ISOC's 2012 Planning Complexity

(see TN distributed by CW on 13/12/2011)

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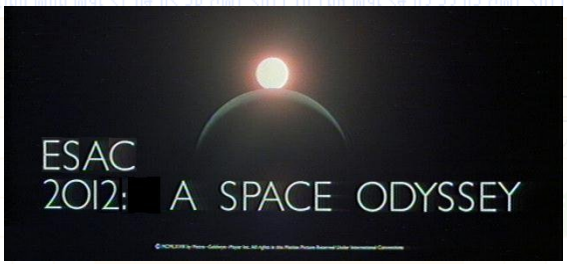
IUG - 18 Jan 2012



Rationale

The past: from AO1 to AO9…

- Focus shifted to (anti-)GC ➔ competing for scheduling!
- Observing patterns more and more non-standard (i.e., not Hex/5x5)
- # monitoring observations (such as GB, GPS) increased

➔ Scheduling process more and more complicated

- Relief strain on: future observing schedule + ISOC's science operations (+MOC!).

➔ How? <u>Ask IUG for advice</u>

AO9 - I

The present: AO9 – Take-over…

- Carry-over from AO-8 into AO-9
  1. ToO on SN 2011fe (in M101) partly during GC visibility
  2. Extra calibration (mask, Crab)

➔ ~3 Msec take-over – mostly GC visibility window

Table 1. List of carry-over from AO8 into AO9

Proposal ID	Target/field	Carry-over (ksec)	Visibility period
0820029	l=55 deg	1324	Apr-May, Oct-Nov
0820024	inner disk l>0 & l<0	427	Mar-Apr, Sep-Oct
0820027	RX J1713.7-3946	494	Feb-Apr, Aug-Oct
0820037	Galaxy scan, l=-22.5	548	Feb-Mar, Aug-Sep

AO9 - II

The present: AO9 – 10 out of 18 non-standard patterns…

- scans (6)
- monitoring (5)
- special 5x5 (3)
- special Hex (6)

For descriptions:

http://integral.esac.esa.int/AO9S/table.php

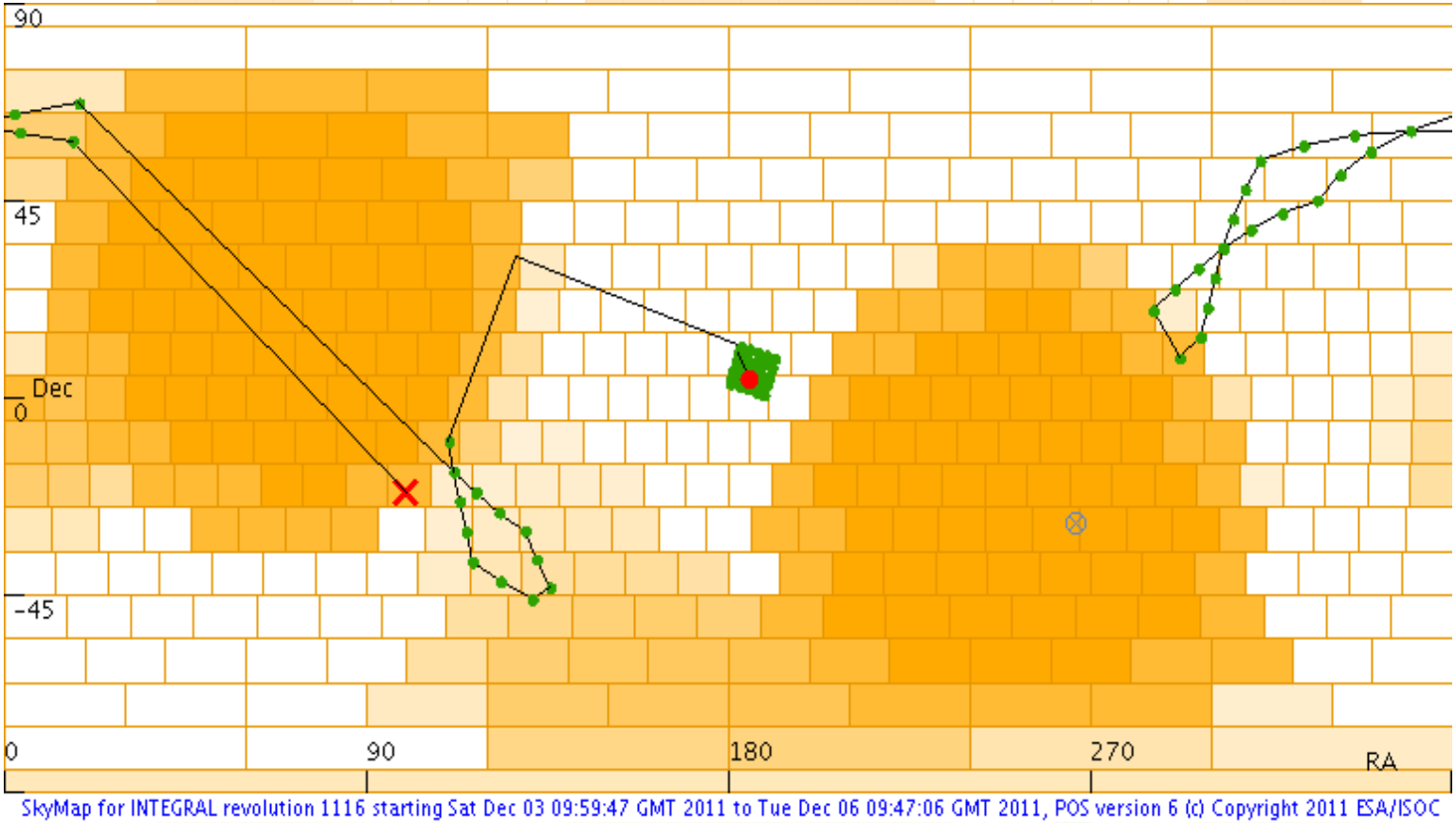
Table 2. List of non-standard observing strategies in AO9

Proposal ID	Target/field	Observation type	Total time (ksec)	Fixed obs. time (ksec)	Visibility	Grade
0820029	l=55 deg	scan	1324	60	Apr-May, Oct-Nov	A
0820037	Galaxy scan, l=-22.5	scan	548	60	Feb-Mar, Aug-Sep	B
0920011	Latitude scans l=0	scan	1000	60	Mar-Apr, Sep-Oct	B
0920012	Latitude scans l=-78.5	scan	1000	60	Jan, May-Aug, Nov-Dec	B
0920002	Galactic halo scans	scan	1600	80	Feb-Mar, Aug-Sep*	B
0920005	GPS	scan, every revolution	2000	variable	Jan-Dec	A
0820024	inner disk l>0 & l<0	2 times 5x5	427	90	Mar-Apr, Sep-Oct	A
0920013	Inner Galactic disk (l=+/-15)	2 times 5x5	2500	90	Feb-Apr, Aug-Oct	A
0920025	Galactic Center	custom 5x5	2000	50	Feb-Apr, Aug-Oct	A
0920024	4U 0614+091	Hex, spread over AO	500	50	Feb-Apr, Aug-Oct	C
0920001	Galactic bulge region	1 Hex, every revolution	504	12.6	Feb-Apr, Aug-Oct	A
0920015	Perseus/Norma arm	1 Hex, every revolution	600	12.6	Feb-Apr, Aug-Oct	A
0920015	Scutum/Sagittarius arm	1 Hex, every revolution	600	12.6	Feb-Apr, Aug-Oct	A
0920008	GRS 1915+105	Hex, every 2nd revolution	500	20	Mar-May, Sep-Nov	A
0920008	Cygnus X-1	custom Hex, spread over AO	700	100	Feb-Jun, Sep-Dec	A

** This is the total visibility for all the scans at l=-20, -10, 0, 10 and 20 degrees. The visibility per scan is typically a month or less per season.*

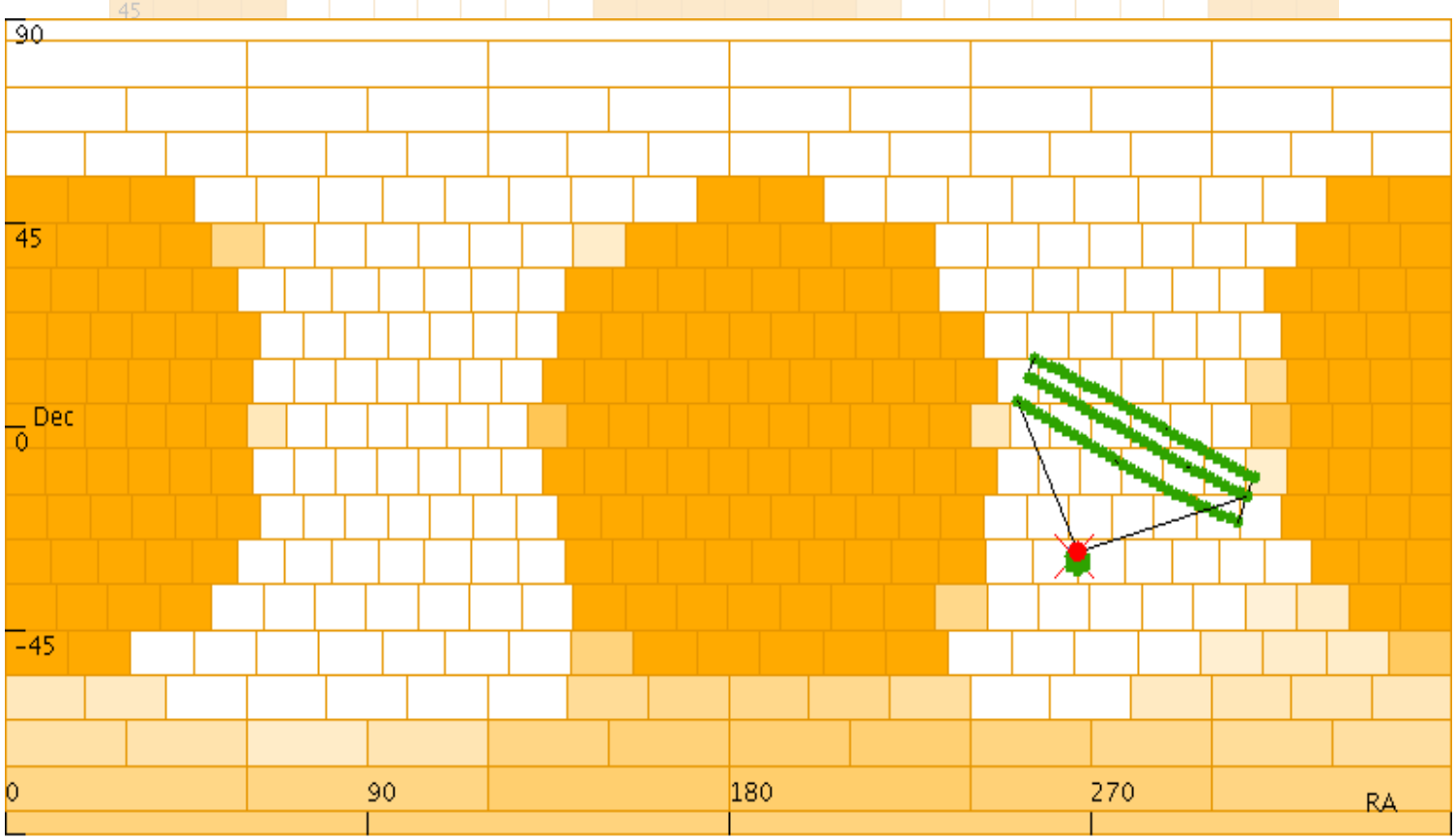
Past examples - I

Past examples of scheduling complexities (1 or more obs in a rev with non-standard patterns (note: ~200-220 ksec available per revolution)



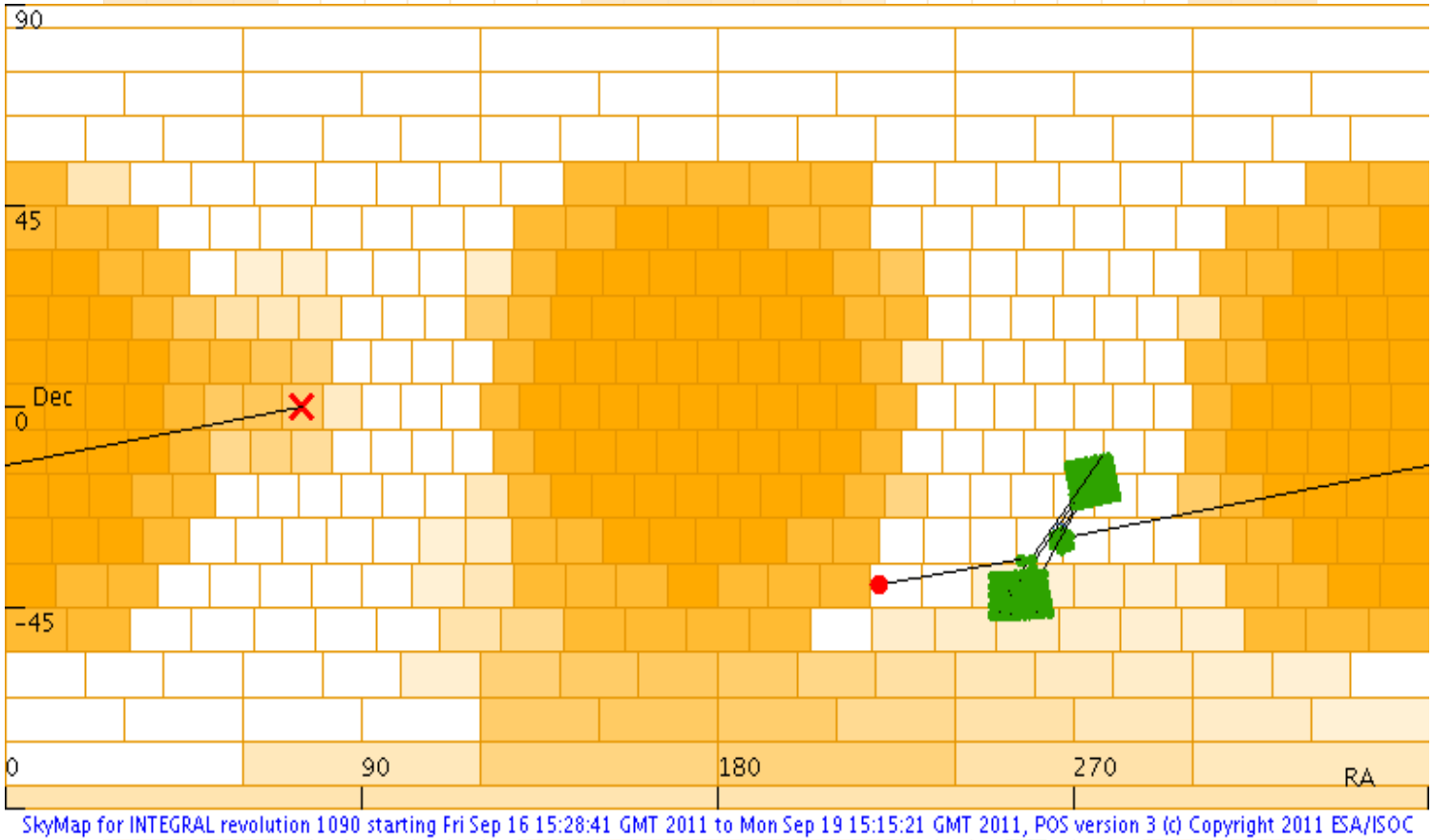
Past examples - II

Past examples of scheduling complexities (1 or more obs in a rev with non-standard patterns (note: ~200-220 ksec available per revolution)



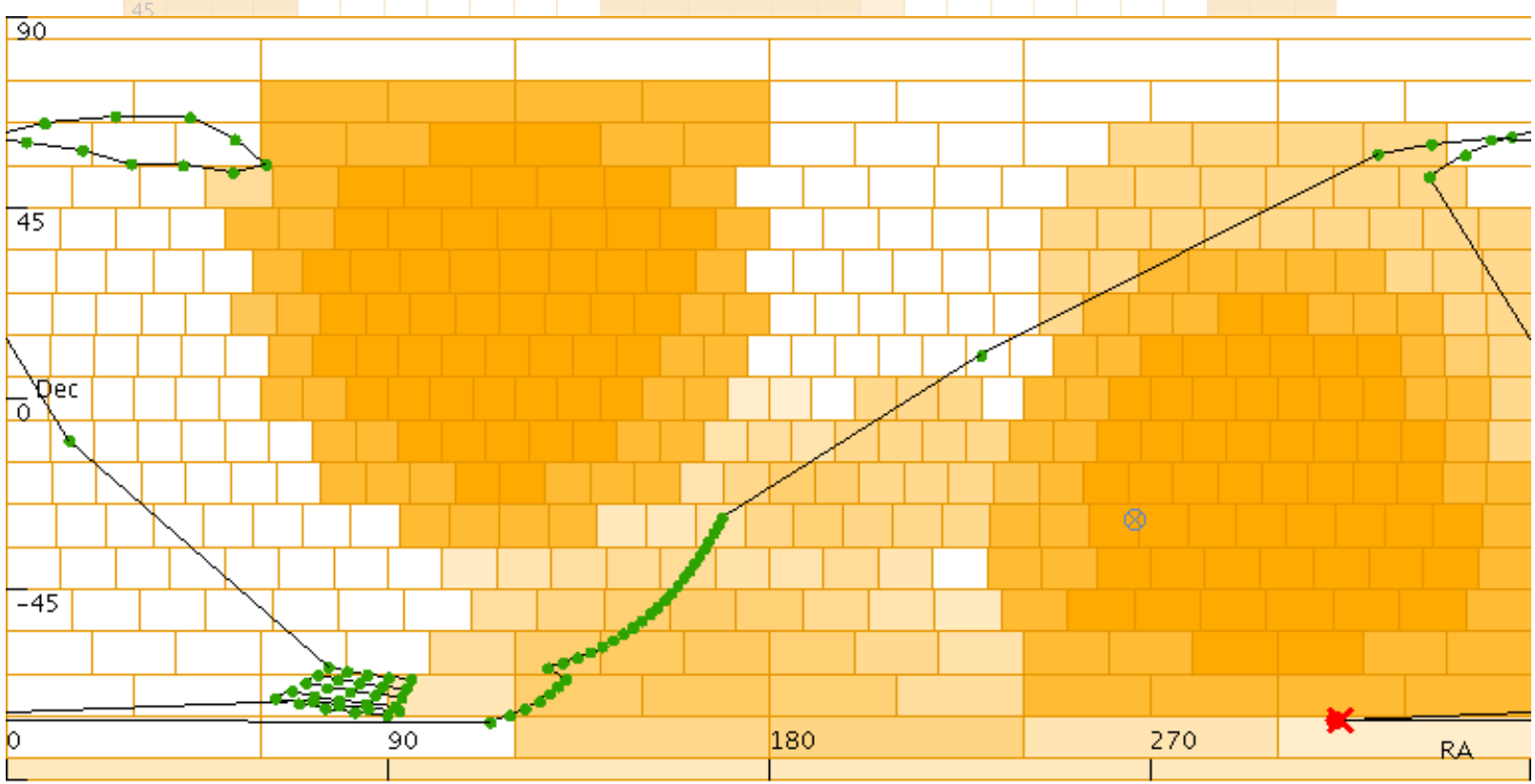
Past examples - III

Past examples of scheduling complexities (1 or more obs in a rev with non-standard patterns (note: ~200-220 ksec available per revolution)



Recent examples - I

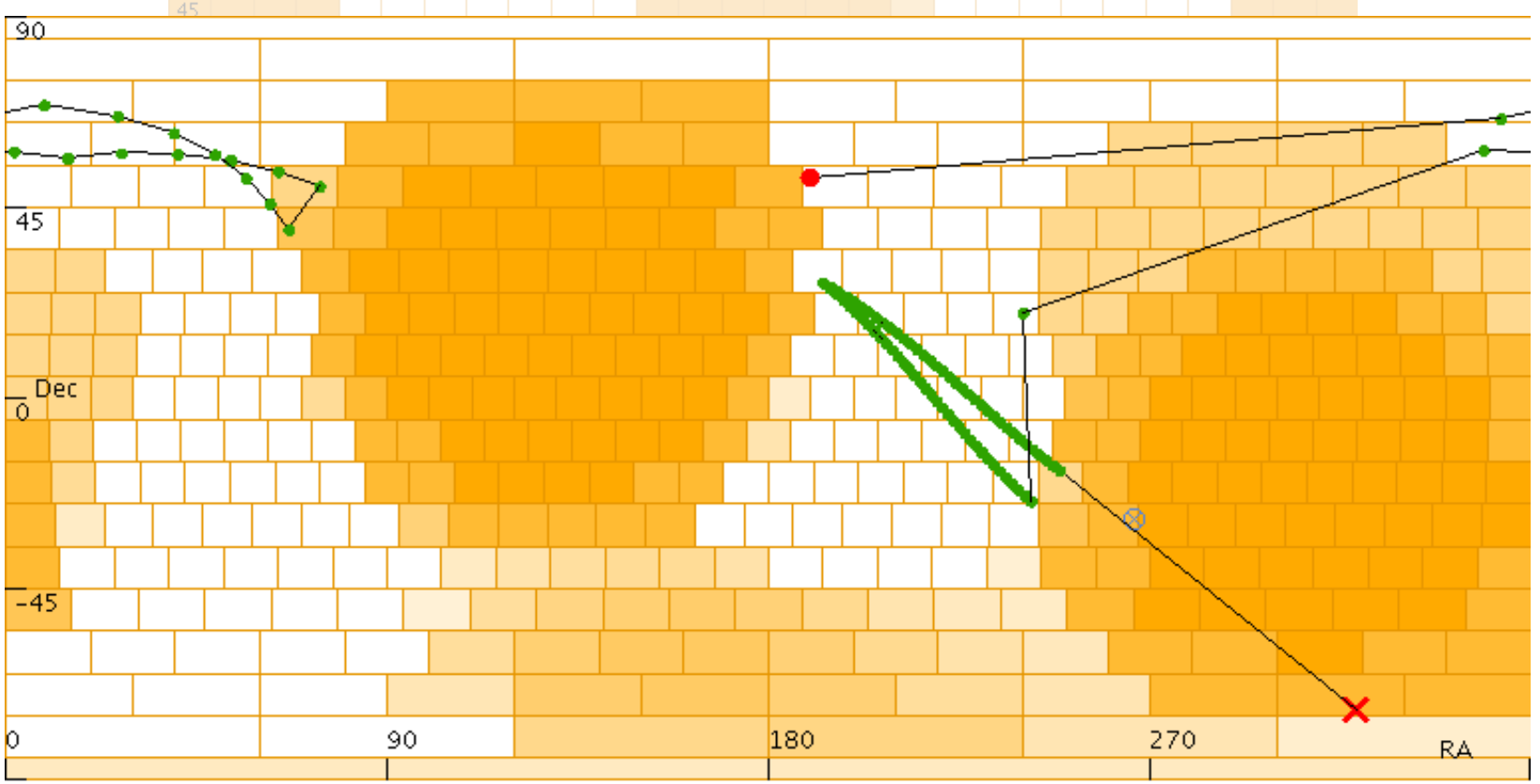
Recent examples of scheduling complexities (1 or more obs in a rev with non-standard patterns (note: ~200-220 ksec available per revolution)



SkyMap for INTEGRAL revolution 1130 starting Sat Jan 14 06:57:53 GMT 2012 to Tue Jan 17 06:47:33 GMT 2012, POS version 3

Recent examples - II

Recent examples of scheduling complexities (1 or more obs in a rev with non-standard patterns (note: ~200-220 ksec available per revolution)

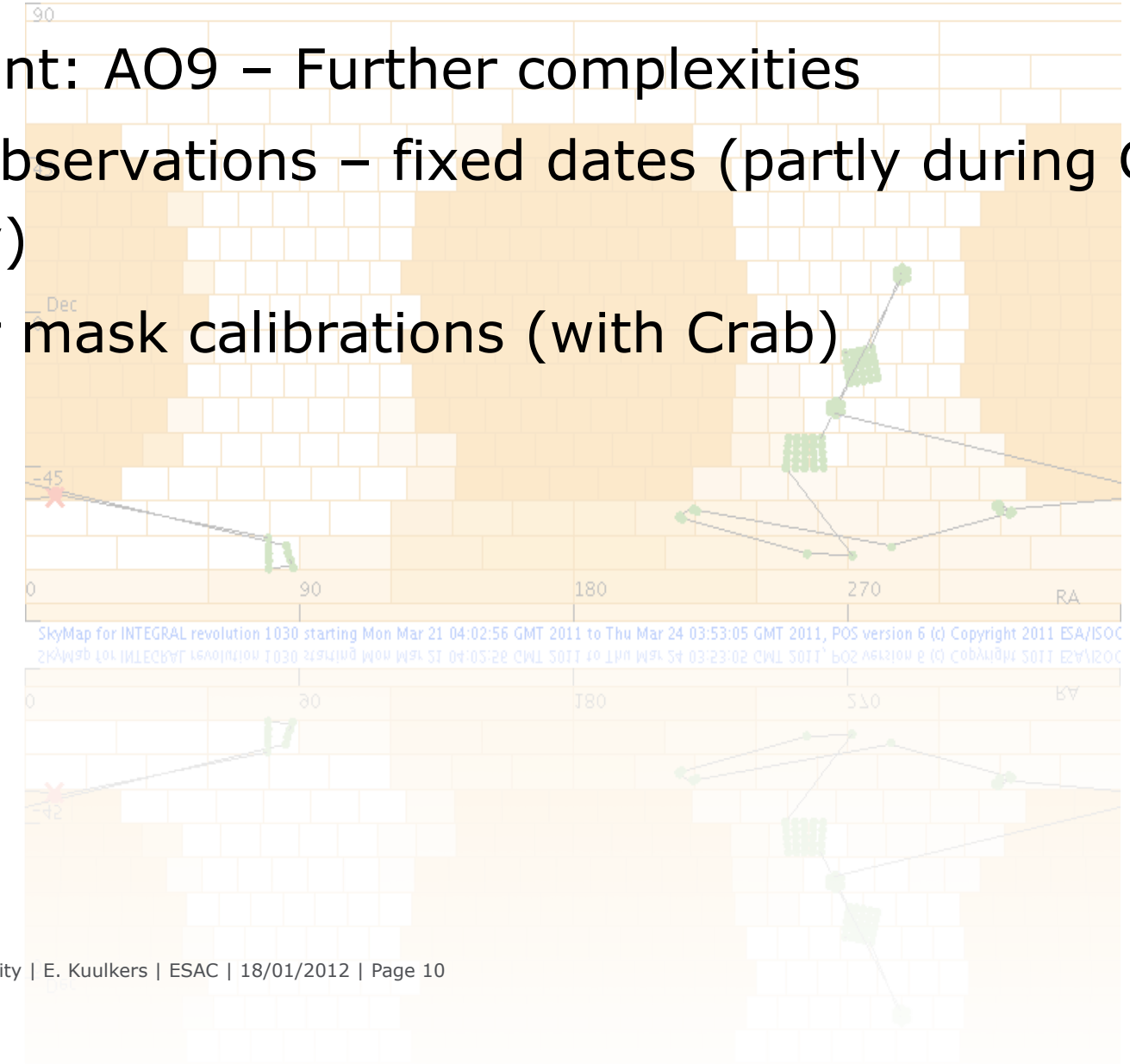


SkyMap for INTEGRAL revolution 1134 starting Thu Jan 26 06:09:21 GMT 2012 to Sun Jan 29 05:56:16 GMT 2012, POS version 1

AO9 - III

The present: AO9 – Further complexities

- Earth observations – fixed dates (partly during GC visibility)
- Further mask calibrations (with Crab)



Conclusion

- Non-standard observations + targets with mostly anti-(GC) visibility windows

➔ Complicate planning efficiency + increase workload at ISOC:

- Many targets: long minimum time blocks
- Competition/combination of targets within a revolution

➔ Scheduling inefficiency in a revolution

IUG: minimize scheduling inefficiency in future AOs

➔ Set priorities? E.g., amount of calibration observations, amount of non-standard observations