

# Useful Research Methods for Aircrew and Air Traffic Controller UAP Sightings

Richard F. Haines  
Chief Scientist

*National Aviation Reporting Center  
On Anomalous Phenomena*

[www.narcap.org](http://www.narcap.org)  
[narcap6@gmail.com](mailto:narcap6@gmail.com)

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# Outline of Subjects

1. Introduction
2. Interview Challenges and Techniques
3. Cockpit 3-D Documentation
4. Sighting Event Reconstruction
5. Data Integration and Analyses
6. Conclusions and Recommendations

# 1. Introduction

UAP continue to be reported by pilots and ATC around the world.

Pilots are good witnesses: (1) Training, flight experience, (2) Possess on-board equipment to sense and record UAP characteristics, (3) Can pursue UAP, (4) Can radio for independent surveillance and support.

Despite decades of private and government supported research UAP have not yet been adequately explained.

# Introduction (cont.)

## Black Swan Metaphor for UAP (Taleb, 2007)

Main Features: (1) A rare event that lies outside of our regular expectations; little can convincingly point to its possibility, (2) Produces an extreme impact, (3) leads to later explanations that try to make it more understandable and predictable.

Our future UAP methods must focus more on the invisible and unexpected Black-Swan-like events as well as what appears to be the obvious.

# Introduction (cont.)

## *Pilot Sightings are Different from Ground Witness Sightings and Call for Special Considerations*

Enclosed environment moving constantly in 3-D with few stable visual references, motion illusions.

Great competition for attention – airplane should be flown first, UAP attended to second.

Personal threat level can be higher - danger may be judged greater with associated psychological and physiological post traumatic stress responses.

Professional reputation may be influenced.

Experience/education/intellect of witness is generally higher.

## 2. Interview Challenges and Techniques

Ask all the right questions in the correct way: What, Who, When, Where, (Why?)

- a) Begin with full event, free-recall without any interruption (even to clarify).
- b) Never insert personal biases, assumptions, leading questions or ad hoc conclusions.
- c) Ask questions in a carefully preplanned order.
- d) Whenever possible think “outside the box.” about your post-event interview.
- e) Interview witness from a position of deep knowledge & understanding about his/her work domain (piloting, ATC).

Be fully knowledgeable about piloting and aircraft.

### 3. Cockpit 3-D Documentation

1. Photograph & Video the Actual Cockpit (if possible) without and also with Witnessing Flight Crew present.
  - At least 3 orthogonal axes relative to ref. eye point (REP).
  - Wide angle photos from REP at known azimuth angles.
2. Refer to Manufacturer's Design/Ops. Manuals for dimensions and window (angular) outline relative to REP.
3. Measure window optical transmission, distortions, reflections and dimensions.

# Sighting Event Reconstruction (Cont.)

- Photograph Cockpit Interior –  
(Haines, F.S.R., Vol. 27, Nos. 4 & 5, 1982)

Date: 7-4-81

Location: Lake Michigan, USA  
Pilot in Initial Position just before  
UAP appeared



Date: 7-4-81

Pilot demonstrating body/head  
movement upon sighting UAP



# Sighting Event Reconstruction (Cont.)

- Photograph Cockpit Interior –  
(Haines, F.S.R., Vol. 27, Nos. 4 & 5, 1982)

Date: 7-4-81

Location: Lake Michigan, USA

Pilot looking at approaching UAP



Date: 7-4-81

Location: Lake Michigan, USA

Pilot leaning forward seconds after  
first seeing approaching UAP



# Sighting Event Reconstruction (Cont.)

Documenting PIREP and Head Position (5-3-75 Mexico)

Pilot in Piper PA-24 cockpit



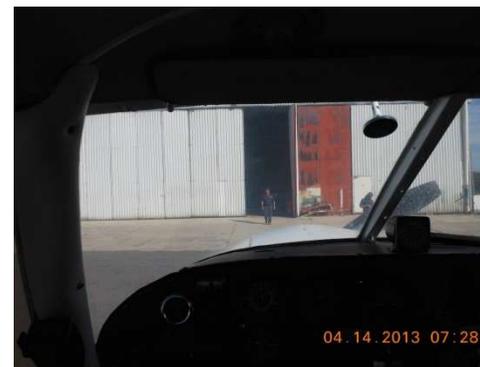
Pilot looking left at UAP



Pilot looking directly forward



Front windshield View of Piper PA-24



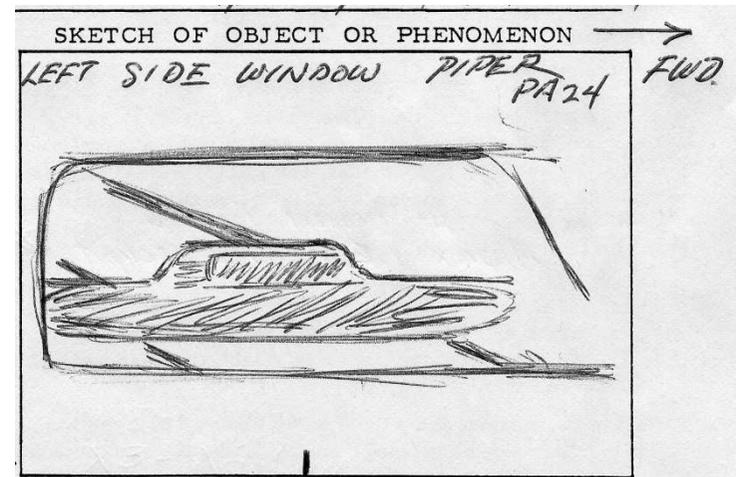
# Sighting Event Reconstruction (Cont.)

( 5-3-75 – Mexico )

Photo from REP of left seat in Piper PA-24 looking 90 degrees left at wing.



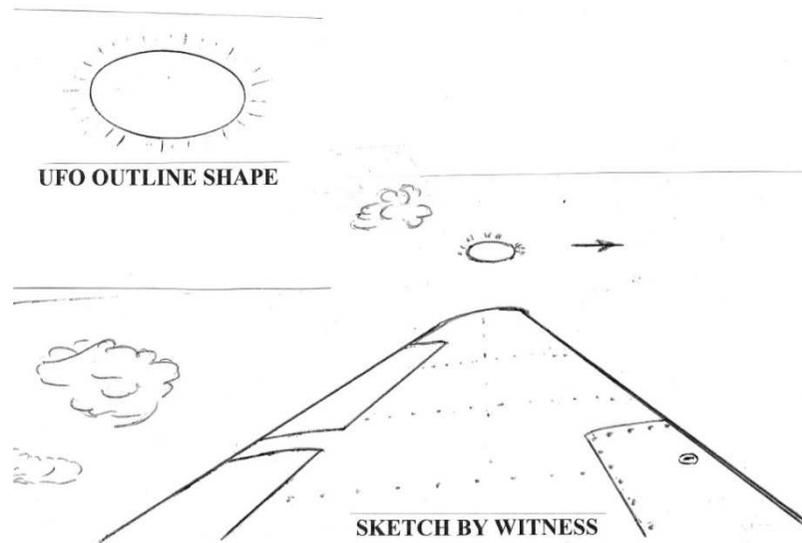
Pilot's sketch of UAP seen hovering above same wing over 10 minutes.



# Obtain Witness Sketches of UAP

Date: 8-3-76

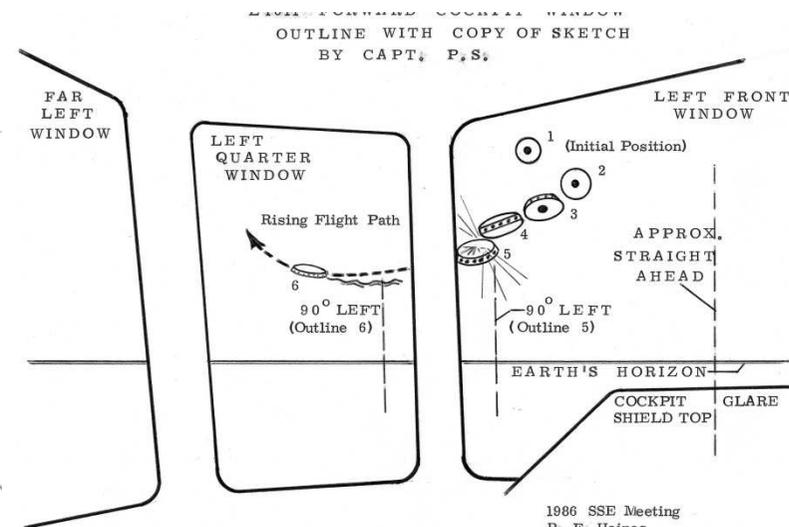
Location: Northern Germany



Date: 7-4-81

Location: Lake Michigan, USA

UAP shown at approx. equal  
time intervals



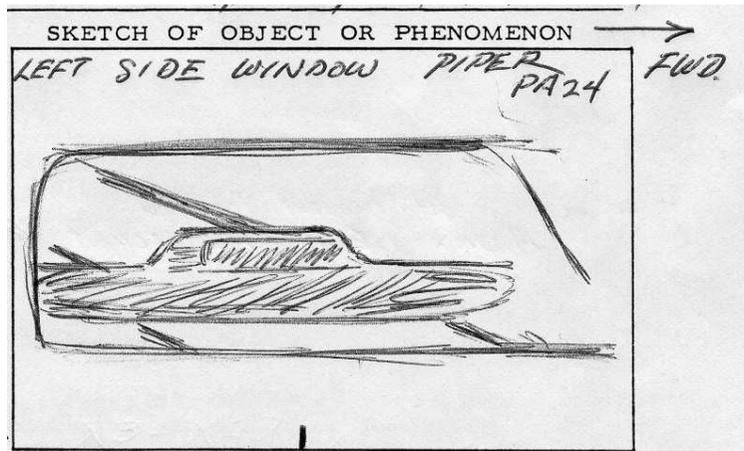
1986 SSE Meeting  
R. F. Haines  
June 1986  
San Francisco, CA

# Obtain Witness Sketches of UAP (Cont.)

Date: 5-3-75

Location: SW of Mexico City

Pilot Drawing made on 4-30-04  
in office setting



Date: 5-3-75

Location: SW of Mexico City

Cockpit Reconstruction made by pilot  
on 4-13-13 directly on window - plastic  
sheet overlay

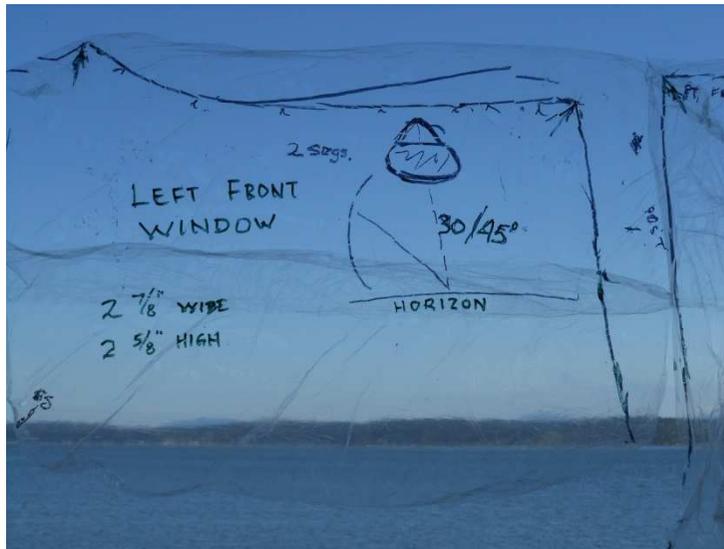


# Obtain Witness Sketches of UAP (Cont.)

Date: 5-3-75

Location: SW of Mexico City

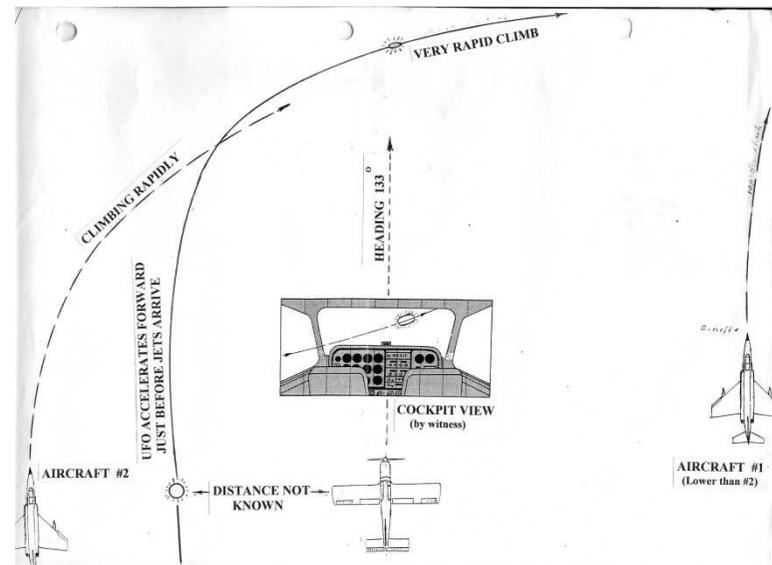
Cockpit Reconstruction of 3rd UAP made directly on plastic sheets overlaid on front window (4-13-13)



Date: 8-3-76

Location: Northern Germany

Pilot drawing of UAP and pursuing jets' flight paths

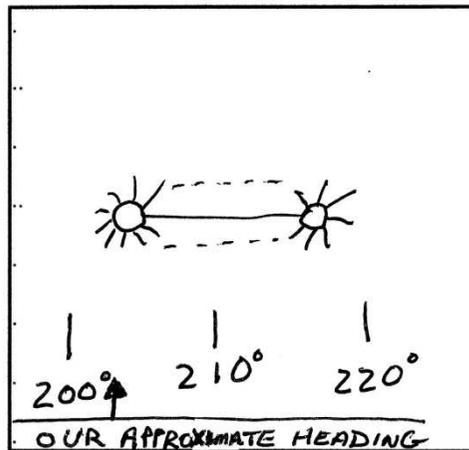


# Obtain Artist Renderings

(Working Closely with Pilot)

Date: 9-27-96

Location: Los Angeles Airport, CA  
Pilot's Initial Sketch from NARCAP  
Report form



No  Unsure  Yes

INITIALLY PACED US IN A  
REVERSE DIRECTION, THEN  
DEPARTED AT AN INCREDIBLE  
SPEED

Date: 9-27-96

Location: Los Angeles Airport, CA  
Artist's Later Reconstruction



# Obtain Artist Renderings (Cont.)

Artist's Rendering of DC-10 Cockpit and  
Apparent Location of UAP Relative to First Officer's Position



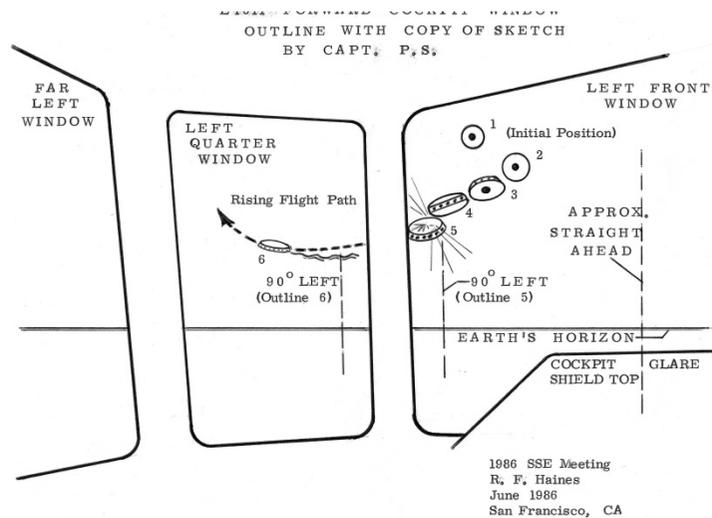
# Reconstructing Sighting Event

## (Additional Calculations)

Date: 7-4-81

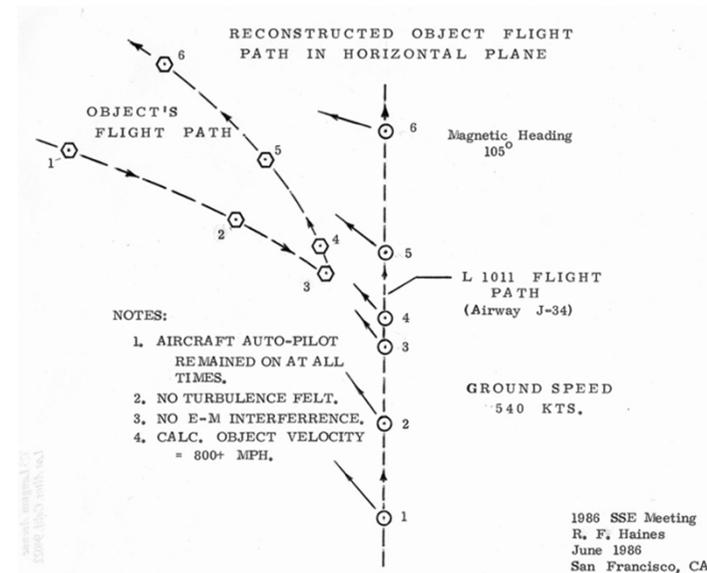
Location: Lake Michigan, USA

Apparent Location and Appearance  
of UAP at Equal Time Intervals



Date: 7-4-81

Location: Lake Michigan, USA  
UAP (left) and Airplane (right)  
Relative Flight Paths



# Reconstructing Sighting Event

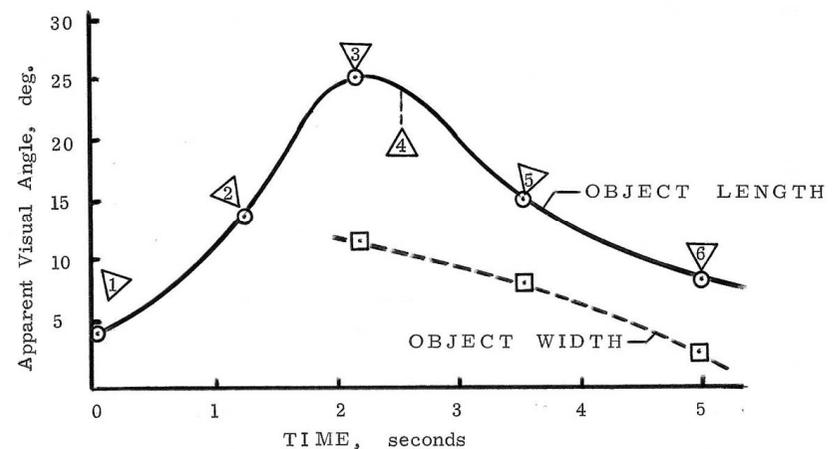
## (Additional Calculations)

Autopilot remained on throughout entire encounter (thus-constant heading, pitch, yaw, etc.).

All UAP position and angular size changes were due to its motion relative to jet.

Date: 7-4-81  
Location: Lake Michigan, USA  
Apparent change in UAP diameter during sighting

APPARENT DIAMETER CHANGE  
DURING THE SIGHTING

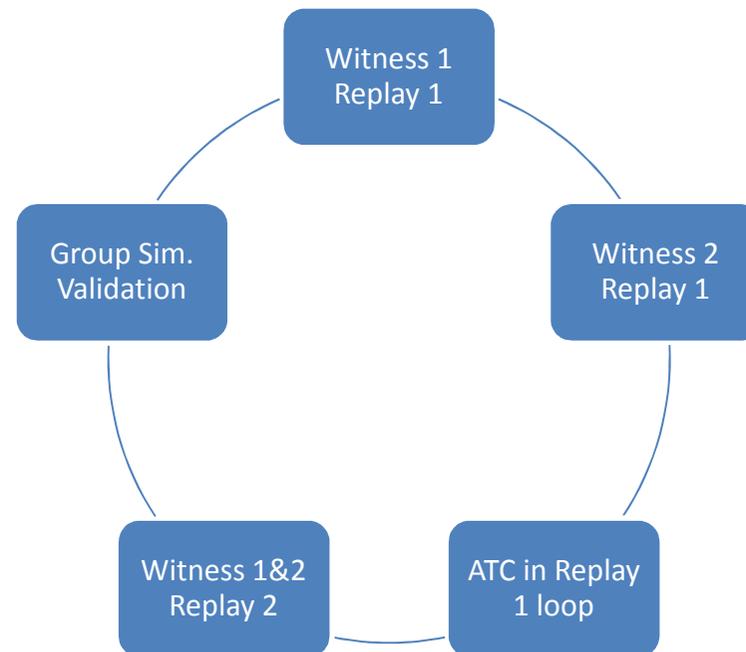


1986 SSE Meeting  
R. F. Haines  
June 1986  
San Francisco, CA

# Reconstructing Sighting Event

## (Sighting Replay Cycle)

- Replay event in a highly real simulator.
- Each witness separately
- Add in ATC participant(s) (if appropriate).
- Replay event with all orig. eye witnesses present.
- Group assessment of degree of accuracy of replay and all deficiencies.
- Involve independent investigators in analysis phase.



# Reconstructing Sighting Event

(Flight Training/Research Simulators)

Full motion, full visual field  
flight training simulators



Example of virtual in-flight scene



# Reconstructing Sighting Event

(Flight Training/Research Simulators)

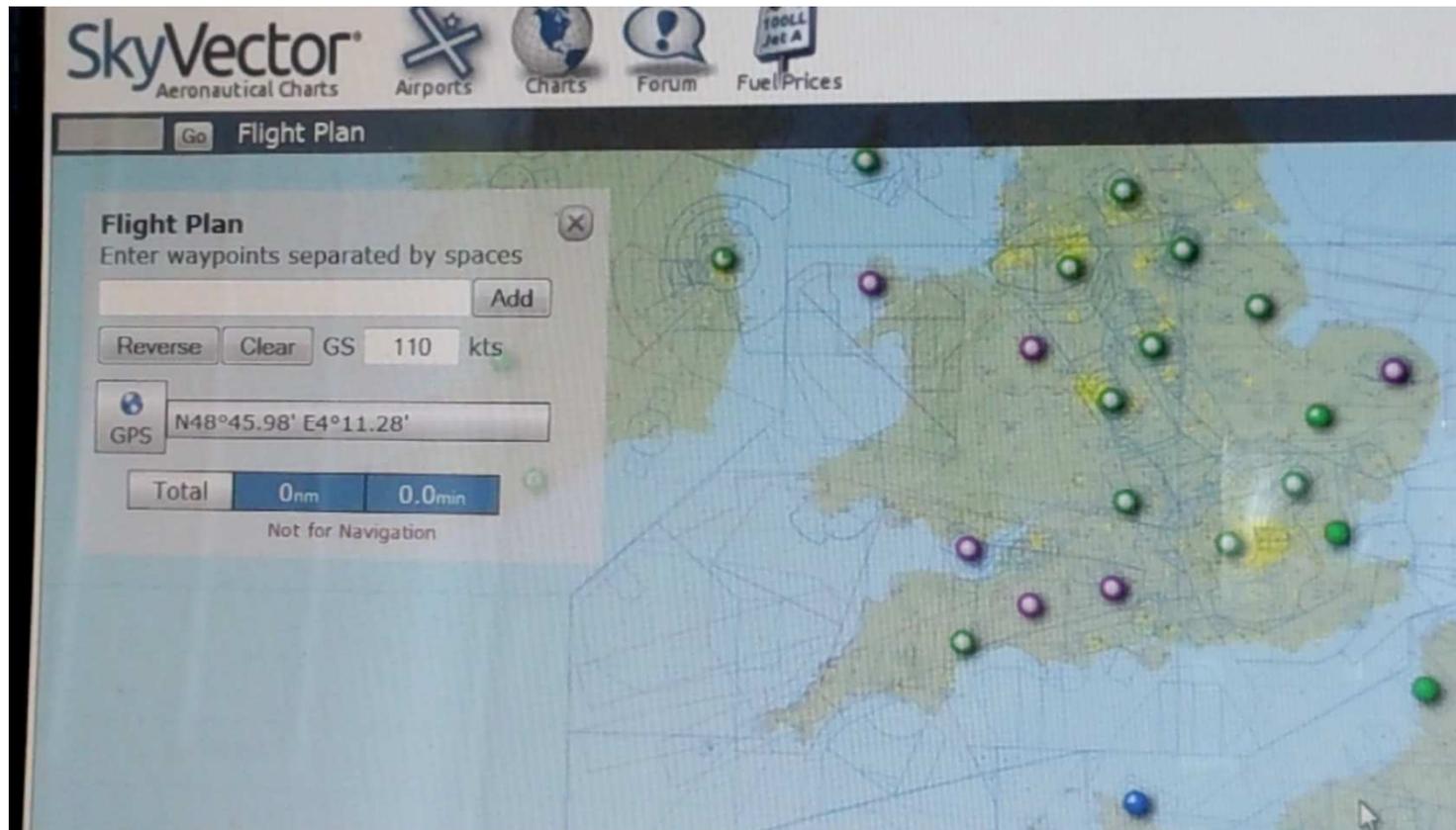
Small airplane, fixed-base  
flight training simulator



Sample computer-generated  
Hi-Def external scene

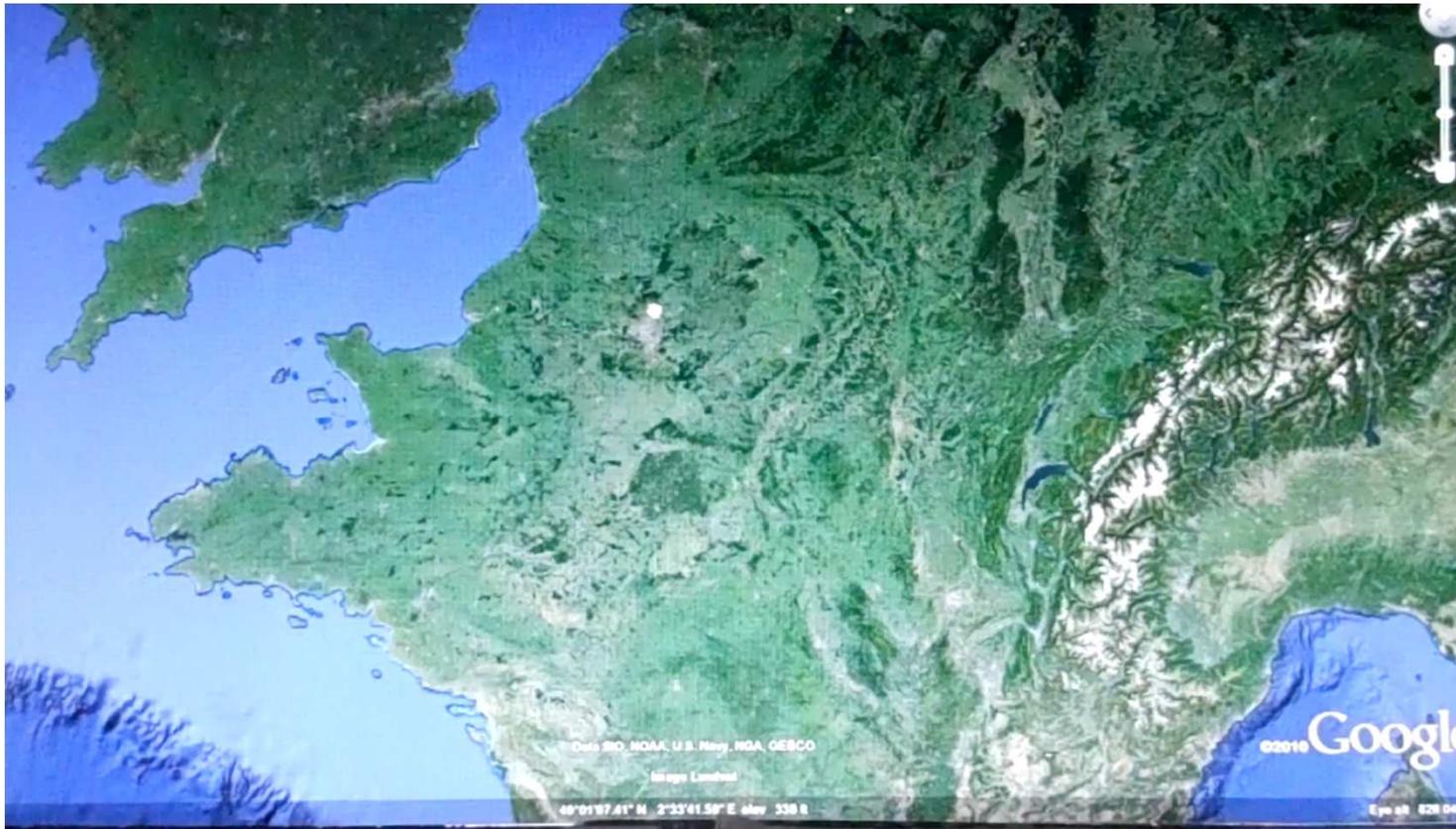


## 5. Near Realtime Avigation Data available today on the Internet



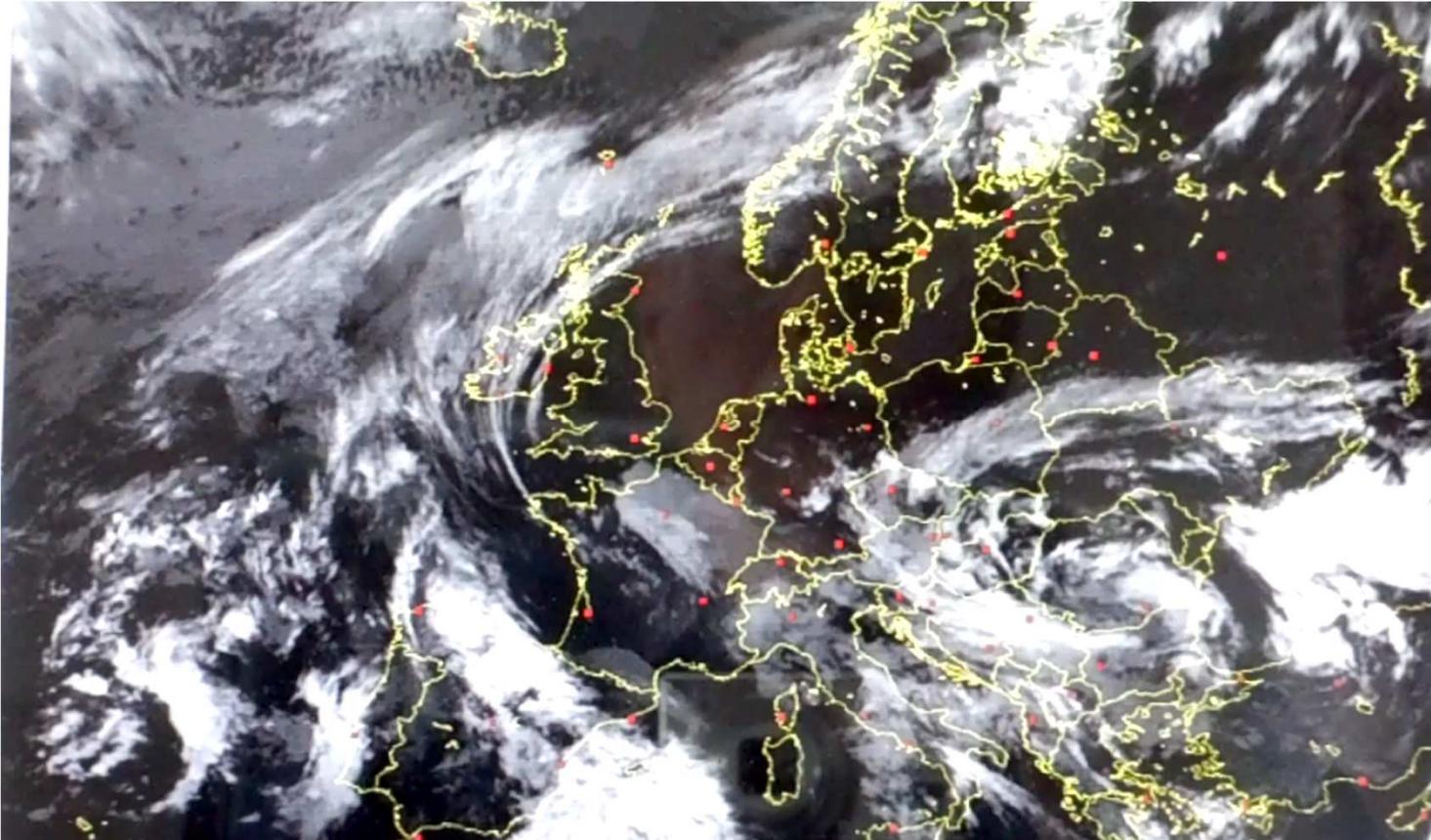
# Earth Surface, Topography, Weather and Improvements

Ref. [www.google-earth](http://www.google-earth)

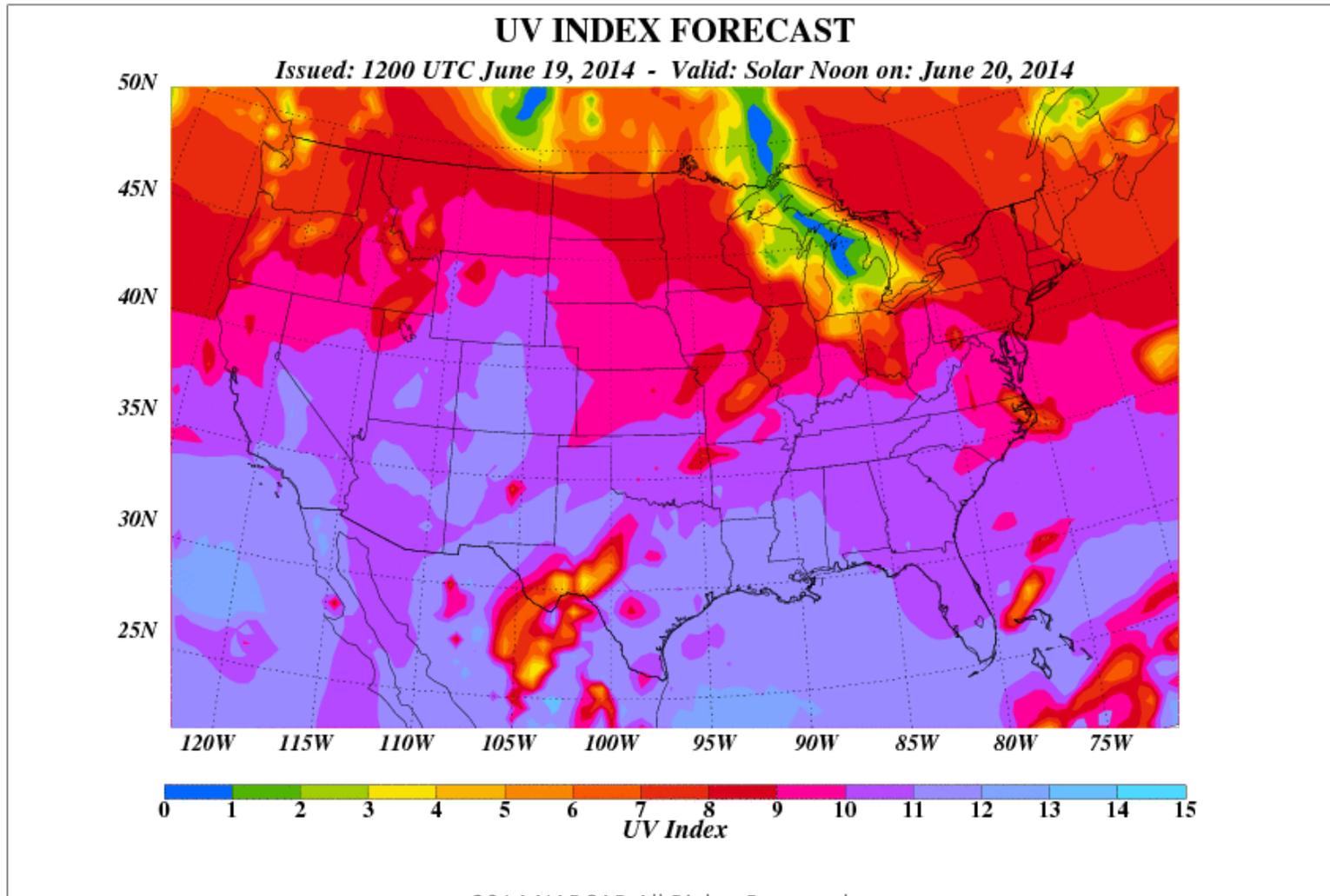


# Europe IR Animated Satellite – Lightning Detection

Date: 19 April 2014    Time: 2030 – 2200 UTC  
(Ref. [SAT24.com/Eumetsat/MetOffice](http://SAT24.com/Eumetsat/MetOffice))



# Solar UV Index Forecasts



## 6. Conclusions

Pilot and ATC reports integrated with near real-time internet data contain a wealth of valuable data that are potentially related to UAP.

UAP investigators should develop and apply a very broad but finely woven “net” of data collection and analysis (strategies, energy spectra, etc.) that include both *objective* hard science data and *subjective* (psychological and sociological) data.

Government aviation officials should collaborate with UAP researchers more openly to enhance scientific understandings and aviation safety related to UAP.

An international data clearinghouse is needed.