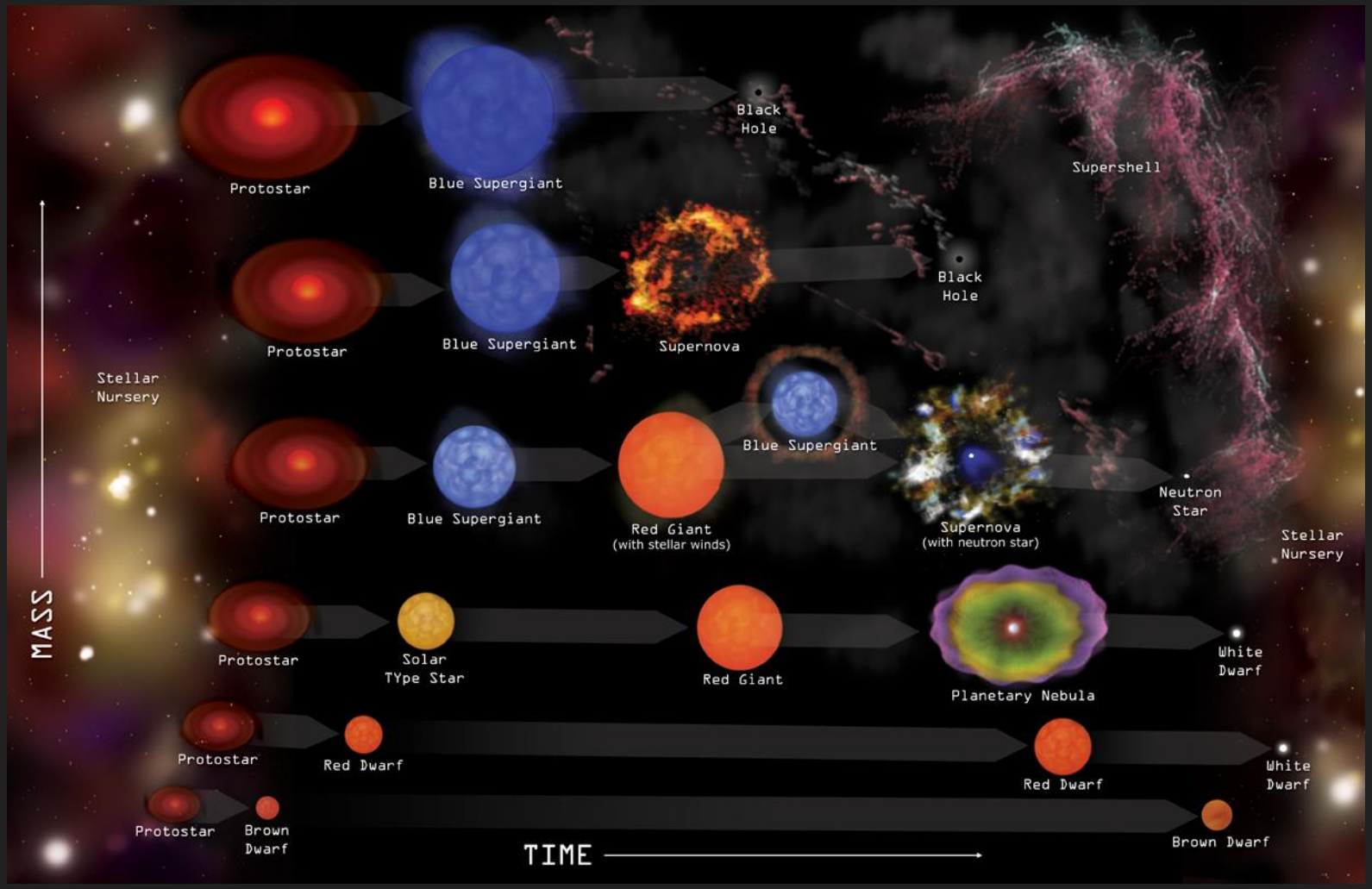
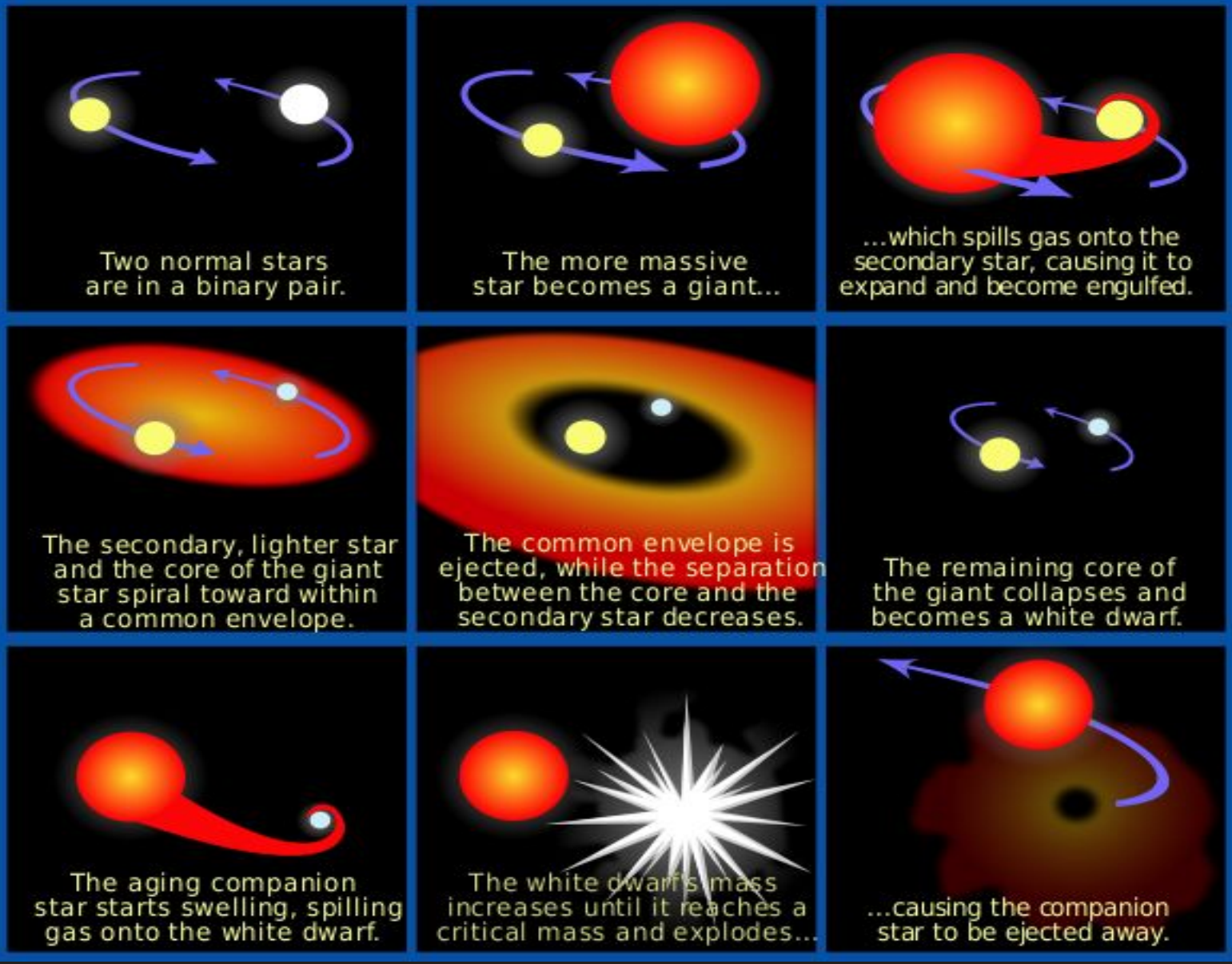
M31N 2008-12a

Toistuva nova Andromedan galaksissa

Tähden kehityskulku

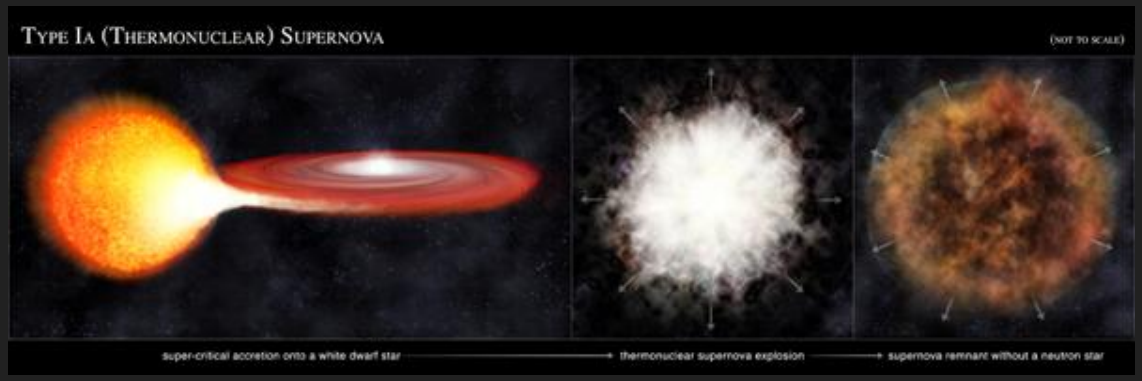


The progenitor of a Type Ia supernova



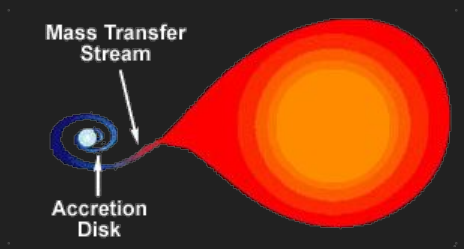
Type Ia supernova

- If mass is added to a white dwarf it will become hotter, smaller and heavier
- When the mass exceeds the critical limit of 1.4 solar mass it will explode as a type Ia supernova (thermonuclear runaway).
- This type is an important cosmic standard candle (assuming equal mass → equal luminosity).

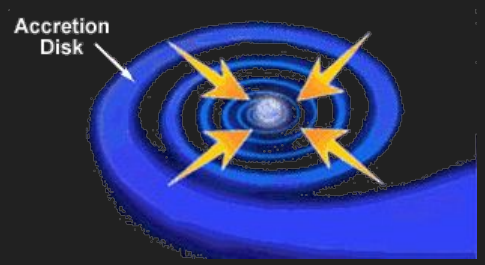


Nova Outburst(s)

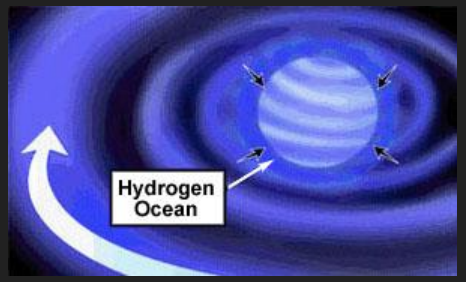
White dwarf accretes mass from the donor star as it fills its Roche lobe. Mass transfer stream flows through the Lagrange point L1 as star evolves to a red giant and the orbit shrinks by gravitational radiation. Usually (not magnetic WD) the falling matter forms an accretion disk around the white dwarf.



As friction slows the matter in the disk it eventually falls on the white dwarf. On the surface of the white dwarf the matter forms an ocean of hydrogen.



The high gravity of the WD pulls the hydrogen to very high density and the high temperature eventually ignites the fusion. This will start a very fast rise of temperature and runaway chain reaction of thermonuclear fusion. **The explosion ejects matter from the white dwarf and the cycle starts over.**



M31N 2008-12a

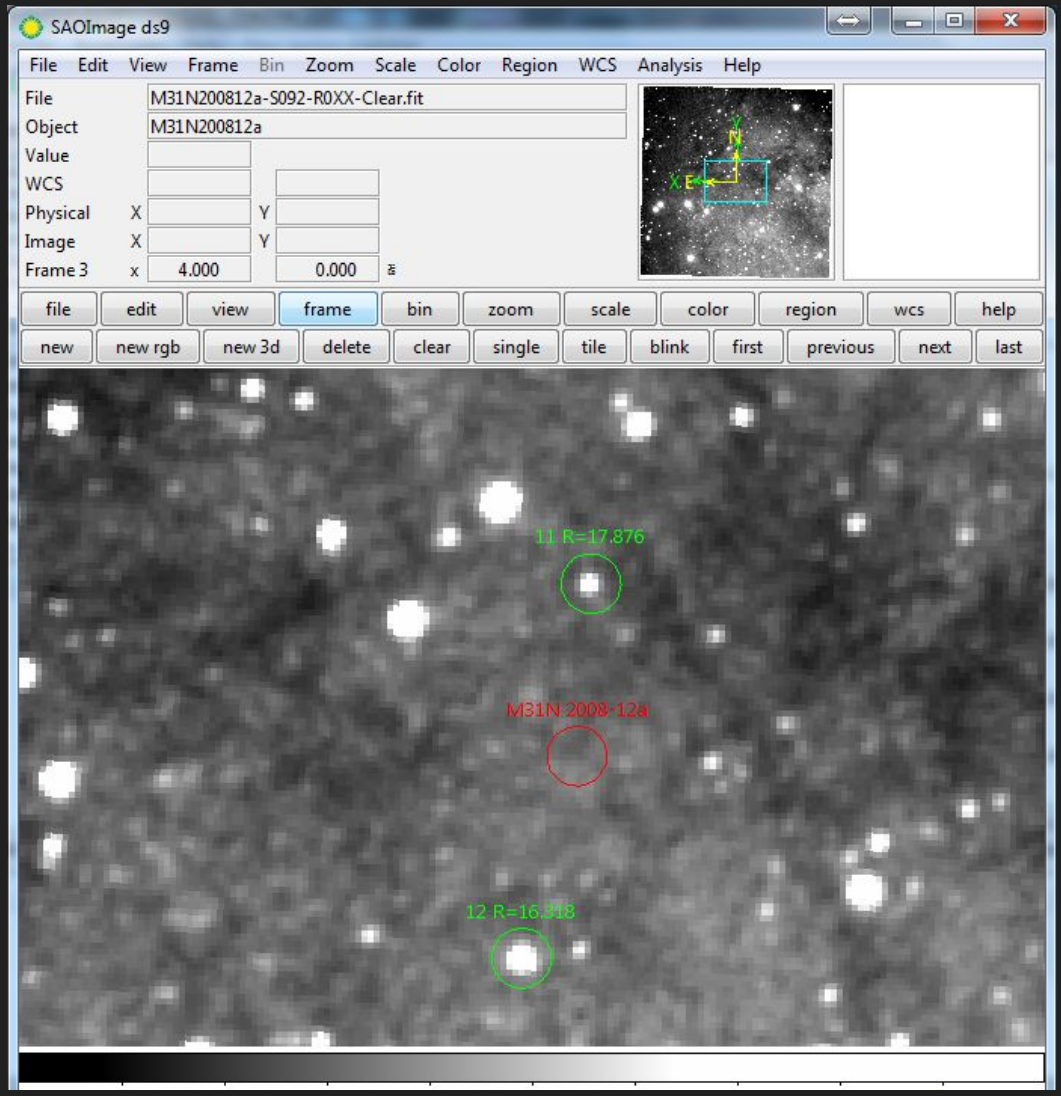
The fastest known recurring nova

M31N 2008-12a

Havaitut novapurkaukset:

- 2008 Dec 26
- 2009 Dec 03
- 2010 Nov 20
- 2011 Oct 23
- 2012 Oct 19
- 2013 Nov 28
- 2014 Oct 03
- 2014 Oct 03
- 2015 Aug 28
- 2016 Dec 12
- 2017 Dec 31

jatkuva intensiivinen monitorointi-kampanja seuraavan purkauksen löytämiseksi.



Julkaisu vuoden 2016 purkauksesta

THE ASTROPHYSICAL JOURNAL, NOVEMBER 1, 2017, DRAFT VERSION
Preprint typeset using LaTeX style AASTeX6 v. 1.0

BREAKING THE HABIT — THE PECULIAR 2016 ERUPTION OF THE RAPIDLY RECURRING NOVA M31N 2008-12a.

M. HENZE,[1,2] M. J. DARNLEY,[3] S. C. WILLIAMS[3,4] M. KATO,[5] I. HACHISU,[6] G. C. ANUPAMA,[7] A. ARAI,[8] D. BOYD,[40,9] D. BURKE,[10] R. CIARDULLO,[11,43] LEWIS M. COOK,[9] M. J. COOK,[9] P. ERDMAN,[10] X. GAO,[12] B. HARRIS,[9] D. H. HARTMANN,[13] K. HORNOCH,[14] J. CHUCK HORST,[1] R. HOUNSELL,[15,16] D. HUSAR,[9,17] A. IGARASHI,[1] K. ITAGAKI,[18] F. KABASHIMA,[19] S. KAFKA,[9] A. KAUR,[13] S. KIYOTA,[20] N. KOJIGUCHI,[21] H. KUČÁKOVÁ,[14,22,44] K. KURAMOTA,[23] H. MAEHARA,[24] A. MANTERO,[9] K. MATSUMOTO,[21] H. NAITO,[23] J.-U. NESS,[25] K. NISHIYAMA,[19] A. OKSANEN,[9] T. OSWALT,[10] E. PAUNZEN,[26] M. PAVANA,[7] R. PICKARD,[40,9] J. PRIETO-ARRANZ,[27,28] P. RODRÍGUEZ-GIL,[27,28] G. SALA,[29,30] Y. SANO,[23] A. W. SHAFTER,[1] Y. SUGIURA,[21] H. TAN,[41] T. TORDAI,[9] J. VRAŠTIL,[14,22] R. M. WAGNER,[31] F. WATANABE,[23] B. F. WILLIAMS,[32] G. ZEIMANN[33] M. F. BODE,[3] A. BRUNO,[9] B. BUCHHEIM,[9] T. CRAWFORD,[9] B. GOFF,[9] M. HERNANZ,[2] J. JOSÉ,[29,30] M. MOTTA,[9] T. J. O'BRIEN,[34] J. P. OSBORNE,[35] K. L. PAGE,[35] G. POYNER,[9] V. A. R. M. RIBEIRO,[36,37,38] R. SABO,[9] M. M. SHARA,[39] J. SHEARS,[40] D. STARKEY[9] C. E. WOODWARD[42]

(Received ?; Revised ?; Accepted ?)

[1]Department of Astronomy, San Diego State University, San Diego, CA 92182, USA
[2]Institut de Ciències de l'Espai (CSIC-IEEC), Campus UAB, C/Can Magrans s/n, 08193 Cerdanyola del Valles, Spain
[3]Astrophysics Research Institute, Liverpool John Moores University, IC2 Liverpool Science Park, Liverpool, L3 5RF, UK
[4]Physics Department, Lancaster University, Lancaster, LA1 4YB, UK
[5]Department of Astronomy, Keio University, Hiyoshi, Yokohama 223-8521, Japan
[6]Department of Earth Science and Astronomy, College of Arts and Sciences, University of Tokyo, 3-8-1 Komaba, Meguro-ku, Tokyo 153-8902, Japan
[7]Indian Institute of Astrophysics, Koramangala, Bangalore 560 034, India
[8]Koyama Astronomical Observatory, Kyoto Sangyo University, Motoyama, Kamigamo, Kita-ku, Kyoto, Kyoto 603-8555, Japan
[9]American Association of Variable Star Observers, 49 Bay State Rd., Cambridge, MA 02138, USA
[10]Embry-Riddle Aeronautical University, Daytona Beach, FL, USA
[11]Department of Astronomy and Astrophysics, The Pennsylvania State University, 525 Davey Lab, University Park, PA 16802, USA
[12]Xinjiang Astronomical Observatory, Urumqi, Xinjiang 830011, PR China

Uusimmat omat havainnot

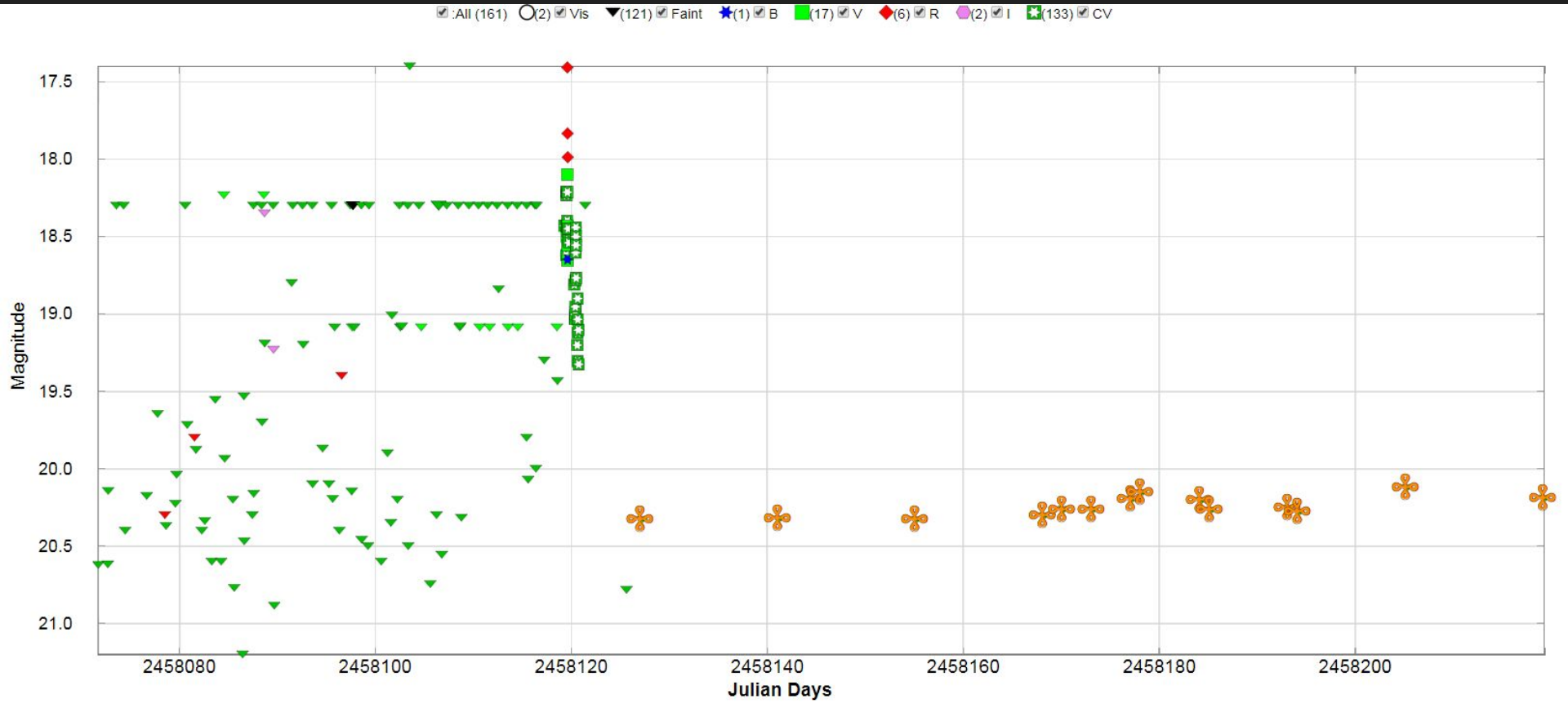
WebObs Search Results

Showing *79* observations for *M31N 2008-12a* by *OAR*

■ Plot a Chart ■ Generate a Light Curve ■ Search VSX

			Star	JD	Calendar Date	Magnitude	Error	Filter	Observer	Collapse All Expand All
☐	Edit	Delete	M31N 2008-12A	2458219.32824	2018 Apr. 10.82824	<20.193	0.096	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458205.29479	2018 Mar. 27.79479	<20.124	0.097	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458194.27071	2018 Mar. 16.77071	<20.283	0.079	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458193.25692	2018 Mar. 15.75692	<20.256	0.084	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458185.29012	2018 Mar. 07.79012	<20.271	0.077	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458184.28726	2018 Mar. 06.78726	<20.207	0.085	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458178.21199	2018 Feb. 28.71199	<20.157	0.090	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458177.22508	2018 Feb. 27.72508	<20.199	0.090	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458173.23791	2018 Feb. 23.73791	<20.268	0.083	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458170.22499	2018 Feb. 20.72499	<20.266	0.080	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458168.26374	2018 Feb. 18.76374	<20.307	0.075	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458155.22273	2018 Feb. 05.72273	<20.331	0.074	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458141.21889	2018 Jan. 22.71889	<20.328	0.077	CV	OAR	Details...
☐	Edit	Delete	M31N 2008-12A	2458127.21618	2018 Jan. 08.71618	<20.330	0.079	CV	OAR	Details...

AAVSOn havainnot 2017 purkauksesta



Seuraava novapurkaus (Henze et al. 2017)

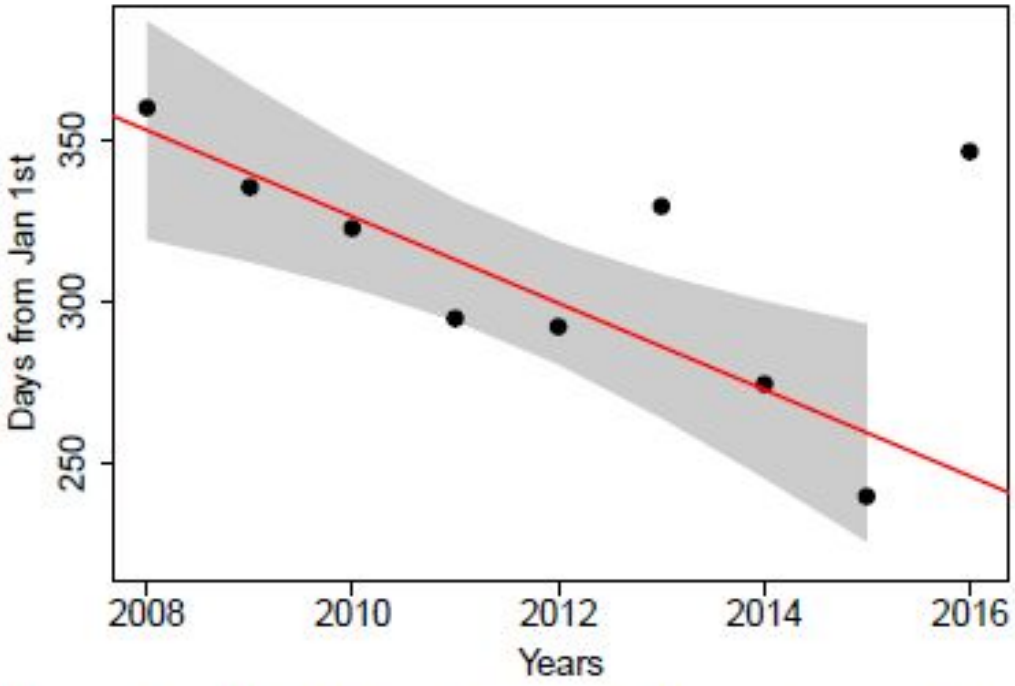
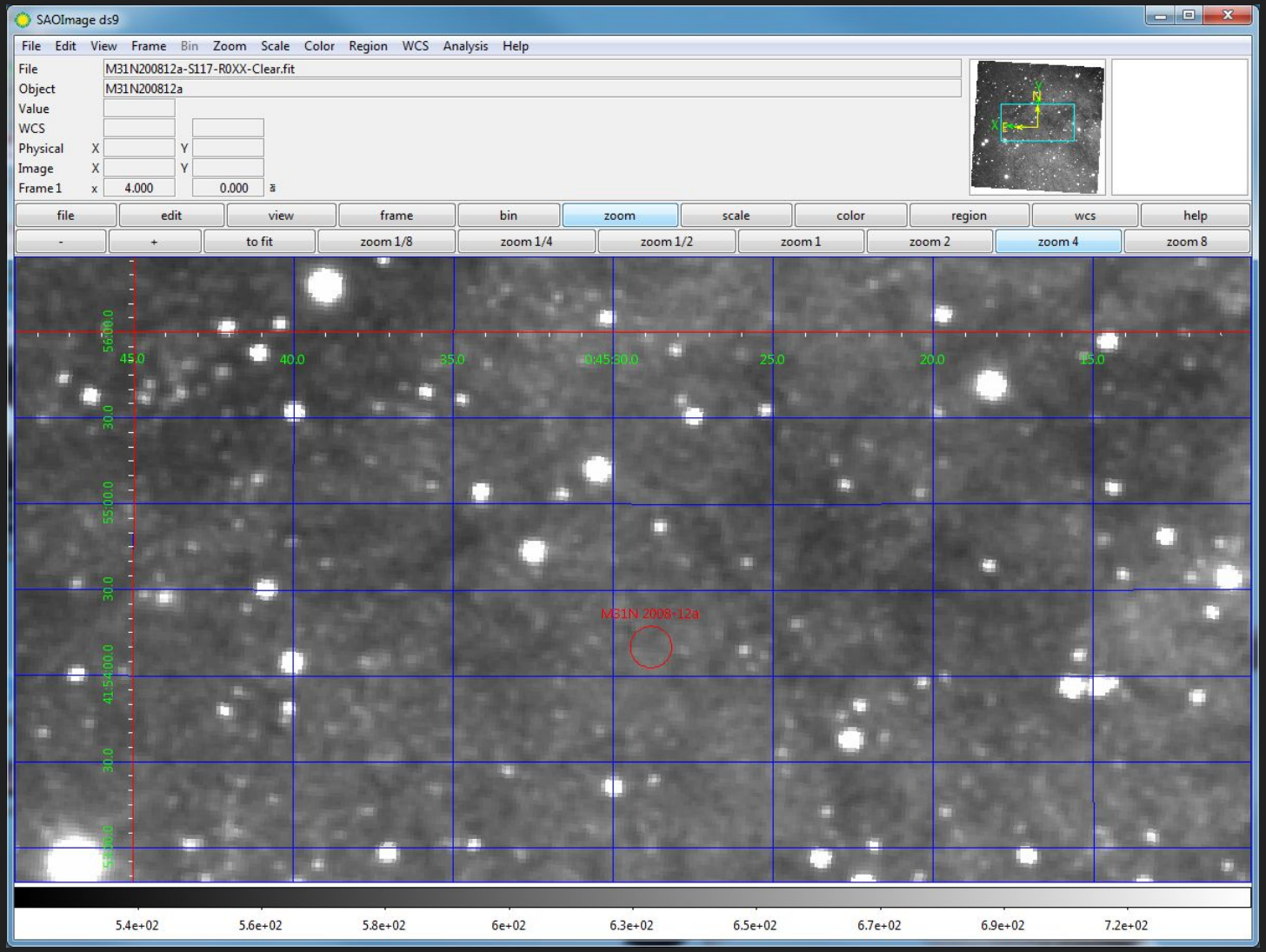


Figure 14. Distribution of eruption dates (in days of the year) over time since 2008. The red line is the best fit for the *2008-2015 eruptions* (cf. DHB16). The gray area is the corresponding 95% confidence region. The uncertainties of the estimated dates are smaller than the symbol size.

Viimeisin havainto 3.9.2018 (<20.3 CV)



Questions?

Arto Oksanen
puh: 040-5659438
arto.oksanen@jklsirius.fi
http://www.ursa.fi/sirius