

# **Robert Koch Conference**

## **August 12, 2011**

**Bob Koch was interested in monitoring variable stars**

- 1) Organize a campaign involving observatories at various longitudes that would simultaneously observe the same star system.**
- 2) Try to set up a telescope in the sky that was “stationary” in the solar system reference frame.**

# Eye in the Sky Concept -1991

- Mount a telescope on a robotic plane and fly that plane due east at a latitude where the Earth's tangential velocity was exactly the same as the plane's velocity.
- For example – for a plane velocity with 400 miles/hr, the latitude is
- $2\pi R_e \cos\theta = v(\text{plane}) \times (24 \text{ hrs}) = (400)(24) = 9600$
- $\cos\theta = 9600/(2\pi)(3963) = 0.386$
- $\theta = 67^\circ$
- The plane must stay aloft for 24 hours + the time to & from airfield to latitude  $67^\circ$  North (or South) =  $24 + 2(5) = 34$  hours.
- Proposed to NASA – Advanced Concepts - 20 years to early

# Global Hawk Specifications

- Maximum speed – 497 mph
- Endurance – 36 hours
- Maximum altitude – 65,000 ft
- Cost - \$35 million
- Available - ~2011 or so

# Robotic Plane for “Eye in the Sky”



**This is not Global Hawk, but rather Israeli Heron 2**

# Global Hawk



# Aurora Flight Services Robotic Planes



## Next Project – Fly Optical Telescope from Balloon- 10<sup>5</sup> ft altitude

- **This one was approved by NASA as a student training effort**
- **Launch from Wallops Island**
- **Funding - \$10,000 from Penn Dean's Office**