



## Meteor hits Earth in Russia's Ural Mountains

Today a large object entered the Earth's atmosphere above the Chelyabinsk region within Russia's Ural Mountains. The object left a streak across the sky as it burned through the atmosphere and eventually exploded. Some of the pieces landed on Earth and left small craters.

Did you know that some 30,000,000 pounds of space "stuff" come to Earth each year? A lot of that is in tiny objects that we don't see or even know about. Every once in a while there is a larger object that comes down. Today's object has been described as a "large" object and I even heard one report that the object was bus size.

First question, was it an asteroid or a meteoroid? Well, the difference in space has to do with the size. Meteoroids are defined as space objects up to 1 meter in diameter and Asteroids are those that are larger than one meter in diameter and within the orbit of Jupiter (closer to the sun than Jupiter). So my guess is that it was an asteroid. There are tens of thousands of asteroids and uncountable meteoroids in the solar system.

So why did they call it a meteor today if it was big enough to be an asteroid? Well, there are different names for the different locations that these live. When the objects are in space, they are either asteroids or meteoroids. But once they enter Earth's atmosphere and start burning up (that's what causes the smoke trail in the day or the burning line of light across the sky at night) then they become meteors. And once they land, they are generally referred to as meteorites. So an object can be start as a meteoroid, shift to being a meteor (briefly) and end as a meteorite.

How fast are these objects going when they hit the Earth? Well, they are travelling through space at anywhere from 20,000 miles per hour to as much as 100,000 miles per hour. When they hit our atmosphere the speed of the object compresses the air in front of it until the air has been compressed to such an extent that the gases in our atmosphere are heated to over 3,000 degrees Fahrenheit.

Many of you will have stuck a hand out a car window in the summer and felt the air going by at 60 miles per hour. Well, if you were to speed up really fast, then the air gets thicker where it hits your hand and before it has a chance to move around the sides. Now imagine going 20,000 miles an hour, that air gets compressed (squished) so much that it heats up to the thousands of degrees, which is hot enough to burn the material of most meteors.

To put things in perspective, if you are standing on the equator, then you are moving at around 1,000 miles per hour just from the rotation of the Earth. And the Earth is moving around the sun

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Maine Robotics is a Maine non-profit corporation that serves schools and families in Maine by providing STEM related activities for youth and adults.

Established in 2004 by the Director, Tom Bickford, Maine Robotics works with almost 100 schools and 1600 students each year.

Our largest programs are the FIRST LEGO League in the fall, the Robot Track Meets in the spring, and our Summer Robotics Camps.

at a speed of approximately 67,000 miles per hour. And the solar system is rotating around the galaxy at around 420,000 miles per hour... How fast you are moving can be answered so many ways, but it has so much to do with what your point of view is.

If you walk down the aisle of a plane traveling at 500 miles per hour; are you walking at 3 mph or 500 +/- 3 mph? Depends on what you are referencing, the plane or the ground.

To learn more about all things space, try checking out some of these websites:

Jordan Planetarium at UMaine in Orono

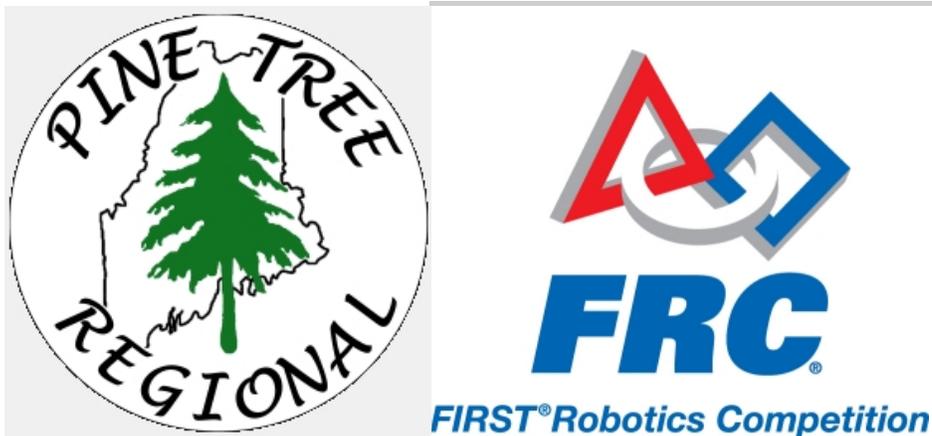
<http://www.galaxymaine.com/>

Southworth Planetarium at USM in Portland

<http://www.usm.maine.edu/planet>

National Aeronautical and Space Administration (NASA)

<http://www.nasa.gov/>



## **Pine Tree Regional (high school robotics) Competition!**

The Pine Tree Regional FIRST Robotics Competition will be held at the Androscoggin Bank Colisee in Lewiston, Maine on April 4-6 of 2013.

Visit the FIRST website at <http://www.usfirst.org/community/volunteers> for information about the competition and volunteer opportunities. If you are interested in volunteering and need more information, please contact the Pine Tree Regional Planning Committee at [pinetreeregional@gmail.com](mailto:pinetreeregional@gmail.com).

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## **Brewer Starting up an afterschool Robotics Program**

Maine Robotics will be starting up an afterschool robotics program at the Brewer Community School this month. Our first meeting is on February 28th and it will run for 10 sessions, every Thursday from 2 to 5 pm (except April Vacation).

If you are interested, please visit our website for more information or to register for this activity.

Click [HERE](#) for more information on the program.

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**We've added a camp in Wells!**  
**Maine Robotics Summer Camp Registrations are open**



Our Summer 2013 schedule is set! We encourage you to sign up your students/children for the 2013 season. We are offering 30 weeks of camp at 18 different locations this summer. That means we'll have over 450 campers this summer, our largest camp season ever!

The camps use the LEGO® MindStorms kits to teach engineering and programming to campers. It is both fun and educational. This is Maine Robotics 9<sup>th</sup> year offering the camps and our Director's 12<sup>th</sup> year of offering the camps.

Please visit our camp website to learn more.

<http://www.mainerobotics.org/summer-camps.html>

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**Maine Robot Track Meets**

Our newest season of the robot track meets is here! We are looking at four locations this year, with track meets in Ellsworth, Oakland, South Portland, and Portsmouth, NH.



We've also added a new event, the walking robot race! So don't delay, check out the website and get your team going.

<http://www.mainerobotics.org/track-meet.html>

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Please share this with your class, your friends, your family. We know we don't reach everyone out there that does robotics in Maine, but we hope you can help us reach everyone close to you that might be interested.

Sincerely,  
Tom Bickford  
Director, Maine Robotics

