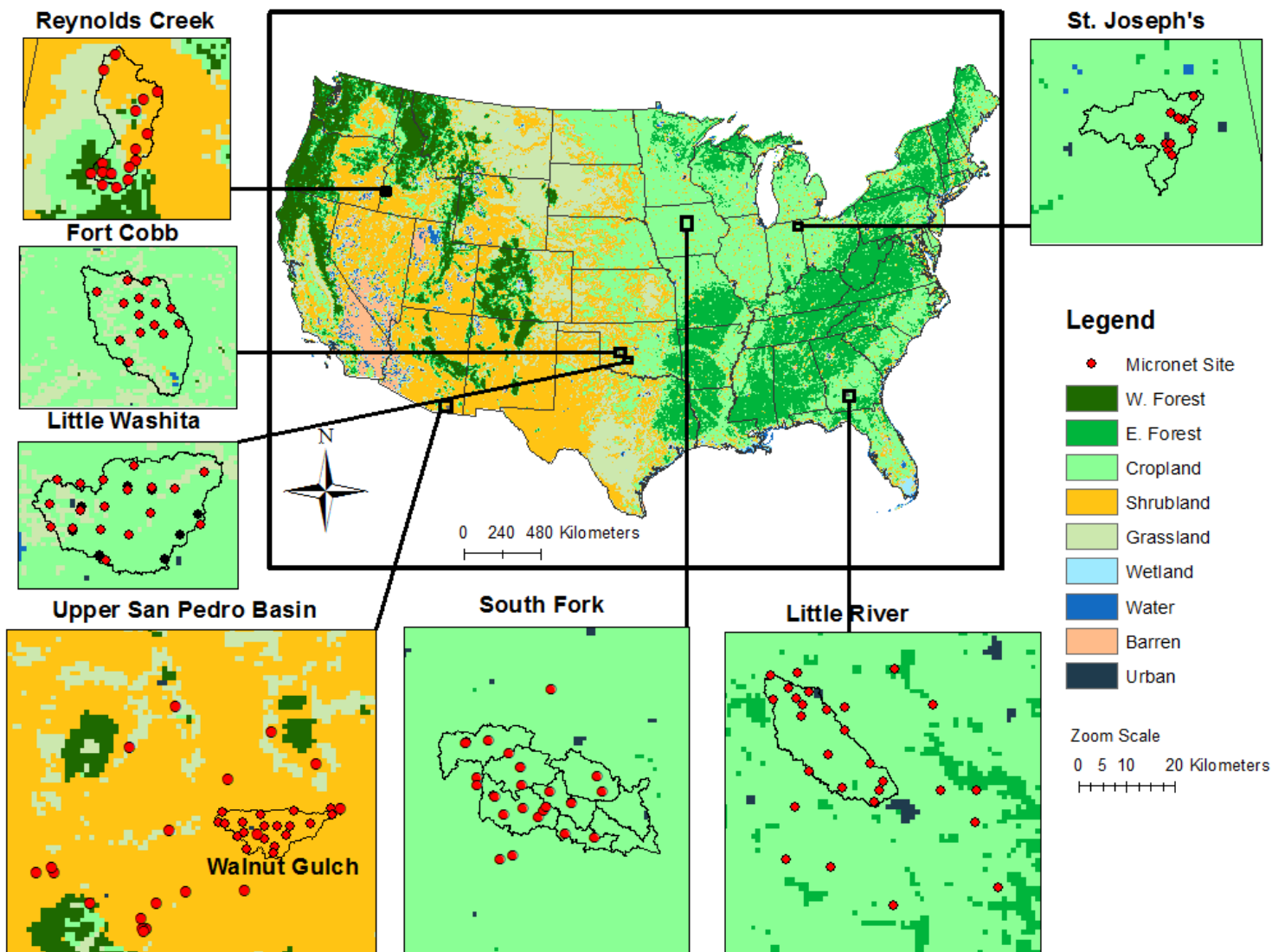




USDA – ARS

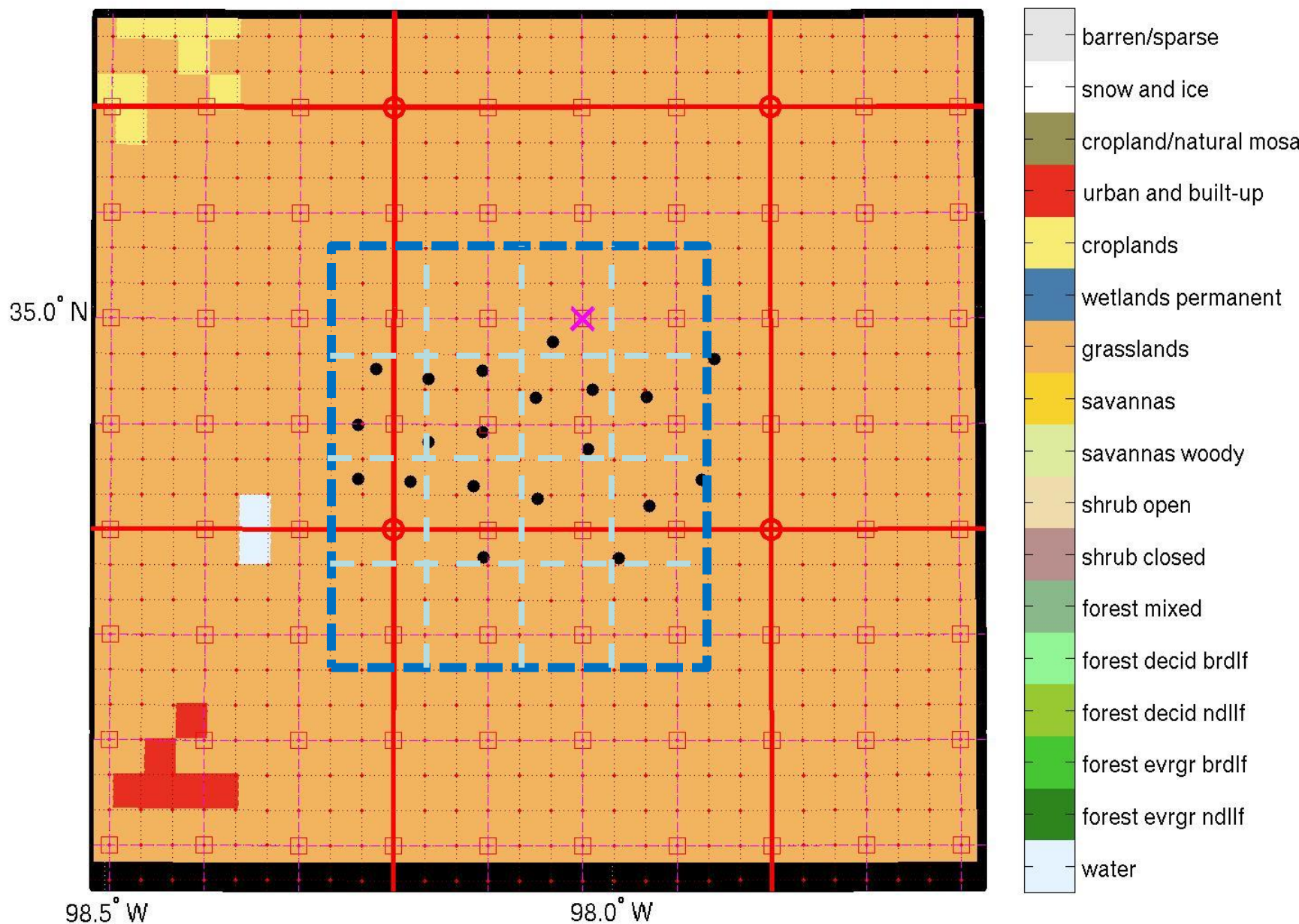
Michael Cosh	HRSL
Pat Starks	GRL
Susan Moran	SWRC
David Bosch	SEWRL
Stan Livingston	NSERL
John Prueger	NLAE
Mark Seyfried	NWRC



Watershed	No. Sites	Climate	Annual Rainfall (mm)	Land Use	Record
Little Washita, OK	20	Sub-humid Steppe	750	Range/wheat	2002-present
Little River, GA	33	Humid Subtropical	1200	Row crop/forest	2002-present
Walnut Gulch, AZ	54	Semi-Arid Desert	320	Range	2002-present
Reynolds Creek, ID	21	Semi-Arid Steppe	500	Range	2002-present
Fort Cobb, OK	15	Sub-humid Steppe	750	Crop/range	2006-present
St. Josephs, IN	15	Humid Continental	914	Row crop	2017-present
South Fork, IA	20	Humid Continental	812	Row crop	2013-present

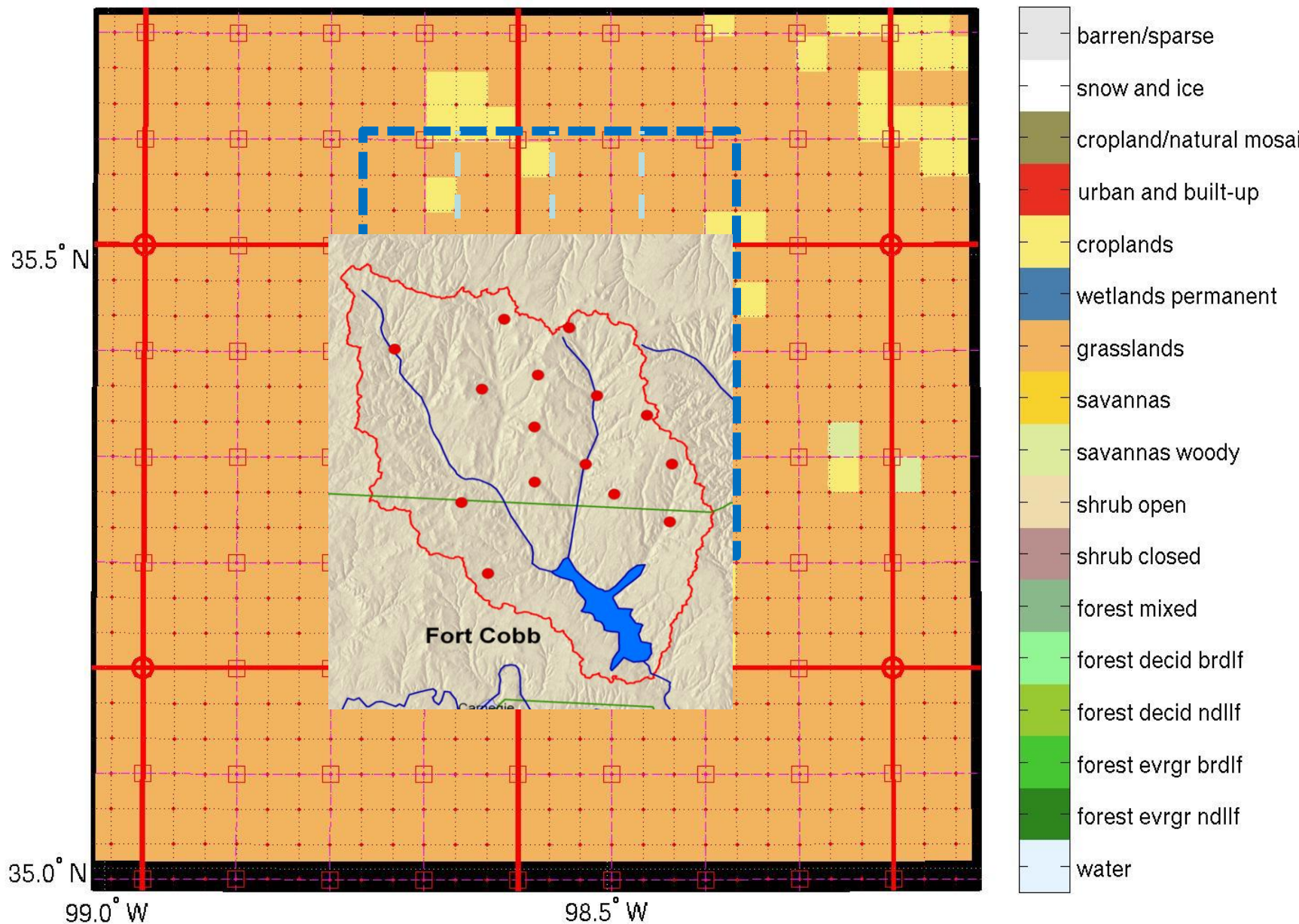


Little Washita (1602)



Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.

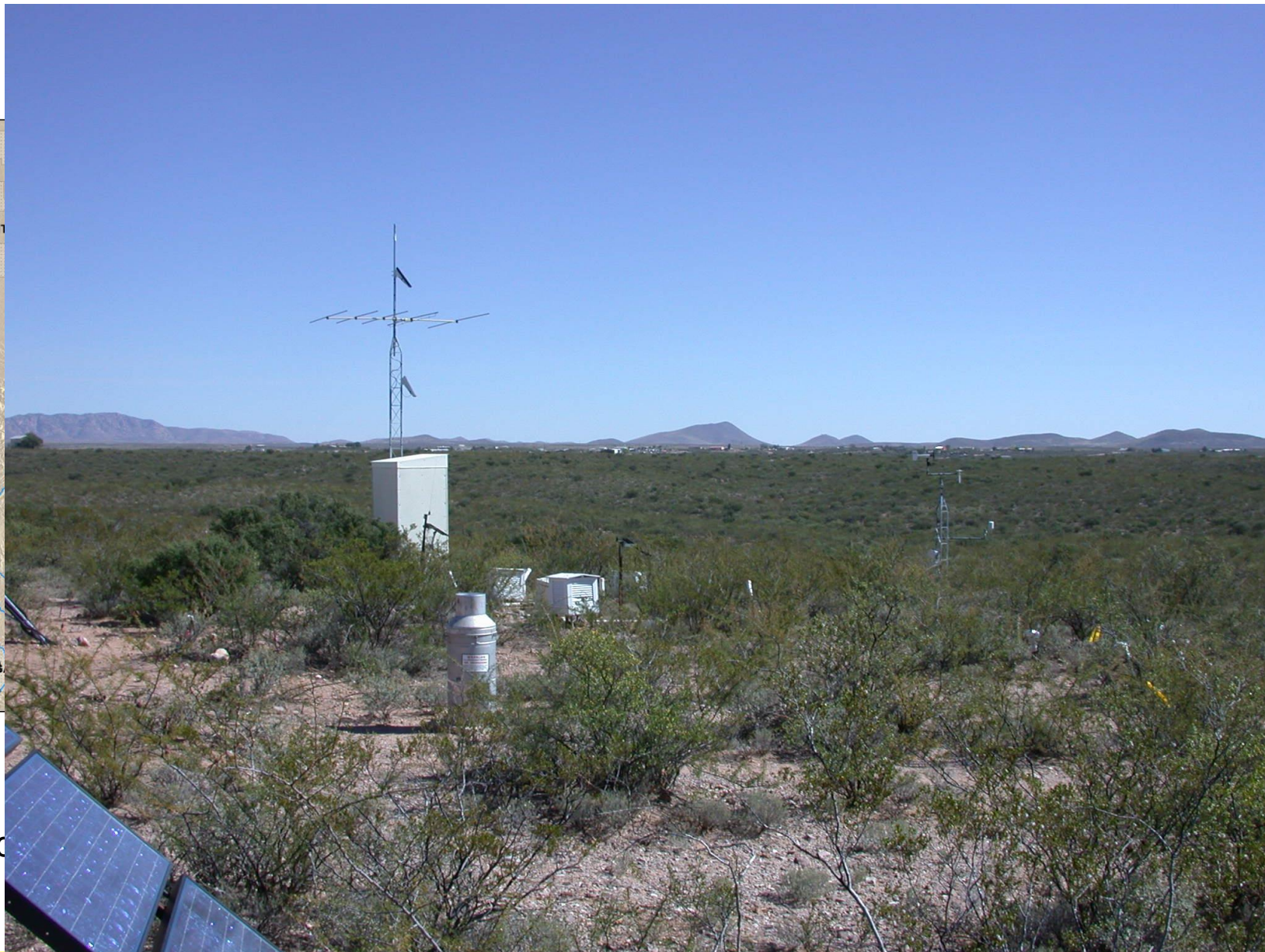
Fort Cobb (1603)



Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.



Lead



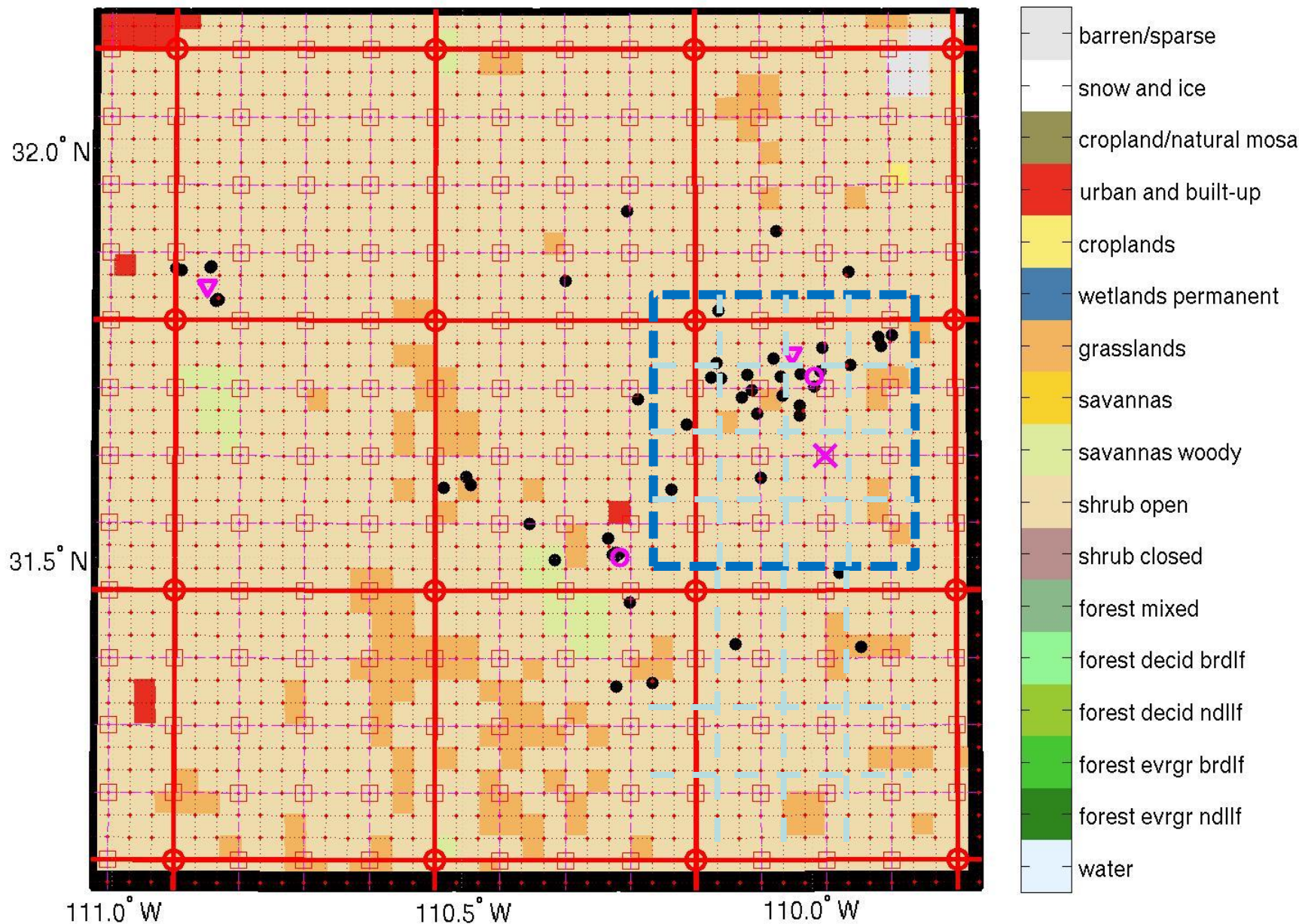
cm

cm



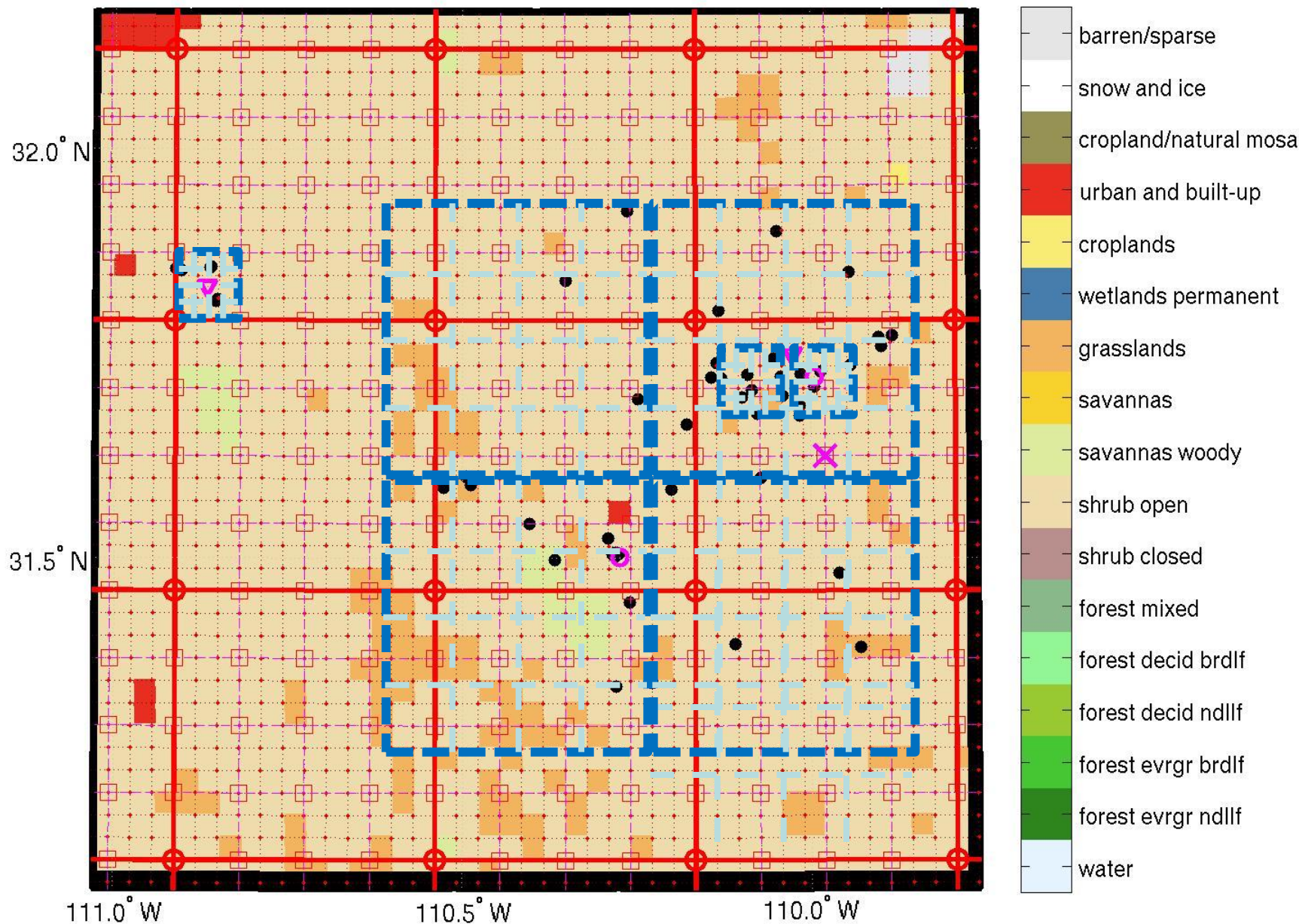
HRSL-SWRC-SEWRL-NLAE-NSERL-GRL-NWRC

Walnut Gulch (1601)



Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.

Walnut Gulch (1601)

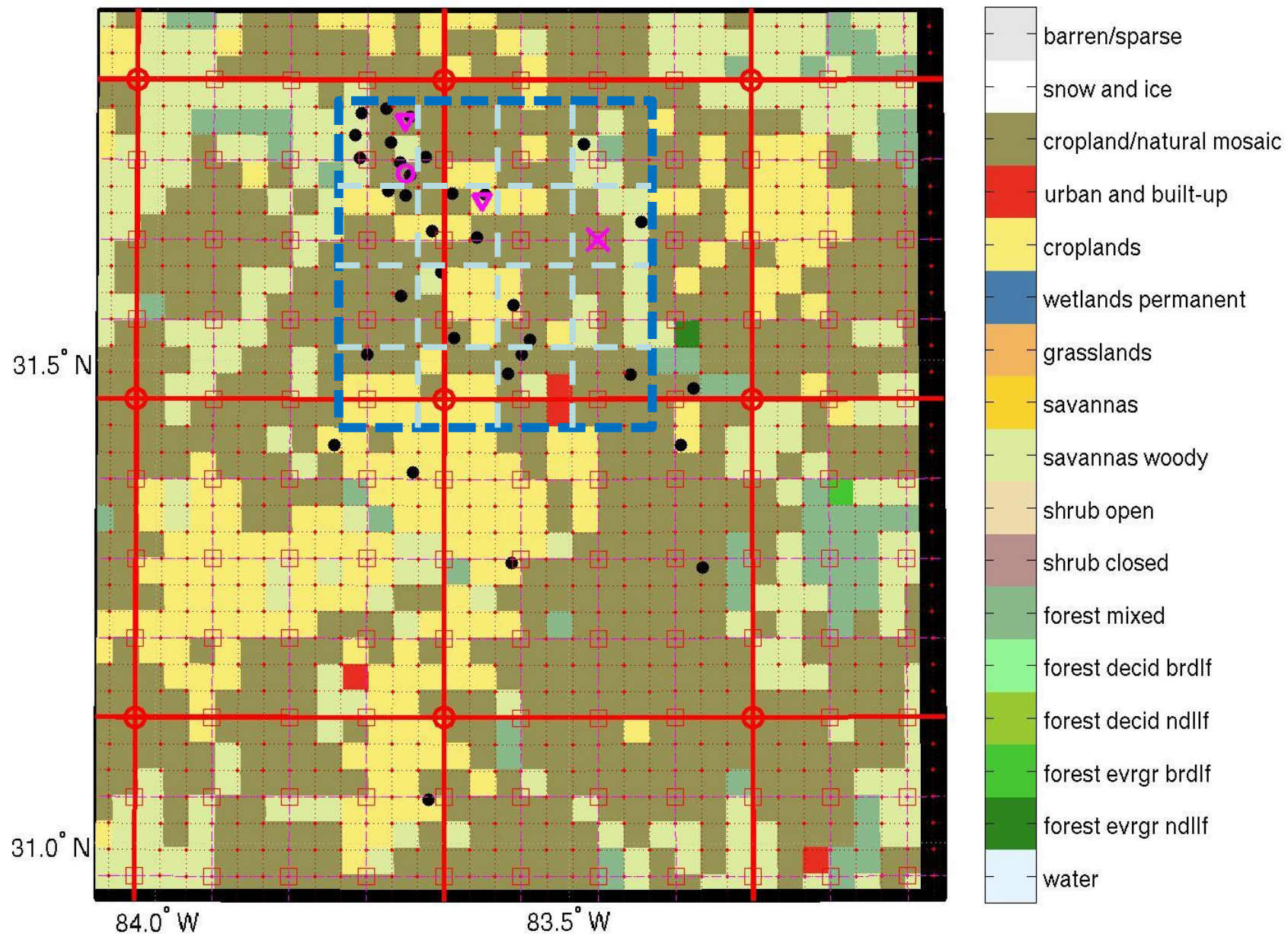


Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.



RL

Little River (1604)



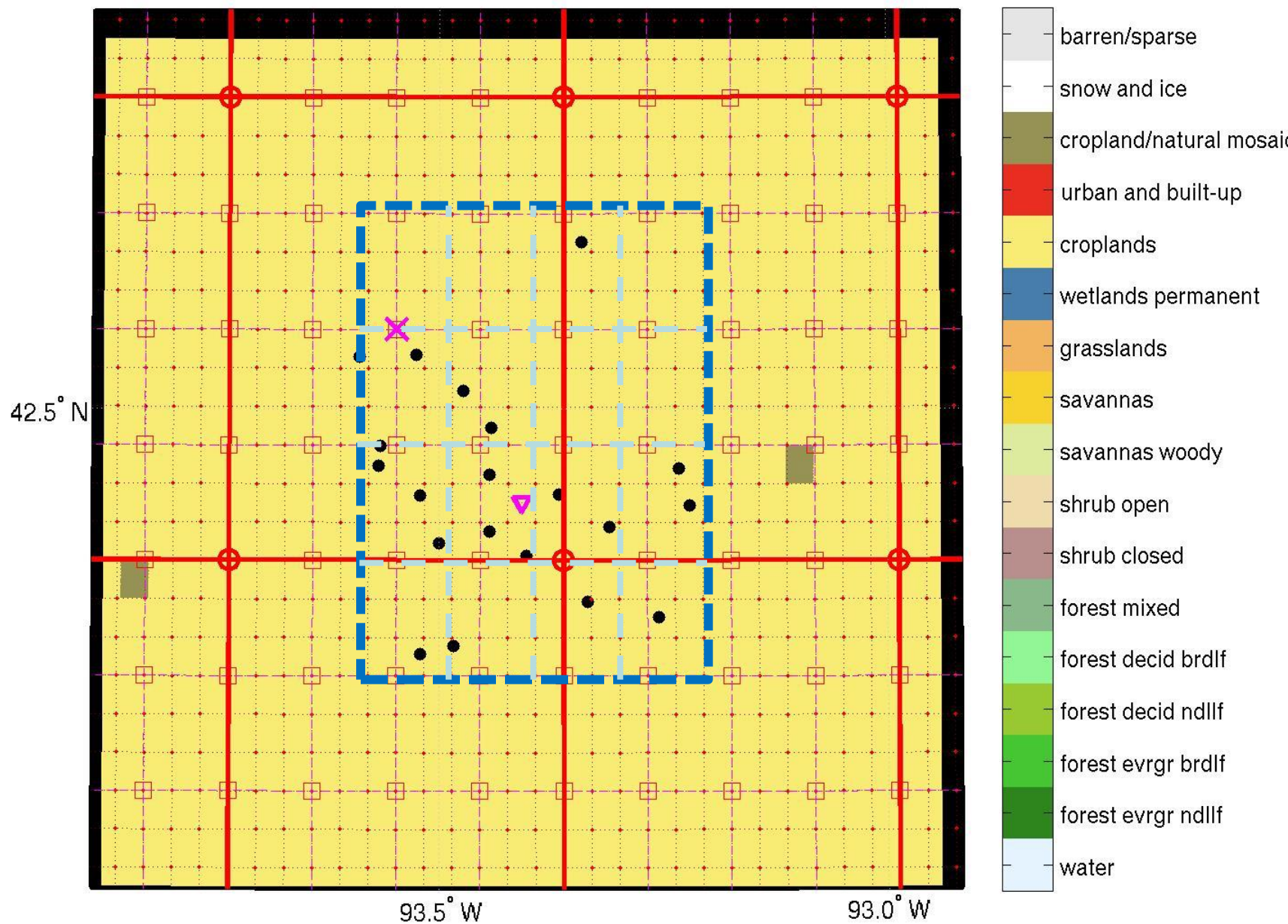
Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.



LAE
SL

HRSL-SWRC-SEWRL-NLAE-NSERL-GRL-NWRC

South Fork (1607)

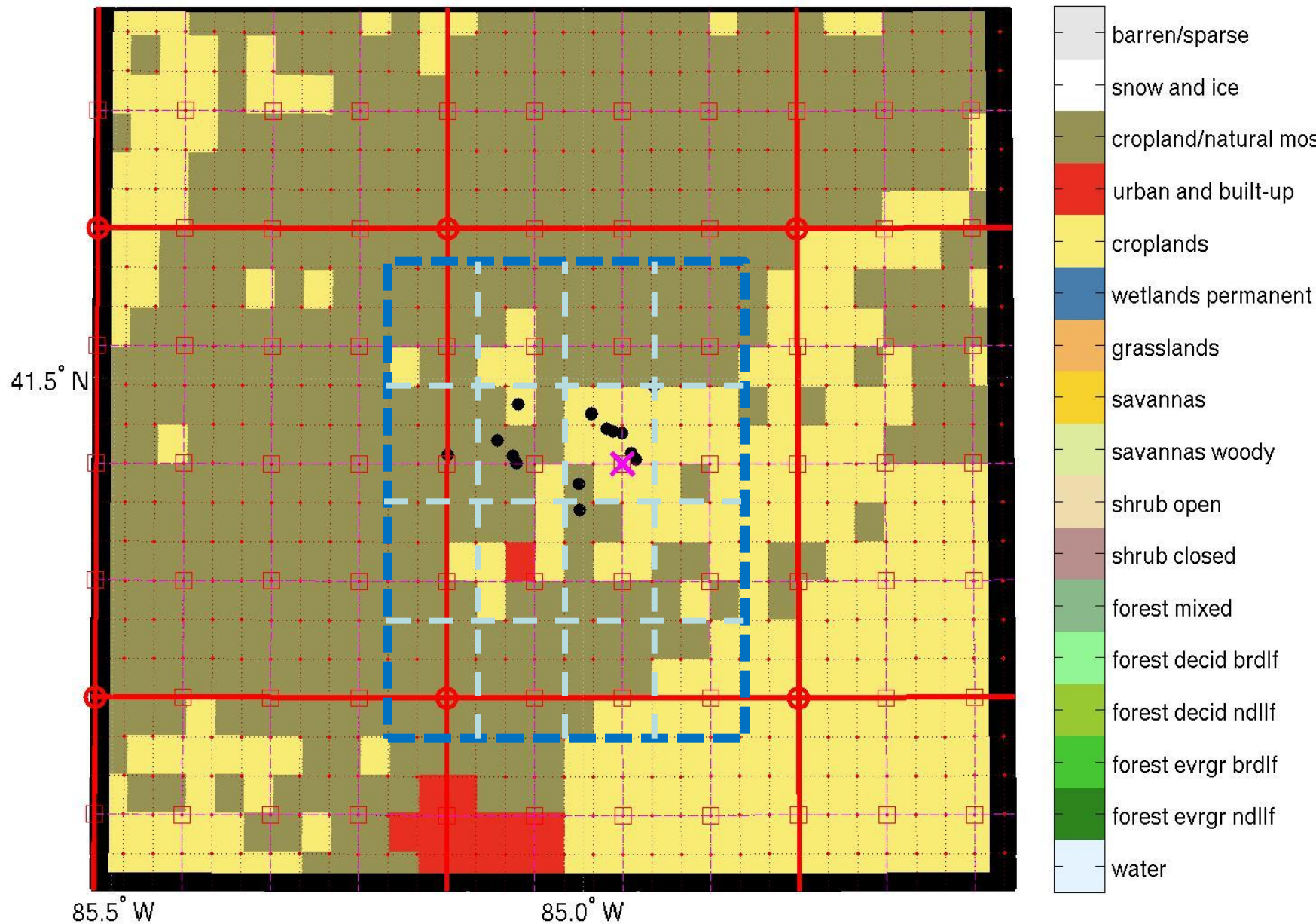


Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.



m

St Josephs (1606)



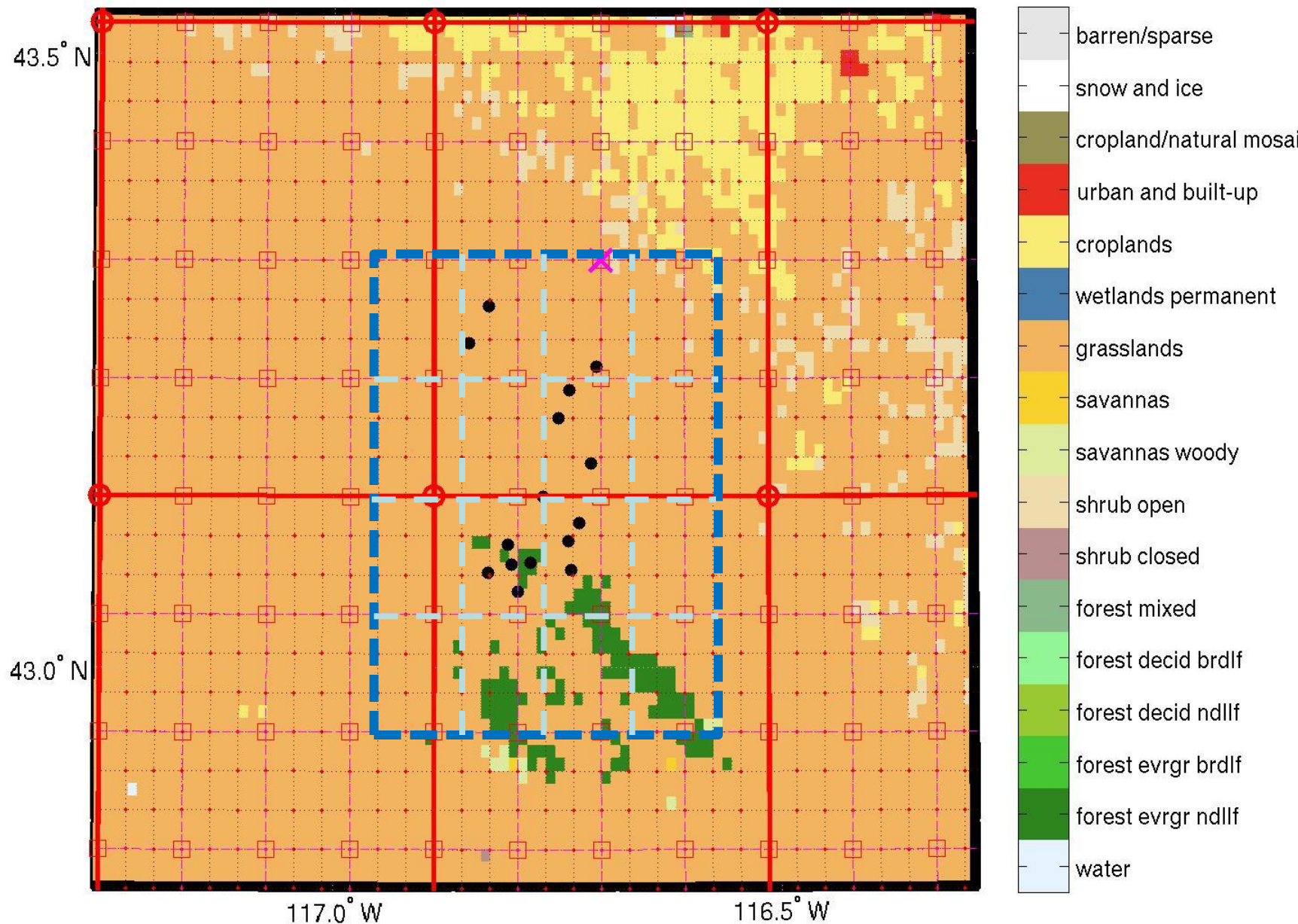
Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.



cm

HRSL-SWRC-SEWRL-NLAE-NSERL-GRL-NWRC

Reynolds Creek (0401)



Thick red lines with circles denote the 36-km grid; dashed magenta lines with squares denote the 9-km grid, and dotted red lines with dots denote the 3-km grid.

Calibration/Validation

- In most instances, Manufacturer setting for Loam or Sand is used, depending on location.
- Little Washita and Fort Cobb were validated to within 1% or 3% rmse to GVSM in 2003/2007, Scaled not calibrated.
- Little River was validated in 2003.
- Walnut Gulch was validated in 2004 to within 1% rmse. Scaled not calibrated.
- South Fork is ongoing, with soil calibration done specific to soil.
- St. Joseph's is ongoing
- Reynolds Creek is underdevelopment

Upscaling Method

- Currently using spatially weighted average for most watersheds.
- Arithmetic averages also calculated.
- Developing dynamic spatially weighted average for missing data points
- Developing models to simulate surface soil moisture to bridge data gaps

Pre-Launch Field Campaigns

Potential campaigns:

- Bi-weekly site visits in the summer/active period (3 months) for each watershed
- Gravimetric/Dielectric Sampling for ground-truth
- Provides sensor calibration and network scaling at a minimal level
- South Fork ongoing, St. Joe's ongoing.