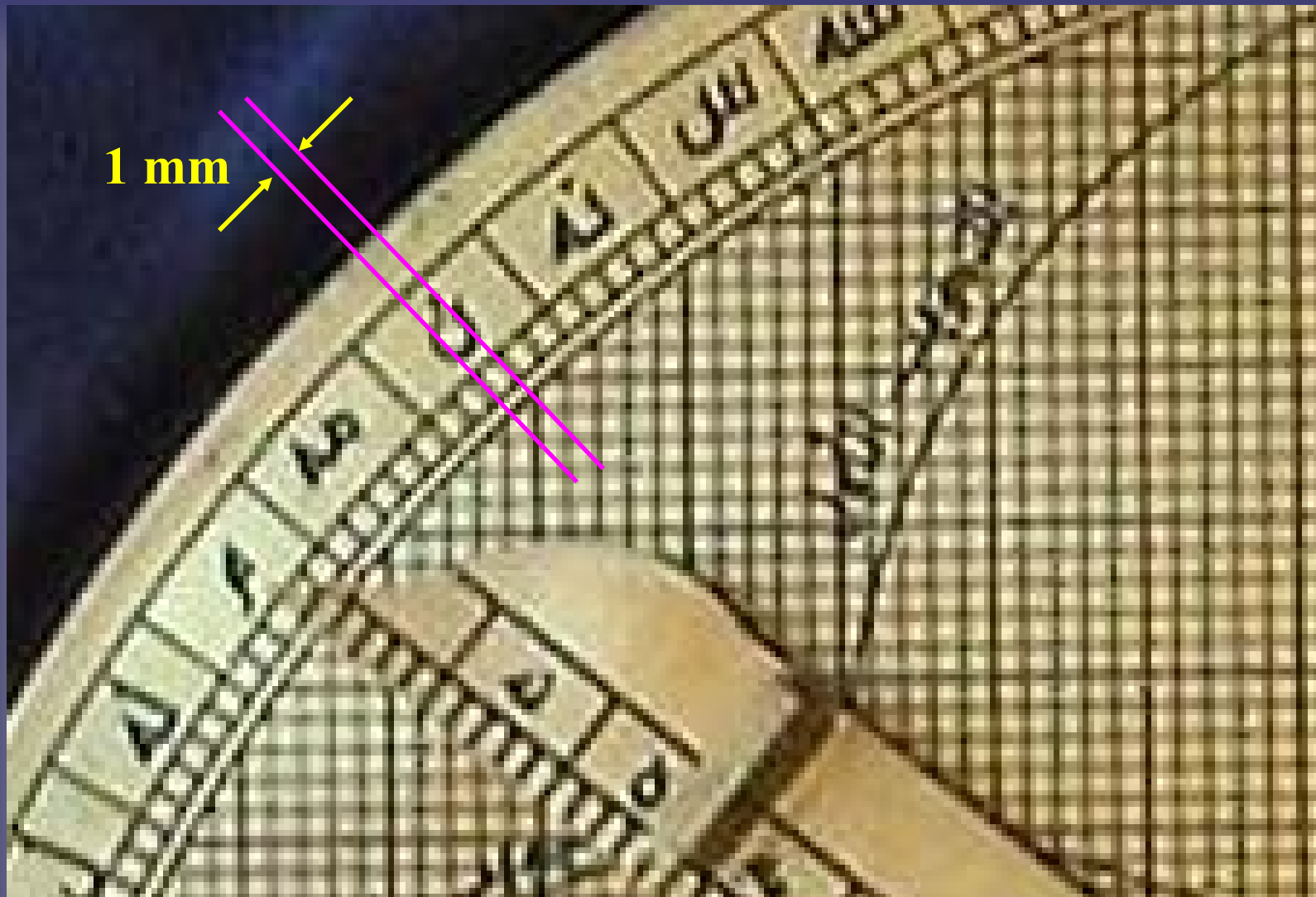
الرصد بالعضادة



محور الرصد

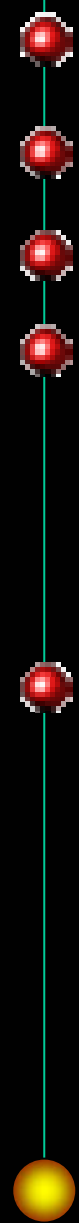
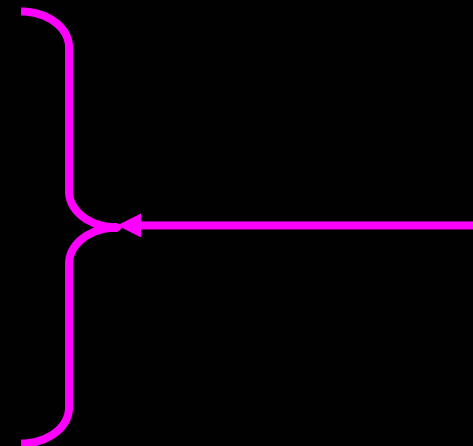
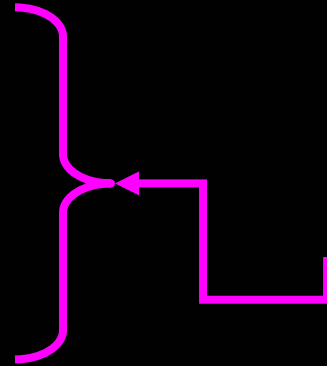


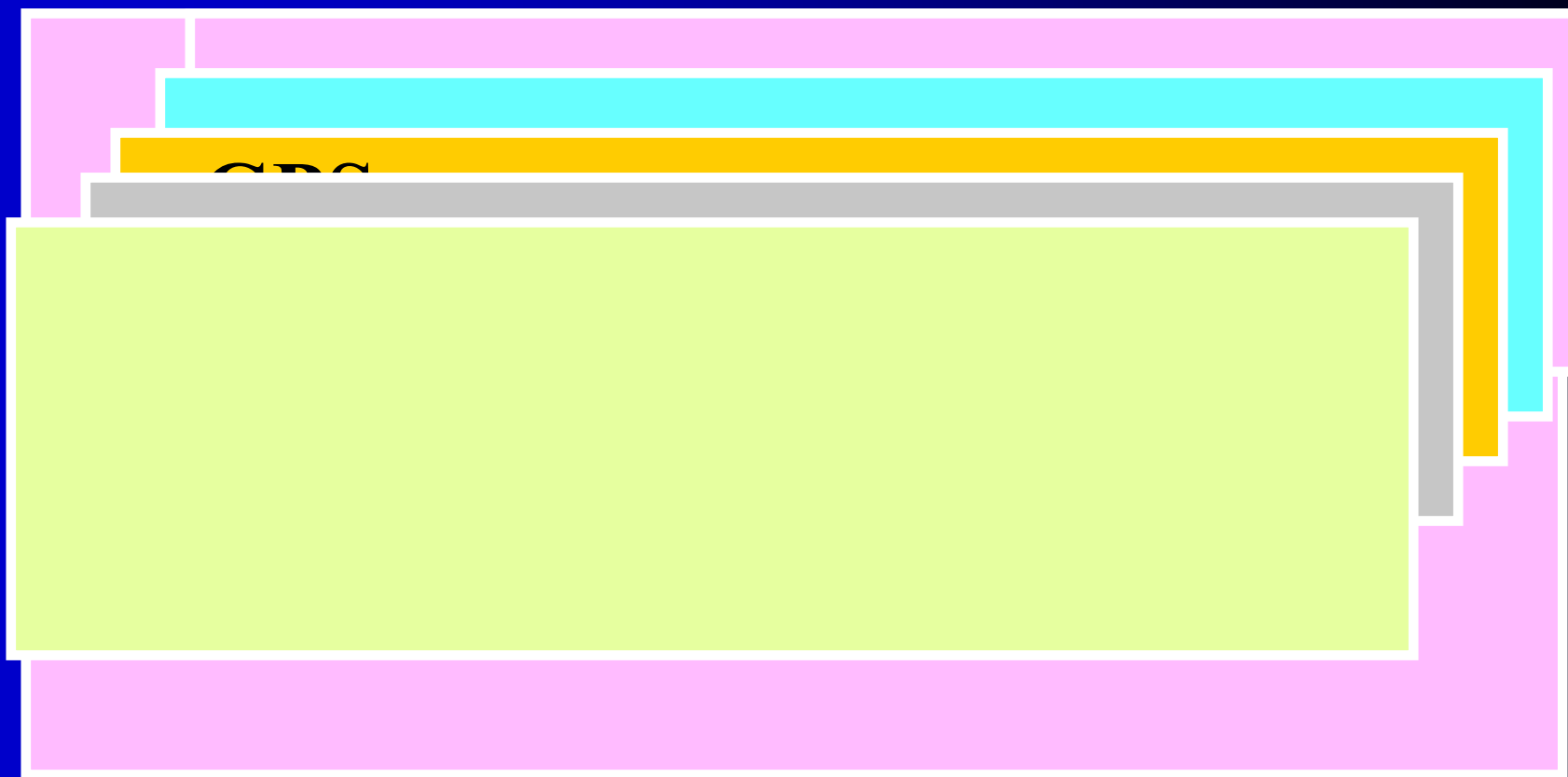
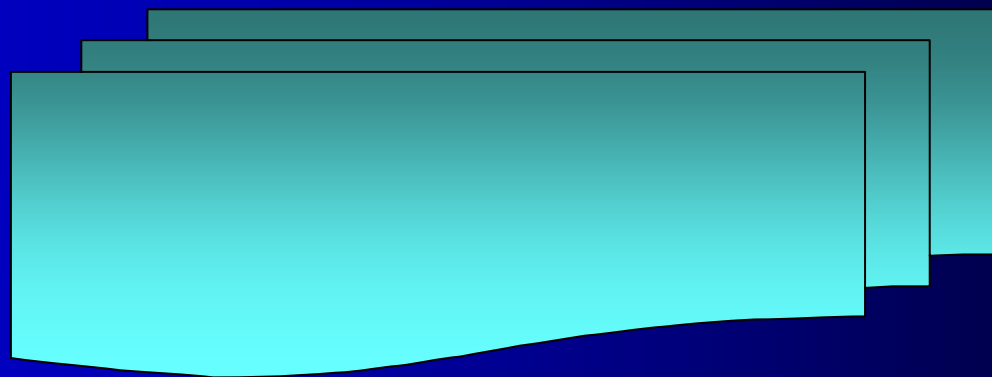
نقطة النظر



0.1 deg.

تمهيد أهمية الموضوع





تمهيد أهمية الموضوع

