

# USEFUL RESEARCH METHODS FOR AIRCREW AND AIR TRAFFIC CONTROLLER UAP SIGHTINGS

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Various methods are available to collect and analyze sighting reports of unidentified aerial phenomena (UAP) made by ground witnesses including but not limited to interviews, image and audio recordings, and subjective drawings usually made from memory. There are also UAP sightings made by aircrew and air traffic controllers around the world [1][2] where additional relevant technical and scientific information is available from a powerful array of virtual, real-time ground- and space-based detection equipment. The following subjects will be presented from the author's NARCAP-related research on this subject: initial and follow-on interview techniques that do not bias the witness; methods of 3-D cockpit documentation; event reconstructions using flight simulators, artist, and computer-based virtual reality reconstructions, and even hypnosis; and integration of ground-based multi-spectral sensor data with near real-time space-based internet data. Photographs, tables, figures and illustrative UAP pilot sighting cases will be presented.

This paper describes a variety of methods of air-crew and air traffic controller interrogation and data collection/management/analysis techniques that can improve overall reliability of the data as well as help uncover otherwise "invisible," "unexpected" Black Swan-like [3] events that lie outside the expectations even of highly experienced investigators (e.g., the where and when of these occurrences cannot be predicted) yet can have an extremely significant impact by producing great uncertainty and even inappropriate, unsafe physical and cognitive flight-related behaviors in the flight crew and others. Like Black-Swan events UAP encounters are a-typical and can have a non-linear influence. Such logic makes what we don't know about them more relevant than what we do know. To the extent that close proximity, in-flight, UAP encounters qualify as true Black Swan events and if flight safety and a better understanding of UAP are our objectives then clearly we need far more effective research methods than we have been using to date; e.g. statistical approaches that are not based on large sample Gaussian distributions. We should be developing new and far more creative analytical approaches for the future.

[1] See [www.narcap.org/technicalreports](http://www.narcap.org/technicalreports) for numerous examples.

[2] R.F. Haines, Chpt. 5, in L. Kean, [UFOs: Generals, Pilots, and Government Officials Go on the](#)

[Record](#). Harmony Books, New York, 2010.

[3] N.N. Taleb, [The Black Swan: The Impact of the Highly Improbable](#). Penguin, London, (2<sup>nd</sup> ed.), 2010.  
r.f.h.

		narcap_CAIPAN_2014_workshop_URLs_FINALFINAL	SELECTED RESEARCH URLS
		Rev. 5-4-14	
No.	Primary Level Subject	Secondary Level Subject	URL (footnote)
1	Aero-Physics	Atmospheric Extinction-all wavelengths	<a href="http://www.google.com/#q=terrestrial+atmospheric+extinction+coefficients">http://www.google.com/#q=terrestrial+atmospheric+extinction+coefficients</a>
		Solar Coronal Mass Ejection (CMEs)	<a href="http://www.geomag.usgs.gov">www.geomag.usgs.gov</a>
		Real Time Solar Quiet Graphs	<a href="http://www.geomag.usgs.gov">www.geomag.usgs.gov</a>
		Proton flux – low & mid altitudes	<a href="http://www.swpc.noaa.gov/rt_plots/pro_3d.html">www.swpc.noaa.gov/rt_plots/pro_3d.html</a>
		USA – Lightning strikes – last 60 min.	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a> (19)
		USA – lightning strikes	<a href="http://www.weatherusa.net/lightningnet">www.weatherusa.net/lightningnet</a>
		Worldwide – lightning strikes	<a href="http://www.science.nasa.gov">http://www.science.nasa.gov</a>
		Lightning – monitoring - last 20 min	<a href="http://thunderstorm.vaisala.com/lightning_explorer">thunderstorm.vaisala.com/lightning_explorer</a>
		USA- Lightning strike monitoring(tee)	<a href="http://www.weatherops.com">www.weatherops.com</a>
		USA – Atmosphere- UV index	<a href="http://www.noaawatch.gov/themes/UVphp">www.noaawatch.gov/themes/UVphp</a>
		USA – Atmosphere – UV index	<a href="http://www2.epa.gov/sunwise/UV-index">www2.epa.gov/sunwise/UV-index</a>
		Stratospheric – UV index	<a href="http://www.cpc.ncep.noaa.gov/currentUVindex">www.cpc.ncep.noaa.gov/currentUVindex</a>
		Blue Jets & Sprites	<a href="http://www.angelfire.com/ga2/stepstoinsanity/sprite.html">http://www.angelfire.com/ga2/stepstoinsanity/sprite.html</a>
		Blue Jets & Sprites	<a href="http://nova.www-star.stanford.edu/~vlf/bibliography/sprites.bib">http://nova.www-star.stanford.edu/~vlf/bibliography/sprites.bib</a>
2	Astronomical	Worldwide – sunrise/set,	<a href="http://aa.usno.navy.mil/data/docs/RS_OneYear.php">aa.usno.navy.mil/data/docs/RS_OneYear.php</a>
		Worldwide -sunrise/set,moon, other	<a href="http://www.esri.noaa.gov/gmd/grad/solcalc/sunrise.html">www.esri.noaa.gov/gmd/grad/solcalc/sunrise.html</a>
		Worldwide – sunrise/set, lunar	<a href="http://www.timeanddate.com">www.timeanddate.com</a>
		USA, Canada,England, Australia	<a href="http://www.sunrisesunset.com">www.sunrisesunset.com</a>
		Worldwide – Timezones, converter	<a href="http://www.greenwichmeantime.com">www.greenwichmeantime.com</a> (20)
3	Geo-Physics	Worldwide Earthquake/fault-line locations	<a href="http://www.earthquake.usgs.gov/earthquakes/search">http://www.earthquake.usgs.gov/earthquakes/search</a> (8)
		Recent seismic activity	<a href="http://earthquakes.usgs.gov/recenteqsww/Quakes/quakes_all.html">http://earthquakes.usgs.gov/recenteqsww/Quakes/quakes_all.html</a>
		Europe – Seismic activity	<a href="http://www.emsc-csem.org/index.php?page=current&amp;sub=list">http://www.emsc-csem.org/index.php?page=current&amp;sub=list</a>
		Earth Resources Observ. & Science	<a href="http://eros.usgs.gov/">http://eros.usgs.gov/</a>
		Earth-Sea surface temperature	<a href="http://neo.sci.gsfc.nasa.gov/view.php?datasetid=MYD28M">neo.sci.gsfc.nasa.gov/view.php?datasetid=MYD28M</a> (22)
		Earth surface magnetic fields	<a href="http://www.intermagnet.org/data_donnee/download-eng.php">http://www.intermagnet.org/data_donnee/download-eng.php</a> (6)
		Earth surface electric fields	<a href="http://www.w3.org/TR/html40/loose.dtd">http://www.w3.org/TR/html40/loose.dtd</a> (10)
		Earth surface electric fields	<a href="http://www.en.wikipedia.org/wiki/Earth%27s_magnetic_field">www.en.wikipedia.org/wiki/Earth%27s_magnetic_field</a>
		USA – Real time seismic monitoring	<a href="http://www.geomag.usgs.gov">www.geomag.usgs.gov</a> (9)
		USA – Infrasound monitoring	<a href="http://www.ees.lanl.gov/pdfs/secur1.pdf">http://www.ees.lanl.gov/pdfs/secur1.pdf</a> (17)
		Worldwide – geonames, coordinates	<a href="http://geonames.nga.mil/ggmaviewer/">http://geonames.nga.mil/ggmaviewer/</a>
4	Oceanographic	USA – NOAA	<a href="http://www.ndbc.noaa.gov/">http://www.ndbc.noaa.gov/</a>
		Sea State	<a href="http://www.oceanweather.com/data">www.oceanweather.com/data</a>
		USA-Pacific 3-hr, sea state analysis	<a href="http://www.opc.ncep.noaa.gov/shtml/PacReqSSA.shtml">www.opc.ncep.noaa.gov/shtml/PacReqSSA.shtml</a>
		British Isles/West France Sea State	<a href="http://www.seastates.net">www.seastates.net</a>
		Worldwide – Surface temperature	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a> (19)
		Worldwide – Sea Surface Temp.	<a href="http://www.ncdc.noaa.gov">www.ncdc.noaa.gov</a> > Climate Monitoring > State of the Climate
		Worldwide – Sea Surface Conditions	<a href="http://www.oceanweather.com/data">www.oceanweather.com/data</a>
5	Weather – At airplane Location	USA – national	<a href="http://www.nws.noaa.gov/rss">www.nws.noaa.gov/rss</a>
		USA – national	<a href="http://www.weather.gov">www.weather.gov</a>
		USA – national	<a href="http://www.noaa.gov/wx.html">www.noaa.gov/wx.html</a>
		USA – regional	<a href="http://www.weather.yahoo.com">www.weather.yahoo.com</a>
		USA – regional	<a href="http://www.accuweather.com">www.accuweather.com</a>
		USA – Rawinsonde launch sites	<a href="http://www.ua.nws.noaa.gov/nws_upper.htm">www.ua.nws.noaa.gov/nws_upper.htm</a>
		Worldwide	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a>
		Worldwide – Climate analysis	<a href="http://www.ncdc.noaa.gov">www.ncdc.noaa.gov</a> > Climate Monitoring > State of the Climate
		Europe – satellite radar imagery	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a> (19)
		Canada – Satellite radar imagery	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a> (19)
		Historical (2)	<a href="http://www.wunderground.com/">http://www.wunderground.com/</a>
		Worldwide current and forecast	<a href="http://weather.cnn.com">http://weather.cnn.com</a> (7)
		Worldwide – Current	<a href="http://www.landings.com">www.landings.com</a>
		Worldwide – Current – interactive	<a href="http://www.weatherspark.com">www.weatherspark.com</a> (15)
		Extreme forecast	<a href="http://www.extremescience.com/weather.htm">www.extremescience.com/weather.htm</a>
		Extreme forecast	<a href="http://www.wunderground.com/climate/extreme.asp">www.wunderground.com/climate/extreme.asp</a>
		USA – national	<a href="http://www.noaa.gov/extreme2011/index.html">www.noaa.gov/extreme2011/index.html</a>
		USA – heavy rain, thermodynamics	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a> (19)
		Wind shear data	<a href="http://www.eldoradocountyweather.com">www.eldoradocountyweather.com</a>
6	Radar Antenna Sites	USA - ARTCC Sites (NAS) (3)	<a href="https://nfdc.faa.gov/xwiki/bin/view/NFDC/ARTCC+Radar+Sites">https://nfdc.faa.gov/xwiki/bin/view/NFDC/ARTCC+Radar+Sites</a>
7	Airport(s)	Worldwide Identifiers, Lat., Long.	<a href="http://www.landings.com">www.landings.com</a>
		Airport identifiers (e.g., KBOS)	<a href="http://www.airnav.com/airports">www.airnav.com/airports</a>
		USA-Airport Diagrams (searchable)	<a href="http://www.faa.gov/airports/runway/Safety/airport-diagrams">www.faa.gov/airports/runway/Safety/airport-diagrams</a>
		Worldwide – Airport Data	<a href="http://www.al-nasir.com/www/PVA/Library/World_Airport_Data/basic-spec.shtml">www.al-nasir.com/www/PVA/Library/World_Airport_Data/basic-spec.shtml</a>
		Worldwide – Airport Codes	<a href="http://www.world-airport-codes.com">www.world-airport-codes.com</a> (18)
		USA – Airport City Codes	<a href="http://www.airportcitycodes.com">www.airportcitycodes.com</a>
8	Orbital Imagery	USA – Landsat Imagery	<a href="http://landsat.gsfc.nasa.gov/?p=7042">http://landsat.gsfc.nasa.gov/?p=7042</a>
		Earth Observatory	<a href="http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=80687">http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=80687</a>
		Earth Explorer	<a href="http://earthexplorer.usgs.gov">http://earthexplorer.usgs.gov</a>
		Earth	<a href="http://www.google.earth">www.google.earth</a> (11)
		NASA-USGS, Spectroradiometer MODIS	<a href="http://lta.cr.usgs.gov/MODIS">http://lta.cr.usgs.gov/MODIS</a>
		USA – NOAA Imagery	<a href="http://www.nhc.noaa.gov/satellite.php">http://www.nhc.noaa.gov/satellite.php</a>
		USA – NOAA Satellite Imagery (1)	<a href="http://www.class.ngdc.noaa.gov/saa/products/welcome%3bjsessionid=F9BA0=0B29BC7FD055ABCAE5F8929D">http://www.class.ngdc.noaa.gov/saa/products/welcome%3bjsessionid=F9BA0=0B29BC7FD055ABCAE5F8929D</a>
		(continued)	
		USA – California Coastline	<a href="http://www1.california.coastline.org/">http://www1.california.coastline.org/</a>
		USA – California Coastline/microwave	<a href="https://fortress.wa.gov/ecy/coastlatlas/tools/ShorePhotos.aspx">https://fortress.wa.gov/ecy/coastlatlas/tools/ShorePhotos.aspx</a>
		USA – National Park Service	<a href="http://www.nps.gov/pub_aff/imagebase.html">http://www.nps.gov/pub_aff/imagebase.html</a>
		USA – Fed. Govt. Public Domain Images	<a href="http://stellar-one.com/public/US_federal_government_public_domain_images.htm">http://stellar-one.com/public/US_federal_government_public_domain_images.htm</a>
9	Rocket launch data	Worldwide -	<a href="http://www.planet4589.org/mailman/listinfo/jsr">http://www.planet4589.org/mailman/listinfo/jsr</a> (16)
		Worldwide-	<a href="http://planet4589.org/space/log/launch.html">http://planet4589.org/space/log/launch.html</a>
		Worldwide – Rocket launch sites	<a href="http://planet4589.org/space/log/launch.html">http://planet4589.org/space/log/launch.html</a>
10	Incident Databases	USA–FAA Accident/Incident Data Sy	<a href="http://www.asias.faa.gov">http://www.asias.faa.gov</a>
		USA – NTSB – Near Miss Reports	<a href="http://www.ntsb.gov/aviationquery/index.aspx">www.ntsb.gov/aviationquery/index.aspx</a>
		USA – NASA – ASRS	<a href="http://www.asrs.arc.nasa.gov">www.asrs.arc.nasa.gov</a>
		USA – NATCA	<a href="http://www.safety1.natca.net">www.safety1.natca.net</a>

11	Near Miss Events		
		USA – ASRS	<a href="http://www.asrs.arc.nasa.gov/docs/rpsts/nmac.pdf">http://www.asrs.arc.nasa.gov/docs/rpsts/nmac.pdf</a>
		USAQ – Pilot Reported Events	<a href="http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/">http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/</a>
		USA – midair events, narrative search	<a href="http://www.nts.gov/aviationquery/index.aspx">http://www.nts.gov/aviationquery/index.aspx</a>
		USA – Aviation Safety Magazine	<a href="http://www.aviationsafetymagazine.com/links">www.aviationsafetymagazine.com/links</a>
		USA -	<a href="http://www.37000feet.com">www.37000feet.com</a>
		USA – NTSB	<a href="http://www.nts.gov/aviationquery/index.aspx">http://www.nts.gov/aviationquery/index.aspx</a>
12	Accident Databases		
		USA – FAA	<a href="http://www.asias.faa.gov/data_research/accident_incident/">http://www.asias.faa.gov/data_research/accident_incident/</a>
		USA – NTSB	<a href="http://www.nts.gov/investigations/reports_aviation.html">http://www.nts.gov/investigations/reports_aviation.html</a>
		USA – NTSB accidents/serious incid.	<a href="http://www.nts.gov/aviationquery/index.aspx">http://www.nts.gov/aviationquery/index.aspx</a>
		USA – NTSB Last ten days accidents	<a href="http://www.nts.gov/data/aviation_stats.html">http://www.nts.gov/data/aviation_stats.html</a>
		USA – Flight Safety Foundation	<a href="http://aviation-safety.net/database/">http://aviation-safety.net/database/</a>
		USA – Skybrary	<a href="http://www.skybrary.aero/index.php/Accident_Incident_Data_System">http://www.skybrary.aero/index.php/Accident_Incident_Data_System</a>
		USA - Air Transport Safety	<a href="http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/National_Transportation_statistics/index.html#chapter_2">http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/National_Transportation_statistics/index.html#chapter_2</a>
		(continued)	
		USA – ERAU (University)	<a href="http://archives.pr.erau.edu/resources/accidentinfo.html">http://archives.pr.erau.edu/resources/accidentinfo.html</a>
13	Accident – Incident		
	Investigation	ICAO – Annex 13	<a href="http://www.cockpitseeker.com/wp-content/uploads/atpl/010/course/ICAO%20">www.cockpitseeker.com/wp-content/uploads/atpl/010/course/ICAO%20</a>
		ICAO – Investigations	<a href="http://www.servito.net/go/international-civil-aviation-aircraft-accident-...">www.servito.net/go/international-civil-aviation-aircraft-accident-...</a>
		NASA – ASRS	<a href="http://www.37000feet.com">www.37000feet.com</a>
14	Operational -		
	Flight-Related	Flight tracking/schedules (4)	<a href="http://www.flihtadar24.com/">http://www.flihtadar24.com/</a>
		Flight tracking/schedules (14)	<a href="http://www.flightstats.com">www.flightstats.com</a>
		Worldwide – Flight planning	<a href="http://www.landings.com">www.landings.com</a>
		USA - NOTAMS	<a href="https://notams.aim.faa.gov">https://notams.aim.faa.gov</a>
		USA – NOTAMS	<a href="http://www.landings.com">www.landings.com</a>
		USA – FAA -NOTAMS	<a href="https://www.pilotweb.nas.faa/PilotWeb/">https://www.pilotweb.nas.faa/PilotWeb/</a>
		UK – NATS	<a href="http://www.landings.com">www.landings.com</a>
		USA – Temporary Flight Restrictions	<a href="http://www.tfr.gov/tfr2/list.html">http://www.tfr.gov/tfr2/list.html</a>
15	FAA Forms		
		Flight Plan (USA) – FAA 7233-1	<a href="http://www.faa.gov/airports">www.faa.gov/airports</a>
		Flight Plan (Intern't) – FAA 7233-4	<a href="http://www.faa.gov/airports">www.faa.gov/airports</a>
		Data Release Request – FAA 1200-5	<a href="http://www.faa.gov/airports">www.faa.gov/airports</a>
		ASRS reporting forms	<a href="http://www.asrs.arc.nasa.gov">Wwww.asrs.arc.nasa.gov</a>
16	Aircraft		
		Worldwide – All models ever built	<a href="http://www.aviastar.org/index2">http://www.aviastar.org/index2</a>
		ICAO - Make-Model Designations	<a href="http://www.icao.int/safety/ism/Accident%20Incident%20Reporting%20Guidance">www.icao.int/safety/ism/Accident%20Incident%20Reporting%20Guidance</a> (21)
		Design specifications – civil only	<a href="http://www.airliners.net/aircraft">www.airliners.net/aircraft</a>
		Design specifications	<a href="http://www.planeandpilotmag.com/aircraft/specifications.html">www.planeandpilotmag.com/aircraft/specifications.html</a>
		Design software (5 airfoils) – free	<a href="http://www.aircraftdesigns.com/designing-aircraft.html">www.aircraftdesigns.com/designing-aircraft.html</a>
17	ATC Operations -		
		USA – FAA	<a href="https://www.faa.gov">https://www.faa.gov</a>
18	Navigation Charts -		
	& Aids	USA – NAS	<a href="http://www.faa.gov/air_traffic/flight_info/aeronav">www.faa.gov/air_traffic/flight_info/aeronav</a>
		USA	<a href="http://www.aeroplanner.com">www.aeroplanner.com</a>
		USA – Wide Selection	<a href="http://www.skysupplyusa.com">www.skysupplyusa.com</a>
		USA & territories	<a href="http://www.airnav.com">www.airnav.com</a>
		USA – Wide Selection	<a href="http://www.aviationcharts.com">www.aviationcharts.com</a>
		Worldwide	<a href="http://www.avcharts.com">www.avcharts.com</a>
		Worldwide (by subscription)	<a href="http://www.jepesen.com">www.jepesen.com</a>
		Worldwide – FAA	<a href="http://www.faacharts.faa.gov">www.faacharts.faa.gov</a>
		Worldwide	<a href="http://www.skyvector.com">www.skyvector.com</a> (5)
		Worldwide	<a href="http://www.landings.com">www.landings.com</a>
19	Accident – Topical		
		Investigation data	<a href="http://www.nts.gov/investigations/index.html">www.nts.gov/investigations/index.html</a>
		Investigation data	<a href="http://www.faa.gov/accident&amp;incidentdata">www.faa.gov/accident&amp;incidentdata</a>
		Investigation data	<a href="http://www.flightsafetyfdoundation.com/aviationsafetynetwork">www.flightsafetyfdoundation.com/aviationsafetynetwork</a>
		Laser – Pilot Vision	<a href="http://en.wikipedia.org/wiki/Lasers_and_aviation_safety">http://en.wikipedia.org/wiki/Lasers_and_aviation_safety</a>
20	Flight Simulation		
		Full size cockpit/hardware	<a href="http://www.therealcockpit.com">www.therealcockpit.com</a> (12)
		Plans to build full size home cockpit	<a href="http://www.theseriesoneplans.com">www.theseriesoneplans.com</a>
		Computer-based software-training/fun	<a href="http://www.kwikpit.com">www.kwikpit.com</a>
		Computer-based software-training/fun	<a href="http://www.fspilot.com">www.fspilot.com</a> (13)
21	Electronics		
	(Avionics)	EW SIGINT (Electronic Warfare)	<a href="http://www.ewsigint.net/">http://www.ewsigint.net/</a>
		Worldwide – HF radio propagation	<a href="http://www.bidstrup.com/7ri-hf-radio-propagation.html">www.bidstrup.com/7ri-hf-radio-propagation.html</a>
		Assoc. of Old Crows (>50subcategories)	<a href="https://www.crows.org">https://www.crows.org</a>
		Assoc. of Old Crows (projects)	<a href="https://www.crows.org/advocacy-publications/publications.html">https://www.crows.org/advocacy-publications/publications.html</a>

Notes:		
1	All data is free but must be requested.	Links are then provided to the requested data
2	Weather data prior to 1980s must be	purchased from National Climatic Data Center (NCDC) <a href="http://www.ncdc.noaa.gov/">http://www.ncdc.noaa.gov/</a>
3	Includes all NAS radar systems capable of transmitting MOSAIC data. Since Dec. 2012 systems without slave capabilities only record audio (no video).	
4	Uses ADS-B transponder signals.	Only about sixty percent of commercial A/C now have ADS-B transponders.
5	Skyvector.com navigation charts are	free.
6	International Real-Time Magnetic Observatory Network. Collects/analyzes 1 min. digital data for USGS observatories after 1985. For World Data Center data back to 1985 see: <a href="http://www.wdc.bgs.ac.uk/catalog/master.html">http://www.wdc.bgs.ac.uk/catalog/master.html</a>	
7	To use <a href="http://weather.cnn.com">weather.cnn.com</a> insert city name and/or postal code	
8	USGS seismic data base allows archival searches using multiple search options, graphics are clear.	
9	This seismic monitoring site provides many research-oriented, free, sub-sites in Data & Products section: realtime H index, HEZF (for 15 stations mostly in USA K index, Dst display, and others.	
10	International Geomagnetic Reference	Field (IGRF11) is updated every 5 years (latest 2011); presents earth's main mag. Field and secular variations.
11	Google-Earth (Version 7.1.2.2041) allows flexible user-controls for 3-D eye-point movement, zoom, overlays, notations, 360 deg. Street-level photos, etc.	
12	The Real Cockpit – product name of TRC Simulators, B.V. (Netherlands); products include full size two-man cockpits with functional, realistic panels, etc.	
13	fsplotshop sells computer s/w to "fly" 1,434 different airplane models, 794 utilities, 997 terrain/scenery add-ons, 106 hardware items, etc.	
14	Flightstats website contains a wealth of real time flight information: schedules, delays, current location, etc.	
15	Weatherspark.com provides useful near real-time data: Temp., dew pt., wind, pressure, humidity (Radar-USA only). Maps with color-topogr: zoom-sleuable.	
16	Planet – rocket launch data - JSR Space Report: 2 updates/month; unmanned and manned launches (from: Harvard-Smithsonian Center for Astrophysics)	
17	Infrasound monitoring is conducted by Los Alamos National Lab. (since 1981) with six sensor arrays in western USA and one on Ascension Island; Data feeds are to U.S.A.F. Technical Applications Center (AFTAC) and the Prototype International Data Center (PIDC) in Alexandria, VA. Sensors can detect nuclear explosions, Space Shuttle launches and re-entry and smaller missile launches, bolide atmospheric entry, earthquakes, volcanic eruptions, gas-fire explosions, etc.	
18	World Airpt Codes presents runway length data, abbreviations, codes, etc. for over 9,000 airports	
19	<a href="http://www.eldoradoweather.com">www.eldoradoweather.com</a> Provides a wealth of near real-time and forecast meteorological data including printable maps, rapid replay barographic charts, etc.	
20	<a href="http://www.greenwichmeantime.com">www.greenwichmeantime.com</a>	Contains a wealth of practical information about GMT, local conversion to, current time at any location, etc.
21	ICAO Airplane Make/Model Report	157 Pp. (ECCAIRS 4.2.8) Provides unique number for all world aircraft.
22	Moderate Resolution Imaging Spectroradiometer (MODIS). Image date: 30 March to 30 April 2014, 8 day average. Measures 1 mm sea depth.	