

SMA Operations



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- Weekends and holidays have a single, grueling, 12ish hour summit shift.

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- Approximately 100 hours of observing can occur per week.

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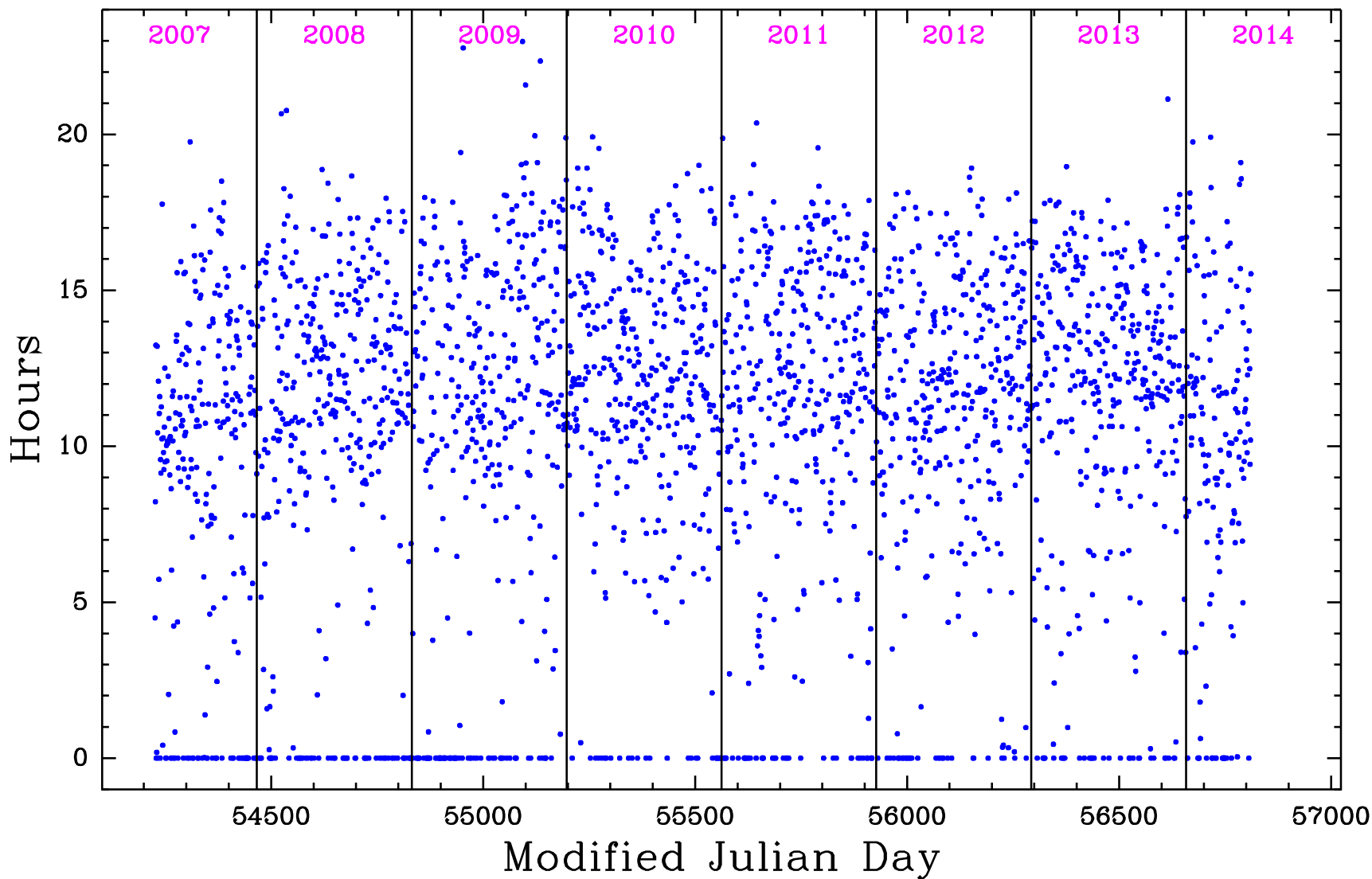
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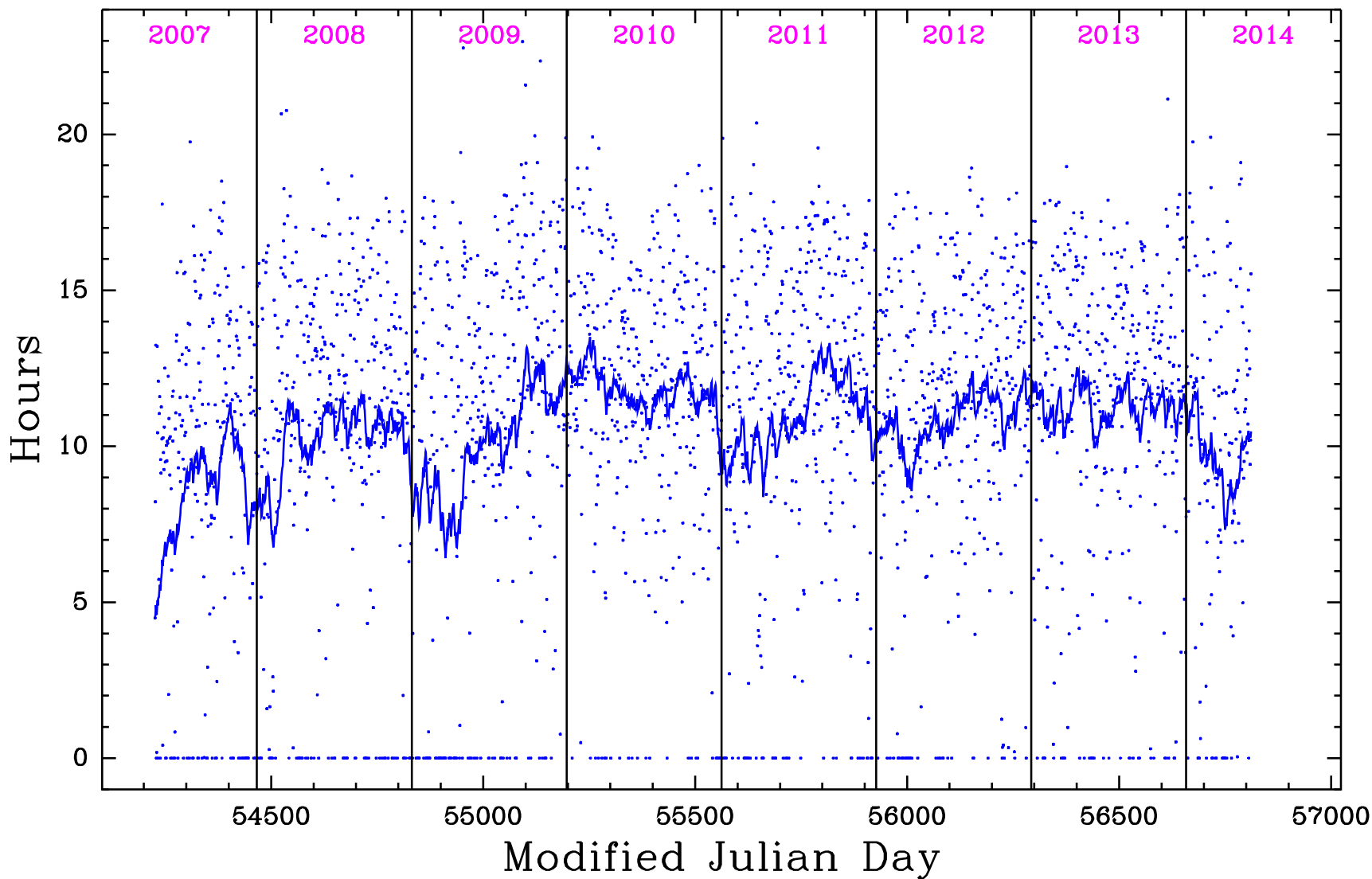
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- Average 10.6 hours of science data per day
- 7 nights out of 8, at least some science data is taken. 1/8 are lost to bad weather, engineering tests and reconfiguration activities.

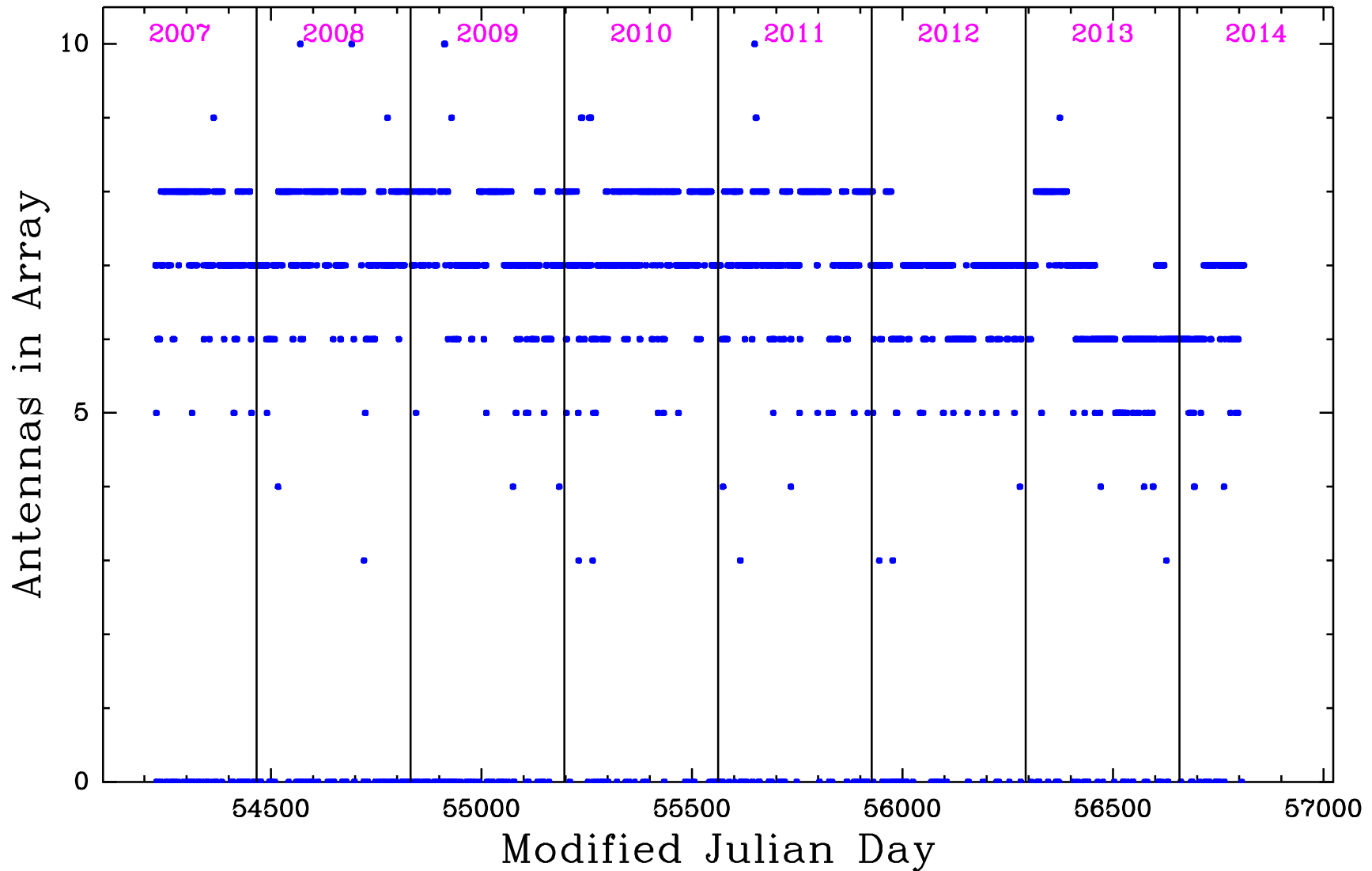
Hours of Science Observing per Night



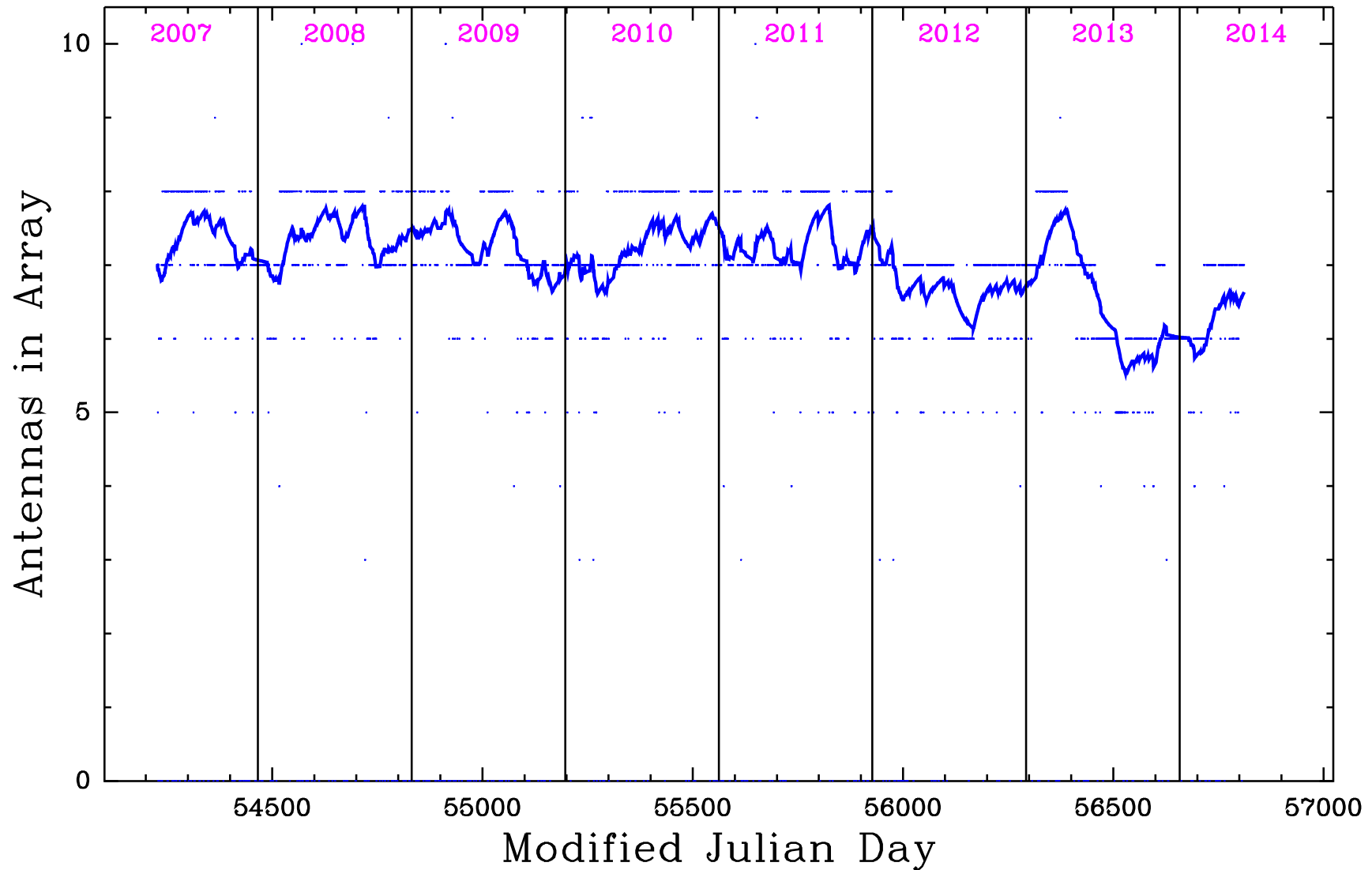
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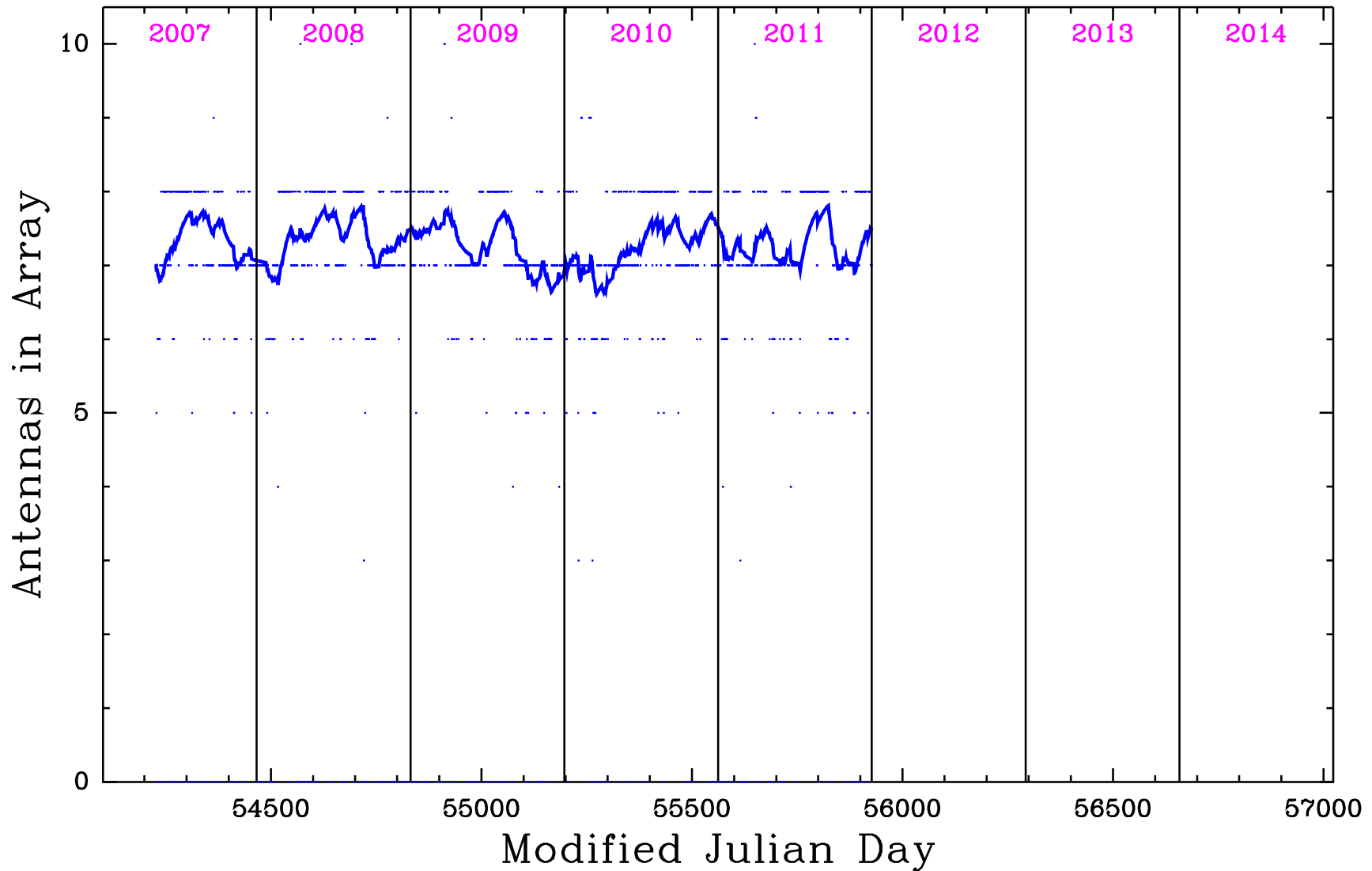
Antennas per Science Track



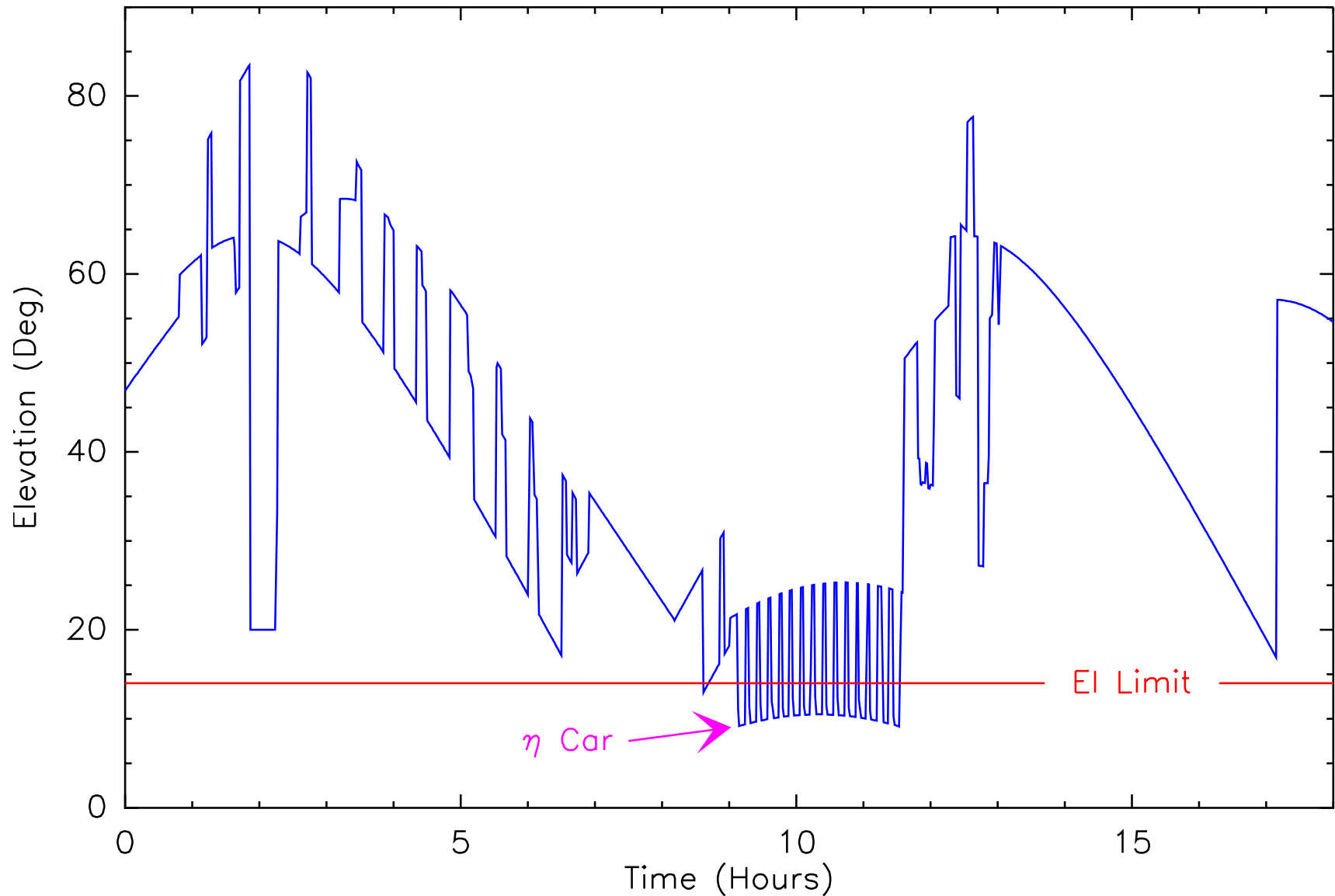
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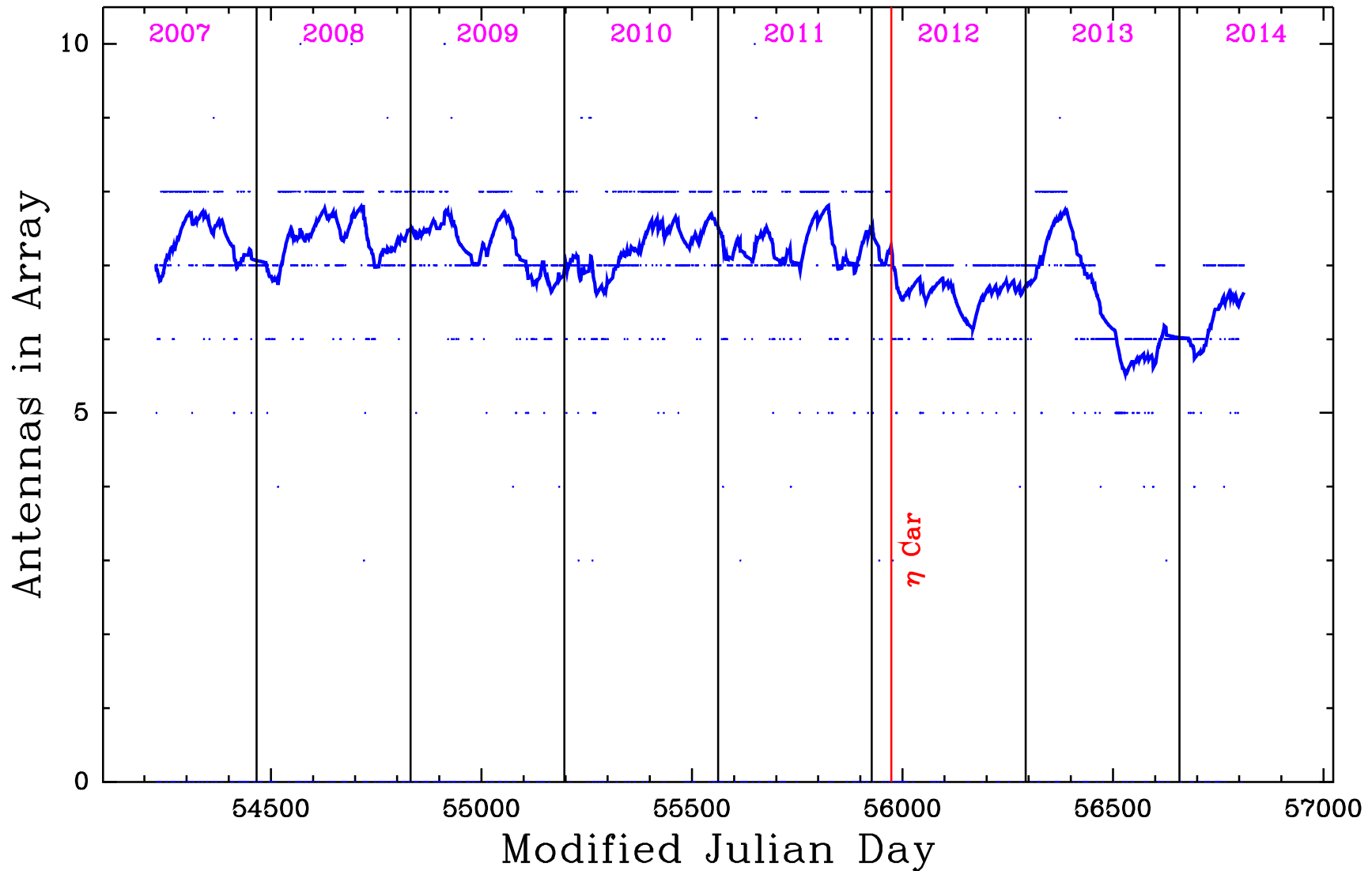
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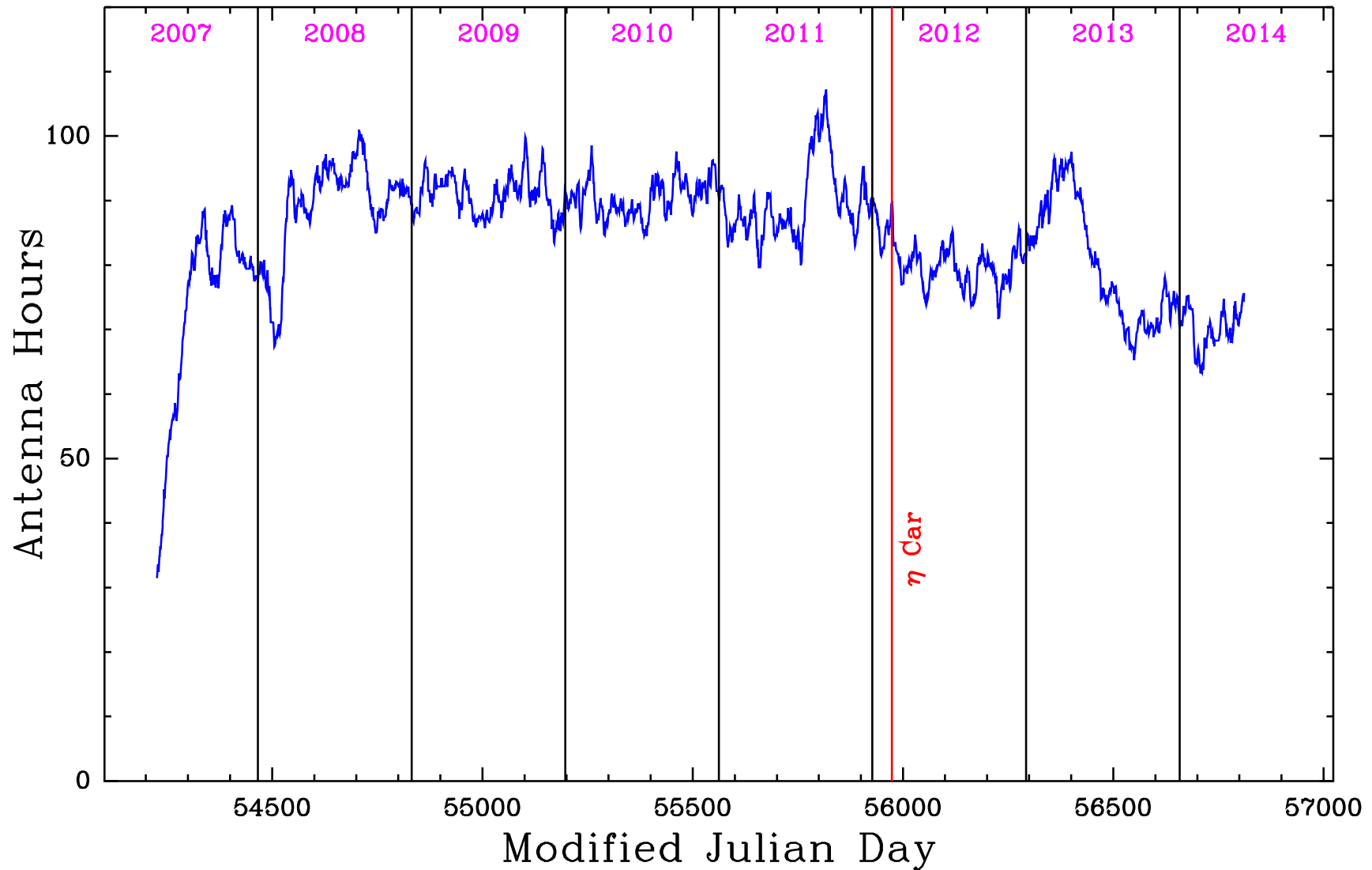
Elevation During η Car Track



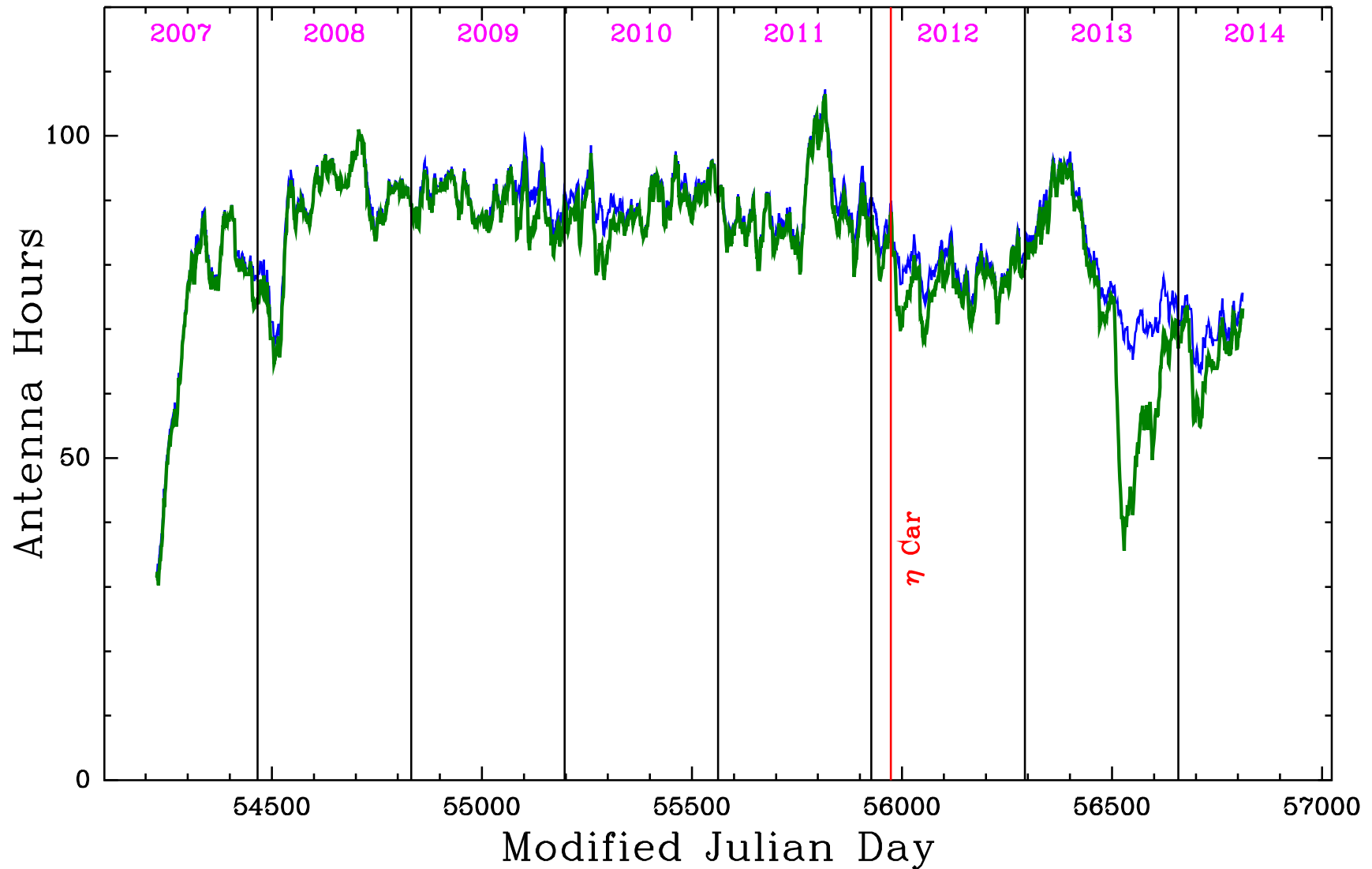
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- Operators log the events as they occur, lost time is measured in Antenna•Hour units (AH).
- We try to log what went wrong, not why, because there are often competing theories about why.
- Not very fine grained, for example one bad chunk is logged as lost time (I threw things like that out).

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- 0.8% lost due to software problems
- 1.5% lost due to unclassified errors (sick observers, flat tires, faulty cables, bogus fire alarms, space heaters put next to workstations, Subaru too tall, etc).

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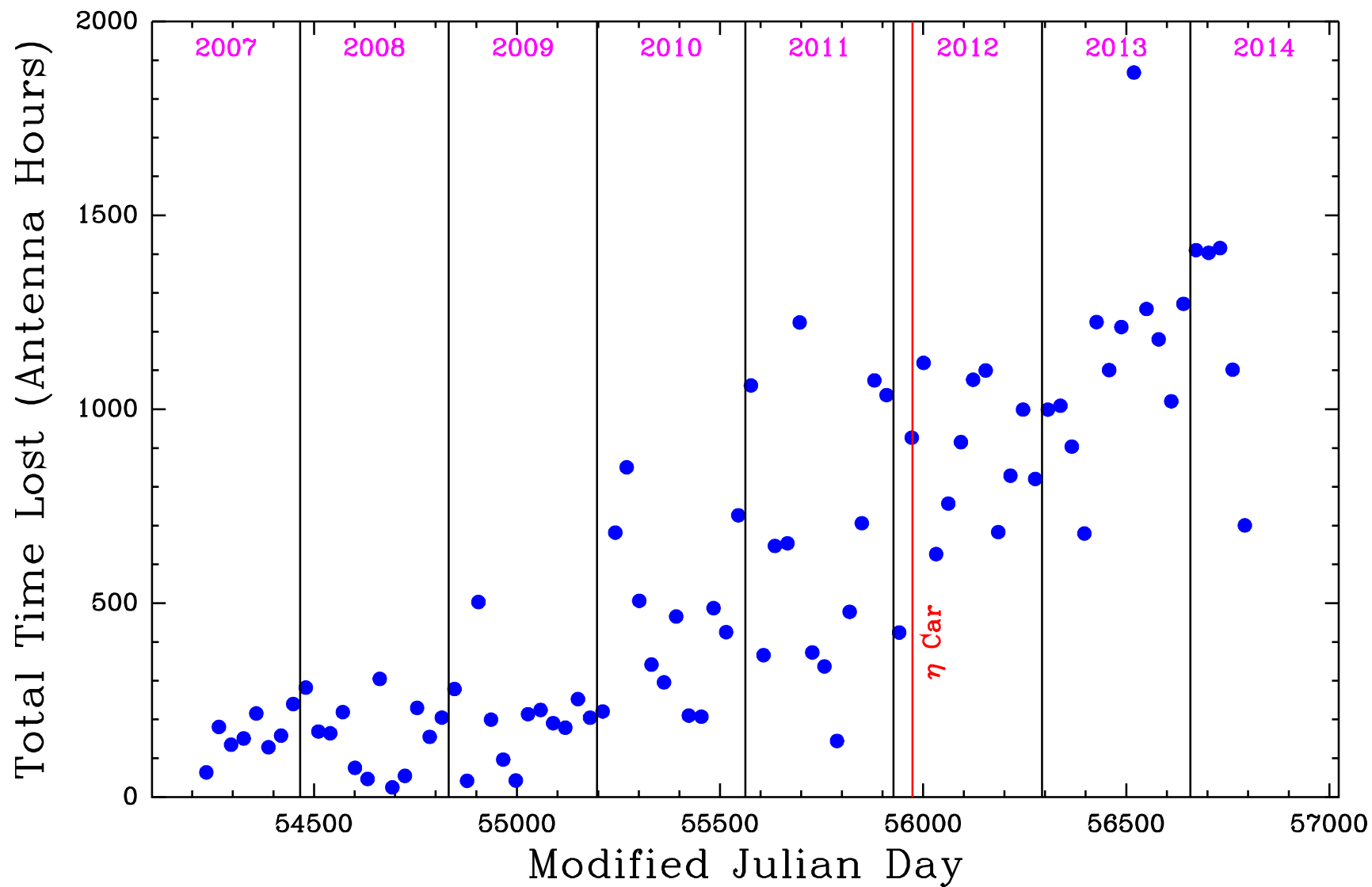
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- 52% antenna hardware problems (overwhelmingly drives)
- 12% dewar warm
- 6% software faults
- 3% receiver hardware problems

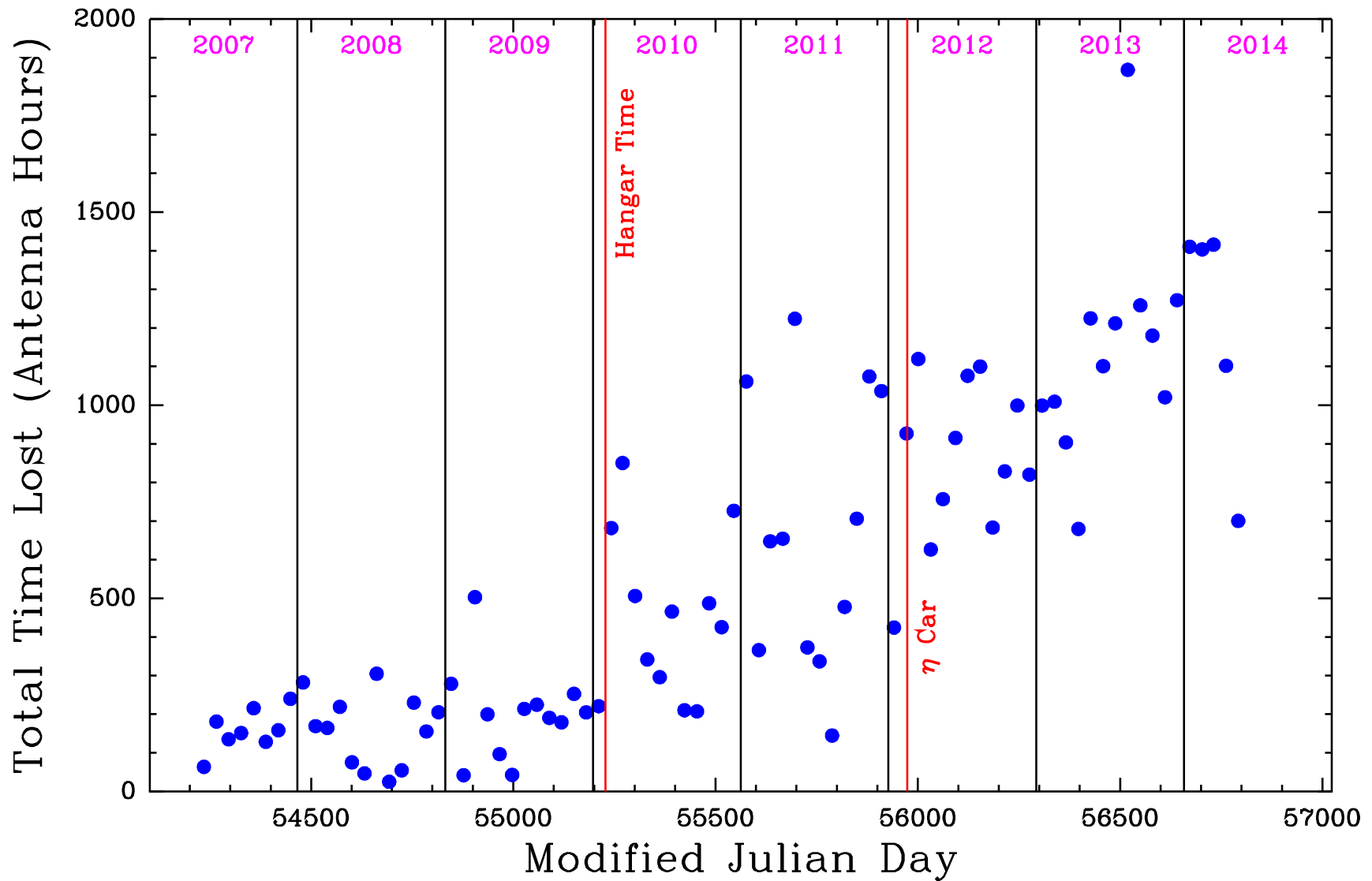
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- Ignoring weather, 13.2% of available time was lost
- 52% antenna hardware problems (overwhelmingly drives)
- 12% dewar warm
- 6% software faults
- 3% receiver hardware problems
- 26% everything else

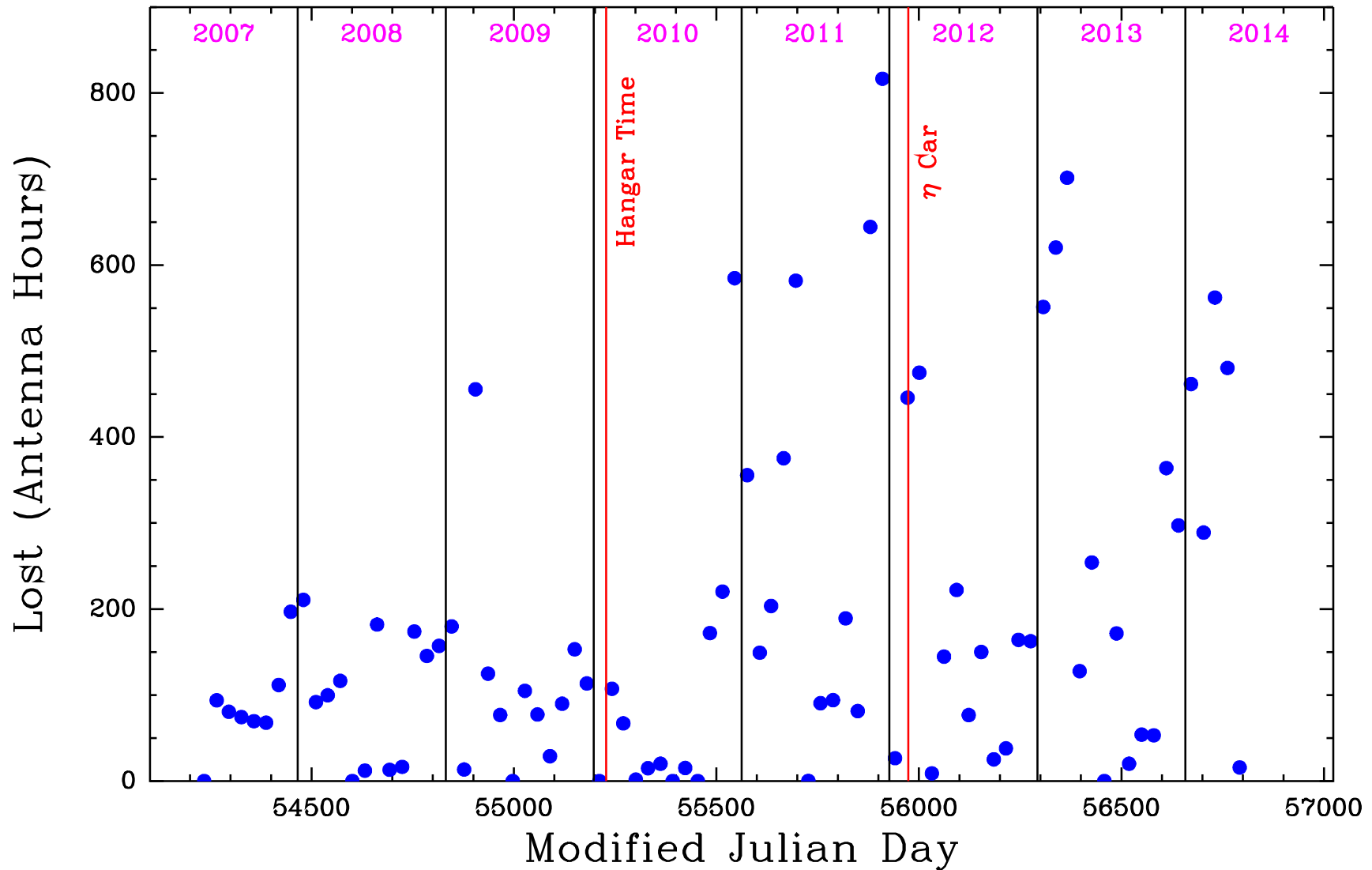
Total Time Lost



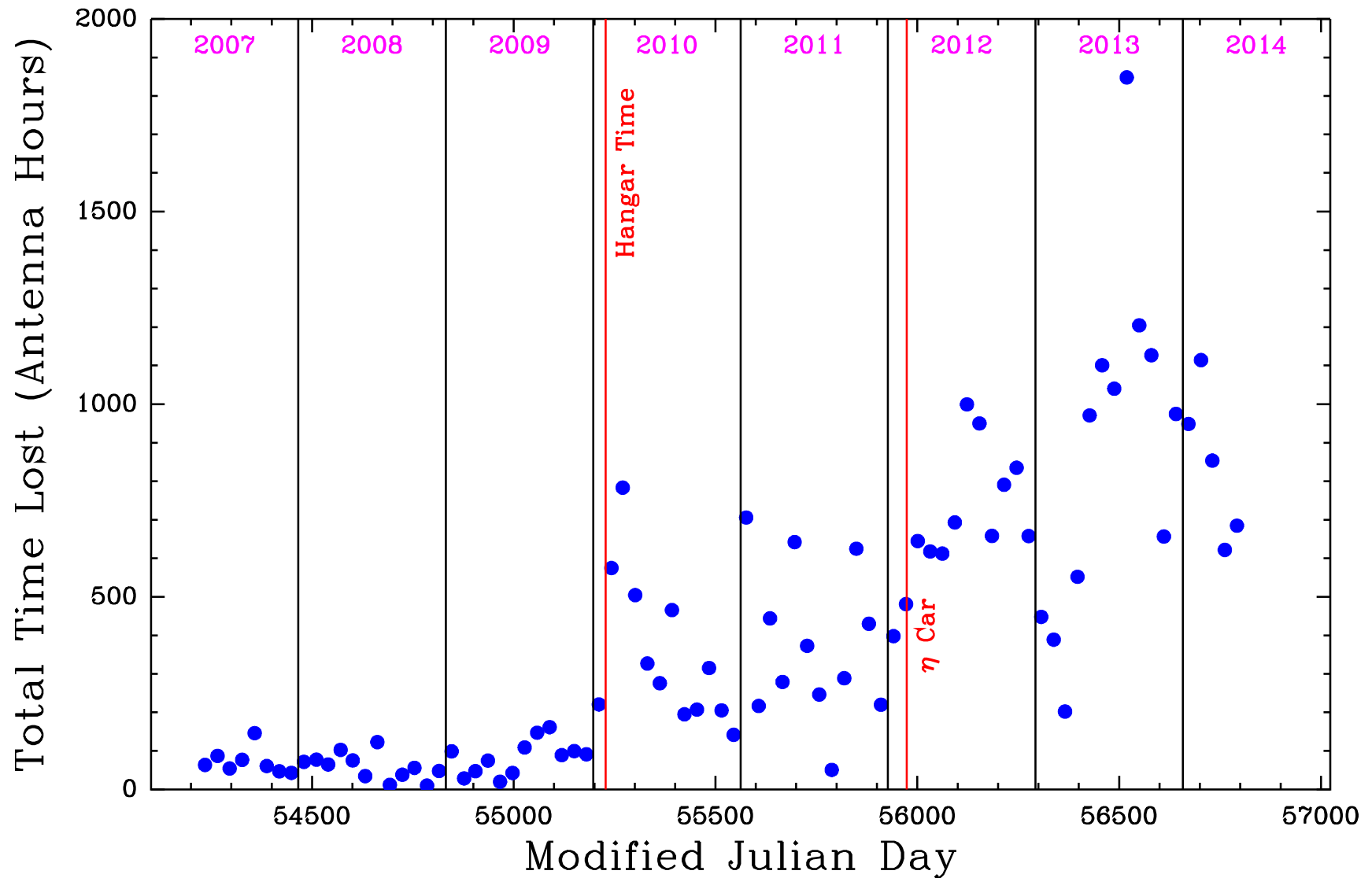
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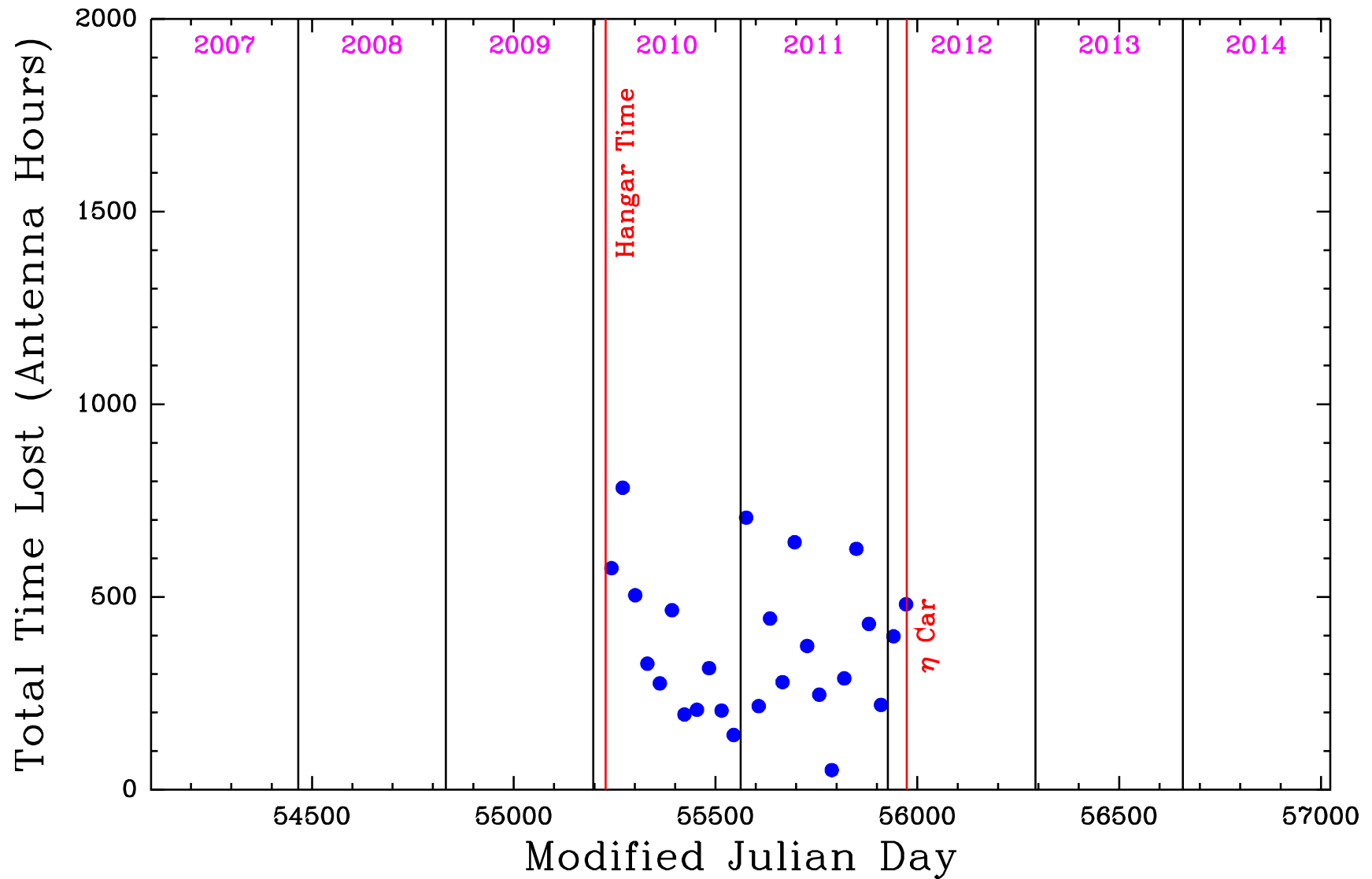
Time Lost Due to Weather



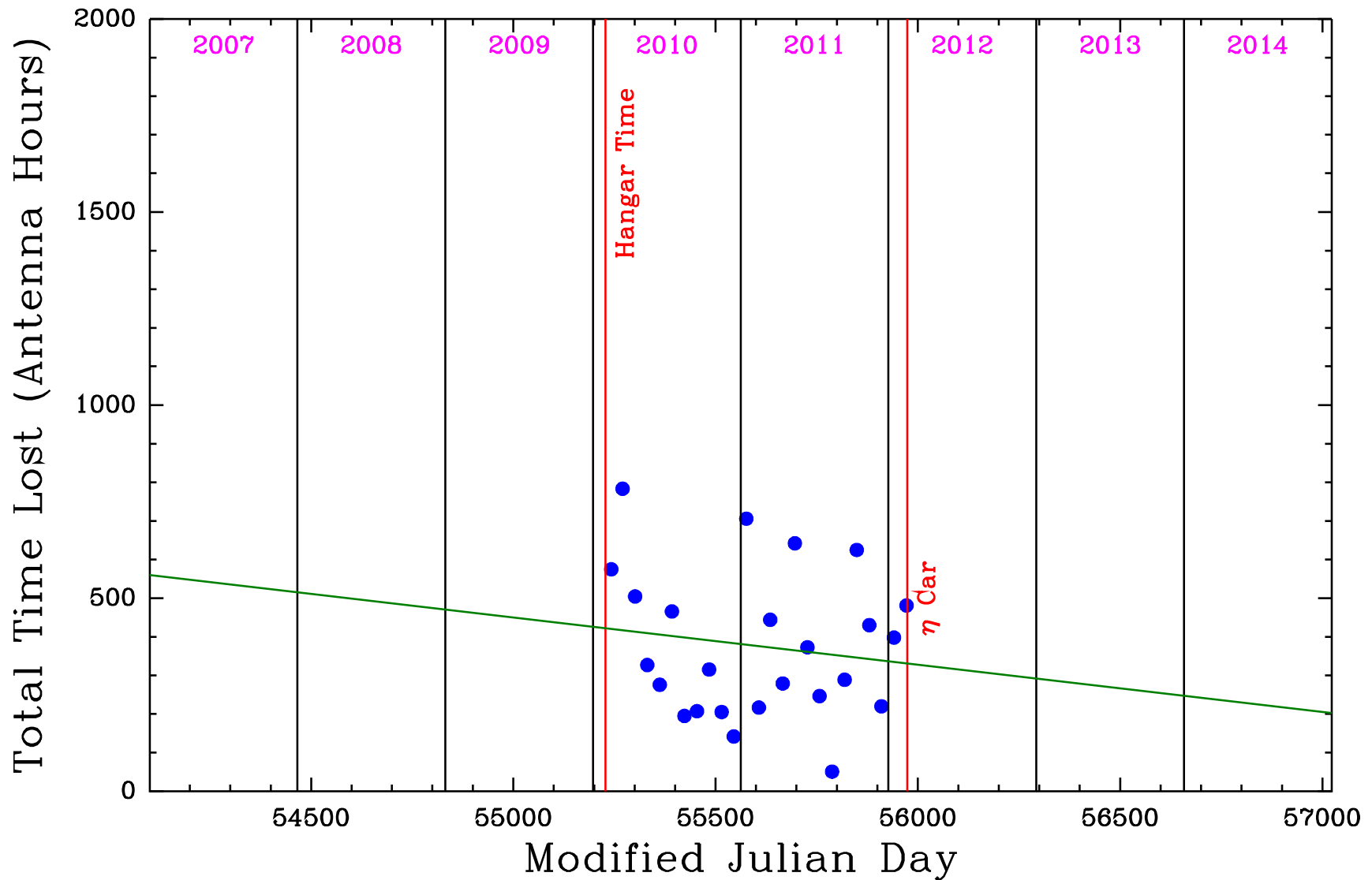
Time Lost, Excluding Weather



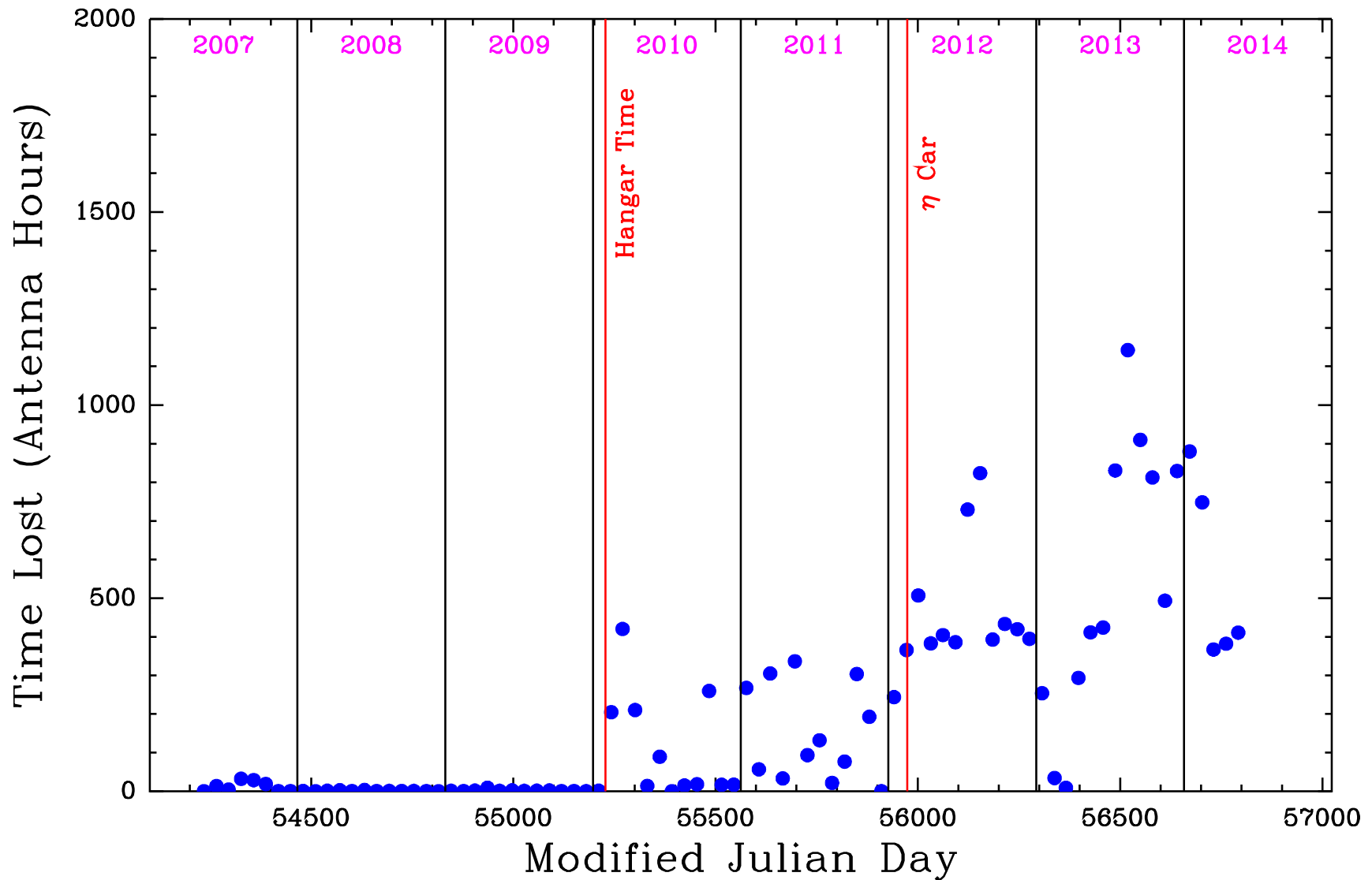
Time Lost, Excluding Weather



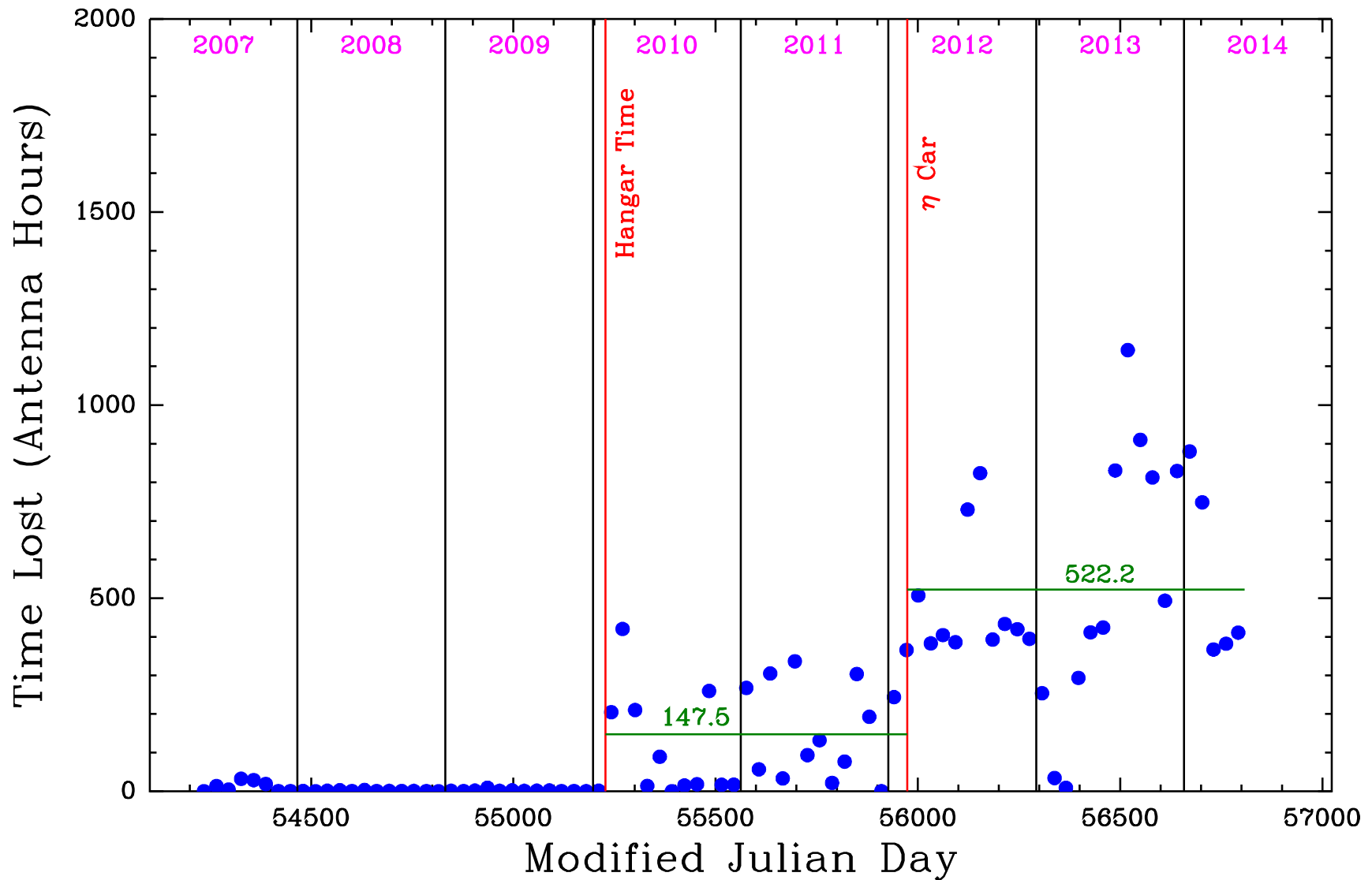
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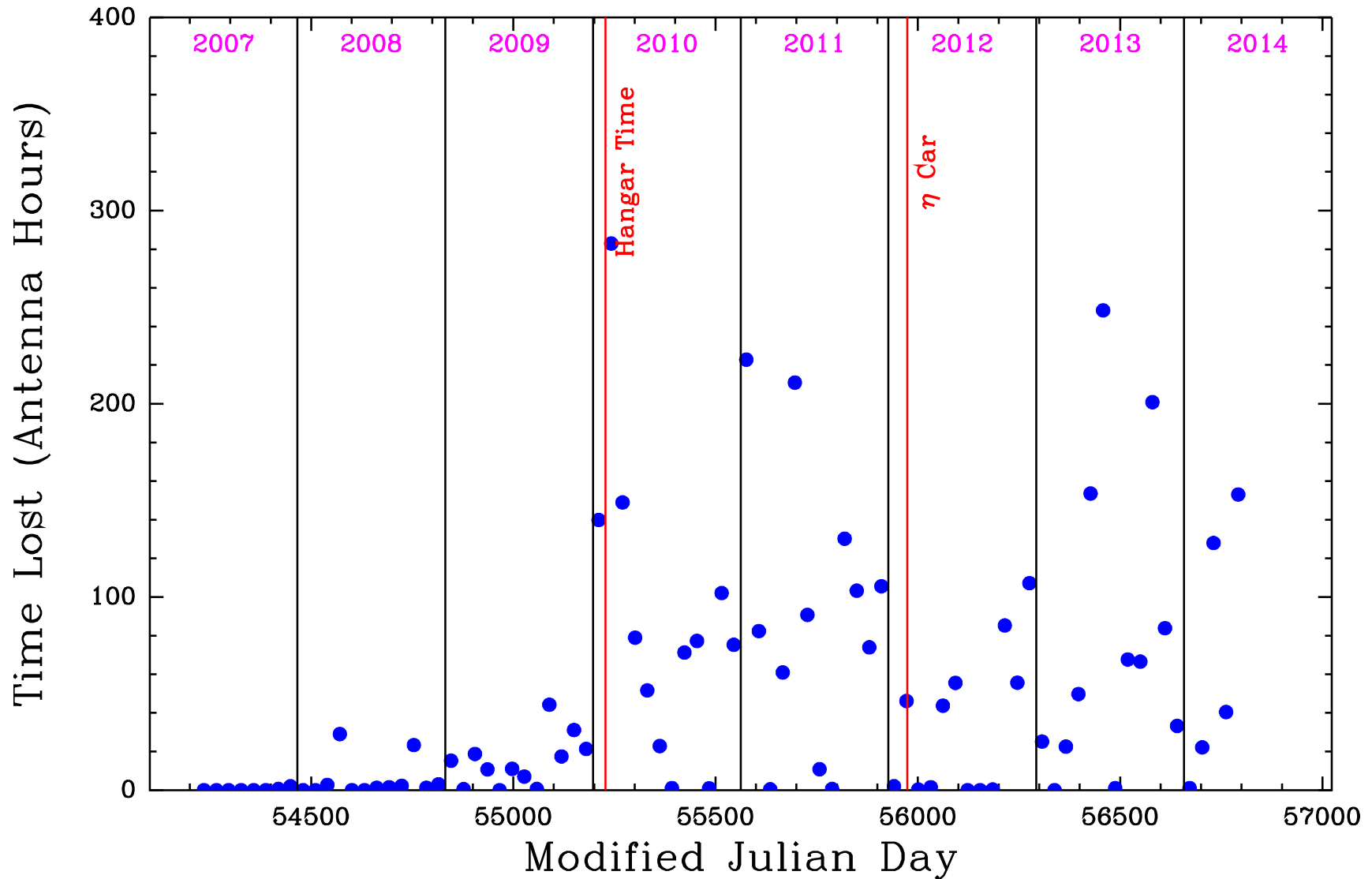
Time Lost due to Antenna Hardware



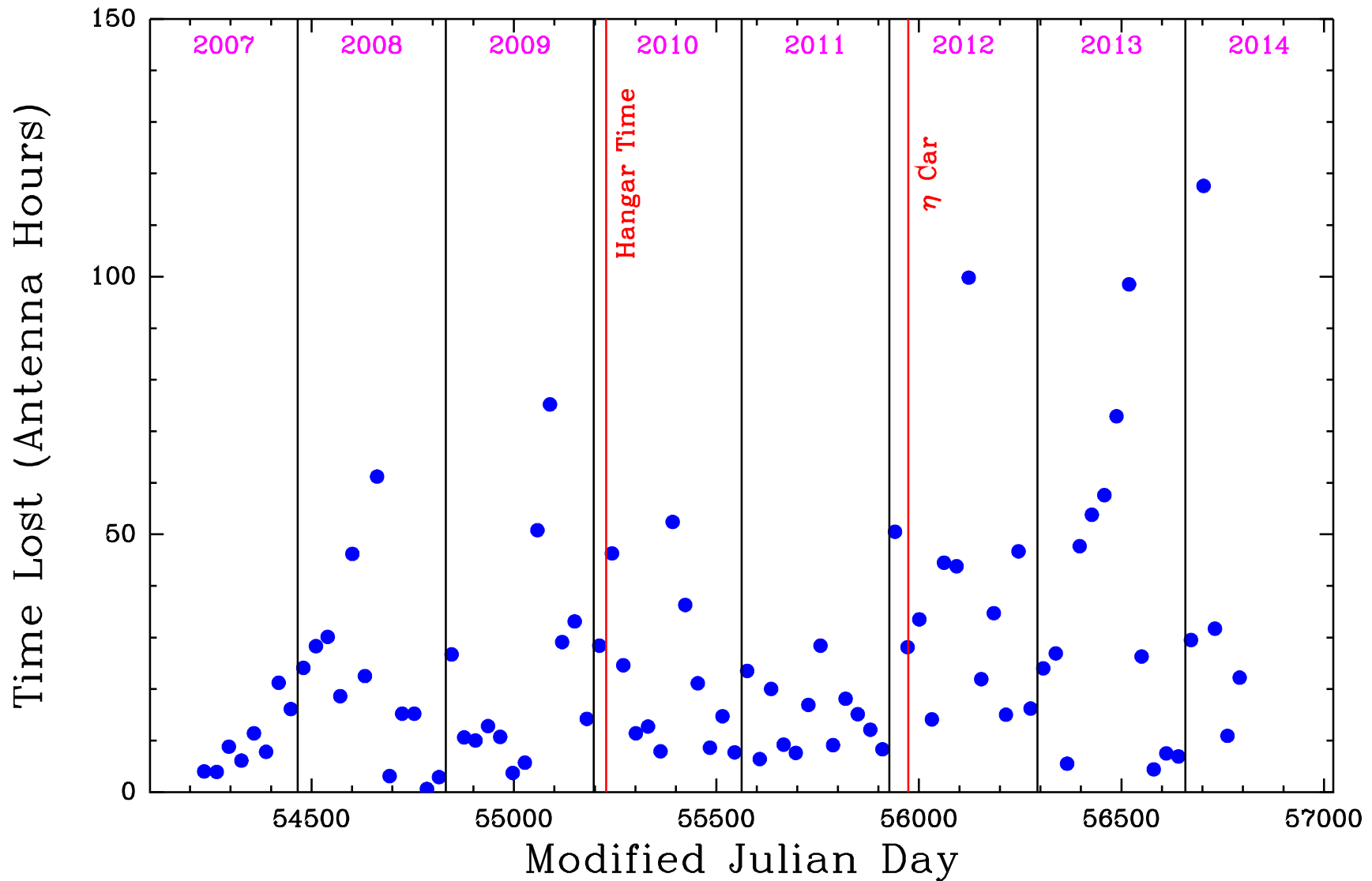
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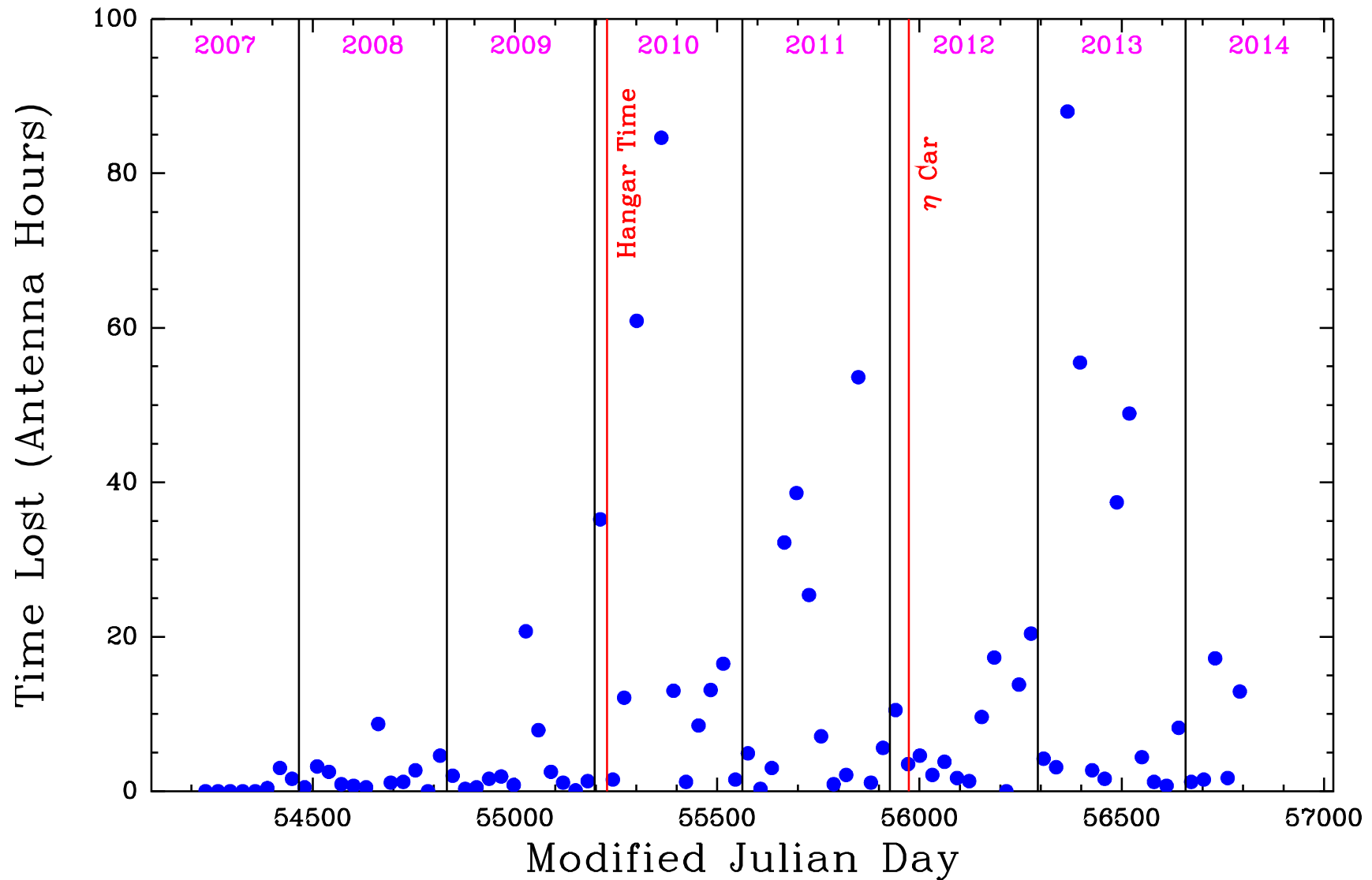
Time Lost due to Warm Dewars



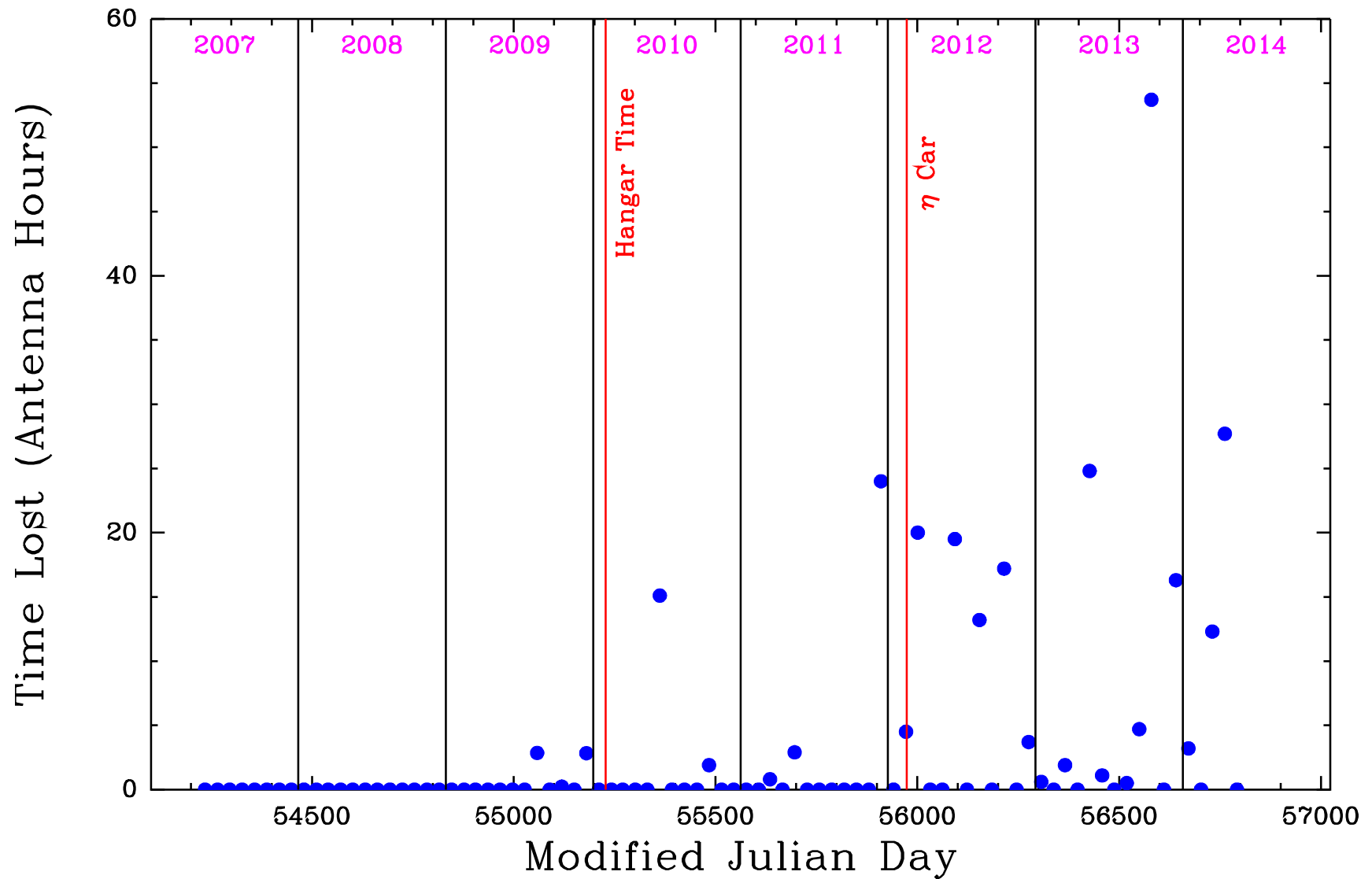
Time Lost due to Software



Time Lost due to Receiver Hardware



Time Lost due to Power Failures



Power Failures by Year

Year	Number of Power Failures	Time Directly Lost
2007 (May→Dec)	0	0.00 Antenna Hours
2008	1	0.07
2009	5	5.07
2010	3	17.0
2011	3	27.7
2012	13	84.2
2013	14	103.6
2014	14 (projected)	100 (projected)