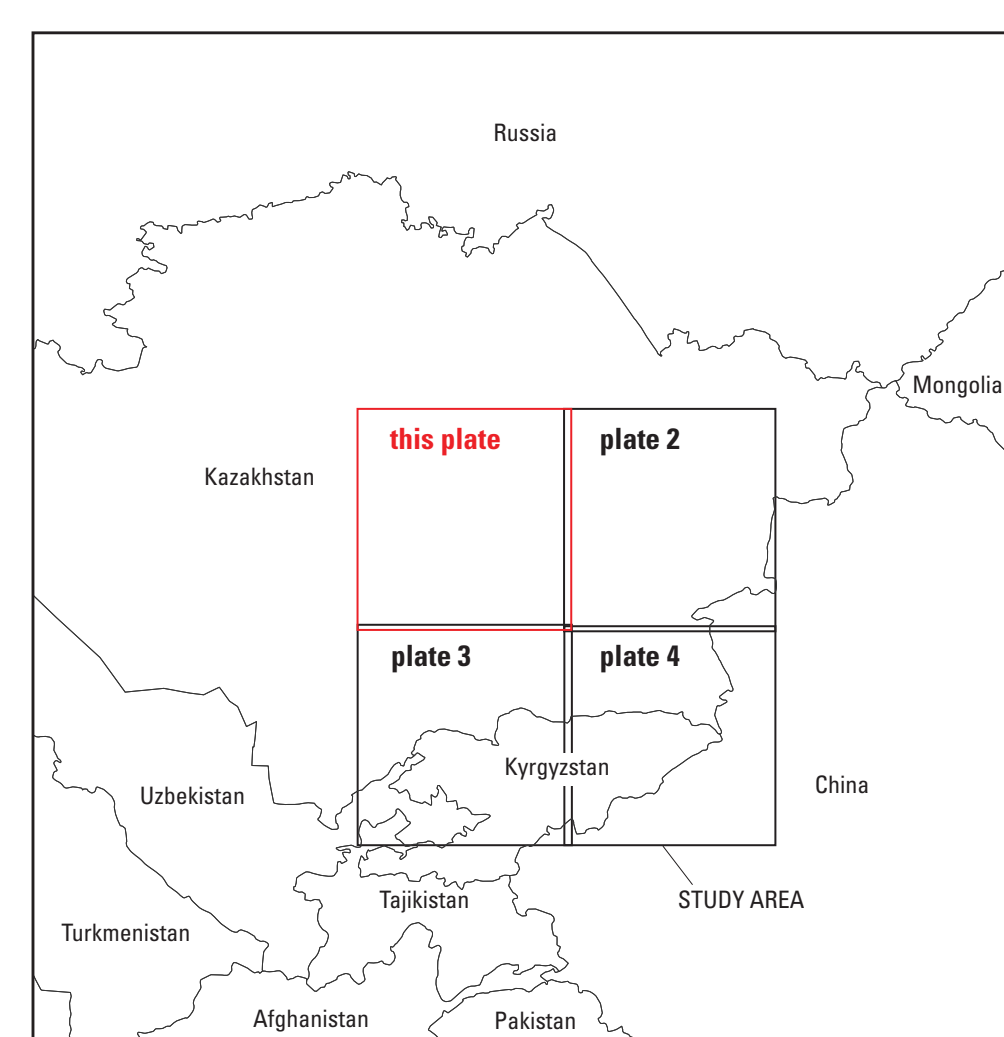
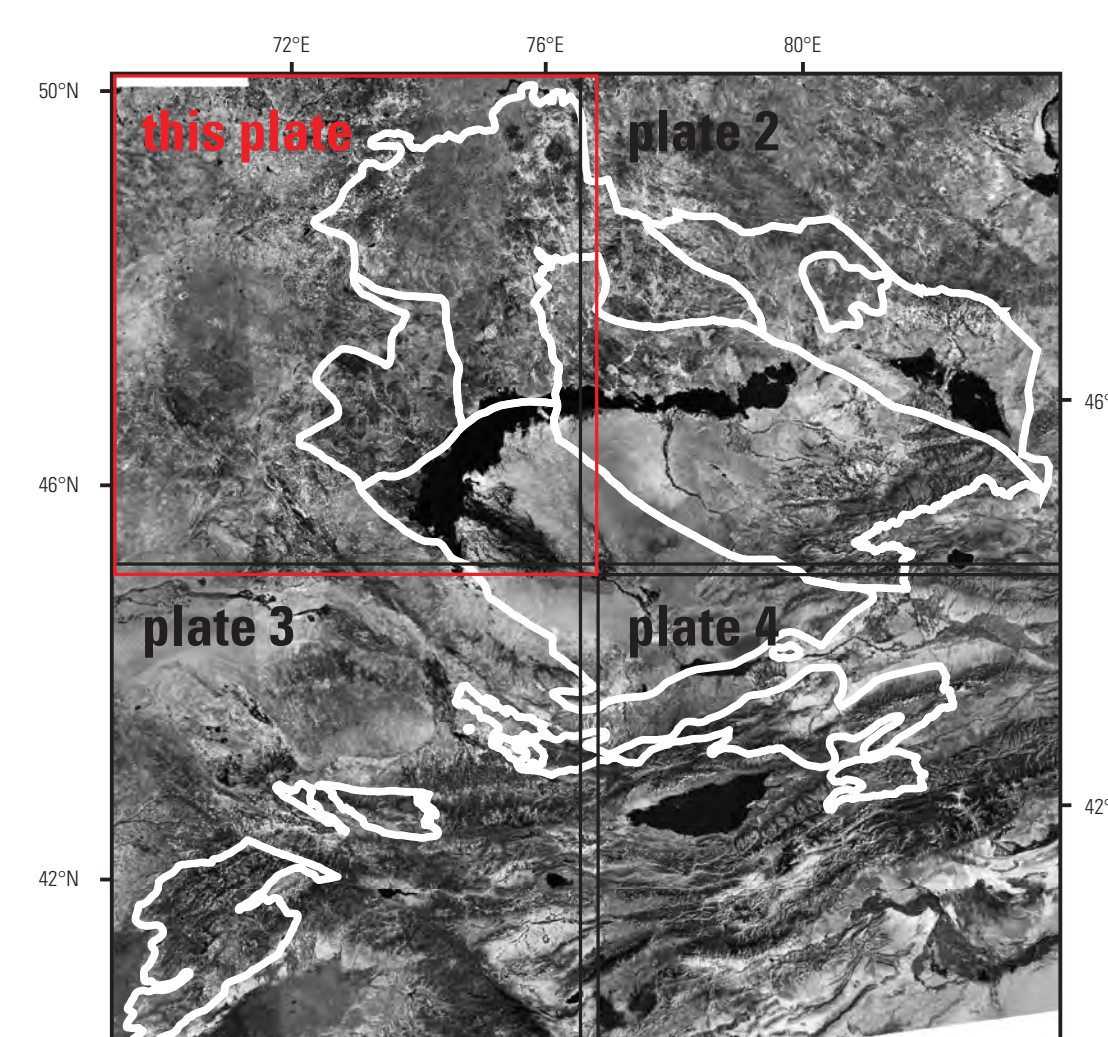


Base is Landsat Thematic Mapper, band 2 grayscale image (<http://landsat.usgs.gov/>)  
Universal Transverse Mercator projection

Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data were used to map hydrothermal alteration, including argillic-, phyllic-, and silicic-altered rocks.



Index map showing location of study area, this map area (red outline), and bordering map areas (black outlines).



Index map showing location of this ASTER hydrothermal alteration map area (red outline), bordering map areas (black outlines), and permissive tract boundaries (white outlines).

### ASTER Hydrothermal Alteration Map of Northwestern Part of Study Area, Central Kazakhstan, Western Central Asia

By  
John C. Mars  
2014

**EXPLANATION**

[NOTE FOR PLOT USERS: Small, isolated data areas may be difficult to see on plots; see files for detail (<http://pubs.usgs.gov/sir/2010/5090/n/>)]

## Alteration units, mapped using ASTER data

-  Phyllic-altered rocks  
 Silicic-altered rocks  
 Argillic-altered rock  
 Permissive tract bound

This map was printed on an electronic plotter directly from digital files. Dimensional calibration may vary between electronic plotters and between X and Y directions at the same cluster, and paper may change size due to atmospheric conditions; therefore, scale and assumptions

For sale by U.S. Geological Survey, Information Services, Box 2430B, Federal Center, Denver, CO 80226. 1-800-ASK-USGS

**Suggested citation:** Mars, J.C., 2014. ASTER hydrothermal alteration map of northeastern part of study area, central Kazakhstan, western Central Asia, plate 1 by Berger, B.R., Mars, J.C., Deering, P.D., Phillips, J.D., Hammond, J.M., Zimok, M.I., Dickson, C.L., and Drow, J.L., with contributions from Alexeev, D., Selmsrud, R., and Herrington, R.J., 2014. Porphyry copper assessment of western Central Asia: U.S. Geological Survey Scientific Investigations Report 2013-5050-N, 21 p., 3 plates, and spatial data. <http://dx.doi.org/10.7554/20130500N>.

ISSN 2328-0226 (online)  
<http://dx.doi.org/10.21320/23280226>