Real-Time Kinematic Surveying at the Osage-Skiatook Petroleum Environmental Research Site, Osage County, Oklahoma

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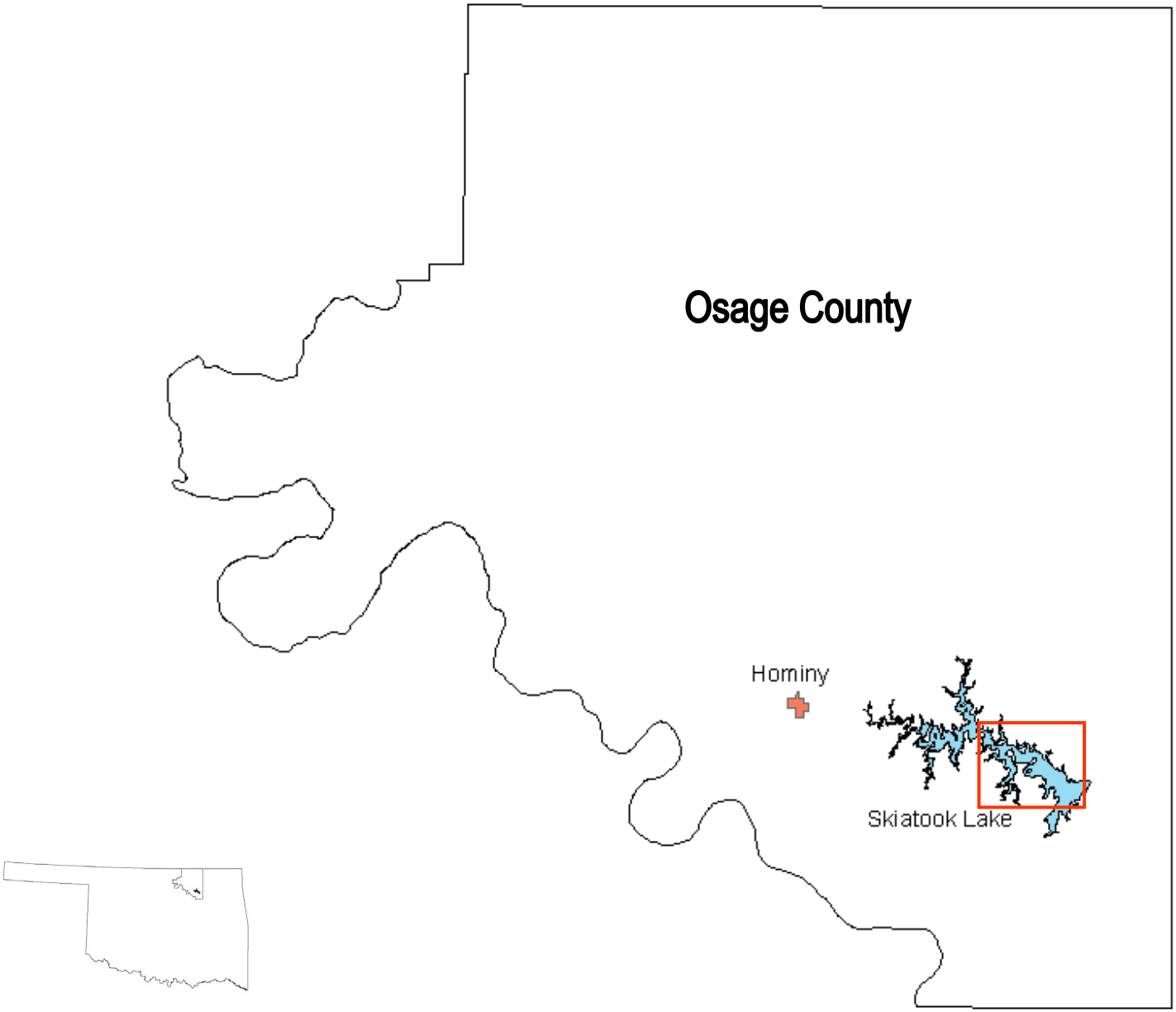
INTRODUCTION

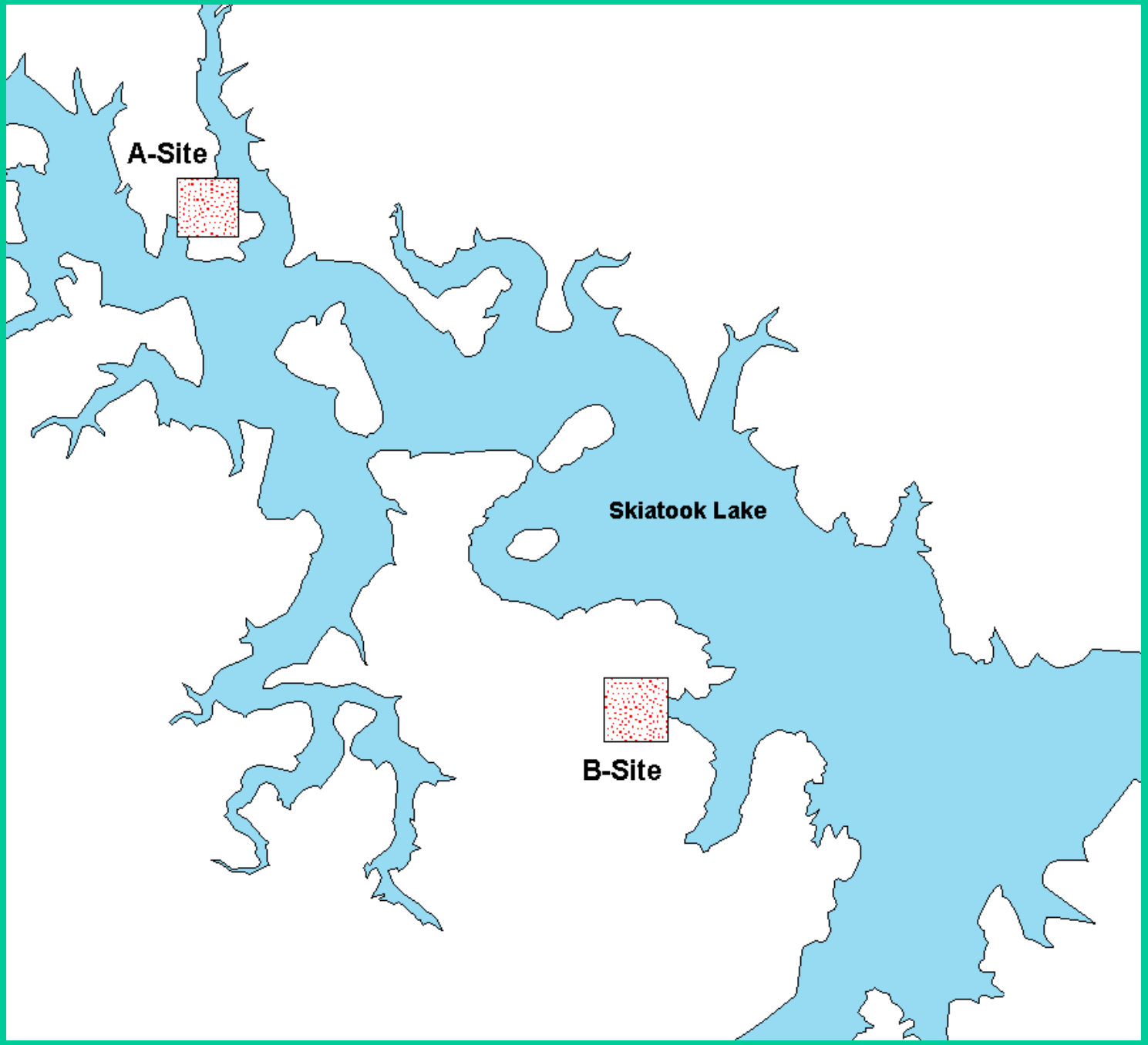
Real-Time Kinematic (RTK) methods offer high accuracy in real time

RTK surveys require some preparation work

RTK surveys have overcome many of the problems of older surveying methods

RTK surveys can be interrupted by many new and different problems


Osage County
Hominy
Skiatook Lake


A-Site
Skiatook Lake
B-Site

GPS Base Station

Radio Link

Monument

GPS Base Station
Monument

OPUS HomePage - Netscape

File Edit View Go Communicator Help

Bookmarks Location: http://www.ngs.noaa.gov/OPUS/index.html What's Related

OPUS

Online Positioning User Service

Output format modified. US National Grid added. See FAQ#13. Details of treating velocities of stations in NAD 83 modified. See discussion on Opus home page.

- What is OPUS
- OPUS Guidelines
- GPS Height Measurements
- Antenna Types
- Output Description
- Discussion
- Expected Precisions
- Latest Orbits
- Areas Covered
- FAQs
- Questions - Comments
- Privacy Statement

OPUS

1. Enter your email address

2. Enter your RINEX file — Browse...

3. Select the antenna type — NONE NONE

4. Enter the antenna height — 0.0 meters

5. *Optional*: State Plane Coordinates — 0 none

6. Upload File

Reminders:

email correct?	correct rinex name?
no kinematic data	minimum of 2 hours of data
dual frequency data	data rates of 1, 2, 3, 5, 6, 10, 15 or 30 seconds

Document: Done

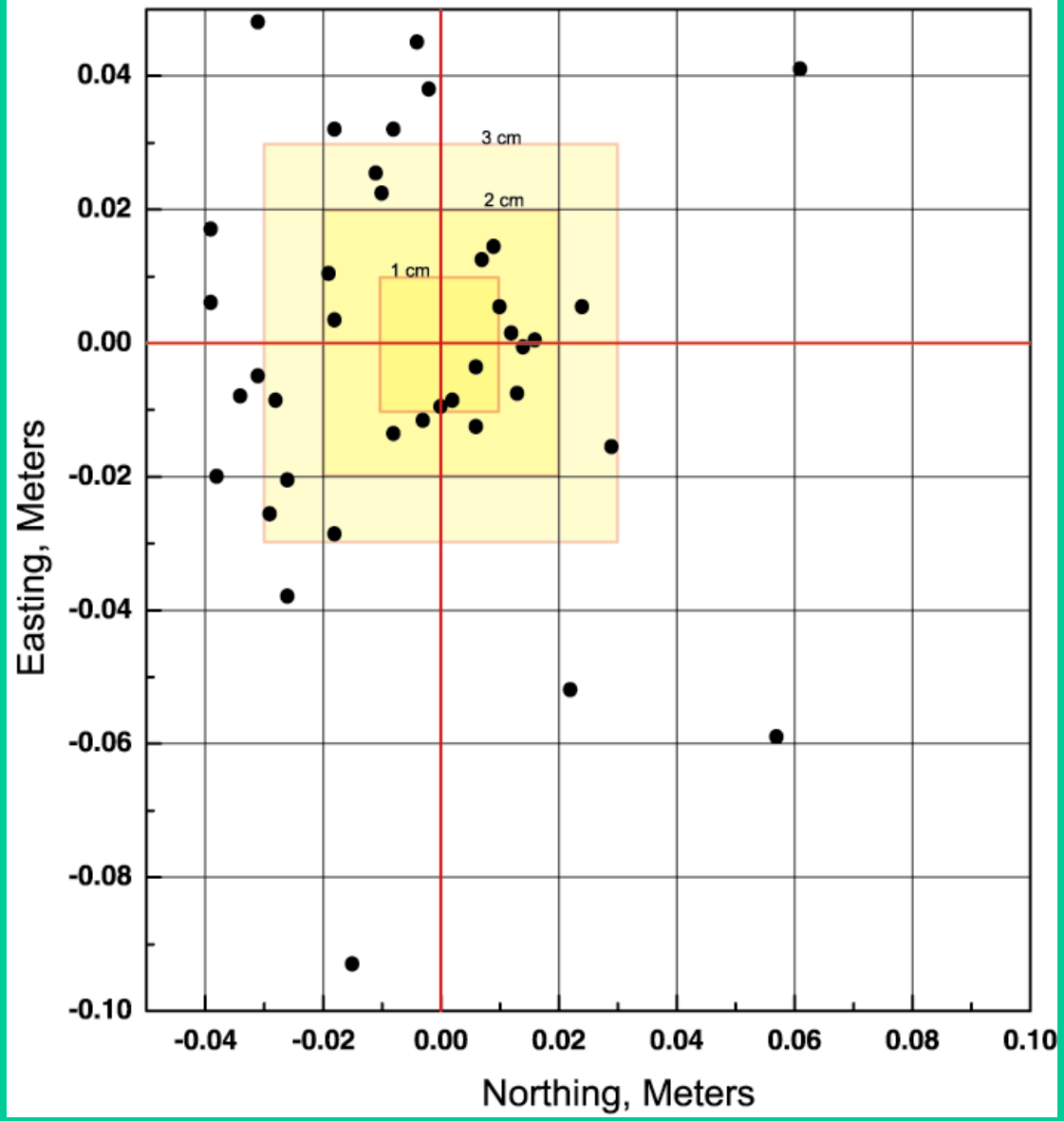
SURVEY
MARKER

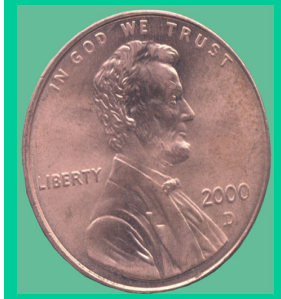
GPS Rover
Radio Link
Data Logger
Bipod

Geoprobe
Hole
Flag

		June, 2002			July, 2002			DIFFERENCE	DIFFERENCE	DIFFERENCE
	WELL ID	NORTHING METERS	EASTING METERS	ELEVATION METERS	NORTHING METERS	EASTING METERS	ELEVATION METERS	NORTHING METERS	EASTING METERS	ELEVATION METERS
A-site	AR01	4030607.05	752464.63	203.32	4030607.00	752464.75	203.36	0.06	-0.06	-0.05
	AA01	4030423.77	752716.02	193.39	4030423.80	752716.03	193.39	-0.03	-0.01	0.00
	AA02	4030396.34	752713.38	195.06	4030396.35	752713.36	195.06	-0.01	0.02	0.00
	AA03	4030394.66	752739.50	195.32	4030394.67	752739.47	195.31	-0.01	0.03	0.00
	AA04	4030386.12	752693.42	195.11	4030386.10	752693.42	195.12	0.02	0.00	-0.01
	AE02	4030445.16	752660.91	194.06	4030445.18	752660.95	194.11	-0.03	-0.04	-0.04
	AE03	4030385.59	752638.20	192.60	4030385.58	752638.20	192.60	0.01	0.00	-0.01
	AE04	4030385.85	752637.55	195.16	4030385.83	752637.61	195.15	0.02	-0.05	0.00
	AE05	4030365.89	752706.92	195.18	4030365.89	752706.93	195.17	0.00	-0.01	0.01
	AE06	4030333.87	752727.31	196.78	4030333.88	752727.33	196.74	-0.01	-0.01	0.04
	AE07	4030304.58	752746.41	198.00	4030304.59	752746.37	197.99	0.00	0.04	0.01
	AE08	4030384.01	752742.21	195.79	4030384.04	752742.22	195.79	-0.03	-0.01	0.00
	AE09	4030389.43	752715.20	195.04	4030389.46	752715.23	195.03	-0.03	-0.03	0.02
	AE10	4030388.78	752726.88	194.85	4030388.77	752726.89	194.83	0.01	-0.01	0.01
	AE13	4030488.62	752744.93	189.36	4030488.61	752744.92	189.35	0.01	0.01	0.01
	AE14	4030466.66	752722.66	189.96	4030466.66	752722.65	189.97	0.01	0.01	-0.02
	AE15	4030459.94	752727.09	189.87	4030459.91	752727.09	189.88	0.02	0.00	-0.01
	AE16	4030437.12	752733.51	191.61	4030437.11	752733.49	191.62	0.01	0.01	0.00
	AE17	4030435.93	752724.42	191.71	4030435.92	752724.43	191.70	0.01	-0.01	0.00
	AE18	4030441.64	752740.44	192.01	4030441.66	752740.47	192.01	-0.02	-0.03	0.00
	AE19	4030396.01	752740.09	195.28	4030396.01	752740.10	195.26	0.00	-0.01	0.02
B-site	BR01	4026214.70	756269.58	241.11	4026214.64	756269.54	241.12	0.06	0.04	-0.01
	BA01	4026349.57	756584.28	190.46	4026349.57	756584.24	190.46	0.00	0.05	0.00
	BA02	4026258.26	756572.21	194.79	4026258.30	756572.20	194.74	-0.04	0.01	0.06
	BA03	4026316.87	756539.08	194.87	4026316.91	756539.10	194.87	-0.04	-0.02	0.00
	BE01	4026366.07	756567.57	191.32	4026366.09	756567.66	191.41	-0.02	-0.09	-0.10
	BE03	4026345.30	756581.89	190.51	4026345.27	756581.91	190.48	0.03	-0.02	0.03
	BE04	4026312.29	756609.96	189.62	4026312.28	756609.96	189.61	0.01	0.00	0.00
	BE05	4026312.15	756609.76	189.63	4026312.17	756609.75	189.60	-0.02	0.01	0.03
	BE06	4026289.01	756630.66	189.67	4026289.03	756630.63	189.65	-0.02	0.03	0.01
	BE08	4026266.78	756630.83	189.28	4026266.79	756630.84	189.29	0.00	-0.01	-0.01
	BE09	4026265.91	756616.42	190.20	4026265.94	756616.38	190.21	-0.03	0.05	-0.01
	BE10	4026271.90	756613.66	190.21	4026271.91	756613.65	190.23	-0.02	0.00	-0.02
	BE11	4026262.41	756605.74	191.31	4026262.45	756605.73	191.28	-0.04	0.02	0.03
	BE12	4026259.14	756606.73	191.37	4026259.17	756606.73	191.39	-0.03	-0.01	-0.02
	BE15	4026277.50	756627.90	189.72	4026277.52	756627.92	189.72	-0.03	-0.02	0.01
	BE18	4026321.39	756627.71	189.06	4026321.40	756627.68	189.00	-0.01	0.03	0.05
	BE19	4026321.22	756627.49	189.06	4026321.21	756627.49	189.05	0.01	0.00	0.01
							MIN	**-0.04**	**-0.09**	**-0.10**
							1st Quartile	**-0.02**	**-0.01**	**-0.01**
							Median	**-0.01**	**0.00**	**0.00**
							3rd Quartile	**0.01**	**0.05**	**0.06**
							Max	**0.06**	**0.05**	**0.06**

Difference between June and July surveys for same locations





Summary

Real-Time Kinematic methods offer high accuracy in real time

Some preparation is required before the RTK survey

RTK surveys are not limited by

- Line of sight from base station
- Darkness
- Lakes
- Minimum number of people

RTK surveys can be interrupted by many things

- Minimum number of satellites
- Tree canopy
- Distance from the base station
- Solar storms
- Other radios on the same frequency
- Battery failure