

The Tropopause

by joe pasquini

magnum opus*

working title for an upcoming book– “Magnum Opus”.

- Latin phrase **meaning** "great work."

The Tropopause

*“There are more things in heaven and earth, Horatio,
Than are dreamt of in your philosophy”.*

Hamlet

William Shakespeare

Having travelled and gone into places where few have gone before; and having experienced and seen things than even fewer people have ever seen; there are indeed *more things* that do exist, that we need to learn about. Many more things! One of which, is the Tropopause.

Most people may not know or have even heard of the Tropopause. At one time, I didn't either. Prepare to be amazed, because the Tropopause has a daily impact on the lives of every living thing on this Planet. Trying to describe the Tropopause is very similar to trying to describe the Invisible Man. Both are invisible.

Only when the Invisible Man is swathed in bandages do you get to see the outline. The very same applies to the Tropopause. You never ever get to see it, because it is invisible, as the photograph of it (shown on the cover) will prove. Perhaps I'll be able to show a photograph of it later.

While everyone is familiar with the many, incredible and glorious EFFECTS it causes. The Tropopause is the CAUSE, of the most eclectic sights and EFFECTS you get to see, and experience. When I first encountered it, I did not know what I was watching or seeing.

It was during the Grapple Yankee hydrogen bomb detonation, location Christmas Island (Kiribati), April 28th. 1958. Flying at 46,000 feet (nine miles high), circling around a rising ball of nuclear magma created by the detonation. When a bomb, the size of a very tiny automobile, exploded and created a second Sun within the atmosphere. It produced a perfect white searing sphere, well over a nautical mile in diameter, with a temperature in excess of 7000 degrees Celsius.

The aircraft I was flying in was the only aircraft within fifty miles of the roiling nuclear sphere. We were flying as the Air Controller for the sampling aircraft, that would be flying into the centre of the nuclear cloud, to collect and extract radiological samples of the nuclear detonation. We were the only ones, brave enough (or stupid), to be as close as we were. We earned our 'flying pay' that day.

Rest assured, you do not need to experience a nuclear bomb explosion to be able to witness the Tropopause. You will be able to see it wherever you live. However, you need to be aware, and cognizant of what you are looking at - seeing and experiencing.

The Grapple Yankee detonation created such heat, that as it started to rise towards the heavens, it accelerated upwards at a speed well in excess of 250 mph. The broiling cloud was so hot that it climbed vertically upwards, a distance of nine miles, before it 'crashed' into what appeared to be an enormous dragnet, at an altitude of 51,000 feet. Where it was arrested and stopped dead in its tracks. Very similar to an aircraft landing on an aircraft carrier.

The incredible power and energy of the nuclear cloud moving close to 300 mph plus, was stopped dead! The broiling, seething mass of the radioactive cloud needed somewhere to go. Somewhere to escape to. As it could no longer go upwards, it went the only way it could.

It ballooned outwards and spread-out sideways, in every direction possible, beneath the very Tropopause itself. It was its only means of deflection and escape.

It had been the Tropopause that had halted and arrested the remnants of the second Sun, that had burst forth, low in the atmosphere. What powerful strength did it have? Strong enough to resist the enormous energy and strength of a multi megaton Hydrogen Bomb? This had to have been something really awesome. Has anyone ever seen it? What else do we know about it? Today, there is still very little substantive information written about it anywhere. That said, this article will shed light on your own past, and future sightings, and other encounters you may have had with the Tropopause. Some you will easily recognize, others you can either believe or discount.

Flying at an extremely high altitude, sitting in my seat in ‘the gods’, I watched this all happen through the Navigation window of a modified Canberra bomber. Observing all the sequences of a hydrogen bomb detonation. Completely oblivious to what was going to happen next, I was totally ignorant of the existence of the Tropopause. We were flying in a circle around the rising nuclear magma cloud, just 10 nautical miles out from the stem of the bomb, in an otherwise bright cloud free sky.

We stayed well clear of the invisible bubble of *gamma* and *neutron* radiation ‘shine’ that surrounded the cloud, being emulated from the guts of the nuclear inferno. The ‘shine’ was the field of high intensity radiation that contaminated every solid particle of space/star dust in the atmosphere that it passed through. Creating the deadly *alpha* and *beta* microns of dust, which afflicted so many nuclear veterans decades later.

Without our crew’s knowledge, or anyone in Task Force Command even being aware of it, the Grapple Yankee detonation had produced the largest ‘temperature inversion’ imaginable.

Normally, as you climb higher into the sky, the air temperature goes down. With a temperature inversion, as you climb higher into the sky, the air temperature goes up. Which creates a whole set of other anomalies. The heat and energy from the detonation had shifted from the point of detonation, to the highest apex in the atmosphere. It heated up the entire sky all over Christmas Island and the surrounding Ocean. At an altitude of 46,000 feet (9 miles high), the temperature over the island had been heated to well over the freezing point. When normally the temperature was a frigid minus 72 degrees Celsius. The temperature inversion was the only reason we encountered rain at such a high altitude, otherwise it would have been impossible for it to rain.

If my brain had been working, I would have taken a reading on the outside temperature gauge. To tell the truth, my brain was working, and working overtime. At the time, I was perhaps more than a little scared out of my wits and was wondering what the hell was going to happen next.

Having seen that Grapple Yankee detonated at 8,000 feet, one and a half miles high. I had a much better view than most. In fact, the best seat in the house. It was a clear sky, and it was a perfect view. The rising magma started changing from spectacular multi colours, to a grey white ball. On reaching an altitude of 10,000 feet, it started to leave a thin white tail from the bottom of the swirling mass.

This developed into the 'mushroom stem' of the cloud. It was perfectly straight and vertical. There was no wind to distort it, as it hovered in the nuclear weather bubble. The space between sea level and the bottom of the Mushroom stem was perfectly clear. There was no entrainment of water from the surface of the ocean, into the Stem. Regardless of what anyone else may say.

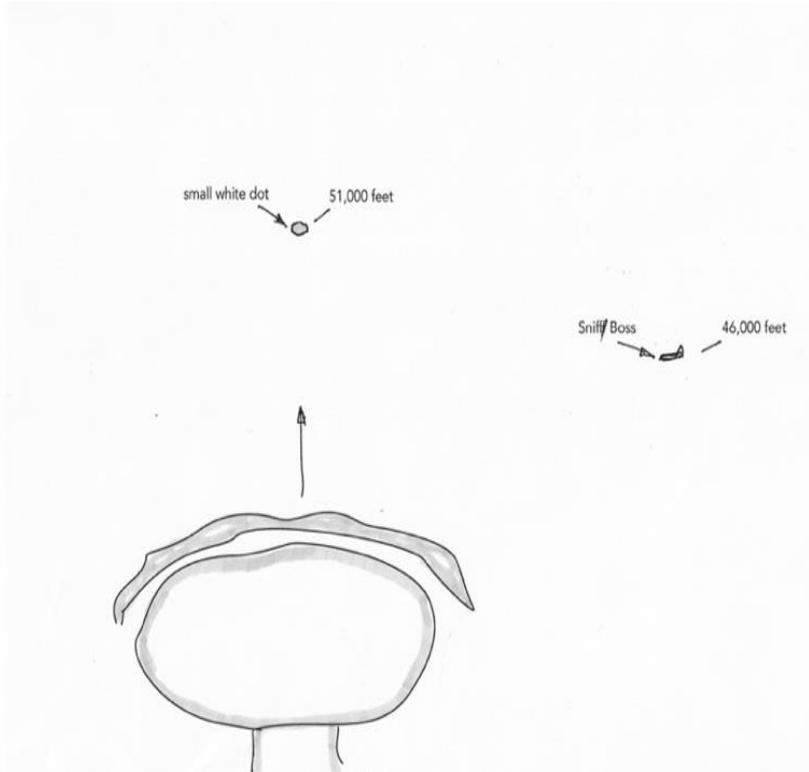
There was a clear space of 10,000 feet, or two miles high between the sea and the bottom of the Mushroom Stem. The heat surge and pressure blast blew out a new, undefined, metrological phenomenon. A nuclear weather bubble had been created. An enormous bubble of dead air, no wind at all within it. It enlarged and surrounded the nuclear magma, as it rose skywards. The heat generated by the detonation followed upwards with the magma. Billions upon billions of British Thermal Units (BTU's) of heat energy, fuelled and caused the molten magma, to climb and accelerate upwards, on its path straight up to the heavens.

As the ball of magma and cloud started rising, I was looking down on it, and was timing its ascent. All the way around the ball, multi coloured flashes of magma flickered and flared out of its sides. The stem grew as the cloud was rising.

On top of the cloud, a small 'skull like' cap of cloud (zucchetto) was sitting above it. Being elevated by the cloud just below it. Looking down, while watching and observing the swirling, flashing cloud – something in the corner of my eye made me look upwards.

Approximately 5,000 feet above me, and directly above Ground Zero, there was a small white dot. Never having seen anything like it ever before, my reaction was to ask myself "*What the hell is that?*"

The following rough diagram shows the rising nuclear cloud, with its zucchetto on top. The small white dot of cloud above it, and the fearless idiots flying close by in the control aircraft, Sniff Boss. The cloud whooshed by travelling close to 300 mph. We were flying at 700 mph. No time to be picking our nose. With a weather eye on the radiation instruments, we were flying 'on station', just outside of the bubble of radiation 'shine', which enveloped the cloud and the stem. It was truly a dynamic situation.



This crude, unsophisticated sketch serves to show, just how very-close our aircraft was to the action, and the rising hydrogen magma cloud. We were the only aircraft within 50 nautical miles of the entire nuclear detonation zone. Immediately after burst, we turned around and flew straight back to Ground Zero. **The only aircraft to do so!**

The rest of the sampling squadron aircraft returned to their holding patterns 60 miles away from Ground Zero. As we watched the most incredible sight, I saw the huge bubble of liquid nuclear magma turn from a bright startling white, to yellow, orange and red, before it started

to rise. Then, as it rose, the cloud start to turn white, as it absorbed the ambient water vapour within the surrounding tropical atmosphere.

The small white dot above me was puzzling, but appeared to be innocuous, so I returned my sights downwards. Which was the main event, watching the rising magma cloud below. Which was still barrelling upwards, with multi-coloured flecks of live nuclear magma flashing out of the sides of the cloud. After a few seconds, little had changed below, I glanced up again to the white dot to see what was happening there.

To my amazement, it had gone. Disappeared! In its place, the sky above me was now a solid sheet of white cloud. How did that happen? It covered the entire sky as far as the eye could see. It was a fine sheet of cirrus stratus cloud, just 5,000 feet, or one mile directly above. Ice crystals that had frozen, and had painted the entire underside of the Tropopause.

When this happened, I was already in deep overload with all the visual events that were taking place. Unable to think, reason or rationalize anything more. I was just absorbing everything, not understanding what was going on, or what was taking place.

We had not been briefed on any of the possible events that might take place, and were clueless as to what would happen next. Added to this, after the bomb detonation, all radio communications, *everywhere*, went silent. No one was talking. Not a word was being said. Everyone was mesmerized, and in awe by the size of the detonation.

Even inside the aircraft, no one spoke or said a word, all of our intercoms were silent. *It was the sound of silence!* In absolute quiet, we watched and waited with deep anxiety and misgivings as to what event could possibly happen next. We were all on our own, in the big sky!

The magma cloud shot past us at 46,000 feet, which from a standing start, gave it a vertical speed of 193 mph. **I know, I timed it.** Flashes of multi coloured magma were still popping out of the side as it passed. The cloud was still wearing the 'Zucchetto' skull cap cloud as it shot by. But this was when things really started getting interesting. More so because none of the following events were ever recorded, reported or captured on film or any other media.

This is the first visual 'eyeball' report of what took place when the Grape Yankee cloud collided with the Tropopause.

As the 3-mile diameter Yankee cloud was careening upwards, it was lifting a vast amount of warm, damp tropical air above it. The air was just sitting on the top of the cloud, being lifted upwards, like going up in a lift. With the air in motion, it did not condense or freeze into ice crystals.

Once the cloud had reached 30,000 feet, a significant volume of damp tropic air was being squeezed up, by the rising cloud, against the bottom of the Tropopause. As soon as the damp air impacted the Tropopause it stopped moving. Encountering an ambient temperature of minus 72 degrees Celsius, the moisture froze into ice crystals. It started to spread out rapidly, as more and more air was lifted from below, until the entire lower surface of the Tropopause was 'painted' by a thin sheet of frozen cirrus stratus cloud. This factor was critical, in that it painted and defined the entire lower level of the Tropopause.

Later, I recognized, and saw that the Tropopause had an upper surface. Significantly higher than the lower surface. *The Tropopause is not just a flat demarcation line, as many people believe. It has volume and a physical 'body', which is several thousand feet thick at the Equator! IT IS ALSO TRANSPARENT, AND YOU CANNOT SEE IT!*

If you can't see it, touch it, feel it, taste it, smell it, eat it – it probably doesn't exist. Perhaps that is why no one has ever identified it before.

Time to wake up Horatio

And yet, we are surrounded by invisibility, and readily accept it. The air we breathe is invisible. Take magnetism, it can't be seen, smelt, tasted, felt or eaten; but without it there would be no (invisible) electricity. No radio or television. No Blue Tooth. No iPhones. No gravity. No natural gas. No wind – which is little more than air on the move. Wind is the CAUSE; the EFFECT is seeing leaves on trees being blown about.

Time to 'weed out your mind' and let go of the old clutter that has accumulated there for far too long. Time for new thinking - and 'thinking out of the box'.

Unless you have actually seen it, it will be difficult trying to imagine a 3-mile, diameter ball of nuclear magma, traveling upwards at a speed near 300 mph, hitting an unknown Tropopause at 51,000 feet. What would happen?

Who knows what happened when the Grapple Yankee nuclear magma collided with the Tropopause in 1958? ***I can tell you.*** I was there, watching it all happen! Our lonely aircraft was just a few miles away, just out of range of the bubble of radioactive *gamma* shine, that emulated from the cloud.

The final EFFECT of the impact was to create a vast Mushroom cloud, that spread to a diameter of 60 nautical miles around Ground Zero. Covering all of Christmas Island, and all of the sea around it. Which was the EFFECT that created the extended Mushroom cloud. The CAUSE was the Tropopause! This unrecorded event showed the power, strength, flexibility and resilience of an unseen, and unknown phenomenon.

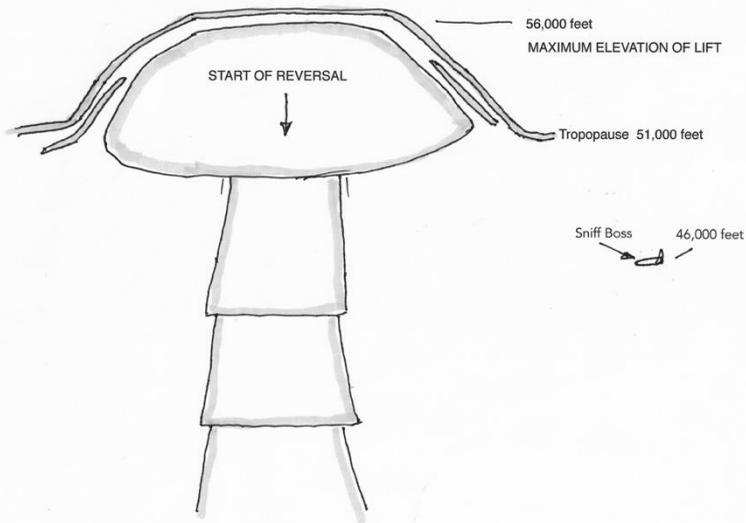
It was the most amazing sight I had ever seen. To be shown the graceful, gentle moving format that transpired, would require Computer Animation (CA). Not having any CA readily available, I've resorted to a series of naïve sketches to show the most significant points of the seemingly choreographed ballet steps that followed.

Throughout the entire event, for whatever reason, a cushion of air separated the bottom of the Tropopause from the nuclear cloud. A curious situation. There was obvious an unknown physical reason that existed, which did not allow the Tropopause to 'mix' with the superheated nuclear cloud. There was no mixing at all. Even the chimney which eventually ran straight through the Tropopause to the Stratosphere, was completely self-contained. The two entities remained separated, there was absolutely no co-mingling. There has to be some significance for this phenomenon.

First movement: On impact the Tropopause was lifted upwards, and acting like the 'arresting wires on an aircraft carrier catching an aircraft that was landing on the deck. Yielding to, and slowing down the speed of the nuclear cloud, stopping it dead in its tracks.

The cloud had lifted the Tropopause upwards to 56,000 feet, a full mile in altitude, before it was fully contained. On the same level we were flying, ten miles away from us I could see that the Tropopause was still flat at an altitude of 51,000 feet. The thin sheet of cirrus stratus cloud had been stretched upwards, and had remained connected, and stayed unbroken.

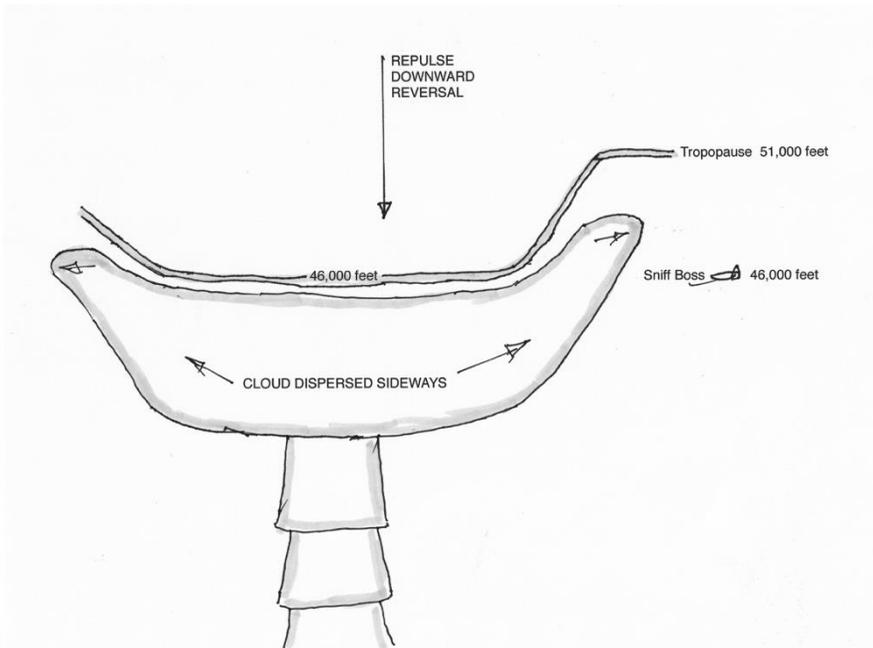
This was no small feat. The upper surface of the nuclear cloud had an area of 10 square miles. It was travelling at 300 mph. How much braking power was needed to stop this impact???



Second movement

The upward movement stopped the cloud dead in its tracks (diagram). Then the Tropopause responded and started pushing back down against the cloud, reversing the motion. Note the air space that kept the cloud and Tropopause separated. The cloud was pushed straight back to the original height of the Tropopause, 51,000 feet. In doing so, the cloud was unable to penetrate the Tropopause, hence it flattened out squeezing the cloud flatter. The 3-mile diameter cloud was thinner, and at this stage had spread to a diameter of 6 nautical miles. The Tropopause did not stop moving down.

It continued its downwards thrust until it had pushed the cloud further down to 46,000 feet. Spreading the cloud to a 15-mile diameter. That was the level we were flying at. The top of the cloud, and the Tropopause were now at my eye level, as is shown in the diagram.



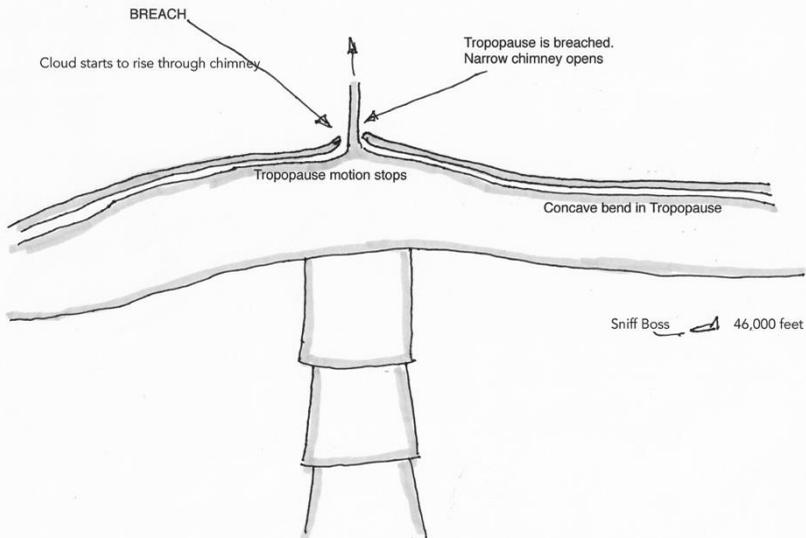
Third movement

The downward thrust of the Tropopause squeezed out much more of the cloud, making it even thinner, the cloud now had grown to a diameter of 30 miles. At 46,000 feet, the heat within the cloud magma was able to reverse the impact of the cloud and the cloud started to rise again, pushing the Tropopause back up to 54,000 feet.

Once again, the Tropopause was able to arrest the cloud, slowing it down to a full stop. The Tropopause pushed back downwards to 48,000 feet, spreading the cloud to a diameter of 50 miles.

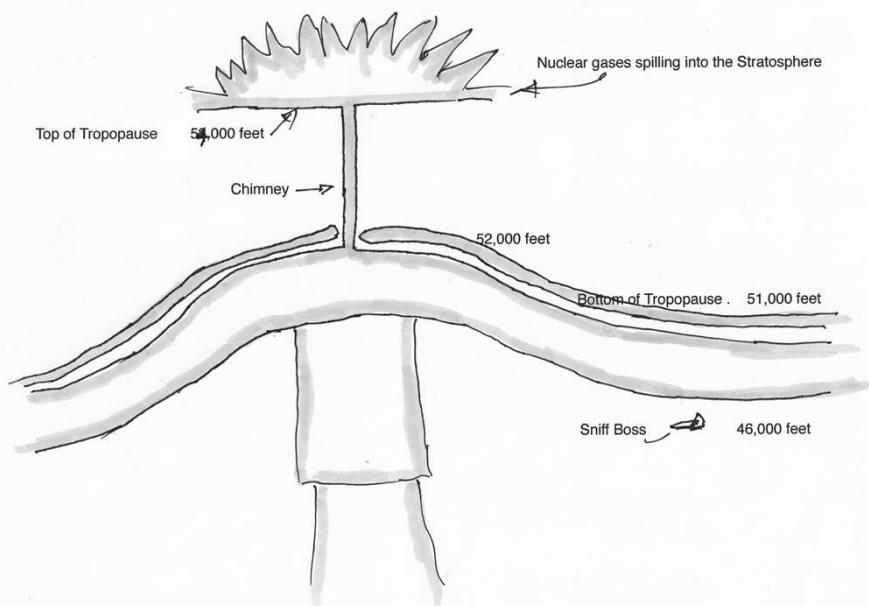
Final movement

This 'see-saw' action continued one more time, with the Tropopause being lifted to 52,000 feet. At which time I thought to myself "*Well that's it, the Tropopause has won!*" **BUT NO!** Right at the very apex, where the cloud connecting with the Tropopause, a very narrow chimney opened up, gases from the main cloud started flowing up the chimney. It looked like smoke rising up an invisible smoke stack. It was so well contained.



The chimney was no more than 50 feet wide initially, as gases from the cloud started bleeding upwards through it. The cloud gases went up the chimney vertically for over 1000 feet, then appeared to overflow, and spilled out over the sides, and dispersed along the top of the Tropopause.

Only when they reached the top of the invisible chimney, did the gases start to spew out and spread randomly into the Stratosphere.



It was at this point that the nuclear cloud was painting the top of the Tropopause, and the sheet of cirrus stratus was painted the lower quadrant. In between there was a large transparent space, *indicating that the Tropopause had depth, and substance, and was not just a flat line.*

Never having ever seen anything like it before, I had no understanding of what I was watching, or even seeing. Being on a very dedicated mission, we had important things that needed to be done. We had not even started the sampling stage of the mission, and that was what we were there for. Hence, the impact of the cloud and Tropopause, and the breaching were just side shows to our prime task.

Only when the 'heavy lifting' of sampling the radioactive cloud had been done, did we have time to consider the other events that had occurred. *It was much later that the significance, and importance of what I had witnessed become obvious.*

In effect, I had seen the Tropopause, like no one else has ever seen it before. The cirrus stratus had painted the bottom, and the cloud breach had painted the chimney and the top of the Tropopause. I could see right through the Tropopause, it was transparent. I saw the Tropopause as a tough, tenacious and highly flexible membrane that surrounds the Earth. But more important, it had depth and substance. On average, it appeared to be around 4000 feet thick. Even though the Grapple cloud had compressed it, in parts to as thin as 1000 feet.

On the ground, no one was interested in what I had seen. They all had bigger, and more important things to take care of. Hence this is the very first time I have had the opportunity of writing about and describing the collision of Grapple Yankee, with the Tropopause.

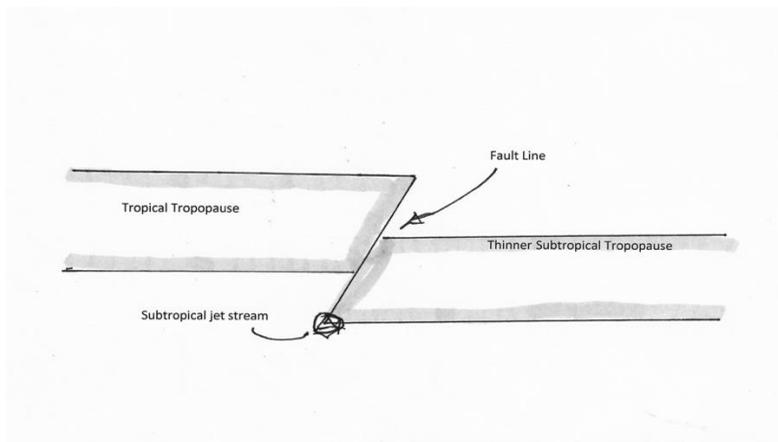
The UK had successfully detonated an air-drop Hydrogen Bomb, and could take a seat with the Big Boys, in the Nuclear Club. That was the only thing that mattered. But an incredible, and important amount of information had been left on the table, to waste away. Amazing phenomena that still need to be recognized, and discovered.

THE TROPOPAUSE

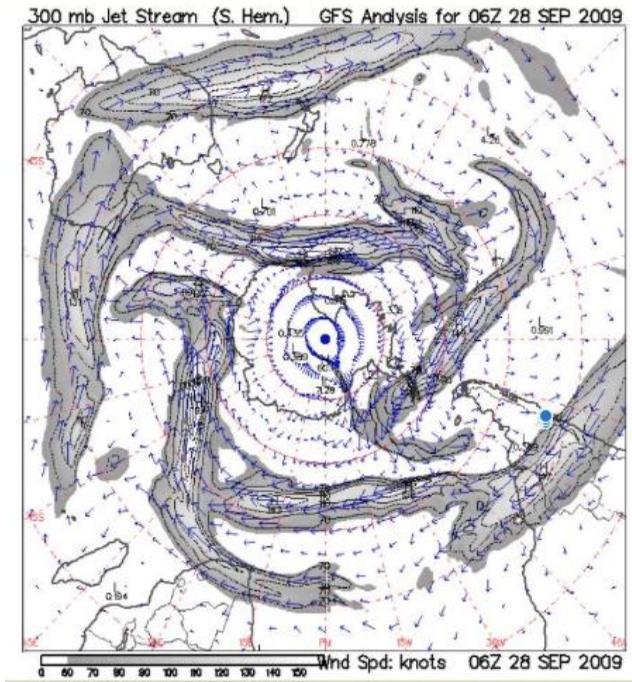
In summary, the Tropopause (you can believe it or not) is a boundary cushion, which encircles the Earth, separating the Troposphere (Atmosphere) below it, from the Stratosphere above it. It is not a pencil line, as many believe, it has depth, and a greater density than the strata above or below it.

Everyone in the World has experienced and seen it one way or the other. My observations over many years, suggest that at the Equator, the Tropopause is approximately 4,000 feet deep. Thinning down to 1000 feet over Polar regions. Being invisible, it is very difficult to detect; and at such a high altitude increases the difficulty to observe it. Let alone, to test and probe the nature of the phenomenon.

While not perfectly round, it is more of an egg shape outline around the Globe. With a series of cracks in both hemispheres. Each of these cracks cut at an angle through it. Similar to fault lines that exist in the Earth's crust. *These unique fault lines spawn the spinning, streaming jet streams.* Not shown in the diagram, the subtropical jet stream is flowing directly towards you



It is possible to detect the geographic position of the fault line cracks by plotting the Jet Streams that encompass the Earth. **The Jet Streams are part of the Tropopause system.** These are provided by a number of Metrological Services and Weather Computer Systems. The jet streams lie along the lower edge of each crack. For example, the Antarctic map view, with Australia at the top left. Africa bottom left. South America bottom right. The streams of fast-moving air, they are not perfectly symmetrical, but have a general West to East flow.



The jet streams are rivers of high-speed air travelling in excess of 100 mph. They are sometimes referred to as steering-winds, as they are directional forces which control the metrological frontal systems around the Globe.

The lack of Jet Streams, to move weather systems, has proven to be catastrophic. Rain clouds stall in position, allowing torrential rain to inundate different locations. Examples: Flooding Houston, Texas. The Hurricane over the Bahamas. Etc. etc.

Another factor, which tends to be confusing, is that the altitude of the Tropopause varies by latitude. At the Equator, the jet stream level is found just below 50,000 feet. In temperate zones, it is being encountered at 40,000 feet. In sub-polar regions, the altitude is barely 30,000 feet.

Perhaps the most important function performed by the Tropopause is still generally unknown, and certainly not recognized. It is the ceiling, and ultimate upper extremity of the entire hydrological cycle. It traps, and maintains moisture within our atmosphere. Water that is continuously being recycled - from rain to sea, to evaporation, back to rain etc.

Without the hydrological cycle, there would be no form of life on land, or in the air. The human body is comprised of 60% water. Earth is known as the blue planet, and is the only one in existence around the Sun. Neither the Moon or any other planet in the Solar system have a Tropopause. Nor do any others have life, as we know it on Earth. They all lack seas and oceans of water.

To press the point home, a rare clear night-time photo of parts of the UK, looking North, shows the curvature of the Earth. At the top, above the visible horizon lies the Troposphere (Atmosphere) in which we all live. Everything we do happens in this very shallow space.



The entire hydrological cycle occurs in this sliver of air. It rains. It snows. Wind blows. Clouds above us move. Travel overseas on holidays – it all happens in this thin space.

The Ozone layer*

- **The ozone layer encircles the entire globe. (Ozone is a high concentration of oxygen (O_3). The ozone layer absorbs most of the Sun's harmful ultraviolet radiation, protecting most forms of life on Earth.)**

A few decades ago, a scientist discovered that the Ozone Layer at the South Pole had a hole in it. The Ozone layer surrounds the Earth, and filters the rays from the Sun. The Sun's rays were penetrating to the Earth's surface unimpeded through the hole. They were not being filtered as they were over the rest of the Earth.

There was little or no Ozone Layer to protect the South Pole, from the devastating rays coming directly from the Sun. Alarms sounded all over, this could lead to the end of the World, unless something was done to fix it.

An International agreement, known as the Montreal Protocol was enacted to stop the use of chemicals that destroyed Ozone above the Earth. Several years later the news filtered through, that the hole was closing up. Sometime afterwards, the hole had closed completely. End of story – nothing more was heard about it. This was just a classic case of CAUSE and EFFECT. What the scientist had discovered was the EFFECT, not the CAUSE.

Insufficient information was readily available at the time, to understand what was happening, leading to a false understanding of the situation. Creating an unnecessary panic! There did appear to be a hole in the Ozone layer; however, unknown by most, the ozone sits on, and resides on top of the upper level of the Tropopause and is supported by it.

The real hole was in the Tropopause. Without a solid base to support it, the ozone just fell through the hole. Giving the appearance that the hole was in the Ozone Layer. It is at the Polar regions that the Tropopause is at its lowest, thinnest and most venerable.

At the other end of the world, a similar type of phenomenon had been observed, and reported in Time magazine. On take-off, a jet aircraft far North in the Arctic seems to smash through something? Which appears to be a 'glass ceiling', leaving a gaping hole in the sky. Looking remarkably similar to another hole in the Tropopause. In Polar regions the Tropopause is very, very low, and thin.

&Science



Bad weather? Blame it on the plane *When aircraft punch holes in clouds, like this one over an Antarctic research camp, they may increase rain or snowfall for miles around nearby airports. Planes boring holes or canals through clouds essentially act as cloud seeders; their movement causes air expansion and cooling, forming ice crystals in clouds' supercooled water and sending precipitation below*

Time magazine

SHOOTING STARS

Like most people, you have probably watched Shooting Stars in the dark of night. Bright incandescent pinpoints of light, shooting across the night sky without a sound, burning out as quickly as they appear. The accepted explanation being that they are meteors, which have strayed into the Earth's atmosphere and burn out before reaching the ground.

On occasions, larger ones do reach the ground, and if they are travelling at supersonic speeds, can break the sound barrier and will blast out a loud sonic boom. With larger shooting stars, that light up the sky's, there is always someone who manages to capture, and film it on a video. Which is then posted on social media for everyone to see.

Unless it is a very large meteor, travelling at thousands of miles an hour, the reality is that that smaller ones do not impact the atmosphere until they come into contact with the upper level of the Tropopause. The very large meteors do start to 'key' into the Stratosphere as high as 60 miles. That is before they encounter the top of the Tropopause, pass through it, eventually entering the Troposphere.

Passing through the Troposphere, in a layer of denser air, is when the friction starts to heat them up, initiating their bright glowing ball of light. Then, and only when the meteor makes contact with the upper level of the Tropopause, does it start to **FLARE-UP** for a minute or so. This occurs only while it is in transit through the Tropopause. As soon as it exits from the lower level of the Tropopause, the 'flaring' subsides, and the meteor reverts back to a bright round flash of light.

Media reports of shooting star reports are constantly being aired. Reports and sightings have become much more common with the advent of the iPhone, with video tapings of these events and the subsequent downloading to social media.

PERSIDEON METEORITE SHOWER

In the Earth's annual transit around the Sun, the Planet continually encounters clouds of space debris. While some are random encounters, there are a number of annual encounters that occur. Of these, the most persistent, and perhaps the most beloved is the Persideon meteorite shower. This is when our planet crosses the orbital path of Comet Swift-Tuttle, the parent of the meteors that it discards, for us to see. It makes for a warm summer evening event in the Northern hemisphere, a pleasant performance for all to enjoy. Instead of one or two rare individual shooting stars, there is a continuous stream of stars all night long.



Daily Express

Photographs of this spectacular annual worldwide event are countless and can be found everywhere.

The Chelyabinsk meteor

From time to time a very large meteor crashes to Earth. Something that happens all over the world. Most fall unseen, and unnoticed into the seas and oceans. One such happened in 2013. It was the incredible Chelyabinsk meteor, which flashed across the sky in the southern Ural region of Russia, eventually impacting the surface of a frozen lake. This was particularly important for several reasons. Fortunately, it occurred in daylight hours in Russia.

Due to safety and security reasons, almost all Russian drivers have video camera recorders mounted in their car windscreen. Enabling thousands of sightings to be captured of the transit of this particular meteor. In addition, building security cameras over a large stretch of the area were also able to record, not only the sight and illumination, but also the sound of the sonic boom created by the supersonic meteor. Which caused a lot of damage to buildings and property.

It was estimated that the Meteor entered the atmosphere 60 feet in diameter, and was traveling at more than 42,000 mph. It was considered to be a superbolide* meteor. Eyewitnesses experienced and felt the intense heat radiating from the meteor.

*A **superbolide** is a bolide meteor which explodes in the atmosphere, and is 100 times brighter than the full moon. Recent examples of **superbolides** include the Sutter's Mill meteorite and the Chelyabinsk meteor.

The event was well documented. Major damage was caused by the shock wave, in nearby towns and villages. Supersonic aircraft flying low to the ground can create and cause similar serious damage to objects on the ground. Visual images of the meteors transit through the Tropopause were captured by dozens of Russian auto video cameras.

One crucial element that was overlooked during the downward plummet, was that at a certain point, the meteor **'flared'**. The light and heat output increased tenfold (superbolide). Then it subsided back.

Some eye witnesses suggested that the meteor was burning-up as it re-entered the atmosphere. The remaining fragment, that eventually crashed into a frozen lake, had been reduced to the size of a football. Barely a foot across.

The 'flaring' was initiated as the meteor encountered the upper level of the Tropopause. It continued as it made the transit through the 3000 feet of the denser layer of the Tropopause. Only to subside as it exited the base of the Tropopause, into the less dense atmosphere. The apparent greater density of the Tropopause still needs to be discovered. The fact that the Tropopause even exists, is still an unrecognized epiphany.



The flaring of the meteor is visible in this photograph. More important is the trail that was left behind within the Tropopause itself. Similar, in many ways to that left by a jet aeroplanes condensation trail in the

atmosphere. With jet engines, water within the aviation fuel is expelled in the jet stream, encountering freezing temperatures.

The water vapour freezes into tiny ice crystals, a miniature form of cirrus stratus cloud. The ability to capture a transit trail, is a unique and key characteristic of the Tropopause. It can capture, retain and **STORE*** the heat of the passing meteor within its mass. In this photograph the heat was still dissipating from within the physical body of the Tropopause. All this occurs in a fraction of a second, and to the casual observer – it come and went very quickly, without their noticing the many different elements that took place. The true visual sighting can only be captured and recorded on video. Our eyes just aren't good enough.

- As a trained Photographic Interpreter (PI) I am reading the photograph, seeing the light trail, as the meteor passes through the body of the Tropopause. The illumination of the light trail can only signify the capture and retention of energy immitted by the meteor.

International Space Station (ISS)

With the many launches of the Space Shuttles, and the Astronaut recoveries from the ISS. There has been a constant transit of space vehicle being recovered, to return back to Earth. With each of these, the vehicles needed to re-enter Earths' atmosphere; and they need protection from the pressures they will encounter on their return.

Each craft needs the protection of 'heat tiles' to stop them from burning up on re-entering the Atmosphere (via the Tropopause). *The 'heat tiles' retard the re-entry speed of the shuttle from several thousand miles an hour while in orbit, to just a few hundred miles an hour once they were within Earth's atmosphere.*

Friction between the heat tiles and the dense Tropopause creates the flaring and heat. As the re-entry vehicles encounter the atmosphere, the retardation process transfers the energy from the speeding shuttle into friction. The friction on the tiles starts making them glow and flare. During this process, all communications between the craft and ground control are 'blacked out'. The radio transmissions between the two are severed and temporarily lost, until they clear the lower edge of the Tropopause.

The reality is that at this juncture, the craft is making its transit through the upper edge of the TROPOPAUSE. The flaring starts at the top layer of the Tropopause - radio communications are lost, flaring stops as the craft emerges through the bottom of the Tropopause. Entering the tropopause at several thousand miles an hour, exiting at a mere two to three hundred miles an hour, would feel as though someone had put the brakes on. At which point, the Spacecraft is transformed into a huge unpowered glider, with a forward momentum of several hundred miles an hour to keep it flying, and manoeuvrable within the atmosphere.

Columbia Shuttle Disaster

In 2003, the second major airborne disaster of the Space Shuttle program occurred. On its return to Earth, as it approached Cape Canaveral, the Columbus shuttle had just touched the upper level of the Tropopause, when it started to break up.

The Columbus shuttle was doomed at lift-off several days earlier; the wings had been holed by break-away debris from the launch. Pieces of insulation from main fuel tanks, knocked off a significant number of heat tiles, leaving holes in the wing sections.

On re-entry the weakened tiles of Columbia started to flare, and the craft started to break up, as it encountered denser air of the Tropopause on

the descent. Pieces were falling off the shuttle. When they broke off, they had the same velocity as the main craft, and flew in formation with the mother craft.

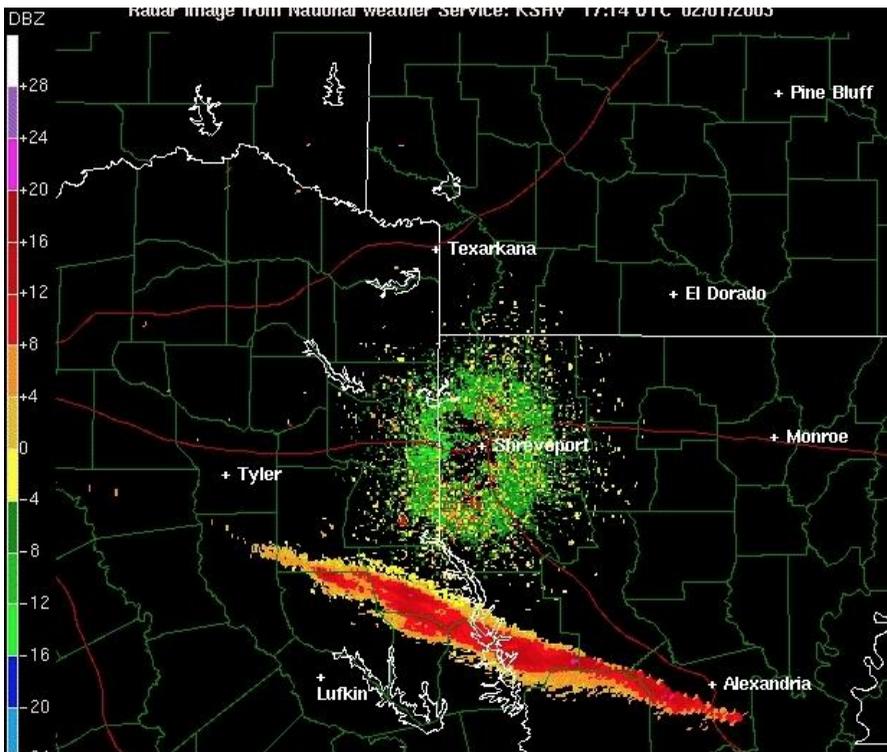
The denser air mass created friction, as it started to retard, and slow the Shuttle down. The damaged Shuttle started to ingest the denser air in the wing roots, which were not protected. This led to catastrophic failure of the wings and finally the main frame.



NASA

Pieces of the craft started breaking off. They had the same velocity and inertia as the rest of the craft. All the different pieces were travelling in the same shallow path through the Tropopause, in formation with the Columbia shuttle.

Until they reached the critical point, when the entire assemblage burnt up and was reduced to very small pieces. Which spreading over a vast area on the ground. The falling debris field eventually descended, and fell over five southern States. It was all captured on radar. It was a tragic disaster.



The radar trace of the scattered debris field, while it was still high in the atmosphere, as is spread from West to East. Just South of the town of Shreveport, Louisiana.

With this disaster, all US Space Shuttles were grounded from future flights. Meanwhile, there were Astronauts stranded in Space in the ISS. They did have an 'Escape Module', which would have brought them back to Earth. But that would have meant abandoning the ISS, and the entire Space Project.

An agreement was established with Russia to use their Soyuz rocket, specifically the launch and recovery facilities, to re-supply the ISS with Astronauts and supplies for several years.

The Soyuz re-entry capsules were considerably smaller, using similar heat tiles for retardation on re-entry – however, they employed parachutes for a final, and relatively gentle landing back on Earth. They were limited in size and could comfortably hold three people. Preventing many of the experiments conducted in space, from being brought back to earth.

Challenger Shuttle Disaster

More than a decade earlier, another disaster had struck the Shuttle program. It happened moments after lift-off and launch. Like the Columbia disaster, *it too should have been blamed on the Tropopause*. But no one had any idea, or even knew what had happened.

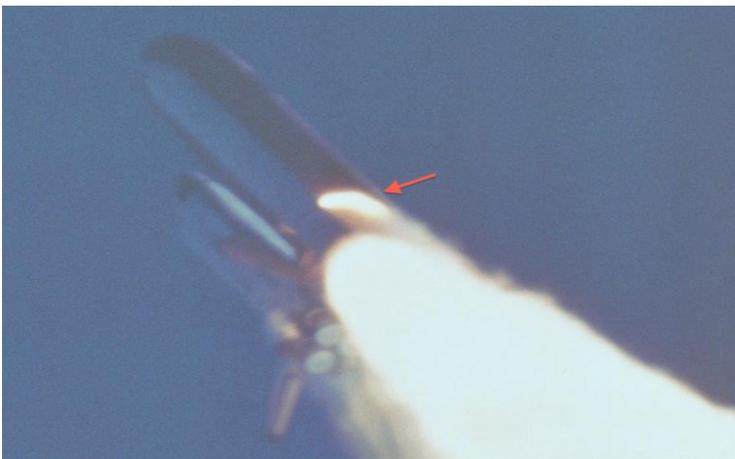
In an attempt to affix blame (as it was a highly charged *political* event), everything and everybody were blamed – and no one got it right. In the end no heads rolled for the tragedy, as it was all blamed-on things called ‘O rings. The President of the United States was present as a witness to the launch. No-one was able to understand that it was the thick dense blanket of the Tropopause that caused, and triggered the final outcome. No one knew or understood the Tropopause then. They still don’t!

The date of the early tragic Space Age event was 1986. The Challenger Shuttle exploded above 46,000 feet, over Cape Canaveral, minutes after launch. Most major tragedies are not caused by a single event, but generally by a series of independent events. This was the case with Challenger. It was a continuous, and cumulative combination of misadventures that led to the final disaster.

The US President was attending the event and was primed to make a major political speech immediately after the launch. As a major 'publicity stunt' a civilian school teacher had been included in the crew of Astronauts. In a well-orchestrated event, her school class were all watching the scheduled launch on TV. She gave them all a big wave before climbing into the Shuttle. The weather had been inclement. Overnight, ice had formed on the superstructure of the launch rig. Several Engineers had urged the postponement of the launch because of the ice, and inclement weather conditions. But political pressure forced the launch to proceed.

On blast-off, video cameras were recording the count down, the rockets firing and lift off. Everything seems normal, the Saturn rocket started its graceful arc upwards. Following standard launch procedures, the shuttle rolled onto its back.

Then without warning, the Saturn rocket exploded into a ball of fire. Examination of the videos after the disaster showed that a plume of fire was escaping from one of the booster rockets and was playing against the side of the main fuel tanks of the Saturn rocket.



After many weeks of investigation, the blame for the accident was placed firmly onto the failure of the 'O' rings that separated the different sections of the solid booster rocket. All other factors had been taken into account, included the metrological conditions prior to count down, and the political expediency of the moment. The fault that was blamed for the tragedy was the failure of one of the booster rockets. To anyone unfamiliar with solid booster rockets, this was an acceptable reason, and the only sole reason for the loss of lives, and the multi-million-dollar failure.

But, to anyone experienced in the construction and use of solid-state rockets, this should have set off alarm bells and red flags, indication that something was not quite right. Solid state rockets, and the propellants used, are specially designed to perform specific actions. The propellant is fired internally at the top of an aperture, which runs through the entire length of the rocket fuel. The centre of the solid fuel is left hollow. The flame ignites at the top of the tube, then runs down the length of the hollow rocket core, igniting more rocket fuel as it goes, emerging as an extra thrust through the tail end of the rocket. It was a brilliant use for a solid-state booster rocket.

For the flame to spurt out of the side of the rocket casing, is a sure indication that something was seriously amiss in the production and assembly of the rocket. The 'O' ring is simply an outer seal which separates one section of the rocket from another. It is also the last point where the flame from the propulsion chemicals should ever reach.

After blast-off, the booster rockets would have been discarded from the main fuel tanks, long before the internal flame could ever reach the O rings. The O rings were never meant to contain the heat, or withstand the pressure of igniting rocket fuel. The burning rocket fuel is meant to be self-sealing and could only escape sideways if there was a gap or hole in the propellant fuel.

The 'O' ring explanation was just a convenient cover up for the supposed lack of forensic evidence. A major effort was made to recover and to reconstruct as much of the Challenger Shuttle as possible. A remarkable amount of debris was eventually recovered (including burnt body parts). Enabling the Shuttle to be partially and successfully, re-assembled in a sealed off hanger. Results stemming from the recovery were never revealed, or made public. These are still highly classified Top Secret documents.

One of the many unanswered questions is "Why did the Shuttle explode at 46,000 feet"? What was the trigger that ignited the main Shuttle fuel tanks of liquid Oxygen and Hydrogen? The answer is simple. The final nail that lead to the overall disaster was the Tropopause.

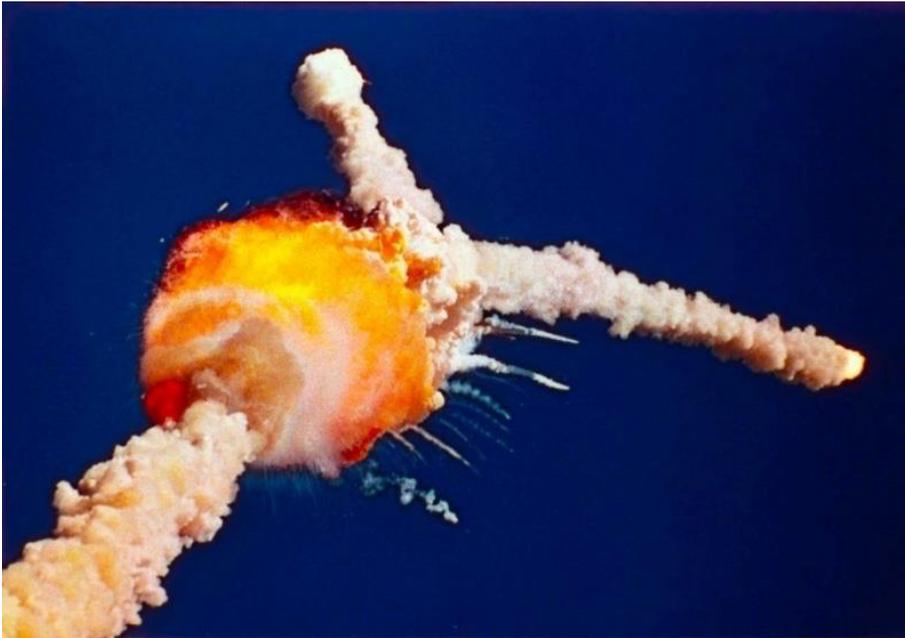
That was the trigger that completed the string of misadventures leading to the final catastrophe. Impacting the denser air of the Tropopause, the additional retardant and drag, would have created an additional blown back from the existing fire escaping from the booster rocket, against the fuel tanks.

The flame would have 'flared' and that would have been sufficient additional heat to burn through the side of the main tanks, exposing the liquid fuels to the flame. It all happened in a micro-fraction of a second.

These are just a few examples of events most people have seen and will remember. But they never connect them to the Tropopause, because they don't even know that it existed. Yet they may think that they have never seen; nor unknowingly witnessed seeing the Tropopause. But they have. These, and similar sightings are far more common than most people think.

They are seen, but not recognize. They happen so fast. Only parts of the events that are seen by the eyes, but never registered into the mind.

Many things that occur, can simply be overlooked or not even noticed. Especially by the untrained eye, or mind. This happened when Challenger impacted the Tropopause, shortly after launch. And here is a photograph to illustrate the point.



NASA

The entire detonation of the fuel tanks was contained and captured within the body of the Tropopause. The explosion was entrained within the 3,000-foot thickness of the Tropopause, as can be seen as the orange fire ball (a chemical reaction) in this photograph. For reasons unknown, the Tropopause has many attributes. Its strength, flexibility, invisibility, and ability to capture and retain heat within its core.

Watching the many videos of the tragedy, the casual observer will probably see little. A Photographic Interpreter (PI) may see that the orange fireball is the actual detonation of the liquid rocket fuel (liquid

hydrogen and oxygen), contained within the body, and depth of the Tropopause. The white smoke trail in the bottom left corner comes from the burning booster rocket fuel. The two white trails (top and right) are the booster trails after the explosion. The brilliant orange ball is the main fuel tank explosion that happened within, and was captured by the body of the Troposphere.

The two booster rockets had punched away from the main vehicle assembly. Through the body of the Tropopause and into the Stratosphere, on their own forward momentum. The one on the left appears to be the faulty booster, it is seen losing speed rapidly. The booster on the right is seen still burning and accelerating. Its engine fire clearly visible.

Sundry items from the shuttle had broken away (white smoke), but had sufficient momentum to breach the Tropopause, and continue on their upwards trajectory into the Stratosphere.

The Tropopause is one of the least know, and even less understood parts of the Earths ecosystem. Not only does it provide the Earth with protection from many random pieces of space debris, but it enables life to exist on this planet. Worldwide weather occurs due to the vagaries of the Tropopause.

Upper altitude, and low altitude winds are directed by it, resulting in the existence of the Intertropical Front system (ITF), around the Equator. The annual weather events, such as the torrential Monsoons, and the dangerous Atlantic Hurricane season. Whenever it rains, the Tropopause could be found lurking somewhere in the background.

It is the one of the things which separates and distinguishes us from the other Planets in our Solar System.

Earth is the Blue Planet. Mars is the Red Planet. Neither Mars or the other Planets have a Tropopause; which performs a very unique and essential function, it traps and contains water on the surface, and in the Atmosphere. It prevents water and moisture from escaping into Space. Considering that all flora and fauna (including ourselves) are comprised mainly of water, it would be very inconvenient to attempt to do without it.

In my humble opinion; all the talk, money and effort of putting people on Mars, is just 'Pie in the Sky'. It would be better to expend our energies on saving the planet we live on instead. Without question, putting people on the Moon, or Mars, is much sexier than investigating the 'rain in Spain', or the mating habits of Herring in the North Sea. But the return on investments, of ridding the seven seas of plastic, would provide a far better return. Which of our World Leaders would put the removal of carbon dioxide from the atmosphere, above their country's gross domestic product (GDP)? Those that choose GDP should be conscripted, as the crew for the first flight to Mars. We just don't need them.

But life anywhere is far from perfect. While the Earth is ostensibly round, the Tropopause is more of an imperfect Egg shape, with cracks. As it surrounds the Globe, there are generally four series of cracks. Two in each hemisphere. These cracks are critical, they cause the atmospheric anomalies that create weather patterns. From the side view, the cracks appear to be 'fault' lines, and it is the bottom of the faults where Jet Streams are formed.

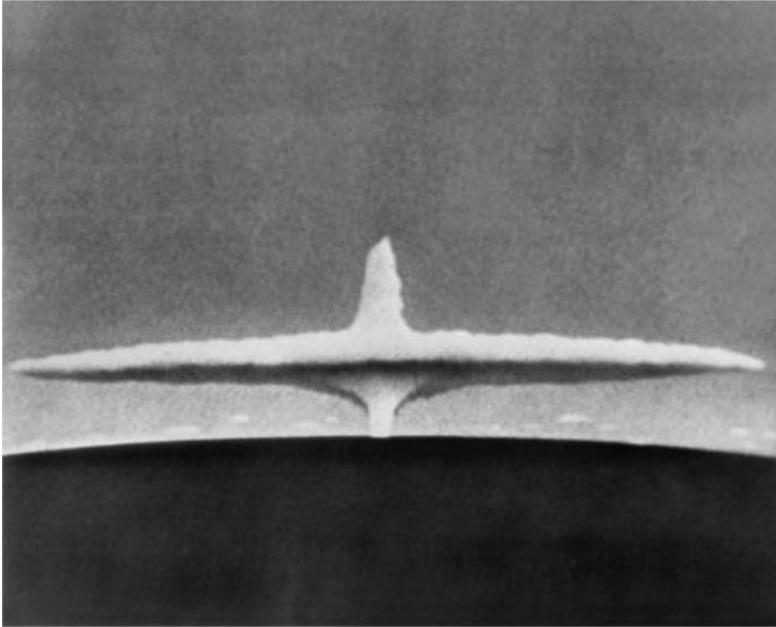
Jet Streams are the Steering Winds that cause the movement of different weather patterns. Surrounding the jet stream is a fine vortex of winds, which create exceptionally strong vertical wind currents. These are the violent updrafts and downdrafts experienced, quite often, especially by trans-Atlantic flight passengers.

This is an observation and a generalization, I made when I was navigating around the World. If the Jet Streams flow from West to East, conditions tend to be mild. If they start sloping at 45 degrees, then weather conditions tend to become stormy. When they become vertical, then conditions become catastrophic. This is like saying “Red sky’s in the morning Shepard’s warning. Red sky’s at night Shepherds’ delight”.

The Sun is the key, which regulates the condition of the Tropopause. Solar activity and Solar flares effect the temperature and radiation emitted by the Sun. These are beyond the control of mankind. What is within our control is what we do on the surface of the Earth, and within the atmosphere. This is tempered by the 23 ½ degree offset angle that the Earth spins around the Sun. Giving us the seasons of Spring, Summer, Autumn and Winter. These seasons are reversed in both the North and South hemispheres. When it is Summer in the in one hemisphere, it is winter in the other. Most plant life has adapted to the different seasons in each hemisphere. However, there is one that doesn’t, the remarkable Easter Lily. This marvellous plant blooms at Easter time, and to hell with the hemisphere in which it is planted.

The RAPE of the Tropopause – the Castle Bravo detonation

This is an amazing photograph of the very first-time mankind ever *raped* the Tropopause.



The first American H bomb exploding in the Marshall Islands in 1952. The Doomsday Clock is now as high as it was during the Cold War. OFF/AFP/Getty Images

Man continued to rape the Tropopause with each subsequent detonation of a hydrogen bomb.

As promised, this is also a photograph of the Tropopause. Difficult to see, as it is invisible. But it is there if you look closely! The entire upper surface of the mushroom head is painting the bottom of the entire Tropopause. The heat and energy of the nuclear cloud has compressed the central part upwards, creating a niche.

At this stage, the cloud is covering 10,000 square miles of the Ocean and was nestled within the niche. The fast-upper atmospheric winds flowed completely around it, without disturbing the cloud in any way. According to the MoD, and its Expert Witnesses, in discussing the Grapple Yankee detonation, the fast-upper atmosphere winds would have dispersed the cloud to the East. At least that is what they told the Pension Appeals court. Here is evidence to show that it just was not so.

During 1952, the United States detonated the world's first thermonuclear weapon, the Hydrogen Bomb, on the Pacific atoll of Bikini. Code name *Castle Bravo*. After the blast, the cloud created by the detonation was captured in this remarkable photograph that showed the sheer size and magnitude of the explosion, demonstrated by the curvature of the Earth.

The scientists assembling the Castle Bravo device, were determined to get it right the first time, and they kept adding more and more nuclear fuel to the weapon project. Eventually, the detonation turned out to be several times larger than had been expected. They had put in too much stuff!

Castle Bravo was assembled in a very large structure, built on the coral surface of the island. It was far too large to be carried by an aircraft (but could be fitted into a ship). After having proven the feasibility that a hydrogen fusion detonation was possible, the individual components were downsized to eventually be fitted into a large aircraft bomb.

On detonation, the exploding ball of nuclear magma pulverized a very large round hole in the coral surface of the island. More than half the thermal energy, and blast resulting from the detonation, was absorbed by the Earth (island) itself.

But the level of radiation generated by the explosion increased several hundredfold, as the *neutron* and *gamma* radiation released by the detonation, contaminated every atom of coral it touched. The fall out spread all the way around the World.

At the time the photograph was taken, and frozen in time, the cloud, looking like an elongated mushroom with a pointed witch's hat, on top. The overall diameter was over 100 miles across. The top layer of the mushroom had an elevation of 55,000 feet. It is at this vast area that the Troposphere (atmosphere) kissed the Tropopause. The lower level of the cloud, close to the stem was 40,000 feet, or 15 miles deep. Above it, the top of the spike (which is poking through the Stratosphere) was rapidly approaching 100,000 feet, or 20 miles high.

It appears that the cloud developed a concave niche within the Tropopause, in which it rested. That is the curved upper surface of the mushroom top. Very similar to what happened with the Grapple Yankee cloud. It was not disturbed by the fast-moving upper atmosphere winds, which just blew around the vast Nuclear Weather Bubble that the blast had created.

The upper layer of the mushroom cloud is actually 'painting' the lower surface of the entire Tropopause. It was able to capture and restrain the entire power and energy of the ball of nuclear magma, preventing the major portion from escaping into the Stratosphere.

Significantly, right at the top epicentre of the mushroom stem, the heat and force of the upward thrust of the detonation, was able to breach, and penetrate the Tropopause.

To achieve this structure, the vast 100-mile-wide diameter of the cloud, would have necessitated the Tropopause to re-act with the rising ball of liquid nuclear magma.

Very much in the same way as I observed with Grapple Yankee. With the Tropopause catching the nuclear cloud, being lifted upwards before retarding it to a full stop. Then repulsing the cloud downwards, and repeating the ballet several times. Until the super-heated centre of the cloud was able to penetrate the Tropopause – allowing a tiny bubble of gas and debris to open a narrow chimney into the Stratosphere. Producing the tall high spike in the centre of the cloud spread.

The tall phallus protruding upwards above the broad mushroom cone is the actual ‘rape’ through the apex of the Tropopause. In legal terms, it is the penetration of the Tropopause by the first Hydrogen Bomb that was detonated, by man, on Earth. The upper surface of the Tropopause is not visible, due in part to the speed and power of the incredible heat surge, created by the Castle Bravo detonation. The nuclear gases did not spill over or paint the upper surface of the Tropopause, as it did for the much smaller Grapple Yankee explosion.

The debris (primarily radioactive coral dust) and gases generated by the detonation are the white cloud like pinnacle that looms above the rounded surface of the cloud spread. The area immediately underneath the top part of the mushroom cloud is the nuclear cloud imbedded in the Troposphere (atmosphere). The area above it is the invisible Tropopause. And above that, the lower part of the Stratosphere (which is also transparent).

*It is worthwhile noting that the gases within the chimney; which has penetrated through the Tropopause, and into the Stratosphere, **ONLY** represent perhaps two to three percentage points of the total volume of the entire cloud. Well over 96% of the total volume of the cloud had been trapped, and retained within the Atmosphere, by the strength, flexibility and tenacity of the Tropopause.*

Yet the heat and blast from ground level was sufficient to enable the escaping gases to reach an altitude of 100,000 feet (20 miles high), at the time that this photograph was taken. The pyroclastic surge was so great that it punched a hole right through the Tropopause, without scattering or dribbling over to paint the upper surface of that body.

If you still think that the Tropopause does not exist. There are still many more dramatic photographs available, to challenge your mind.

The next time you spot a shooting star, or see a brilliant object flash across the night sky - don't call the local Police Department.

Think TROPOPAUSE!



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