

NASA Chat: A Possible New Meteor Shower: May Camelopardalids
Expert – Dr. Bill Cooke
May 23, 2014

Brooke_Moderator: Hello everyone. Welcome to the chat. Bill is ready to go. Please give him a little time to answer because we have a lot of questions coming in. Let's talk meteors!

Awesome: what time will it show in McleanVA

Bill_Cooke: The expected peak is between 2 and 4 a.m. EDT.

Laz: any early indications from the west coast how intense this meteor storm might be ?

Bill_Cooke: No indications. It's still several hours from the peak.

Sheila661: when is this meteor shower to start?

Bill_Cooke: It can begin around 10:30 p.m. EDT, but that's uncertain.

juliejezek: Has anyone seen anything interesting yet?

Bill_Cooke: No.

savaboxer10: where is it most visible

Bill_Cooke: North America near the Canadian border if the sky is clear.

Jade: Why are we not able to predict whether it will be a very active shower or a dud?

Bill_Cooke: Because we don't know how much debris the comet produced two centuries ago.

Awesome: will i be able to see it from my deck

Bill_Cooke: If you have dark, clear skies, yes.

Bearcat: The peak time is 2-4am so does this mean it should ramp up until that happens?

Bill_Cooke: Yes.

Awesome: when will it end

Bill_Cooke: Dawn.

gordinkelowna: will the astronauts be able to see the shower from iss,and will we be able to see them from the HD cameras on the ISS??

Bill_Cooke: If there is a meteor shower, yes, but the HD cameras are too insensitive to show meteors.

Zyphot: I'm in South Carolina and I'm looking forward to seeing the meteor shower, but will I be able to notice much without a telescope?

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Bill_Cooke: You don't need a telescope to view meteors; just use your eyes --- that's the best way.

hersheybear: Do you know if this shower will be bright and very noticeable?

Bill_Cooke: No. That's the fun of it.

him619: What should I look for in the Sky?

Bill_Cooke: Streaks of light called meteors or shooting stars.

Boomie: its a beatiful and clear in the indiana/michigan area a well, hopin to see something

Bill_Cooke: Hope you do too.

Awesome: Bill cooke how much you get paid

Bill_Cooke: Not enough.

rocks80: What's the difference between a meteor shower and a meteor storm?

Bill_Cooke: In a meteor storm, the meteor rates exceed 1000 per hour.

justuscheeks: I'm in Georgia, which direction should I be looking? North, South,

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

jpalm91: two centuries ago? wow! Is that when the comet broke apart? and all the debris is just now reaching earth?

Bill_Cooke: The comet did not break apart --- it sheds debris every time it passes the Sun. Jupiter's gravity has tugged the debris into our path this year.

Maelstrom: Is the ISS at risk or out of the orbital trajectory of the meteors?

Bill_Cooke: ISS is armored and is not at risk.

Maelstrom: Any possibility any of the meteors could make it to earth? Do we have an idea of the range of sizes of the incoming projectiles?

Kris_Moderator: Hi Maelstrom - our experts are predicting sizes of ping pong balls or smaller. They will hit Earth but will burn up harmlessly, 40 miles above us in the Earth's atmosphere.

Frank: how much meteor will be going per hour

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Bill_Cooke: Anywhere from 0-200 per hour.

therx: Is there a particular region of the sky (i.e. south or west) that viewers should be watching?

Bill_Cooke: Look straight up.

Tim: Will the debris be able to be detected by radar ? if so, how soon will it be able to be determined the density of the shower?

Bill_Cooke: Radar can detect the meteors as they burn up in the atmosphere. It will take some time to go through the radar data.

juliejezek: Can the HD cameras on the space station pick up the meteor burning up in the atmosphere? ight be a cool light show from Space!

Bill_Cooke: They are too insensitive except to the brightest meteors.

Derrek: is there any direction in the sky we should be focusing on or will it be all around?

Kris_Moderator: Hi Derrek - The meteors will appear to radiate from the constellation Camelopardalis, which means they will appear to come out of the north. Any direction is possible - think of spokes radiant from the hub of a wheel.

SuperCell93: What is the chemical composition of the comet and do we know where it originated?

Bill_Cooke: The comet is composed of water and dry ice mixed with rock. It is a Jupiter-family comet which means its orbit extends out to that of Jupiter.

Awesome: will it be around 9 am

Bill_Cooke: Sun will be up at 9 a.m. -- can't see meteors in the daylight.

TennTerry88: Do you believe it will be a good show tonite on a hunch?

Bill_Cooke: The possibility of a good show based on computer simulations so a little better than a hunch.

Zyphot: When was the last time this particular meteor shower took place?

Bill_Cooke: This meteor shower has not been seen before.

jcsilly@yahoo.com: How many meteors are intended in the next two days to fly by?

Bill_Cooke: Have no idea. Hoping to see a few hundred tonight.

dd: Any chance of ISS or satellites being hit?

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Kris_Moderator: The International Space Station is armored to protect it from orbital debris (space junk). This armor is very good protection against meteoroids as well.

las: has anything been spotted yet?

Bill_Cooke: Not as far as I know.

Memphis: Bill, thank you for hosting. Assuming this pass-through produces a visible shower, how often in the future should we expect to see another Camelopardalids shower?

Bill_Cooke: This is a one-time event. Nothing for the foreseeable future.

alexpreston: any particular place to look in the sky in northeast florida?

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

JayBee: How wide is the debris belt?

Kris_Moderator: Thanks for joining us Jaybee. Our experts say the debris stream is of the order of a million miles wide, give or take a factor of 2.

dewey2010: Are you watching the sky right now?

Bill_Cooke: No, I am answering these questions.

hersheybear: Could the earth be hit by any meateors?

Bill_Cooke: The Earth is always hit by meteors, but they burn up in the atmosphere.

SwiftAir: I live in Pennsylvania, and I'm trying to see the shower with my dad, but where should we be looking?

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

Meteor_Watcher: Are there any reports (or place to follow reports) of present meteor rates from tonight's possible shower?

Bill_Cooke: You can go to www.amsmeteors.org or www.imo.net.

RBriton: Can a comet break apart and if so how long does it take?

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Bill_Cooke: Yes, comets can break apart and it can happen in a matter of minutes.

Aragon_TX: Hey Bill...I read your interview in New Scientist...you mentioned that this was going to be the one chance to watch these meteors...isn't there a way to predict when we are going to hit this shower again?

Bill_Cooke: Yes, but we have not tried to forecast this shower more than ten years from now. This is it for the next ten years.

yahoosoooo: Is northern Minnesota a good viewing area?

Bill_Cooke: If it's clear and you have dark skies, yes.

stevenh: it's raining is there a livestream link where I could watch the meteor shower?

Bill_Cooke: <http://www.ustream.tv/channel/nasa-msfc>

Brooke_Moderator: Thanks for all of these great questions! It's a VERY busy chat, so thanks for your patience as we work through the queue. Also...we're getting some reports of meteors starting to be seen on the East Coast of the U.S., plus some views on the Ustream feed:

<http://www.ustream.tv/channel/nasa-msfc>

him619: When is the next meteor shower?

Bill_Cooke: The next good meteor shower is the Perseids in August.

tomb: how fast will the meteors be moving across the sky?

Kris_Moderator: Bill says meteoroids travel very fast and therefore have a lot of energy. The May Camelopardalids will be traveling slowly, as far as meteors go, but they will still be moving at 36,000 mph! That's about 27 times faster than the Concorde jet!

MW: you said we should see 0-200 meteors... what is the likelihood that there are 1000? 0.1% 10% or ?

Bill_Cooke: Less than 1%.

Jackson: What time is it starting?

Bill_Cooke: After midnight.

hellomynameis: If I'm on the lower East coast, should I look up or north or where?

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

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Space_Man: Does dust glow for long once it reaches the earth.

Bill_Cooke: Meteors only take a couple of seconds to burn up unless they are fairly big.

hunglo: is there any chance i may find one in my yard tomorrow?

Bill_Cooke: Nope.

barbarasaunders: Where can we go on the web to see NASA's live feed?

Kris_Moderator: <http://www.ustream.tv/channel/nasa-msfc>

Anthony: Bill, have you seen the movie Gravity? Pure hollywood or something possible?

Bill_Cooke: Great entertainment; poor science.

Jackson: What makes this happen?

Bill_Cooke: Earth is running into debris left behind by comet 209P/Linear.

MW: Is there any website that might tell us if things are looking promising? I'm at home and would like to go out if there are early reports it is looking good.....

Bill_Cooke: You can try www.imo.net.

hunglo: so if i see something in the day time it isnt a meteor?

Bill_Cooke: Only bright fireballs are visible during the day and those are rare.

jcg097: How fast will the debris be travelling relative to earth when they hit the atmosphere?

Bill_Cooke: 17 kilometers per second or 37,000 miles per hour.

Jade: Bill - What is the most interesting meteor shower you have ever seen?

Bill_Cooke: 2001 Leonid meteor storm.

Jade: Will this meteor shower be seen again? If so, when?

Bill_Cooke: It will not be seen again in the next ten years. Don't know beyond that.

Shannan: What does Camelopardalids mean?

Bill_Cooke: Camel-leopard, the Roman name for giraffe.

dewey2010: I live in Georgia, will I be able to see the metoer shower tonight given that I have clear skies with no light?

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Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

stevecook: You say in Jupiters comet family. Does that mean Jupiter is also visible?

Bill_Cooke: Jupiter is visible, low in the west, but that has nothing to do with Jupiter-family comets. They are so named because their orbits approach that of Jupiter.

him619: Are you watching the showers?

Bill_Cooke: No, I am answering questions.

blu1226: what time is the best time to start gazing im in orlando florida

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

hellomynameis: So it will continue into tomorrow night?

Kris_Moderator: This is a one night show! Hope you see something!

123456: Cant be seen from EU then ?!

Bill_Cooke: No, it cannot be seen from Europe.

jordan25: Why is there such a large range of predicted viewing time

Bill_Cooke: Because of the different forecasts based on different techniques. They all agree that tonight/early tomorrow is the time for the shower.

Manuel_Francisco: Hello, I live in Mexico, am I able to see it?

Bill_Cooke: Not very well --- too far south.

Gulfhills: We are leaving in our pontoon boat to get a better view. So excited

Kris_Moderator: That sounds fabulous. Good luck!

singlemode: What are meteors made of?

Bill_Cooke: Most are bits of ice mixed with dust; a small percentage are iron. Still others are like rocks.

KoolPeterLee: I would like to know if i step outside and just stare the sky, will i be able to see the meteor shower?

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Bill_Cooke: Yes, but you need to wait a few hours.

jlq2005: Has there been any meteors spotted yet that you know of?

Bill_Cooke: No.

camelamadingdong: Are you aware of any resources that quantify light pollution in relation to night sky visibility? "Dark" can be a very relative term.

Bill_Cooke: Go to www.darksky.org.

Usili: Are there any graphics showing the orbit of 209P/Linear in comparison to the sun, and our respective orbit?

Bill_Cooke: Yes. Check the links posted on this page.

shartzog: I wonder if the ISS will be recording the view topside.

Kris_Moderator: If it occurs, yes. We have received word that the astronauts may try to photograph Camelopardalids Saturday morning, during three orbits centered on the peak. They have a different perspective, as the astronauts will have to look down into earth's atmosphere to see the meteors, rather than up like we do on the ground.

new_life_form: We aren't going to get nailed by fireballs like Russia did a while back, are we??? Me getting scared

Bill_Cooke: Nope. Sorry to disappoint.

stargazing: when should i expect to see some of this spectacular event tonight

Bill_Cooke: After midnight.

PaCkMaN: Working backwards, is there any indication how long 209P LINEAR has been orbiting in the inner solar system?

Bill_Cooke: I am not aware of anyone who has performed the necessary calculations.

ChittyVenezuela: can i watch the meteors from venezuela??

Bill_Cooke: No.

AT9182: Will It Be Seen In Ontario Canada

Bill_Cooke: Yes, definitely.

Jackson: Is there a possibility the meteors will hit earth?

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Kris_Moderator: Not to worry. Dr Cooke says the bits will burn up harmlessly, 40 miles above us in the Earth's atmosphere.

lisarocks92: Will I be able to see the shower even if it is cloudy?

Bill_Cooke: No, you cannot see meteors through clouds.

slcjazz: How old is this comet?

Bill_Cooke: Billions of years old.

hellomynameis: Will the meteors still be going in the daylight and we just can't see them?

Bill_Cooke: Yes, but they will taper off soon after sunrise.

hunglo: so how can we see the edge of the universe but we cant have NASA stream this in HD for the whole to watch? how can we not track the car size rock as they come in?

Bill_Cooke: HD cameras do not have sufficient sensitivity to show meteors. We could provide an HD feed, but you would see nothing.

nicorobi: The sky is not clear where I am, but it will be tomorrow night. Will it still be possible to see them?

Kris_Moderator: This is a one night show. You can always check out our UStream <http://www.ustream.tv/channel/nasa-msfc>

T: Why is this shower only visable from North America and part of Western Africa according to graphic below?

Bill_Cooke: Because of the radiant being up near the celestial pole and the timing of the debris encounter.

Brooke_Moderator: Again, thanks for your patience as we work through your questions in this very full room. We have a lot of meteor fans with us here tonight, and Bill is working hard on your questions. We ARE seeing some meteors on the Ustream feed -- and getting live reports -- but we're not sure yet if these are Camelopardalids. The predicted peak of the shower begins about 2.5 hours from now and is predicted to last for about two hours (06:00-08:00 UTC).

rkolter: How bright will the meteors from this shower be?

Bill_Cooke: Unknown. They could be quite faint. The only one we recorded back in 2012 was about as bright as Mars.

AT9182: Can You See This?

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Kris_Moderator: We see you. Are you seeing anything in the skies where you are?

Mel: I live in a suburb. How may this affect the number of meteors I can see? will it reduce the number by 20%? 50%? 75%? We have no street lights, just lamp posts in the front yards.

Bill_Cooke: Hard to tell; if you can see the Little Dipper, you are probably good (don't confuse it with the Big Dipper).

idmdvan: I'm in Bogotá, Colombia, at 4 degrees of latitude (at the frontier of the visible zone). Will the camelopardalids be visible at horizon?

Bill_Cooke: You will see practically nothing even if there is a strong meteor shower.

sofiesverden: According to the meteor shower map I'm checking (from a news outlet), folks at the northernmost point of South America (Venezuela & Colombia, Trinidad and Tobago) should be able to watch the shower. Can you please confirm this?

Bill_Cooke: No, the radiant is too low.

user00928: What the best plan to follow to have the best view from Mississippi?

Kris_Moderator: If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky

spacetan: If this is an never before passed debris trail, any chance there will be huge fireballs, maybe from meters-wide chunks?

Bill_Cooke: There may be some bright meteors, but I doubt there will be meter-sized chunks. 209P/Linear is not very big.

Space_Man: Hi Bill... Just How Big Are The Particles Hitting Us Tonight?

Bill_Cooke: Millimeter to centimeter size.

MW: What is the likelihood of a 1000/hr meteor shower in our lifetime? is there any good chance of this happening?

Bill_Cooke: There's a good chance, but I can't think of a specific shower right off the top of my head.

Madelyn_Rainey: How come the meteors don't hit us all the time even though we have a gravitational pull?

Bill_Cooke: Meteors constantly bombard Earth; you just don't see them during the daytime.

Mageeta: Thanks for doing this Bill :D

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Bill_Cooke: You're welcome.

LiL_Mikey: How fast does the debris move thru the atmosphere?

Kris_Moderator: About 36,000 mph.

zublii: just saw one on the nasa feed

Bill_Cooke: Congrats.

rkolter: Do you think this storm might be better than the 2001 Leonid meteor swarm?

Bill_Cooke: I very much doubt it. This will be a shower, not a storm.

Jackson: About how close will the meteors be?

Bill_Cooke: I do not understand the question. The meteors will appear in your sky at different times.

SusanD: I live in Minnesota, how well will I be able to see this happening?

Bill_Cooke: If the sky is clear and dark, you have a good shot.

sss: will it be visible in iowa?

Kris_Moderator: If your skies are clear! Just keep looking!

camelopardilittle_annoying: this chat room looks like something straight out of the 80's

Bill_Cooke: Well, I'm straight out of the 1950s, so it's thirty years more advanced than I am.

Swag: How big is each meteor?

Bill_Cooke: Millimeter to centimeter size.

eperry: Bill, what are the small flashes on the Marshall live feed?

Bill_Cooke: Noise in the camera system.

singlemode: I just saw one on the video feed!

Kris_Moderator: Great!!

brianthiffault.9: im in trois-rivieres (quebec) when exactly i shower beginning plz??at what time?

Bill_Cooke: Peak is 2-4 a.m. your time.

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starling: Is 2am to 4am EST still looking like the peak window of time for the height of the meteor shower?

Bill_Cooke: Yes, but it's 2-4 a.m. EDT.

MW: Will you be stopping this session to go watch meteors? (thanks for all your time in answering all our questions)

Bill_Cooke: I may sneak out for a quick look in a couple of hours.

Zak: How do you pronounce Camelopardalids?

Bill_Cooke: Common pronunciations are camel-oh-PAR-dahl-idz, kah-MEL-oh-PAR-dal-idz, and camel-oh-par-DAL-idz.

geminis83: 2001 Leonid Meteor storm was most epic event in my lifetime, I saw over 10,000 that night, will the storm return in 2034 Bill?? Also is there another predicted storm or outburst before that?

Bill_Cooke: I have no idea; I only generate shower forecasts ten years in the future. 2034 is way beyond that. However, there will be a Perseid outburst in 2016.

p_o13: Sorry : What is the star moving down in your camera (stream)

Bill_Cooke: I am unable to see the camera feed and answer questions. Sorry.

RBriton: What does it mean if a comet is active?

Bill_Cooke: That the comet still has ice and other volatiles left on its surface.

metalmancic: Hey Bill, do you know if people in Oregon will be able to see this show, its super cloudy here now..

Bill_Cooke: If it's cloudy, you will not see meteors.

Ryan: Compared to the Perseids last August, is it predicted to be a better show this evening?

Bill_Cooke: It could be, but we shall see.

dd: This is so informative. Loving this Q&A.. Thanks for everything you guys do @ NASA <3

Bill_Cooke: You are welcome.

kyran: which direction should I be looking at .. EAST/WEST/NORTH/SOUTH

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Kris_Moderator: Hi Kyran - Dr. Cooke says the meteors will appear to radiate from the constellation Camelopardalis, which means they will appear to come out of the north. Any direction is possible - think of spokes radiant from the hub of a wheel.

Konan: Hi I'm from Michigan, can we see the shower from here?

Bill_Cooke: Yes.

shanny: Are you upset you're answering questions and not watching for Camelopardalids? (it's totally not showing)

Bill_Cooke: I like answering questions.

bp: I'm in North Carolina. Will I be able to see it?

Bill_Cooke: Yes.

Krish: Sir, I am a middle school student- How did NASA predict that this meteor shower would occur only once in the foreseeable future?

Bill_Cooke: Because we have computer models that show the debris will intersect this year and not any other time before 2024.

JayBee: Where is the USTREAM camera located?

Bill_Cooke: Marshall Space Flight Center.

Kruzar: Have the comet clouds been viewed from a telescope?

Bill_Cooke: Infrared telescopes like Spitzer can show the dust trails near the comet's orbit.

YSB1: It is somewhat cloudy here in Southern VA, will I still be able to see it?

Bill_Cooke: If it's cloudy, you won't be able to see meteors.

spaceboy: is pennsylvania a good viewing area

Bill_Cooke: Yes, if it's clear.

showerpower: Would you expect any fragments to hit earth

Bill_Cooke: Nope, gonna burn up in the atmosphere.

jmat2240: What time is the best time to start looking, if the sky is not cloudy, I'm in Laramie, Wyoming?

Kris_Moderator: Hi jmat - the expected peak is between 1 and 3am CDT. Hope you see something!

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johnpainter: If the peak is expected between 2 and 4 am EDT, what time would the peak be on the west coast? 2-4 am PDT?

Bill_Cooke: 11-1 a.m. Pacific Daylight Time.

lisadaro: Have we known that this was coming for a while, I just heard about it today?

Bill_Cooke: Yep, researchers have been predicting this since 2006.

starling: Any sites that are good for recommending on how to take pictures of meteors?

Bill_Cooke: I am a lousy photographer. Have you tried Google to find a site?

Adam3482p: If you could pick one spot to watch this shower from, where would it be?

Bill_Cooke: ISS.

noah: can i see them from cincinnati ohio

Bill_Cooke: If it's clear.

magickmoon: after midnight which time zone?

Bill_Cooke: Eastern time zone.

cathy_B: will i see from Barbados

Bill_Cooke: The radiant will be very low, so not many, if any at all.

rkolter: Is the ISS in any danger from this meteor shower?

Kris_Moderator: Thanks for joining us rkolter. The International Space Station is armored to protect it from orbital debris (space junk). This armor is very good protection against meteoroids as well.

Leopardalid2014: Are these faster meteors like the Orionida or slower ones?

Bill_Cooke: These are much slower than Orionids. Camelopardalids move at 17 kilometers per seconds. Orionids move at 66 kilometers per second.

Chikara: I live in AZ close to the border, any chance to have a nice view?

Kris_Moderator: If you have a clear sky, there is a good chance. Good luck!

Maelstrom: Is this comet an OORT cloud constituent or has it always inhabited this orbit?

Bill_Cooke: Nope. This one is an inner solar system comet and its origin is not likely the Oort Cloud.

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SciCheerGopher: We're pretty far from the sun out here. What's knocking this debris off the comet?

Bill_Cooke: Sublimation of the ice to gas at perihelion releases dust particles that become meteors.

Joy: What are the chances of seeing at least some "fireballs" like the 2001 Leonids?

Bill_Cooke: There's always a chance. Can't tell you the odds since we haven't seen this shower before.

Abysssoft: where can we see the coverage broadcast online?

Kris_Moderator: We are streaming live on Ustream <http://www.ustream.tv/channel/nasa-msfc>

tombrady: Any good Apps to download to see what part of the sky I am looking at or for?

Bill_Cooke: For what operating system?

Kruzar: What do the residuals consist of after the dust burns up?

Bill_Cooke: There are no residuals; the meteors are vaporized.

Stargazer: I just saw the first one. I live in Powhatan VA

Kris_Moderator: Great! Was it beautiful?

lack_attack: Is it true that the meteor shower might not occur at all? How likely is it?

Bill_Cooke: Yes, there could be nothing tonight. As to odds, your guess is as good as mine.

new_life_form: Can I see it from under water if I am in clear water like say the Bahamas?

Bill_Cooke: Haven't tried that, but I doubt it.

Laura: What happens if meteors bump into each other? Would we be able to see that?

Bill_Cooke: Meteors are too far apart to bump into each other.

Krish: Sir, What we will be seeing will be the meteors burning up as they enter the atmosphere.
Correct?

Bill_Cooke: You are correct.

yogapants72: What is the best wine, beer, or cocktail to accompany this particular meteor shower?

Bill_Cooke: Your preference.

RBriton: Will I be able to see anything from the Florida Keys?

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Bill_Cooke: Pretty far south, but might see one or two.

Ummm: I know this is an idiot question, but how do I know that the dipper I am seeing is the big or little?

Bill_Cooke: The Big Dipper is bigger than the Little Dipper. ☺ You might want to use your computer to pull up a star chart to help you out.

metalmanic: Bill, are you used to typing this much, or are your fingers in agony by now? Lol.

Bill_Cooke: A friend is typing for me and his fingers are the ones that are suffering.

BJConover: is there going to be a live video feed to watch for people who cant see this?

Kris_Moderator: We are streaming live on Ustream and getting reports of activity!

noah: can i see them in cincinnati

Bill_Cooke: Yes, if the sky is clear.

spaceboy: Is Pennsylvania a good viewing area?

Bill_Cooke: Yes.

Leopardalid2014: Is it known if this comet came from the kuiper Belt or the Oort Cloud?

Bill_Cooke: No.

new_life_form: Did Bill just go on a potty break?

Bill_Cooke: Bill is here.

Doc: Hope I am not asking you to repeat yourself. What type of camera equipment is providing the stream from Huntsville?

Bill_Cooke: The camera is a Watec 902H2 Ultimate with a Schneider lens.

devtripathi0112: what would be the rate of shower

Bill_Cooke: Anywhere from 0-200.

mpuder: So does a gal in Philly have a chance of seeing this?

Bill_Cooke: If your skies are clear and dark.

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Brooke_Moderator: Thanks for your patience, everyone. This is a very, very busy chat, and Bill is working through your questions at a rapid pace. If it helps, here are some FAQ answers for the shower: <http://www.nasa.gov/sites/default/files/files/Brand-New-Meteor-Shower.pdf>

hiyolo: ok i live in pennsylvania any chance

Kris_Moderator: If your sky is clear, there is a good chance. Just keep looking!

mpuder: what is the link to the NASA live feed?

Brooke_Moderator: Here it is: <http://www.ustream.tv/channel/nasa-msfc>

mlbh2os: I take it you are not answering all questions. I asked why are we just hearing about this meteor shower?

Bill_Cooke: The public is just hearing about it because it's about to happen. Scientists have known about it since 2006. And you are correct; I am not able to answer every question.

Zak: Will it be decently visible in Kentucky? We do have some electricity here for lights.

Brooke_Moderator: Hey Zak! With clear skies, you're in the zone to be able to see the shower. Turn off those lights. ☺

Dunnagan: Thanks for the chat, much appreciated

Brooke_Moderator: You are very welcome!

Maelstrom: I live in Kentucky. It looks like we're dead in the center of the visibility area. Does that mean the celestial pole is oriented towards us and we are likely to have an ideal showing?

Bill_Cooke: Has nothing to do with the celestial pole, but you are not an ideal location. Canada and places north of you will see better rates.

frank: What is the peripheral diameter on Nasa's webcam that's pointed towards the upcoming meteor shower? (i.e. diameter of 10 moons lined up?)

Bill_Cooke: Horizontal field of view is approximately 23 degrees.

noah: if i live in Cincinnati Ohio will i see it

Kris_Moderator: If the sky is clear, you just might. Good luck and let us know if you see anything!

rkolter: How did you get stuck answering our questions instead of watching the meteor shower? Lose a bet? Draw the short stick? (and thank you) :)

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Bill_Cooke: I volunteered if you can believe it.

T: Are there any other comets out there that could produce a shower like this in the near future? Also thank for doing this!

Bill_Cooke: Not as far as we know and you are welcome.

YSB1: Virginia here, Nothing yet to report sadly.

Kris_Moderator: Thanks for joining us from Virginia. Keep looking! You can always check out our Ustream feed <http://www.ustream.tv/channel/nasa-msfc>

MW: I feel like all the meteor showers recently are in the northern hemisphere. Is that because fewer people watch in the southern hemisphere, and people just don't know when meteor showers are? or how come they all seem to be viewable in the US? (Leonids, this one)?...

Bill_Cooke: Actually, we just had a meteor shower, the Eta Aquarids, which are best viewed from the Southern Hemisphere.

new_life_form: Are you single?

Bill_Cooke: Taken.

lui-G: hello

Kris_Moderator: Hi! Thanks for joining us!

Bill: Will we see it in the western sky???

Bill_Cooke: Look straight up.

YSB1: When you say noise on the feed... Do you mean UFO?!?

Bill_Cooke: No, I mean camera noise.

Brooke_Moderator: Hi again -- we're getting a huge number of questions about viewing locations and times. Basically, North America is in a good place to see the shower, but sadly, other parts of the world (Europe, South America, Asia, Africa, Australia) aren't in position to see this live, only on the Ustream feed: <http://www.ustream.tv/channel/nasa-msfc> The shower peak is predicted to begin in about two hours, and to last for about two hours (06:00 UTC-08:00 UTC). Hope this helps!

Krish: Who comes up with such complicated names for these things?

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Bill_Cooke: Meteor showers are named after the constellation from which the meteors appear to radiate. Leonids appear to come from Leo, Perseids from Perseus and Camelopardalids from Camelopardalis. Blame the dude in the 1600s who named this constellation, not me.

sofiesverden: Do you have a favourite poem/quote about meteor showers? Can you share? Thanks!

Bill_Cooke: Not a poetic person. My sister says I have the personality of Sheldon Cooper.

Harry: According to the color-coded areas of the US on www.imo.net, the areas in deeper green are the best views of the showers due to their higher positioning in the sky. If you have really tall trees and live in the mid atlantic I suppose our viewing chances are grim?

Bill_Cooke: Need to be able to see lots of sky.

Madelyn_Rainey: SO excited for my first meteor shower. I've seen a meteor, but never a shower

Bill_Cooke: Hope one appears for you.

YSB1: how long till EDT sees it?

Bill_Cooke: Couple of hours.

geminis83: Perseid outburst in 2016 huh? what is the moon phase at that time? Im gonna write that down now thanks Bill I have asked you so maany questions over the years and your knowledge is truly appreciated. SALUTE!

Bill_Cooke: Have no idea, but you can Google "moon phase August 2016" and get an answer.

Sabedora: Hi! would you tell me how so big are this objects?

Bill_Cooke: Millimeter to centimeter size.

omata75: i m in alabama , i can see in alabama the meteor, how i can know which one is a meteor

Kris_Moderator: Our experts say if you see a meteor, trace it's path backwards.If you end up in the constellation Camelopardalis, there's a good chance you've seen a May Camelopardalid!

donaldjr1959: I know that tonights meteor shower is from comet 209P/LINEAR and that it is in an orbit that runs around the Sun to out near Jupiter. Did this comet originate in the Ort cloud and was captured in this strange orbit or what?

Bill_Cooke: It could be a former Kuiper Belt object. I have not seen any calculations pertaining to the past of this comet.

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Jemhadar: Hi Bill, Can you tell me if the Space Weather Radio on their web site would be a good indicator of the storm starting to get going?

Bill_Cooke: Hard to say. Camelopardalids are slow and may not show up well at higher frequencies like those used by Space Weather Radio.

Burton: Does the debris leftover from the comet follow a similar orbit as the original comet or does it tend to spread out due to breaking apart?

Bill_Cooke: It spreads out due to gravitational and radiated forces, not because of a comet breakup.

Maelstrom: How were you able to initially identify and track this debris field?

Bill_Cooke: It is a computer simulation. We have not seen this debris field.

Insolvee: Hello, from Canada, New-Brunswick here, Any chance I can get a good look at it? It's raining a bit and apparently to some graphics it shows I am in area where the chance to see it is poor

Bill_Cooke: If it's cloudy you won't see meteors.

Excl: When is peak predicted to be?

Bill_Cooke: Between 2 and 4 a.m. EDT.

spaceboy: what if it is partly cloudy?

Bill_Cooke: You may see a few in the clear spots.

Nick: Hi i'm from California, what time will the meteor shower be?

Kris_Moderator: Thanks for joining us from California! The peak is predicted to be between 06:00-08:00 UTC, May 24.

T: When is the next time a comet will be visible from earth?

Bill_Cooke: Comets are visible in telescopes all the time. We are monitoring three with our little telescope in New Mexico.

new_life_form: I bet on the pool deck of a cruise ship coming or going to Bermuda would be great for viewing???

Bill_Cooke: Absolutely.

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Aragon_TX: Bill...I read that this shower was debris from a comet that fell apart in the 1800's and that was the first time that Earth was encountering this debris...is that accurate? Thanks to NASA Marshall for hosting this, btw.

Brooke_Moderator: Hi 576 -- Bill asked me to answer for him. ;) Hope you don't mind. From Bill: "That's true. We have no idea what the comet was doing in the 1800s. The parent comet doesn't appear to be very active now, so there could be a great show, or there could be little activity."

Nicholas: Have you got any meteor sightings recently?

Kris_Moderator: We are getting reports of sightings! Our Ustream feed is available for those of you with cloudy skies. <http://www.ustream.tv/channel/nasa-msfc>

marcedum: Im in Mexico and it is raining A LOT! if it stops at anytime before sunrise, will I be able to see it?

Brooke_Moderator: Hey marcedum -- if your skies clear, then Mexico is the zone to be able to see the shower. Good luck on the weather.

mikecrdg: Is this the first time the Earth has experience this meteor shower, or is it just the first time it was noticed in advance? Are there computer models showing that we have been in it before?

Bill_Cooke: It is the first time we've experienced it. The forecast models show little or no activity before 2014.

zaya: I live in Hatterass NC, at the outer edge of NC. Any chance I'll see anything?

Bill_Cooke: If it's clear, yes.

slcjazz: What will be the best time to see it? I am in Utah and the skies are clear.

Bill_Cooke: Between midnight and 2 a.m. Mountain Time.

connie4358: any significant meteor activity yet ?

Brooke_Moderator: Connie, we're getting some reports of meteors, but we haven't confirmed yet if they're May Camelopardalids.

marcedum: will the ozone layer be damaged?

Bill_Cooke: No.

PaCkMaN: Meteor showers rock!

Brooke_Moderator: We think so, too!

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darla: Kris, where are the reports of activity coming in from?

Kris_Moderator: Hi Darla. Two of our chat room participants just reported seeing activity in southwest Florida and south of Nashville.

w3yyz: These are slower than Orionids..so would they be good for attempting meteor scatter communications?

Bill_Cooke: Have no idea. You need to talk to a ham radio person.

gatorgrl: Did the livestream go down?

Brooke_Moderator: Hi gatorgirl -- it looks live here on our end...

wfsaf: Any good apps on iPad for what part of sky I am looking at?

Bill_Cooke: Sky Safari, Red Shift, TheSkyHD, and many others.

zaya: Will we see anything on the Outer Banks in NC?

Kris_Moderator: If the sky is clear, there is a great chance. Let us know if you see anything!

Canada: When do you think we'll see the showerr again? Will it be reoccurring like Halley's Comet?

Brooke_Moderator: Hi Canada -- per Bill, this looks to be a one-time event, and also for tonight only.

ruthie: Just saw at least 2 from my place in SC

Bill_Cooke: Congrats.

Leopardalid2014: So, is it true that the farther South in the U.S. you are, the better and more meteors you will see?

Bill_Cooke: No, the farther north you are the better.

aleco: is there any meteor storm predicted any time soon? if yes what location and date. thank you!

Bill_Cooke: There is a Perseid outburst predicted for mid-August of 2016.

hocket: Can you break down the word Camelopardalids into its constituent parts and what they mean?

Brooke_Moderator: Hi hocket! The word originates from Latin: kamēlos (or camel) and pardalis (or leopard). The result is a camel-leopard creature with a long neck and lots of spots -- which we affectionately know as the giraffe. Camelopardalis, a large and dim constellation in the northern sky, is named for its many faint stars that resemble the spots of a giraffe.

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SkyScraper: Does central Florida have a chance of a show?

Brooke_Moderator: Yes, all of North America is in the viewing zone, provided you have clear and dark skies.

KoolPeterLee: How does a meteor shower look like, and how can i identify them? First time seeing one :V

Bill_Cooke: Look for streaks of light in the sky. Pretty obvious when you see it.

Spencer12: Did you pick the soundtrack for the UStream?

Bill_Cooke: Nope. That's done by our outstanding media support folks.

tbecke: how fast is the earth moving in its orbit?

Bill_Cooke: Approximately 30 kilometers per second.

mnbrrrrrrs: should i look to the north, south, east, west or just up? minnesota here

Kris_Moderator: You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky. Give your eyes time to adjust to the dark. Good luck!

pfarrside: So Bill, I picture you outside in a chais lounge with a drink and your laptop. Am I close at all? LOL

Bill_Cooke: Nope, I'm indoors in a conference room with this chat window projected on a big screen. So not even close.

KoolPeterLee: How does a meteor shower look like, and how can i identify them? First time seeing one :V

Brooke_Moderator: Hi Peter -- this view might help. It shows how meteors look in the sky:
http://www.youtube.com/watch?v=EGriq_yuqpU&list=PLBEXDPatoWBkQ3nw19vJz7qLXiSVzcfF5

Leopardalid2014: What happened to the whole "meteor storm" tag put on this shower? Was it found that this shower was weaker than previously noticed, or something else?

Bill_Cooke: I never said meteor storm, but things tend to get blown out of proportion. The best I think we will get is a meteor shower.

docmalc: Since the ustream feed is based out of Huntsville, does that mean its pointless to watch the feed since its not in ideal viewing area so South?

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Bill_Cooke: Not pointless, because our camera is more sensitive than your eyes, so we will pick up the more numerous faint ones.

angiena: I have 3 kids still up and I have told them so much of what we will see....so with that said I hope we can see here in Missouri because if not i will have very mad kidos :) VERY EXCITED

Kris_Moderator: Thanks for joining us! There is still plenty of time so don't give up yet!

LASKIES: Msg from Dr. KB in SE Louisiana: "Hey, I like meteors. Do you?" and from me, LASKIES, thanks for this live chat...my first time connecting to anything like this. Hubbie and I are ready and waiting for the show to begin here in Bush, LA.

Bill_Cooke: You are welcome.

billy_b: Cloudy here in NJ, ny chance tomorrow night might have some leftovers?

Brooke_Moderator: Hey billy -- unfortunately, this is only a one-night event. We wish there WERE some leftovers tomorrow. ☺

Steve: Do you feel Gallileo lived up to all the hype? I'm on the fence.

Bill_Cooke: The spacecraft? Absolutely.

Meteorite: How many of tonights meteors will hit the ground?

Bill_Cooke: Zero, zip, none.

Leopardalid2014: This is turning out like the Leonids so far. Is this doing as it was forecasted?

Bill_Cooke: Um, I suppose. I can't see anything in this room.

blu1226: CAN THE METEOR SHOWER BE RECORDED WITH A DSL CAMERA

Bill_Cooke: You can record individual meteors with a DSLR, yes.

taimur: 6 to 8 utc ok i am going to check it at my local area time

Kris_Moderator: This site might help you figure out the best time for viewing in your area.

<http://www.dxing.com/utcgmt.htm>

new_life_form: Hi Bill, if I wear a tin foil hat is there a better chance I will see the shower, or will that just expose me to more cancerous radiation from the comet? Thanks Bro!

Bill_Cooke: I have no idea; why don't you try it.

jmat22400: I live in Wyoming at 7,200 Feet, will elevation affect the viewing of the shower?

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Bill_Cooke: No.

Meteorite: Why is this the first time we'll see this shower? Was this the comet's first visit to the Sun? or the first time Earth crossed its trail?

Bill_Cooke: Because Jupiter's gravity has tugged the debris into the Earth's path this year.

jesi: approximately what time could i see the meteor shower from milwaukee, wisconsin?

Bill_Cooke: One to three a.m. Central Time.

ShadowLeeSmith: Any chance of seeing them near city lights?

Bill_Cooke: Not much.

duluthmn1971: Duluth MN here nice cool night no mosquitows yet whats the odds of this being a dud

Bill_Cooke: Don't know. Your guess is as good as mine.

Leopardalid2014: If it starts to cloud up at the Marshall Space Station, will you guys end the stream?

Bill_Cooke: Nope, we will show clouds. Have done it before.

JayBee: Here is a virtual pat on the back to the moderators and Bill for doing such a great job tonight!

Brooke_Moderator: Gosh, Jay, we appreciate that. Thanks!

Justin: Bill, what type of schooling would one look to pursue to work in a job field such as yours

Bill_Cooke: Lots of math, physics and astronomy. Ph.D. required.

stella: I live around Philadelphia area.. will I be able to see the shower?

Kris_Moderator: Thanks for joining us from Philly! If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky.

Brownie: Ohio here. We've seen a couple.

Bill_Cooke: Congrats.

skeeter11268: is there any threat to the space station?

Brooke_Moderator: Hi skeeter -- per Bill, the International Space Station is armored to protect it from orbital debris (space junk). This armor is very good protection against meteoroids as well.

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nerdfest123: we will be able to see venus rising up with the moon?

Bill_Cooke: Yes.

demo: Hi Bill It looks as if the feed is clouding up a bit?

Bill_Cooke: Can't see the feed and answer questions.

bigcatfish: Is it possible to hear a meteor shower? Do they break the sound barrier and produce sonic booms like jet fighters?

Kris_Moderator: Hi bigcatfish! Our experts say you may hear a sonic boom if the meteor penetrates deep enough into the atmosphere to decelerate below the speed of sound, but you will not hear any noises associated with the ablation. Way too high in the atmosphere

Leopardalid2014: Space Weather Radio is picking up quite a few meteors tonight... it's also being very persistent on its ringing, and it's giving me a earache. Is the SWR a good thing to use to find out if meteors are coming from this shower?

Bill_Cooke: All SWR can tell you is the number of meteors, not their origin.

AndrewG: in SW Ontario Canada, which direction should we be looking? feel free to be specific (degrees etc)

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

lakelot91: I live outside of Atlanta the yard is dark and you can see stars. will the city glair ruin it? or will we be able to see?

Bill_Cooke: If you can see the stars in the Little Dipper, you will be okay.

docmalc: Since the ustream feed is based out of Huntsville, does that mean its pointless to watch the feed since its not in ideal viewing area so South?

Bill_Cooke: No, it is not pointless. See my previous answer.

Steve: Do you recommend getting high and watching tonight?

Bill_Cooke: Not if you're near a cliff.

ainitfunny: is there any strong desire to try to RECOVER a meteorite to find out the composition of this comet? Would such a rock be more valuable than other meteorites?

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Bill_Cooke: None of this stuff will make it to the ground.

patti616_: Im in the city, no darkness at all. Heard NASA At Marshall was showing the show online,,,,,,true?

Kris_Moderator: We are streaming live on Ustream! <http://www.ustream.tv/channel/nasa-msfc>

SanDiego: It's cloudy in San Diego, how long might this go on as I'm hoping it might clear?

Bill_Cooke: Peak is 11 p.m.-1 a.m. your time. Hope it clears soon.

ShadowLeeSmith: Should I go outside the city?

Bill_Cooke: If your skies are not dark, sure.

lesr39: Any chance this could affect the ISS?

Kris_Moderator: Hi lesr39! The International Space Station is armored to protect it from orbital debris (space junk). This armor is very good protection against meteoroids as well.

AZPetroglyph: which section of the sky should I be viewing?

Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look straight up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

pennelophe: sr bill cooke you understand spanish?

Bill_Cooke: Nope.

sofiesverden: Is the International Astronomical Union -or other multinational body related to astronomy- formally tracking this event?

Bill_Cooke: The International Meteor Organization is.

patti6290: what direction do I need to look? Using big dipper and little dipper as reference lol

Bill_Cooke: Look straight up.

OFCR: What direction should we look to?

Kris_Moderator: If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky. Add a lawn chair or sleeping bag and snacks and you should be all set.

zack: what about easter time

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Bill_Cooke: 2-4 a.m. Eastern Time.

Houston1: What time can I see the meteor shower from Houston?

Bill_Cooke: 1-3 a.m. Central.

Kathryn: I'm 8 years old and I'm in California, San Diego. Is this a good place to see the meteor shower?

Bill_Cooke: If your skies are clear, yes.

Meteorite: Is the International Space Station in any danger?

Bill_Cooke: No, it has armor.

Chill: What time could I see the meteor shower from Nashville, Tennessee?

Bill_Cooke: 1-3 a.m. Central Time.

Leopardalid2014: Does Comet 209P/LINEAR even still exist? Or was it sucked in by the Sun?

Bill_Cooke: Of course, it does. We will observe it with our telescope tonight.

pete: Have you seen any meteors on the NASA live cam

Bill_Cooke: Can't see the live feed.

Daehawk: Thanks to Bill and the mods for chatting with us and answerin our sometimes silly questions

Bill_Cooke: You're welcome.

esteban: What time should I be able to see it from New Orleans?

Bill_Cooke: 1-3 a.m. Central Time.

YESITSME: What time for near Chicago? Seeing nothing so far. Closer to 1am CDT?

Bill_Cooke: Yes.

radevers: How can I see the NASA video stream?

Kris_Moderator: Thanks for joining us tonight. Check out our live stream here
<http://www.ustream.tv/channel/nasa-msfc>

Steve: What;s the difference between a meteor, meteorite, meteroid etc ?

Bill_Cooke: A meteor is the streak of light you see when a meteoroid burns up in the atmosphere. A meteorite is the piece of rock that survives to the ground.

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Brooke_Moderator: Hi again -- we're getting a huge number of questions about viewing locations and times. Basically, North America is in a good place to see the shower, but sadly, other parts of the world (Europe, South America, Asia, Africa, Australia) aren't in position to see this live, only on the Ustream feed: <http://www.ustream.tv/channel/nasa-msfc> The shower peak is predicted to begin in about 1.5 hours, and to last for about two hours (06:00 UTC-08:00 UTC). Hope this helps!

Maybeshower: How big or small are the particles that cause the shower?

Bill_Cooke: Millimeters to centimeters.

Bill: I be down in Florida and its clear to see Camelosphediancids

Brooke_Moderator: We hope you get a good show!

Meteorite: Given all the interest in this shower, do you think we should make man-made meteor showers?

Bill_Cooke: Why would you want to do that.

Rick: I can confirm I can spot a few of them =) (Toronto, ON)

Kris_Moderator: Thanks Rick!

Burton: Do the mm-cm sized meteors pose any threat to the ISS since they're traveling at 36,000 mph? Or have they adjusted their path at all to avoid it?

Brooke_Moderator: Hi Burton -- from Bill Cooke earlier: "The International Space Station is armored to protect it from orbital debris (space junk). This armor is very good protection against meteoroids as well."

TrickyMosquito: Would you be able to get a better view from a plane or helicopter. It seems like that would eliminate some of the light pollution issues...but I've been wrong a lot lately.

Bill_Cooke: Plane windows suck as far as clarity. Helicopters I don't know about and you would have to still be away from the city to get rid of the light pollution.

LookinUpInOhio: How many meteors do you expect per hour?

Kris_Moderator: Hi Ohio! Dr. Cooke says rates are predicted to be from zero to hundreds of meteors per hour between 06:00-08:00 UTC, so we are dealing with a meteor outburst. A peak rate of ~200 meteors/hour is the current best estimate

Steve: What does Moderator Brooke look like? Single?

Bill_Cooke: Taken as well. I'm heartbroken.

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Jeff: Is anyone recording the peak of the meteor shower? I'm probably going to fall asleep before 2am EST.

Bill_Cooke: We are recording the live feed and it will be replayed.

Marcos_dgz: What time can I see the meteor shower from Mexico, Is this a good place to see the meteor shower, IT'S CLOUDY?

Bill_Cooke: If it's cloudy, you can't see meteors.

Kathryn: Are people preparing for trips to other places such as Mars? I'm in third grade and I was in a play called Vacation On Mars and I was Venus in the play :)

Bill_Cooke: NASA is preparing to visit an asteroid. After that, it's on to Mars.

yogapants72: For lack of beverage guidance, I'm referring to this meteor shower as the "Night Train Express." My son will NOT go to sleep. He's staring at a stargazing app on his iTouch. I have promised to set an alarm for 2:00 a.m. EDT and wake him up. Can you please tell him to go to bed? His name is Max.

Kris_Moderator: Max...go to bed!! Hope you see something when you get up at 2:00!! Let us know!

marceduma: why is the shower not visible to all the world?

Bill_Cooke: Because the radiant is near the celestial pole and it only lasts a few hours.

TravisM: Will the meteors on USTREAM look the same as if you were looking at the sky from outside?

Bill_Cooke: You will see fainter meteors on the Ustream than you can with your eye.

Krish: How confident are you of the computer model that predicted this? What adjustments you do to the model (if any) if, for instance, we didnt see anytihng happen today..

Bill_Cooke: I am confident in the model, but we cannot calibrate it without past observations. The model has worked well with other showers such as the Leonids.

dianemd: I feel very priviledged to be part of a conversation with NASA esperts--thank you from clear skies in Maryland :)

Brooke_Moderator: Dianemd, I'm just a humble moderator, but I speak for the NASA experts when I say, "thank you very much!"

Dave: What will determine if this will be a "good" shower or not?

Bill_Cooke: If we see meteors. Lots of them would be nice.

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bobo: i'm in midtown east, new york city. it's currently raining. where can i go to see the meteor shower?

Kris_Moderator: Sorry about your weather. Check out our Ustream feed here <http://www.ustream.tv/channel/nasa-msfc>

xItsElectric: Stupid clouds, go away, I want to see the meteor shower. :c

Brooke_Moderator: Please let us know if that works. We want to use that for when the clouds plague us. ☺

samer: how about the people in the international space station are they going to see it?

Bill_Cooke: They are going to try.

Leopardalid2014: Smyrna, Tennessee(5 miles SE of Nashville) at 11:30 PM CST: 1 meteor split into 3 fireballs as it slowly arched across the sky. All in all, it lasted about 7 seconds, and created an elegant line of light across Camelopardus!

Kris_Moderator: Wow!!

anticitizen2: You may have answered this, but could you explain the 209P part of the comet's name?

Bill_Cooke: 209P means it is the 209th discovered periodic comet.

starboy: What kind of fragments does a comet leave behind?

Bill_Cooke: Icy dust particles.

Steve: If a catastrophic asteroid was going to hit Earth, would NASA tell us?

Bill_Cooke: Yes.

Konan: I heard that the meteors range anywhere from 0 to 400 meteors per hour. Is there a definite amount known?

Bill_Cooke: No, we haven't seen this shower before.

Jennifer: Wish the skies were clear in Denver. I was looking forward to capturing some amazing photos. Thank you for giving us eyes this evening.

Brooke_Moderator: Jennifer, it's our pleasure. Maybe you'll have better luck with the Perseids in August. That's usually a very good show.

KeithF: Has anyone seen meteor activity?

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Kris_Moderator: Hi Keith! We are getting reports of activity in southwest Florida, eastern Indiana, around Nashville, Tennessee and up in Toronto!

BrianNashTN: We know the best way to view the shower is by looking straight up, but should we expect the meteors to move across the sky in any certain direction? (east to west, north to south, etc)

Bill_Cooke: They will appear to radiate from the north, so they can move north-to-south, north-to-west, and so forth.

bigcatfish: What tricks do astronomers use to stay up late and avoid getting tired?

Bill_Cooke: I wish I knew.

Meteorite: what is the field of view on the USTREAM?

Bill_Cooke: 23 degree horizontal field of view for the camera.

daisybreed: which direction should we be looking ,north south ect in Alabama ?

Bill_Cooke: Look straight up.

guanu: do we know what section of the sky the camera on the video feed is pointing at?

Bill_Cooke: To the northwest.

anticitizen2: I'm surrounded by trees and streetlights

Brooke_Moderator: That sounds like a challenge to meteor-watching, citizen. ☺

MW: I don't know if my question got through before... i saw the leonids in 1998 and they were eath grazer meteors and spectacular. My understanding is that these come early in the evening. What time would you expect to see these with tonight's shower? Given CA is earlier in the night, could you see earth grazers in CA?

Bill_Cooke: Given that the radiant is circumpolar, there shouldn't be any grazers.

Infinity17: waiting

Kris_Moderator: Keep waiting. There is still plenty of time!

stox: What kind of equipment is being used for the UStream?

Bill_Cooke: Watec 902H2 Ultimate with a Schneider lens.

TrickyMosquito: Historically, what has been the most...I guess prolific meteor shower seen to date?

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Bill_Cooke: 1833 Leonids.

Kathryn: How far away are these meteors?

Bill_Cooke: They burn up about 40 miles above your head.

aleco: what are the 2 bright tini spots (stars?) on the left side of the Marshall live stream

Bill_Cooke: Can't see the live feed.

Brooke_Moderator: Thanks again for all of your questions. Bill is whipping through them almost as fast as the meteors are traveling tonight. ☺ We appreciate your patience, and also your sky reports of what you're seeing in your area.

B-Tech: What time does it start in Southeren Ontario

Bill_Cooke: About 2 a.m.

ieatpuppiezz: Is the ISS in danger from the shower?

Kris_Moderator: No worries for the ISS. The International Space Station is armored to protect it from orbital debris. This armor is very good protection against meteoroids as well.

Meteorite: do you know of any good legends about meteors?

Bill_Cooke: Not off the top of my head.

Leopardalid2014: @KeithF we saw a splitting meteor just moments ago in Smyrna, Tennessee! Overall, a total of 11 meteors have come into the Smyrna sky that I've seen, and we're surrounded by quite a few trees! Just LOOK UP!

Bill_Cooke: Congrats.

HxC_Ferret: i live in NC were do i need to look?

Kris_Moderator: Thanks for joining us. If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky.

Byron: What devices could photograph or record this event clearly, if at all possible?

Bill_Cooke: Low light level video camera can record a limited section of the sky.

Era: Is it possible to take good pictures using your iphone or do I need a professional camera?

Bill_Cooke: I don't think an iPhone will do it.

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stargrazer: Any chance of larger debris coming in with this meteor shower?

Bill_Cooke: Always a chance, but the comet is small.

B-Tech: Will any debris hit earth

Bill_Cooke: Yes, and it will burn up in the atmosphere.

psc330: should i look towards the big dipper if i am in central indiana

Bill_Cooke: No, lie on your back and look straight up.

lharber: Other than having the joy of seeing a meteor shower, what do you learn, scientifically, from seeing one?

Bill_Cooke: Lots of stuff. We can determine trajectories, orbits, get an idea of their densities and figure out the risks to spacecraft from the shower.

B-Tech: Could this be related to Hayleys Comet

Bill_Cooke: No.

pennelope: hi bill cooke you likely is that some fall into the earth?

Bill_Cooke: Nothing will make it to the ground.

chrisnportorange: Are there any risks to the ISS in this shower? Thanks

Bill_Cooke: No, ISS is armored.

theJason: saw one in Florida right about midnight EST near the big dipper from east to west

Kris_Moderator: Great. We are getting quite a few reports from Florida!

PaCkMaN: You are telling people to look straight up. Why is USTREAM looking northwest instead of straight up?

Bill_Cooke: Because the camera is oriented to look at the same part of the sky as our other cameras in the area. We point them north to avoid the moon.

Meteorite: You said that the meteors are on the scale of millimeters to centimeters. How big is the comet that left this trail?

Bill_Cooke: About 3 kilometers in diameter.

Rae: Are airplanes at risk of getting hit?

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Bill_Cooke: No.

omi678: Is it possible to get a view from Georgia?

Kris_Moderator: If you have a clear sky, it is possible. . If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky. Good luck!

omi678: We can see a few stars, does that mean we can see the shower from where we are? (Georgia)

Bill_Cooke: Need to be able to see lots of stars.

Aktinos: What kind of protection (like type of metal) does ISS have?

Bill_Cooke: Google "whipple shield" for an answer.

B-Tech: Has something like this ever happened before

Bill_Cooke: Yes.

paralleoneirdwell: After this has occurred, will it be possible from any scientific observations to tell how the interaction with Jovian gravity affected the different dust regions?

Bill_Cooke: Yes, if the shower occurs, we will be able to calibrate the models.

Krish: Sir, Do you feel amused when people ask you whether you and Ms. Moderator are single etc.?? I was looking through the chat and had a nice laugh..

Bill_Cooke: Yes.

Leopardalid2014: What time is the moon supposed to rise tonight? If it's later on, it hopefully won't obstruct our view of this shower!

Bill_Cooke: Around 3 a.m. local time.

Guest101: Im in Louisiana. Am I eligible to see it?

Bill_Cooke: Yes.

pennelope: hi bill cooke and that climate changes can cause meteor showers?

Bill_Cooke: No way.

julie: How can you tell if you are looking at a satellite? We saw a few moving objects that were small and moving pretty fast.

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Kris_Moderator: If you see a meteor, try to trace it's path backwards. If you end up in the constellation Camelopardalis, there's a good chance you've seen a May Camelopardalid

daisybreed: nothing seen here yet ,Alabama

Brooke_Moderator: Hi daisy -- the peak won't be for at least another hour, so hopefully you'll see meteors tonight.

SGH05: I've been laying in a field for an hour with my girlfried.. We are 10 miles outside of huntsville,al. She is getting bored. What are my chances of seeing some good flying stars. How can i convience her to stay? thanks.

Bill_Cooke: Have no idea as far as chances of seeing a good meteor. Maybe you should offer her some wine and chocolates to get her to say.

Meteorite: I've heard about meteorites that were from Mars. How can we tell those ones are from Mars, as opposed to from elsewhere, for example the Asteroid Belt?

Bill_Cooke: By analyzing gas trapped in those meteorites, we can determine that the gas was a match to the Martian atmosphere (because we've sent space probes to land on Mars).

new_life_form: Will this shower cause power outages or worse yet, cell tower outages?

Bill_Cooke: Nope.

Bill_W: I'm in Joliet Il folks, where am I looking with my new Telescope I havent used yet? Should I be looking towards the north star??

Bill_Cooke: You don't use telescopes to view meteors. Field of view is too small. Use your eyes and look straight up.

bobo: I'm in NYC - if it's raining does that mean i won't see anything? Will moving to higher ground help? Any hints on dealing with light pollution?

Bill_Cooke: If it's raining, you can't see meteors.

FALLING: since this is a new meteor shower, and i am stuck under clouds here in Edmonton, AB. Whats the odds of next year's shower going to be as good?

Bill_Cooke: This shower will not be around next year.

Meteorite: What do you call someone who studies meteorites professionally? Certainly not a "meteorologist." That's something different?

Bill_Cooke: A meteoriticist.

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Guest101: What's the chances of this happening?

Bill_Cooke: Your guess is as good as mine.

Byron: Bill, do you have a clear view to see the shower yourself?

Bill_Cooke: No, I'm in a room answering these questions.

stargrazer: Dr. Bill Cooke, is it normal to get dizzy whilst staring straight up at the stars?

Bill_Cooke: I don't know.

bobo: will this shower ever return? when?

Kris_Moderator: Hi bobo! Our experts say this is a one-time thing; Jupiter's gravity tugged the stream into Earth's path this year, and will pull it away by next year.

chrisnportorange: Bill are you in Florida? If so I feel sorry that you are stuck in a room it is such a nice night. Thanks for doing this.

Kris_Moderator: Bill is here with us in Huntsville, Alabama!

Sark: Thanks for hanging out with us right now then, Bill!

Bill_Cooke: You're welcome.

C1ARK: What direction should I face?

Bill_Cooke: Lie on your back and look straight up.

bigcatfish: Is it possible that these meteorites could impact the surface of the Moon?

Bill_Cooke: Yes.

Leopardalid2014: When is the next time this meteor shower will appear? It's already showing off in Tennessee this year! :)

Bill_Cooke: Nope, it won't be seen again for at least ten years.

Tparr: How many meteors per hour were predicted?

Kris_Moderator: Hi Tparr! Our experts are telling us rates are predicted to be from zero to hundreds of meteors per hour between 06:00-08:00 UTC. A peak rate of ~200 meteors/hour is the current best estimate.

ryan: any pre peak results from anyone yet

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Bill_Cooke: Not as far as I know.

Meteorite: Do you have any good meteor stories to share? What was the best meteor you ever saw? When was it? Where were you? What did it look like?

Bill_Cooke: Chelyabinsk over Russia was very nice.

TrickyMosquito: Have you had a chance to handle different types of meteorite? I can only imagine that's a relatively surreal feeling, holding something that is terra incognita.

Bill_Cooke: They look like rocks to me.

omi678: Will this event be recorded by Nasa for later viewing?

Bill_Cooke: The live feed is being recorded.

PC: Would meteorites hitting the dark side of the moon be visible?

Bill_Cooke: The dark side of the Moon, yes, the far side, no.

HxC_Ferret: can i see it now in nc??? there is a clear sky

Kris_Moderator: How great that you have a clear sky! Find a safe, dark location and lay out beneath the stars. Let your eyes adjust to the dark. You don't need to look in any particular direction, just straight up.

bigcatfish: Where did you go to school and how long have you worked for NASA?

Bill_Cooke: University of Florida and twenty years.

Guest101: Bill, What happens after the shower?

Bill_Cooke: I get some sleep.

Monesti: Hi Bill , What is the average speed of the meteors ?

Kris_Moderator: Hi Monesti! Dr. Cooke says the May Camelopardalids will be traveling slowly, as far as meteors go, but they will still be moving at 36,000 mph! That's about 27 times faster than the Concorde jet!

pennelophe: mr bill cooke and here in venezuela do can viewing the showers?

Bill_Cooke: Too far south.

wave64: ughh cloudy in New Jersey. Not a happy camper here

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Kris_Moderator: Sorry to hear that. You can always check out our live Ustream feed
<http://www.ustream.tv/channel/nasa-msfc>

Enginner: How much time lack for begin the rain? the true is, i don't understand that hour UTC

Bill_Cooke: In a couple of hours.

Brooke_Moderator: Excellent questions, everyone! Keep them coming as we work through the queue -- and btw, we're about an hour from the predicted time that the peak will begin, predicted to last for about two hours.

gatorgrl: Hey Bill, fellow Gator here... Go Gators and thanks for answering all our questions :)

Bill_Cooke: You are welcome.

GBell_Hopkinsville: Hello Bill! It was a pleasure working with you and the others in the MEO over the fall. I'm going to try to stay up until 4 AM and watch this. If I'm understanding the info correctly, will this will be the first ever appearance of this particular shower?

Bill_Cooke: Hi, Gary. Yes it will be the first appearance of this shower.

Brooke_Moderator: Just a note -- Dr. Cooke is going to take a short break to check his meteor cameras, but please keep your questions coming, and he'll be back to answer them soon.

starrynite9999: Will the meteors be different colors?

Kris_Moderator: Thanks for joining us tonight! Dr. Cooke says the question of meteor colors is tricky, as it has much to do with the specific individual's color perception. For example, some of my colleagues describe Perseids as having a yellowish color, whereas I perceive them to be white. Bright Geminids look a pale green to me, and look bluish to others. So the first takeaway on meteor colors is that it is all in the eye of the beholder. That being said, the colors can come from various elements ionized as the meteor burns up - yellow from sodium, green from oxygen, and so forth.

gdmercad: How large are these meteors when they enter the atmosphere?

Kris_Moderator: Hi! Our experts tell us they are the size of ping-pong balls and smaller.

Buckeye: Love your Southern drawl, Bill. What bet did you lose to get stuck answering our questions? ;p

Bill_Cooke: I volunteered.

AndrewG: if I wanted to use a program like Bandicam to record the Ustream broadcast, would I legally be allowed to put that video on Youtube?

Bill_Cooke: It's your tax money at work.

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ravalex90: will you be able to see the meteors from Las Vegas NV if its kind of cloudy?

Bill_Cooke: Not if it's cloudy.

bob: so if if a star is traveling 80 mph how long does it take to ttravel 80 miles

Bill_Cooke: One hour.

Meteorite: If an asteroid hits the Earth, is it called an asterite?

Bill_Cooke: No.

Martin3CA_: are we going to be able to see this even if is cloudy?

Kris_Moderator: Hi Martin3CA! If your sky doesn't clear up, we have a live feed on Ustream!

<http://www.ustream.tv/channel/nasa-msfc>

Era: If rates are predicted to be from zero to hundreds of meteors per hour, does that mean we could end up with zero?

Bill_Cooke: Yes.

birdlady: ontario, ca...which direction is it coming from. I'm a total idiot and don't have any idea where to look other than up

Bill_Cooke: You got it right --- look straight up.

rosco: is it true that you can even see them when they are the size of a piece of dust?

Bill_Cooke: You can see the streak of light produced when they burn up.

ravalex90: will u be able to see the shower fromn las vegas?

Kris_Moderator: If you can get away from all those lights you might be able to see the shower. Let your eyes adjust to the dark and look up!

ravalex90: Will you be able to see the comets from Las Vegas NV tonight?!?!

Bill_Cooke: If you are outside the city, away from the lights, you will be able to see meteors if it's clear, not cloudy.

fragulater: I'm sure you answered this already, but what is the best direction to view the shower, I've been outside for quite some time and havent see any :(

Kris_Moderator: Don't give up yet. Let your eyes adjust to the dark, and look straight up. Meteors can appear all over the sky. Good luck!

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christopher: can i see it from tampa

Kris_Moderator: Hi Christopher! We've had reports of activity down there in Florida so keep looking. Good luck!

Justin2013: Will this shower occur annually, or is this it's sole appearance?

Kris_Moderator: Hi Justin 2013! Our experts tell us this is a one-time thing; Jupiter's gravity tugged the stream into Earth's path this year, and will pull it away by next year.

Lel: I read somewhere that these meteors travel a bit slower than other meteors. Is that true?

Bill_Cooke: Yes. These meteors are slow at 17 kilometers per second. The average speed for meteors is 20 kilometers per second.

NASA_is_Awesome: Has it ever happened when some meteorite has hit somebody?

Bill_Cooke: Yes. A meteorite hit a lady in Alabama in the 1950s and bruised her side.

adsf: Anyone see anything from TN right now?

Kris_Moderator: We are getting reports of activity around Nashville/Smyrna. Hope you see something too!

pgr: Are those Camelopardalis (to the left) and Perseus (center) we're seeing on your camera?

Bill_Cooke: No. I cannot see the camera feed, but our field of view is too small to contain both constellations.

Ismael_Flores: What is the chance of a meteorite hitting on my yard?

Bill_Cooke: Zero.

bryanb1980: Bill, what's your personal guess on how many meteors we might get?

Bill_Cooke: Have no idea.

ok: Any reports of decent activity so far? I know we're not at the peak yet...but I'm in a pretty urban area so I bet I won't see much unless it's really active.

Bill_Cooke: Some sightings are coming in.

littlemisscatfish: Im by virginia city nv.. Its the middle of nowhere crystal clear skys.. What time should i be expecting the shower to start?

Bill_Cooke: Midnight to 2 a.m. Mountain Time.

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NASA_is_Awesome: Have you ever seen a martian meteorite?

Bill_Cooke: Yes.

Steve: LOTS of meteors on streaming Meteor radar audio from New Mexico receiver...correlating with visible reports?

Bill_Cooke: Visual sightings beginning to come in.

darla: How long will each meteor be visible?

Bill_Cooke: Couple of seconds.

pennelophe: mr bill cooke want to see the meteor shower where i can see it? i am in venezuela

Bill_Cooke: Venezuela is too far south.

kaka: i am in toronto ontario , sky is clear i can star right now, would i been able to see meteors.

Bill_Cooke: Shower should begin in a couple of hours.

Tparr: How big would a meteor have to be to hit the ground as a small rock?

Bill_Cooke: Depends on its speed.

daisybreed: why do stars appear to blink ?

Bill_Cooke: Because of the motion of the Earth's atmosphere.

Meteorite: What evidence is used to predict the rate of meteors in a shower?

Bill_Cooke: Computer models and past observations of meteor showers.

stan58: will it be visable from just outside St Louis?

Bill_Cooke: If the skies are clear and dark.

lisa_92: What is the link to watch the meteors online?

Brooke_Moderator: Hi Lisa -- you can see them here: <http://www.ustream.tv/channel/nasa-msfc>

Ismael_Flores: How many viewers do you think are trying to watch the shower?

Bill_Cooke: I have no idea.

adsf: Are they going to be as bright as stars? How bright relatively

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Kris_Moderator: Hi adsf! Dr. Cooke tells us their brightness is unknown, though the one meteor we have recorded was about as bright as Mars; there will also be faint ones if the shower occurs.

Lel: Are the meteors traveling a certain general direction away or toward the Camelopardalids constellation? Perhaps they are going southwest since Jupiter is down there pulling them? Or are they just going in scattered directions?

Bill_Cooke: They will move away from Camelopardalis.

Cyd: What would account for the slower rate of travel?

Bill_Cooke: The encounter speed with Earth is low.

samantha: Is it possible that one could make it through our atmosphere?

Bill_Cooke: No.

lostwind: when you say activity in an area...are they giving you any numbers?

Bill_Cooke: Not yet.

camiskow: Do you believe there will be a point in time where the suburbs of Chicago will get a good view?

Bill_Cooke: In a couple of hours, if the skies remain clear.

Meteorite: Is this the most anticipated meteor shower in history? Or have I been living under a rock?

Bill_Cooke: Nope, the Leonids of 1838 were the most anticipated in history and they were a dud.

ravalex90: Where on the website is the visibility map?

Kris_Moderator: Hi ravalex90! Hope this helps!

http://www.nasa.gov/sites/default/files/files/2DMap_full.jpg

Mike_D: Good music.

Brooke_Moderator: Thank you, Mike. That's Third Rock Radio: <http://thirdrockradio.rfcmedia.com/>

john_montez: OK, I am a rookie! Should I be looking north, or can you redirect me?

Bill_Cooke: Look straight up.

MamaRobs: Can you give me any tips on spotting Camelopardalis?

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Bill_Cooke: If it's not cloudy, get as far away from bright lights as you can, lie on your back, and look straight up. You should be able to see May Camelopardalids over the whole sky. The expected peak is between 2 and 4 a.m. EDT.

Suzzanne: hello! where these meteors fall?

Bill_Cooke: They burn up in the atmosphere.

ShadowLeeSmith: Should I get to a dark place? or from the roof will suffice?

Kris_Moderator: You should get as far away from bright lights as you can, lie on your back and look up. Good luck!

Steve: Any expectations of reports from ISS astronauts from above, if passes appropriate?

Kris_Moderator: Hi Steve! We have received word that the astronauts may try to photograph Camelopardalids Saturday morning, during three orbits centered on the peak. They have a different perspective, as the astronauts will have to look down into earth's atmosphere to see the meteors, rather than up like we do on the ground.

Meteorite: only 30min, and I'm driving the family out to a cornfield for some astronomical delights!

Kris_Moderator: Sounds like fun! Good luck!

renigade4x4: Mr. Cooke On the NASA Ustream Ch.How much of the sky are we looking at? Thank you for being here.

Bill_Cooke: 23 degree horizontal field of view.

dixon: just saw three in rapid succession in west ky

Kris_Moderator: Great!!

gdmercad: How does JUpiter's gravity compare to Earth's?

Bill_Cooke: Jupiter's gravity is 2 and a half times that of Earth at the top of the atmosphere.

gdmercad: I heard that all meteorites are magnetic. Is this true?

Bill_Cooke: Most but not all.

mkent89: i live fairly close to the raleigh metro area... lots of light pollution... should i still be able to see some of these meteors?

Bill_Cooke: I sincerely doubt it.

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Brooke_Moderator: Just wanted to mention that we're about half an hour from the projected start of the peak. We're getting reports of meteors from many places, but still unconfirmed if they're May Cams (as we affectionately call them when that word is just too much to type one more time!) Bill is answering questions while simultaneously watching his cameras, so thanks for your patience.

camiskow: so it is possible to see it an hour from chicago, or is there too much light pollution?

Kris_Moderator: Thanks for joining us! Dr. Cooke advises too much light pollution will make it hard to see anything but you can always check out our live Ustream feed!

<http://www.ustream.tv/channel/nasa-msfc>

camiskow: There is all this talk about the parent comet from the 1800s, what exactly does that mean? is this current comet based on that. I am so oblivious

Bill_Cooke: The debris was ejected back into the 1800s; the comet has been around for billions of years.

N_A_S_A: What kind of camera are you using to hook up to a computer with ustream

Bill_Cooke: Watec 902H2 Ultimate

Meteorite: Dr. Cooke, thank you for your time and patience with us. I'll admit I asked some silly questions, but only to keep myself awake for the show

Bill_Cooke: You are welcome.

imper: Dr. Cooke, can you explain why this is the first time this comet and its meteor shower has encountered earth?

Bill_Cooke: The comet has passed near Earth many times, but its debris has been tugged into Earth's path by Jupiter's gravity for the first time this year. It will be pulled away from our orbit next year, so this shower will not be seen again.

MamaRobs: While my son and I are watching for the meteor shower I'd like to help him spot some constellations, but I only know a couple. Do you have a resource for helping us spot some that are currently visible?

Bill_Cooke: There are several apps available for smart phones that can help with that.

bryanb1980: What is a good indicator of how dark and clear your location needs to be in able to see meteors? I can see all 7 stars in the big dipper very easily, is that dark enough?

Bill_Cooke: You should be good to go.

Meteorite: Are you all going to go out and watch when the peak arrives?

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Bill_Cooke: I hope so.

Lel: What causes these meteors to dissipate in the atmosphere? The heat caused by the friction from the atmosphere?

Bill_Cooke: Yes.

ravalex90: what time will the shower start Pacific time please!

Bill_Cooke: Peak will be between 11 p.m. and 1 a.m. Pacific Time.

LookinUpInOhio: Why are you sure there is a zero chance of any of these meteors making it through our atmosphere?

Bill_Cooke: Because they are bits of ice and dust. Ice cannot withstand the heat of reentry.

sofiesverden: Are meteor showers an unique spectacle to the Earth atmosphere? Or is there anywhere else in the Solar System where their appearance is similar to our sky? (e.g Europa, Mars)

Bill_Cooke: Any planet or moon with an atmosphere can see meteor showers.

gatorgrl: At what point can you confirm the meteors are May Cams?

Bill_Cooke: With our cameras I will have to look at the trajectories and orbits and that will tell me whether or not they are May Cams.

girlfromthestars: What time can I see the shower? I am in south florida if that helps.

Bill_Cooke: 2-4 a.m. Eastern Time will be the peak.

gp28: I keep looking out my window and don't see much activity, will that change within the next 20 minutes? I'm in South GA, US

Bill_Cooke: You can't see meteors unless you can see stars.

Panama507: I live in Windsor,ON, Canada, Can I see the shower star?

Bill_Cooke: 2-4 a.m. Eastern Time will be the peak.

kidlogic: Dr. Cooke, I read that there's the possibility of moon strikes. Will that be something visible or would they be too small?

Bill_Cooke: You will need a telescope to see the flashes caused by impacts with the Moon.

girlfromthestars: What time is the shower going to start in Eastern time?

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Bill_Cooke: 2-4 a.m. Eastern Time will be the peak.

umguadakitbody: The field of view appears to have widened has it? I see one star/planet moving on the left side. What is it?

Bill_Cooke: No, the field of view is constant.

i_luve_meters: Dr. Bill Cooke how many times have you been in space?

Bill_Cooke: 0

NASA_is_Awesome: How big do you think the astroid was that hit russia before it exploded?

Bill_Cooke: Chelyabinsk was 20 meters (62 feet) in diameter.

Nobuko: Has there been any sightings yet? I keep looking outside but nothing haha. I'm in the southern Cali area

Bill_Cooke: Our meteor cameras just detected a May Cam over Pennsylvania.

bigcatfish: Do meteor showers gradually increase throughout the night and build up to the peak time or does the peak time just begin suddenly without warning?

Bill_Cooke: They gradually build up.

MeteoriteMike: How bad would you like some of your chat room guests to be hit in the head by just one meteorite from May Cams?

Bill_Cooke: No comment.

spaceytracey72: which meteor shower has generally had the most activity in past years?

Bill_Cooke: Either the Perseids or the Geminids.

Steve4879563256: I am bored, so I shall submit a question. When will the next meteor STORM be? Go big or go home.

Bill_Cooke: There will be a Perseid outburst in 2016.

Nobuko: Oh I have a good question. Is it true that is has been 200 years since something like this has happened?

Bill_Cooke: No.

mdowli: What is a May Cam?

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Bill_Cooke: May Camelopardalid, a meteor belonging to this shower.

mdowli: is anyone reporting seeing any meteors?

Kris_Moderator: Dr. Cooke says our meteor cameras just detected a May Cam over Pennsylvania!

Brooke_Moderator: Confirmed! A May Camelopardalid seen over Pennsylvania tonight around 11:22 p.m. EDT: <https://www.flickr.com/photos/nasamarshall/14069416309/>

dixon: 15 mins till projected "peak" ... would you say you are disappointed or are things as expected thus far?

Bill_Cooke: The peak is uncertain by two hours, so I'm going to wait and see.

scadie: Do you know if the ISS can be also strike by meteors ?

Kris_Moderator: Hi Scadie! No danger to the ISS. The International Space Station is armored to protect it from orbital debris. This armor is very good protection against meteoroids as well.

starboy: Heading out to a soccer field closeby with my wife of 26 years to see if we see any meteors. Thanks for a fun and unusual late night date!

Kris_Moderator: What a great date! Good luck!

Byron: Hey Bill, do you have an Instagram?

Bill_Cooke: No.

girlfromthestars: How many meteors will be in this shower? Do you estimate that there will be alot? and how much is alot? (Sorry I'm very curious, i want to work for NASA some day) Will it cover a large portion of the sky?

Kris_Moderator: Thanks for joining us! Our experts tell us rates are predicted to be from zero to hundreds of meteors per hour between 06:00-08:00 UTC, so we are dealing with a meteor outburst. A peak rate of ~200 meteors/hour is the current best estimate. Meteors can appear all over the sky. Hope you see some tonight!

sofiesverden: following the atmosphere question >> No matter what the gas composition of any atmosphere is, Dr Cooke? Would meteor showers look the same?

Bill_Cooke: At least on Mars, they would. Can't say about Jupiter or Saturn.

ed: Dr Cooke, is watching through those cameras fun or would you rather be outdoors right now?

Bill_Cooke: I'd rather be outdoors.

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talkin@rogers.com: if the plough is to my back which direction will the shooting star move

Bill_Cooke: Look straight up. The meteors will appear to come from the north.

delinnlara: Does anyone know if the meteor heading from North or South? I'm trying to face the right direction if I see it through my neighborhood.

Bill_Cooke: Meteors will come from the north. Look straight up.

Luna_Bella: Can not see anything yet here at Mountain Home.

Kris_Moderator: Hi Luna! Peak rates are scheduled to start at any time and last for about 2 hours. Hope you see something!

Lel: I get confused about this all the time but may you please tell me the difference between meteors, meteorites, and asteroids?

Bill_Cooke: Meteors are the streak of light you see when a meteoroid burns up. Meteorites are any pieces that survive to the ground. And asteroids are space rocks garage-sized and larger.

MArtyi: What was behind the selection of the sky over Huntsville selected for the live feed? Why that particular city?

Bill_Cooke: The camera is pointed at the same patch of sky as our other cameras so we can get trajectories by triangulation. The reason for Huntsville is because that's where Marshall Space Flight Center is.

bryanb1980: Is this shower similar to others in that it kind of starts ramping up until its peak? Or could it just bust loose at any moment?

Bill_Cooke: Yes, there will be a gradual ramp up and ramp down.

mdowli: Hold it, did you just say that ONE meteor has been reported over Pennsylvania? Aren't there usually 5-10 sporadics a night and you have ONE in a nation wide search. Just trying to confirm. I thought we were talking about a ZHR of 300 or more. (sorry but its cloudy here in Dallas) and if we are talking ONE meteor, I won't be so disappointed by clouds.... whats up?

Bill_Cooke: One FIREBALL belonging to the shower has been seen over Pennsylvania. There are many fainter ones.

Panama507: I need somethings or telescope to see the shower star?

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Kris_Moderator: No telescope needed. If your weather is clear, find a safe, dark location and lay out beneath the stars. Let your eyes adjust to the darkness. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky.

talkin@rogers.com: what is the difference between a shooting star and a meteor

Bill_Cooke: They are the same thing.

Scott-MSFC: Just went out for 10 minutes and saw 3 within 2 minutes and then nothing, one was fairly bright. (Hazel Green AL area).

Kris_Moderator: Wow! Peak rates are about to start. Hopefully you'll see more!

imper: I want to ask again: We've slammed things into the moon to learn about it's composition. It's fair to ask if a natural impact even could provide useful science. Or, do we already know enough about the moon's make-up?

Bill_Cooke: The problem is that we don't know what the composition of the meteor striking the Moon is, so it is hard to separate meteor material from Moon material.

Drew220: What is the ISS armor made of?

Bill_Cooke: Google "whipple shield."

chrisnportorange: in 1966 there were seen 144,000 Leonids per hr. Are there ANY predictions of such a thing happening again that you know of?

Bill_Cooke: Nope, not in the next decade.

imper: Nice picture! Is Dr. Cooke in PA?

Kris_Moderator: Dr. Cooke is here in Huntsville, Alabama!

Nobuko: How often do meteor showers occur on earth each year? I read there is about 4 more coming this year

Bill_Cooke: There are about ten major showers each year.

talkin@rogers.com: Bill if the big dipper is to my back which direction will the meteors travel

Bill_Cooke: Lie on your back and look straight up. They will move north to south.

SpC.Carmon: when can i expect to see the shower in arizona?

Kris_Moderator: Hi SpC. Carmon. Peak rates are about to start and will last for about 2 hours.

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am: The imcce site with information on 209P has a bullet point that is repeated on the wiki article that states that tonight would "confirm (or not) that all the trails from 1803 to 1924 are indeed crossing the path of the Earth in May 2014". Is the '1803 to 1924' referring to years the comet tail was generated? Or some other measurement/unit?

Bill_Cooke: 1803-1924 refers to the years the debris was produced.

imper: OK, this is a comet shedding pieces of itself due to solar wind? Those become meteors? Correct me if I'm wrong. How much of the comet's mass do you think gets shed during this pass around the sun?

Bill_Cooke: The comet sheds pieces of itself through sublimation. Solar wind has nothing to do with it. Comets lose a depth of several yards of surface with each pass around the Sun.

spaceytracey72: what did I see moving from right to left across the NASA feed, fairly slowly? Way too slow to be a meteor, in my understanding (but I am not very knowledgeable). Did you see it?

Bill_Cooke: I can't see the NASA feed, but that's probably a satellite.

spacewanderer: is there any possibility of debris making it to the ground?

Bill_Cooke: No.

StevelnAtlanta: Bill..I live intown Atlanta...will I still see some?

Bill_Cooke: Not in the middle of Atlanta, you won't.

lolol: Dr. Cooke, would you say that the "show" of the May Camelopardalids is better from earth, or far more fascinating to the astronauts in outer space? I imagine for the astronauts it'd be like taking a ride on Space Mountain in Disney World! Haha!

Bill_Cooke: You would have to ask the astronauts.

ravalex90: Will you livestream the Perseid outburst in 2016 is that going to be a good meteor shower with lots of flashing lights?

Bill_Cooke: Yes, if I'm still around.

CINDYRSOLIS: WILL IT BE VISIBLE IN GEORGIA?

Bill_Cooke: Yes.

smokinmathgeek: What is the best direction to look in Arizona?

Kris_Moderator: Thanks for joining us tonight! If your weather is clear, find a safe, dark location and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can

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appear all over the sky. Peak rates are projected to start at any time and last for about 2 hours. Good luck!

paulus: Looks like you should have bought more than 500 users worth of license! Took forever to get on, reported Access Denied. Chat service license limit has been reached.

Bill_Cooke: The limit is 500 because the system gets too slow if there are more users than that.

datboywing: has anyone seen anything yet tonight?

Kris_Moderator: We have! Our cameras confirmed a May Cam over Pennsylvania!

imper: Dr. Cooke, if a comet doesn't experience friction in the vacuum of space, and it's not solar wind, can you please explain sublimation? Is it gravitaional forces?

Bill_Cooke: Sublimation is when ice goes directly from solid to gas without turning into water.

Anjelikka: what time does it start in southern calif?

Kris_Moderator: Peak rates are projected to start at any time and last for about 2 hours. Hope you can spot something!

lolol: What year did you witness the most active meteor shower?

Bill_Cooke: My best meteor shower was the Leonid meteor shower of 2001.

vohpoh: If I took the optical lowpass filter off my camera would i see much of a differnce taking pictures of meteors?

Bill_Cooke: No.

scadie: Where is the best location in north america to see it ? Canada, North of USA, South of USA, East of USA, West of USA ?

Bill_Cooke: Canada.

Doukas: Will I get a good view of the shower in Arizona?

Bill_Cooke: If it's clear.

KaraStar: Are there cameras we can watch them on?

Kris_Moderator: Hi KaraStar! You can watch our live Ustream feed at <http://www.ustream.tv/channel/nasa-msfc>

SandFalls: When is the best time to watch from Florida?

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Bill_Cooke: The expected peak is between 2 and 4 a.m. EDT.

jkk: how broad a peak, time wise, do the models show?

Kris_Moderator: About 2 hours.

Lel: Can i just take a minute to tell everyone that I appreciate Dr. Cooke and the Moderators for taking the time to satisfy our curiosity and our interest in space and the wonders it has to offer?

Bill_Cooke: You are welcome.

slam99: Will this be a yealy meteor event or is this a one time event?

Kris_Moderator: Our experts are telling us this is a one-time thing; Jupiter's gravity tugged the stream into Earth's path this year, and will pull it away by next year.

bigcatfish: What kind of scientific instruments besides cameras does NASA use to study these types of events?

Bill_Cooke: Radar, infrasound, VLF.

s3rlrules: can light pollution also effect if we can see anything

Bill_Cooke: Yes, the brighter the sky, the fewer the meteors.

RevHowie: For an average meteor shower, how much mass ends up entering the atmosphere?

Bill_Cooke: Have no idea.

pradeept08: i live in austin texas can i see the shower from austin

Kris_Moderator: It is possible if you have a clear sky.

Eichenlaub: Since we haven't seen the usual build-up, I'm assuming this probably isn't going to rock quite as much as many of us have hoped. Would you agree?

Bill_Cooke: Probably.

Nobuko: What type of degree does someone typically get if they want to work for NASA?

Bill_Cooke: Science or engineering degree.

spaceytracey72: Considering what you have seen so far, paired with your experience, do you expect to see an exceptional meteor shower tonight, or possibly one comarable to the leonids or perseids?

Bill_Cooke: Looks like it's going to be less than the Perseids.

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pradeept08: I live in Austin Texas should i be able to see the shower from here

Bill_Cooke: Yes, if the sky is clear.

DcInDenver: Since this is the first time we have seen this meteor, do we have an idea when it will be around again?

Bill_Cooke: Not for at least ten years.

Me_dee: I'm in New Mexico and for the first time in a long time we are having some awesome rain showers. Being in a drought for a few years now I can not complain. But cloud cover is too great to look at the sky. Thank you for sharing this with my family.

Kris_Moderator: Thanks for joining us tonight! Since you have cloudy skies, you can always check out our live Ustream feed at <http://www.ustream.tv/channel/nasa-msfc>

imper: Dr Cooke, for the scientists here, can you please tell me what forces then, cause sublimation? I understand that in space, ice will turn to vapor, and probably not be in a liquid state for long! If it's not friction (in a vacuum), or solar wind (alpha particles?) It could only be gravitational forces that cause the disruption in that huge chunk of ice.. Would love to know what is happening to make a comet shed those chunks!

Bill_Cooke: Sunlight heats the comet, which causes the ice to sublimate, since space is a vacuum.

Big_Island_Nerd: From what I've read there are two predicted peaks, at 7:09 UT and 7:47 UT, so would you say that your statement that the peak is two hours wide is a simplification?

Bill_Cooke: No, there are more streams than the 1903 and 1778 peaks you mentioned.

pradeept08: i live downtown so is it better for me to drive a little out of the city

Kris_Moderator: Hi! Dr. Cooke advises the darker, the better. If the Camelopardalids are rich in faint meteors, then you should be well away from city lights. There may be a few bright meteors - we just don't know.

kthom: Appreciate you guys doing things like this. Even if it is a bust, major props for you guys getting space more attention from the public!

Kris_Moderator: We appreciate you joining us tonight!

dixon: dr cooke ... has a spacecraft or sat ever been lost because of a meteor strike?

Bill_Cooke: Yes, the Olympus spacecraft was hit by a Perseid in 1993 and was sent tumbling.

h0k: if this is a bust this year, is it likely this will show up next year?

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Bill_Cooke: No, it will not.

kattmellis: Hi. What are the chances of seeing the meteors from Northern Ohio?

Bill_Cooke: If the skies are clear, you have a shot.

s3rlrules: how bright could a meteor be

Bill_Cooke: The brightest we have seen is about Mars brightness.

b3v3rLy: Hi Mr. Cooke!!! Do you think I could see the shower from North Georgia??

Kris_Moderator: Hi b3v3rLy! If you have a clear sky, Dr. Cooke says it is possible. Find a safe, dark location, let your eyes adjust and lay out beneath the stars. You don't need to look in any particular direction, just straight up. Meteors can appear all over the sky.

bran: where is this live feed from alabama?

Bill_Cooke: From Marshall Space Flight Center in Huntsville.

mardo: How many Meteors an hour would you say? I'm stuck with a cloudy sky here in Nebraska, quite the dissapointment. Watching the live stream but have yet to see anything. Thanks guys!

Bill_Cooke: Tough to tell from the visual reports. Won't have a good idea until tomorrow.

imper: *Bill_Cooke*, thanks! So, it is getting closer to the sun, the warming. I imagine that mostly the ice melts (sublimates) into water vapor and flies off into space. But, it seems as though some of the sublimation causes large chunks to become loose from the comet and then travel on their own, into earth's atmosphere. That would imply that the comet is not just a perfect chunk of water ice, but, has cracks and structure. Do we think they are all water ice? Or also a lot of rocky materials?

Bill_Cooke: Not all water/ice; there is dry ice and rock as well.

bran: I meant the link for it. lol sorry should have been more clear to my question.

Kris_Moderator: You can see our live feed at <http://www.ustream.tv/channel/nasa-msfc>. Thanks for joining us tonight!

KaraStar: What are the next predicted meteor shwoers?

Bill_Cooke: Next good meteor shower is the Perseids in August.

bryanb1980: Did I read where it's possible the peak times could be as much as 2 hours off?

Bill_Cooke: It is possible.

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Spc.Carmon: what direction should i face in AZ to get a glimps of the meteor showe? N,S,E,W?

Kris_Moderator: Dr. Cooke tells us you don't need to look in any particular direction, just straight up. Meteors can appear all over the sky.

kthom: I do some amateur astrophotography, I have noticed a few "shooting stars" almost every night I go out. I know it is called "space junk", but what does that usually consist of? Also, is there an average on how many pieces of "space junk" burns up every night?

Bill_Cooke: Space junk is manmade debris, not natural material like a meteoroid. What you're seeing are meteors burning up in the atmosphere, not space junk.

Toad: We did manage to see a single brilliant streak in Virginia. Will you be posting video later if you capture any on your live feed?

Bill_Cooke: Yes.

Alizsha: Hola Mr. Cooke :) we say hi all the way from Mexico, we are always following all the NASA events and streams... Thanks for making the world part of this awesome events and what a better way to celebrate my bday watching the meteor shower. Hope we can see it from here...

Bill_Cooke: You are welcome.

Brooke_Moderator: Thanks for your questions tonight. It's been a VERY busy chat, and we appreciate your patience as Bill works through them. Hope everyone is getting a good show. Some areas are reporting a lot of meteors, and some not so much. We'll see what the night brings -- thanks for watching the skies with us.

zeus: Is the shower visible from New Jersey? Thank You!

Kris_Moderator: Hi Zeus! If you have a clear sky, it is possible!

imper: Dr Cooke, By dry ice, you mean CO2? Is there an opportunity with this close fly-by that we can find out more about it's composition? Do we know that or do we have to land on one someday? I suppose we can spectrum analyze what falls off of it, right? And hope that a tiny piece lands on earth? But, if it's all H2O and CO2, nothing will ever make it down here to analyze.

Bill_Cooke: We can get a good idea of comet 209P/Linear's composition by using ground-based telescopic observations.

RevHowie: Since these bits and pieces are burning up, can you get good spectroscopic data from them?

Bill_Cooke: Very difficult to get good spectra of meteors --- they are fast.

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villager: are the Meteors stationary and the Earth passing through the field?

Bill_Cooke: Both are moving.

imper: If there is "rock" in the comet, how much do we know about it's composition? Made when the solar system was created, really cool stuff!

Bill_Cooke: Comets are pristine material left over from solar system formation.

Barry: Hello mr Cooke how long have you worked at nasa ? and what would you say was the most exciting time since your time there ?

Bill_Cooke: 20 years. And the Leonid meteor storms 1999-2002.

Dori: I am in Central Ky, how likely (sky is crystal clear) are we to see anything here? ...thank you in advance!

Kris_Moderator: Hi Dori! A clear sky is definitely in your favor. Good luck!

kjc: should we looks for streaks of light?

Bill_Cooke: Yes.

Tim: If the live stream detects a meteor, will it look the same as if seeing it outdoors?

Bill_Cooke: Yes.

billbo: If I am in MN is there any part of the sky I should be looking towards or just up in general

Bill_Cooke: Look straight up. Just up in general.

k: so we dont need to look NORTH?? Just look up??

Bill_Cooke: Just look up.

k: Has it started yet? I am in Western NC and not seen anything but two bats and some moths lol

Kris_Moderator: Peak rates are projected to last for about the next 90 minutes. Hopefully you see spot something besides 2 bats and a moth. It must be late because that made me laugh!

imper: Thanks Brooke for moderating and making this a very controlled chat!

Brooke_Moderator: It's my pleasure, imper. It's been very busy in here, but y'all have been a terrific group of meteor-watchers. :)

MikeDiddy: 2 Bats and a moth? Thats lucky! All I've seen are some vicious Lightning bugs

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Kris_Moderator: HA! Keep looking!!

mg: Has anyone in the San Francisco Bay Area spotted any meteors? I haven't caught a glimpse of anything =/

Kris_Moderator: Hi mg! Peak rates are projected to last for about the next 90 minutes or so. Hopefully you'll spot something!

lololololol: What rates are you hearing reported in?

Kris_Moderator: Dr. Cooke says it is tough to tell from the visual reports. Won't have a good idea until tomorrow.

Robert_D.: Is there any software or any images/sites where we can see the orbit paths of comets or other NEOs?

Bill_Cooke: You can acquire planetarium software for your computer that will do this.

critterdubya: I am in Sonora, Mexico...does looking up still the best direction? Saw a few between the dippers about thirty minutes ago (which are not up from where I am), but not a thing since...

Bill_Cooke: Keep looking up.

imper: Dr Cooke: Do you think that we'll learn anything new from observing this comet pass-by? Knowing it's composition will just affirm what we already know about all the other comets. And, since the material here is pristine, it's pretty exciting to get a chance to look at it! But, do we already know everything about the formation of the solar system? Forgive me if I'm going out of your field here. :)

Bill_Cooke: No, we don't know everything and you need to talk to a comet person; I'm a meteor guy.

Zyphot: oh a bunch—at least 20 with some really nice ones

Bill_Cooke: Congrats.

jjjjj: when is the peak time over?

Bill_Cooke: Dawn.

Tim: Can the same meteor be seen from the east coast and the west coast?

Bill_Cooke: No.

jkk: did the models predict a gradual rate increase until peak or did they show a fairly abrupt increase in rate at peak?

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Bill_Cooke: Gradual rate increase.

TobyJay: are they going to be around the dippers or is it unpredictable?

Bill_Cooke: They will appear to come from the area of the Dippers.

PortableCakeBake: I havent really seen much can clouds make them harder to spot?

Bill_Cooke: Can't see meteors through clouds.

Brooke_Moderator: Hey everyone -- we're down to our last 10 minutes of the chat, so if you've been saving a really good question...this is the time to ask. ☺

oollie: is it possible to witness the metoer if you are in Los Angeles?

Kris_Moderator: Hi oollie! Our experts say if you have a clear sky, you have a shot. Get as far away from the light as possible, let your eyes adjust to the dark and look straight up. Good luck!

talkin@rogers.com: been star gazing for 2 hours and only one meteor, going to bed, thank you bill for your answers Cambridge Ontario 2.45 est signing out.

Kris_Moderator: Thank you for joining us!!

HxC_Ferret: whaen is the peak?

Kris_Moderator: Hi HxC_Ferret! Peak time is going on now!

am: Neil deGrasse Tyson was upset by the sky in Titanic, but liked Deep Impact; Stephen Hawking apparently had a thing for Brando. Which flick did Bill Cooke find most painful to sit through?

Bill_Cooke: Armageddon.

queequeg: What geographic region is reporting more meteors? You mentioned ealier that some places were seeing more.

Bill_Cooke: Northern US and Canada reporting more meteors.

SusanD: what is the website to watch live?

Kris_Moderator: Hi SusanD! Our live Ustream feed is here <http://www.ustream.tv/channel/nasa-msfc>

Jmycenae: I'm watching the ustream and wondering where exactly is the camera located, and how much of the sky is showing?

Bill_Cooke: Camera is in Huntsville, Alabama and it's showing a 23 degree field of view.

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roshan: in florida - can't see much been gazing for an hour now...also signing off thank you for the chat!

Bill_Cooke: You're welcome.

HxC_Ferret: when is the best peak time for North Carolina?

Bill_Cooke: The expected peak is between 2 and 4 a.m. EDT.

OFCR: Really appreciate your effort! Please keep doing things like this... ;)

Bill_Cooke: You're welcome.

vohpoh: Will we see any meteors from this comet tomorrow?

Kris_Moderator: Hi vohpoh! Unfortunately, our experts are telling us this is a one-time thing.

bobo: also, the camera at <http://www.ustream.tv/channel/nasa-msfc> seems weird now - a lot of noise, maybe high gain or something? it's different from earlier

Bill_Cooke: We are setting up a telescope to observe impacts on the Moon. It will go away in a minute.

OEM1: Bill, where is the live stream? in the dfw area and complete overcast

Kris_Moderator: Hi OEM1. The live stream is here in Huntsville, Alabama .Watch it here <http://www.ustream.tv/channel/nasa-msfc>

john780: which part of the sky should i be looking at?

Bill_Cooke: Look straight up.

girlfromthestars: Apologies if all these comments are making you guys feel bad; Thank you guys so much for what you're doing! Even if we aren't seeing a lot doesn't mean we won't soon! Keep up the good work <3

Bill_Cooke: Thank you.

vohpoh: Thanks for you help!

Bill_Cooke: You're welcome.

queequeg: Thank you for answering my question. I live in Southern Indiana, so I am giving up after seeing one fireball.

Bill_Cooke: You're welcome.

zjmw: Bill, should the shower be visible at the moment?

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Bill_Cooke: Yes.

adrasd: let me rephrase, were should i be looking :)

Bill_Cooke: Look straight up.

Brooke_Moderator: And – that's a chat. We're closing down for the night, but thank you all so much for being here tonight. We've appreciated your questions, and your patience in this busy chat. We're getting mixed reports about meteor viewing...some are seeing very little, and some are seeing amazing sky views. We'll keep watching and see how we turn out. Bill, thank you for being here, and to all of you, have a wonderful weekend.

smil3e: can I see meteors in utah??

Kris_Moderator: Hi smil3e! Dr. Cooke advises it is possible if your sky is clear. Get as far away from the light as possible, let your eyes adjust to the darkness and look straight up. Good luck!

strandtc: The post on the website by "*Brooke_Moderator*" says "We're currently in the projected peak of the shower, with just over an hour to go in that time frame."... but that was posted 4 hours ago. Is this the peak time? Or is the website just wrong about the time?

Brooke_Moderator: Strand, we're currently in the peak with about an hour to go.

bobo: thanks nasa, thanks bill, brooke, kris, and all the mods/organizers!

Brooke_Moderator: It's our pleasure -- thank you for being here tonight!

lynn: will the ustream stay on

Brooke_Moderator: Hi lynn -- yes, we'll leave that up all weekend. But it will be gray during daylight hours, since the camera is light-activated.

lynn: thanks - and have a great holiday weekend! You are all appreciated so much

Brooke_Moderator: And we appreciate you, and everyone here. Have a great night, everyone. Signing off.