M2O Telecom, No. 31

Theme: publication progress updates and upcoming conferences
Previous Telecom/Newsletter PDFs: (link)

Main topics:

G358 6.7 GHz maser flux rising: In the most recent results from the Ibaraki monitoring campagin we see one velocity feature slightly rising flux. It may or may not be important, we should watch it closely.

Conferences:
EVN Symposium 2022. Confirmed speakers (Ross, ..., please let me know and I'll include info in the Telecom minutes)
IAU Maser Symposium Kagoshima 2023 (T. Hirota will report)
PPVII registration now open
M2O conference in 2022

New/progressing Publications: Highlighted in blue below. Some will be introduced/discussed in this Telecom

G358-MM1 6.7 GHz VLBI paper, Burns et al.:
If you have not received a copy please email me for a copy or check SamePage: Workspace > Flaring Masers > G358.93-0.03.

1 Activity since the previous Telecom

- **SamePage:** +0; total 84 members.
- **Papers accepted:** +3; Total: 22
  PoS: Recent Status of the Maser Monitoring Organisation (M2O), Burns et al.
  PoS: Milliarcsecond analysis of the 6.7 GHz methanol maser outburst in HMYSO G24.33, Kobak et al.
  PoS: Single-baseline interferometer for mJy observations Steinbergs et al.
- **Papers in revision:**
  Hirota et al., G24.33+0.14 ALMA follow-up; pre- and post- flare phases. (Updates reported in today's Telecom)
- **Papers in prep:**
  - Burns et al., 6.7 GHz VLBI monitoring of G358-MM1. Circulated and likely discussed in this Telecom
  - Orosz et al., 7.6 and 7.8 GHz methanol masers in G358, aiming for ApJL
  - Kobak et al., VLBI images and SD monitoring of G24.33 during the maser flare(s).
  - Gray et al., Two additions to the maser flare series: compression and skyplane overlap scenarios.
  - Volvach et al. "The powerful flare event of a water maser in the young protostellar system IRAS 16293-2422"
  - Volvach et al. "Powerful flare phenomena in water vapor maser lines in the emerging protostellar system with protoplanetary disks IRAS 16293-2422"
  - Breen et al. "Ammonia masers towards G 358.9310.030"
  - Stecklum et al. Simulations of heat propagation during the G358 accretion burst
  - Bayandina et al. "The evolution of the H2O maser emission in the accretion burst source G358.93-0.03"
- **New observing proposals:**
  EVN Updated resubmission of our 6.7 GHz methanol VLBI follow-up (Burns; submitted)
  EAVN Updated resubmission of our 6.7 GHz methanol VLBI follow-up (Burns; submit today)
  KaVA Updated resubmission of our K/Q/W/D VLBI follow-up (Burns; submit today)

- **M2O targets:**

Name	Maser line [GHz]	Pre-flare [Jy]	Date reported	Flare onset	Max Flux [Jy]	Current Flux [Jy]	Reported by	Reobserved by	Status
G25.65+1.05	22	850	08SEP17	08SEP17	60k	2150	Volvach	Hh, Sz, Mc	post-burst
W49N	22	5k	07SEP17	07SEP17	35k	?	Kramer, Ef	?	post-burst
NGC2071	22	1k	DEC18	18MAY18	7k	920	Sunada, Hh	Vr, Hh, Sz, Ib	post-burst
IRAS 16293-2422	22	<10	12DEC19	14APR19	30k	-	Sunada, Mc	Vr, Mc, Hh, Sz, Ib, Mc	-
G358.93-0.03	6.7	5	18JAN19	14JAN19	1000	15	Yonekura	Hh, Ib	decreasing
G53.22-0.08	22	3	31JAN20	12FEB19	800	30	Sunada	Vr, Hh, Ib	post-burst
G24.33+0.14	6.7	-	05SEP19	14AUG19	800	5	Olech	Hh, Ib, Vs, Mc	decreasing
Orion S6	6.7	3.1	10FEB20	09FEB20	9	2	Yonekura	Ib, Tr, Sz, Hh	variable
G85.411+0.002	6.7	12	28FEB20	18OCT19	95	80	Yonekura	Ib, Ef, Sz, Tr, Hh, Ky, Vs	decreasing
G33.641-0.228	6.7	periodic	MAR20	flutter	236	60	Bringfried	Hh, Ib, Vs	eruptive
G359.617-0.251	6.7	120	13JUL20	10JUL20	200	90	Yonekura	Ib, Hh,	decreasing
G034.196-0.592	22	<1	23OCT20	06OCT20	120	120	Ladeyschikov	Sz, Oa, Hh, Mc	?
G35.20-0.74	22	600	20JAN21	03JAN21	4k	4k	Volvach	Sz, Hh, Ib	?
G024.541+0.312	6.7	∼5	04NOV21	05JUL21	60	60	Durjasz	Ib, Hh, Vr	Active
G081.174-0.100	22	10	26NOV21	15OCT21	45	45	Ladeyschikov	Ef	Active
V1318 Cyg S	22	<10	05MAR22	27MAR21	330	330	Sunada		See SamePage

(Ib = Ibaraki) (Tr = Torun) (Sz = Simeiz) (Hh = HartRAO) (Ef = Effelsberg) (Ky = KVN Yonsei) (Vs = Ventspil) (Vr = VERA stations) (Mc = Medicina) (Ps = Puschino) (Oa = OAO-WFC)

- **Follow-up observations conducted (see Record Keeping for more details):**
  G081.174-0.100: KaVA; K-band 22 GHz water masers (PI: R Burns)

- **Active trigger proposals:**

Array	Code	Grade	Hours granted target x epoch x hour	Hours remaining	Active period	Resubmit deadline
EVN	EB083	1.2 / 5.0 (0 is best)	(3x2x8)x2 bands = 96	96	15/SEP/20 - 15/SEP/21	1/JUN/22 *
KaVA	EAVN21A-213	7.6 / 10.0 (10 is best)	2 x 1 x 8 = 16	16	16/JAN/21 - 15/JAN/22	15/NOV/21 #
EAVN	EAVN21A-214	8.3 / 10.0 (10 is best)	1 x 2 x 8 = 16	16	16/JAN/21 - 15/JAN/22	15/NOV/21 #
LBA	V581	4.1 / 5.0 (5 is best)	96	88	01/OCT/20 - 01/OCT/21	16/JUN/22 *
VLBA	BB438	5.71 / 10.0 (0 is best)	48	48	01/AUG/22 - 01/AUG/22	01/AUG/23
VLA	VLA/21B-082	B	12	12	29SEP21 - 31JAN22	-
SOFIA	90053	A	3.46	3.46	Rolled over	Rolled over
ATCA	C3321	[score]	50	50	[dates]	-
Subaru	S20B0051N	[score]	0.5*2 or 1 night	0.5*2 or 1 night	01/AUG/20 - 01/JAN/21	-
JWST	01906	1st quintile	24.9	24.9	Cycle 1	-
SMA	2022A-S026	A	5 tracks	all	JUN-DEC 2022	March 2023
ALMA	2021.1.00455.T	A	11.2	all	01OCT21 - 01SEP22	Roll over?

(*/#) New proposals already (submitted/accepted) for the following observing semester

Blue coded proposals have public links (Ctr-F search the page for the code if it is not initially identifiable)

2 Reports

Short reports on specific activities, please send me an email (ross.burns@nao.ac.jp) in advance if you have something to report in an upcoming telecom.

See the attached manuscript drafts

Next Newsletter / Telecom: 30th Nov 2021, 18:00 JST

Record keeping

M2O Publications

No.	Target	Facility	Author	Frequency (GHz)	Status	Ref	Journal
1	W49N	Sm, Tr	Volvach+	22.2	Published	(1)	MNRAS_L
2	W49N	Sm, Tr, Mc, Ef	Volvach+	22.2	Published	(2)	A&A
3	W49N	Sm, Tr, Mc, Ef, Kvazar	Volvach+	22.2	Published	(3)	Ast.Rep.
4	W49N	Sm	Volvach+	22.2	Published	(4)	MNRAS
5	G25	VLA	Bayandina+	6.7, 12.2, 22	Published	(5)	ApJ
6	G25	Sim/Hh/Tr	Volvach+	22	Published	(6)	MNRAS_L
7	G25	KVASAR	Volvach+	22	Published	(7)	Ast.Rep.
8	G25	EVN	Burns+	22	Published	(8)	MNRAS
9	G25		Aberfelds+	6.7	in prep		-
10	G25		Bayandina+	12.2, 23.1	in prep		-
11	G25		MacLeod+	6.7, 22	in prep		-
12	G358	ATCA	Breen+	mm	Published	(9)	ApJ
13	G358	ALMA-SMA	Brogan+	mm	Published	(10)	ApJL
14	G358	Hh	MacLeod+	New Methanol masers	Published	(11)	MNRAS
15	G358	LBA	Burns+	6.7	Published	(12)	Nat.Ast.
16	G358	Various VLBI	Burns+	6.7 movie	in prep		-
17	G358	Various VLBI	Burns+	Maps of rare masers	in prep		
18	G358	VLBA	Burns+	6.7 and 12.18	in prep		
19	G358	Asia-Pacific VLBI	Orosz+	7.6, 7.8	in prep.		ApJL
20	G358	VLA	Chen+	multiple lines methanol	Published	(13)	ApJL
21	G358	VLA	Chen+	New lines + Methanol	Published	(14)	Nat. Ast.
22	G358		MacLeod+	6.7 GHz monitoring	in prep		
23	G358		MacLeod+	6.2, 12.2, 20.3, 20.9	in prep		-
24	G358	VLA	Bayandina+	6.18,6.7,12.18,12.23,20.97,23.12	Published	(15)	AJ
25	G358	SOFIA	Stecklum+	FIR	Published	(16)	A&A
26	G358	Sm and Hh	Volvach+	19.9, 20.9	Published	(17)	MNRASL
27	G24.33	EVN, VLBA	Kobak+	6.7, 12.2, 22.2	in prep		-
28	G24.33	Tr	Olech+	OH, Meth	in prep		-
29	G24.33	Tr	Kobak+	Meth	Published	(18)	PoS
30	G24.33	Hh	v. d. Heever+		in prep		-
31	G24.33	ALMA	Hirota+	Thermal and maser	in prep		-
32	G24.33 + G359	ATCA	MacCarthy+	6.7. 22. Rare transitions	Published	(19)	MNRAS
33	IRAS16293-2422	Simeiz	Volvach+	Water maser flare	Published	(20)	MNRAS
34	M2O General		Burns+		Published	(21)	PoS
35	M2O General	IrIb single baseline		Steinbergs+	Published	(22)	PoS

[1] Volvach, L. N., Volvach, A. E., Larionov, M. G., MacLeod, G. C. & Wolak, P. Unusual flare activity in the extreme-velocity 81 kms1 water-maser feature in W49N. *Monthly Notices of the Royal Astronomical Society: Letters* **487**, L77–L80 (2019). URL https://doi.org/10.1093/mnrasl/slz088.

[2] Volvach, L. N. *et al.* Flaring water masers associated with W49N. A&A **628**, A89 (2019).

[3] Volvach, L. N. *et al.* An unusually powerful water-maser flare in the galactic source w49n. *Astronomy Reports* **63**, 652–665 (2019). URL https://doi.org/10.1134/S1063772919080067.

[4] Volvach, A. E., Volvach, L. N. & Larionov, M. G. Unusually powerful flare activity of the H_2O maser feature near a velocity of -60 km s^{-1} in W49N. MNRAS **496**, L147–L151 (2020).

[5] Bayandina, O. S., Burns, R. A., Kurtz, S. E., Shakhvorostova, N. N. & Val'tts, I. E. JVLA overview of the bursting H$_2$O maser source G25.65+1.05. *arXiv e-prints* arXiv:1812.11353 (2018).

[6] Volvach, L. N. *et al.* Powerful bursts of water masers towards G25.65+1.05. MNRAS **482**, L90–L92 (2019).

[7] Vol'vach, L. N. *et al.* A Giant Water Maser Flare in the Galactic Source IRAS 18316-0602. *Astronomy Reports* **63**, 49–65 (2019).

[8] Burns, R. A. *et al.* VLBI observations of the G25.65+1.05 water maser superburst. MNRAS **491**, 4069–4075 (2020).

[9] Breen, S. L. *et al.* Discovery of Six New Class II Methanol Maser Transitions, Including the Unambiguous Detection of Three Torsionally Excited Lines toward G 358.9310.030. ApJ **876**, L25 (2019).

[10] Brogan, C. L. *et al.* Sub-arcsecond (Sub)millimeter Imaging of the Massive Protocluster G358.93−0.03: Discovery of 14 New Methanol Maser Lines Associated with a Hot Core. ApJL **881**, L39 (2019).

[11] MacLeod, G. C. *et al.* Detection of new methanol maser transitions associated with G358.93-0.03. MNRAS **489**, 3981–3989 (2019).

[12] Burns, R. A. *et al.* A heatwave of accretion energy traced by masers in the G358-MM1 high-mass protostar. *Nature Astronomy* 10 (2020). URL https://ui.adsabs.harvard.edu/abs/2020NatAs.tmp...10B.

[13] Chen, X. *et al.* $^{13}CH_3OH$ Masers Associated With a Transient Phenomenon in a High-mass Young Stellar Object. ApJL **890**, L22 (2020). URL https://ui.adsabs.harvard.edu/abs/2020ApJ...890L..22C.

[14] Chen, X. *et al.* New maser species tracing spiral-arm accretion flows in a high-mass young stellar object. *Nature Astronomy* (2020). URL https://ui.adsabs.harvard.edu/abs/2020NatAs.tmp..144C.

[15] Bayandina, O. S. *et al.* A Multitransition Methanol Maser Study of the Accretion Burst Source G358.93-0.03-MM1. AJ **163**, 83 (2022).

[16] Stecklum, B. *et al.* Infrared observations of the flaring maser source G358.93-0.03. SOFIA confirms an accretion burst from a massive young stellar object. A&A **646**, A161 (2021).

[17] Volvach, A. E. *et al.* Monitoring a methanol maser flare associated with the massive star-forming region G358.93-0.03. MNRAS **494**, L59–L63 (2020).

[18] Kobak, A. & organization, M. Milliarcsecond analysis of the 6.7 GHz methanol maser outburst in HMYSO G24.33. In *European VLBI Network Mini-Symposium and Users' Meeting 2021*, 20 (2022).
[19] McCarthy, T. P. *et al.* Molecular line search towards the flaring 6.7-GHz methanol masers of G 24.33+0.13 and G 359.62-0.24: rare maser transitions detected. MNRAS **509**, 1681–1689 (2022).
[20] Volvach, A. E., Volvach, L. N. & Larionov, M. G. Composite powerful short flare of water maser emission in IRAS 16293-2422. MNRAS **507**, L52–L56 (2021).
[21] Burns, R. A. *et al.* Recent updates on the Maser Monitoring Organisation. In *European VLBI Network Mini-Symposium and Users' Meeting 2021*, 19 (2022).
[22] Steinbergs, J. *et al.* Single-baseline interferometer for mJy observations. In *European VLBI Network Mini-Symposium and Users' Meeting 2021*, 33 (2022).

M2O follow-up data

No.	Target	Facility	Date	Frequency (GHz)	Code	PI/comment
1	G25	VLA	Oct 2017	6.7, 12.2, 22	17B-408	OB / Reduced
2	G25+W49N	EVN	Oct 2017	22	RB004	RB / Reduced
3	G25+W49N	KaVA	Oct 2017	22	K17RB01A	RB / Reduced
4	G25+W49N	VLBA	Oct 2017	22	BO058	GO / Reduced
5	G25	VERA	2007-2013	22, 16 x epochs	[archival]	K. Motogi / On hold
6	G358	VERA	31 Jan 2019	6.7	-	SY / Reduced
7	G358	VERA	3 Mar 2019	6.7	-	SY / Reduced
8	G358	VERA	1 Apr 2019	6.7	-	SY / Reduced
9	G358	VERA	3 May 2019	6.7	-	SY / Reduced
10	G358	LBA	2 Feb 2019	6.7	vc026a	RB / Published
11	G358	LBA	3 Feb 2019	23.1	vc026b	GO / Abandoned
12	G358	LBA	28 Feb 2019	6.7	vc026c	RB / Published
13	G358	EVN	13 Mar 2019	6.7, 6.18	RB005	RB / Reduced
14	G358	KVN	25 Mar 2019	22, 44, 95, 120	n19rb01a	RB / Reduced
15	G358	VLBA	19 May 2019	6.7, 12.2, 23.1	BB414	RB / Reduced
16	G358	VLBA	7 Jun 2019	6.7, 12.2, 20.7	BB412	RB / Reduced
17	G358	LBA+E.Asia	17 May 2019	7.6, 7.8	vx028a	GO,SE / Reduced
18	G358	LBA+AusSCOPE	28 Sep 2019	6.7	v581a	RB / Reduced
19	G358	LBA+AusSCOPE	18 Aug 2020	6.7	v581b	RB / Reduced
20	G358	SOFIA	30 April 2019	50...120 μm		BS,JE / Published
21	G358	GROND	8 Feb 2019	NIR		HL,BS,AC / Published
22	G358	SMA	several 2019	mm		THunter,CB / Published
23	G358	ALMA	several 2019	Bands 5,6,7		CB / Published
24	G358	VLA	25FEB19	X/S/C/U/K	19A-448	OB / Published
25	G358	VLA	04JUN19	X/S/C/U/K	19A-476	OB / Published
26	G358	VLA	2019	HNCO	-	XC,AS
27	G24	LBA	8 Sep 2019	6.7	vx026d	RB,MO / Correlated
28	G24	LBA	13 Sep 2019	6.7	s002a	RB,MO / Correlated
29	G24	LBA	28 Sep 2019	6.7	v581a	RB,MO / Correlated
30	G24	EVN	22 Sep 2019	22	RB006A	RB,MO / QuickLook
31	G24	EVN+Merlin	7 Oct 2019	6.7	RB006B	RB,MO / QuickLook
32	G24	EVN+Merlin	17 Nov 2019	1.667	RB007	RB,MO / correlated
33	G24	VLBA	27 Sep 2019	6.7, 12.2, 22	BB416A	RB,MO / QuickLook
34	G24	VLBA	27 Oct 2019	6.7, 12.2, 22	BB416B	RB,MO / correlated
35	G24	VLBA	02 Dec 2019	6.7, 12.2, 22	BB416C	RB,MO / correlated
36	G24	ALMA	26 Sep 2019	Band6	-	THirota / Reduced
37	G24	SOFIA	25 Oct 2019	FIR		BS,JE
38	G24	ATCA	26 Nov 2019	K-band	C3321	GO,SB
39	G24	ATCA	27 Nov 2019	C-band	C3321	GO,SB
40	NGC2071, Ori-S6	KaVA	13 Mar 2020	22/44/95/130	a20d3a	RB / QuickLook
41	NGC2071, Ori-S6	KaVA	16 Apr 2020	22/44/95/130	a20d3b	RB / QuickLook
42	NGC2071, Ori-S6	KaVA	11 May 2020	22/44/95/130	a20d3c	RB / Quick Look
43	G85.411+0.002	VLBA	24/Apr/2020	L/C/Ku/K	BB421B	RB / QuickLook
44	G85.411+0.002	VLBA	22/May/2020	L/C/Ku/K	BB421A	RB / QuickLook
45	G85.411+0.002	VLBA	22/June/2020	L/C/Ku/K	BB421C	RB / Quick Look
46	G359.617-0.251	LBA	18/Aug/2020	6.7	V581B	RB / Quick Look
47	G359.617-0.251	VLBA	21/Aug/2020	6.7 / 12.2 / 22	BB418A	RB / Quick Look
48	G359.617-0.251	ATCA	25-26/July/2020	6-10 GHz	C3321	GO / Submitted
49	G034.196-0.592	VLA	19/NOV/2020	C	VLA/20B-441	DL / Calibrated
50	G034.196-0.592	VLA	29/NOV/2020	K	VLA/20B-441	DL / Calibrated
51	G034.196-0.592	KaVA	12/DEC/2020	K(QWD)	a20d4a	RB / Quick Look
52	G034.196-0.592	KaVA	23/JAN/2021	K(QWD)	a21d1a	RB / Quick Look
53	G034.196-0.592	KaVA	18/FEB/2021	K(QWD)	a21d1b	RB / Quick Look
54	G35.200.74	KaVA	23/JAN/2021	K(QWD)	a21d1a	RB / Quick Look
55	G35.200.74	KaVA	18/FEB/2021	K(QWD)	a21d1b	RB / Quick Look
56	S255 and G188	EVN	3/NOV/2021	C	EB087	RB / Correlated
57	G024.541+0.312	VLBA	16/NOV/2021	C/Ku/K	BB428A	RB / Correlated
58	G024.541+0.312	VLBA	30/DEC/2021	C/Ku/K	BB428B	RB / Correlated
59	G024.541+0.312	VLBA	25/JAN/2022	C/Ku/K	BB428C	RB / Correlated
60	G081.174-0.100	EAVN	9/DEC/2021	K	a21d2a	RB / observed
61	G081.174-0.100	EAVN	12/JAN/2021	K	a21d2b	RB / observed
62	G081.174-0.100	EAVN	10/MAY/2022	K	a22d1a	RB / observed
63	G081.174-0.100	VLA	19/DEC/2021	X/S/C/K/U	21B-082	OB / reduced
64	G081.174-0.100	VLA	03/JAN/2022	X/S/C/K/U	21B-082	OB / reduced

Reminders:

Please consult the original reporters of flare events on how they request their input to be acknowledged in follow-up proposals and publications.

All G25.65+0.15 papers : include a member from the Volvach et al. group in the author list and an acknowledgement of their funding.
All W49N papers : include a member from the Kramer et al. group in the author list and an acknowledgement of their funding.
All NGC2071 papers : include a member from the VERA / Sunada team in the author list and an acknowledgement of their funding.
All G358.93-0.03 papers : include a member from the Ibaraki team in the author list and an acknowledgement of their funding.
All G53.22-0.08 papers : include a member from the VERA / Sunada team in the author list and an acknowledgement of their funding.
All G24.33 papers : include a member from the Torun team in the author list and an acknowledgement of their funding.
All Orion-S6 papers : include a member from the Ibaraki team in the author list and an acknowledgement of their funding.
All G85.411+0.0002 papers : include a member from the Ibaraki team in the author list and an acknowledgement of their funding.
All G33.641-0.228 papers : not follow-up'd yet. Best consult SamePage > Workspace > G33.641-0.228 if you're planning to work on this source
All G359.617-0.251 papers : include a member from the Ibaraki team in the author list and an acknowledgement of their funding.
All G034.196-0.592 papers : include a member from the Ladeyschikov et al. group in the author list and an acknowledgement of their funding.
All G35.200.74 papers : include a member from the Volvach et al. group in the author list and an acknowledgement of their funding.
All G024.541+0.312 papers : include a member from the Torun team in the author list and an acknowledgement of their funding.
All G081.174-0.100 papers : include a member from the Ladeyschikov et al. team in the author list and an acknowledgement of their funding.
All V1318 Cyg S papers : include a member from the VERA / Sunada team in the author list and an acknowledgement of their funding.