



ANTON PANNEKOEK  
INSTITUTE

# The relativistic jets in the BH XRB MAXI J1836-194

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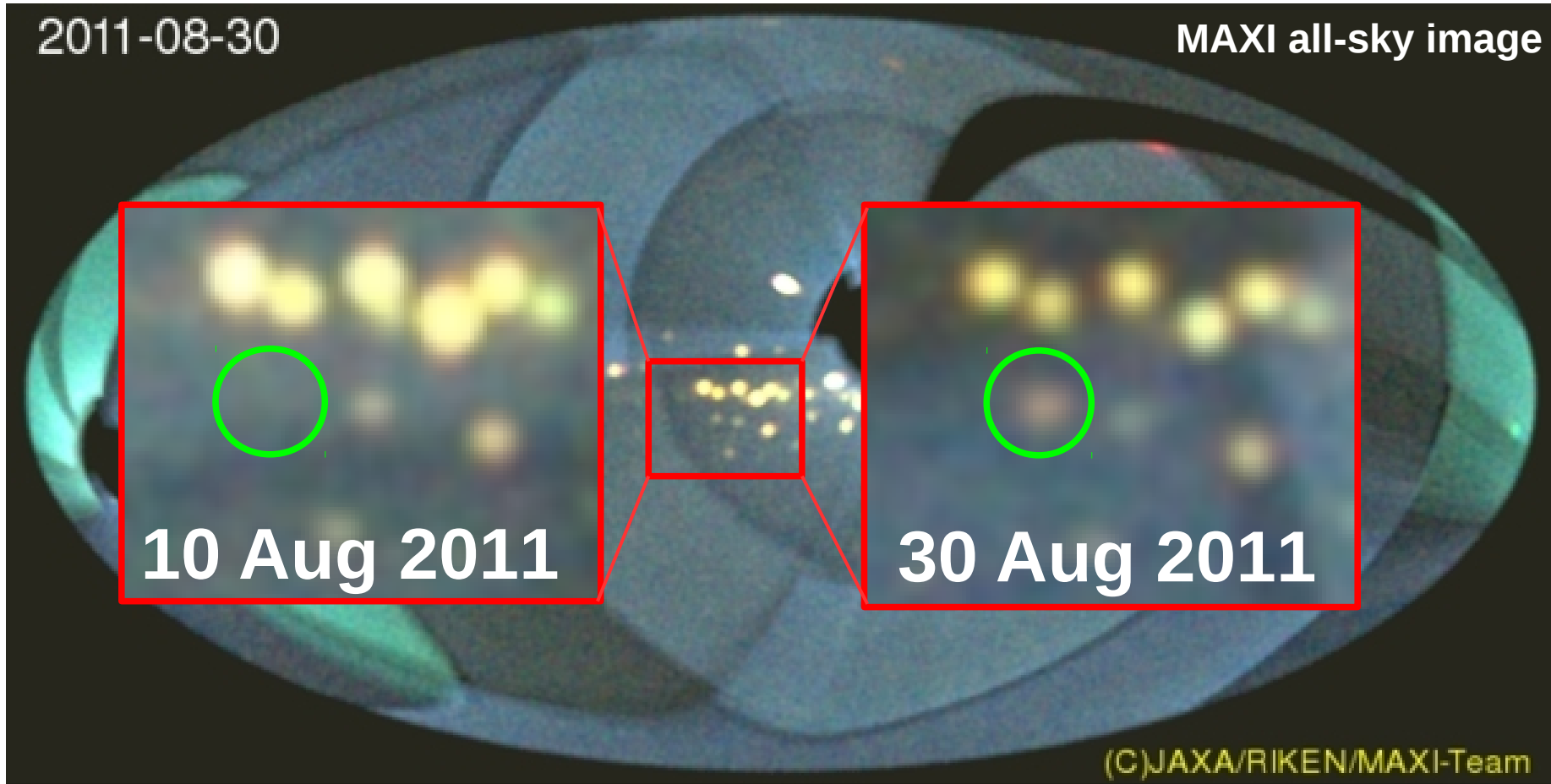


UNIVERSITY OF AMSTERDAM



# MAXI J1836-194 – a black hole

## XRB in outburst



# JACPOT XRB: Quasi-simultaneous multiwavelength observing campaign



Image courtesy of NRAO



Image courtesy of Harvard - SMA

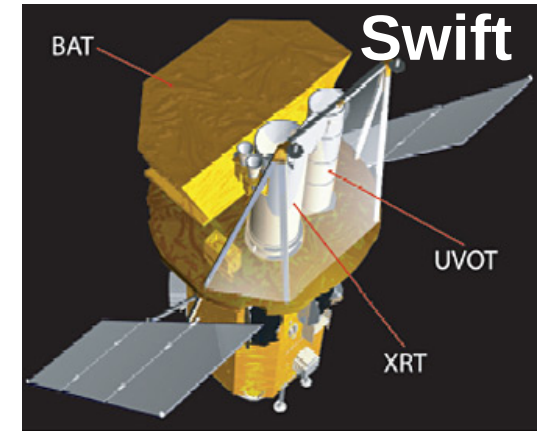


Image courtesy of NASA

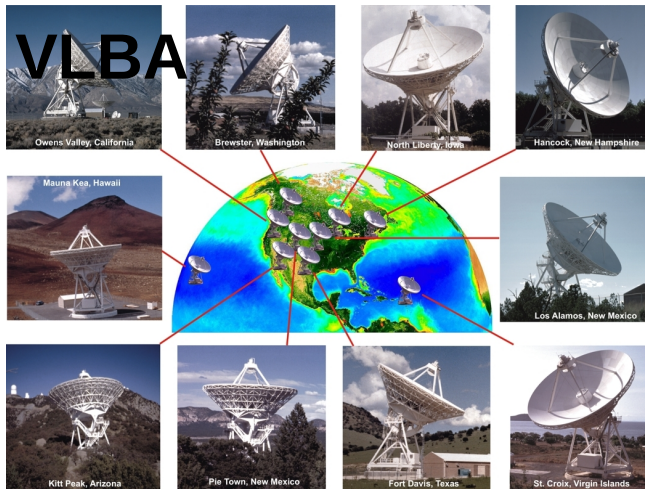


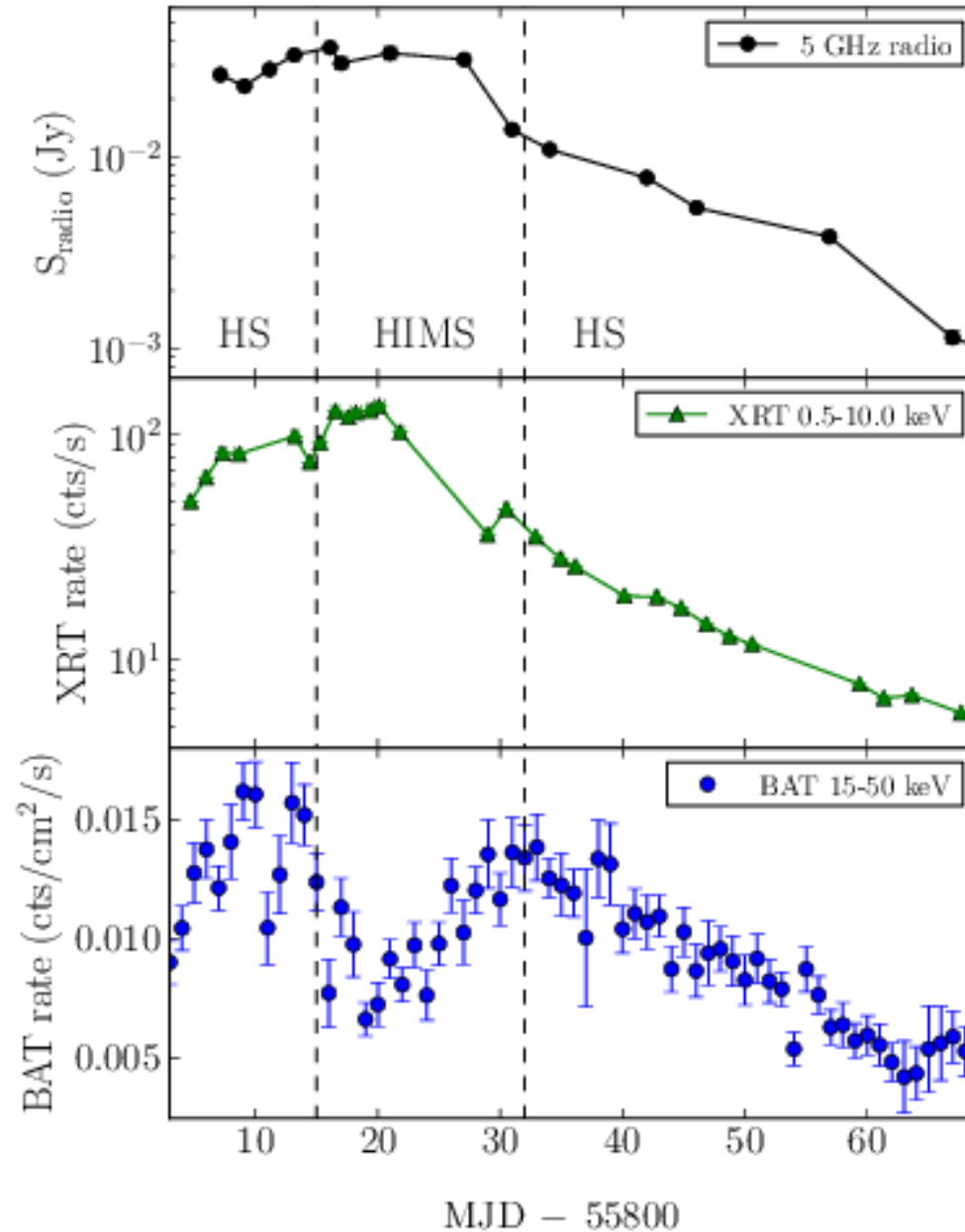
Image courtesy of NRAO



Image courtesy of ESO

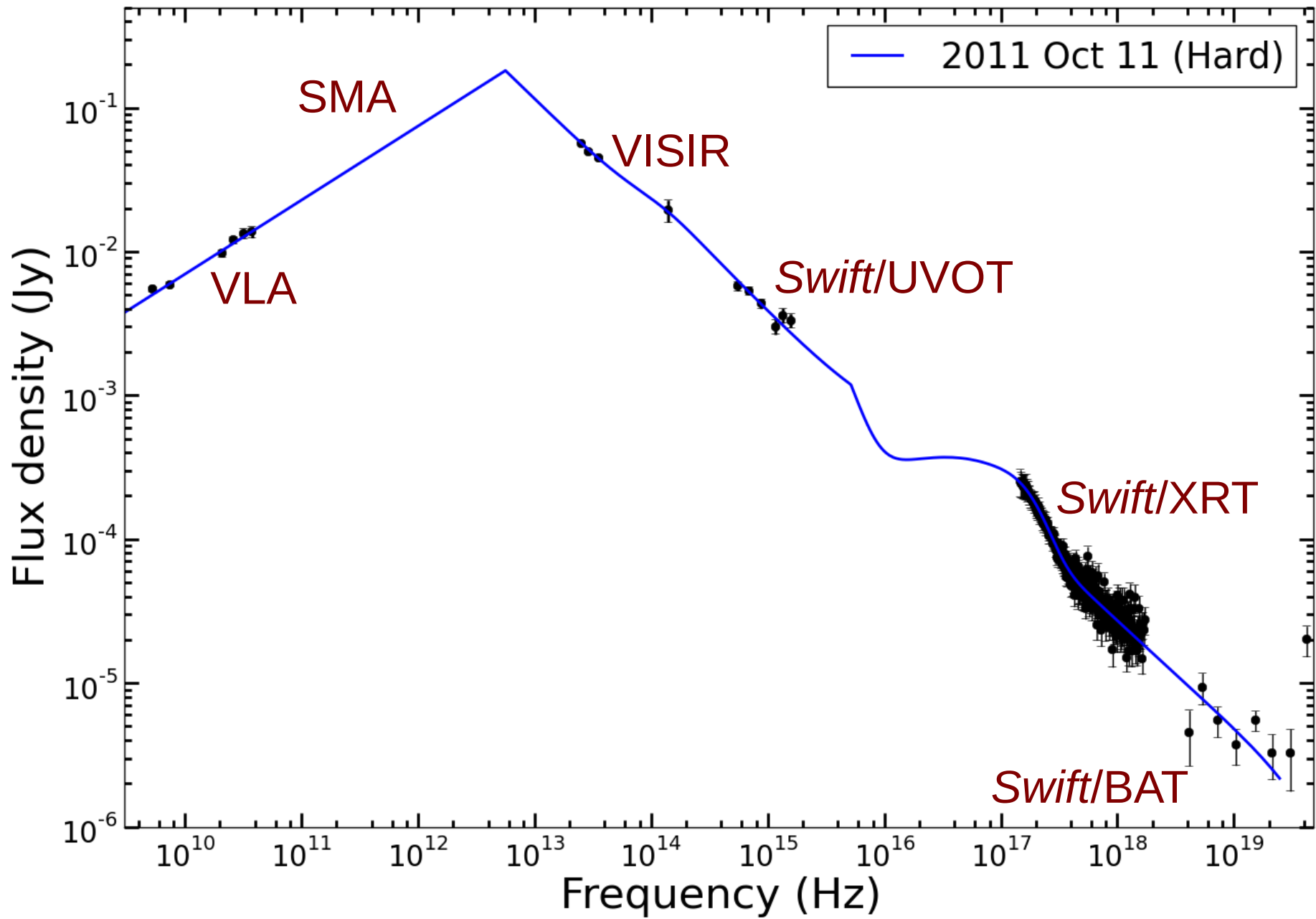


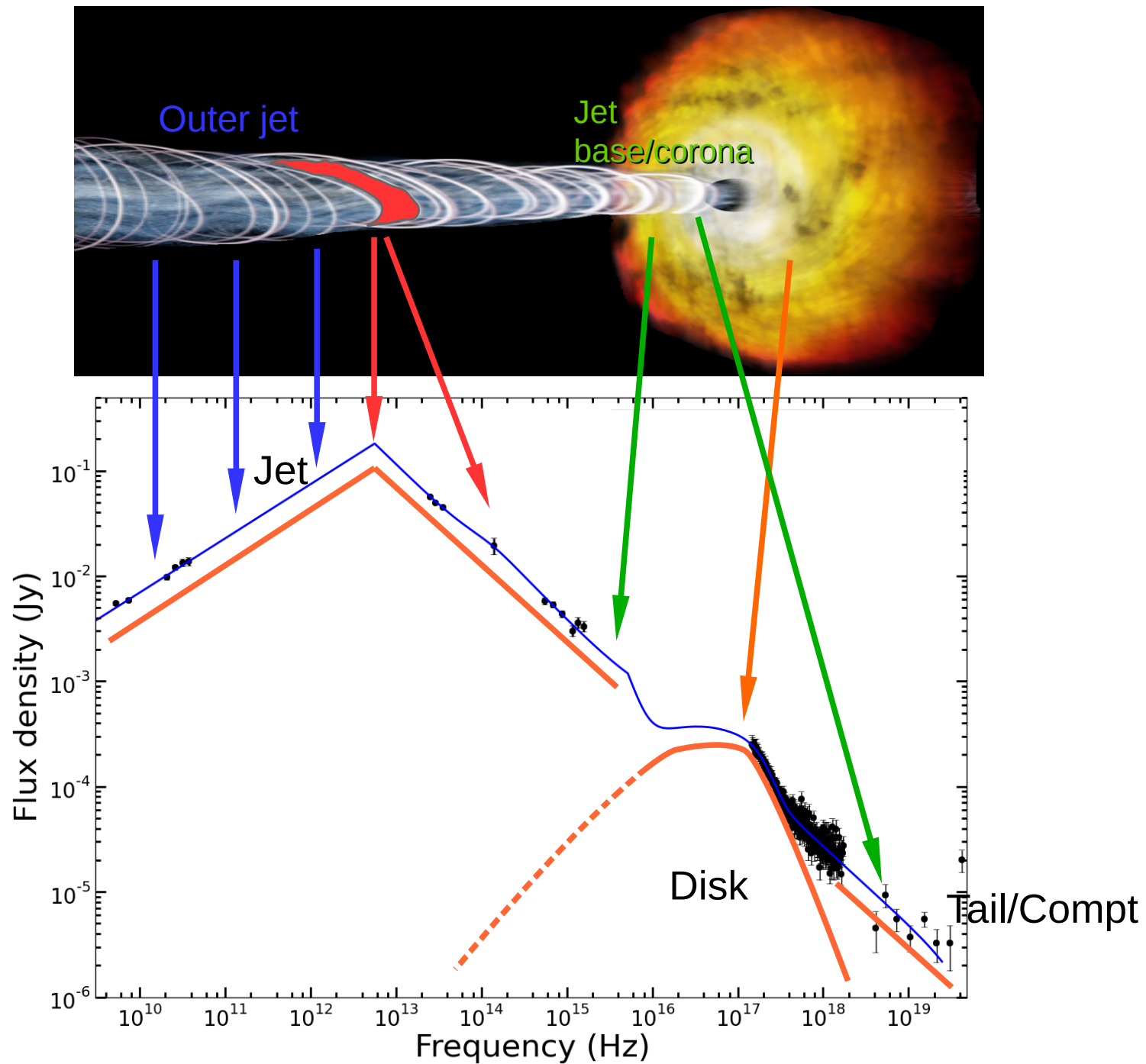
# Radio through to X-ray behaviour

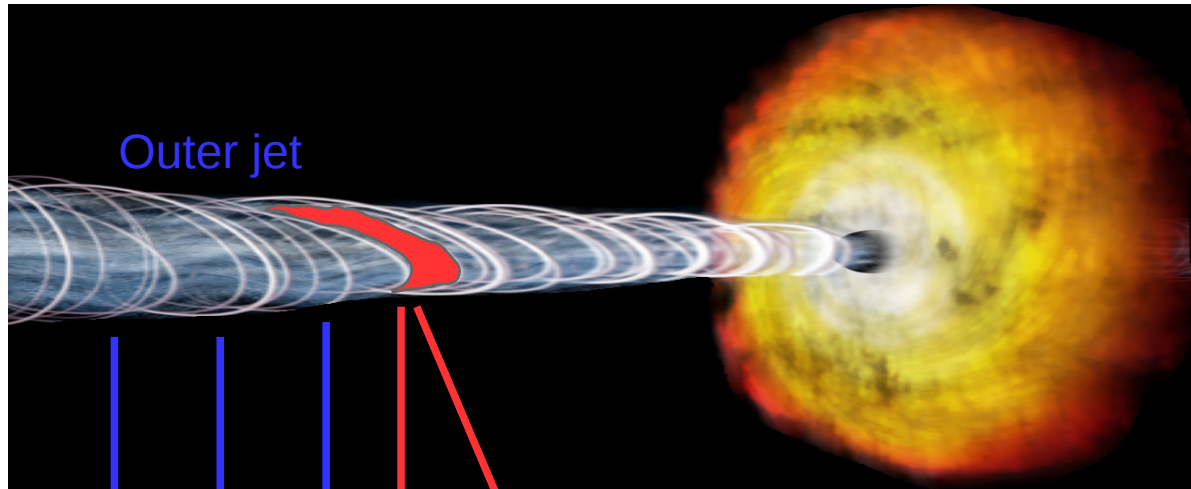




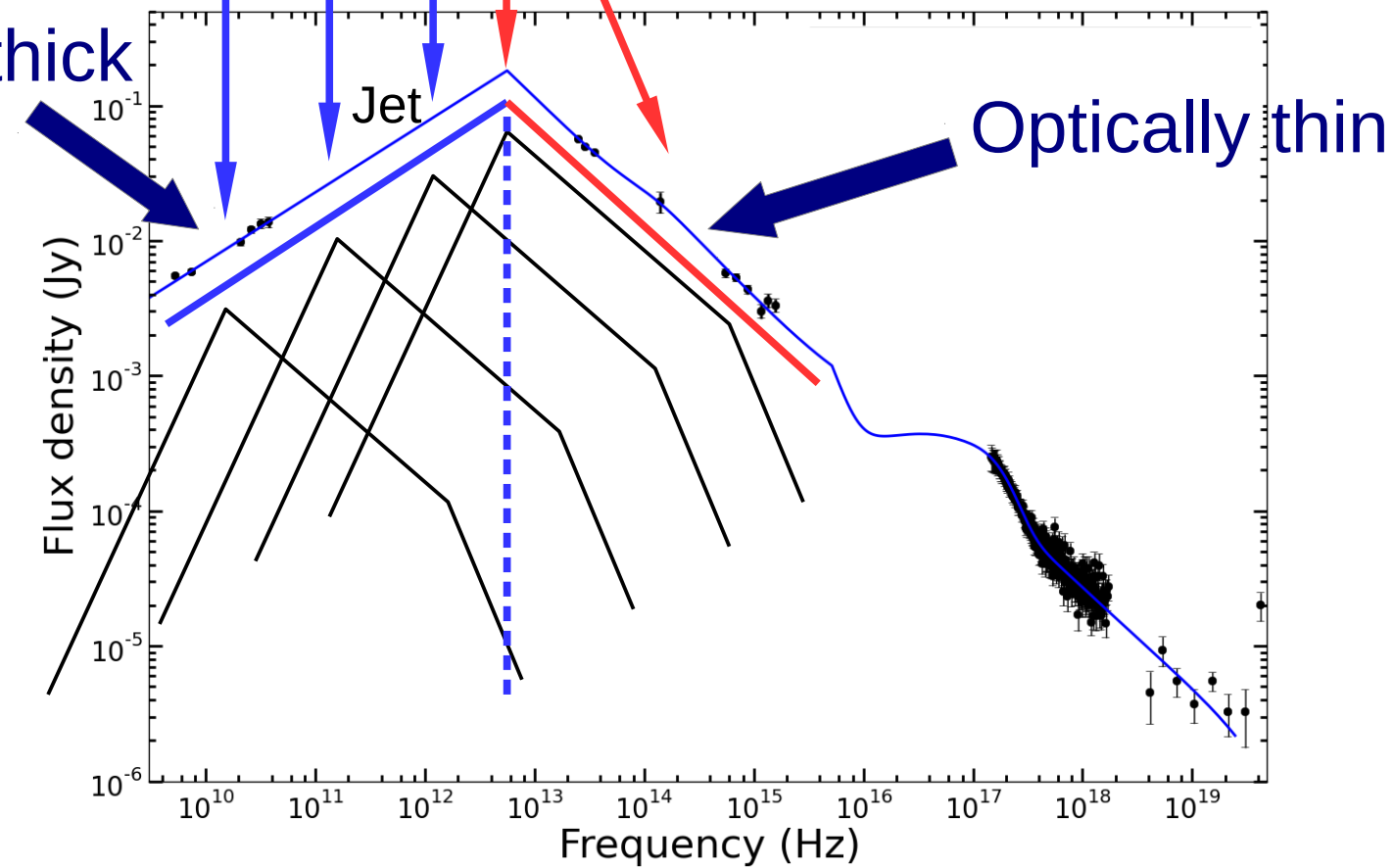
# Simultaneous broadband data







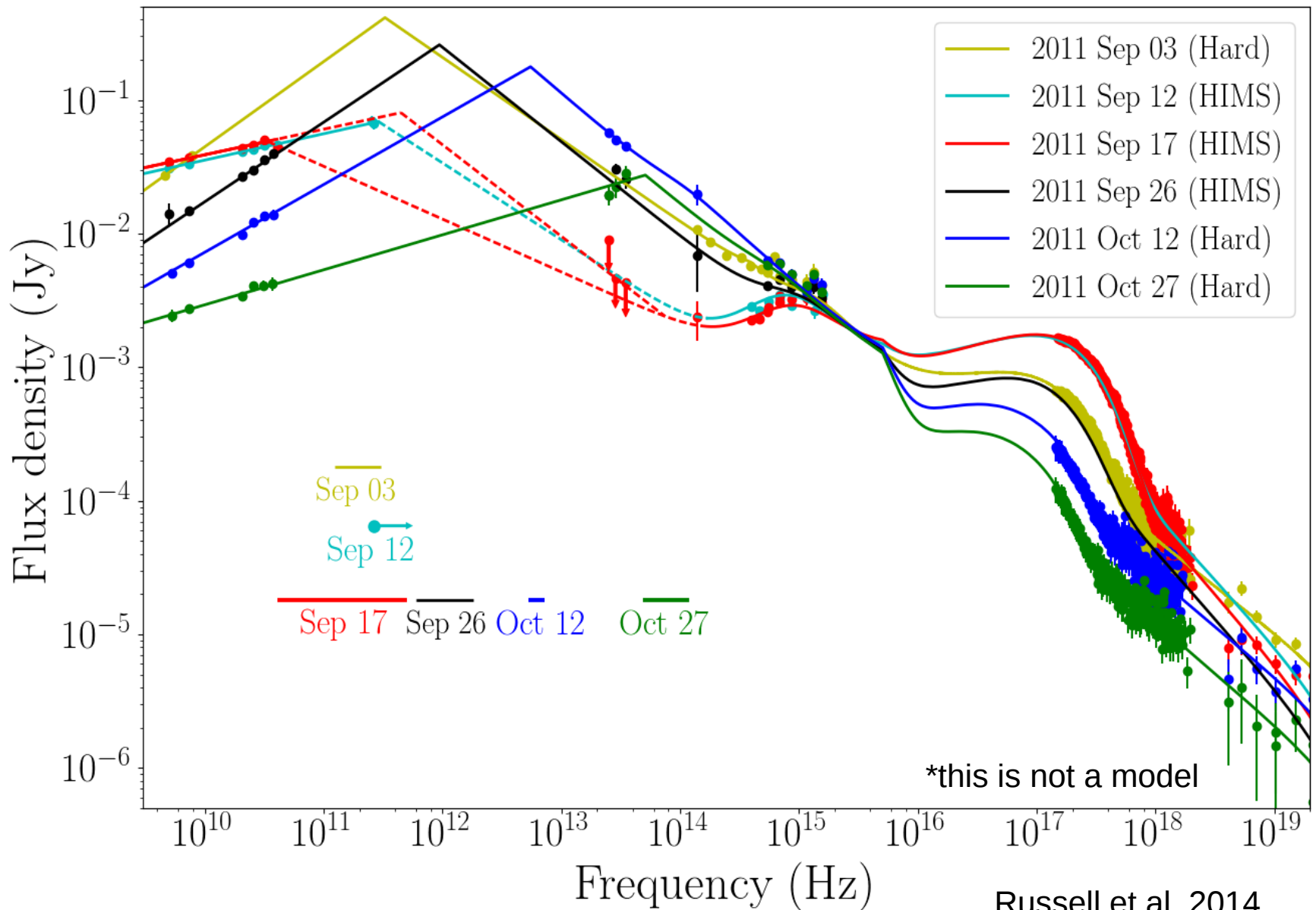
Optically thick





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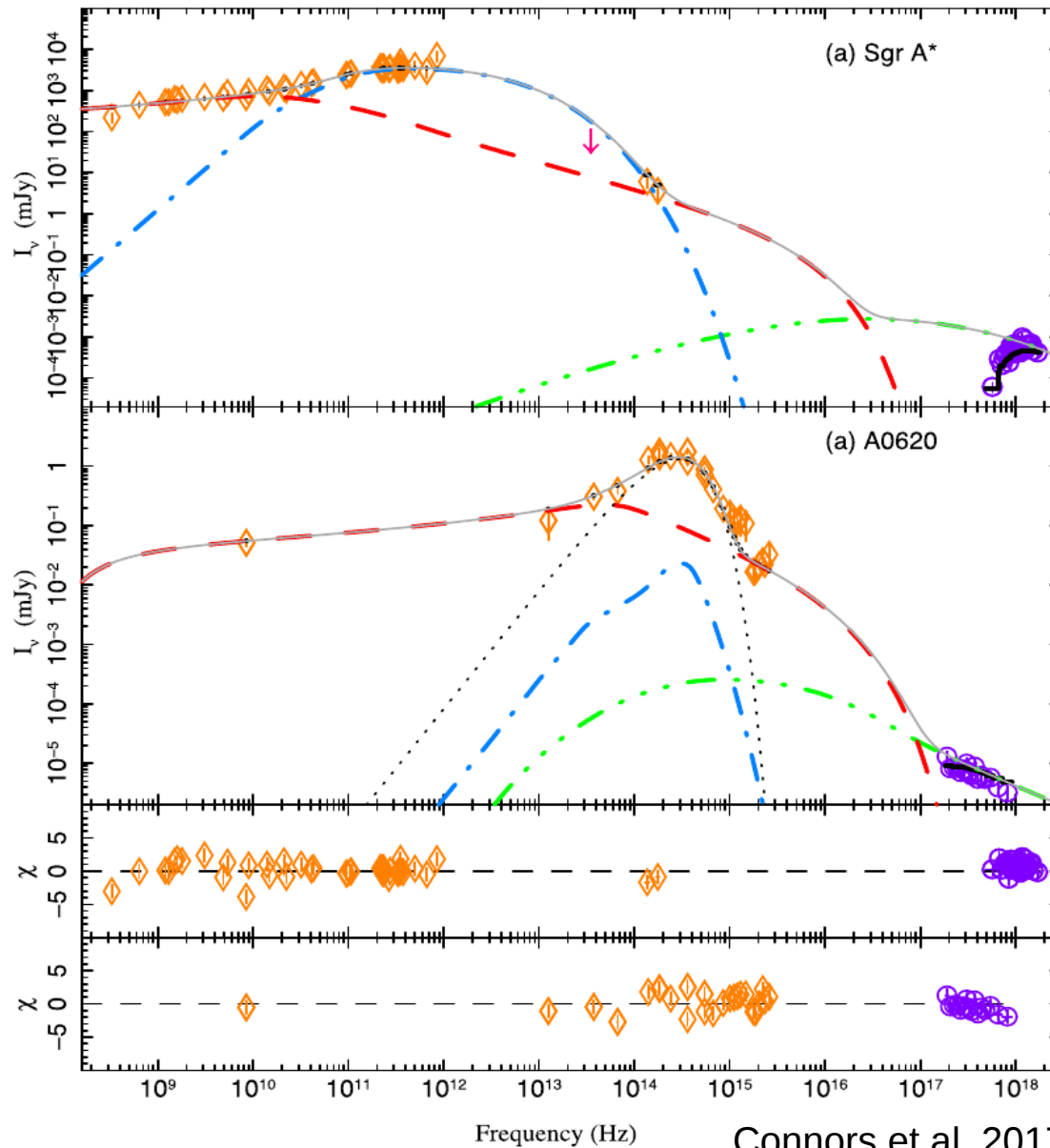
# Broadband evolution



Russell et al. 2014

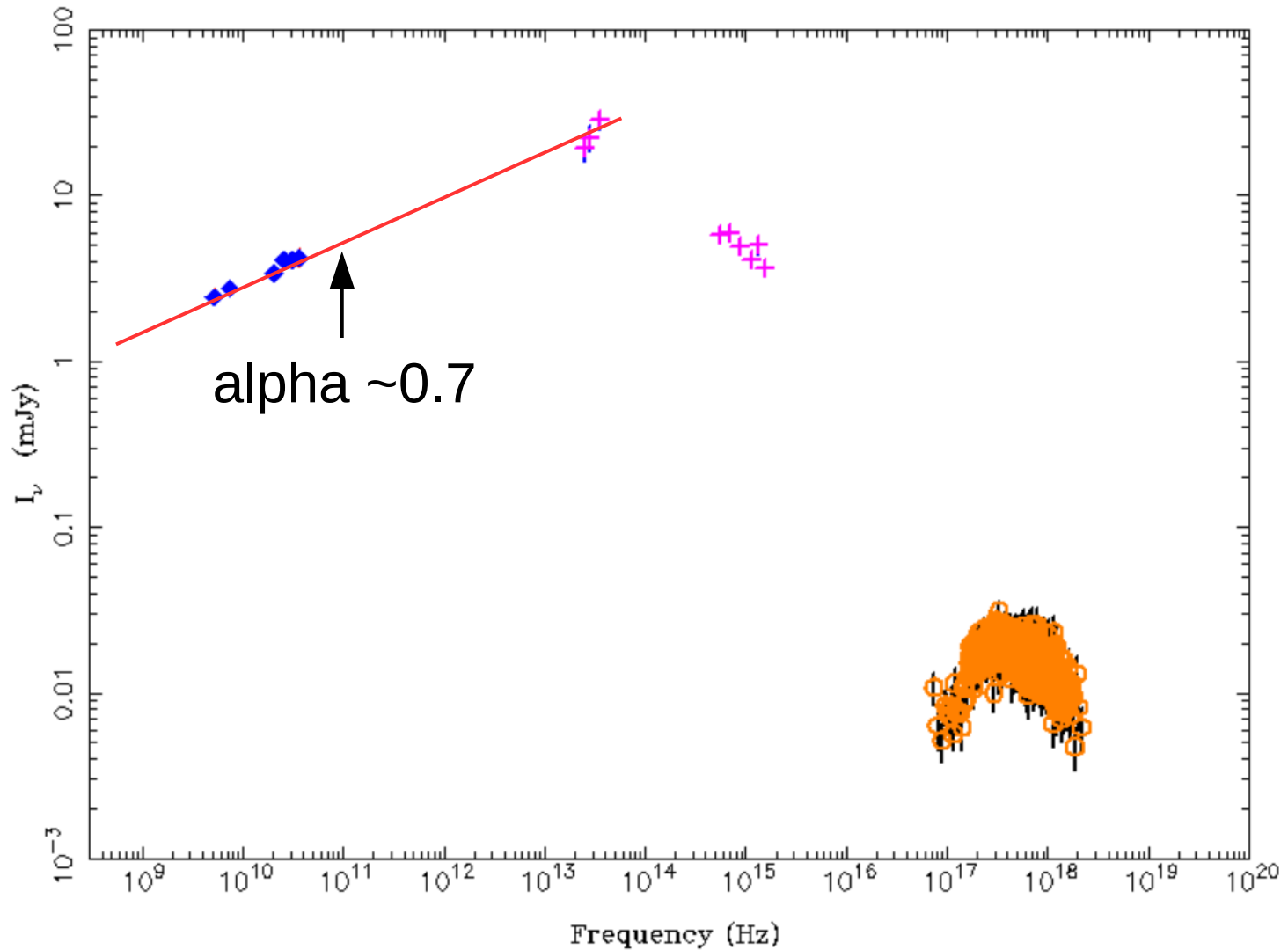


# agnjet: an outflow-dominated model

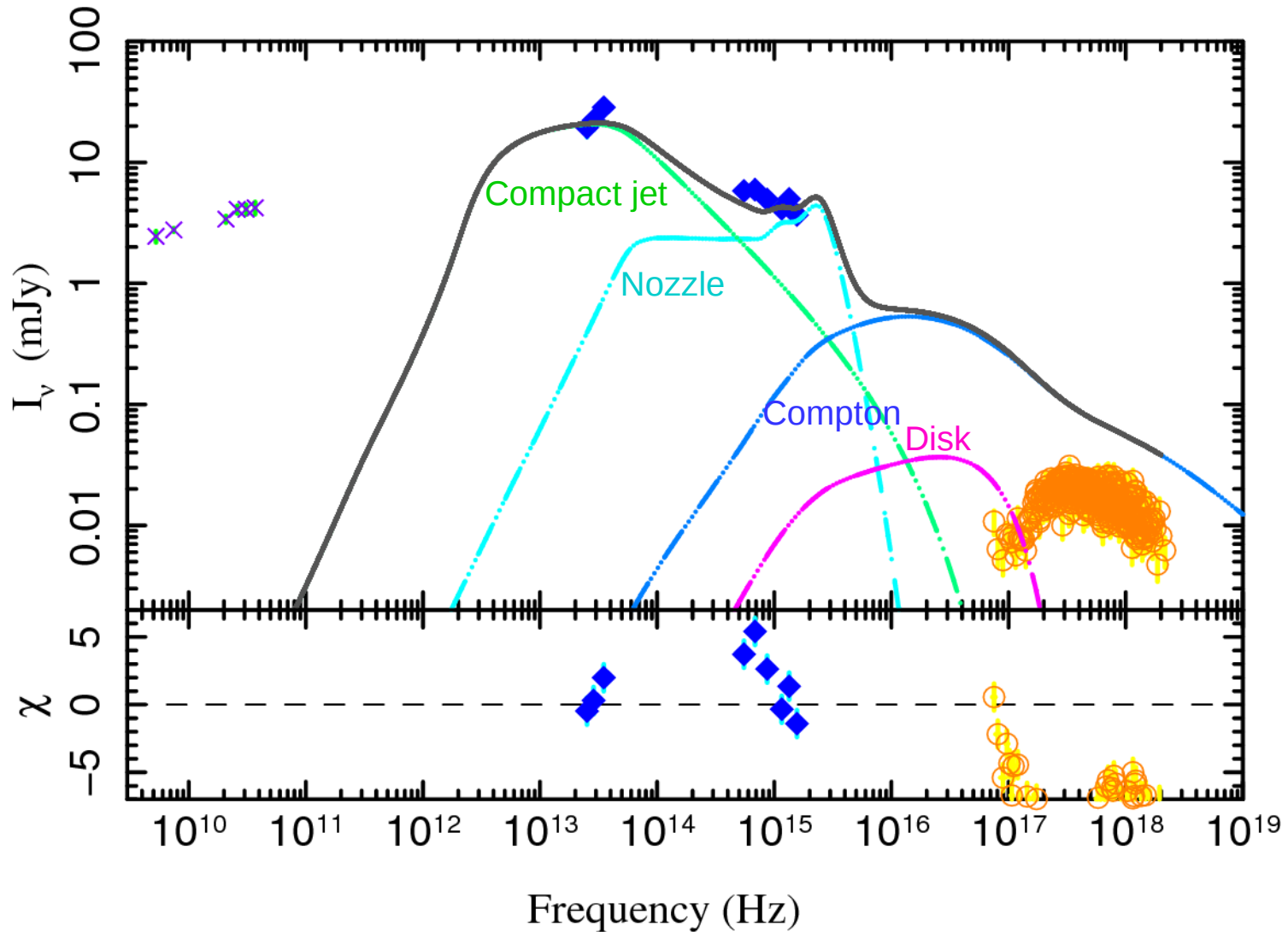


Markoff et al. 2005, 2008  
 Gallo et al. 2007  
 Maitra et al. 2009, 2011  
 Plotkin et al. 2015  
 Connors et al. 2017  
 Crumley et al. 2017

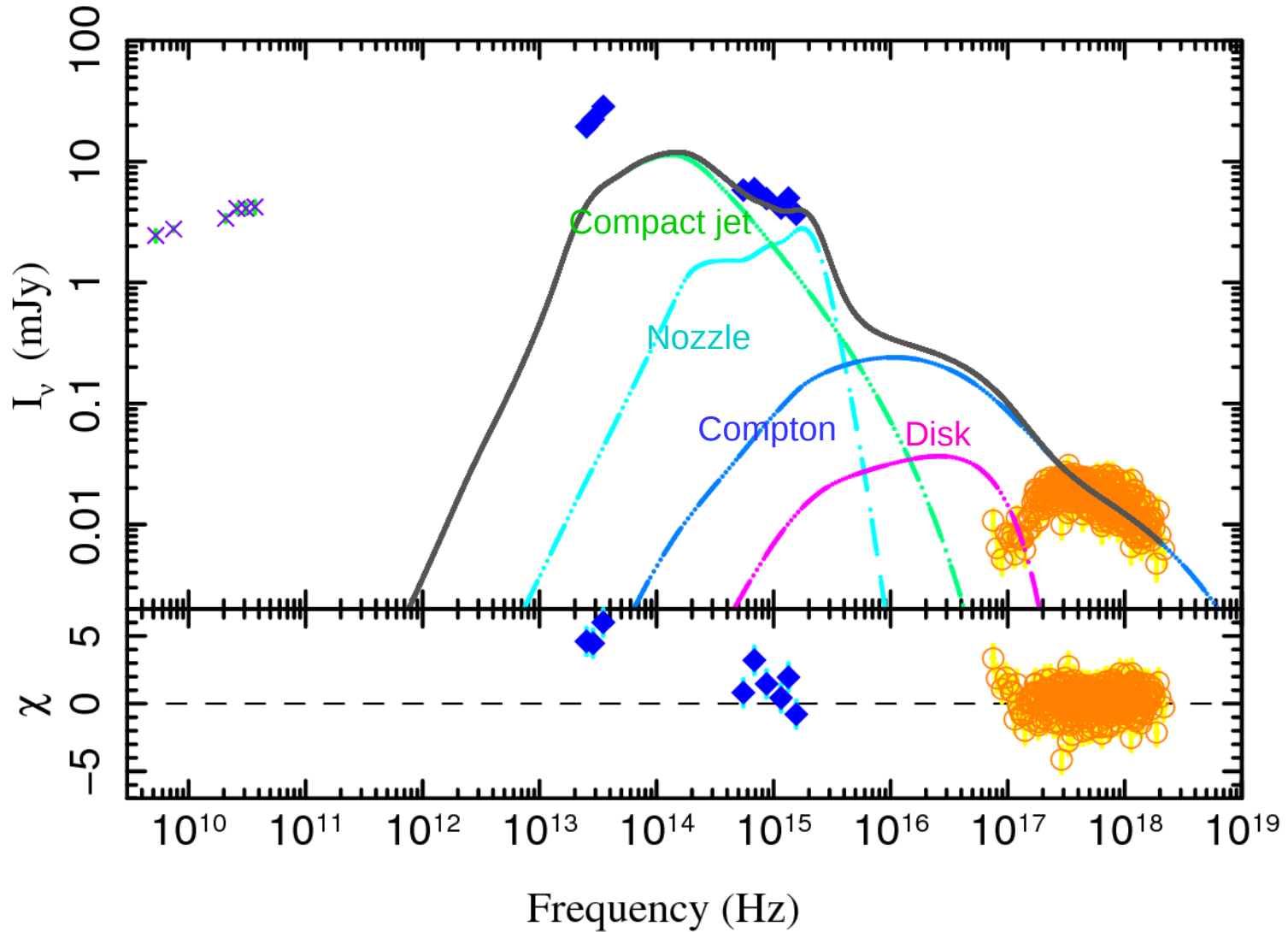
# The inverted radio spectrum



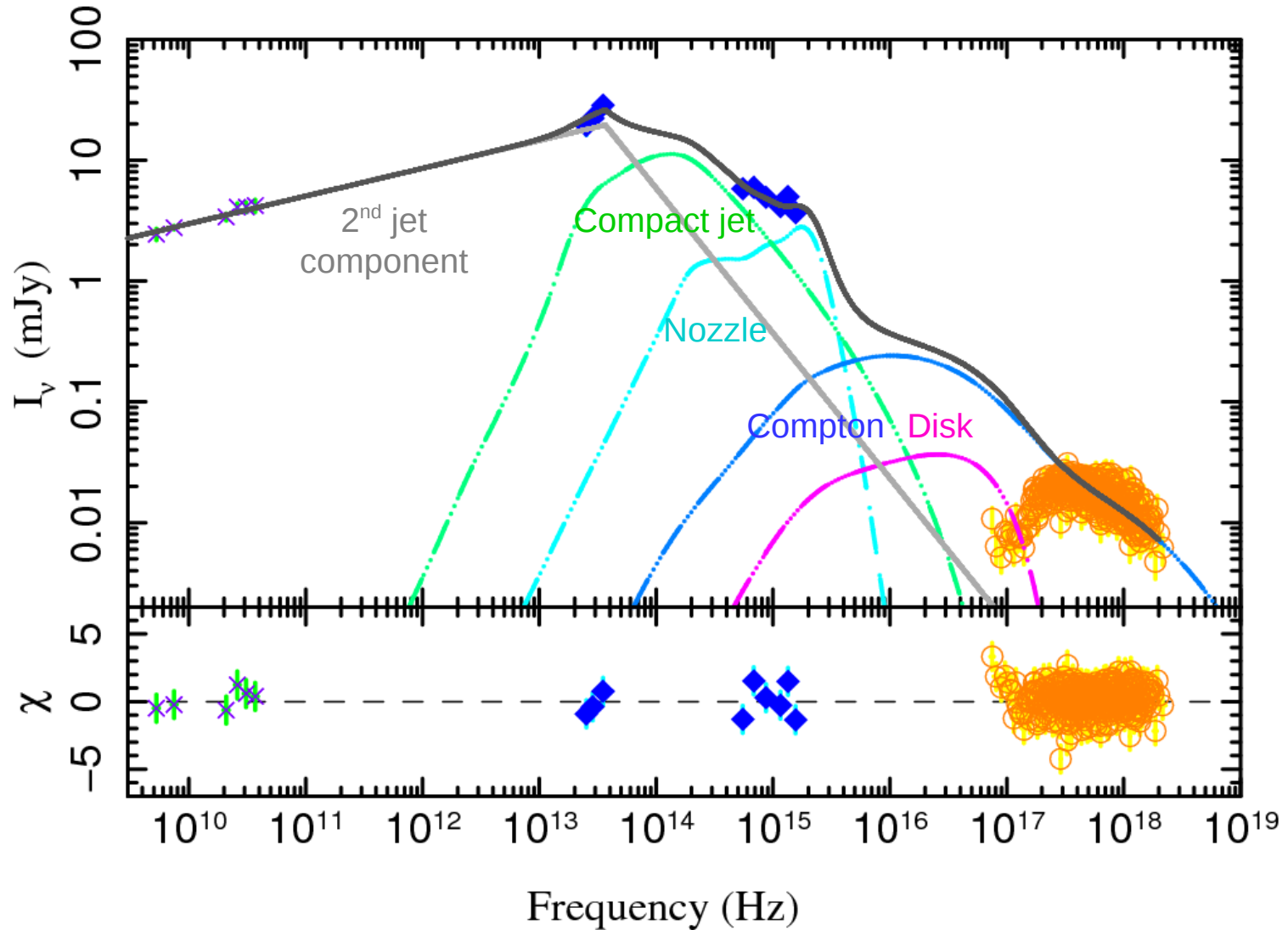
# Accounting for the X-ray emission



# Fitting the IR and optical



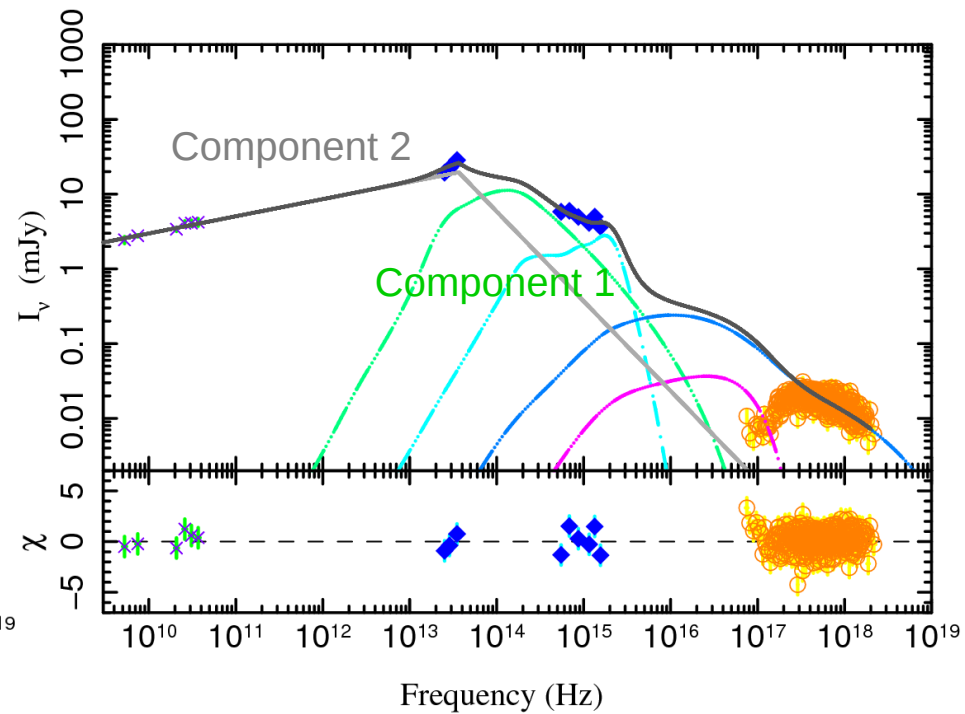
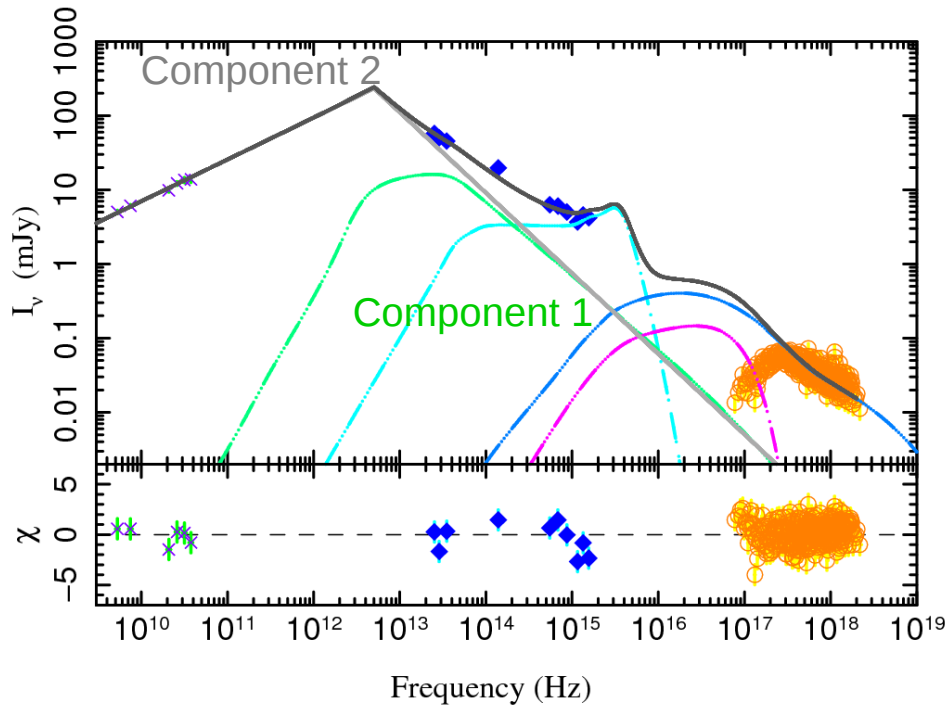
# A second jet component?



# Fading, flaring?

October 12

October 27



# Summary

- Unprecedented multiwavelength coverage
- Evolving compact jet
- Track the jet spectral break
- Broadband modelling hints at two component jet
- Further analysis is ongoing

# Conclusions

- Only possible with simultaneous multiwavelength monitoring
- mm and IR – probe inner regions of the jet



Image courtesy of Harvard - SMA



Image courtesy of  
ALMA, O. Dessibourg



Image courtesy of ESO





# Conclusions

