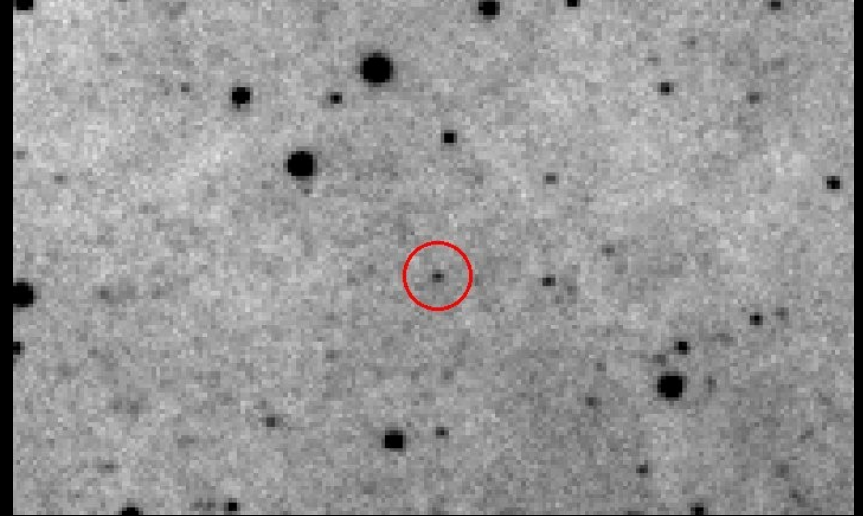


# Breaking the habit - The peculiar 2016 eruption of the remarkable nova M31N 2008-12a

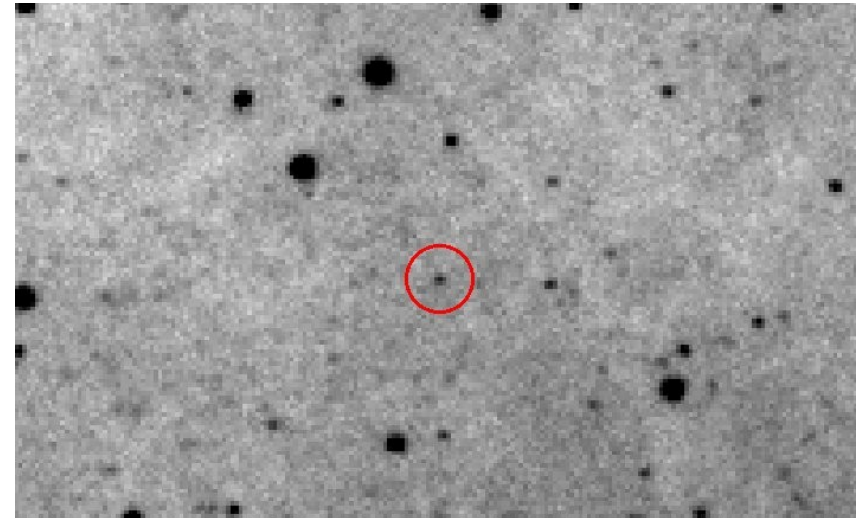
*Martin Henze*



A long time ago in a galaxy far,  
far away....



# Starring: M31N 2008-12a



# Starring: M31N 2008-12a



## *Optical eruptions*

2008

2009

2010

2011

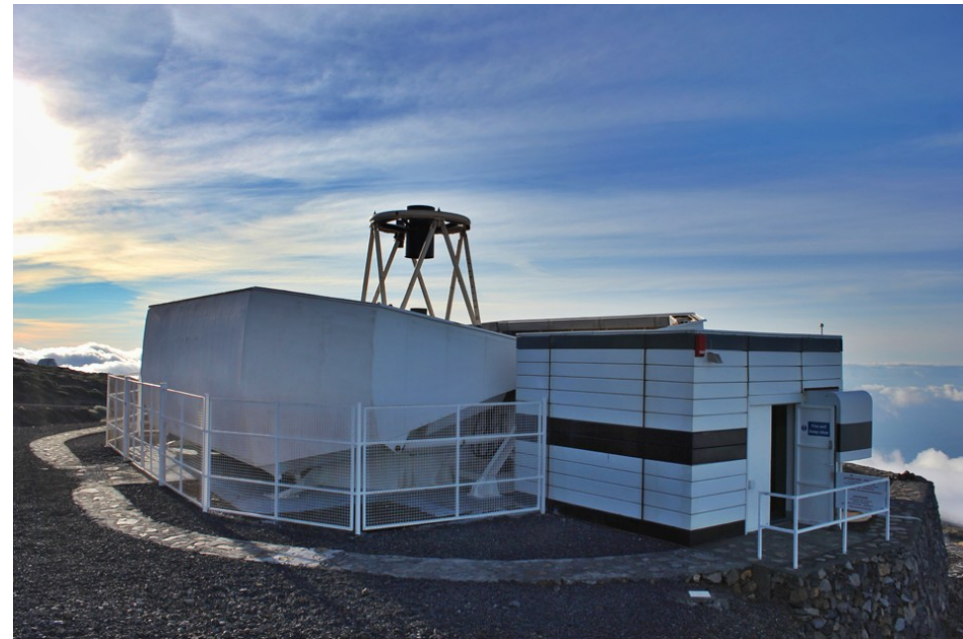
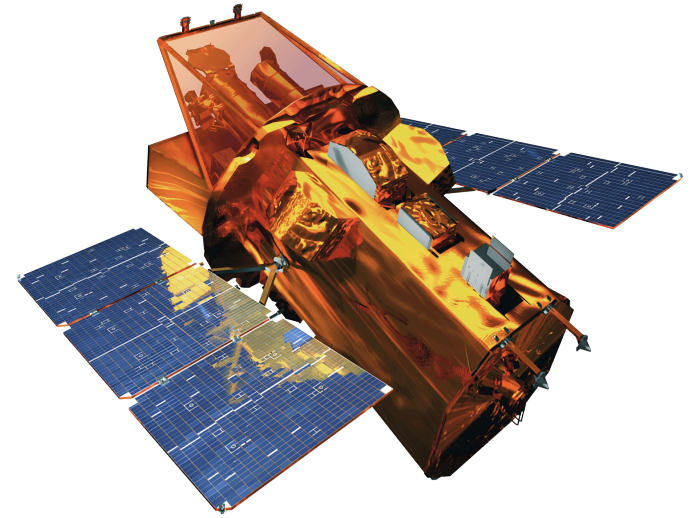
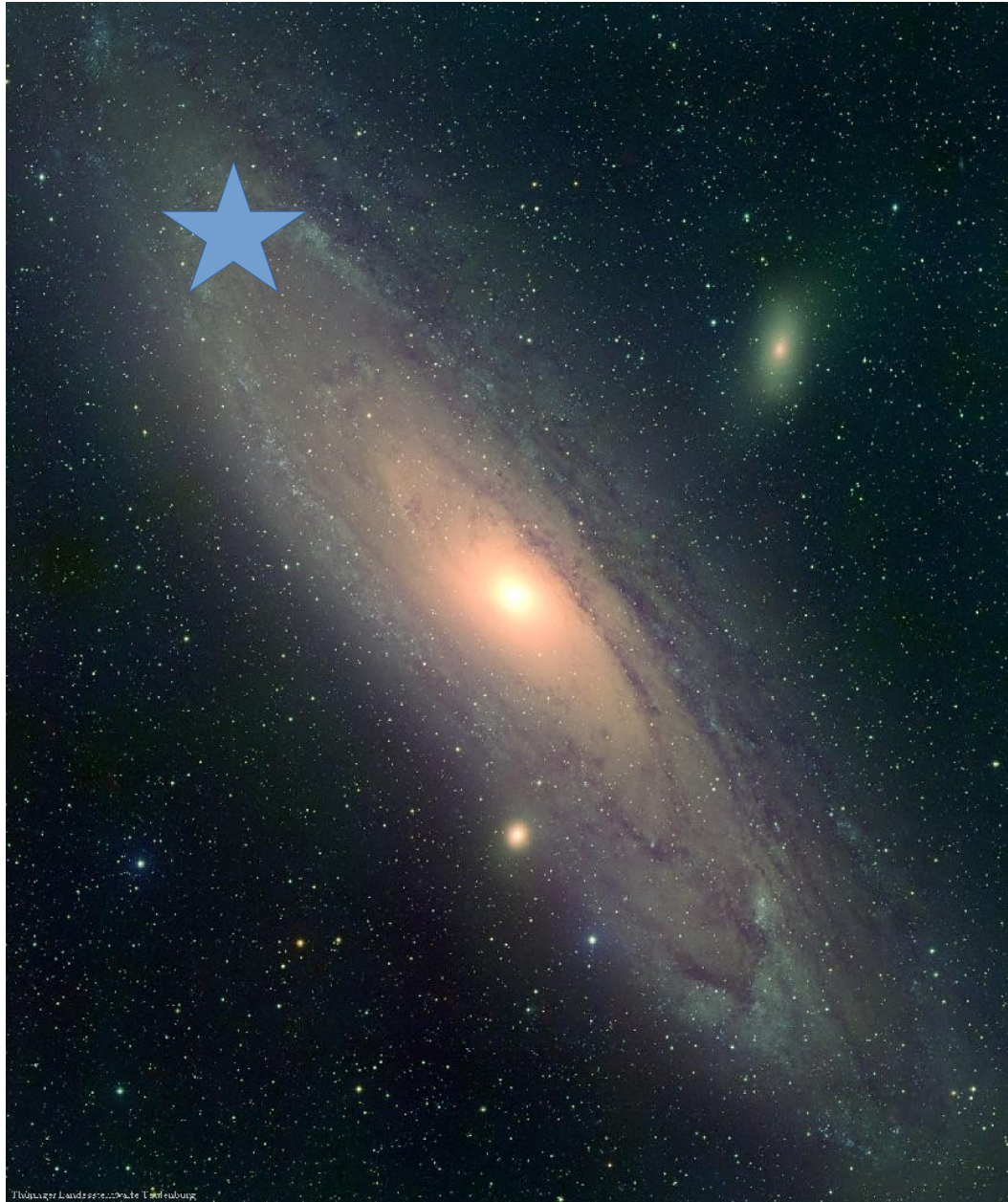
2012

2013

2014

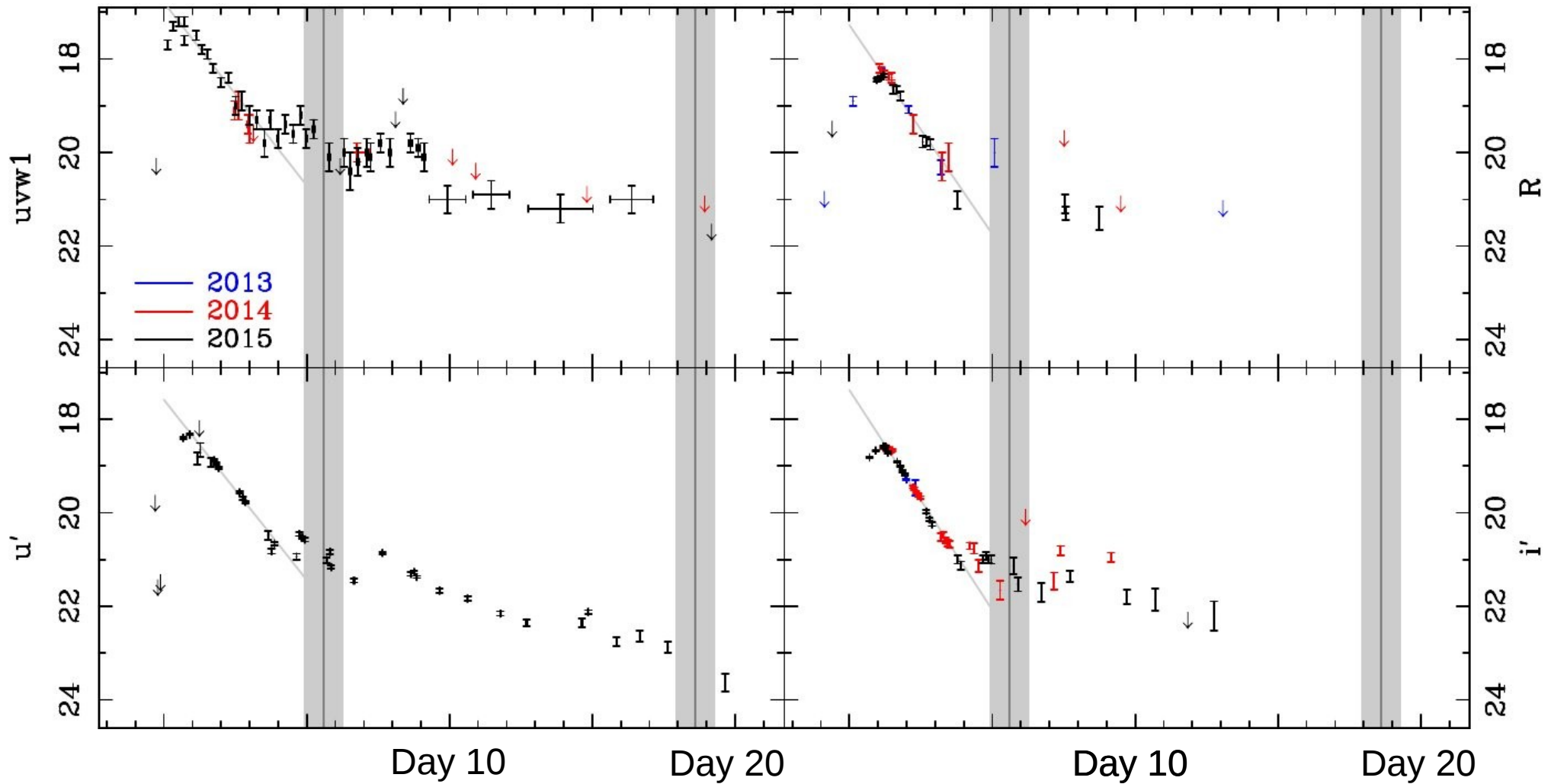
2015

# Supporting cast: Swift + Liverpool Telescope



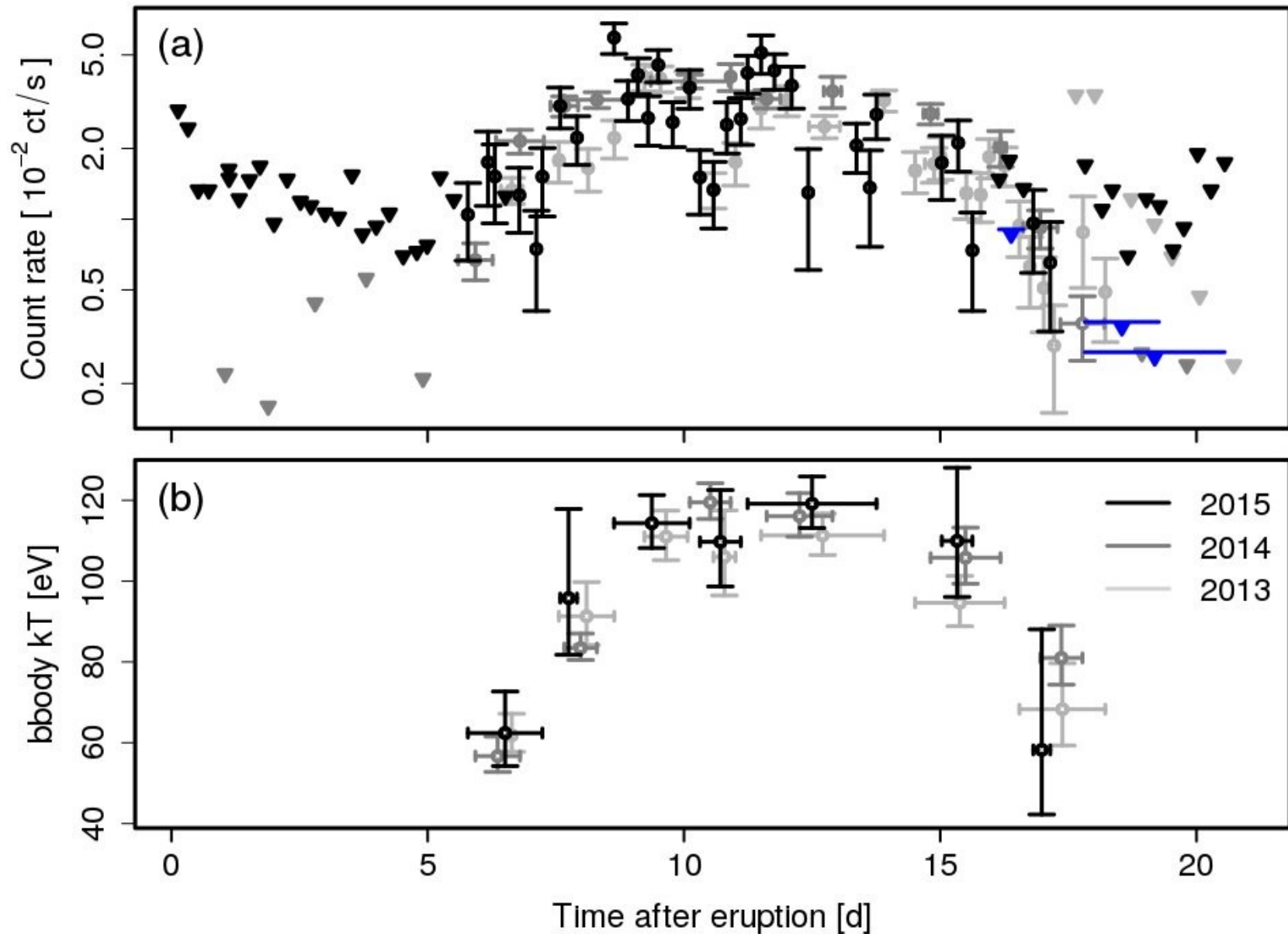
# 2013 – 2015: consistent optical light curves

*Darnley, Henze, + 2016, ApJ, 833, 149*



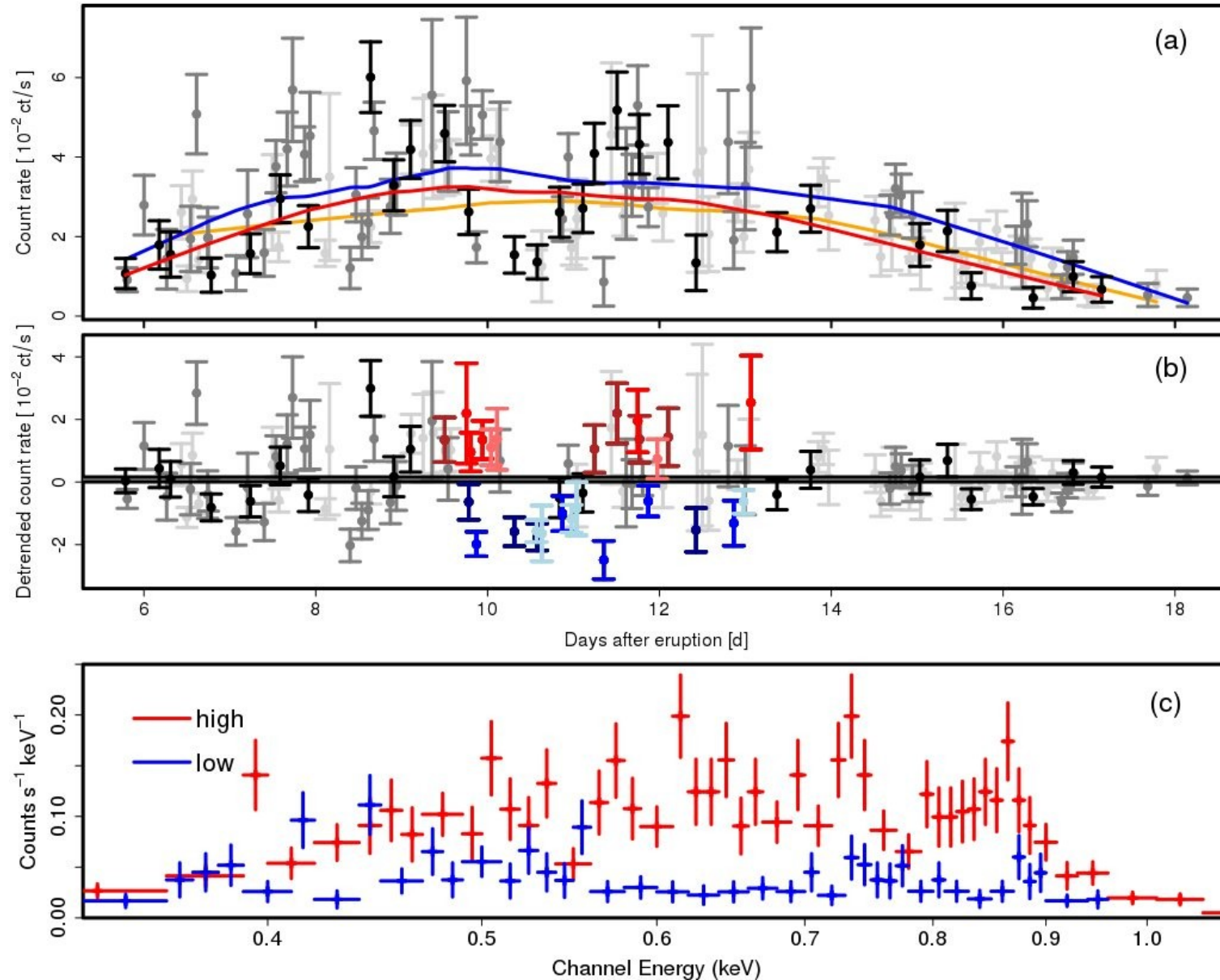
# 2013 - 2015: consistent X-ray light curves

*Darnley, Henze, + 2016, ApJ, 833, 149*



# 2013 – 2015: consistent SSS variability

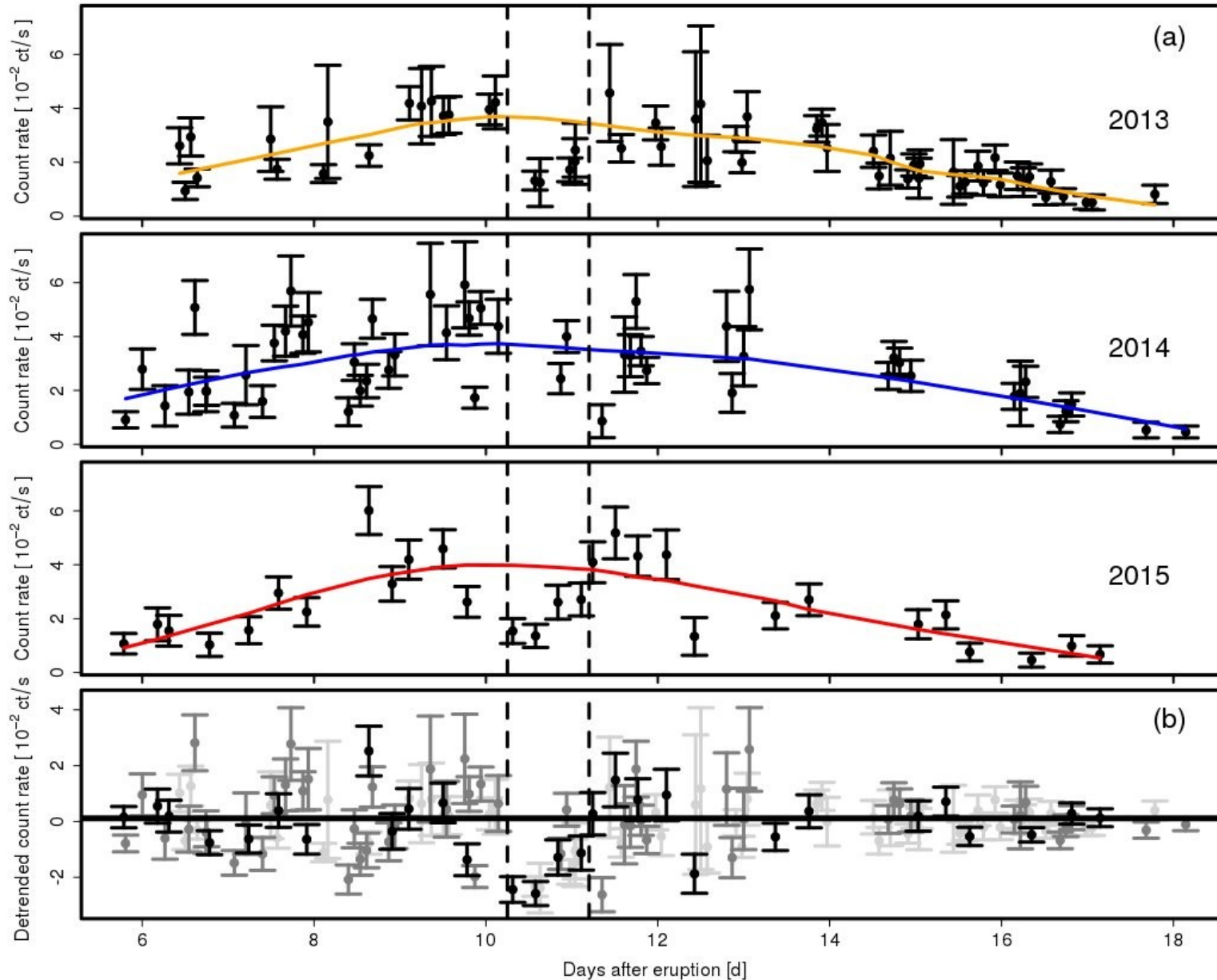
*Darnley, Henze, + 2016, ApJ, 833, 149*





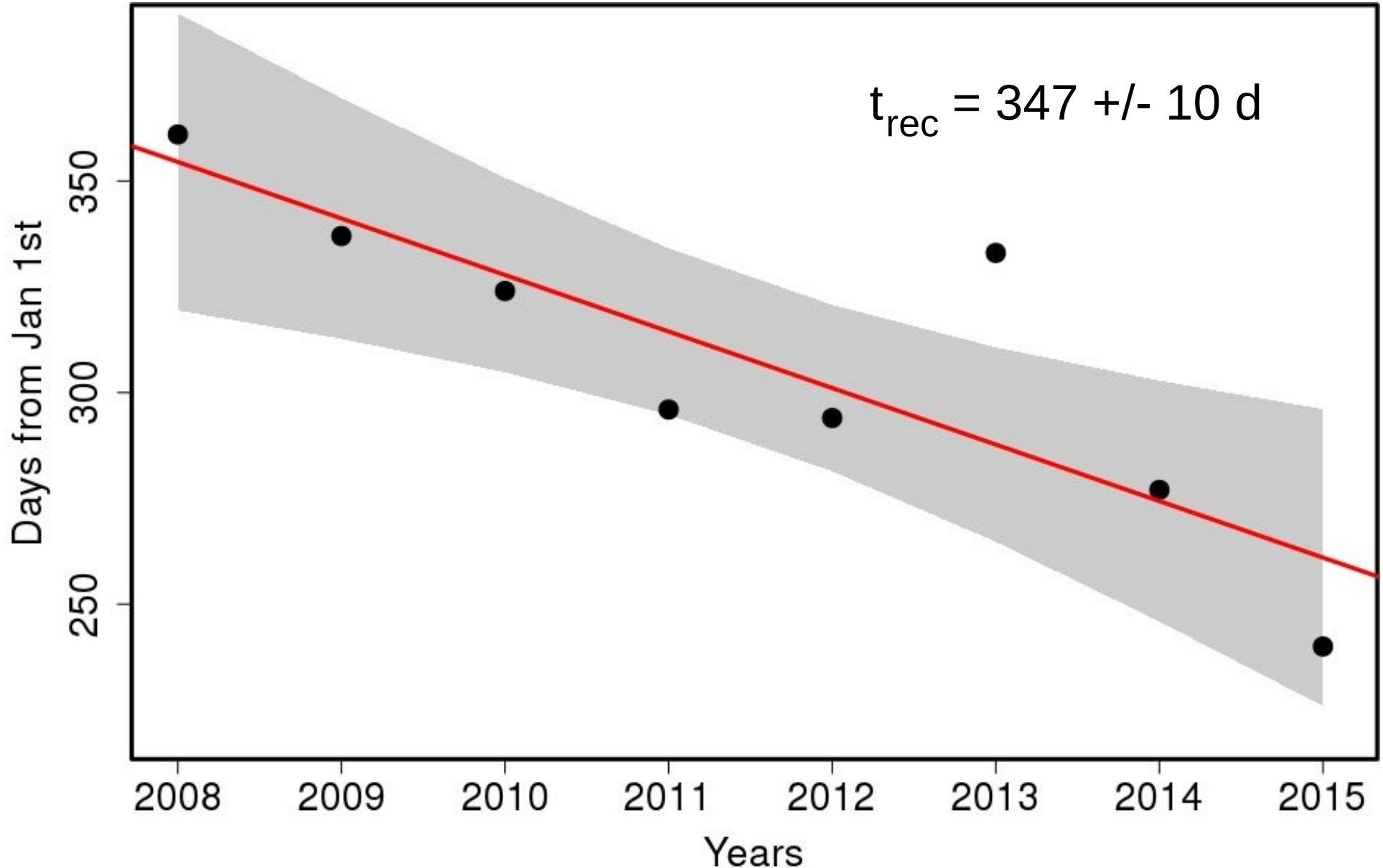
# 2013 – 2015: SSS variability – dips?

*Darnley, Henze, + 2016, ApJ, 833, 149*

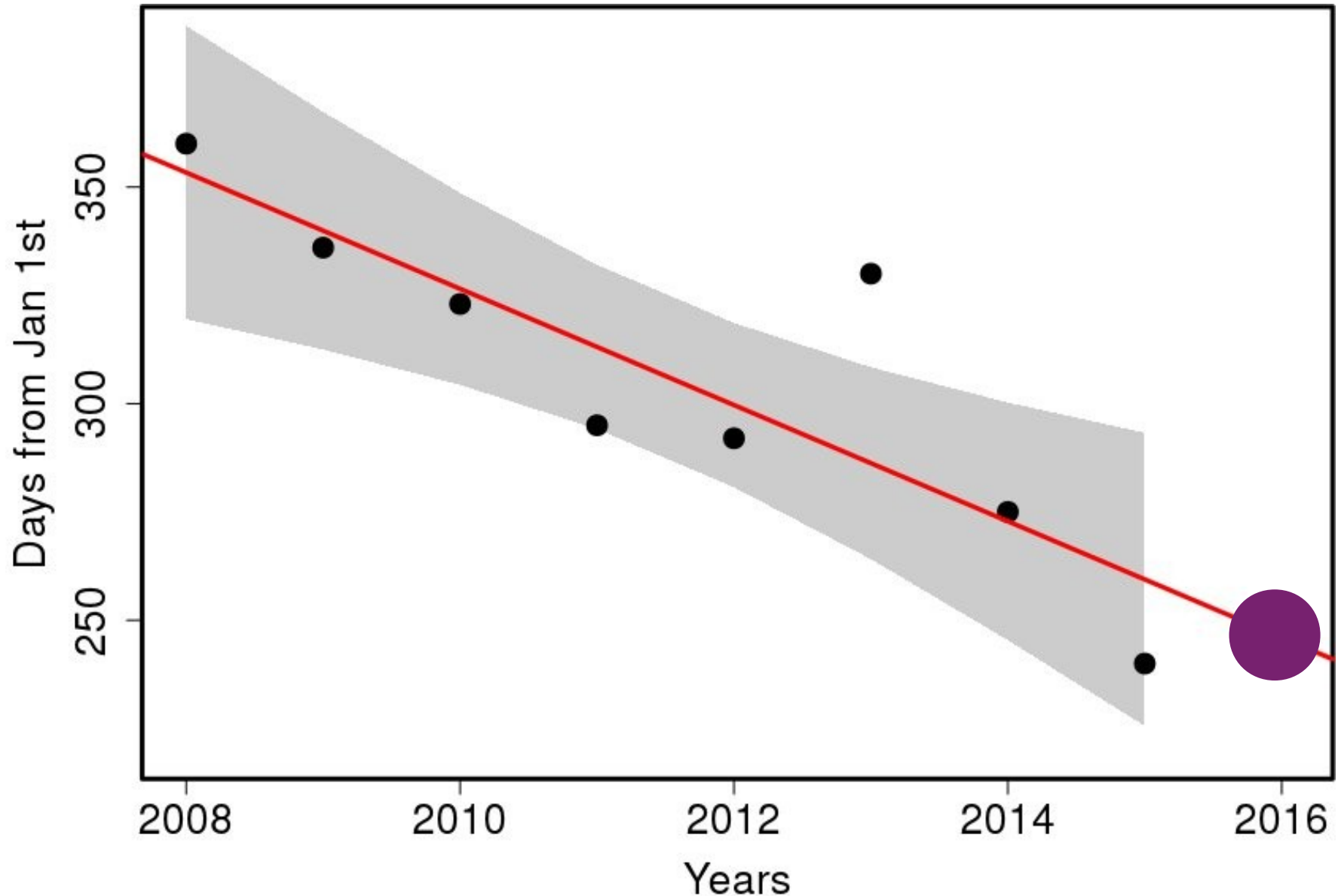


# 2008 – 2015: recurrence period

*Darnley, Henze, + 2016, ApJ, 833, 149*



# 2016 eruption prediction: mid September

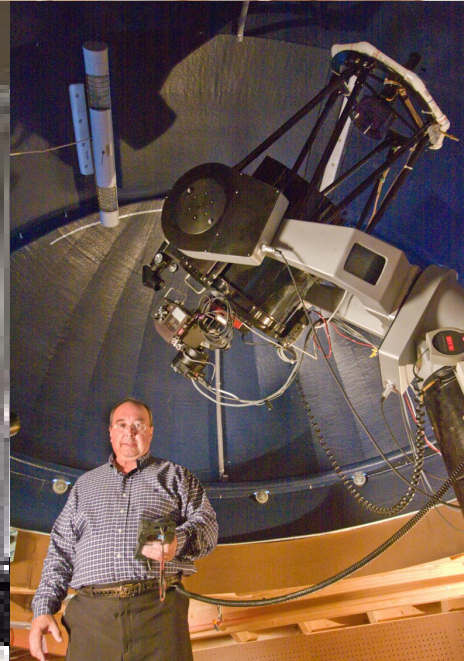


# 2016 eruption prediction: mid September

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# Monitoring team



# Waiting for the 2016 eruption ...



# Finally! December 12 2016

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## Recurrent Nova M31N 2008-12a: discovery and constraints of the 2016 eruption

ATel #9848; *K. Itagaki (Itagaki Astronomical Observatory), X. Gao (Xingming Observatory), M. J. Darnley (LJMU), M. Henze (CSIC-IEEC), A. W. Shafter (SDSU), S. C. Williams (Lancaster), S. Kafka (AAVSO), M. Kato (Keio University), for a larger collaboration*  
on **12 Dec 2016; 13:44 UT**

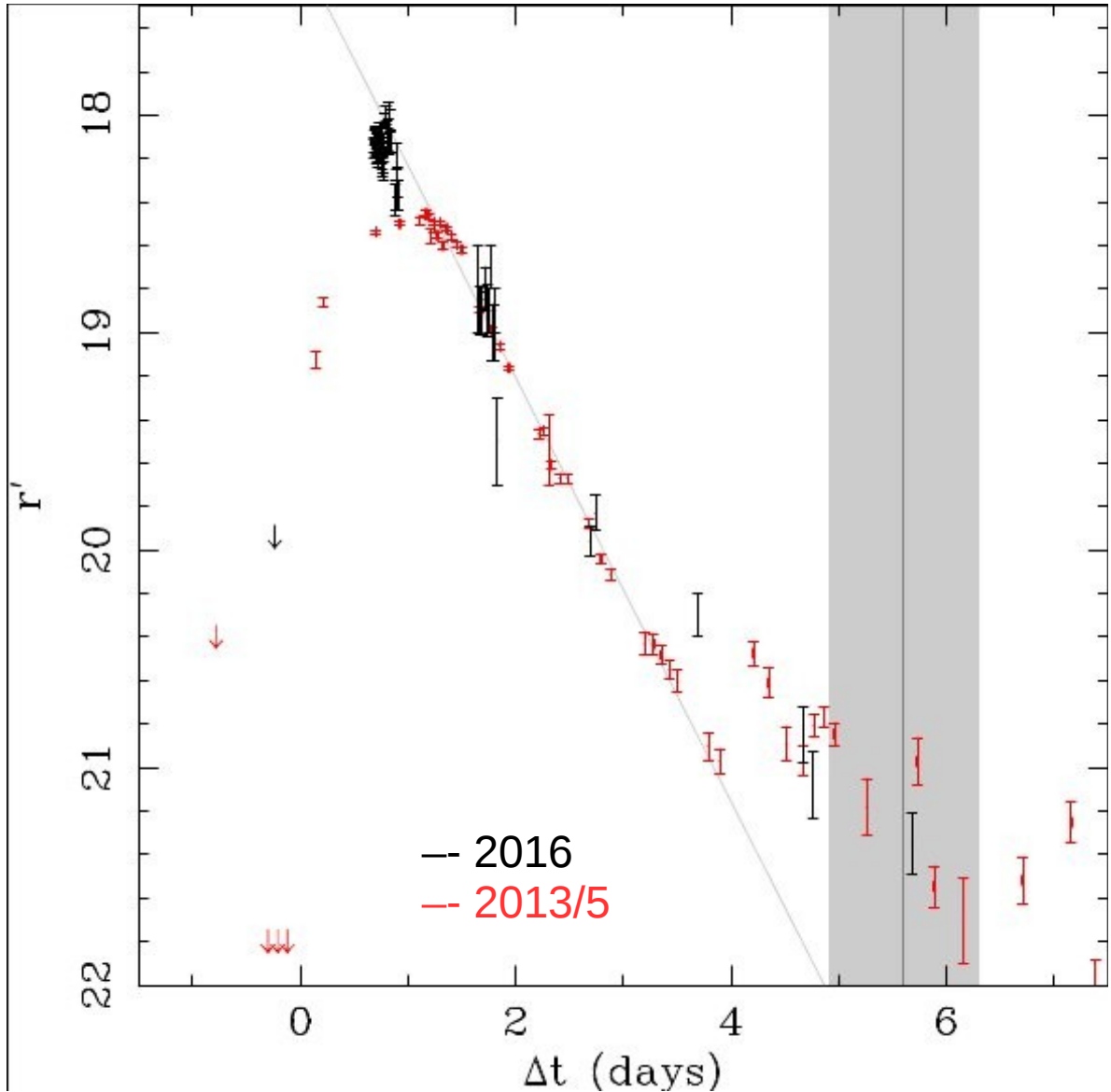
*Credential Certification: Matt Darnley (M.J.Darnley@ljmu.ac.uk)*

Subjects: Optical, Nova, Transient

Referred to by ATel #: [9852](#), [9853](#), [9857](#), [9861](#), [9864](#), [9865](#), [9872](#), [9874](#), [9881](#), [9883](#), [9885](#), [9891](#), [9906](#), [9907](#), [9910](#), [10001](#)

# 2016: Optical light curve – bright peak

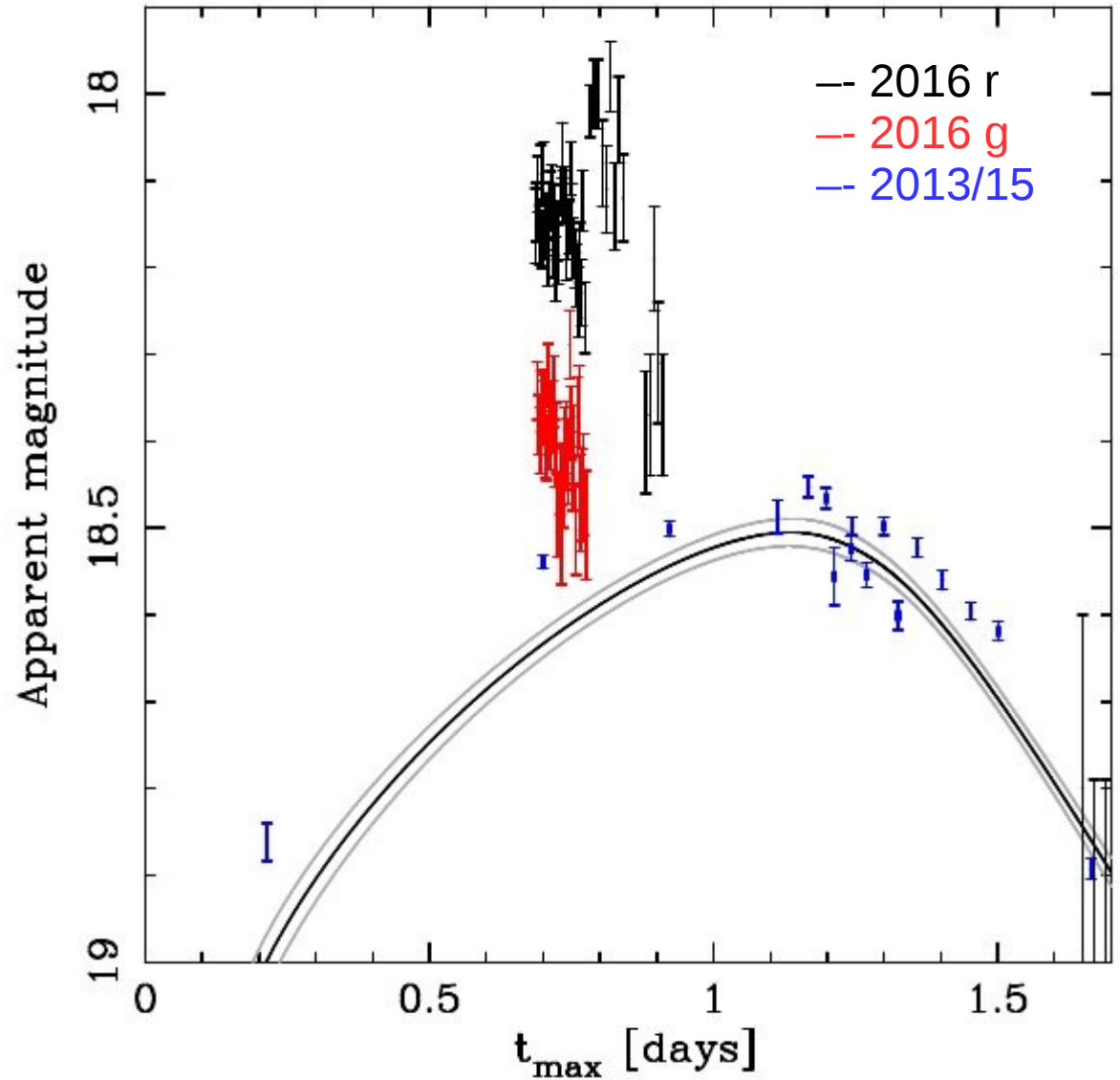
*Henze, Darnley, Williams, + in prep.*





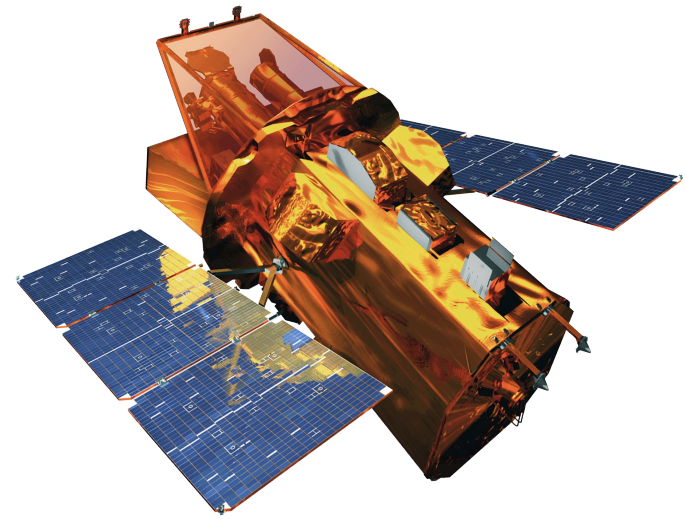
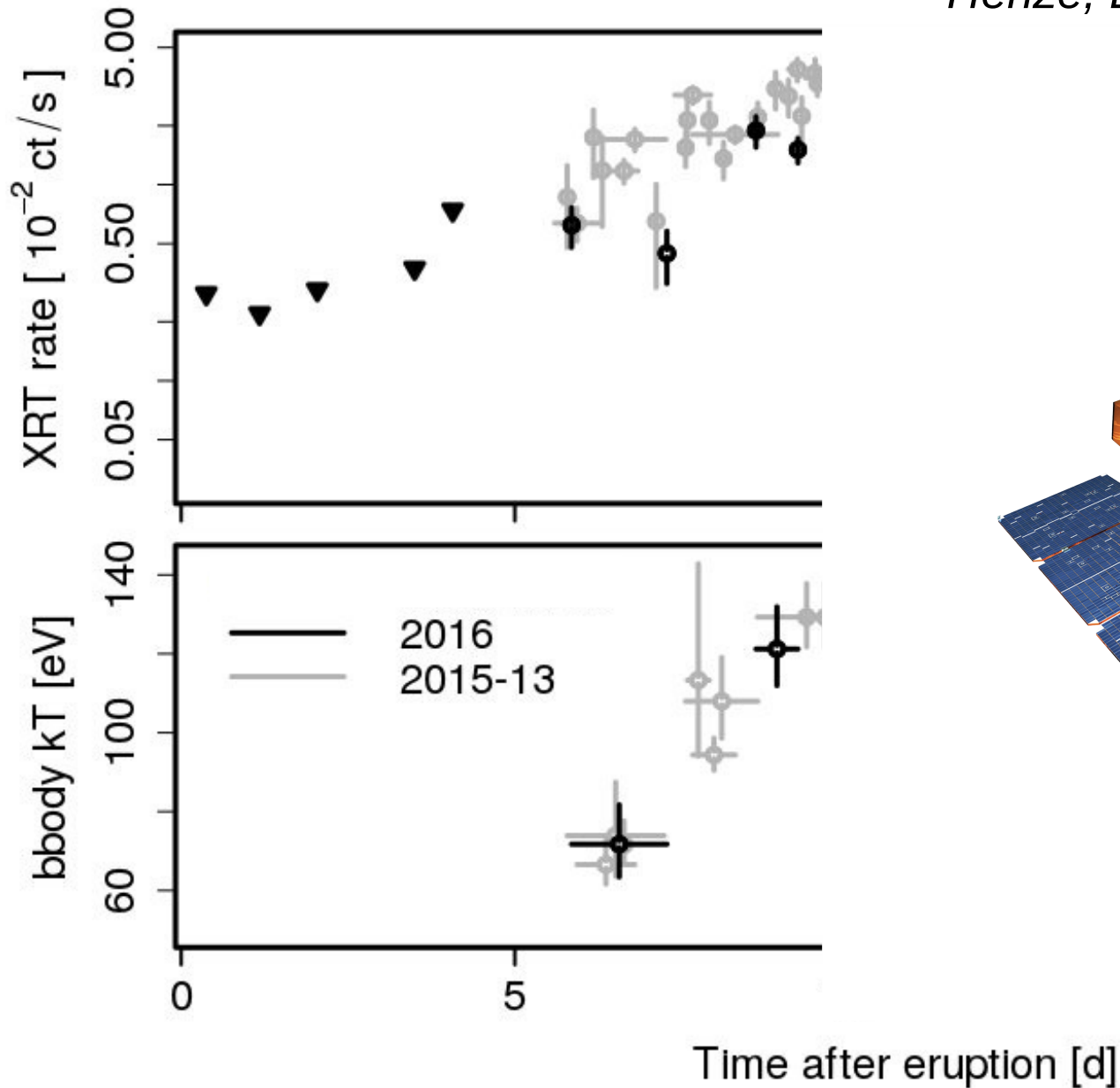
# 2016: Optical light curve – bright peak

*Henze, Darnley, Williams, + in prep.*



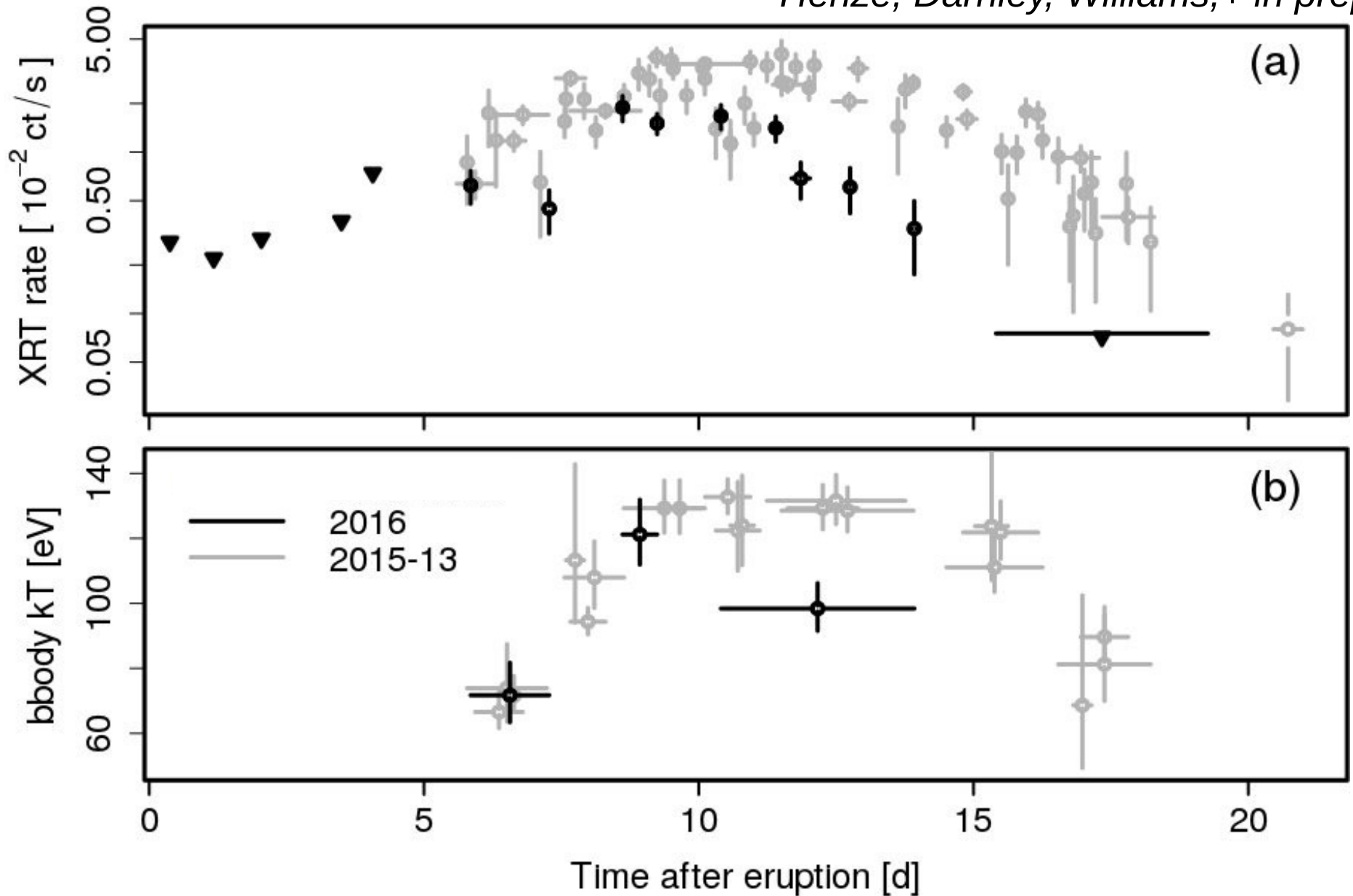
# 2016 Swift X-rays

*Henze, Darnley, Williams, + in prep.*



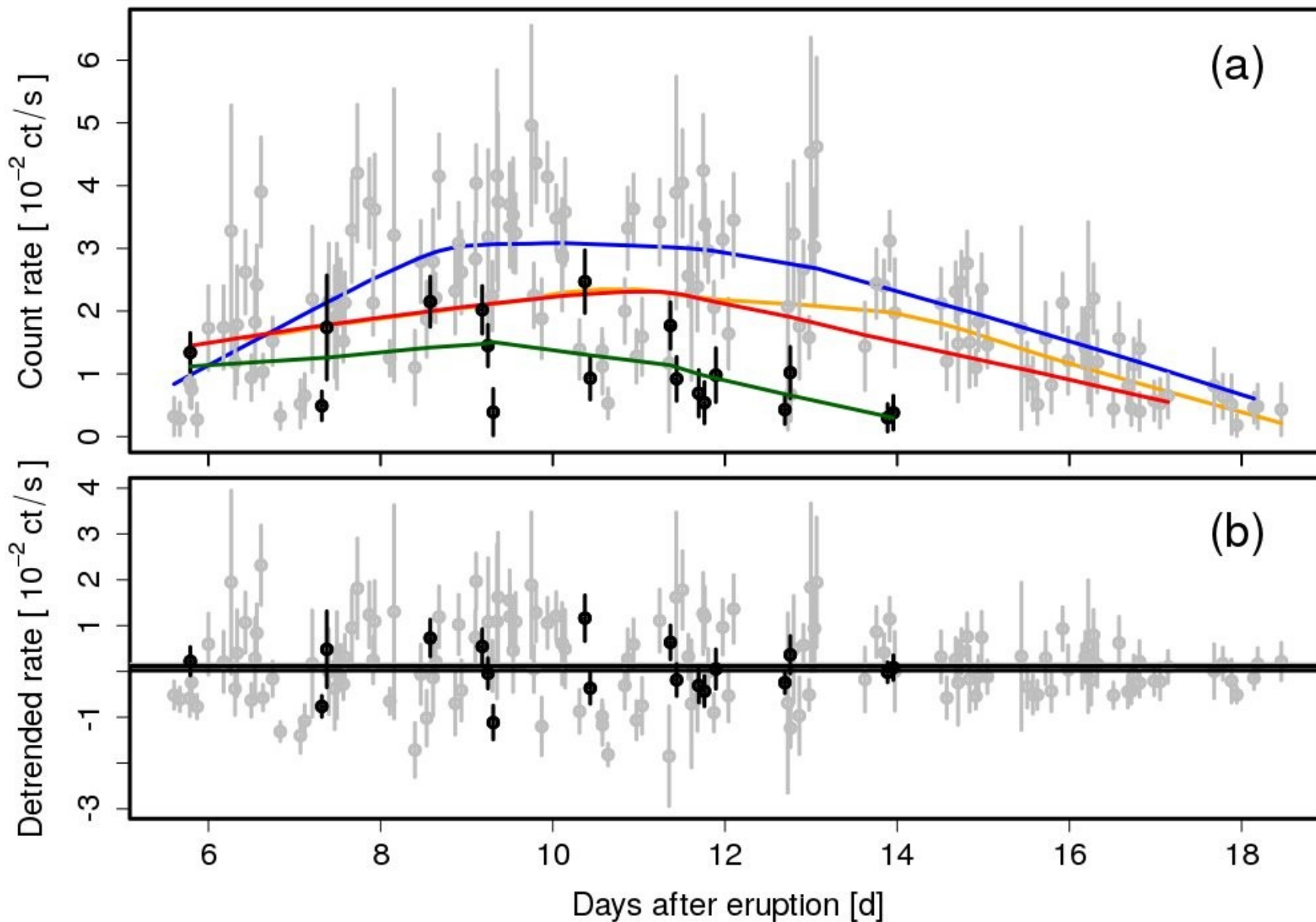
# 2016 Swift X-rays – swift decline

*Henze, Darnley, Williams, + in prep.*



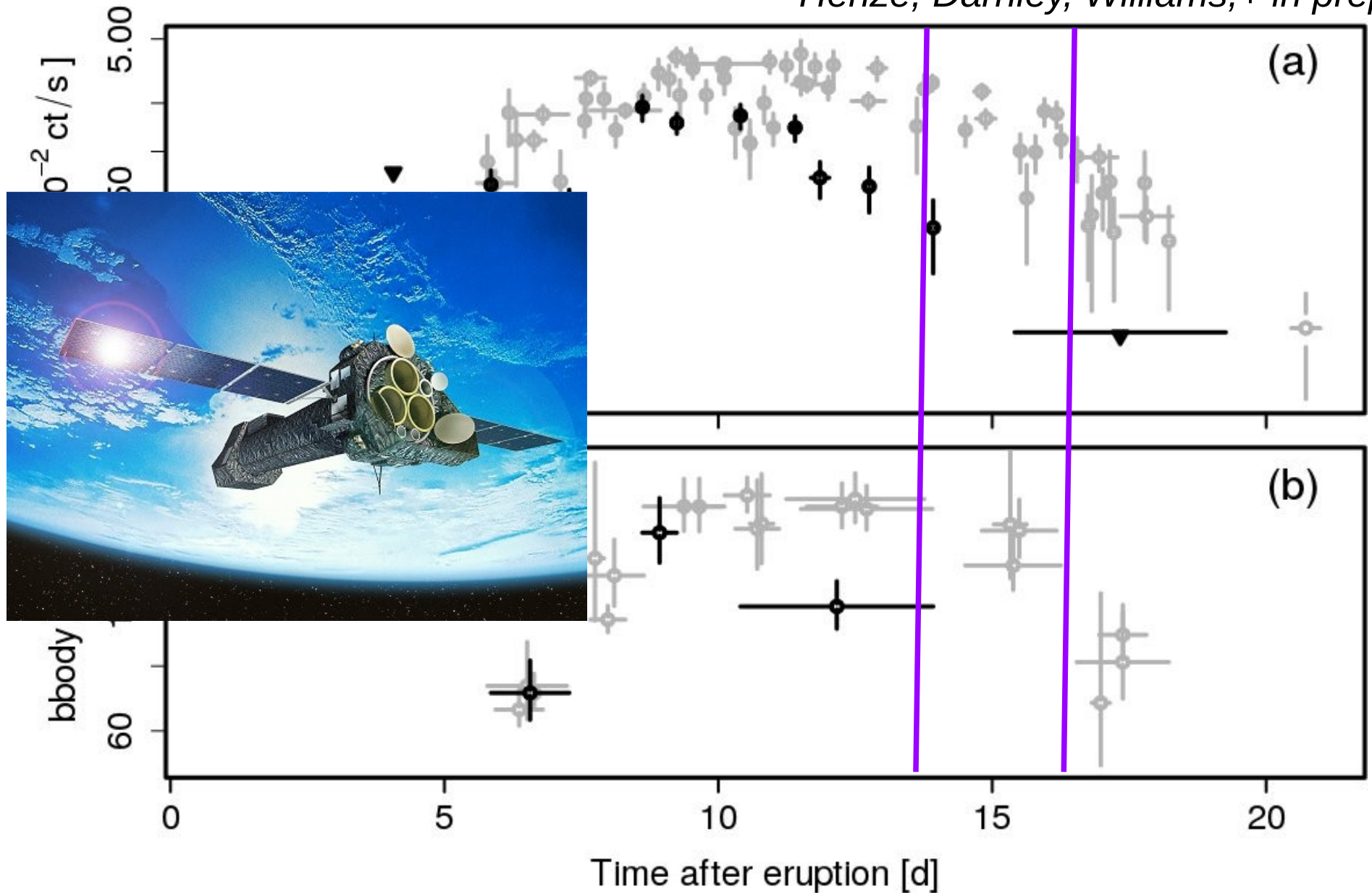
# 2016 Swift X-rays – variability

*Henze, Darnley, Williams, + in prep.*



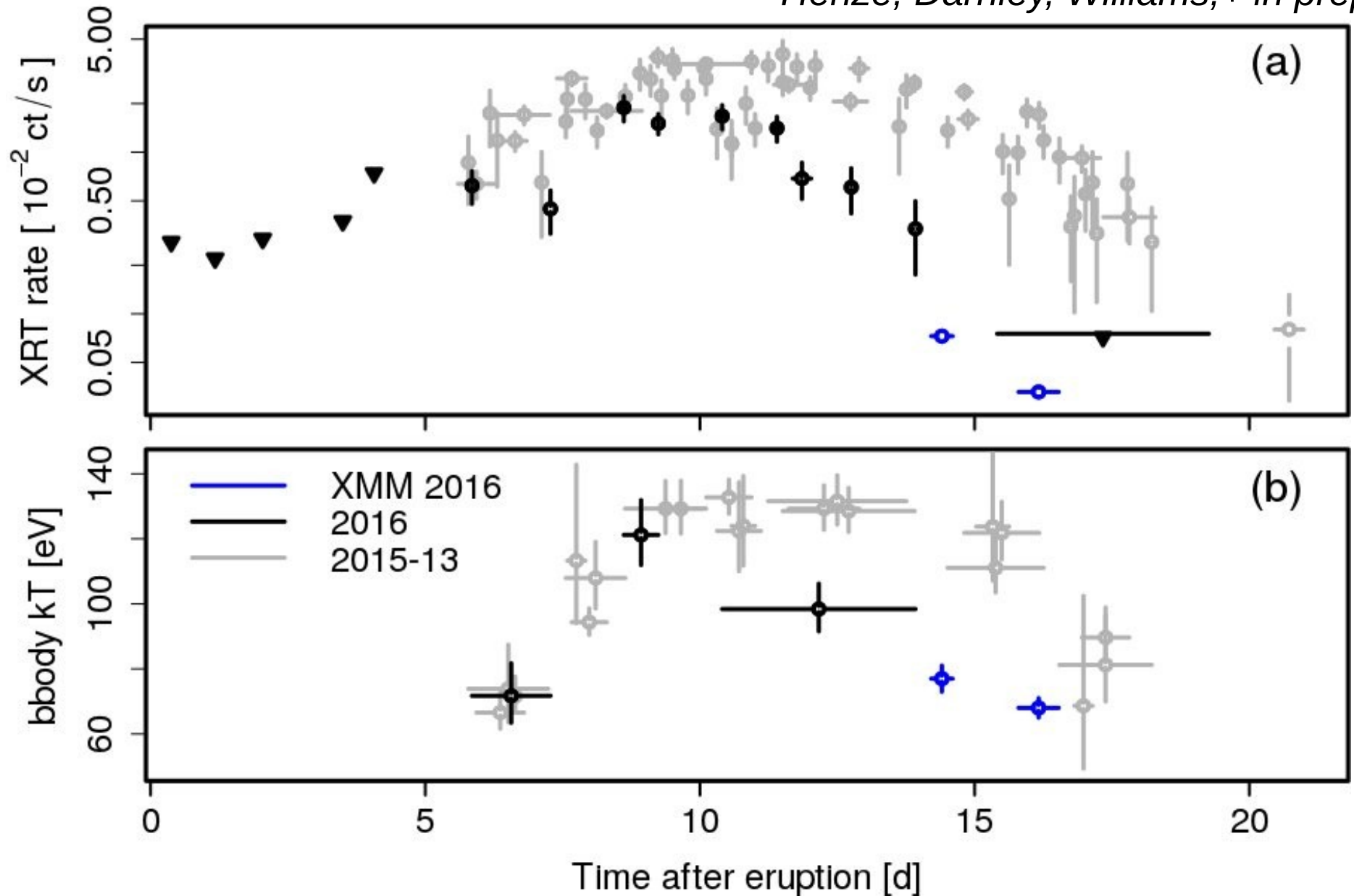
# 2016 XMM-Newton – as close as it gets

*Henze, Darnley, Williams, + in prep.*



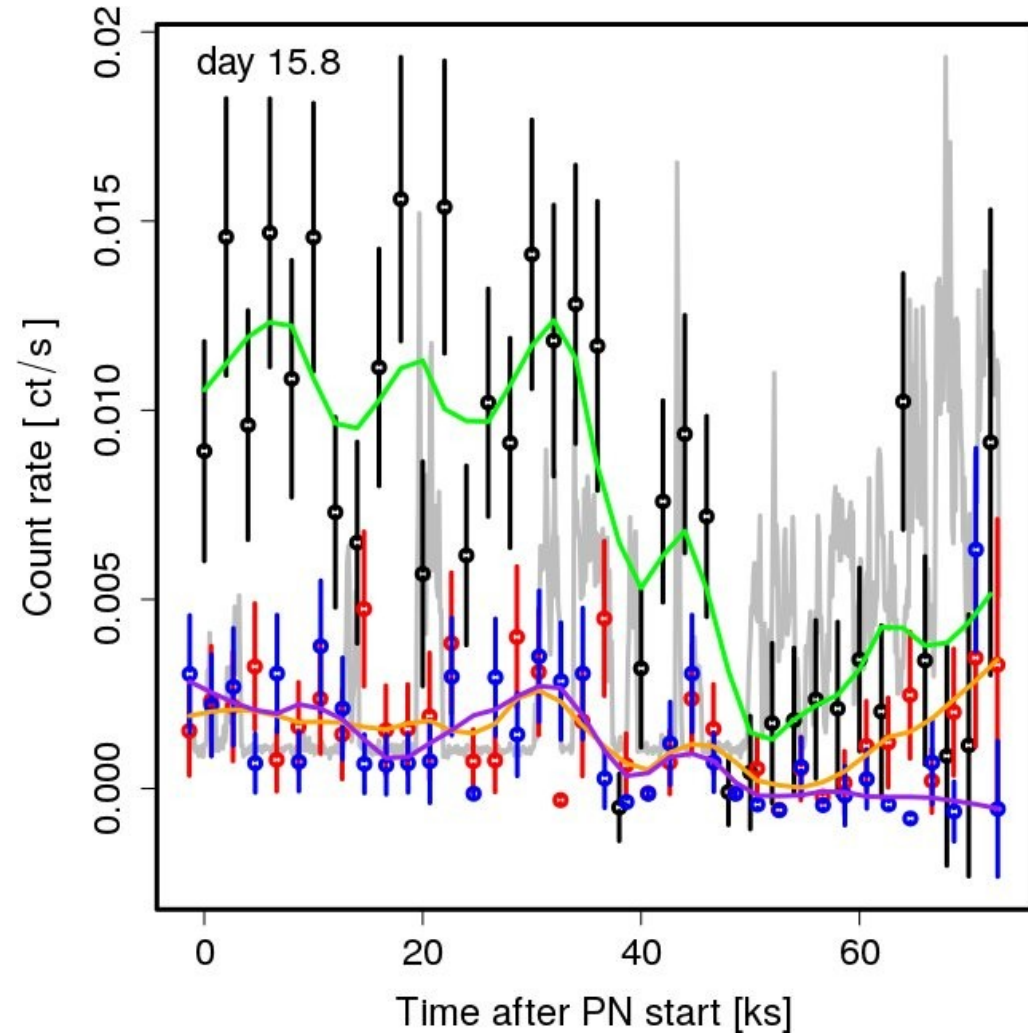
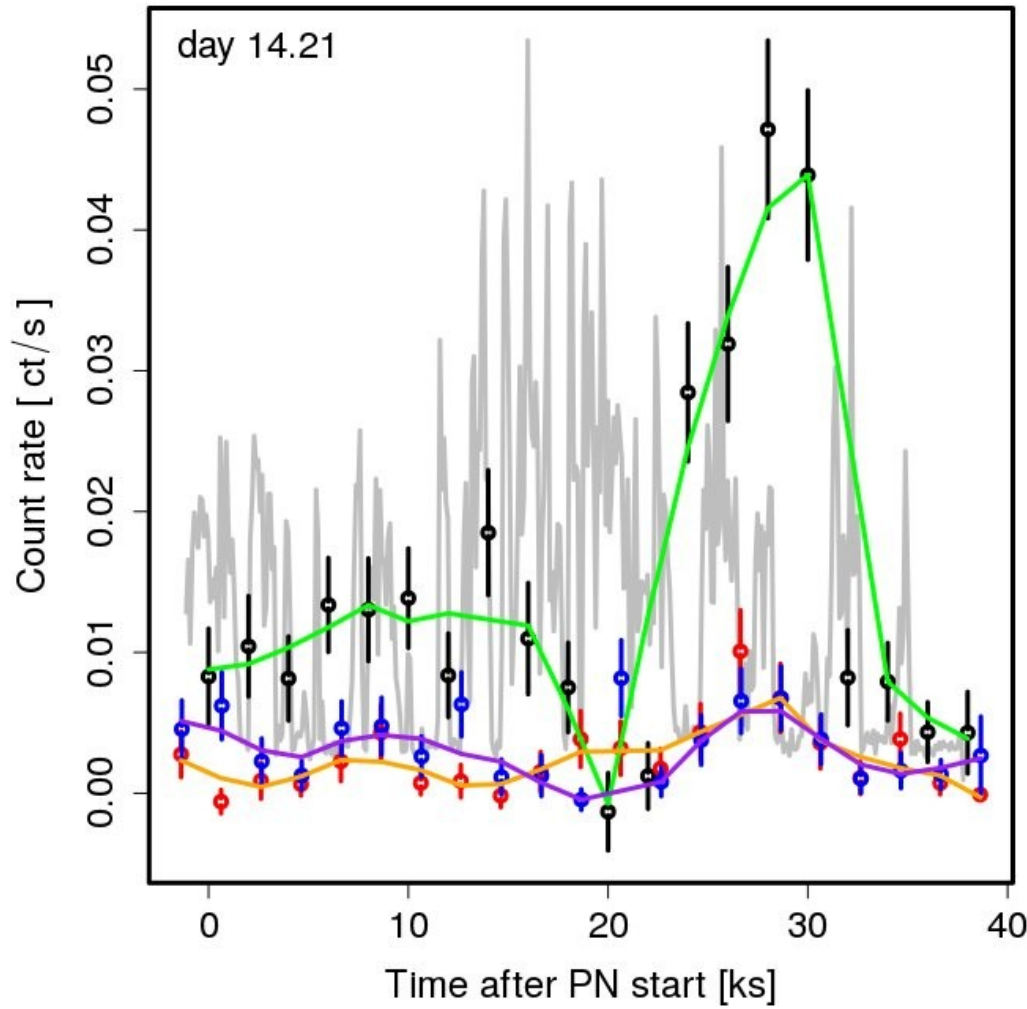
# 2016 XMM-Newton – as close as it gets

*Henze, Darnley, Williams, + in prep.*



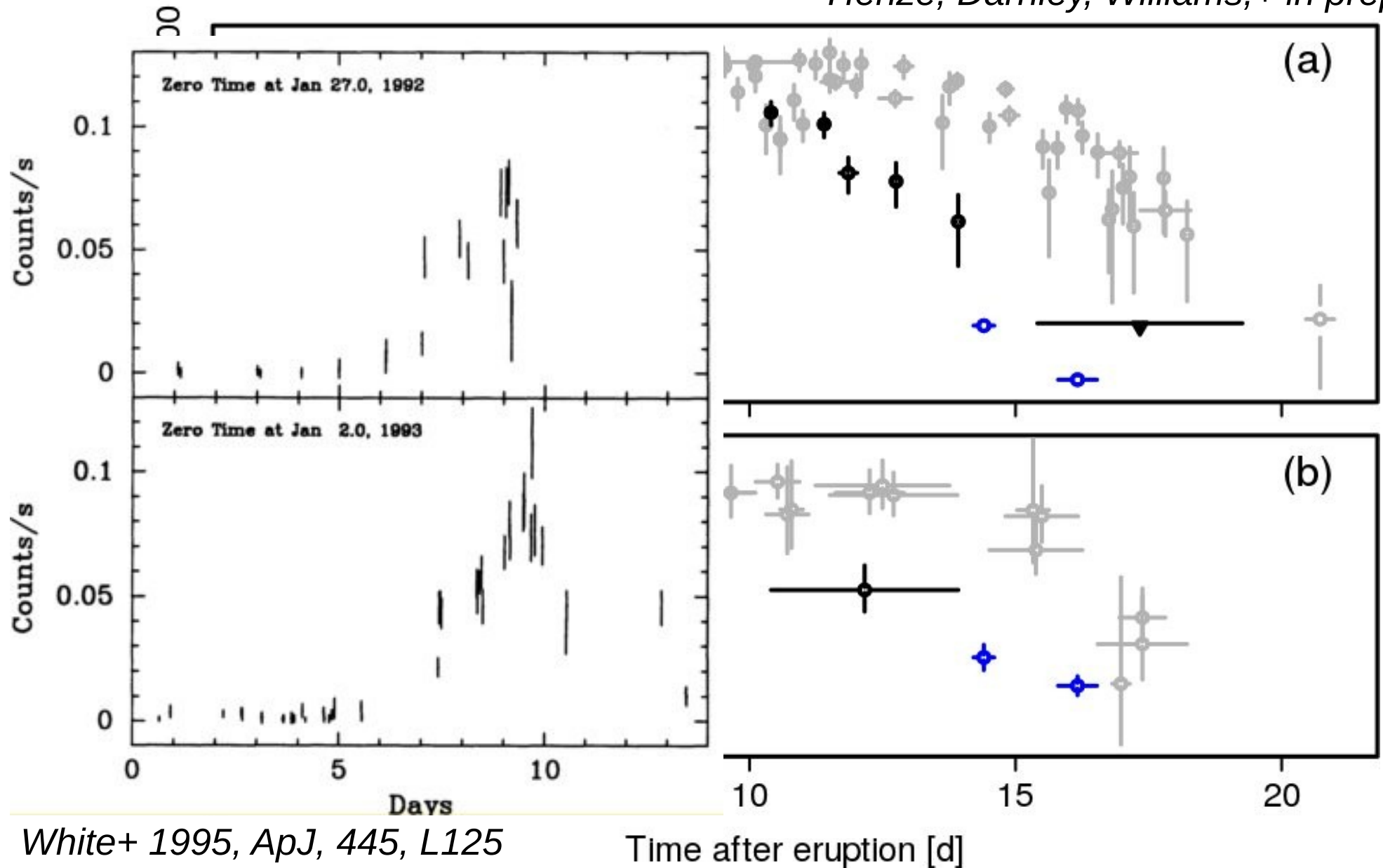
# 2016 XMM-Newton – surprising variability

*Henze, Darnley, Williams, + in prep.*



# 2016 X-rays – deja vu?

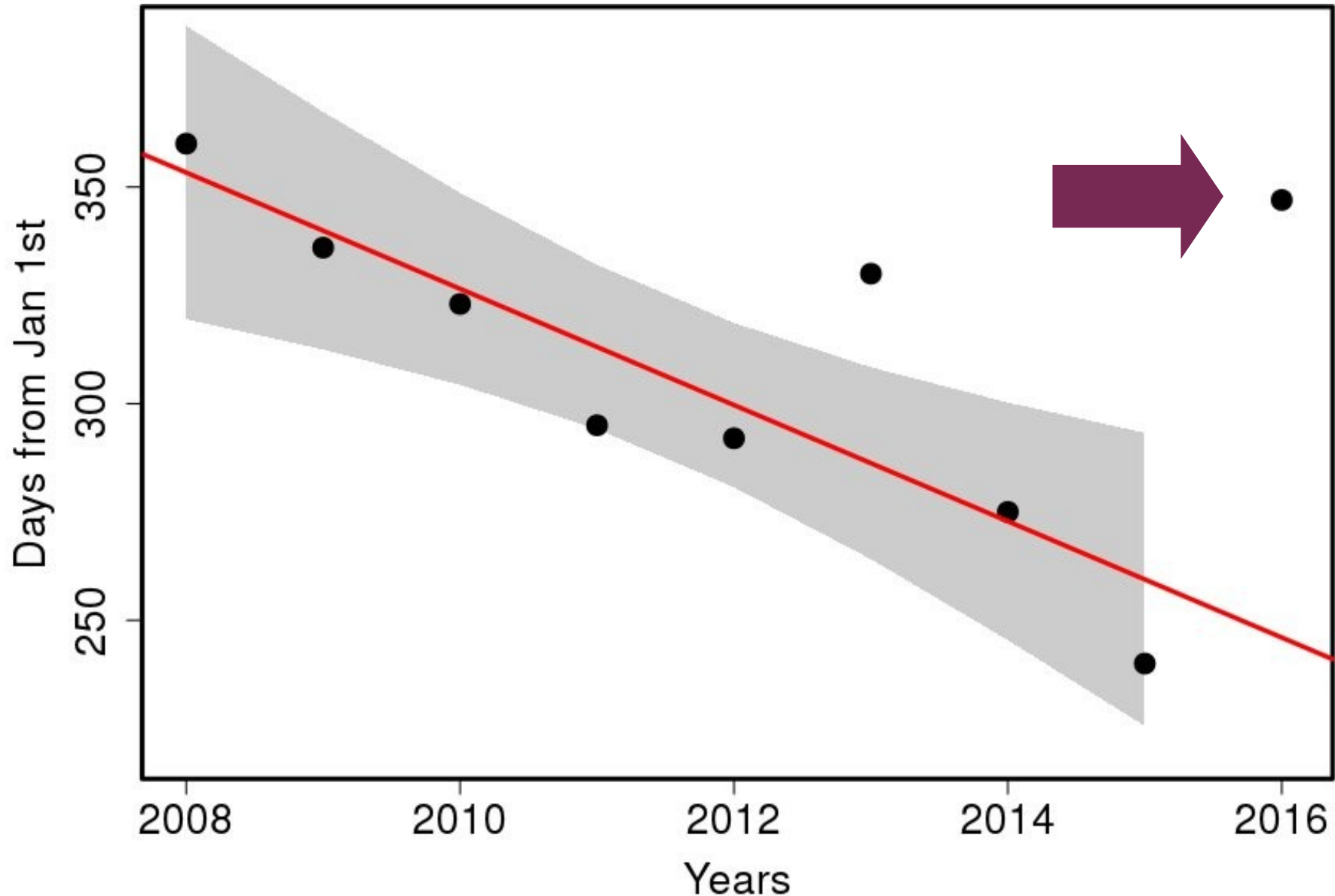
Henze, Darnley, Williams, + in prep.





# 2016: Recurrence time evolution outlier(?)

*Henze, Darnley, Williams, + in prep.*



# Waiting for the 2017 eruption ...

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**Thank you Margarita!**

**Happy Birthday!**

