an early start for noctilucent clouds

presented by science at NASA every summer something strange and wonderful

happens high above the North Pole ice
crystals begin to cling to the smoky remains of meteors forming electric-blue clouds with tendrils that ripple hypnotically against the sunset sky

noctilucent clouds also known as NLCS are a delight for high latitude sky

watchers and around the Arctic Circle

their season of visibility is always eagerly anticipated news flash this year

NLCS are getting an early start NASA's
Ames spacecraft which is orbiting Earth on a mission to study noctilucent clouds started seeing them on May thirteenth the 2013 season is remarkable because it started in the northern hemisphere a week earlier than any other season that aim has observed reports Cora Randall of the laboratory for atmospheric and space physics at the University of Colorado this is quite possibly earlier than ever before for sky watchers this means it's time to pay attention to the sunset sky where NLCS are most often seen an early start could herald brighter clouds and
wider visibility than previous years

noctilucent clouds were first noticed in the mid 19th century after the eruption of super volcano Krakatoa volcanic ash spread through the atmosphere painting vivid sunsets that mesmerised observers all around the world that was when the NLCS appeared at first people thought they must be some side effect of the volcano but long after Krakatoa sash settled that the noctilucent clouds remained they've been with us ever since

says Randall not only that they're spreading
when aim was launched in 2007 the underlying cause of NLCS was still unknown researchers knew they formed 83 kilometers above Earth's surface where the atmosphere meets the vacuum of space but that's about all aim quickly filled in the gaps it turns out meteoroids play an important role in the formation of NLCS explains hampton university professor james russell the principal investigator of aim throughout the year meteors disintegrate in the upper atmosphere leaving behind a haze of smoky debris during summer when the upper atmosphere is ironically coldest
water molecules waft up from the earth below and form ice crystals around the meteor smoke this is what makes noctilucent clouds back in the 19th century NLCS were confined to high latitudes you had to go to Alaska or Scandinavia to see them in recent years however they've been cited as far south as Utah Colorado and Nebraska some researchers believe that the spread of NLCS is a sign of climate change one of the greenhouse gases that has become more abundant in Earth's atmosphere since the 19th century is
methane when methane makes its way into the upper atmosphere it is oxidized by a complex series of reactions to form water vapor says Russell this extra water vapor is then available to grow ice crystals for analyses the early start of the 2013 season appears to be caused by a change in atmospheric teleconnections half a world away from where the northern NLCS are forming strong winds in the southern stratosphere are altering global circulation patterns explains randall this year more water vapor is being
pushed into the high atmosphere where NLCS love to form and the air there is getting colder all of this has come as an interesting surprise for us notes Russell when we launched AIM our interest was in the clouds themselves but now and I'll Cesar teaching us about connections between different layers of the atmosphere that operate over great distances our ability to study these connections will surely lead to new understanding about how our atmosphere works this year researchers get a head start noctilucent clouds are back
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