



Modern Astronomy in Egypt: Past, present and future

علم الفلك الحديث في مصر: الحاضر والماضي والمستقبل

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The Ancient Egyptians



The Solar radiation is the source of all life on the Earth





**Ancient Egyptians and solar corona,
The sun as wages during total eclipse**



Amun Ra (Temple_of_Amun, in Nubia)

إله الشمس آمون رع

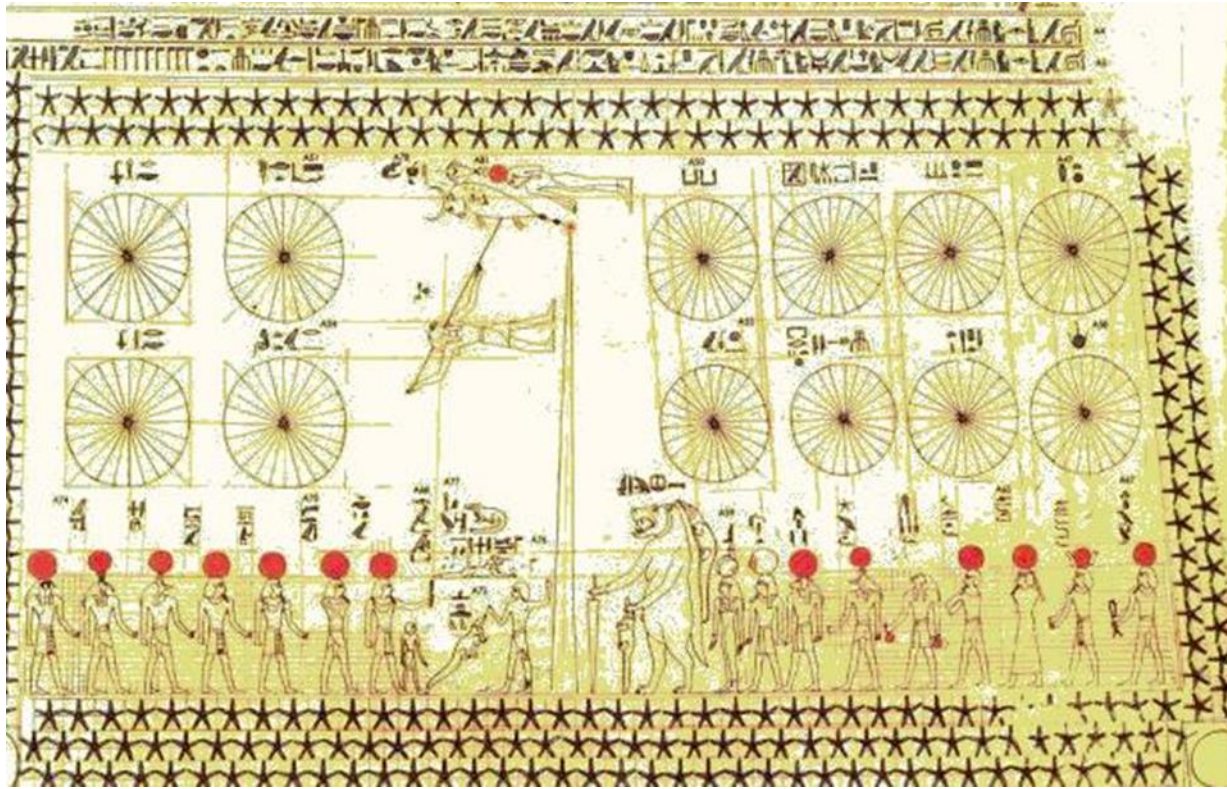
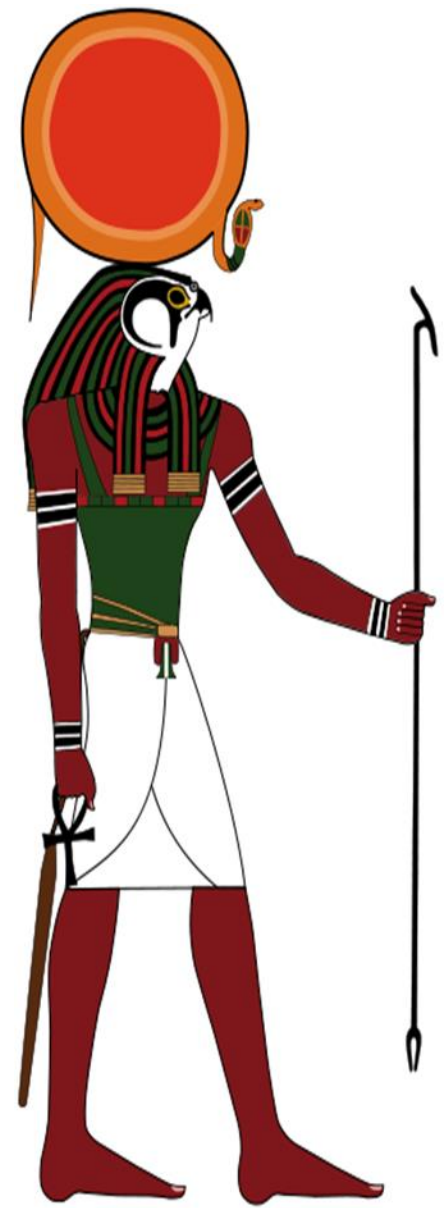


Chart from Senemut's tomb, 18th dynasty
 رسوم وحسابات فلكية علي قبر سنيموت (سلالة ال18)



The values of the Solar activity observations



The Abu Simbel temple: The axis of the temple was positioned by the ancient Egyptian architects in such a way that on October 22 and February 22, the rays of the sun would penetrate and illuminate the face of the status .

Modern Astronomy in Egypt

1- In year 1840 an astronomical observatory was constructed at *Boulac*, Cairo (Tahrir Square now) under supervision **Mahmoud Pasha El-Falaky**, this observatory was closed in year 1860 due to light pollution.

2- In **1868** another observatory was built at *Abbasya* east of Cairo.

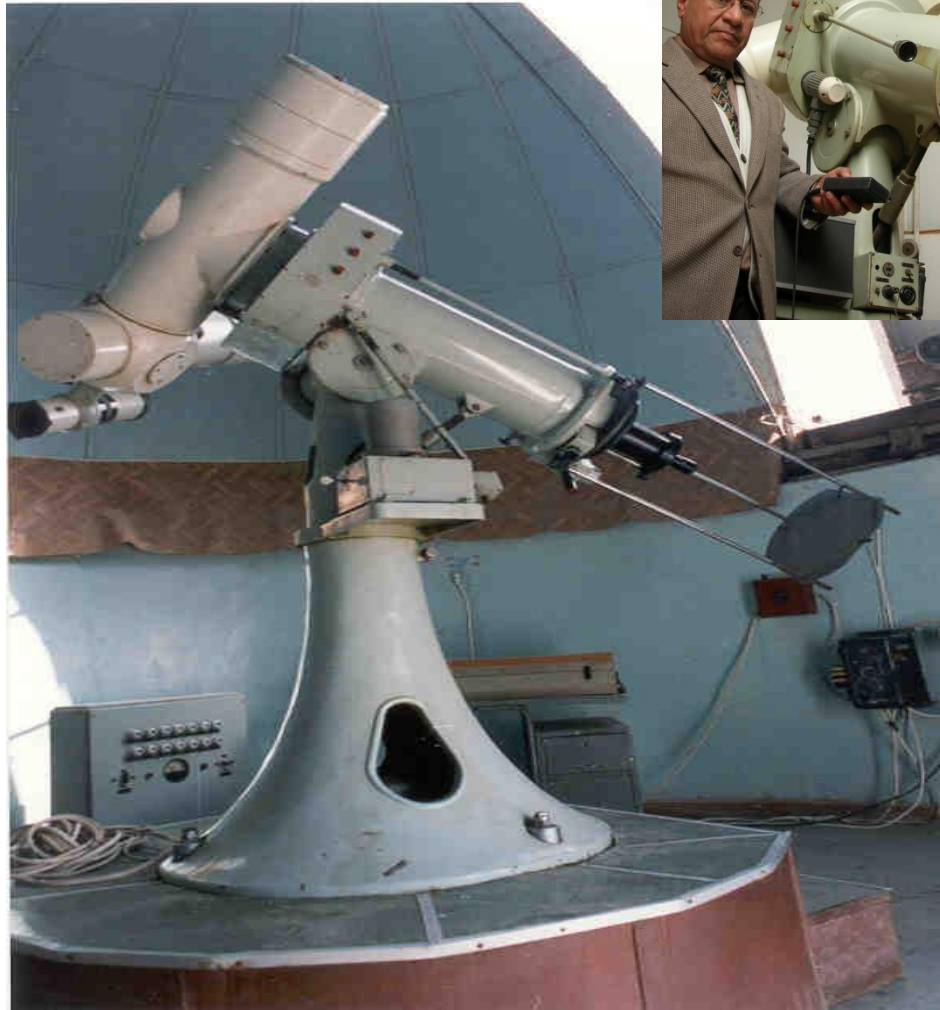
It continued its function till the end of the century. When observations was not suitable, due to the introduction of the electric tram way in Cairo.

3- Astronomical observations at **Helwan** started in **1903** by using a

30 inch reflecting telescope →

- This *30-inch reflector telescope* was provided in 1903 by British astronomer **John Henry Reynolds** (1874-1949)





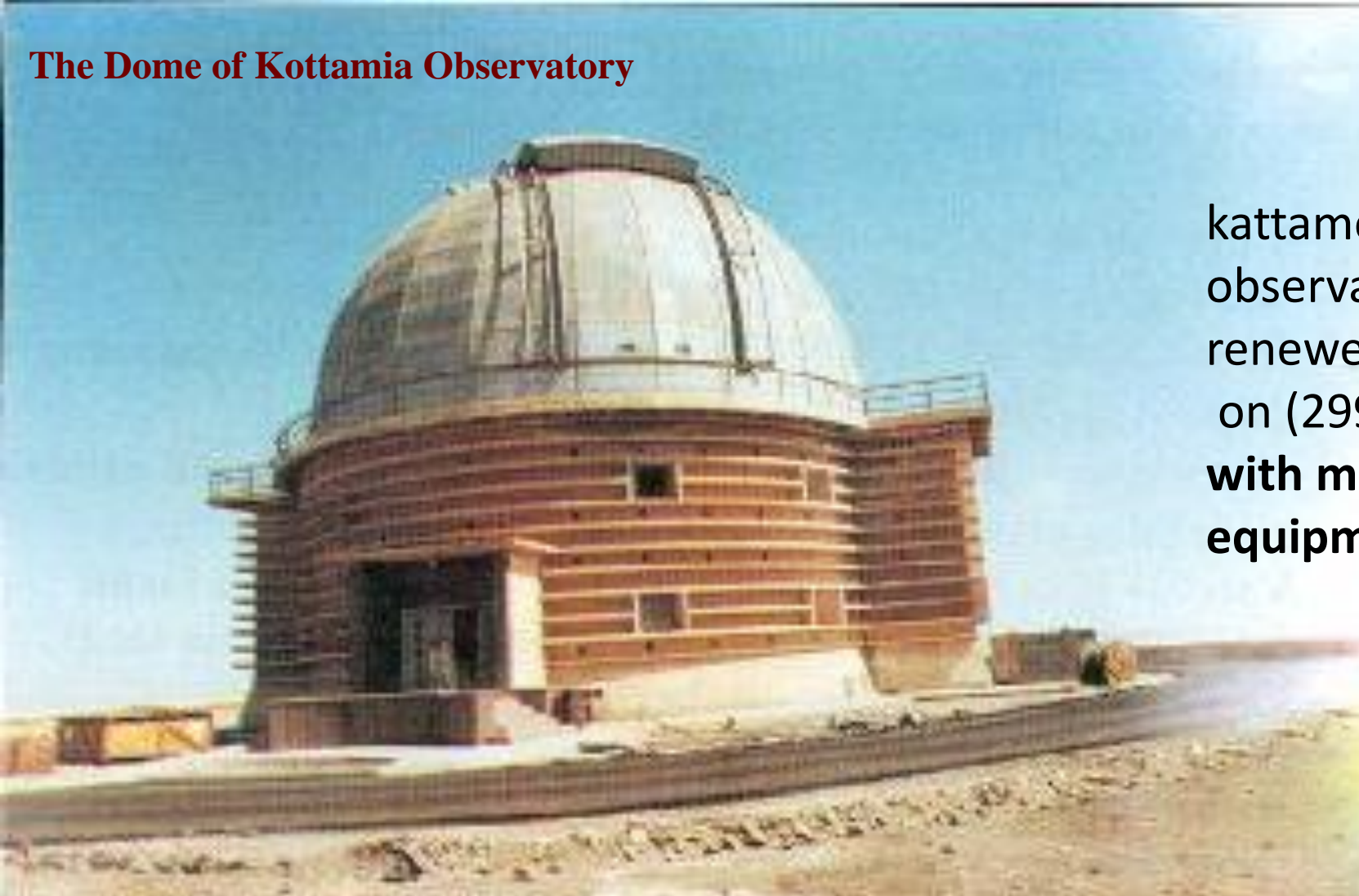
Zeiss-Coude' refractor (6 inch) in Helwan with solar and lunar Camera, and its Dome . Erected in Helwan observatory from year 1946, and still working until now with some modifications

Kottamia Observatory has been established in 1962 under supervision of **Prof. Mahmoud Reda Madwar**, by Cairo University fund, katameya mountains lies in the north eastern desert (80 Km far from Cairo).

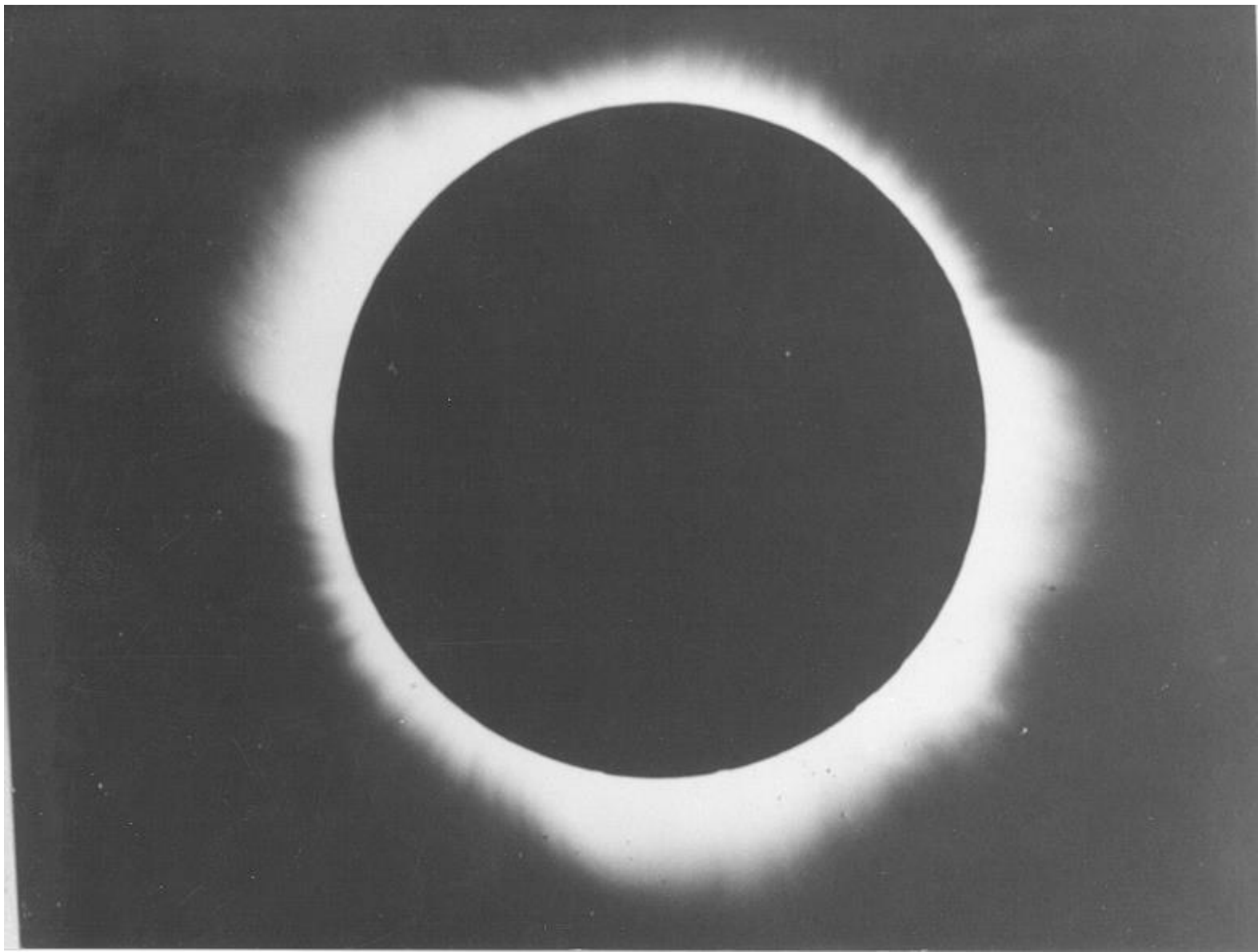
The observatory housed a 74 Inch, reflecting telescope (about 1.9m).

Lat: 29° 55' 48" N , Lon.: 31° 49' 30" E' , Altitude: 476 meters (msl)

The Dome of Kottamia Observatory



kattameya
observatory was
renewed again
on (2995 - 2008)
**with modern
equipment**



Solar Corona image as given during Khartoum total solar Eclipse Feb. 25, 1952, observed by Egyptian-French group.

March 29, 2006 Total Eclipse Observations

By several G-B instrumental set-up , The Egyptian-French scientific group (Koutchmy S. & Hady A.) made its observations of March 29, 2006 total eclipse from El-Saloum site , in Egypt.



Modern Astronomy Educations in Egypt

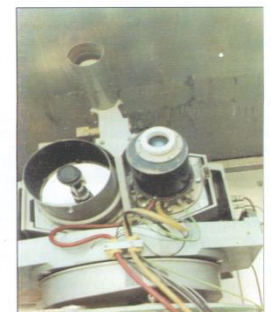
Modern astronomy and space science educations started since 1932 in Egypt at the university level at Department of Astronomy at Cairo University.

The University levels of period 4 years, to study **B.Sc.** in Astronomy. **Master degree** is awarded in Astronomy and space science. The **Ph.D. and D.Sc.** studies continue in Egyptian universities according to the international level.

Solar radiation measurements at Cairo University



Camera AVO for Satellite Observation



The Laser Ranging Satellite Station – Helwan

Annually, Egyptian astronomers published more than 200 papers in peer reviewed International scientific journals.



Advances in Space Research 42 (2008) 1800–1805

**ADVANCES IN
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www.elsevier.com/locate/asr

Space science education in Egypt and the 2006 solar eclipse

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Received 11 January 2007; received in revised form 29 March 2008; accepted 17 June 2008

Abstract

The space science research has been started in Egypt since 1910 by measuring the solar constant as indication of solar radiation at Helwan Observatory. The solar sunspot studies and its influence on the Nile flooding was erected and operated at Helwan as a first solar station in Egypt during 1957. Zeiss-Coude' refractor was installed in 1964. Astronomy and space science educations started in Egypt at the university level since 1936 at Department of Astronomy and Meteorology of Cairo University. Undergraduate and graduate education in Egypt will be discussed in this work.

The total solar eclipse observations on 25th February, 1952 in Khartoum have been done by an Egyptian–French group by using the Worthington Camera. Several international groups observed the total solar eclipse on 29 March 2006, in El-Saloum (Egypt). A coordinated effort partly undertaken in the frame of the French–Egyptian scientific cooperation permitted joined simultaneous eclipse observations of the solar corona. Several Ground base instrumental set-up has been prepared. Spaceborne quasi-simultaneous EIT and Lasco

In future:

we plan to establish New international Astronomical Observatory for the Region of Western Asia and North Africa (WANA), in Sinai, Egypt,
with reflecting telescope has mirror about 10 meters.

It's old and new idea,
started in the late seventies of the last century, have
been identified the site in St. Kathrine, and were site
tested by Egyptian astronomers.

**The idea again appeared during the IAU-GA, china -
Beijing, 24 August 2012**

Participants at the first Sinai Interest Group meeting
24 August 2012, Beijing IAU General Assembly



Ahmed Hady Jose Funes

Dina Prialnik

Chris Corbally

George Miley

Bob Williams

Kevin Govender

Petri Vaisanen

Noah Brosch

Alaa Ibrahim

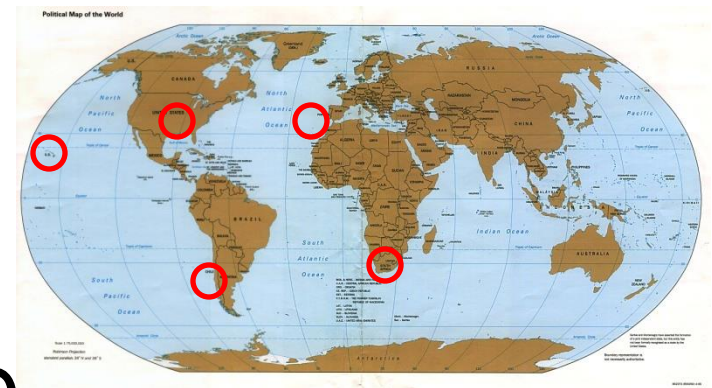
**Sinai observatory initiative group meeting: Beijing, 24 August 2012,
(this is part of the team; only the members that were in Beijing).**



Sinai Observatory A Regional Center of Excellence in WANA

Geographical distribution of large telescopes in the world

- **Canarias:** GranTECAn (10.3m)
- **Chile:**
 - ESO (4xVLT@8M)
 - NOAO: Gemini S (8.1m)
- **South Africa:** SALT (~10m)
- **North America:** LBT (2x8.4m), HET (9.2m), Gemini N (8.1m)
- **Hawaii:** Keck (2x10m), Subaru (8.3m)



Choice of WANA observing site

- Must follow the astronomical requirements for site testing
- Preferred locations are high mountain peaks raising significantly above their neighborhood
- Other non-astronomical requirements are tectonic stability, and willingness from the part of the hosting country to provide territory and infrastructure
- Given the central position of Egypt in the WANA regions, and the Sinai geography,
- the proposed site is the Santa Catherina peak as shown in the map.



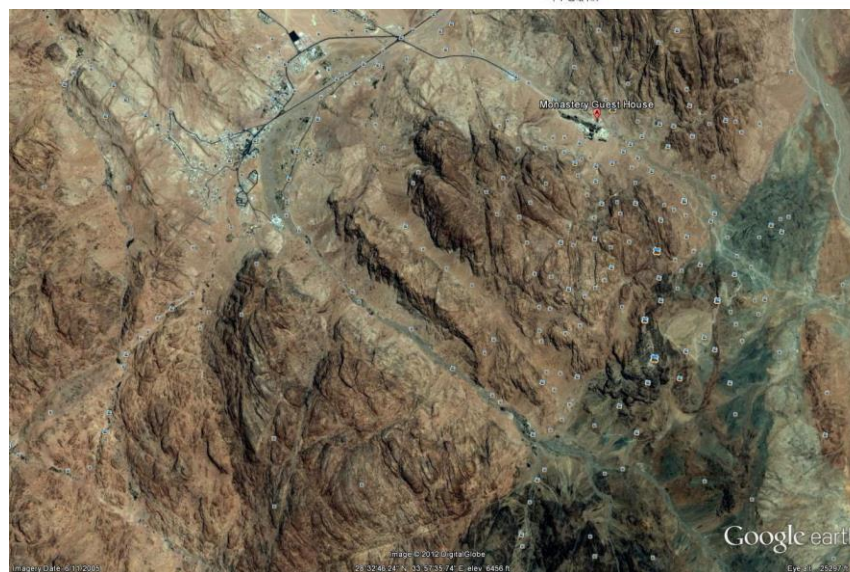
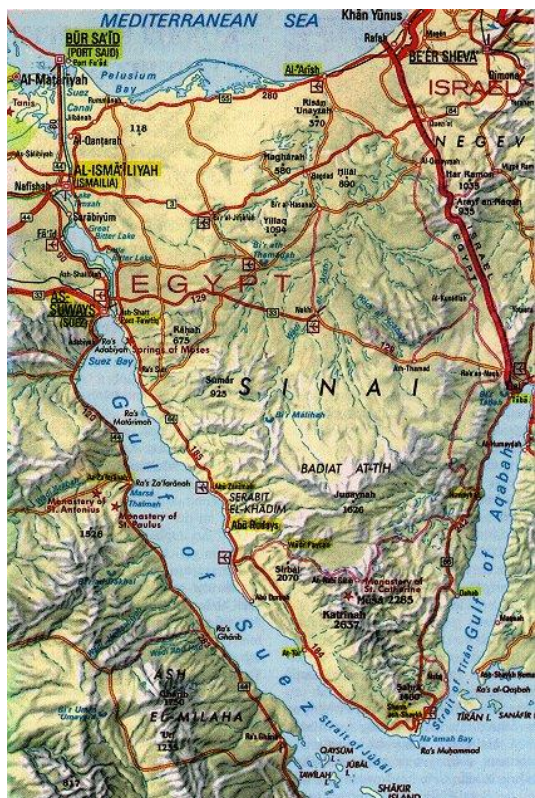
St Catherine's Monastery



St. Catherine mountain

2642-m

2500m
2250m
2000m
1750m



Protectorate area
Tourism now limited to monastery
Three hotels and guesthouses



No paved road to mountain top
No power and water until now

Thank you for your attention !

