



## No Noon Shadow Day

Soumis par eric vayssie le dim, 05/04/2015 - 15:09

There are special days, special places, when and where the sun casts no shadow at noon.  
This was the first Eratosthenes experiment between Alexandria and Aswan, 2200 years ago.  
It Happened on march 31, 2015 in Kuantan Malaysia

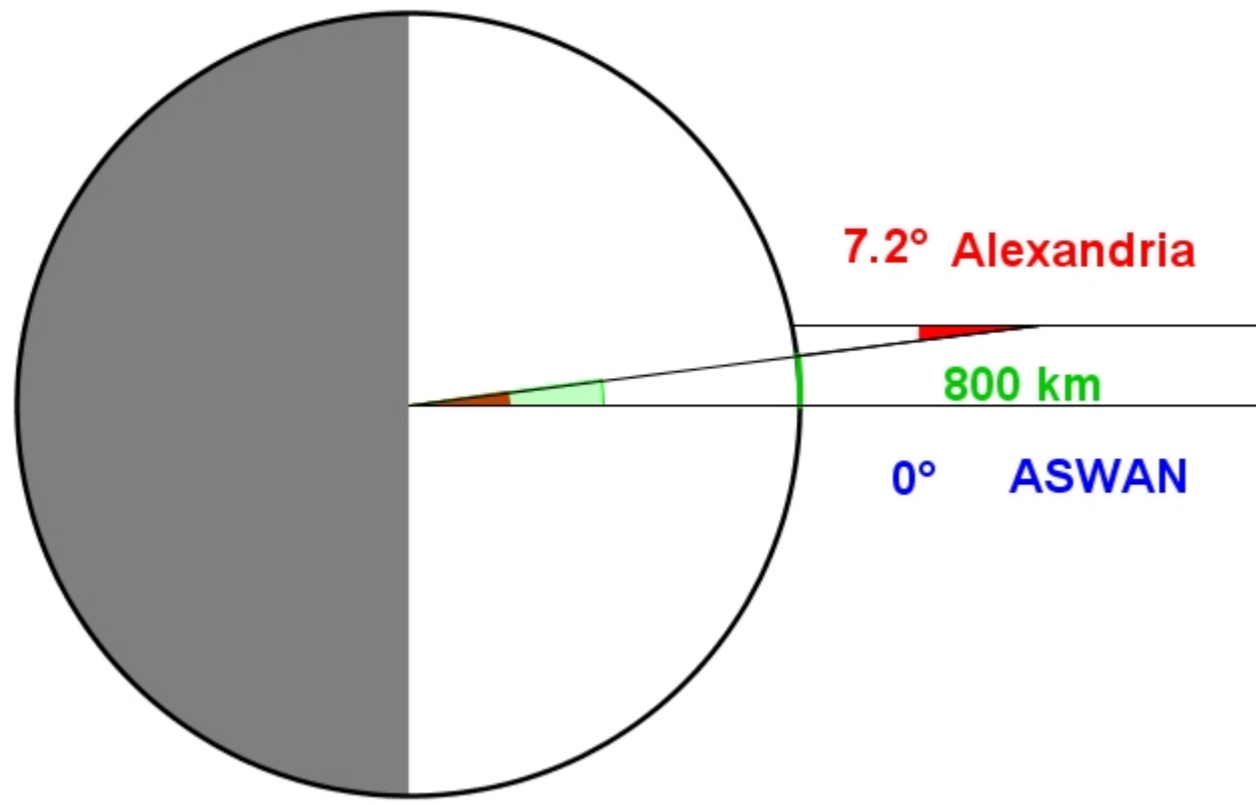


Eratosthenes, at the time Director of the Great Library of Alexandria in Egypt, proposed a purely geometrical method to measure the length of the Earth's meridian (circle passing through the poles). He started by using the observation of shadows made at two different places, Alexandria and Syene (now Aswan) distanced approximately 800 km apart (distance estimated in relation to the time taken by a caravan of camels to connect the two towns !) at the time of the Summer solstice and at noon local solar time.



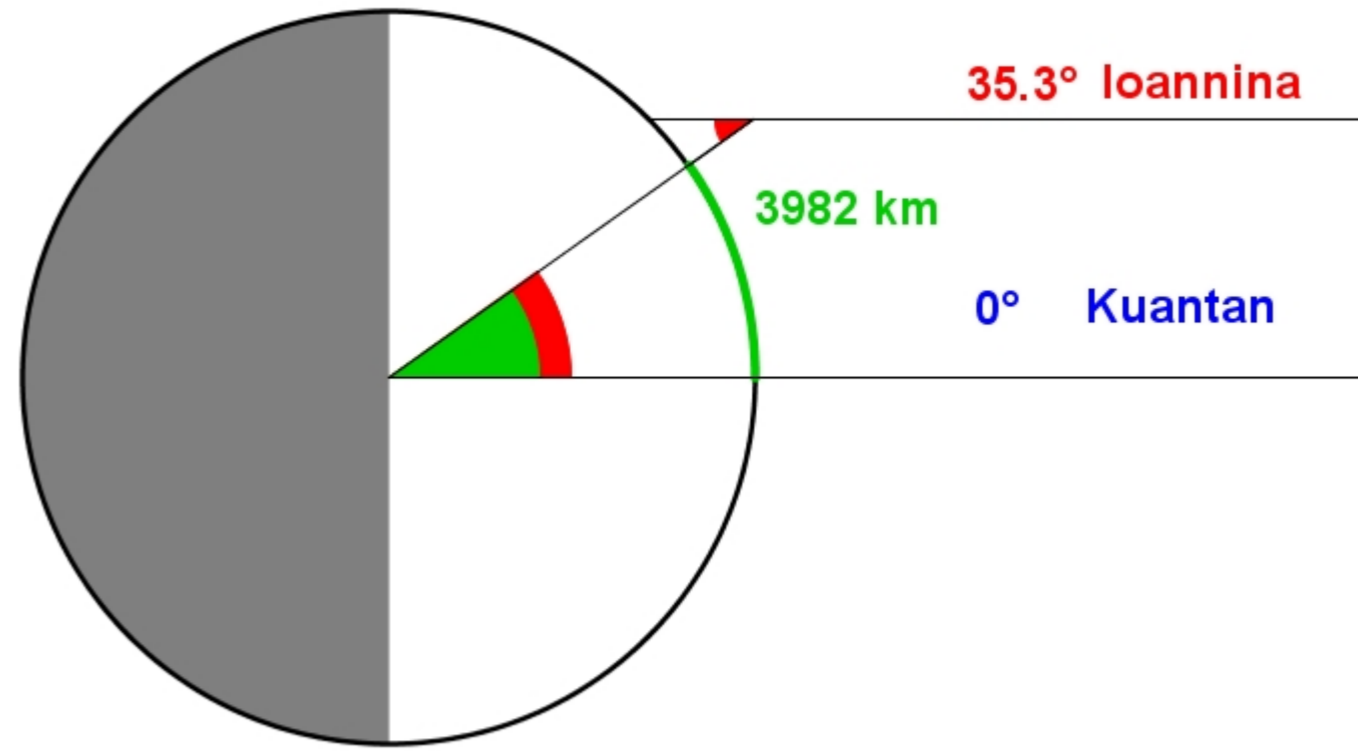
Addons

21 june 200 BC (Alexandria-EGYPT)  
 21 june 200 BC (ASWAN-EGYPT)



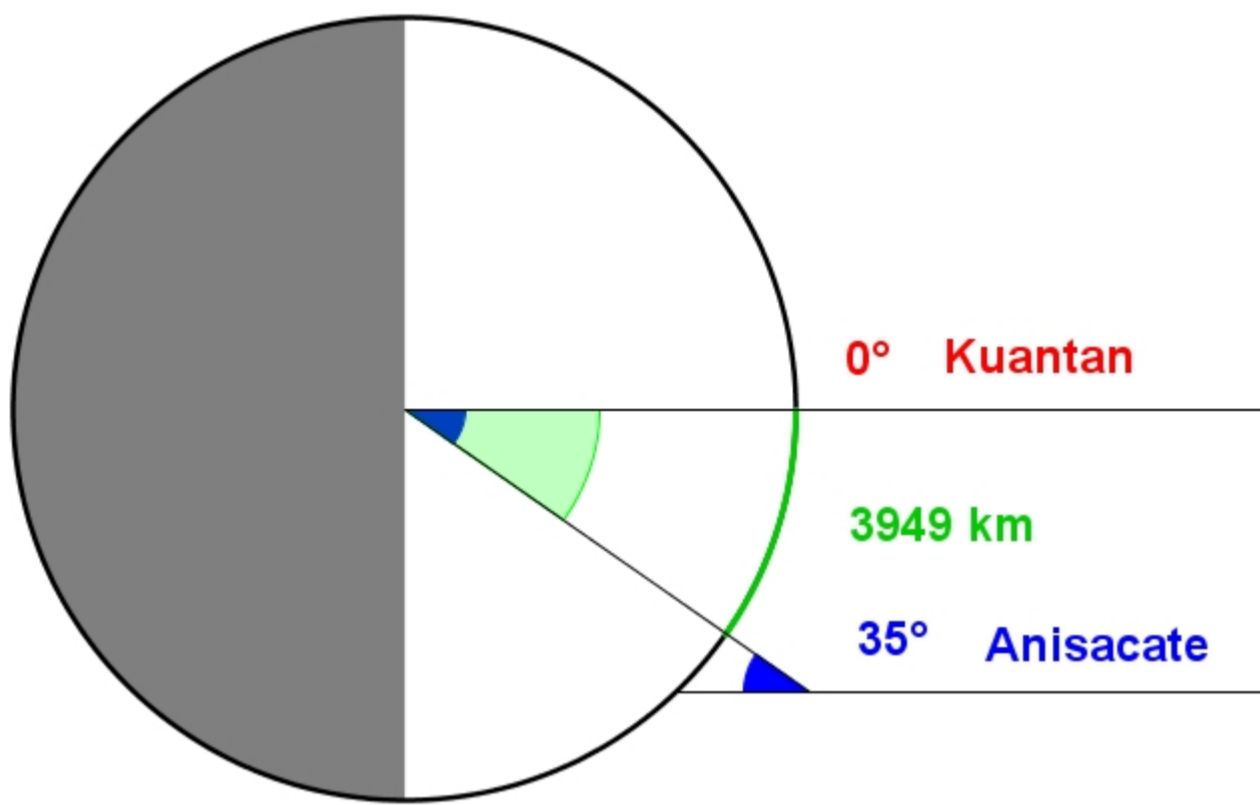
$$\text{circumference} = \frac{360^\circ \times 800 \text{ km}}{7.2^\circ} = 40000 \text{ km}$$

31 march 2015 (Ioannina-GREECE)  
 31 march 2015 (Kuantan-MALAYSIA)



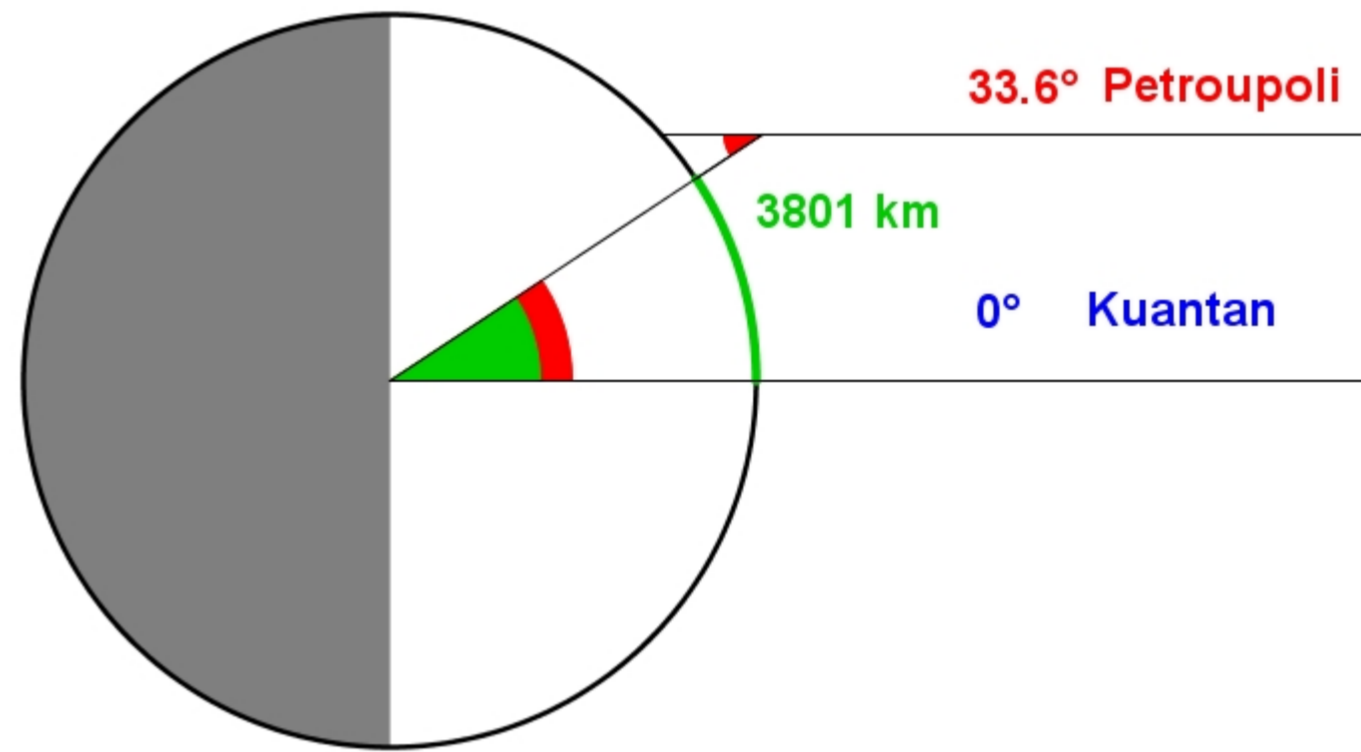
$$\text{circumference} = \frac{360^\circ \times 3982 \text{ km}}{35.3^\circ - 0^\circ} = 40610 \text{ km}$$

31 march 2015 (Kuantan-MALAYSIA)  
 31 march 2015 (Anisacate-ARGENTINA)



$$\text{circumference} = \frac{360^\circ \times 3949 \text{ km}}{0^\circ + 35^\circ} = 40618 \text{ km}$$

31 march 2015 (Petroupoli-GREECE)  
 31 march 2015 (Kuantan-MALAYSIA)



$$\text{circumference} = \frac{360^\circ \times 3801 \text{ km}}{33.6^\circ - 0^\circ} = 40725 \text{ km}$$

| City       | Country   | School                               | Latitude | Longitude | Date   | Gnomon height [cm] | Shadow length [cm] | Angle |
|------------|-----------|--------------------------------------|----------|-----------|--------|--------------------|--------------------|-------|
| Ioannina   | Greece    | Experimental College                 | 39.666   | 20.845    | 31-Mar | 100.0              | 70.8               | 35.3  |
| Petroupoli | Greece    | 4th Junior High School of Petroupoli | 38.036   | 23.674    | 31-Mar | 100.1              | 66.4               | 33.6  |
| Kuantan    | Malaysia  | SMK Saint Thomas                     | 3.827    | 103.339   | 31-Mar | 101.0              | 0.0                | 0.0   |
| Anisacate  | Argentina | Fundación Caminos de Anisacate       | -31.717  | -64.4     | 31-Mar | 100.0              | -70.0              | -35.0 |

| 31-Mar     |            | Ioannina | Petroupoli | Kuantan | Anisacate |       |
|------------|------------|----------|------------|---------|-----------|-------|
|            | Angle >    | 35.3     | 33.6       | 0.0     | -35.0     |       |
|            | Latitude V |          |            |         |           |       |
| Ioannina   | 39.666     |          | 38329      | 40610   | 40614     | CIR   |
| Petroupoli | 38.036     | 181      |            | 40725   | 40671     | CUM   |
| Kuantan    | 3.827      | 3982     | 3801       |         | 40618     | FE    |
| Anisacate  | -31.717    | 7931     | 7750       | 3949    |           | RENCE |
|            |            |          | DISTANCE   |         |           |       |

Commentaires  
 Aucun commentaire