



THE WATCHERS

(/)

Late Antique Little Ice Age (LALIA) in the context of socio-political perturbances 1 500 years ago revealed

Posted by Seneca (/author/Seneca/) on February 12, 2016 in categories Featured articles (/category/featured-articles/), History (/category/history/), Research (/category/research/), Science (/category/science/)

Follow @TheWatchers_



Local Weather Forecast



Search Any Zip Code or City. 5, 7 and 10 Day Forecasts & Radar.



A group of scientists, led by the Swiss Federal Research Institute WSL and the Oeschger-Zentrum of the University of Bern, have discovered a mini ice age period in Eurasia from the tree-ring measurements. The period of extreme cold is dating between 536 and around 660 CE, and it coincides with periods of Justinian plague, great migrations and political turmoil across Europe and Asia.

New tree-ring measurements (http://www.wsl.ch/medien/news/jahrringe_kleine_eiszeit/index_EN) from the Altai mountains in Russia have enabled the scientists to precisely reconstruct the summer temperatures in central Asia over the last 2 000 years, for the first time.

The-

53099957119641)

ers_/)



New tree-ring width measurements from the Russian Altai mountains indicate a drastic cold period 1,500 years ago. Image credit: Vladimir S. Myglan

The width of tree rings in old trees reflects the summer climate in any past time period. The cold phase, observed in the 6th century, has showed temperatures even lower than during the Little Ice Age between 13th and 19th century CE. The cold period also lasted longer and had a larger expanse.

"This was the most dramatic cooling in the Northern Hemisphere in the past 2 000 years," said Ulf Büntgen, the WSL dendroclimatologist.

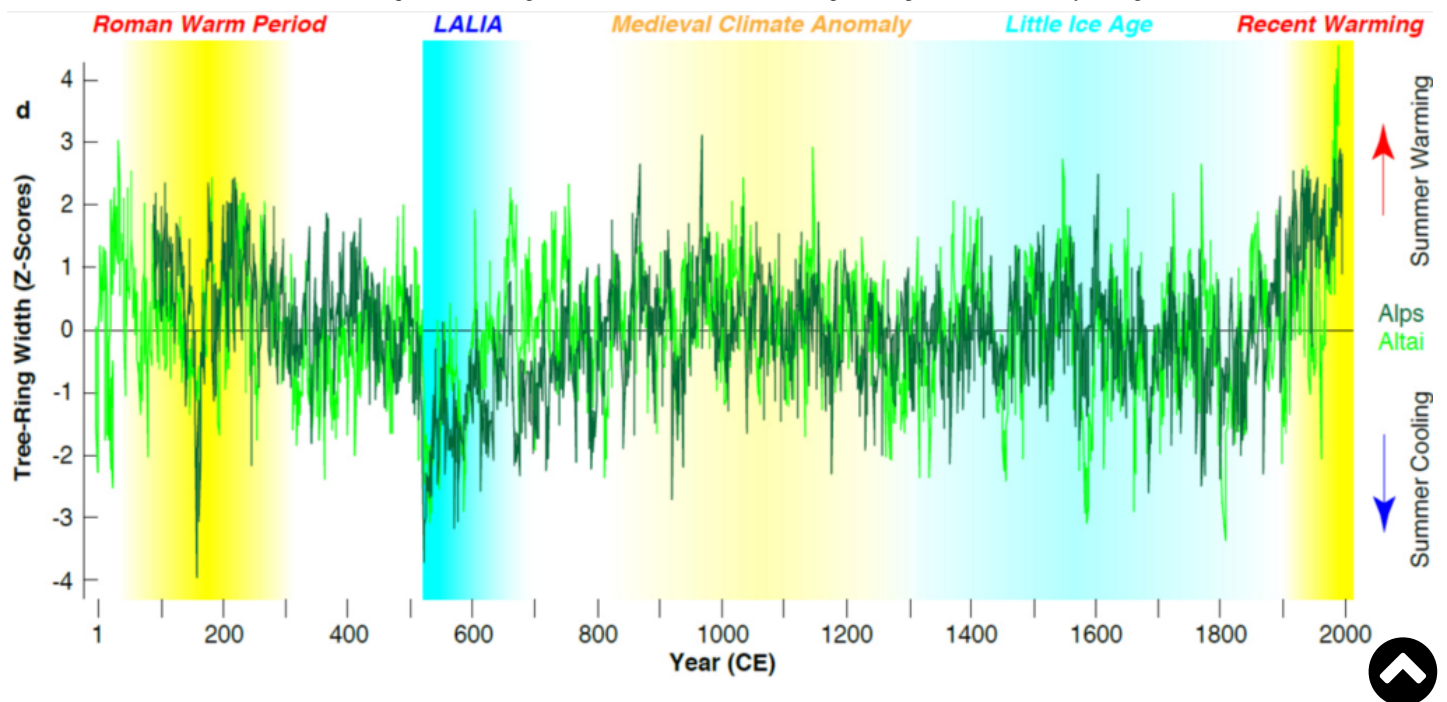


Studying old trees in the Altai mountains allowed reconstructing Eurasia summer temperatures over the last 2,000 years. Image credit: Vladimir S. Myglan

Research results complement the 2 500 years old climatological history of the European Alps, revealed by the group of experts in 2011.

"The course temperatures took in the Altai mountains corresponds remarkably well to what we found for the Alps."

The combined studies have for the first time allowed the scientists to infer summer temperatures across large parts of Eurasia over the last 2 000 years.



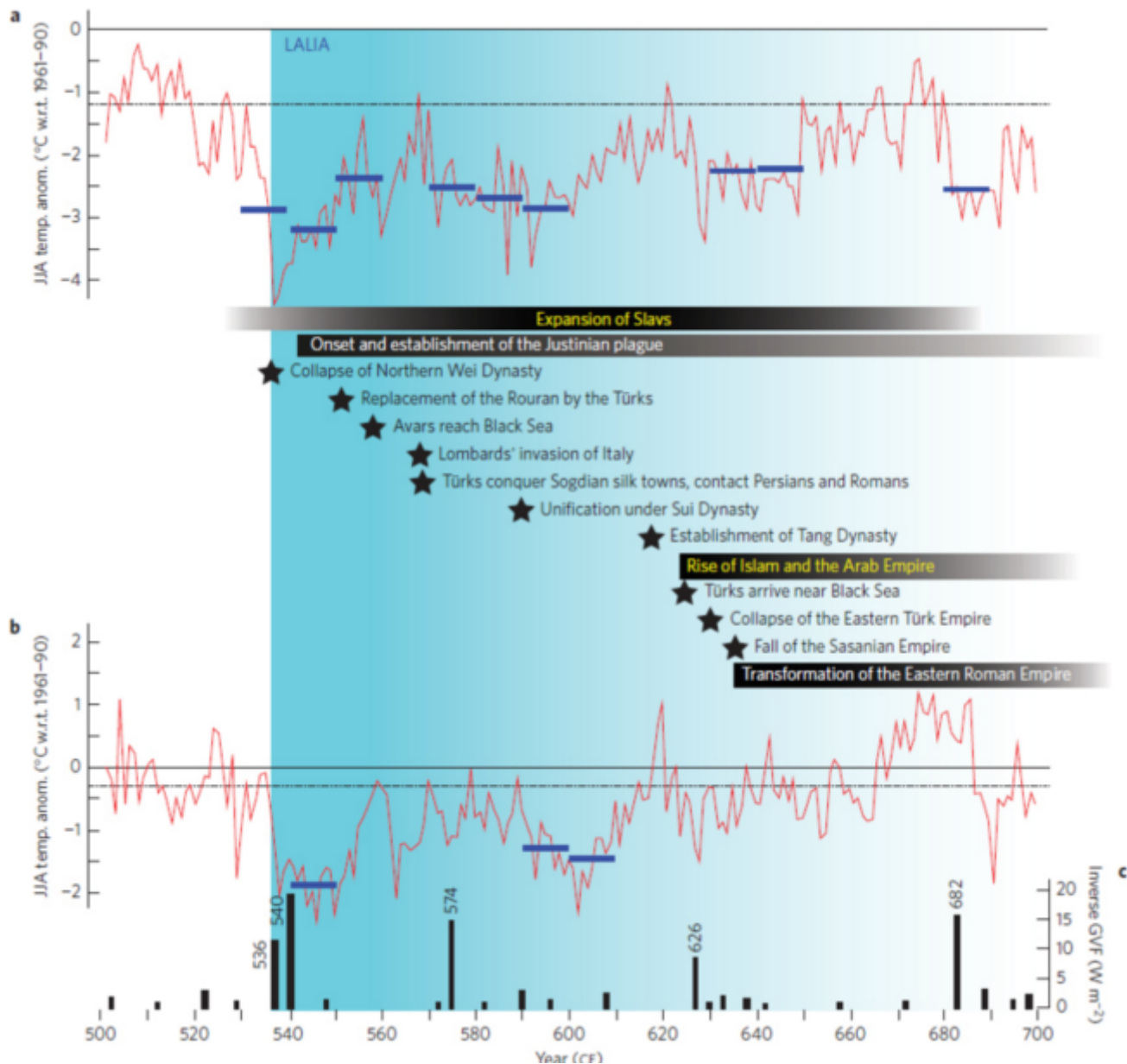
The "Late Antique Little Ice Age" (LALIA) started 536 CE. The temperature drop stands out clearly in the reconstructed summer temperatures (blue shading left). Image credit: Ulf Büntgen

The period between 536 and 660 CE has been referred to as the "Late Antique Little Ice Age" (LALIA) for the first time in this research. The mini ice age was triggered by three major volcanic eruptions in 536, 540 and 547 CE. Their impact on climate was most likely further prolonged by the retardant effect of the oceans and a minimum in solar activity.

Socio-political context

The team of naturalists, historians and linguists agree that this period was marked by numerous social upheavals. Following the time of famine, the Justinian plague killed millions of people in the coming centuries and might have contributed to the decline of the Eastern Roman Empire.

Proto-Slavic-speaking people migrated, supposedly from the Carpathian region, into the eastern areas of modern-day Europe that had been abandoned by the Romans, thereby forming the Slavic language area. According to the researchers, this period of cool temperatures may also have fostered the expansion of the Arab Empire in the Middle East. The Arabian Peninsula received more rain, growing more vegetation, which may have sustained larger herds of camels used by the Arab armies for their campaigns.



Major plague outbreaks, rising and falling empires, large-scale human migrations, and political turmoil (Horizontal bars, shadings and stars) coincide with the coldest decades of the last 2 000 years, the LALIA (blue lines). Image credit: Nature Geoscience

In cooler areas, various peoples also migrated east towards China, resulting in rising hostility in the steppe regions of northern China between nomads and the local ruling powers. Subsequently, an alliance had formed between these steppe populations and the Eastern Romans which resulted in a collapse of the Sasanian Empire in Persia.

The scientists made clear that potential links between this mini ice age period and socio-political changes should be treated with great caution. However, they still emphasize that the LALIA fits in well with the main transformative events that occurred in Eurasia during that time.

Ulf Büntgen points out that the conducted is as an example of how sudden climatological shifts can change existing political systems: "We can learn something from the speed and scale of the transformations that took place at that time."

Reference:

- Featured image: New tree-ring width measurements from the Russian Altai mountains indicate a drastic cold period 1,500 years ago. Image credit: Vladimir S. Myglan*



Share:



(http://www.freebsd.org/doc/en_US/8.0/relnotes/)

Comments



What I see is a period of warming (Roman Warm Period), followed by a period of cooling (Little Ice Age), followed by a period of warming (Medieval Climate Anomaly). So, we had a period of cooling (little ice age) followed by the period of warming that we are currently in. Looks like a pretty regular pattern. Unless we can expect another ice age in the next hundred years or so... that

seems to be consistent with data gathered from ice-core samples, which also tell us that carbon levels were higher during the last ice age than they are now...it's called the impact of solar forcing on our earth's weather patterns.

in-agen-in-in-in-in-in-in-in-the fallathethethethethethe-

Post a comment

contextcontextcontextcontextcontextcontextcontextcontext-
 of- theof- of- of- of- of- of- of- of-

Source: null
Comment: text: *
1- political- 1- 1- 1- 1- 1- 1- 1-
500 per 500 500 500 500 500 500 500-

years- years- years- years- years- years- years- years-
ago500agoagoagoagoagoagoagoagoago-
revealed%2F)revealed%2F)revealed%2F)revealed%2F)revealed%2F)
ago-
revealed%2F)

The image that appears on your comment is your Gravatar (<http://gravatar.com>)

1. Record rain, wild electrical storms hit southeast Australia (/2016/09/10/record-rain-wild-electrical-storms-hits-southeast-australia/)
2. Meteor explodes over Cyprus, parts of it believed to have fallen north of the island (/2016/09/09/meteor-explodes-over-cyprus-parts-of-it-believed-to-have-fallen-north-of-the-

country/)

3. Strong M6.0 earthquake at intermediate depth hits Peru (/2016/09/10/strong-m6-0-earthquake-at-intermediate-depth-hits-peru/)
4. Destructive tornadoes hit Homer and Sidney, Illinois (/2016/09/10/destructive-tornadoes-hit-homer-and-sidney-illinois/)
5. Daylight meteor seen over North Carolina, US (/2016/09/09/daylight-meteor-seen-over-north-carolina-us/)
6. Alert status of Mayon volcano raised, 'big' eruption possible, Philippines (/2016/09/08/alert-status-of-mayon-volcano-raised-big-eruption-possible-philippines/)
7. Oklahoma's M5.8 earthquake activated an unknown fault (/2016/09/08/oklahoma-s-m5-8-earthquake-activated-an-unknown-fault/)

Today

This week

This month



**99 Retirement Tips
From Ken Fisher**

If you have a \$500,000 portfolio, download the guide by *Forbes* columnist and money manager Ken Fisher's firm. It's called **99 Retirement Tips from Ken Fisher**.

Click Here to Download Your Report!

FISHER INVESTMENTS*

Browse articles by date



Around the world headlines (/around-the-world-headlines/)

Friday, September 09, 2016

- System off Florida has 40 percent chance of becoming tropical storm: NHC [↗](http://www.reuters.com/article/storm-atlantic-nhc-idUSKCN11F2K7) (http://www.reuters.com/article/storm-atlantic-nhc-idUSKCN11F2K7)
- Glacial lake outburst floods threaten Tibet, Nepal [↗](http://floodlist.com/asia/glacial-lake-outburst-floods-threaten-tibet-nepal) (http://floodlist.com/asia/glacial-lake-outburst-floods-threaten-tibet-nepal)

Thursday, September 08, 2016

- Meteor sightings reported across Virginia [↗](http://wtvr.com/2016/09/08/fireballs-meteor-spotted-over-virginia/) (http://wtvr.com/2016/09/08/fireballs-meteor-spotted-over-virginia/)
- Storm causes major damage to Camp Ripley's Training Center, solar array, Minnesota [↗](http://minnesota.cbslocal.com/2016/09/08/storm-causes-major-damage-to-camp-ripleys-training-center-solar-array/) (http://minnesota.cbslocal.com/2016/09/08/storm-causes-major-damage-to-camp-ripleys-training-center-solar-array/)
- New Mexico activates emergency operations over Newton storm [↗](http://www.upi.com/Top_News/World-News/2016/09/08/New-Mexico-activates-emergency-operations-over-Newton-storm/3301473332087/) (http://www.upi.com/Top_News/World-News/2016/09/08/New-Mexico-activates-emergency-operations-over-Newton-storm/3301473332087/)
- Illinois sees record precipitation totals for August and July [↗](http://wlds.com/news/illinois-sees-record-precipitation-totals-for-august-and-july/) (http://wlds.com/news/illinois-sees-record-precipitation-totals-for-august-and-july/)
- Winter blast: Storm brings gales, snow and heavy rain to New Zealand [↗](http://www.stuff.co.nz/national/84027405/Winter-blast-Storm-brings-gales-snow-and-heavy-rain) (http://www.stuff.co.nz/national/84027405/Winter-blast-Storm-brings-gales-snow-and-heavy-rain)

See all headlines [↻](/around-the-world-headlines/) (/around-the-world-headlines/)

Tweets by [@TheWatchers_](#)**The Watchers**

@TheWatchers_

Record rain, wild electrical storms hit southeast Australia dlvr.it/MDd0Rt #AUWX #SouthAustralia #Victoria #NSW #Tasmania

Record rain, wild electrical storms hit s...

A strong cold front moved through southea...
thewatchers.adorraeli.com

16h

**The Watchers**

@TheWatchers_

Strong M6.0 earthquake at intermediate depth hits Peru dlvr.it/MDcd8M #earthquake #Peru

[Embed](#)[View on Twitter](#)



The Watchers


16,262 likes


Like Page

Share

Be the first of your friends to like this



News links 

Real-time monitoring 

Tools 

Newsletter

Your email address

Subscribe

Contribute

[Send a news tip \(/news-tips/\)](#)

[Write an article \(/write-an-article/\)](#)

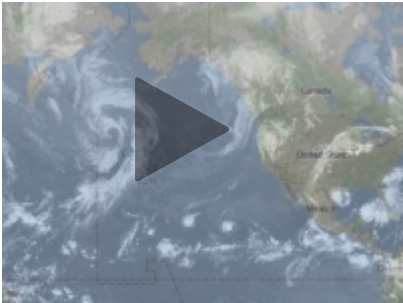
[Upload your photos \(/upload-your-photos/\)](#)

[Publish your video \(/publish-your-video/\)](#)

[Submit a press release \(/press-release/\)](#)

Video gallery

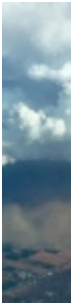
[\(/2016/09/09/daylight-meteor-seen-over-north-carolina-us/\)](#)



[\(/2016/08/30/the-peak-of-](#)



[\(/2016/08/25/tornado-](#)



[\(/201](#)

northern-hemispheres-
The peak of northern
hemispheres 2016 tropical
cyclone season

outbreak hits indiana-and-
tornado outbreak hits
indiana and ohio EF3
touched down in Kokomo

Pro
storm
Aug
from
above
and-

Earth changes (/category/earth-changes/)

- Record rain, wild electrical storms hit southeast Australia (/2016/09/10/record-rain-wild-electrical-storms-hits-southeast-australia/)
- Strong M6.0 earthquake at intermediate depth hits Peru (/2016/09/10/strong-m6-0-earthquake-at-intermediate-depth-hits-peru/)
- Strong and shallow M6.3 earthquake hits near Macquarie Island, Australia (/2016/09/08/strong-and-shallow-m6-7-earthquake-hits-near-macquarie-island-australia/)

Space (/category/space/)

- Daylight meteor seen over North Carolina, US (/2016/09/09/daylight-meteor-seen-over-north-carolina-us/)
- Meteor explodes over Cyprus, parts of it believed to have fallen north of the island (/2016/09/09/meteor-explodes-over-cyprus-parts-of-it-believed-to-have-fallen-north-of-the-country/)
- OSIRIS-REx launched toward near-Earth asteroid Bennu, sample return expected in September 2023 (/2016/09/09/osiris-rex-launched-toward-near-earth-asteroid-bennu-sample-return-expected-in-september-2023/)

Research (/category/research/)

- Alarming decline in wilderness areas around the world over the last 20 years (/2016/09/08/alarming-decline-in-wilderness-areas-around-the-world-over-the-last-20-years/)
- Origins of solar wind revealed (/2016/09/03/origins-of-solar-wind-revealed/)
- Mysterious anomaly interrupts stratospheric wind pattern (/2016/09/02/mysterious-anomaly-interrupts-stratospheric-wind-pattern/)

Space weather (/category/space-weather/)

- Positive polarity CH HSS sparks geomagnetic storm (/2016/09/01/positive-polarity-ch-hss-sparks-geomagnetic-storm/)

- [Spotless Sun heralds Solar Minimum after CME producing Region 2567 departs \(/2016/07/25/spotless-sun-heralds-solar-minimum-after-cme-producing-region-2567-departs/\)](#)
- [3 strong M-class solar flares erupt from Region 2567, CME produced \(/2016/07/23/3-strong-m-class-flares-erupt-from-region-2567-cme-produced/\)](#)

Science (/category/science/)

- [Solar Probe Plus to fly into the Sun's upper atmosphere and touch the star \(/2016/08/09/solar-probe-plus-to-fly-into-the-sun-s-upper-atmosphere-and-touch-the-star/\)](#)
- [New form of light created \(/2016/08/06/new-form-of-light-created/\)](#)
- [Super-eruptions may give warning signs only one year ahead \(/2016/07/21/super-eruptions-may-give-warning-signs-only-one-year-ahead/\)](#)



[🏠 \(/\)](#) | [LINK LIBRARY \(/LINK-LIBRARY/\)](#) | [CONTACT US \(/CONTACT-US/\)](#) | [JOIN US \(/JOIN-US/\)](#) |
[SPACE WEATHER STATION \(/SPACE-WEATHER-STATION/\)](#) | [TERMS & CONDITIONS \(/TERMS-AND-CONDITIONS/\)](#) |
[PRIVACY POLICY \(/PRIVACY-POLICY/\)](#) | [ADVERTISE ON THE WATCHERS \(/ADVERTISE-ON-THE-WATCHERS/\)](#)

Advertise with us

Click here to
see our advertising
options
[\(/advertise-on-the-watchers/\)](#)

Contribute

- [Send a news tip \(/news-tips/\)](#)
- [Write an article \(/write-an-article/\)](#)
- [Upload your photos \(/upload-your-photos/\)](#)
- [Publish your video \(/publish-your-video/\)](#)
- [Submit a press release \(/press-release/\)](#)

Newsletter

Subscribe to our newsletter and have our news updates delivered to your inbox daily.

Remember, it's free and you can unsubscribe at any time!

Follow us

 Facebook (<http://www.facebook.com/pages/The-Watchers/255517537825098>)

 Twitter (http://www.twitter.com/TheWatchers_/)

 Google Plus (<https://plus.google.com/101423553099957119641>)



Main RSS feeds (/rss-feeds/)


 Latest articles (<http://feeds.feedburner.com/adorraeli/tsEq>)


 Featured articles (<http://feeds.feedburner.com/TheWatchers-FeaturedStories>)

 Editors' picks (<http://feeds.feedburner.com/TheWatchers-EditorsPicks>)

Individual categories (/rss-feeds/)

 Earth changes (/category/earth-changes/feed/)


 Winds of change (/category/winds-of-change/feed/)

 Seismic activity (/category/seismic-activity/feed/)

 Volcanoes (/category/volcanoes/feed/)

 Space (/category/space/feed/)

 Solar activity (/category/solar-activity/feed/)

 Space weather (/category/space-weather/feed/)

 Science (/category/science/feed/)

 Technology (/category/technology/feed/)

 Research (/category/research/feed/)

 All RSS feeds (/rss-feeds/)

"Here's to the crazy ones, the misfits, the rebels, the troublemakers, the round pegs in the square holes... the ones who see things differently -- they're not fond of rules... You can quote them, disagree with them, glorify or vilify them, but the only thing you can't do is ignore them because they change things... they push the human race forward, and while some may see them as the crazy ones, we see genius, because the ones who are crazy enough to think that they can change the world, are the ones who do."

— Steve Jobs, US computer engineer & industrialist

The Watchers — Watching the world evolve and transform

Except where otherwise noted, content on this site is licensed under a [Creative Commons Attribution-ShareAlike 3.0 Unported License](http://creativecommons.org/licenses/by-sa/3.0/) ↗ (http://creativecommons.org/licenses/by-sa/3.0/)

Developed by [Nino Turcin](http://twitter.com/ninoturcin) ↗ (http://twitter.com/ninoturcin)

