

# SkyWatch



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Your 24 hour a day source for weather information across Central Indiana

## Severe Weather Preparedness Week March 5th through 11th

By Dave Tucek, Warning Coordination Meteorologist

Mother Nature beat us to the punch this year, bringing damaging winds and a tornado on February 16. The real thrust of severe weather typically begins in April and so weather safety preparation should



Above: Damage at Union Christian Church in Terre Haute from February 16, 2006 tornado.

begin in earnest now.

Governor Mitch Daniels has proclaimed March 5 - 11 as Severe Weather Preparedness Week in Indiana. During Preparedness Week, public officials work together with Indiana's media, the newspapers, and radio and television stations, to deliver the message of awareness, preparedness and rapid response for extreme weather events.

Severe Weather Preparedness Week is highlighted by two statewide tornado drills which will be conducted between 10:00 a.m. and

10:30 a.m. and between 7:00 p.m. and 7:30 p.m. Wednesday, March 8. The purpose of the drills is two-fold. First, we test communication systems to ensure warning information is being delivered promptly. Second, and just as important, we encourage schools, businesses, medical facilities and folks at home to practice their action plan, going to pre-designated safe shelter areas. The drills help to identify short-comings in communication systems or action plans, and an opportunity to correct these problems before severe weather season becomes active.

We encourage each and every one of our spotters to participate in the tornado drills. Be the leader at your place of business to practice your plan. Lead your children through the appropriate actions at home. Participate in county nets if you are an amateur radio operator. Being prepared, remaining aware, and exercising a plan are all keys to remaining safe during Indiana's severe weather.

A newsletter on Preparedness Week can be found at [http://www.crh.noaa.gov/images/ind/2006%20severe\\_wx\\_awareness.pdf](http://www.crh.noaa.gov/images/ind/2006%20severe_wx_awareness.pdf).

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# Severe Weather Training in Progress



By Dave Tucek, Warning Coordination Meteorologist

Severe weather storm spotters will always play a critical role in the weather warning process. Volunteers, numbering in the tens of thousands across the country, provide an invaluable service to their community by contacting local National Weather Service offices with information about storms or storm damage in their area.

Doppler radar, satellite data, and many other sources of information are extremely important to meteorologists in their warning decisions, but it's the spotter report that makes the difference. The spotter report, or ground truth as we call it, lets meteorologists know what's taking place on the ground. The meteorologist correlates your report with what's measured in the atmosphere by Doppler radar. This relation of ground data to atmospheric data is critical because the radar can neither "see" down to the ground, nor "see" tornadoes because their circulations are too small. Ground based weather sensing equipment at airports or privately owned and operated by weather enthusiasts simply is not a dense enough network to aide meteorologists, thus again pointing to the need for spotters to "fill in the gaps."



*Above: National Weather Service employees survey damage caused by tornado July 26, 2005 in Dayton, Indiana.*

As a result, SkyWarn spotter training is conducted every year in as many areas as we can reach to increase the number of available reports to "fill the gaps." The untrained person may not report accurate information, so training volunteers is a vital part of the process. SkyWarn spotter training talks have already begun, and will continue throughout the spring in nearly every county across central Indiana. We encourage you as a trained spotter to come and refresh your memory on the intricacies of storm spotting. Invite family, friends, or co-workers to come join you as well. The 2 hour training we offer can be applied in all facets of your life.

For the latest on Spotter Talks conducted by the Indianapolis National Weather Service Office, see <http://www.crh.noaa.gov/ind/spotter.php>.



# Winter 2005-2006 Summary

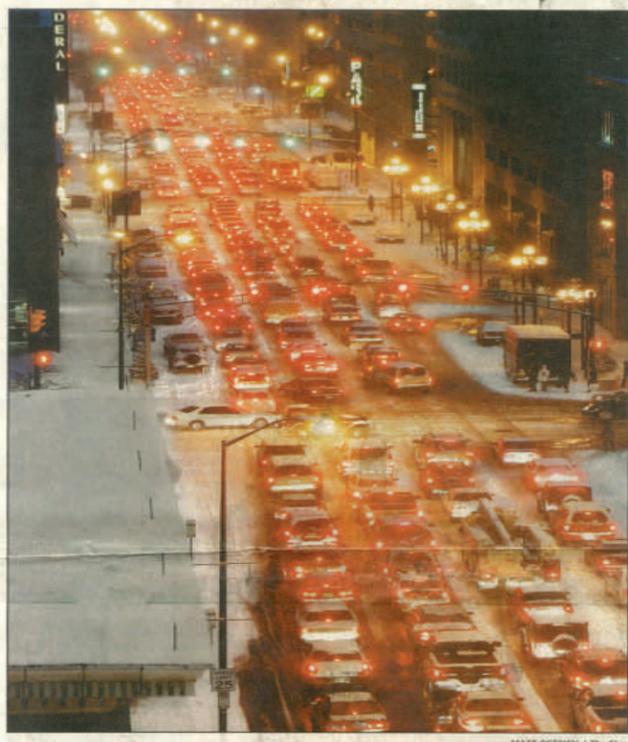


By Chad Omitt, Meteorologist

The 2005-2006 Meteorological winter season, defined as December through February, has turned out to be full of extremes. The winter started out cold and snowy. In fact, December was downright cold since during the first 20 days temperatures were below normal on all but 2 days and the mercury managed to go above freezing on just 2 days. In addition, there

was lots of snow in December; Indianapolis received 14.1 inches of snow which ranks as the 7<sup>th</sup> snowiest December on record. The biggest storm came on December 8<sup>th</sup> when much of central Indiana saw heavy snow which accumulated to between 6 and 8 inches. Another interesting note was that the National Weather Service at Indianapolis received 18 straight days of snowfall during the first few weeks of December.

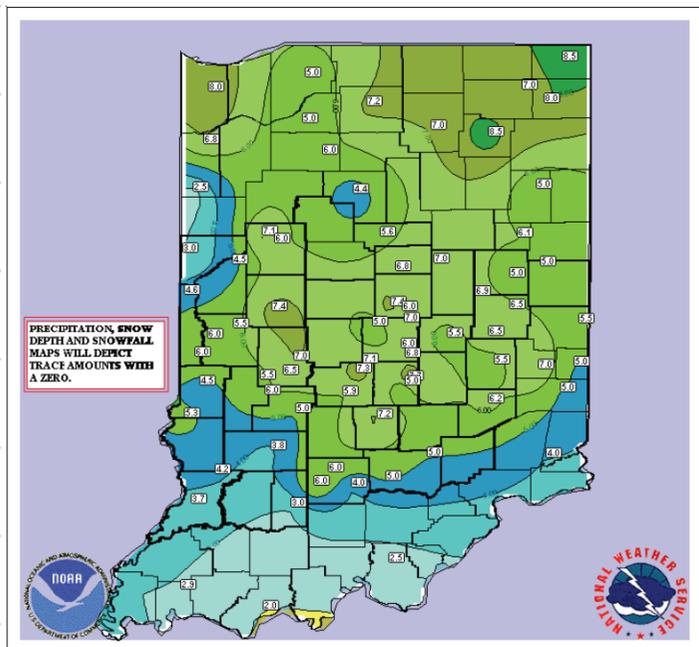
The weather turned sharply warmer just before Christmas. This set the stage for what turned out to be the warmest January at Indianapolis in 126 years! This past January will go down as the 2<sup>nd</sup> warmest on record surpassed only by the January of 1880. Believe it or not, the temperature on every day in January was above normal. This fact



Above: Traffic backup in downtown Indianapolis during the December 8 snowstorm. Picture taken by Matt Detrich of the Indianapolis Star

was not lost on those of you who have early spring bulbs that were fooled into thinking it was spring. Since temperatures were so warm, central Indiana did not see much snow. In fact, measurable snow only fell on 2 days at Indianapolis in January while thunderstorms were reported at Indianapolis 3 times!

**Indiana Daily COOP Snowfall**  
Reports the Past 24 hours ending 7 AM EST, Dec 09 2005  
Prepared Dec 09 2005



Above: Map of snowfall received (in inches) from 7 a.m. EST December 8 through 7 a.m. EST December 9.

As of this writing, February has turned out to be closer to an average winter month. Temperatures varied considerably from well above average to much colder than average. It appears that the temperatures for February will turn out to be near average. The weather remained volatile with severe thunderstorms on February 16 along a strong cold front. This cold front pushed central Indiana back to more typical winter weather which held on for much of the rest of the month.

All told, it appears that the winter of 2005-2006 will go down as warmer than average with near average moisture both for snow and liquid precipitation.

# Hail Climatology for Central Indiana



By John Kwiatkowski, Science and Operations Officer

Hail occurs an average of twice a year at a typical Indiana location. Even then, it may be so small or short-lived that you miss it. From that perspective, Indiana can't claim to get a lot of hail.

On the other hand, compared to the rest of the USA, the Hoosier State holds its own when it comes to hail. Many coastal and southern areas of our nation see it an average of just one day a year, or even less. On the other hand, the High Plains from Texas to North Dakota may get pelted 5 to 10 days a year, making them the world's hail capital.

A reason hail is comparatively rare is that the processes that form it often oppose each other. The first such process is a strong updraft of air, normally within a thunderstorm. As such updrafts climb into the atmosphere, they cool off. This eventually causes any water vapor they carry to condense into tiny drops of liquid water. If these drops are carried even higher, some will finally cool enough to begin freezing and form little pieces of slush called graupel.

If the updraft is sufficiently turbulent, the graupel particles will collide. Some will stick together, forming relatively large clumps. As graupel clumps enlarge, they are likely to experience more collisions and grow even faster. Besides other pieces of graupel, they pick

up water drops that haven't frozen yet. The next step in the hail process is a graupel clump has to get carried to where temperatures are cold enough for total freezing. When that happens, a hail stone is born! It may keep growing if other stones hit and stick to it.

How big the hailstone will get depends on the updraft strength. Eventually the stone will become so heavy it falls toward the ground. Sometimes, it may drop into a stronger updraft, get carried aloft again, and grow



Above: Hail covers the ground in this Indianapolis neighborhood during April 22, 2005 severe thunderstorm.

even larger. The record hailstone by weight fell on Coffeyville, Kansas on September 3, 1970. It weighed 1.65 pounds!

Such a stone would go right through a windshield. Fortunately, most are much smaller. In fact, the majority of hail melts before hitting the ground. Hail actually occurs aloft in most Indiana thunderstorms—but on the surface you see it as rain.

The updrafts needed for hail are favored by *warm* conditions. However, *cool* conditions are desirable to freeze the stones and keep them frozen all the way to the ground. Only rarely is the right balance achieved, and that is why hail is not very common.

The largest hail reported in Indiana was 4.5 inches at Cayuga on May 18, 2000 and also at Hartford City on April 9, 2001. When it's large, or wind driven, hail can devastate roofs, vehicles, and crops. But even then, when you see hail, you're watching the result of one of the most delicate balances in nature.

# Preparedness and Awareness Save Lives

By Joseph Nield, Meteorologist



On November 15, 2005, three tornadoes tore through south central Indiana, as part of an outbreak of severe weather that stretched from Indiana to the southern Mississippi Valley and included over 50 tornadoes. Despite two of these Indiana tornadoes being of high-end F3 strength (the third was F1), no major injuries or deaths occurred. This was due to early warnings, and the diligent and appropriate response of citizens in the paths of these tornadoes. These factors together helped the warning system work exactly as it should.

At K&K Industries near Cannelsburg, Indiana, owner Abe Knepp made a critical and lifesaving decision thanks to his preparedness, awareness, and aggressive warnings. Mr. Knepp sent his 120 employees home early after hearing of tornado warnings in the area through law enforcement radio traffic. Thirty minutes after the factory was cleared, the tornado struck the factory and flattened the facility. Only one employee was near the building at the time. He escaped major injury.



*Above: The remains of K & K Industries.*

Daviess County school districts



*Above: The worst of the damage in Shelby County is pictured here. This farmhouse was blown off its foundation. The structural integrity of the home was insufficient to justify a violent rating.*

also took advantage of their preparedness and awareness to keep staff and children safe. The decision was made to keep students at their respective schools, in their places of safety, an hour or more past their normal dismissal time. According to Barr-Reeve school Superintendent Brian Harmon, "Everything went just as we had planned and we had practiced." Both districts practice tornado drills at least four times yearly. After the tornado passed, buses were able to safely transport the students

home, albeit with some minor detours due to downed trees and power lines.

In all, 123 homes and 20 businesses sustained damage in Daviess County, with only one serious injury. Two homes sustained minor damage in Lawrence County. In Bartholomew and Shelby Counties, around 25 properties were damaged, with six declared total losses. Only one minor injury was reported there.

Tornado warnings were out 17 minutes prior to the touchdown of the Daviess/Martin County F3, 19 minutes prior to the Lawrence County F1, and 14 minutes prior to the Bartholomew/Shelby County F3.

Many thanks once again to you, our invaluable spotters, for your assistance in this and other critical weather events throughout the year.

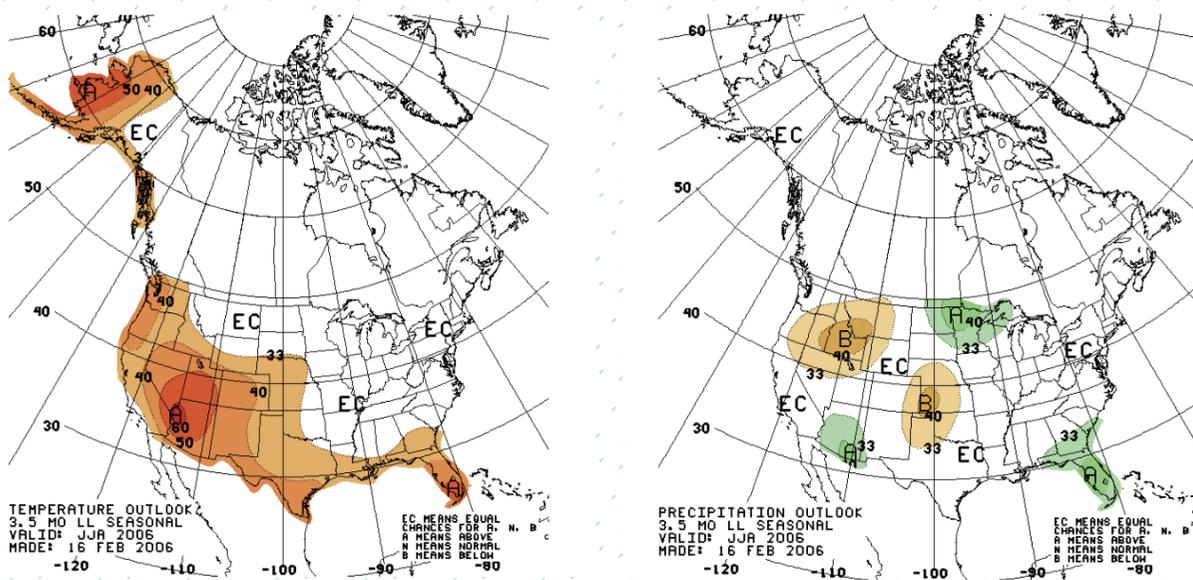
# Summer Outlook 2006: Hot or Not?



By Logan Johnson, Meteorologist

The **Climate Prediction Center** (<http://www.cpc.ncep.noaa.gov>) is the division of the National Weather Service responsible for long range forecasting. Each year, they issue seasonal outlooks for temperature and precipitation across the United States.

The outlook for this upcoming summer season (June, July, August) indicates that forecasters think that Central Indiana has an equal chance of experiencing both temperatures and precipitation in the above, near, or below normal category.



Above: The maps from CPC show equal chances (EC) for above normal, below normal or normal temperatures (left) and precipitation (right) across Indiana during June, July and August.

Reading these long range forecasts is a lot different than reading the forecast for the next few days. Seasonal outlooks have much more uncertainty than a daily forecast would. Rather than dealing in certainties, like it is going to rain tonight, these seasonal outlooks try and predict what is *most likely* to occur this summer.

While there is an equal chance of above or below normal temperatures this summer, this does not mean every day will be near normal. This outlook covers a three month period, which means that we could experience numerous days that are below normal, only to see these balanced out the next month with a stretch of warm weather. Just remember that it will be summer in Central Indiana, and that means we can expect bouts of hot weather!

What is the driving factor behind this summer outlook? This year it will be La Nina, the well-known phenomenon that describes a cooling of ocean water temperatures across portions of the equatorial Pacific Ocean. In general, this tends to create drier and warmer than normal conditions across the southern plains and southwest. This is causing most of the southern portion of the lower 48 states to have an enhanced likelihood of drier and warmer than normal conditions this summer. In Central Indiana, the jury is out on just how far north the dry and warm conditions may extend, and thus an Equal Chance forecast is issued. We can expect CPC forecasters to closely monitor the development of these dry and warm conditions and make updates to the summer outlook. Monthly updates to the summer outlook will be issued around the 15<sup>th</sup> of every month.



# CoCoRaHS??



By Logan Johnson, Meteorologist

There is a new program sweeping the nation, linking together scientists, weather enthusiasts, science educators, and backyard observers of all ages and interest levels in a grass-roots volunteer effort. This program goes by the name of CoCoRaHS!

At this point, you're probably saying "What in the world is CoCoRaHS?" Well, it stands for the Community Collaborative Rain, Hail, and Snowfall network. It's basically a volunteer network of backyard weather observers who measure, record, and report all forms of precipitation on a daily basis. The network aims to help everyone learn more about the fascinating and highly complex patterns of precipitation that exist across our country.

Does it seem like certain parts of town always get more rain than others? Or perhaps it appears that your neighbor always gets more snow than you do! Well, with CoCoRaHS, we aim to completely study and document these little differences that may exist in rain and snow across small areas. This network aims to involve everyone in this process.

So who can join CoCoRaHS? Simply put, you can! We seek any and all people who are interested in learning about the power and beauty of the natural world, and have a sincere interest in accurately measuring and reporting all forms of precipitation.



The network is currently up and running in 11 states and the District of Columbia. It began in Indiana in January of this year, as a partnership between the National Weather Service in Indianapolis and the Indiana State Climate Office at Purdue.



If you are interested in joining our network, please contact the state coordinator, Logan Johnson, at [logan.johnson@noaa.gov](mailto:logan.johnson@noaa.gov). You can also get more information from the Indiana CoCoRaHS website at <http://www.cocorahs.org/state.aspx?state=in>. Qualified observers will be eligible to receive a complimentary gauge for their usage in the network. Training sessions will be held on a monthly basis in Central Indiana!

## Ask a Meteorologist about NWS Services



Dear Sir:

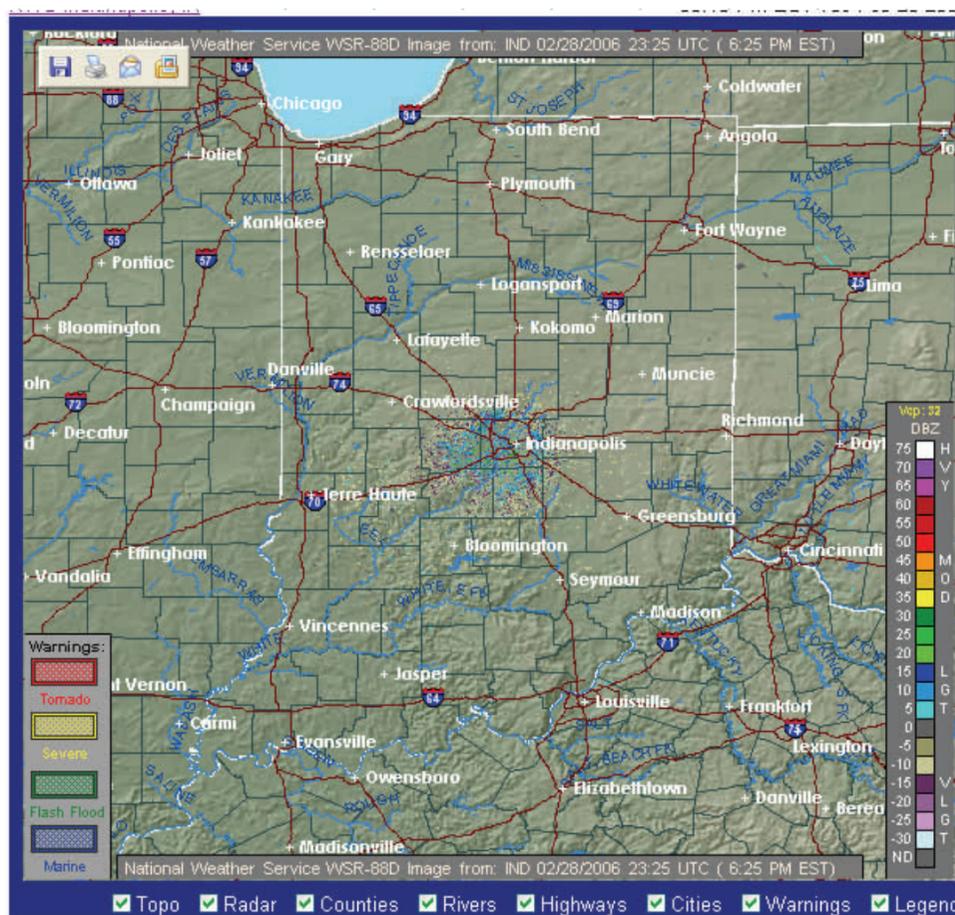
When did NOAA Weather Radio Station KEC-74 first go on the air in Indianapolis? Thank you.

Sincerely,

Ron

Ron,

After extensive inquiry we have determined that the NOAA Weather Radio in the Indianapolis area began in late 1971 or early 1972. No one is exactly sure of the date. We are also not sure that it was broadcast as KEC-74. Information leads us to believe that the identifier was officially used starting in September of 1980. The transmitter started downtown on the roof of the Indiana National Bank and moved later to its current location on the Indiana State



Above: New radar imagery available at <http://radar.weather.gov/radar.php?rid=ind&product=N0R&loop=no>

Police tower on Post Road. To learn more about NOAA Weather Radio, visit <http://www.weather.gov/nwr/>.

- Mike S

Hello, I am a frequent visitor to the NOAA website, and wanted to let you know that I really like the new local radar picture that is available today. I found it very hard to view the previous one. I hope this new format will stay. I enjoy learning about the weather, and also having the ability to view all of the other states' weather as well. I live in Indianapolis, IN. Thanks for the website.

- Dawn  
Dawn,

You are correct, there is a new radar display available on our webpage that includes topography, more detailed interstates, as well as river information. Warning information will also be displayed on the map. Furthermore, storm relative velocity and base velocity data is also now available. An example image is displayed above. We hope you enjoy the new imagery. Thanks for your kind words.

- Jason

## News and Notes



### All Day Advanced Spotter Workshop March 18, 2006

#### ...Central Indiana Severe Weather Symposium March 18, 2006...

The National Weather Service in Indianapolis will be hosting the *Central Indiana Severe Weather Symposium*. This all day advanced spotter workshop will be held on Saturday, March 18, 2006 from 8:00 a.m. to 4:00 p.m. at Creekside Middle School in Carmel, located at 3525 W. 126th Street. Speakers from the National Weather Service in Indianapolis (NWS), the Storm Prediction Center (SPC), private industry, Purdue University, Ball State University, amateur radio, state and county homeland security, and a local television station are tentatively scheduled to give presentations. Topics will range from the latest research on low topped supercells, bow echo complexes and bow echo tornadoes to spotter positioning and field equipment used to help assess the environment.

The registration form can be viewed at <http://www.crh.noaa.gov/images/ind/RegistrationForm.pdf>. Just fill out this form, print (it can be filled out before printing), and return it to the address listed along with your registration fee (*Note: Anyone requesting the Student rate must send a copy of their current, valid Student ID.*).

#### Ask a Meteorologist about NWS Services



Have you ever had a question about the weather? I'll bet that you have! Isn't there an old saying that goes there's never a meteorologist around when you need one? Well, now here is your chance. In this section of the newsletter, our staff of meteorologists will try our hardest to answer any and all of your questions concerning Meteorology. I can tell you now that we will not have all the answers, but we will certainly try our best. If you have a question, please send it to our [Editor](#). We will try to answer all questions, and some of the most interesting or common questions and answers will be printed in the next newsletter.

#### Send us Your Story!



Spotters! Remember, this newsletter is for you! You could be a guest columnist in our next issue of "SKYWATCH". If you have an interesting weather story or storm chasing experience to share with the other spotters, submit it to our [editor](#), or our [webmaster](#).

Please keep any submissions to one page of typewritten text. We are also always looking for pictures of hail, tornados and storm damage that occurred in Central Indiana. Feel free to send those items also. Any photos submitted may be included in the next edition of Skywatch. We try to give credit for photo submissions where possible. The next issue of "SKYWATCH" is planned for early summer.

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