



# Visual Observation of Meteors in Nepal

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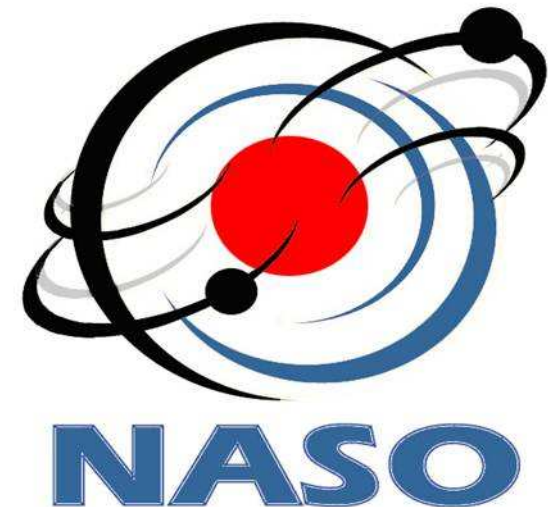
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**29<sup>th</sup> International Meteor Conference (IMC), September 17,2010,Armagh, Northern Ireland**

## What is happening on Meteors in Nepal?

- Nepal Astronomical Society (NASO) is carrying out different outreach activities on meteors since its formation in July,2007
- The first meteor outreach was for Perseids on August 13/14, 2007
- Since then NASO is creating substantial awareness among publics on meteors showers!
- So far, it has many individual as well as group observation of meteors during major shower of the year.
- Last observation on Perseids during August 12/13 was ruined due to the bad weather.



## Brief Introduction of Nepal Astronomical Society(NASO)



TOTAL VIDEO CONVERTER  
HTTP://EFFICIENTMATRIX.COM

Note: This is the first video developed by NASO as its short introduction to be presented in talk programmes, Star parties and other astronomical events organized by NASO in different parts of Nepal.

# How NASO works on Meteors in Nepal?

- Regarding the major meteor showers, we send press releases containing all the details on the shower to the mass media.



Date: 13<sup>th</sup> Dec, 2007

**PRESS RELEASE ON GEMINID METEOR SHOWER (DECEMBER 14-15, 2007)**

One of the best meteor showers of the year, the Geminids are expected to exhibit consistently prolific flashes of shooting stars in the night of 14 to 15 December 2007. Circa sixty to one hundred streaks of tiny particles that burn up fairly seventy kilometers high above earth's surface as they slam through our atmosphere with speeds of approximately thirty five kilometers per hour could be admirably observed in the eastern sky from well after mid-evening. Since the streaming meteor shower seems to be emanating from a point, alias, radiant in the sky lying vividly near glittering star Castor (Kastur) in the zodiacal constellation Gemini (twins), it is conventionally identified as famed Geminid Meteor Shower. The origin of this moderately swift Geminid Meteor Shower is linked to mysterious object called Phaethon-3200 that looks like cross between a veined asteroid and quaintly burned-out comet.

Brightly yellowish Geminids watch could begin as early as 10 PM local time on Friday, because the shower's radiant is fairly high in the eastern sky and they would peak around 2 AM Saturday. The glare from moonlight would not disturb while watching Geminids, because the waxing moon that rises at 10:16 AM is five-day-old crescent and sets at 06:20 PM in the evening. The Sun rises at 06:46 AM and sets at 05:10 PM on 14 December 2007.

Comets generally unleash streams of dusty debris as they approach the Sun. When earth, speeding around its orbit, crosses some of these streams, we see the stunning meteor showers or dazzling shooting stars. However the Geminid meteor shower results from broken fragments from oddity pseudo asteroid-comet Phaethon-3200 with mysterious composition, which possesses an extremely elliptical 1.4-year-long orbit around our Sun and it is described as comant comet coated with thick layer of dust. It is bereft of the characteristic comet tail and its spectra indicate peculiar rocky surface. Meteors created as Phaethon-3200 advances toward the Sun are arguably much denser than those usually created by comets. The Geminids were first noticed only 150 years ago even though other meteor showers like Leonids and Persids had been documented in details for centuries. Geminids are thought to be intensifying each year.

Ruddy planet Mars is delightfully glittering above stars Castor and Pollux (Punarvasu) of Gemini. It is making its closest approach to earth from approximately 59 million kilometers on 18 December and appears alluringly red and big. New moon was witnessed on 09 December while full moon is recognized as long night moon or Yaman. Purnase falls on 24 December (Christmas Eve). Winter Solstice occurs on 22 December, as Sun enters Capricornus (sea goat). We experience the shortest daylight but the longest night on this day.



मिति: १०६४१०६१३७

**प्रेस विज्ञापन**

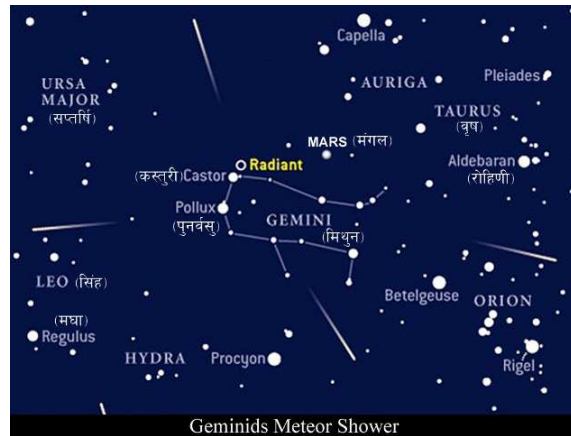
**उन्मार्गः (मिति: १२-१२, २००७)**

सा-२१०० नामक क्षुद्रग्रहका कारण हुने उन्मार्ग (उन्मार्गः) बस वर्षे मात्र २०० गते पृथ्वीको साथ १० वने क्षैतिज गति २५ गते धरातल विरुद्ध २ वने समान बन्धनात्मक गतिमा देखिने छ। ती उन्मा बन्धको स्रोत जेटिन तारासङ्घ (मिटर राश्री) भएको उन्मा देखिने बरालाई जेटिन विभिन्न विभिन्न नाम दिइएको छ। उन्मा उन्मा बन्धको स्रोत जेटिन तारासङ्घको नाम हुने भएकोले उन्मा नाम दिइएको छ। उन्मा बन्धको स्रोत जेटिन तारासङ्घको नाम हुने भएकोले उन्मा नाम दिइएको छ। उन्मा बन्धको स्रोत जेटिन तारासङ्घको नाम हुने भएकोले उन्मा नाम दिइएको छ।

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Note: Samples of press releases that we send to mass media during the major showers of the year.



# How NASO works on Meteors in Nepal?

- News published in different national English Dailies on major Meteor during the year

## New year's maiden meteor shower on view

Himalayan News Service  
Kathmandu, October 20

The Quadrantid Meteor Shower -- the first one in 2008 -- can be seen in the north-east sky till January 5, though it will be visible most clearly on the night of January 4 well before sunrise, according to the Nepal Astronomical Society.

Quadrantids are intense meteor showers that occur annually during January. According to Suresh Bhattarai of NASO, the shower could consist of 50 to 120 meteors per hour and would be bluish in colour.

According to Bhattarai, this phenomenon will take place four days before the new moon and pale moonlight would not hamper its sighting. "But we won't be able to observe it during its peak hour since it is in the afternoon."

Quadrantids are located between the constellations of Bootes, Draco (Dragon) and the handle of Ursa Major (Great Bear).

Meteors are small fragments of cosmic debris entering the Earth's atmosphere at extremely high speed (approximately 60 to 70 km per second).

As most fragments of cosmic debris are smaller than a grain of sand, almost all of them disintegrate about 70 km above the Earth.

## Date with Orionid meteor shower

Himalayan News Service  
Kathmandu, October 20

A celestial fireworks and maximum number of shooting stars would be seen in the north-east sky from tomorrow till October 24 for several hours every day because of Orionid meteor shower -- rain down the greatest number of meteors before dawn, which would be on its peak on Tuesday. The best time to watch this shower will be between the midnight and dawn.

Depending on weather conditions, people could see up to 20-25 shooting stars per hour, said Suresh Bhattarai, secretary of Nepal Astronomical Society.

The fiery streaks during this maximum period is likely to be faint as they are created by very small meteoroid grains with the speed of about 60 kps, he said.

From THE HIMALAYAN TIMES, Oct 21, 2008

## Lyrid meteor shower to begin today

Himalayan News Service  
Kathmandu, April 14

People would be able to see numerous shooting stars in the northeast sky from April 15 to 26, as Lyrid meteor shower begins tomorrow. The shower would peak on April 22 and 23.

Lyrid meteor shower occurs in late April every year when Earth crosses the orbital path of Comet Thatcher. The shower is a result of a fall of bits and pieces from this comet into the Earth's atmosphere.

These particles, vaporized and lightened up, while plunging into the earth's atmosphere are seen as meteors in the night.

The shower could be seen from any part of the country, but most from which part of the country you belong to, however the best time to see the shower would be hours before the dawn on April 22 and April 23, according to officials at the Nepal Astronomical Society.

"We would witness the meteor shower after the rise of constellation Lyra in northeast at around 11 pm, but the best time to view the shower is after 3 am," said Suresh Bhattarai of the Nepal Astronomical Society.

From Page 3, THE HIMALAYAN TIMES, April 15, 2008.

## Eta Aquarid meteor shower on May 5

Himalayan News Service  
Kathmandu, May 1

Eta Aquarid meteor shower will light up the pre-dawn sky on May 5. Meteor shower occurs when up to 40 shooting stars fall in the night sky per hour.

The Eta Aquarids are active between April 24 and May 6, but the strongest activity will be seen on May 5, when rates of the shower could reach up to 40 meteors per hour, said Suresh Bhattarai of the Nepal Astronomical Society.

Unlike most major annual meteor showers, there is no sharp peak for this shower, but rather a plateau of good rates would last approximately three days from May 4-6, he added. "The best time to view the shower would be between 3 am to 4 am."

Contrasting other meteor showers which are seen in the north-east sky, the Eta Aquarids will be seen in the south-east horizon, Bhattarai said.

Eta Aquarids are seen when the radiant, the point from where entire meteors shoot outward from one place in the sky, is low in the horizon. They strike the Earth on a nearly head-on direction, thus a majority of these meteors will appear swift. This situation allows these meteors to leave very long streaks in the sky, often lasting up to five seconds.

From Page 2, May 2, 2008  
THE HIMALAYAN TIMES DAILY

## The Rising Nepal

THE RISING NEPAL NATIONAL DAILY

No. 1017 | No. 232 | Kathmandu | August 12, 2007 | Monday | 22 Nepali Rupee | 1 Nepali Rupee = 100 Paisa

### British Army to begin recruiting Nepalese women

By A Staff Reporter  
Kathmandu, Aug 11

British Gurkha Nepal has begun preparing for recruiting female into the British Army and the start of this procedure will start in 2009 for intake in 2010, and a press release issued by the British Gurkha Nepal Sunday.

"The Brigade of Gurkhas has not historically recruited women, however, under the new Gurkha Terms and Conditions of Service announced on March 8, 2007, Nepalese women will be able to be considered for auxiliary posts within the British Army's Brigade of Gurkhas," it said.

Raising its concern on the training academics offered in Nepal in preparation for joining the British Army, it said that it will be able to get the best of both.

The small Perseid meteor shower is expected to peak abundantly through the night of August 12 into the dawn of the next day. The meteor rain from constellation Perseus being in the northern sky according to Nepal Astronomical Society.

"The shower might provide an excellent opportunity for amateur stargazers to witness the awesome fiery streaks," the Society said.

The meteor showers generally appear what do earth orbits through the stream consisting of tiny particles ejected by a comet as it passes by the sun. As the earth travels through the pocket and particles of comet's trail meet the earth.

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AS IT IS  
green shopping

The news on Meteors Showers publishes in National English, Nepali Dailies as well as National and International Electronic medias

## How NASO works on Meteors in Nepal?

- Give interview to TVs and radios on how to observe the meteors during the shower.



Rishi Shah, Academician -Nepal Academy of Science and Technology(NAST)and Founder President – NASO, giving interview to National level Radio and Television on the meteor showers.



## How NASO works on Meteors in Nepal?

- Conducts talk programmes for school students and publics at different places of Nepal.



Talk programmes at NAST hall during the meteor shower. Left: talk on Perseids Meteor Shower 2007 and Right: talk programme organized during the Leonids 2009

## How NASO works on Meteors in Nepal?

- Carries workshops for journalists and photographers .



NASO organized the Astrophotography and Image processing workshop during Leonids 2009



## How NASO works on Meteors in Nepal?

- Carries naked eyes observations of the showers.



**Left:** Observation Campaign at Nagarkot, Bhaktapur and **Right:** Observation at my house during the meteor shower. To entertain the participants with other celestial objects during the observation we use telescopes.

## How NASO works on Meteors in Nepal?

- NASO also co-ordinates with the international groups for the Meteor Observation Campaign in Nepal
- It was a part of LOC of the International Leonids Outburst Campaign 2009 in Nepal during their visit.
- It co-ordinated the TWAN and Markamstreet Film, Canada Team for the shooting of “Acquainted With the Nights during the Leonids Outburst 2009” in Nepal.
- It also organized a talk with the Team of Astronomical Tours LLC, USA during the Leonids 2009



The World at Night Nov. 2009 mission to Nepal. TWAN assisted Nepal Astronomical Society to have a new telescope for public observations. Photo: D. Zak



Suresh Bhattarai (left), a founder member of Nepal Astronomical Society (left), and Jen Recknagel (right) from Markham Street film company in Canada

# Landscape Astrophotography: Meteors and Trails above Panauti Temple

Constellation Orion and star Sirius trail above the historic Indreshwar temple in Panauti of Nepal.

Two planes has crossed the field, but more interesting are two shorter streaks at the left and right edges of the images which are both bright meteors captured in the low-sensitive film used by the photographer for this three-hour photographic exposure.

The Indreshwar wooden monument is one of the largest and tallest pagoda style temples in Nepal originally built in 1294, making it the oldest surviving temple of the country.



Credit: Oshin Zakarian, TWAN photographer





## How NASO observes Meteors in Nepal?

- The observation Campaigns are organized during the peak time of the major meteor showers
- We are providing free participations for 50 participants for the overnight observation campaign
- It forms a group of at least 4 people with one moderator to record the number of meteors, their colour and their size as much as possible.
- Most of the observation are carried at NASO office or Nagarkot or members' residential areas for greater public participations for the observation!

# One more thing:

- Nepal is celebrating Tourism year in 2011, so we would like to invite you to explore the night sky above the Himalayas.
- Your participation will help us to establish astrotourism as a new branch of tourism in Nepal



Panorama view of Himalayas as seen from the Kathmandu Valley, Kathmandu, Nepal



# Finally.....

You can check all our activities in our blog site:

<http://astronomy-nepal.blogspot.com>

Or you can email us to find more about our activities and venue of  
Observation campaigns during the major meteor shower over the year

[Info.naso@gmail.com](mailto:Info.naso@gmail.com)





**Thank you!**