

Title: CopterSonde WxUAS Profile Data

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1.0 Dataset Overview

These files contain various levels of meteorological and flight data collected by the CopterSonde uncrewed aerial system (UAS) during the PERiLS 2023 field campaign. The CopterSondes flew at three locations during the campaign with a maximum altitude of 1.52 km (5000 ft) above ground level. Flights were conducted approximately every 30 minutes during an 8-hour window leading up to arrival of convection.

1.1 Dates: 2/16/2023 (IOP1), 3/3/2023 (IOP2), 3/24/2023-3/25/2023 (IOP3), 3/31/23-4/1/2023 (IOP4), 4/5/2023 (IOP5)

1.2 Locations:

- Lake Village, AR; 33.3314 N, 91.2841 W, 39 m elevation
- Yazoo City, MS; 32.9106 N, 90.3811 W, 38 m elevation
- Schlater, MS; 33.6381 N, 90.3619 W, 40 m elevation

1.3 Estimated data availability

The following tables summarize the number of flights and the approximate altitudes reached at each site during the IOPs where the CopterSonde team deployed. A full list of flight times is provided in the Appendix

IOP 01 - 16 Feb 2023					
Flights			Altitudes (m)		
Total:	27		Average:	579.85	
	Yazoo City	Schlater	Lake Village	Yazoo City	Schlater Lake Village

9	8	10	640.67	571.13	532.10
Flight ops:	4:31:10	2:37:06	Maximum:	1293	
<i>operating time</i>		<i>flight time</i>			

IOP 02 - 3 March 2023

<u>Flights</u>			<u>Altitudes (m)</u>		
Total:	53		Average:	243.19	
Yazoo City	Schlater	Lake Village	Yazoo City	Schlater	Lake Village
18	17	18	243.33	226.24	259.06
Flight ops:	7:07:00	3:31:02	Maximum:	464	
<i>operating time</i>		<i>flight time</i>			

IOP 24 - 3 March 2023

<u>Flights</u>			<u>Altitudes (m)</u>		
Total:	47		Average:	834.98	
Yazoo City	Schlater	Lake Village	Yazoo City	Schlater	Lake Village
17	16	14	866.82	870.56	755.64
Flight ops:	0:00:00	3:31:02	Maximum:	1380	
<i>operating time</i>		<i>flight time</i>			

IOP 04 - 31 March 2023

<u>Flights</u>			<u>Altitudes (m)</u>		
Total:	50		Average:	402.44	
Yazoo City	Schlater	Lake Village	Yazoo City	Schlater	Lake Village
14	18	18	527.57	369.33	338.22
Flight ops:	7:00:00	4:16:02	Maximum:	1012	
<i>operating time</i>		<i>flight time</i>			

IOP 05 - 5 April 2023

<u>Flights</u>			<u>Altitudes (m)</u>		
Total:	58		Average:	729.41	
Yazoo City	Schlater	Lake Village	Yazoo City	Schlater	Lake Village
22	20	16	884.27	652.90	612.13

Flight ops:	8:00:00	7:35:30	Maximum:	1211
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2.0 Instrument Description

The original CopterSonde uncrewed aerial system (UAS) was designed to sample the thermodynamic and kinematic state of the lower Earth's atmosphere, with a focus on vertical profiles in the planetary boundary layer. It provides the same information as a rawinsonde, but with much more control of its sampling location.

Development began in 2016, for the NOAA-funded EPIC (Environmental Profiling and Initiation of Convection) field campaign, and development has largely continued through support from the National Science Foundation and the University of Oklahoma. The initial design has undergone considerable modification, and the Copter- Sonde UAS is now capable of adaptive atmospheric sampling, real-time data processing and dissemination, longer flight times, and better data quality.

The goal in developing the CopterSonde UAS has been to provide a sensor platform for lower atmospheric sampling that is easy to deploy, delivers reliable data, and facilitates adaptive sampling.

Below is a table of specifications for the current CopterSonde. More detailed information is available in the references at the end of this document

AIRFRAME

Body	Carbon fiber tube (arms), G10 fiberglass (internal structure), and aluminum (connectors and spacers)
Shell	3D printed PLA
Diagonal	50.8 cm
Height	15.2 cm
Fight Controller	Pixhawk Cube

COMMUNICATIONS

Telemetry Frequency	915 MHz
Radio Frequency	2.4 GHz
Transmission Distance	up to 5 km

GPS ACCURACY

Horizontal (RTK enabled)	± 3 cm
Horizontal (RTK disabled)	± 1.5 m
Vertical (RTK enabled)	± 5 cm
Vertical (RTK disabled)	± 3 m

PROPULSION SYSTEM

<i>Brushless Electric Motor</i>	
Lifespan	1600 hrs
kV Rating	700 RPM/V
Maximum Thrust	1.23 kg / rotor
Maximum Power	500 W/rotor
<i>T-Style Propellers</i>	
Diameter x Pitch	11 x 5.5 in
Material	Carbon Fiber
<i>ESC - Motor Speed Controller</i>	
Max. Cont. Current	35 A
Burst Current	45 A
Maximum Voltage	14.8 V (4S LiPo)

POWER

Battery Type	4S Smart LiPo
Capacity	5870 mAh
Typical Endurance	15 min

Meteorological Specifications

THERMODYNAMIC

Primary Variables	T, RH, p
Derived Variables	T_d , T_v , θ , θ_e , θ_w , r, r_s , q, q_s , e, e_s , LCL, Γ
Accuracy	T: ± 0.1 °C RH: ± 2 % p: ± 1.5 mbar
Logging Rate	10 – 20 Hz

KINEMATIC

Primary Variables	Tilt Angles
Derived Variables	Horizontal wind speed and direction
Accuracy	Speed: ± 0.6 m/s Direction: $\pm 4^\circ$
Logging Rate	10 – 20 Hz

Flight Parameters

Maximum Tilt Angle	40°
Maximum Wind Resistance	22 m/s
Maximum Operating Speed	28 m/s
Maximum Flight Ceiling	6,000 ft AGL
Recommended Operating Temperatures	-20 – 40 °C
Typical Ascent Rates	1 – 5 m/s
Typical Descent Rates	1 – 6 m/s
Weight (sans battery)	1.5 kg
Average All-up Weight	2 kg

For more information regarding CS purchase or other custom-built solutions, please contact us at oubliss@ou.edu

3.0 Data collection and processing:

Data were collected at three sites simultaneously. Launches were coordinated whenever possible at a 30-minute cadence. Typically, as weather phenomena of interest got near a flight site, this cadence was changed to 15 minutes to capture high rate profiles leading up to the phenomena. For PERiLS, this was typically started approximately an hour before the leading line of storms reached the first profiling site.

Data from the CopterSonde are logged via the Pixhawk autopilot system. This file is converted from a binary format to numerous levels of netCDF file for meteorological analysis. For

simplicity, we have provided only one level of netCDF. The raw autopilot logs are available by request or from the NSSL THREDDS Server.

The processed files take the raw binary to a radiosonde-like netCDF file. To do this, data are averaged into 5 m height bins and proper calibration coefficients are applied to get the desired meteorological variables. Wind speed is determined from the tilt of the UAS as it counteracts the wind using the method described in Neumann and Bartholmai (2015). More advanced wind estimations are currently being developed and will be released in future versions. The 3 temperature and 3 humidity sensors are averaged together to get the resulting temperature and relative humidity measurement. Before averaging, sensors are quality checked against each other to ensure there is no bad sensor going into the average. Only the ascent portion of the profile is used in the averaging. Prior research has found the descent leg is often contaminated by the rotor wash and is thus not trustworthy.

4.0 Data format:

Data are provided in netcdf format. The typical naming convention is {location}{tailnumber}CMTascent.c1.YYYYMMDD.HHmmss.nc, following closely to ARM file naming convention. The files have time dimensions.

Variables provided:

Name	Dimension	Unit,
base_time	Single value	Seconds (since 00 UTC 1 Jan 1970)
time_offset	Time	Second (since base_time)
time	Time	microseconds since 2010-01-01 00:00:00:00
alt	Time	Meters, altitude MSL
pres	Time	Pascal, pressure
wspd	Time	m/s, wind speed
dir	Time	Deg, wind direction
wind_u	Time	m/s, westward wind component
wind_v	Time	m/s, northward wind component
lat	Time	Deg N, latitude
lon	Time	Deg W, longitude
tdry	Time	Kelvin, dry bulb temperature
mr	Time	g/kg, water vapor mixing ratio
theta	Time	Kelvin, potential temperature
Td	Time	C, dewpoint temperature
q	Time	g/kg, specific humidity

5.0 Data Remarks

Wind speeds using the current linear function often are underestimated by the CopterSonde when they reach 15m/s or greater. New methods are being developed to minimize this underestimation and will be released in new versions of this dataset.

6.0 References

- Bell, T. M., B. R. Greene, P. M. Klein, M. Carney, and P. B. Chilson, 2020: Confronting the boundary layer data gap: evaluating new and existing methodologies of probing the lower atmosphere. *Atmospheric Measurement Techniques*, **13**, 3855–3872, <https://doi.org/10.5194/amt-13-3855-2020>.
- Greene, B., A. Segales, T. Bell, E. Pillar-Little, and P. Chilson, 2019: Environmental and sensor integration influences on temperature measurements by rotary-wing unmanned aircraft systems. *Sensors*, **19**, 1470, <https://doi.org/10.3390/s19061470>.
- Segales, A. R., B. R. Greene, T. M. Bell, W. Doyle, J. J. Martin, E. A. Pillar-Little, and P. B. Chilson, 2020: The CopterSonde: an insight into the development of a smart unmanned aircraft system for atmospheric boundary layer research. *Atmospheric Measurement Techniques*, **13**, 2833–2848, <https://doi.org/10.5194/amt-13-2833-2020>.

7.0 Appendix

7.1 Full Flight List

2/16/2023	0:01:18	6:01:18 PM	1	Lake Village	Josh Gebauer	0:09:01	913
2/16/2023	0:32:56	6:32:56 PM	1	Lake Village	Josh Gebauer	0:09:40	985
2/16/2023	0:59:40	6:59:40 PM	1	Lake Village	Josh Gebauer	0:08:11	821
2/16/2023	1:34:14	7:34:14 PM	1	Lake Village	Josh Gebauer	0:03:10	195
2/16/2023	2:00:50	8:00:50 PM	1	Lake Village	Josh Gebauer	0:04:33	396
2/16/2023	2:29:16	8:29:16 PM	1	Lake Village	Josh Gebauer	0:05:37	507
2/16/2023	2:59:29	8:59:29 PM	1	Lake Village	Josh Gebauer	0:03:49	264
2/16/2023	3:30:23	9:30:23 PM	1	Lake Village	Josh Gebauer	0:04:46	417
2/16/2023	4:00:11	10:00:11 PM	1	Lake Village	Josh Gebauer	0:05:03	406
2/16/2023	4:32:28	10:32:28 PM	1	Lake Village	Josh Gebauer	0:04:38	417
2/16/2023	0:07:38	6:07:38 PM	1	Yazoo City	Elizabeth Smith	0:09:24	902
2/16/2023	0:33:52	6:33:52 PM	1	Yazoo City	Elizabeth Smith	0:07:39	751
2/16/2023	1:00:04	7:00:04 PM	1	Yazoo City	Elizabeth Smith	0:07:29	759
2/16/2023	1:30:23	7:30:23 PM	1	Yazoo City	Elizabeth Smith	0:06:19	623
2/16/2023	2:00:43	8:00:43 PM	1	Yazoo City	Elizabeth Smith	0:03:55	331
2/16/2023	2:31:06	8:31:06 PM	1	Yazoo City	Elizabeth Smith	0:06:27	644

2/16/2023	3:00:24	9:00:24 PM	1	Yazoo City	Elizabeth Smith	0:05:25	510
2/16/2023	3:31:41	9:31:41 PM	1	Yazoo City	Elizabeth Smith	0:05:49	560
2/16/2023	4:00:00	10:00:00 PM	1	Yazoo City	Elizabeth Smith	0:03:44	686
2/16/2023	0:04:44	6:04:44 PM	1	Schlater	Tony Segales	0:11:16	1293
2/16/2023	0:30:12	6:30:12 PM	1	Schlater	Tony Segales	0:10:16	1165
2/16/2023	1:00:21	7:00:21 PM	1	Schlater	Tony Segales	0:03:16	286
2/16/2023	2:00:09	8:00:09 PM	1	Schlater	Tony Segales	0:03:14	289
2/16/2023	2:30:16	8:30:16 PM	1	Schlater	Tony Segales	0:04:01	378
2/16/2023	3:00:08	9:00:08 PM	1	Schlater	Tony Segales	0:04:15	411
2/16/2023	3:30:09	9:30:09 PM	1	Schlater	Tony Segales	0:04:00	393
2/16/2023	4:00:53	10:00:53 PM	1	Schlater	Tony Segales	0:02:09	354
03/03/2023	2:12	8:12:00 PM	2	Lake Village	Elizabeth Smith	0:12:11	319
03/03/2023	2:31	8:31:00 PM	2	Lake Village	Elizabeth Smith	0:03:14	364
03/03/2023	3:00	9:00:00 PM	2	Lake Village	Elizabeth Smith	0:03:54	234
03/03/2023	3:37	9:37:00 PM	2	Lake Village	Elizabeth Smith	0:06:21	179
03/03/2023	4:00	10:00:00 PM	2	Lake Village	Elizabeth Smith	0:02:53	197
03/03/2023	4:29	10:29:00 PM	2	Lake Village	Elizabeth Smith	0:04:07	267
03/03/2023	5:02	11:02:00 PM	2	Lake Village	Elizabeth Smith	0:06:35	155
03/03/2023	5:29	11:29:00 PM	2	Lake Village	Elizabeth Smith	0:03:27	274
03/03/2023	6:00	12:00:00 AM	2	Lake Village	Elizabeth Smith	0:03:20	263
03/03/2023	6:31	12:31:00 AM	2	Lake Village	Elizabeth Smith	0:07:11	279
03/03/2023	7:00	1:00:00 AM	2	Lake Village	Elizabeth Smith	0:03:24	172
03/03/2023	7:30	1:30:00 AM	2	Lake Village	Elizabeth Smith	0:02:45	172
03/03/2023	7:45	1:45:00 AM	2	Lake Village	Elizabeth Smith	0:06:57	332
03/03/2023	7:59	1:59:00 AM	2	Lake Village	Elizabeth Smith	0:03:40	407
03/03/2023	8:15	2:15:00 AM	2	Lake Village	Elizabeth Smith	0:02:55	343

03/03/2023	8:30	2:30:00 AM	2	Lake Village	Elizabeth Smith	0:05:53	206
03/03/2023	8:45	2:45:00 AM	2	Lake Village	Elizabeth Smith	0:03:36	293
03/03/2023	8:59	2:59:00 AM	2	Lake Village	Elizabeth Smith	0:03:12	207
03/03/2023	2:00	8:00:00 PM	2	Schlater	Antonio R. Segales	0:05:44	261
03/03/2023	2:30	8:30:00 PM	2	Schlater	Antonio R. Segales	0:03:10	226
03/03/2023	3:00	9:00:00 PM	2	Schlater	Antonio R. Segales	0:02:37	289
03/03/2023	3:30	9:30:00 PM	2	Schlater	Antonio R. Segales	0:03:37	290
03/03/2023	4:00	10:00:00 PM	2	Schlater	Antonio R. Segales	0:02:05	321
03/03/2023	4:30	10:30:00 PM	2	Schlater	Antonio R. Segales	0:03:40	264
03/03/2023	5:00	11:00:00 PM	2	Schlater	Antonio R. Segales	0:05:58	269
03/03/2023	5:29	11:29:00 PM	2	Schlater	Antonio R. Segales	0:02:09	117
03/03/2023	6:00	12:00:00 AM	2	Schlater	Antonio R. Segales	0:03:29	141
03/03/2023	6:29	12:29:00 AM	2	Schlater	Antonio R. Segales	0:04:56	158
03/03/2023	7:00	1:00:00 AM	2	Schlater	Antonio R. Segales	0:02:23	147
03/03/2023	7:30	1:30:00 AM	2	Schlater	Antonio R. Segales	0:03:37	274
03/03/2023	7:44	1:44:00 AM	2	Schlater	Antonio R. Segales	0:04:23	198
03/03/2023	7:59	1:59:00 AM	2	Schlater	Antonio R. Segales	0:02:07	185
03/03/2023	8:14	2:14:00 AM	2	Schlater	Antonio R. Segales	0:02:43	262
03/03/2023	8:29	2:29:00 AM	2	Schlater	Antonio R. Segales	0:04:04	177
03/03/2023	8:45	2:45:00 AM	2	Schlater	Antonio R. Segales	0:03:17	267
03/03/2023	1:52	7:52:00 PM	2	Yazoo City	Tyler Bell	0:02:41	389
03/03/2023	2:26	8:26:00 PM	2	Yazoo City	Tyler Bell	0:04:31	231
03/03/2023	2:56	8:56:00 PM	2	Yazoo City	Tyler Bell	0:02:44	272
03/03/2023	3:27	9:27:00 PM	2	Yazoo City	Tyler Bell	0:04:05	380
03/03/2023	3:57	9:57:00 PM	2	Yazoo City	Tyler Bell	0:03:17	430

03/03/2023	4:28	10:28:00 PM	2	Yazoo City	Tyler Bell	0:02:32	361
03/03/2023	4:57	10:57:00 PM	2	Yazoo City	Tyler Bell	0:04:48	296
03/03/2023	5:30	11:30:00 PM	2	Yazoo City	Tyler Bell	0:03:49	222
03/03/2023	5:57	11:57:00 PM	2	Yazoo City	Tyler Bell	0:03:21	253
03/03/2023	6:27	12:27:00 AM	2	Yazoo City	Tyler Bell	0:04:14	150
03/03/2023	6:57	12:57:00 AM	2	Yazoo City	Tyler Bell	0:04:25	116
03/03/2023	7:29	1:29:00 AM	2	Yazoo City	Tyler Bell	0:02:37	222
03/03/2023	7:43	1:43:00 AM	2	Yazoo City	Tyler Bell	0:03:00	217
03/03/2023	7:58	1:58:00 AM	2	Yazoo City	Tyler Bell	0:03:31	75
03/03/2023	8:13	2:13:00 AM	2	Yazoo City	Tyler Bell	0:03:10	128
03/03/2023	8:27	2:27:00 AM	2	Yazoo City	Tyler Bell	0:03:49	104
03/03/2023	8:43	2:43:00 AM	2	Yazoo City	Tyler Bell	0:05:59	70
03/03/2023	8:59	2:59:00 AM	2	Yazoo City	Tyler Bell	0:02:55	464
03/24/2023	17:14	11:14:00 AM	3	Lake Village	Elizabeth Smith	0:09:10	988
03/24/2023	17:30	11:30:00 AM	3	Lake Village	Elizabeth Smith	0:08:40	938
03/24/2023	18:00	12:00:00 PM	3	Lake Village	Elizabeth Smith	0:07:42	826
03/24/2023	18:30	12:30:00 PM	3	Lake Village	Elizabeth Smith	0:08:45	950
03/24/2023	19:02	1:02:00 PM	3	Lake Village	Elizabeth Smith	0:11:09	1247
03/24/2023	19:30	1:30:00 PM	3	Lake Village	Elizabeth Smith	0:08:22	895
03/24/2023	20:01	2:01:00 PM	3	Lake Village	Elizabeth Smith	0:07:24	778
03/24/2023	20:30	2:30:00 PM	3	Lake Village	Elizabeth Smith	0:05:40	568
03/24/2023	21:00	3:00:00 PM	3	Lake Village	Elizabeth Smith	0:06:46	692
03/24/2023	21:31	3:31:00 PM	3	Lake Village	Elizabeth Smith	0:09:14	993
03/24/2023	22:03	4:03:00 PM	3	Lake Village	Elizabeth Smith	0:06:22	654
03/24/2023	22:31	4:31:00 PM	3	Lake Village	Elizabeth Smith	0:04:16	385
03/24/2023	22:59	4:59:00 PM	3	Lake Village	Elizabeth Smith	0:05:13	490

03/24/2023	23:15	5:15:00 PM	3	Lake Village	Elizabeth Smith	0:02:41	175
03/24/2023	16:58	10:58:00 AM	3	Schlater	Tyler Bell	0:08:21	933
03/24/2023	17:28	11:28:00 AM	3	Schlater	Tyler Bell	0:09:23	1045
03/24/2023	17:59	11:59:00 AM	3	Schlater	Tyler Bell	0:10:48	1220
03/24/2023	18:28	12:28:00 PM	3	Schlater	Tyler Bell	0:11:41	1300
03/24/2023	18:59	12:59:00 PM	3	Schlater	Tyler Bell	0:11:01	1238
03/24/2023	19:30	1:30:00 PM	3	Schlater	Tyler Bell	0:04:51	442
03/24/2023	19:58	1:58:00 PM	3	Schlater	Tyler Bell	0:11:11	1265
03/24/2023	20:30	2:30:00 PM	3	Schlater	Tyler Bell	0:10:42	1217
03/24/2023	20:59	2:59:00 PM	3	Schlater	Tyler Bell	0:10:29	1189
03/24/2023	21:30	3:30:00 PM	3	Schlater	Tyler Bell	0:08:50	983
03/24/2023	22:00	4:00:00 PM	3	Schlater	Tyler Bell	0:10:02	1136
03/24/2023	22:29	4:29:00 PM	3	Schlater	Tyler Bell	0:06:09	622
03/24/2023	22:59	4:59:00 PM	3	Schlater	Tyler Bell	0:04:05	338
03/24/2023	23:15	5:15:00 PM	3	Schlater	Tyler Bell	0:05:51	590
03/24/2023	23:30	5:30:00 PM	3	Schlater	Tyler Bell	0:02:12	160
03/24/2023	23:46	5:46:00 PM	3	Schlater	Tyler Bell	0:02:48	251
03/24/2023	16:58	10:58:00 AM	3	Yazoo City	Joshua Gebauer	0:15:40	1351
03/24/2023	17:26	11:26:00 AM	3	Yazoo City	Joshua Gebauer	0:11:00	650
03/24/2023	18:00	12:00:00 PM	3	Yazoo City	Joshua Gebauer	0:13:12	1320
03/24/2023	18:27	12:27:00 PM	3	Yazoo City	Joshua Gebauer	0:14:54	1347
03/24/2023	18:55	12:55:00 PM	3	Yazoo City	Joshua Gebauer	0:16:55	1380
03/24/2023	19:25	1:25:00 PM	3	Yazoo City	Joshua Gebauer	0:16:45	1264
03/24/2023	19:57	1:57:00 PM	3	Yazoo City	Joshua Gebauer	0:14:17	1200
03/24/2023	20:28	2:28:00 PM	3	Yazoo City	Joshua Gebauer	0:14:26	1272
03/24/2023	20:57	2:57:00 PM	3	Yazoo City	Joshua Gebauer	0:14:30	1125
03/24/2023	21:28	3:28:00 PM	3	Yazoo City	Joshua Gebauer	0:05:11	194

03/24/2023	21:58	3:58:00 PM	3	Yazoo City	Joshua Gebauer	0:12:28	1144
03/24/2023	22:29	4:29:00 PM	3	Yazoo City	Joshua Gebauer	0:08:47	779
03/24/2023	22:57	4:57:00 PM	3	Yazoo City	Joshua Gebauer	0:07:52	453
03/24/2023	23:13	5:13:00 PM	3	Yazoo City	Joshua Gebauer	0:07:52	578
03/24/2023	23:26	5:26:00 PM	3	Yazoo City	Joshua Gebauer	0:07:42	408
03/24/2023	23:43	5:43:00 PM	3	Yazoo City	Joshua Gebauer	0:03:32	73
03/24/2023	23:58	5:58:00 PM	3	Yazoo City	Joshua Gebauer	0:04:07	198
03/31/2023	19:00	11:14:00 AM	4	Lake Village	Connor Bruce	0:02:50	237
03/31/2023	19:33	2:14:00 PM	4	Lake Village	Connor Bruce	0:02:22	176
03/31/2023	20:00	4:14:00 PM	4	Lake Village	Connor Bruce	0:01:18	45
03/31/2023	20:30	6:14:00 PM	4	Lake Village	Connor Bruce	0:05:58	589
03/31/2023	21:01	7:14:00 PM	4	Lake Village	Connor Bruce	0:02:43	192
03/31/2023	21:34	12:14:00 AM	4	Lake Village	Connor Bruce	0:02:06	132
03/31/2023	22:00	3:14:00 AM	4	Lake Village	Connor Bruce	0:04:32	456
03/31/2023	22:30	5:14:00 AM	4	Lake Village	Connor Bruce	0:06:22	667
03/31/2023	23:01	9:14:00 AM	4	Lake Village	Connor Bruce	0:02:33	167
03/31/2023	23:30	11:14:00 AM	4	Lake Village	Connor Bruce	0:02:59	265
04/01/2023	0:00	2:14:00 PM	4	Lake Village	Connor Bruce	0:04:19	413
04/01/2023	0:30	6:14:00 PM	4	Lake Village	Connor Bruce	0:05:07	527
04/01/2023	1:00	9:14:00 PM	4	Lake Village	Connor Bruce	0:03:35	328
04/01/2023	1:30	12:14:00 AM	4	Lake Village	Connor Bruce	0:03:36	333
04/01/2023	2:00	2:14:00 AM	4	Lake Village	Connor Bruce	0:04:48	447
04/01/2023	2:15	5:14:00 AM	4	Lake Village	Connor Bruce	0:04:29	438
04/01/2023	2:30	8:14:00 AM	4	Lake Village	Connor Bruce	0:04:33	441

04/01/2023	2:45	10:14:00 AM	4	Lake Village	Connor Bruce	0:02:54	235
03/31/2023	19:02	12:14:00 PM	4	Schlater	Antonio R. Segales	0:06:31	657
03/31/2023	19:30	1:14:00 PM	4	Schlater	Antonio R. Segales	0:04:13	417
03/31/2023	20:00	3:14:00 PM	4	Schlater	Antonio R. Segales	0:09:16	1012
03/31/2023	20:30	5:14:00 PM	4	Schlater	Antonio R. Segales	0:07:34	819
03/31/2023	21:13	9:14:00 PM	4	Schlater	Antonio R. Segales	0:07:12	772
03/31/2023	21:30	11:14:00 PM	4	Schlater	Antonio R. Segales	0:02:59	254
03/31/2023	21:59	2:14:00 AM	4	Schlater	Antonio R. Segales	0:03:26	268
03/31/2023	22:30	6:14:00 AM	4	Schlater	Antonio R. Segales	0:04:29	370
03/31/2023	23:00	8:14:00 AM	4	Schlater	Antonio R. Segales	0:02:23	182
03/31/2023	23:31	12:14:00 PM	4	Schlater	Antonio R. Segales	0:03:21	290
04/01/2023	0:00	3:14:00 PM	4	Schlater	Antonio R. Segales	0:03:00	217
04/01/2023	0:29	5:14:00 PM	4	Schlater	Antonio R. Segales	0:02:15	102
04/01/2023	1:00	8:14:00 PM	4	Schlater	Antonio R. Segales	0:03:43	207
04/01/2023	1:29	11:14:00 PM	4	Schlater	Antonio R. Segales	0:02:51	236
04/01/2023	2:02	3:14:00 AM	4	Schlater	Antonio R. Segales	0:03:09	192
04/01/2023	2:30	7:14:00 AM	4	Schlater	Antonio R. Segales	0:02:25	176
04/01/2023	2:46	11:14:00 AM	4	Schlater	Antonio R. Segales	0:03:10	272
04/01/2023	2:59	1:14:00 PM	4	Schlater	Antonio R. Segales	0:02:33	205
03/31/2023	21:21	10:14:00 PM	4	Yazoo City	Elizabeth Smith	0:11:14	174
03/31/2023	21:57	1:14:00 AM	4	Yazoo City	Elizabeth Smith	0:08:04	529
03/31/2023	22:27	4:14:00 AM	4	Yazoo City	Elizabeth Smith	0:10:58	886
03/31/2023	22:58	7:14:00 AM	4	Yazoo City	Elizabeth Smith	0:06:38	373
03/31/2023	23:28	10:14:00 AM	4	Yazoo City	Elizabeth Smith	0:09:38	763
03/31/2023	23:58	1:14:00 PM	4	Yazoo City	Elizabeth Smith	0:09:53	803

04/01/2023	0:27	4:14:00 PM	4	Yazoo City	Elizabeth Smith	0:09:34	734
04/01/2023	0:55	7:14:00 PM	4	Yazoo City	Elizabeth Smith	0:11:50	784
04/01/2023	1:28	10:14:00 PM	4	Yazoo City	Elizabeth Smith	0:07:20	565
04/01/2023	1:58	1:14:00 AM	4	Yazoo City	Elizabeth Smith	0:06:28	444
04/01/2023	2:14	4:14:00 AM	4	Yazoo City	Elizabeth Smith	0:05:24	329
04/01/2023	2:27	6:14:00 AM	4	Yazoo City	Elizabeth Smith	0:05:49	327
04/01/2023	2:44	9:14:00 AM	4	Yazoo City	Elizabeth Smith	0:05:04	295
04/01/2023	2:57	12:14:00 PM	4	Yazoo City	Elizabeth Smith	0:06:34	380
04/05/2023	11:30	6:30:00 AM	5	Schlater	Antonio R. Segales	0:04:40	453
04/05/2023	11:45	6:45:00 AM	5	Schlater	Antonio R. Segales	0:04:05	388
04/05/2023	12:00	7:00:00 AM	5	Schlater	Antonio R. Segales	0:04:26	428
04/05/2023	12:30	7:30:00 AM	5	Schlater	Antonio R. Segales	0:04:31	434
04/05/2023	13:00	8:00:00 AM	5	Schlater	Antonio R. Segales	0:04:08	382
04/05/2023	13:30	8:30:00 AM	5	Schlater	Antonio R. Segales	0:04:10	392
04/05/2023	14:00	9:00:00 AM	5	Schlater	Antonio R. Segales	0:04:16	404
04/05/2023	14:30	9:30:00 AM	5	Schlater	Antonio R. Segales	0:05:23	572
04/05/2023	15:05	10:05:00 AM	5	Schlater	Antonio R. Segales	0:04:04	390
04/05/2023	15:30	10:30:00 AM	5	Schlater	Antonio R. Segales	0:06:54	726
04/05/2023	16:00	11:00:00 AM	5	Schlater	Antonio R. Segales	0:06:04	636
04/05/2023	16:30	11:30:00 AM	5	Schlater	Antonio R. Segales	0:08:45	963
04/05/2023	17:00	12:00:00 PM	5	Schlater	Antonio R. Segales	0:07:43	855
04/05/2023	17:15	12:15:00 PM	5	Schlater	Antonio R. Segales	0:07:00	763
04/05/2023	17:30	12:30:00 PM	5	Schlater	Antonio R. Segales	0:09:16	1050
04/05/2023	17:45	12:45:00 PM	5	Schlater	Antonio R. Segales	0:08:40	979
04/05/2023	18:00	1:00:00 PM	5	Schlater	Antonio R. Segales	0:08:29	951

04/05/2023	18:29	1:29:00 PM	5	Schlater	Antonio R. Segales	0:05:29	578
04/05/2023	18:44	1:44:00 PM	5	Schlater	Antonio R. Segales	0:09:20	1052
04/05/2023	18:59	1:59:00 PM	5	Schlater	Antonio R. Segales	0:06:05	662
04/05/2023	11:26	6:26:00 AM	5	Yazoo City	Elizabeth Smith	0:09:27	537
04/05/2023	11:43	6:43:00 AM	5	Yazoo City	Elizabeth Smith	0:06:40	458
04/05/2023	11:58	6:58:00 AM	5	Yazoo City	Elizabeth Smith	0:07:36	574
04/05/2023	12:23	7:23:00 AM	5	Yazoo City	Elizabeth Smith	0:11:24	468
04/05/2023	12:58	7:58:00 AM	5	Yazoo City	Elizabeth Smith	0:05:38	342
04/05/2023	13:28	8:28:00 AM	5	Yazoo City	Elizabeth Smith	0:09:28	484
04/05/2023	13:57	8:57:00 AM	5	Yazoo City	Elizabeth Smith	0:06:50	401
04/05/2023	14:28	9:28:00 AM	5	Yazoo City	Elizabeth Smith	0:08:21	630
04/05/2023	14:58	9:58:00 AM	5	Yazoo City	Elizabeth Smith	0:11:24	891
04/05/2023	15:28	10:28:00 AM	5	Yazoo City	Elizabeth Smith	0:10:52	997
04/05/2023	15:57	10:57:00 AM	5	Yazoo City	Elizabeth Smith	0:11:54	1070
04/05/2023	16:28	11:28:00 AM	5	Yazoo City	Elizabeth Smith	0:10:00	902
04/05/2023	16:58	11:58:00 AM	5	Yazoo City	Elizabeth Smith	0:12:12	1163
04/05/2023	17:14	12:14:00 PM	5	Yazoo City	Elizabeth Smith	0:11:37	1119
04/05/2023	17:28	12:28:00 PM	5	Yazoo City	Elizabeth Smith	0:12:39	1199
04/05/2023	17:43	12:43:00 PM	5	Yazoo City	Elizabeth Smith	0:11:55	1135
04/05/2023	17:57	12:57:00 PM	5	Yazoo City	Elizabeth Smith	0:13:06	1201
04/05/2023	18:27	1:27:00 PM	5	Yazoo City	Elizabeth Smith	0:13:01	1200
04/05/2023	18:43	1:43:00 PM	5	Yazoo City	Elizabeth Smith	0:12:27	1211
04/05/2023	18:58	1:58:00 PM	5	Yazoo City	Elizabeth Smith	0:11:38	1115
04/05/2023	19:14	2:14:00 PM	5	Yazoo City	Elizabeth Smith	0:11:44	1152
04/05/2023	19:29	2:29:00 PM	5	Yazoo City	Elizabeth Smith	0:12:35	1205
04/05/2023	11:30	6:30:00 AM	5	Lake Village	Joshua Gebauer	0:05:23	505
04/05/2023	11:45	6:45:00 AM	5	Lake Village	Joshua Gebauer	0:04:45	436

04/05/2023	12:00	7:00:00 AM	5	Lake Village	Joshua Gebauer	0:04:23	400
04/05/2023	12:30	7:30:00 AM	5	Lake Village	Joshua Gebauer	0:03:17	271
04/05/2023	13:00	8:00:00 AM	5	Lake Village	Joshua Gebauer	0:04:33	419
04/05/2023	13:30	8:30:00 AM	5	Lake Village	Joshua Gebauer	0:04:02	348
04/05/2023	14:00	9:00:00 AM	5	Lake Village	Joshua Gebauer	0:05:31	542
04/05/2023	14:30	9:30:00 AM	5	Lake Village	Joshua Gebauer	0:05:39	549
04/05/2023	15:01	10:01:00 AM	5	Lake Village	Joshua Gebauer	0:06:07	595
04/05/2023	15:30	10:30:00 AM	5	Lake Village	Joshua Gebauer	0:06:59	690
04/05/2023	16:00	11:00:00 AM	5	Lake Village	Joshua Gebauer	0:07:59	832
04/05/2023	16:31	11:31:00 AM	5	Lake Village	Joshua Gebauer	0:07:04	729
04/05/2023	17:00	12:00:00 PM	5	Lake Village	Joshua Gebauer	0:08:35	886
04/05/2023	17:15	12:15:00 PM	5	Lake Village	Joshua Gebauer	0:07:50	801
04/05/2023	17:30	12:30:00 PM	5	Lake Village	Joshua Gebauer	0:08:51	927
04/05/2023	17:45	12:45:00 PM	5	Lake Village	Joshua Gebauer	0:08:36	864