

THE WARBLER

AN EDUCATIONAL WEEKLY

ISSUE

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Dear Student, Artist, Thinker, Friend,

In this week's edition of *The Warbler* — tornadoes!! Growing up I never knew much about this natural disaster, also known as twisters to some. I knew they could be dangerous, and I kind of knew how to “protect” myself from one, but I didn't really know much else.

Within these pages, we will bring you information about an interesting aircraft named the Panavia Tornado. First introduced into service in the 1970's, this aircraft was a staple for British air power. Though numerous countries were originally involved in its configuration, the Panavia Tornado was completed by the work of the United Kingdom, West Germany, and Italy. We hope you enjoy this issue of *The Warbler*!



WORDS INSIDE

FOUND INSIDE “HERE'S HOW THE TORNADO SCENE ...”

computer generated imagery | The use of computer graphics to create or contribute to images in art, printed media, video games, simulators, and visual effects in films and television

FOUND INSIDE “HOW DO TORNADOES AFFECT ...”

introspection | the examination or observation of one's own mental and emotional processes

FOUND INSIDE “WHAT IS A LANDSPOUT TORNADO?”

supercell | Thunderstorm that is characterized by the presences of a mesocyclone

cumulus congestus | Type of cloud

FOUND INSIDE “SEVERE WEATHER 101 ...”

mesocyclone | A cyclonic air mass associated with a supercell; its presence is a condition for a tornado warning

“I've been fascinated with sever weather since I was four, when I saw a tornado at night in my mom and grandmother's southeast Minnesota hometown while everyone else was asleep — an experience I encoded in *The Stormchasers*.”

JENNA BLUM // American Writer

ENTERTAINMENT

Here's How the Tornado Scene in the *Wizard of Oz* was Actually Made

BY WENDY MEAD | *Grunge.com* | Sept. 21, 2021

Released in 1939, *The Wizard of Oz*, a fantastical tale of a young woman's adventures in a wondrous land, captured the public's imagination. Considering the time the film was made, the special effects seem especially magical. Remember there was no computer generated imagery in the 1930s! So how did they create such dramatic events as a swirling, whirling tornado on screen?

According to Peraton Weather, the legendary tornado scene in the book *The Wonderful Wizard of Oz* by L. Frank Baum was inspired by a real-life weather disaster. Baum worked as a newspaper editor and learned about twin tornadoes that ripped through the town of Irving, Kansas in 1879. One of the victims of these destructive forces of nature was a woman named Dorothy Gale. Baum used the same name for his main character in his novel and Judy Garland played Dorothy in the film version.

For the film, Arnold Gillespie handled the special effects and worked hard to recreate a natural weather phenomenon for the cameras. Getting the tornado to look and move right was a trial-and-error process, according to the *Washington Post*. He tried a giant rubber cone that stood 35 feet tall, but it was too stiff to simulate the motion of a real twister. According to the *Wichita Eagle*, he also tried a water vortex. But the best solution came from, of all places, the airport. Gillespie remembered the windsocks used at airports around this time.

Arnold Gillespie Built His Own Tornado

Gillespie made his tornado out of muslin cloth in a sock-like shape, which could move much like a real one. Gillespie's new version could twist, bend, and shift around in an authentic way. The next challenge was getting the twister to move around on the film's soundstage. The top of the muslin sock was wrapped around some chicken wire to help it hold its shape and then was attached to a gantry crane. The crane was on a track that spanned the entire stage. The gantry was custom-built for the film, and cost more than \$12,000 — an enormous expense for 1938

The bottom of the muslin cloth and chicken wire tornado was attached to a cart on a track, according to *Playbill*. Two stagehands, hidden under the stage floor, moved to the cart back and forth to give the tornado its dramatic motion across the prairies of Kansas. All of Gillespie's efforts really paid off as the final version of the film shows. *The Wizard of Oz* tornado scene is considered the first realistic depiction of a twister in a film. Gillespie earned an Academy Award nomination for all the wonderful special effects he did for the movie. ●



Resources

Listed below are a few organizations able to offer support, community, and engagement for persons who have been or are currently incarcerated. Please contact them with concerns or questions you might have. These organizations are primarily volunteer organized and operated, so please allow time for response. We would also love to hear from you. Feel free to write to us at **APAEP**.

1061 Beard-Eaves Memorial Coliseum
Auburn University, AL 36849

OAA (Offender Alumni Association) Based out of Birmingham and able to offer resources for individuals currently incarcerated and those who have been released.
1000 24th Street South
Birmingham, AL 35205

FIGCN (Formerly Incarcerated College Graduate Network) supports persons who have been or are currently incarcerated and are involved or looking to get involved in post-secondary education (college). They offer access to job and internship opportunities, job fairs, and other educational resources.
600 Park Offices Drive, Ste 300 #54
Durham, NC 27709

“**Toto, I’ve got a feeling we’re not in Kansas anymore.**” DOROTHY // character from the *Wizard of Oz*

WILDLIFE

How Do Tornadoes Affect Birds?

BY EMMA BRYCE | *Audobon.org* | May 24, 2013

Any natural disaster calls for prolonged introspection, especially facing the loss of life. Eventually curiosity turns us onto other consequences—the wildlife and surrounding habitats that the storm also left in its path. How do plants, birds, and other wildlife fare after a tornado tears through an area?

The general consensus seems to be that we don't really know. As weather systems go, the impact of hurricanes is easier to study because their broad spread and brooding nature makes them easier to predict. But tornadoes, which typically rip through a region called 'Tornado Alley'—between Iowa, Colorado, and Texas—from late spring into summer, are coiled tightly like forceful weather springs, and they move fast—making them harder to detect in advance. Despite the many mysterious surrounding twisters, we do have some knowledge about how they affect nature.

Sensing the storm

Birds are lucky in that they can detect minute pressure shifts before unusual weather arrives. However, Kenn Kaufman, *Audubon* field editor and author, believes that our feathered friends are worse at predicting tornadoes than we are because the twisters move so fast and are so localized. "Humans have more advanced warning than birds do because we have the nightly news," he says. There is one thing that birds can do more effectively than us, though, he says—escape. The assumption is that "a lot of birds get out of the way," he says.

In the tornado's path

Like hurricanes—which can actually spawn twisters—tornadoes are hugely destructive and can flatten things in their paths even more severely. "The intense concentration of habitat destruction that occurs undoubtedly makes a difference in bird habitat," Kaufman says. Trees where birds nest are ripped from the ground, and debris from shredded structures and vegetation obscures underground burrows.

After a tornado has blown a hole through a forest, for instance, "You'd see a lot of logs lying down, and brush and snags standing where trees have been snapped off," says King, who has studied forests hit by twisters. "The principal changes are to the removal of forest canopy." That allows a lot of light to hit the ground, which in turn results in smaller saplings colonizing the former wooded areas, forming a dense thicket over time. The habitat shifts from forest to

shrub, making way for different species to move in to the area. "The golden-winged warbler is a shrubland species that has been the subject of a lot of conservation concern, and would use tornado-damaged sites," says King. He adds to that list the chestnut-sided and prairie warblers, as well brown thrashers.

A return to (a different kind of) normalcy

When it comes to birds, the timing of tornadoes—stormy late spring and early summer—often coincides with nesting season. After the storm passes, birds are often drawn back to their established territories. "There's such a powerful instinct for them to return to their nesting habitat," Kaufman explains, "they can go back and figure out, oh well this is the spot." Unfortunately for them, 'the spot' might be a downed tree or an obliterated building.

While much remains unknown, King loosely compares the tornado-stricken habitats to those devastated by fire: Some landscapes—especially forests—actually thrive after disaster strikes. In these ecosystems, upheaval brings revival that can be key to some species' survival. Fallen branches provide more cover, nooks, and crannies where animals can take cover. Rotting wood also spurs new growth as it fertilizes the soil. The benefits are significant enough that ecologists suggest authorities refrain from clearing forests of damaged vegetation after severe weather events. Believe it or not the U.S. Forest Service still refers to this as woody "debris" and often burns it.

For some birds, change is salvation. King offers a hopeful anecdote in the form of the whip-poor-will, a forest-dwelling bird that faces habitat loss. In forests, fallen trees give a photosynthetic boost to the lower, shrubby level—an ecosystem that birds like the whip-poor-will need more than deep, shadowy forest. "They won't actually use mature forest," King says. "They require shrubland." Sometimes, new life can spring from nature's worst destruction. ●



Photograph by Lori Mehmén

Edited for space

MATHEMATICS

Sudoku

#269 PUZZLE NO. 3074749

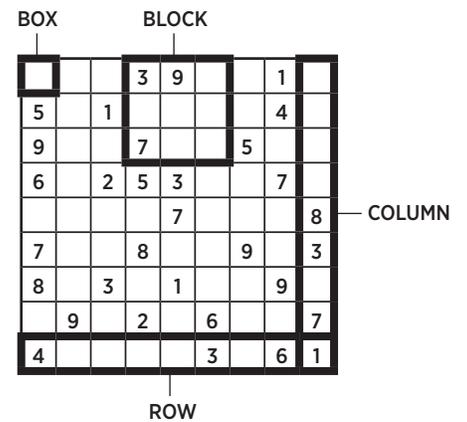
1	4			7	9			
	2	5				6		
6							8	
		3		4	5			
8			2					6
	9						2	
5					3	1		
		9			1			8
			7			2		

#270 PUZZLE NO. 4977216

							9	
	6	5		4	1		8	
	4	8		6				
	3				4	7		
2				7		8	6	
			5					
	9				3		5	
			2				4	
		3				1	2	

SUDOKU HOW-TO GUIDE

1. Each block, row, and column must contain the numbers 1-9.
2. Sudoku is a game of logic and reasoning, so you should not need to guess.
3. Don't repeat numbers within each block, row, or column.
4. Use the process of elimination to figure out the correct placement of numbers in each box.
5. The answers appear on the last page of this newsletter.



What the example will look like solved ☺

2	4	8	3	9	5	7	1	6
5	7	1	6	2	8	3	4	9
9	3	6	7	4	1	5	8	2
6	8	2	5	3	9	1	7	4
3	5	9	1	7	4	6	2	8
7	1	4	8	6	2	9	5	3
8	6	3	4	1	7	2	9	5
1	9	5	2	8	6	4	3	7
4	2	7	9	5	3	8	6	1



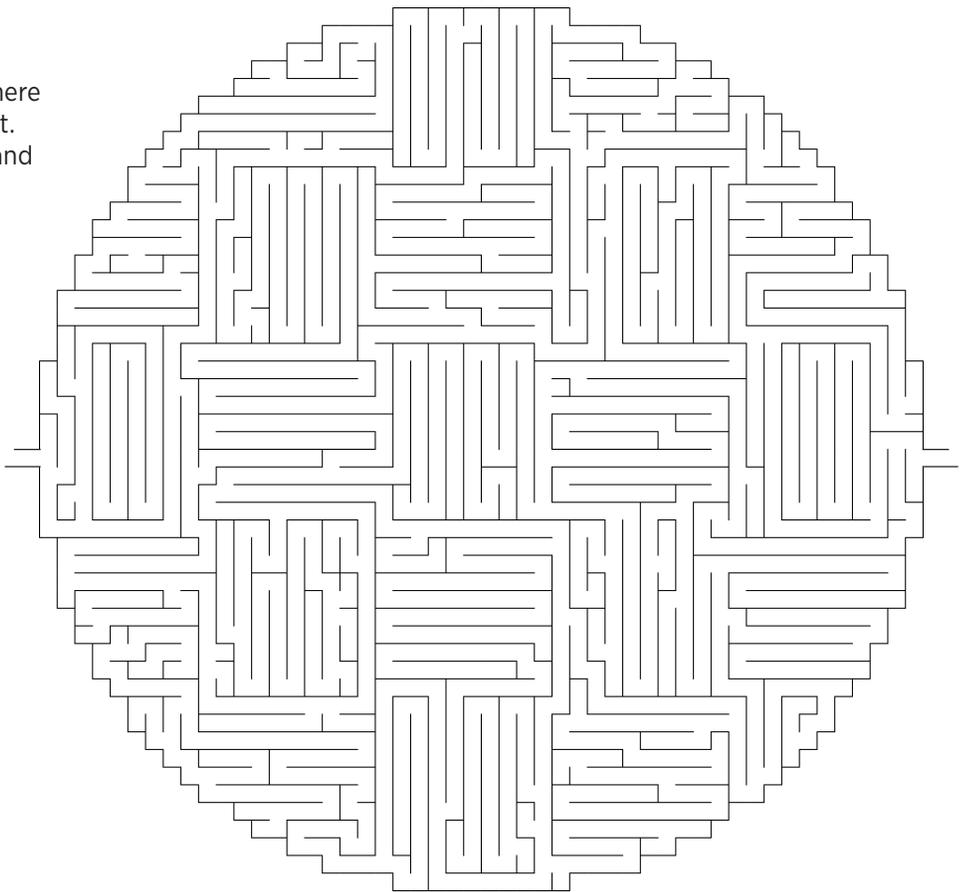
“Wherever you go, no matter what the weather, always bring your own sunshine.”

ANTHONY J. D'ANGELO // American Musician



Maze ►

This maze is a collection of paths, where there is both a start and ending point. The player starts at one entry point and follows a path of their choice, which leads to the end point.



DID YOU KNOW?

Tornadoes appear in **all colors**. They take on the color of the materials they pick up.

The word "tornado" comes from *tornare*, which is **Latin**, meaning "to turn or to have torn."

The 1999 Oklahoma City tornado generated winds of **318 mph**, the strongest winds ever recorded on earth.

During the 1974 Super Outbreak, two **F5 tornadoes** hit Tanner, Alabama, only 45 minutes apart.

Fun Facts Source: factretriever.com/tornado-facts



MOST TORNADOES IN THE SOUTHERN HEMISPHERE **ROTATE CLOCKWISE**. MOST TORNADOES IN THE NORTHERN HEMISPHERE ROTATE **COUNTERCLOCKWISE**.

romantic	ASK ASK ASK ASK ASK	Oct. 10	GOING DOGS DOGS DOGS DOGS
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WORD PLAY A Rebus puzzle is a picture representation of a common word or phrase. How the letters/images appear within each box will give you clues to the answer! For example, if you saw the letters "LOOK ULEAP," you could guess that the phrase is "Look before you leap." *Answers are on the last page!*

ART + CULTURE

The Tornado

BY IRENE LATHAM

The story comes grumbling
over the hill. It tumbles
hailstones and cracks tree-trunks.
It craves front-page news,

so it musters all speed
and muscle. It tears across
Main Street, steals shingles
and un-parks cars.

It whirls, whistles
screams and teems with twists
no one sees coming.
We huddle, hunch

brace ourselves for the end.
When sunshine arrives,
we unfold, emerge.
Our words echo

and soothe as we join
hands with our neighbors.
Together
we sift through rubble

to shape a new story.
It rises like hallelujah!
as a goldfinch gathers
thistle to rebuild its nest.

Irene Latham is the author of many books for children, including novels, poetry, and picture books. Winner of the 2016 ILA Lee Bennett Hopkins Promising Poet Award, she writes poetry inspired by nature, art, and the experience of being human. Together with Charles Waters she's written *Dictionary for a Better World* and *Can I Touch Your Hair? Poems of Race, Mistakes and Friendship*, which was named a Charlotte Huck Honor book and a Kirkus Best Book of 2018. Irene lives on a lake in Alabama where she does her best to "live her poem" every single day by laughing, playing the cello, and birdwatching.



WRITING PROMPT

Latham describes rebuilding after a storm, a communal effort to shape a new story following loss and ruin. After bracing for a supposed end, they later join hands and move forward. Using this as a prompt, write or illustrate a short essay, poem, blog, or illustration describing a time you might have gathered with others to create community in order to rebuild or celebrate.

Word Search

U	L	H	R	O	D	A	N	R	O	T	H	E	L
H	U	D	D	L	E	E	I	B	O	E	A	A	T
M	O	S	A	E	E	R	O	L	I	H	J	G	I
S	C	O	M	M	U	N	I	T	Y	R	U	U	O
S	H	I	N	G	L	E	S	C	T	T	L	L	I
O	N	E	I	G	H	B	O	R	S	O	E	N	N
N	E	C	I	T	H	I	S	T	L	E	L	A	T
E	R	E	B	U	I	L	D	I	N	G	L	J	C
I	E	W	S	R	E	S	S	E	G	H	A	M	C
T	E	C	R	G	N	I	C	A	R	B	H	S	R
G	G	G	N	O	I	T	C	U	R	T	S	E	D
R	E	E	S	R	E	T	L	E	H	S	E	S	D
O	E	N	G	N	I	L	T	S	I	H	W	E	A
R	S	L	T	S	I	L	H	E	O	M	L	A	A

- | | | | |
|------------|---------|-------------|-----------|
| REBUILDING | TORNADO | HALLELUJAH | SHINGLES |
| NEIGHBORS | HUDDLE | THISTLE | SHELTERS |
| WHISTLING | BRACING | DESTRUCTION | COMMUNITY |

WEATHER

What is a Landspout Tornado?

FROM TORNADO XTREME

Any type of non-supercell tornado is defined as a landspout tornado. Non-supercell tornadoes are tornadoes that come from non-supercell thunderstorms. These kind of tornadoes are usually weaker in strength and do not last as long as supercell tornadoes.

Landspouts vs Waterspouts | You may have already heard of waterspout tornadoes and are wondering how they differ from landspouts. Landspout tornadoes and waterspout tornadoes have extremely similar mechanisms and look like each other.

The term “landspout” was created by a meteorologist named Howard B. Bluestein in 1985. While waterspout tornadoes form over the water, landspout tornadoes form over land. They are able to form even when a thunderstorm is not visible.

Landspout Tornado Duration and Damage | While landspout tornadoes do not tend to last very long, they are able to cause damage to everything in their path. A landspout tornado will probably not last any longer than about fifteen minutes.

Landspout tornadoes are able to cause damage to things in their path despite the fact that they lack strong winds. While the damage may not be especially serious, it is certainly a reality. One reason why landspout tornadoes do not have strong wind strength is because they develop at ground level. This kind of tornado usually has weak wind strength and is generally at the EF-0 level.

Landspout tornadoes are virtually impossible to predict. This is because they can happen at any time of the year. Also, they are extremely hard to see and can even be invisible to the naked eye. One way these tornadoes can be seen is a result of the dust and dirt that they kick up. Spring and summer tend to be the times of year when landspout tornadoes are most likely to happen.

Conditions Needed for a Landspout Tornado | A landspout tornado can be generated during a cumulus congestus cloud’s growth stage. This is because of stretching upward of boundary layer vorticity that brings it into the updraft of the cumulus congestus.

Landspout tornadoes are much weaker and smaller than other kinds of tornadoes, especially supercell tornadoes, and they are not able to create a mesocyclone. This is one reason why it’s so difficult for Doppler radar to detect the conditions they need to form.

How a Landspout Tornado Forms | In order for landspout tornadoes to form, there must be spinning air (also called

vorticity) at the Earth’s surface. This vorticity can be a product of wind shear or the convergence of air with different speeds or from different directions.

After this condition is in place, there can be formation of a storm cloud above the spinning air. Air updraft is the force that pulls the spinning air and creates a vertical shape. When this occurs, the spinning air is in tube form.

Where are Landspout Tornadoes Most Likely to Happen?

The High Plains is the region of the United States where landspout tornadoes are most likely to occur. This region includes eastern Colorado, western Kansas, western Nebraska, southwestern South Dakota, southeastern Wyoming, eastern Montana, western Oklahoma, eastern New Mexico, and a bit south of the Texas Panhandle. Be aware, however, that this kind of tornado has occurred in many different parts of the country.

Areas where landspouts are most likely to develop have drier climates with significant low-level instability and high-based storms. Although most landspout tornadoes are short it is sometimes possible for them to last longer than 15 minutes. On rare occasions, they can cause significant damage.

The state in which landspouts are more likely to develop is Colorado. There are usually about 46 tornadoes each year in that state, and most of those tend to be landspouts. Many landspouts are invisible and can only be detected by way of swirling dirt and debris lifted from the ground.

Landspout Tornado vs Dust Devil | Landspouts have similarities to dust devils (they both involve fast-moving vortexes of air that are vertical in nature), but they are definitely tornadoes. The term often used by the National Weather Service to describe landspout tornadoes is “*dust tube tornado*,” so the confusion between the two terms is understandable. But a landspout tornado is not a dust devil. ●



“My grandmother was the greatest cook in the world. She could just go in there, the whole kitchen would look like a tornado hit it and then she’d come out with the best food. Then she’d sit at the table and she wouldn’t eat!” EDIE BRICKELL // American Singer

FEATURE

Severe Weather 101 | Tornadoes

FROM NOAA | *National Severe Storms Laboratory*

What is a tornado?

A tornado is a narrow, violently rotating column of air that extends from a thunderstorm to the ground. Because wind is invisible, it is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust and debris. Tornadoes can be among the most violent phenomena of all atmospheric storms we experience.

Where do tornadoes occur?

Tornadoes occur in many parts of the world, including Australia, Europe, Africa, Asia, and South America. Even New Zealand reports about 20 tornadoes each year. Two of the highest concentrations of tornadoes outside the U.S. are Argentina and Bangladesh.

How many tornadoes occur in the U.S. each year?

About 1,200 tornadoes hit the U.S. yearly. Since official tornado records only date back to 1950, we do not know the actual average number of tornadoes that occur each year. Plus, tornado spotting and reporting methods have changed a lot over the last several decades, which means that we are observing more tornadoes that actually happen.

Where is Tornado Alley?

Tornado Alley is a nickname invented by the media to refer to a broad area of relatively high tornado occurrence in the central United States. Various “Tornado Alley” maps look different because tornado occurrence can be measured many ways: by all tornadoes, tornado county-segments, strong and violent tornadoes only, and databases with different time periods.

However, the idea of a “tornado alley” can be misleading. The U.S. tornado threat shifts from the Southeast in the cooler months of the year, toward the southern and central Plains in May and June, and the northern Plains and Midwest during early summer.

When are tornadoes most likely?

Tornado season usually refers to the time of year the U.S. sees the most tornadoes. The peak “tornado season” for the southern Plains (e.g., Texas, Oklahoma, and Kansas) is from May into early June. On the Gulf coast, it is earlier in the spring. In the northern Plains and upper Midwest (North and South Dakota, Nebraska, Iowa, Minnesota), tornado



season is in June or July. But remember, tornadoes can happen at any time of year. Tornadoes can also happen at any time of day or night, but most tornadoes occur between 4-9 p.m.

What is the difference between a Tornado WATCH and a Tornado WARNING?

A **Tornado Watch** issued by the NOAA Storm Prediction Center meteorologists who watch the weather 24/7 across the entire U.S. for weather conditions that are favorable for tornadoes and severe weather. A watch can cover parts of a state or several states.

A **Tornado Warning** is issued by your local NOAA National Weather Service Forecast Office meteorologists who watch the weather 24/7 over a designated area. This means a tornado has been reported by spotters or indicated by radar and there is a serious threat to life and property to those in the path of the tornado.

How is tornado strength rated?

To determine the strength of a tornado, experts examine the damage it caused. From this information, we can estimate the wind speeds. An “Enhanced Fujita Scale” was implemented by the National Weather Service in 2007 to rate tornadoes in a more consistent and accurate manner. The EF-Scale takes into account more variables than the original Fujita Scale (F-Scale) when assigning a wind speed rating to a tornado, incorporating 28 damage indicators such as building type, structures and trees. For each damage

A condensation funnel is made up of water droplets and extends downward from the base of the thunderstorm. If it is in contact with the ground it is a tornado; otherwise it is a funnel cloud. Dust and debris beneath the condensation funnel confirm a tornado’s presence.

indicator, there are 8 degrees of damage ranging from the beginning of visible damage to complete destruction of the damage indicator. The original F-scale did not take these details into account. The original F-Scale historical data base will not change. An F5 tornado rated years ago is still an F5, but the wind speed associated with the tornado may have been somewhat less than previously estimated. A correlation between the original F-Scale and the EF-Scale has been developed. This makes it possible to express ratings in terms of one scale to the other, preserving the historical database.

How do tornadoes form?

The truth is that we don't fully understand. The most destructive tornadoes occur from supercells, which are rotating thunderstorms with a well-defined radar circulation called a mesocyclone. (Supercells can also produce damaging hail, severe non-tornadic winds, frequent lightning, and flash floods.) Tornado formation is believed to be dictated mainly by things which happen on the storm scale, in and around the mesocyclone. Recent theories and results from the VORTEX2 program suggest that once a mesocyclone is underway, tornado development is related to the temperature differences across the edge of downdraft air wrapping around the mesocyclone. Mathematical modeling studies of tornado formation also indicate that it can happen without such temperature patterns; and in fact, very little temperature variation was observed near some of the most destructive tornadoes in history on 3 May 1999.

What do storm spotters look for when trying to identify a tornado or a dangerous storm?

Inflow bands are ragged bands of low cumulus clouds extending from the main storm tower usually to the southeast or south. The presence of inflow bands suggests that the storm is gathering low-level air from several miles away. If the inflow bands have a spiraling nature to them, it suggests the presence of rotation.

The **beaver's tail** is a smooth, flat cloud band extending from the eastern edge of the rain-free base to the east or northeast. It usually skirts around the southern edge of the precipitation area. It also suggests the presence of rotation.

A **wall cloud** is an isolated cloud lowering attached to the rain-free base of the thunderstorm. The wall cloud is usually to the rear of the visible precipitation area.

A wall cloud that may produce a tornado can exist for 10–20 minutes before a tornado appears, but not always. A wall cloud may also persistently rotate (often visibly), have strong surface winds flowing into it, and may have rapid vertical motion indicated by small cloud elements quickly rising into the rain-free base.

As the storm intensifies, the updraft draws in low-level air from several miles around. Some low-level air is pulled into the updraft from the rain area. This rain-cooled air is

very humid; the moisture in the rain-cooled air quickly condenses below the **rain-free base** to form the wall cloud.

The **rear flank downdraft** (RFD) is a downward rush of air on the back side of the storm that descends along with the tornado. The RFD looks like a “clear slot” or “bright slot” just to the rear (southwest) of the wall cloud. It can also look like curtains of rain wrapping around the cloud base circulation. The RFD causes gusty surface winds that occasionally have embedded downbursts. The rear flank downdraft is the motion in the storm that causes the hook echo feature on radar.

A **condensation funnel** is made up of water droplets and extends downward from the base of the thunderstorm. If it is in contact with the ground it is a tornado; otherwise it is a funnel cloud. Dust and debris beneath the condensation funnel confirm a tornado's presence. ●

Edited for space

RANDOM-NEST

The Panavia Tornado

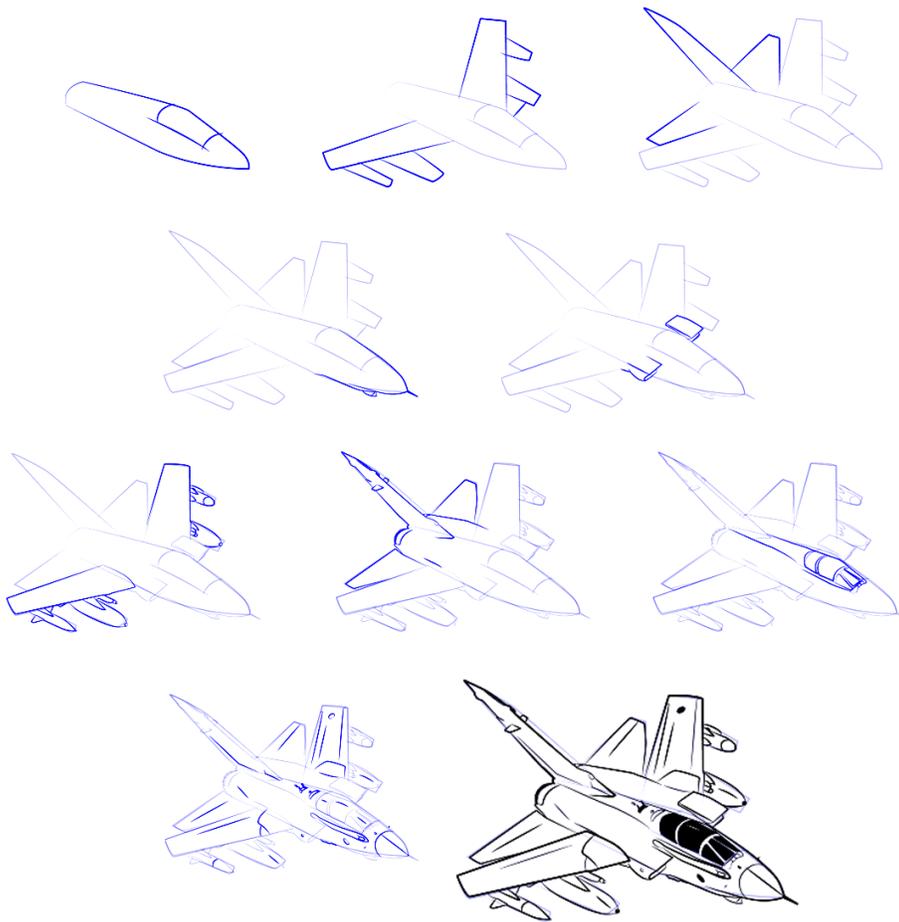
FROM ROCHESTERAVIONICARCHIVES.CO.UK



The **Panavia Tornado** is a family of twin-engine combat aircraft, which was jointly developed by the United Kingdom, West Germany and Italy. There are three primary versions of the Tornado; the Tornado IDS (Interdictor/Strike) fighter-bomber, the suppression of enemy air defenses Tornado ECR (Electronic Combat/Reconnaissance) and the Tornado ADV (Air Defense Variant) interceptor. It is one of the world's most sophisticated and capable interdiction and attack aircraft, with a large payload, long range and high survivability. The Tornado was designed as a low-level supersonic ground attack bomber, capable of taking off and landing in short distances. This requires good high-speed and low-speed flying characteristics. In order for an aircraft to be operated efficiently at both high and low speeds, variable wing sweep is a desirable feature; this was incorporated into the Tornado design. The cockpit is of conventional design with a centre stick and left hand throttles. In flight the Tornado GR4 uses three sweep angles, with a corresponding speed range appropriate for each angle. Sweep may also change automatically to accommodate different store configurations, as these directly affect lift.

Developed and built by Panavia, a tri-national consortium consisting of British Aerospace (then the British Aircraft Corporation), MBB of West Germany, and Alenia Aeronautica of Italy, the Tornado first flew on August 14, 1974 and was introduced into service in 1979–1980. Due to its multi-role design, it was able to replace several different fleets of aircraft in the adopting air forces. It saw action with the RAF and AMI (Italian Air Force) in the Gulf War. International co-operation continued after its entry into service within the Tri-National Tornado Training Establishment, a tri-nation training and evaluation unit operating from RAF Cottesmore, England. Including all variants, 992 aircraft were built for the three partner nations and Saudi Arabia. The Royal Saudi Air Force (RSAF) was the only export operator of the Tornado in addition to the three original partner nations. Production ended in 1998; The last aircraft was completed by British Aerospace on 24 September, a RSAF IDS.

HOW TO DRAW PANA VIA TORNADO AIRCRAFT



drawingtutorials101.com



WORDS OF ENCOURAGEMENT

In this week's edition of *The Warbler*, we brought you various information about tornadoes. Whether it was awareness about how they are formed, what areas of the country they occur most often, or the difference between a landspout or waterspout we hope you found something that peaked your interest. Maybe it was even the history of how the tornado in the *Wizard of Oz* was created!

No matter what it was, tornadoes are an interesting and extreme force of nature. They seem to sometimes appear out of nowhere and can disappear just as quickly. We hope you enjoyed our topic this week and we look forward to bringing you many more issues to come.

Tammy and the APAEP Team

Answers

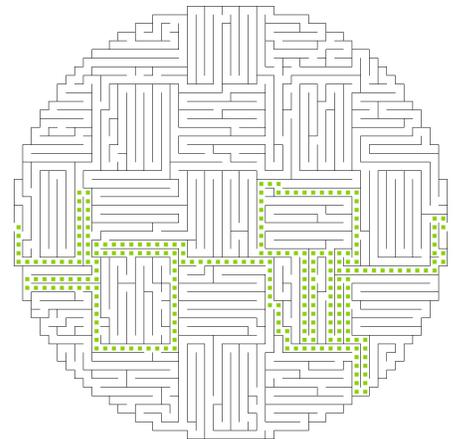
SUDOKU #269

1	4	8	6	7	9	3	5	2
9	2	5	3	8	4	6	7	1
6	3	7	5	1	2	9	8	4
2	6	3	8	4	5	7	1	9
8	5	1	2	9	7	4	3	6
7	9	4	1	3	6	8	2	5
5	8	2	9	6	3	1	4	7
3	7	9	4	2	1	5	6	8
4	1	6	7	5	8	2	9	3

SUDOKU #270

1	2	7	8	3	5	4	9	6
9	6	5	7	4	1	2	8	3
3	4	8	9	6	2	5	7	1
8	3	9	6	2	4	7	1	5
2	5	1	3	7	9	8	6	4
6	7	4	5	1	8	9	3	2
4	9	2	1	8	3	6	5	7
5	1	6	2	9	7	3	4	8
7	8	3	4	5	6	1	2	9

Page 5 MAZE



Page 5 REBUS PUZZLE

1. A Little Romantic
2. Ask for a date
3. Going to the dogs

UNTIL NEXT TIME !