

# *Catastrophic Equatorial Icing Events May Be Crashing Airplanes*

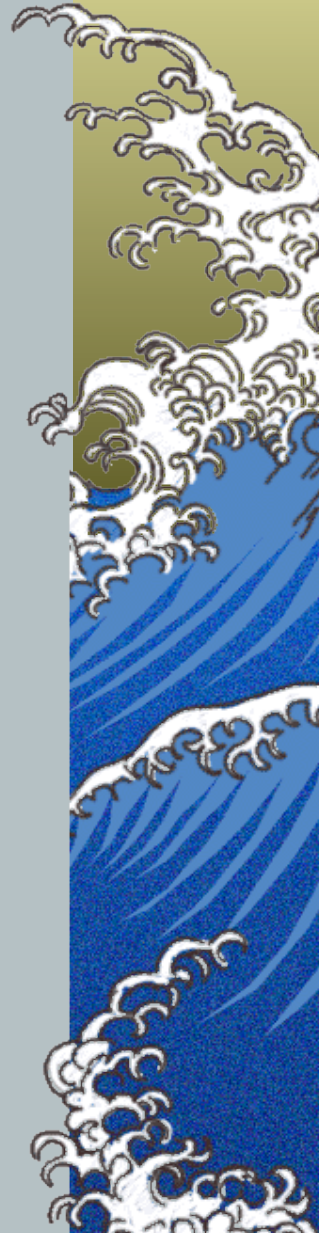
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AOS seminar, Oct. 1, 2015, Spiess 330, 4 pm



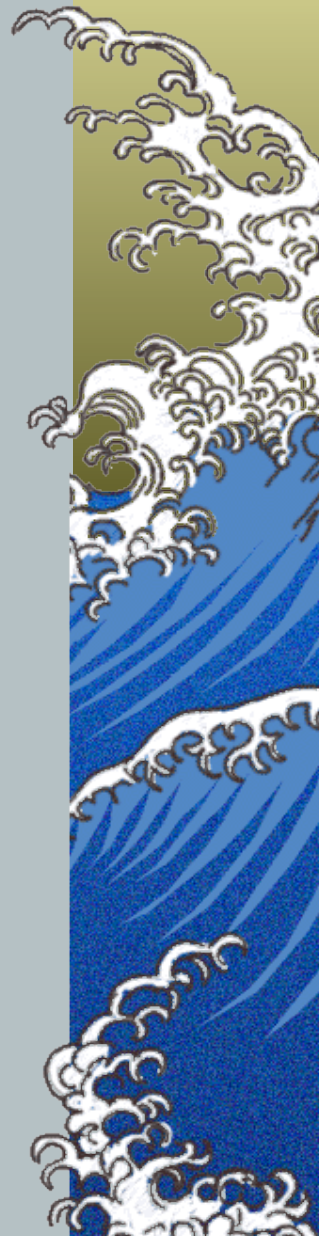
# Catastrophic Equatorial Icing

 **AGU FALL MEETING**

San Francisco | 15–19 December 2014

**Catastrophic Equatorial Icing Caused the Air France 447 and Malaysian 370 Crashes: Risks of More Such Disasters Are Increased By Global Warming**  
**Carl H Gibson**, University of California San Diego, La Jolla, CA, United States

Dangerous icing conditions near the equator have been observed, and may account for the tragic crashes of Air France 447 in 2009 and Malaysian Airlines 370 in 2014, not pilot error in either case. Six cases of engine failures from icing were reported in 2013 at high altitudes for 747-8 and 787 Dreamliner planes at tropical latitudes ([journalofcosmology.com](http://journalofcosmology.com) volume 23). Lack of horizontal Coriolis forces accounts for the extreme intermittency of equatorial turbulence and turbulent mixing, Baker and Gibson (1987). Intermittency factors inferred from the available microstructure data sets were much larger than those at higher latitudes, reflecting the wide range of scales of the turbulence cascade from small scales to large in the horizontal direction. Lognormal statistical analysis implies mean values of dissipation rates are likely to be 30,000 times larger than mode values at the equator, compared to only 2000 times larger at midlatitudes. Modern stratified turbulence theory ([journalofcosmology.com](http://journalofcosmology.com) volume 21) shows turbulent mixing of heat, mass, momentum, and chemical species in natural fluids such as the ocean, atmosphere, and cosmological fluids is dominated by mixing chimneys directed perpendicular to vertical and radial layers of gravitational stratification by the inertial vortex forces that define turbulence. Rarely, thick columns of supercooled steam reach cruising altitudes of jet aircraft. After entering such a column, the plane is doomed.



# Extreme Equatorial Icing

Engines fail due to high altitude icing at equatorial latitudes



\*journalofcosmology.com volumes 21 and 23

A Boeing 747 "Dreamliner" takes off in this file picture. AP photo

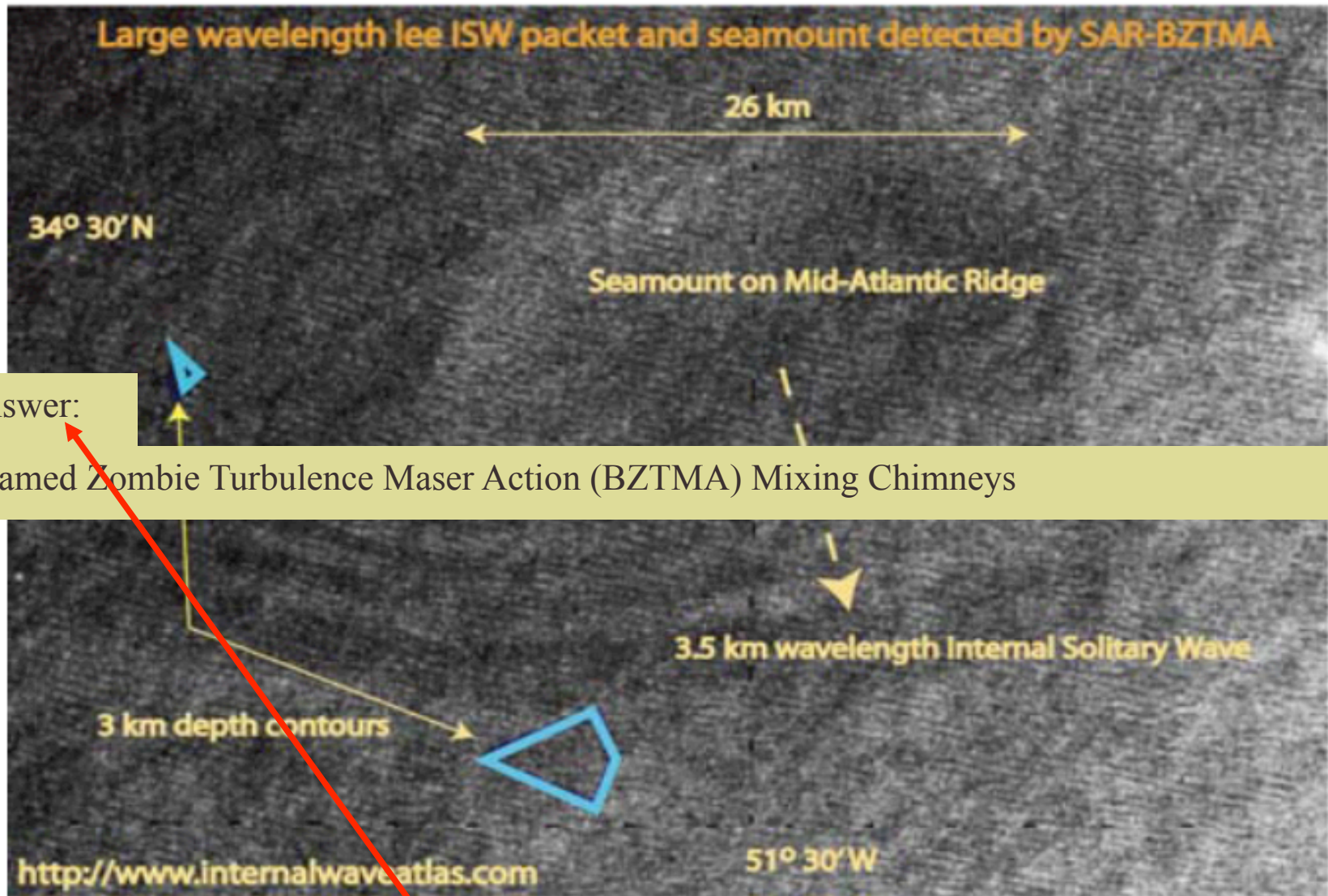
\*Catastrophic equatorial icing is likely cause of MH 370 crash  
(not pilot error, not terrorist capture, not engine failure)



# Beamed Zombie Turbulence Maser Action Mixing Chimneys

- *Generic mechanism for vertical and radial transport in natural fluids*
- *Ocean, atmosphere, galaxy, stars*
- *Heat, mass, momentum, information*
- *Supercooled water vapor of Catastrophic Equatorial Icing*
- *Journalofcosmology.com vol 21*





Answer:

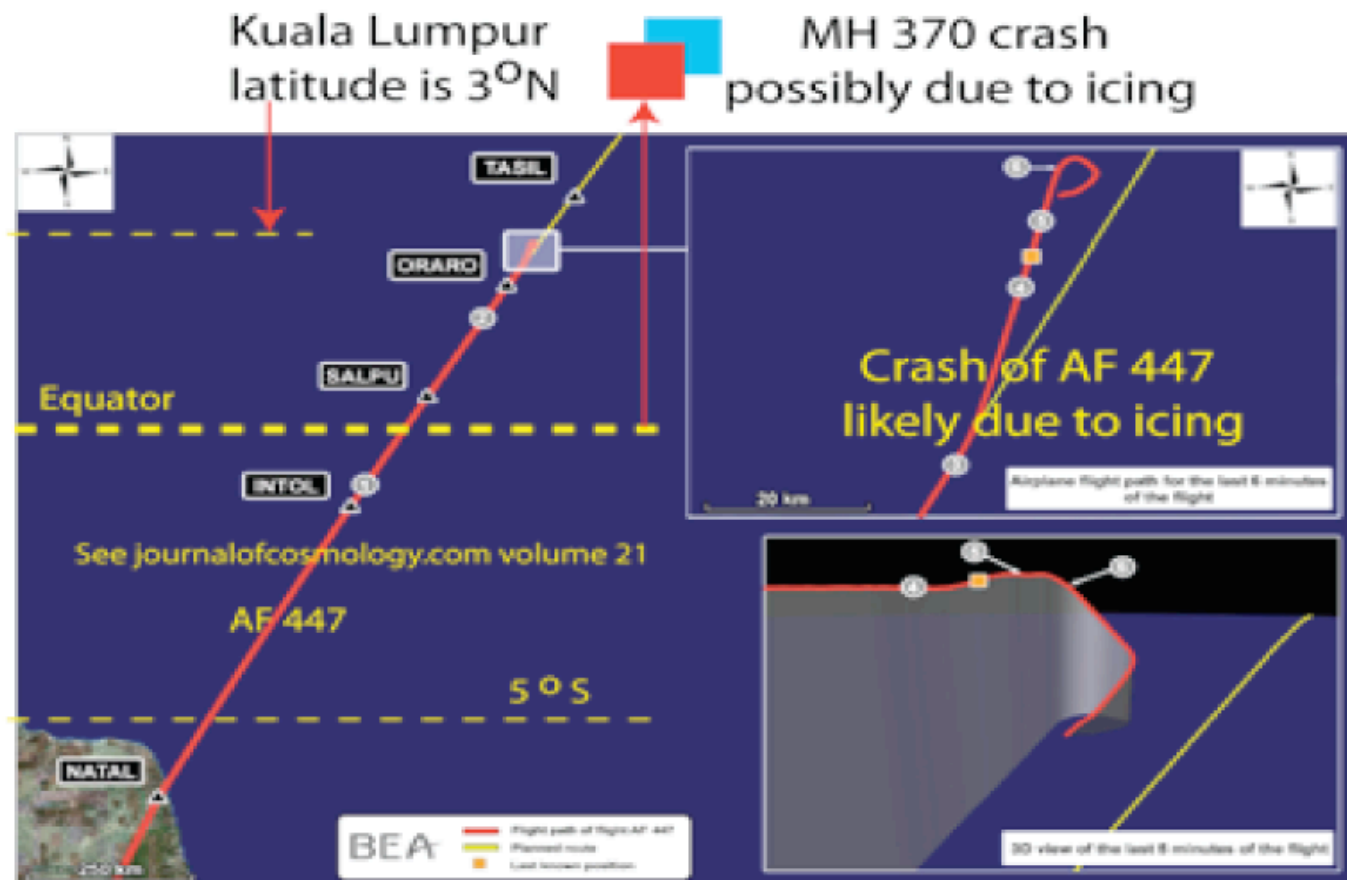
Beamed Zombie Turbulence Maser Action (BZTMA) Mixing Chimneys

Figure 1. Seamount and internal tidal waves from space. How is this information transmitted?

# What happened to AF 447?

Catastrophic Equatorial Icing crashes Air France 447 (not pilot error)

Equatorial latitudes have extremely intermittent turbulence\* that can cause icing altitude layers to become dangerously thick



\* Baker and Gibson (1987)

■ Latitude of MH 370 crash by this mechanism coincides with Chinese satellite (object?) sightings at  $6.7^{\circ}\text{N}$  ■

# Four Minutes Left to Live

Air France 447 suffered death by icing, ignorance of equatorial turbulence

Pitot tubes ice up   Tail ices up   Icy wings lose lift   Doomed plane hits water



No pilot errors and no hope

# Crash of QZ8501

## Missing AirAsia QZ 8501 is latest in long series of flight mysteries

AirAsia's flight QZ 8501's disappearance is the latest in a long series of flight mysteries including Malaysia Airlines Flight 370, Air France Flight 447, American Airlines Boeing 727-223 and an Indian Air Force cargo plane that vanished in 2007.

BY ALFRED NG / NEW YORK DAILY NEWS / Sunday, December 28, 2014, 12:57 AM

AAA



<http://JournalofCosmology.com/JOC24/indexVol24CONTENTS.htm>

See Gibson, C. H. AGU 2014 Poster, J of C, Vol 24, Number 17



# Planes don't just crash!



Numerous planes near QZ8501 show the cause of crash was extremely intermittent: extreme intermittency is characteristic of catastrophic equatorial icing events



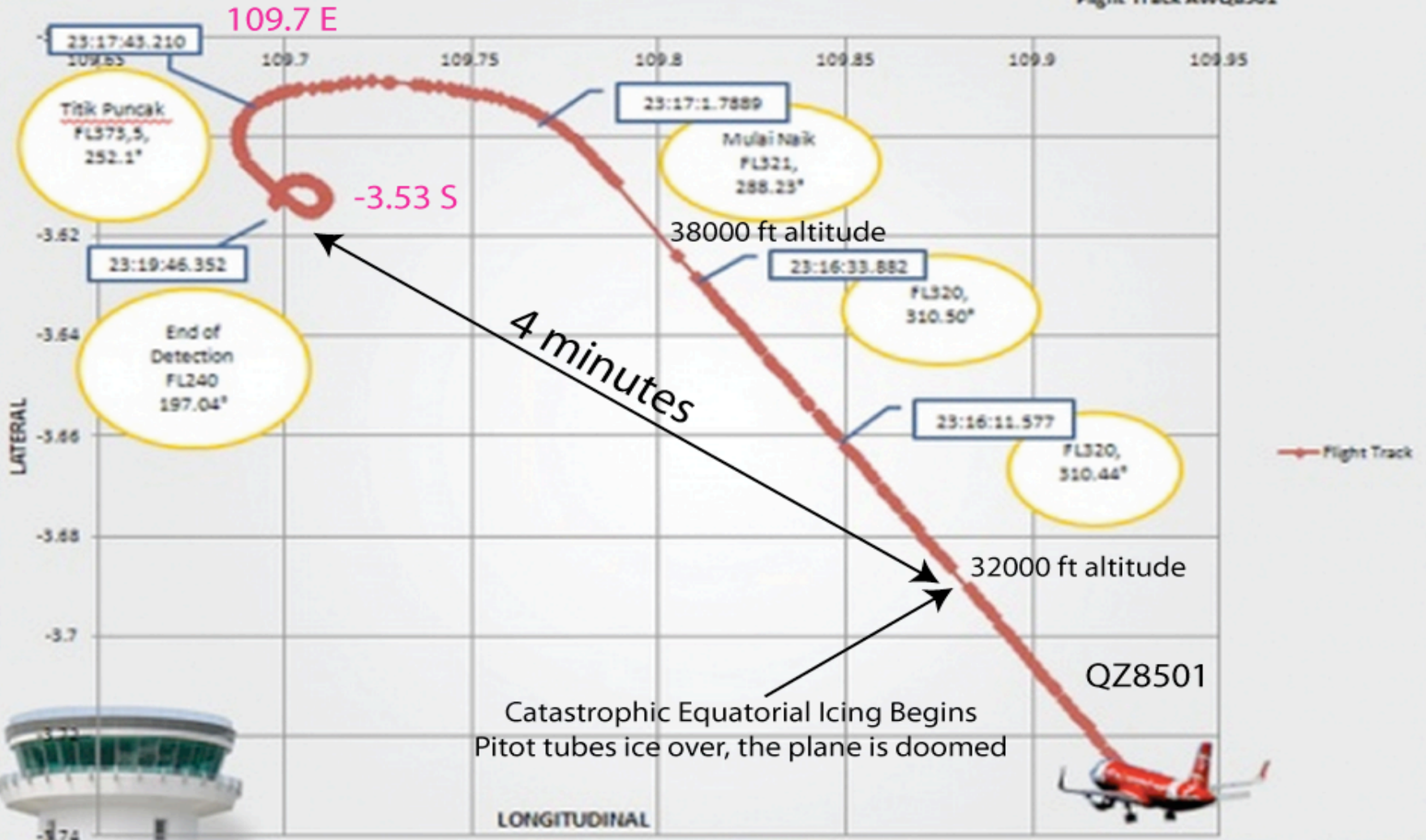
**Figure JC2014.24.17.3 CHG:** Numerous aircraft are shown passing the crash site, suggesting the cause of the crash must be more complex than simply "weather"

# The Last Four Minutes



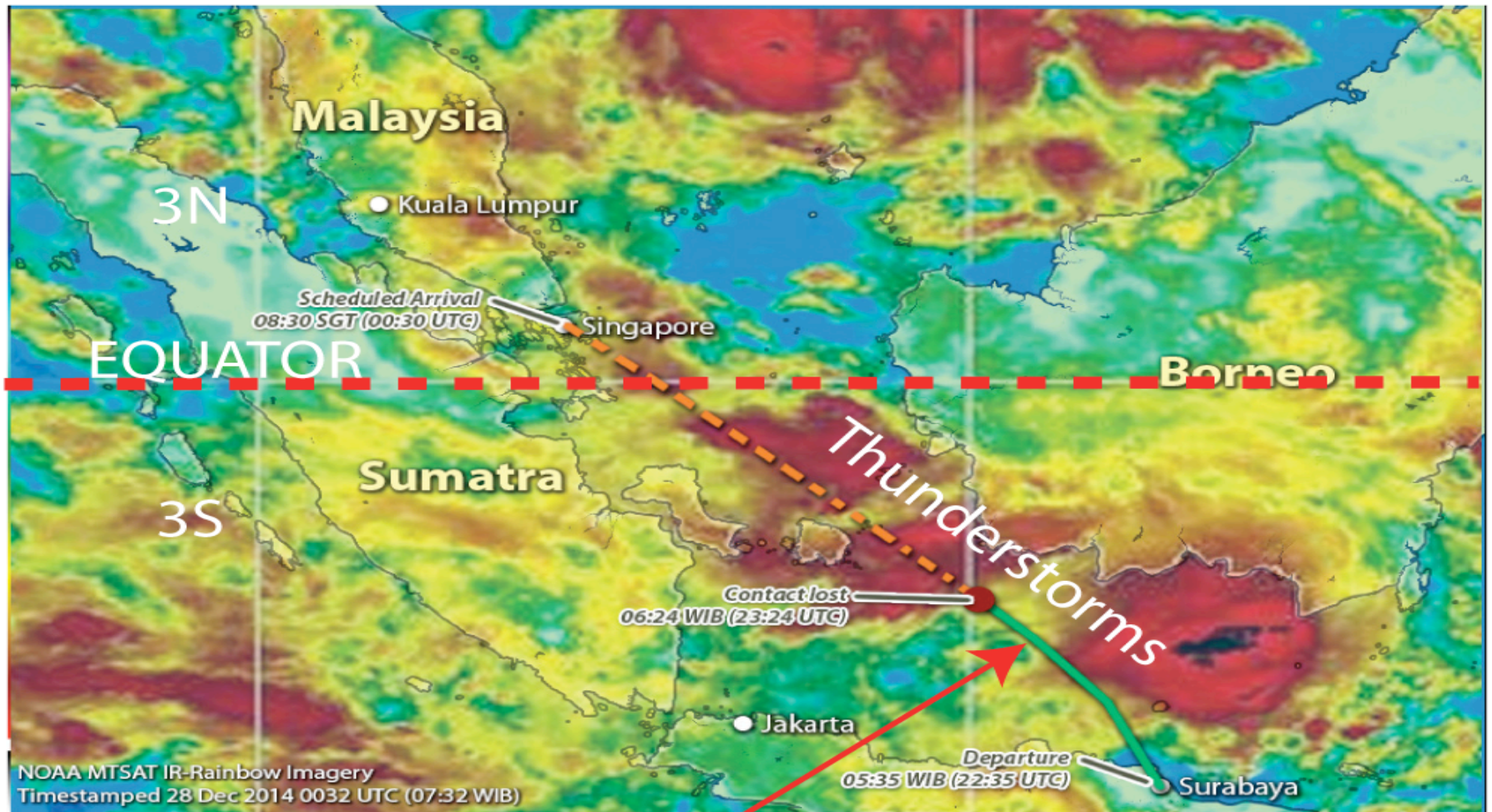
## DATA SURVEILLANCE AWQ 8501

Flight Track AWQ8501



# Where does icing occur?

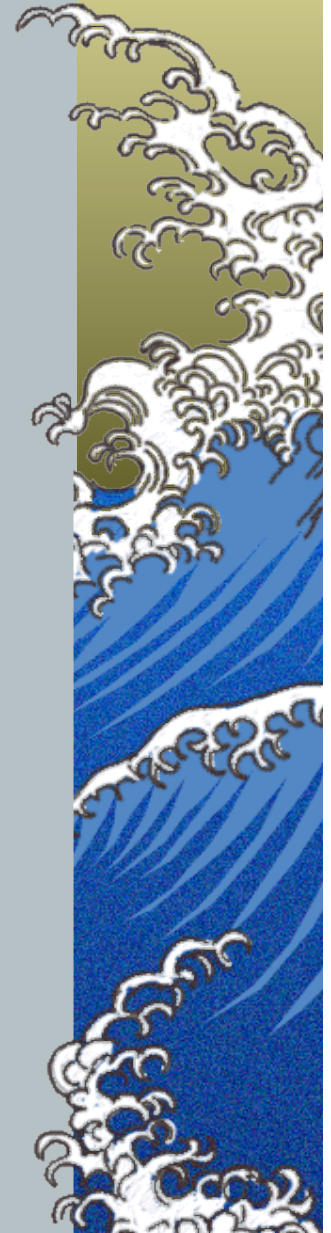
Catastrophic Icing occurred between thunderstorms



Catastrophic Equatorial Icing of QZ8501 begins here

# Where is MH 370?

- ▶ *Rogue Pilots are holding it hostage*
- ▶ *Rogue Pilots crashed it near Perth*
- ▶ *It crashed in the South Indian Ocean*
- ▶ *It crashed where it was last seen*
- ▶ *It was captured by aliens*



# Rogue Pilot Theory



How to escape responsibility for ignoring the risk of equatorial icing  
(see [journalofcosmology.com](http://journalofcosmology.com) vol 21)



The inmarsat flight path is an extrapolation of several highly questionable MH 370 locations to one acceptable to their several client airlines

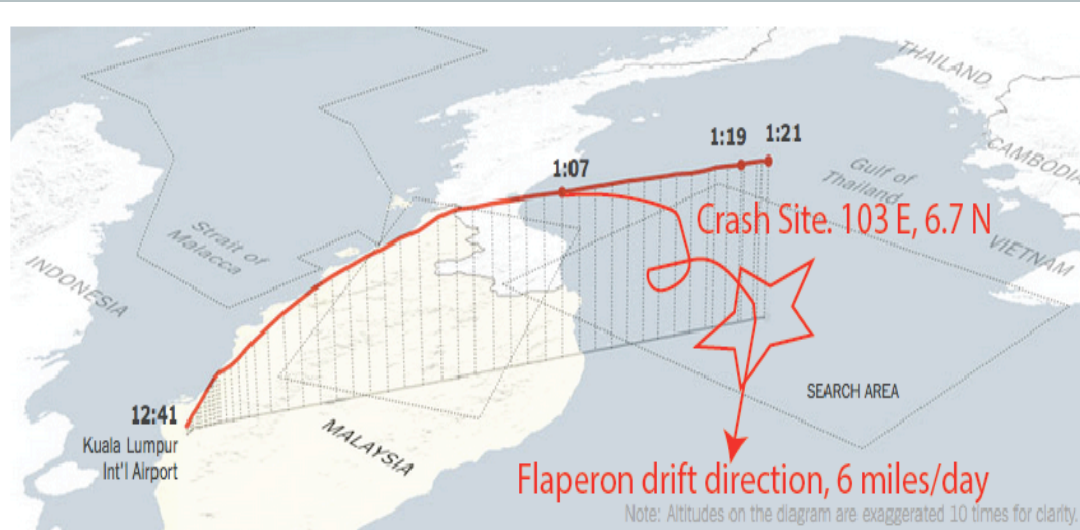
# Rogue Pilot Speculations

## Sorting Out the Clues

PUBLISHED MARCH 20, 2014

Since the Malaysia Airlines plane went missing on March 8, officials have offered sometimes conflicting details of what they believe happened. Here is the current understanding of the flight, based on the most recent statements from officials and investigators.

Sources: Malaysia's Department of Civil Aviation; Flightradar24.com; Malaysia Airlines; GEBCO



### 12:41 a.m.

The Boeing 777-200 operated by Malaysia Airlines leaves Kuala Lumpur International Airport bound for Beijing with 227 passengers, of whom two-thirds are Chinese, and a Malaysian crew of 12.

### 1:07 a.m.

The Aircraft Communications Addressing and Reporting System, or Acars, which transmits data about the plane's performance, sends a scheduled message. The next one is scheduled for 1:37.

### 1:19 a.m.

Someone in the cockpit, believed to be the co-pilot, makes the last voice contact with ground control, saying, "All right, good night."

### 1:21 a.m.

The plane's transponder, which broadcasts its identity, altitude and speed, stops working.

### After 1:21 a.m.

The plane turns off course and heads west. The turn is not executed manually using cockpit controls. Rather, it is entered into a cockpit computer sometime before or after takeoff. This has reinforced investigators' belief that the plane was deliberately diverted.

8:11 a.m.  
The plane is found in the Andaman Sea.

**Speculation!**

Military radars were likely tracking different planes



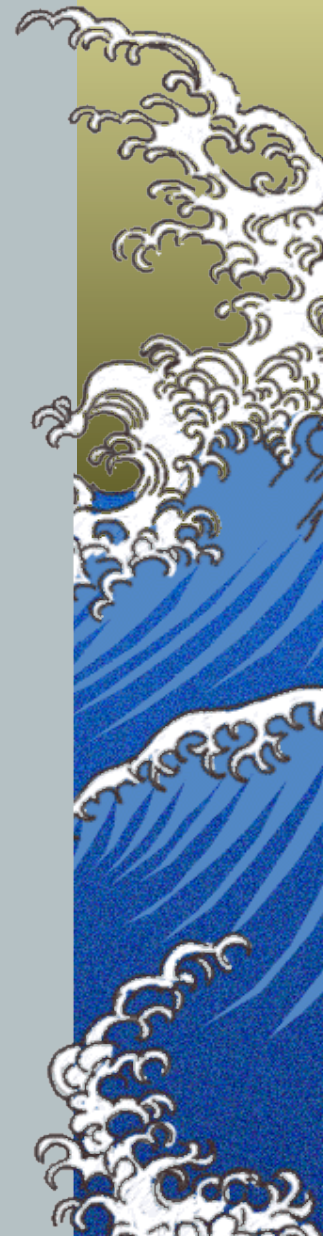


# What happened to MH 370?

The frequency of CEI events is increasing (2009 Jun, 2014 Mar, 2014 Dec)



The water is hotter and the winds are stronger (global warming)





# What were the currents?

Search for MH 370 debris should focus on Sunda Strait

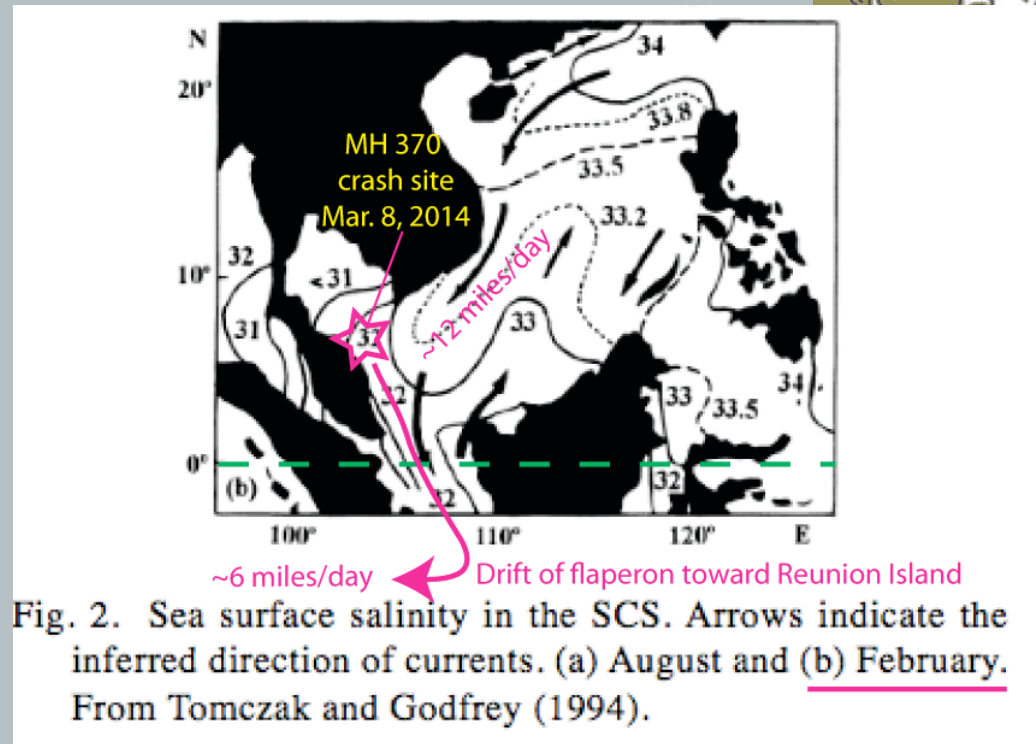


Fig. 2. Sea surface salinity in the SCS. Arrows indicate the inferred direction of currents. (a) August and (b) February. From Tomczak and Godfrey (1994).

# What happened to MH 370?

A Chinese Satellite Image was reported briefly



*Satellite image of suspected floating objects from the missing Malaysia Airlines plane MH 370. Credit: China SASTIND/China Resources Satellite Application Center*





# Turbulence Problem Solved!

Wikipedia says "... turbulence remains one of the unsolved problems in physics" furthermore, they suggest Kolmogorovian universal similarity laws are "broken" Wikipedia is wrong about both of these assertions, as shown by the data

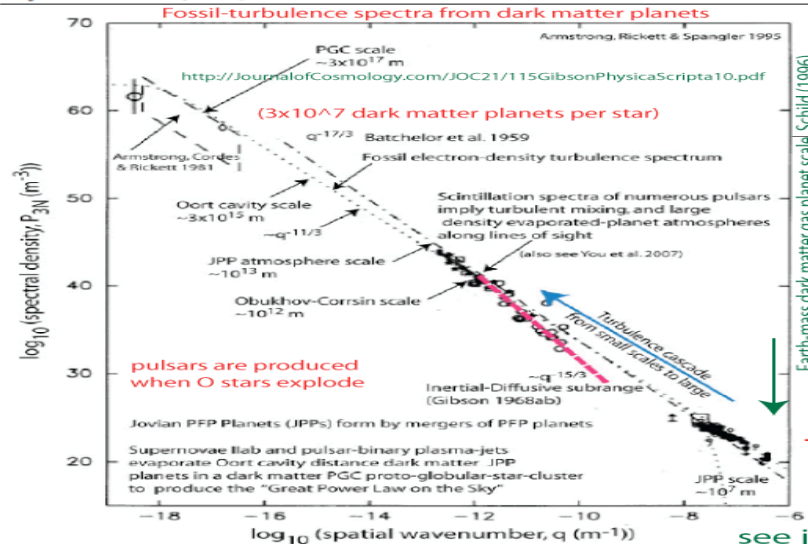
concept of self-similarity. As a result, the Kolmogorov microscales were named after him. It is now known that the self-similarity is broken so the statistical description is presently modified.<sup>[9]</sup> Still, a complete description of turbulence remains one of the unsolved problems in physics.

According to an apocryphal story, Werner Heisenberg was asked what he would ask God, given the opportunity. His reply was: "When I meet God, I am going to ask him two questions: Why relativity? And why turbulence? I really believe he will have an answer for the first."<sup>[10]</sup> A similar witticism has been attributed to Horace Lamb (who had published a noted text book on Hydrodynamics)—his choice being quantum electrodynamics (instead of relativity) and turbulence. Lamb was quoted as saying in a speech to the British Association for the Advancement of Science, "I am an old man now, and when I die and go to heaven there are two matters on which I hope for enlightenment. One is quantum electrodynamics, and the other is the turbulent motion of fluids. And about the former I am rather optimistic."<sup>[10B]</sup>

Turbulence is defined as an eddy-like state of fluid motion where the inertial-vortex forces of the eddies are larger than any of the other forces that tend to damp the eddies out. When turbulence is defined in this way, the problem is solved, and the physical mechanism behind the universal Kolmogorovian cascade of turbulent kinetic energy from small scales to large is clear. Kolmogorov's only mistake was to believe G. I. Taylor and L. F. Richardson.

**Little whorls on vortex sheets, merge and pair with more of, whorls that grow by vortex forces, Slava Kolmogorov!**

Phys. Scr. T142 (2010) 014030 **Turbulence and turbulent mixing in natural fluids, C. H. Gibson (2010)**



**Figure 10.** Great power law on the sky. A variety of radio telescope fossil turbulence electron density  $P_{3N}$  power spectra  $\sim q^{-11/3}$  are combined over 11 wavenumber  $q$  decades, suggesting a turbulent mixing origin of supernova-driven plasma within the PGC planet clump surrounding the earth.

**Some of the more spectacular data**

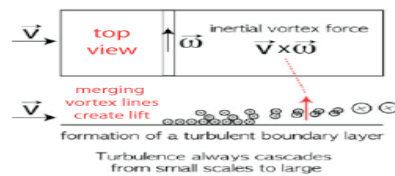
see also [journalofcosmology.com](http://journalofcosmology.com) volume 24

see [journalofcosmology.com](http://journalofcosmology.com) volume 21

turbulence always obeys the universal similarity laws of Kolmogorov-Obukhov

C H Gibson

Turbulence is defined as an eddy-like state of fluid motion where the inertial vortex forces of the eddies are larger than any of the other forces that tend to damp the eddies out



**Figure 12.** The definition of turbulence is given based on the inertial vortex force. The formation of a turbulent boundary layer is a generic example.

**The mechanism of turbulence**

turbulence always cascades from small scales to large



# Definitions of **turbulence** and **fossil turbulence** and the direction of the turbulence cascade

Turbulence is defined as an eddy-like state of fluid motion where the inertial vortex forces of the eddies are larger than any of the other forces that tend to damp the eddies out.

**Fossil  
turbulence  
waves  
allow seals  
to survive  
dark polar  
winters**



**Fossil Vorticity Turbulence Detectors**


Fossil turbulence is defined as a perturbation in any hydrophysical field produced by turbulence that persists after the fluid is no longer turbulent on the scale of the perturbation.  
*Turbulence always cascades from small scales to large*


**Turbulence  
ALWAYS  
cascades  
from small  
scales to  
large**





# Credit to postdoctoral scholars


## Critical Turbulence Length Scales

**Monin**  
  
 $L_H = ct$


**Newton**  
  
 $L_S = mG / c^2$



**Kolmogorov**  


**Einstein**  


**Schwarzschild**  


**Planck scale**  
 $L_P = (c^{-3}hG)^{1/2}$

**Heisenberg**  




**Planck Boltzmann**  



$L_K = (v^3 / \epsilon)^{1/4}$

$L_P = (c^{-3}hG)^{1/2}$

**turbulent**  
 $L_R = (\epsilon / N^3)^{1/2} = L_{ST} = (\epsilon / (\rho G)^{3/2})^{1/2}$


**viscous**  
 $L_{RF} = (\gamma v / N^2)^{1/2} \sim L_{SV} = (\gamma v / \rho G)^{1/2}$


**Compton de Broglie**  



$L_C = h / mc$


**diffusive**  
 $L_{SD} = (D^2 / \rho G)^{1/4}$

**Jeans' scale**  
 $L_J = V_{sound} / \sqrt{\rho G}$



**Ozmidov**  


**Jeans**

**Obukhov**  


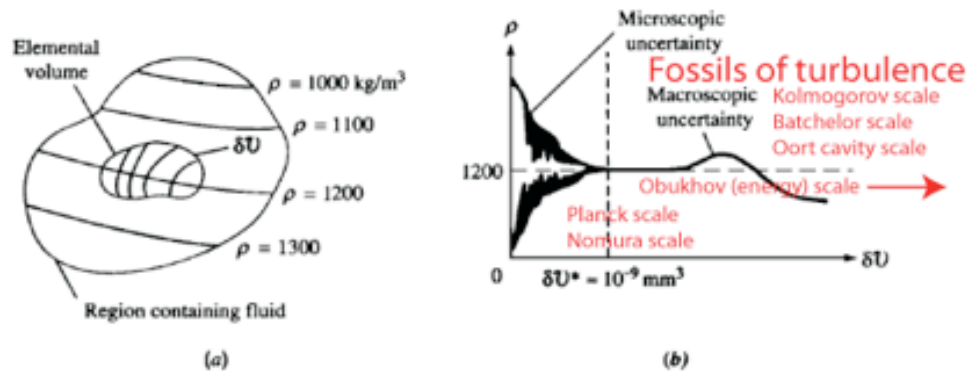
Schwarz scales

# Fossil Turbulence Scales

## White, Fluid Mechanics, Basics

journalofcosmology.com, 2014, vol 24, C.H.Gibson

Fig. 1.4 The limit definition of continuum fluid density: (a) an elemental volume in a fluid region of variable continuum density; (b) calculated density versus size of the elemental volume.



Density (mass per unit volume): 
$$\rho = \lim_{\delta V \rightarrow \delta V^*} \frac{\delta m}{\delta V}$$

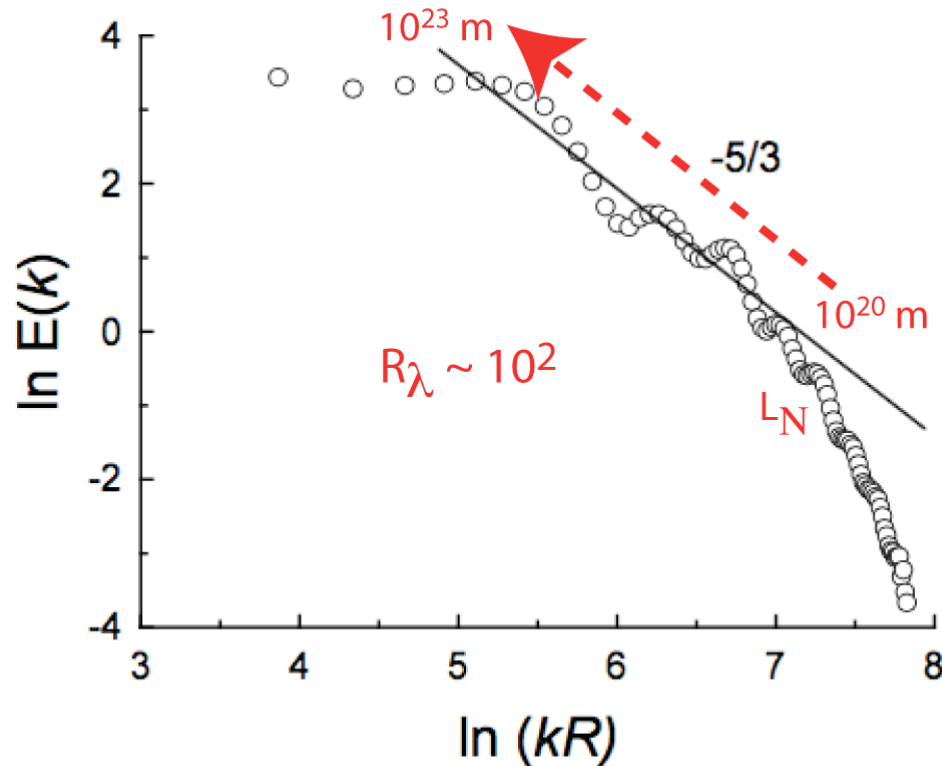
Velocity (momentum per unit volume): average of a vector fluid property

Turbulence, fossil turbulence and the continuum hypothesis

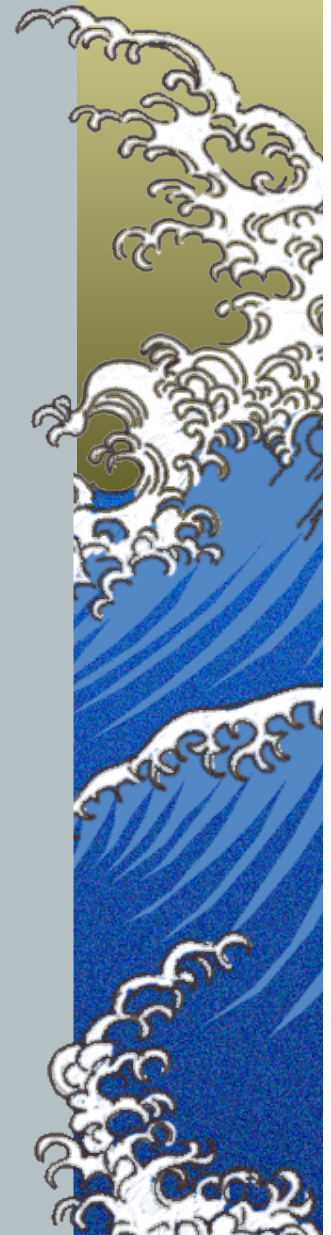


# CMB Velocities Show Weak Plasma Turbulence

Fossil plasma turbulence spectrum (3D) computed by Alexander Bereshadskii, from CMB (Planck) data



The spectrum shows a cascade of weak turbulence from the Nomura-Kolmogorov plasma protogalaxy scale of  $10^{20}$  m to  $10^{23}$  m protosuperclustervoids.





# Nomura Scale Pancakes Make $10^{20}$ m Spaghetti

Journal of Cosmology (2012), Vol. 18, No. 13, pp 8095-8104.

Proceedings JIHT Moscow

Matter Under Extreme Conditions: The Early Years

Keeler/Gibson

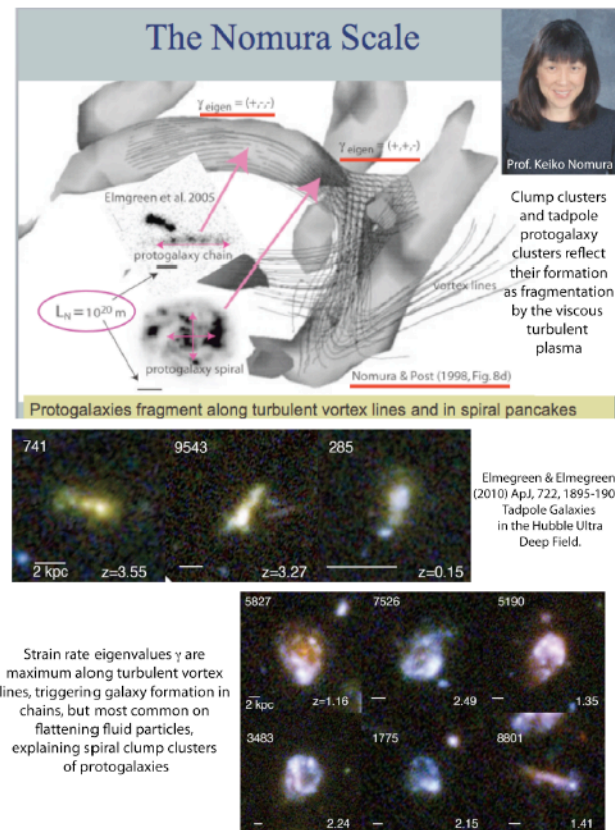
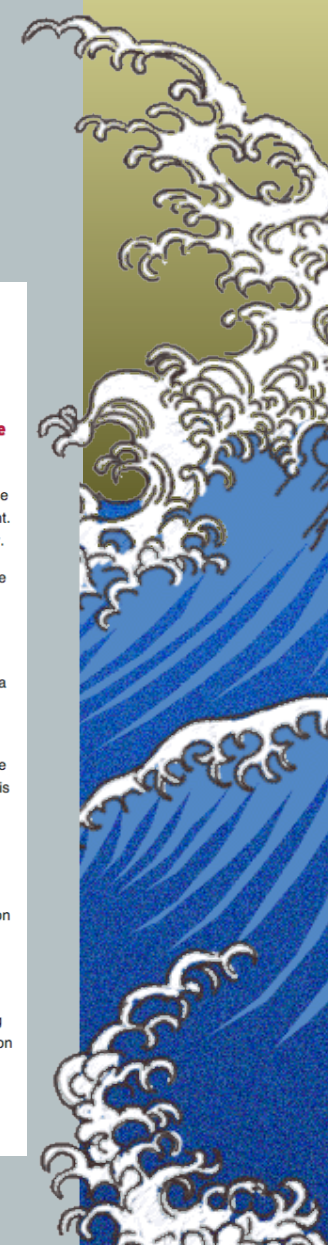


Fig. 2. Nomura scales and turbulence morphology, reflected in the most distant clusters of protogalaxies formed in the last stages of the plasma epoch by weak plasma turbulence.



# Keeler article May 1, 2015



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Home / Other / Pilots Face Brick Wall-Like Icing Along Equator





This chart plots the location of Southeast Asia airline crashes. Note the proximity to the equator. Because the AF447 flight was lost in the equatorial Atlantic Ocean, its location is shown as an insert in the upper right hand portion of the chart. The equator is correctly located for all events.

**Pilots Face Brick Wall-Like Icing Along Equator**  
May 1, 2015  
By Dr. R. Norris Keeler

**Pilots Face Brick Wall-Like Icing Along Equator**  
May 1, 2015  
By Dr. R. Norris Keeler

**A freak weather condition that spoofs sensors and controls may be the cause of airliner disappearances.**

A spate of commercial airliner crashes along the equator in Southeast Asian waters has taken the lives of several hundred passengers and cost hundreds of millions of dollars in aircraft equipment. A lack of concrete evidence of mechanical causes often results in a default decision of pilot error.

Yet, the aircraft may have been done in by an unavoidable freak atmospheric effect unique to the equatorial region. The airline flights involved include: Air France AF447, lost June 1, 2009, over the Atlantic near the equator; Adam Air DHI 574, January 1, 2007; Malaysia Airlines MH370, March 7, 2014; and most recently, AirAsia Flight QZ 8501, December 28, 2014.

These flights cited do not include other equatorial crashes or disappearances that involved only a few casualties, and for which in most cases there were no major investigations nor available detailed flight track information.

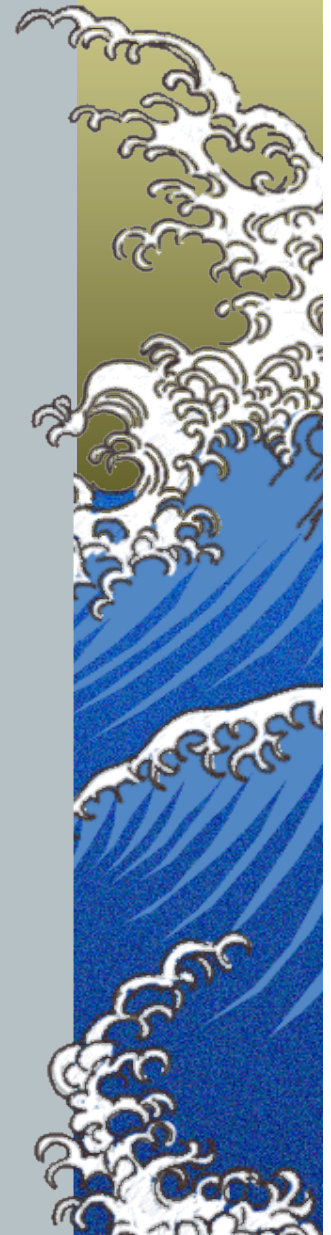
The only final decision of any possible cause was in the case of AF447, in which a report says ice crystals in vital pitot tubes generated false sensor information ultimately leading to pilot error. This conclusion was reached with the recovery of aircraft wreckage and the flight data recorder. The mystery surrounding missing Malaysia Airlines flight MH370 persists. Engine-to-satellite communications suggest the airliner flew for several hours off course after losing radar contact, ending up crashing in the ocean. No wreckage was found.

That all these events took place in equatorial regions causes Carl Gibson of the Scripps Institution of Oceanography to rely on earlier research. A widely recognized turbulence specialist, Gibson's research, together with that of Mark A. Baker of the Applied Physics Laboratory/Johns Hopkins University, involves the behavior of air turbulence in equatorial regions.

The Coriolis effect is caused by the rotation of the Earth and the inertia of the mass experiencing the effect—in this case, water and air. On Earth, one way it manifests itself is in the circular motion of cyclonic storms—counterclockwise in the Northern Hemisphere, clockwise in the Southern Hemisphere. Because Coriolis forces vanish on the equator, the horizontal scale of turbulence extends from centimeter Kolmogorov scales to hundreds of kilometers. These effects vastly increase the amplitude and power of extreme turbulence events in equatorial regions.

# Conclusions

- ▶ *Catastrophic equatorial icing is crashing airplanes near Indonesia*
- ▶ *The cause of equatorial icing is extreme turbulence intermittency at the equator, plus BZTMA mixing chimneys of supercooled equatorial steam*
- ▶ *MH 370 flaperon arrival at Reunion disproves Rogue Pilot speculations.*



# Critical Turbulence Length Scales



$$L_H = ct$$



$$L_S = mG / c^2$$



$$L_P = (c^{-3}hG)^{1/2}$$



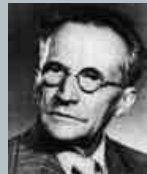
$$\left[ L_K = (v^3 / \epsilon)^{1/4} \right]_P \approx L_P = (c^{-3}hG)^{1/2}$$

$$L_R = (\epsilon / N^3)^{1/2} = L_{ST} = (\epsilon / (\rho G)^{3/2})^{1/2}$$

$$L_{RF} = (\gamma v / N^2)^{1/2} \sim L_{SV} = (\gamma v / \rho G)^{1/2}$$



$$L_J = V_{sound} / \sqrt{\rho G}$$



$$L_C = h / mc$$



$$L_{SD} = (D^2 / \rho G)^{1/4}$$

