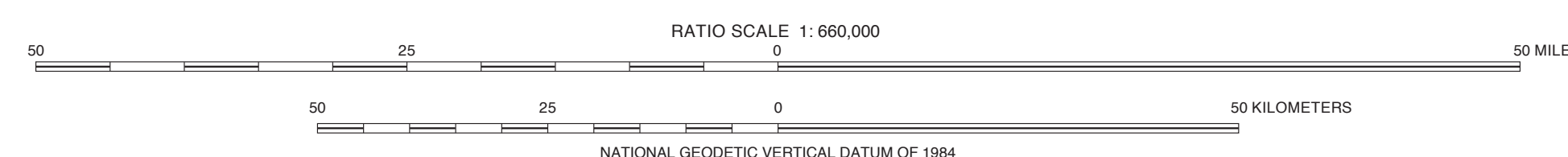
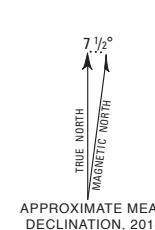
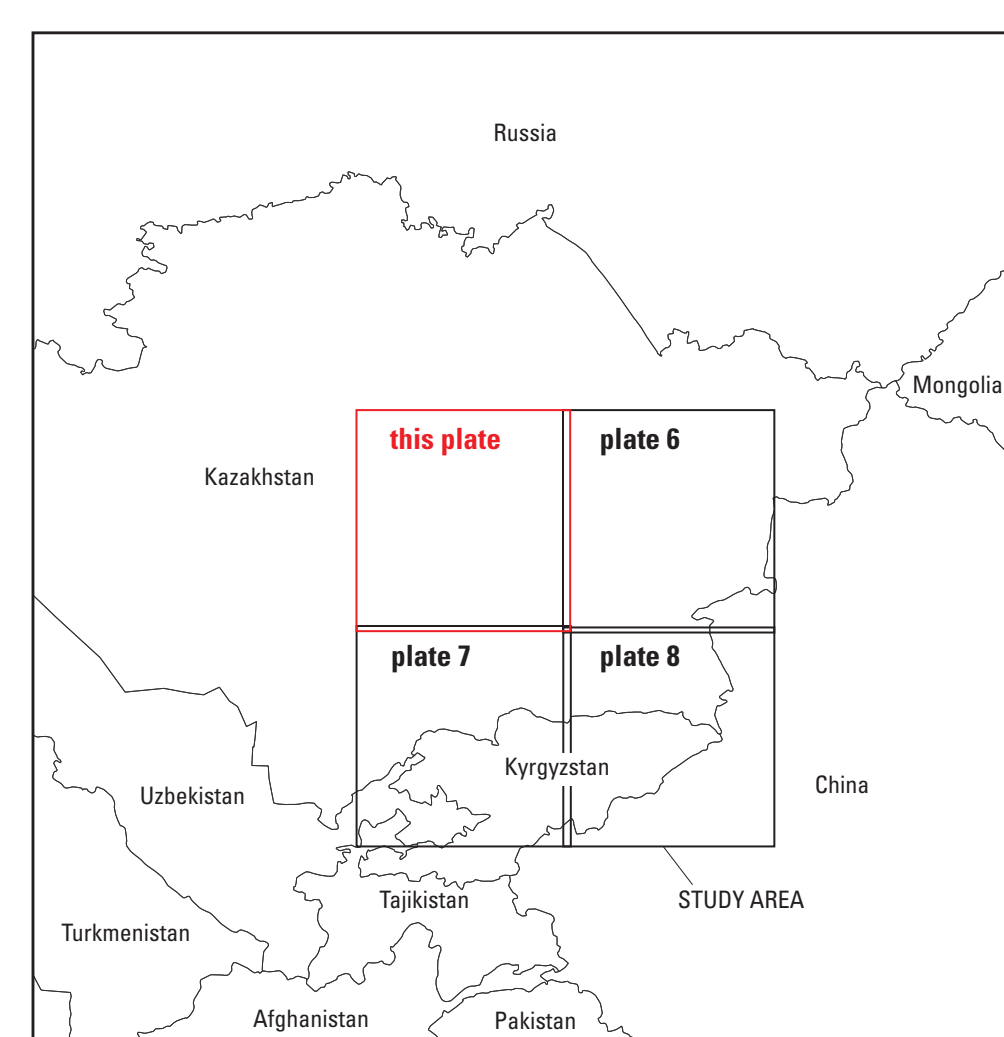


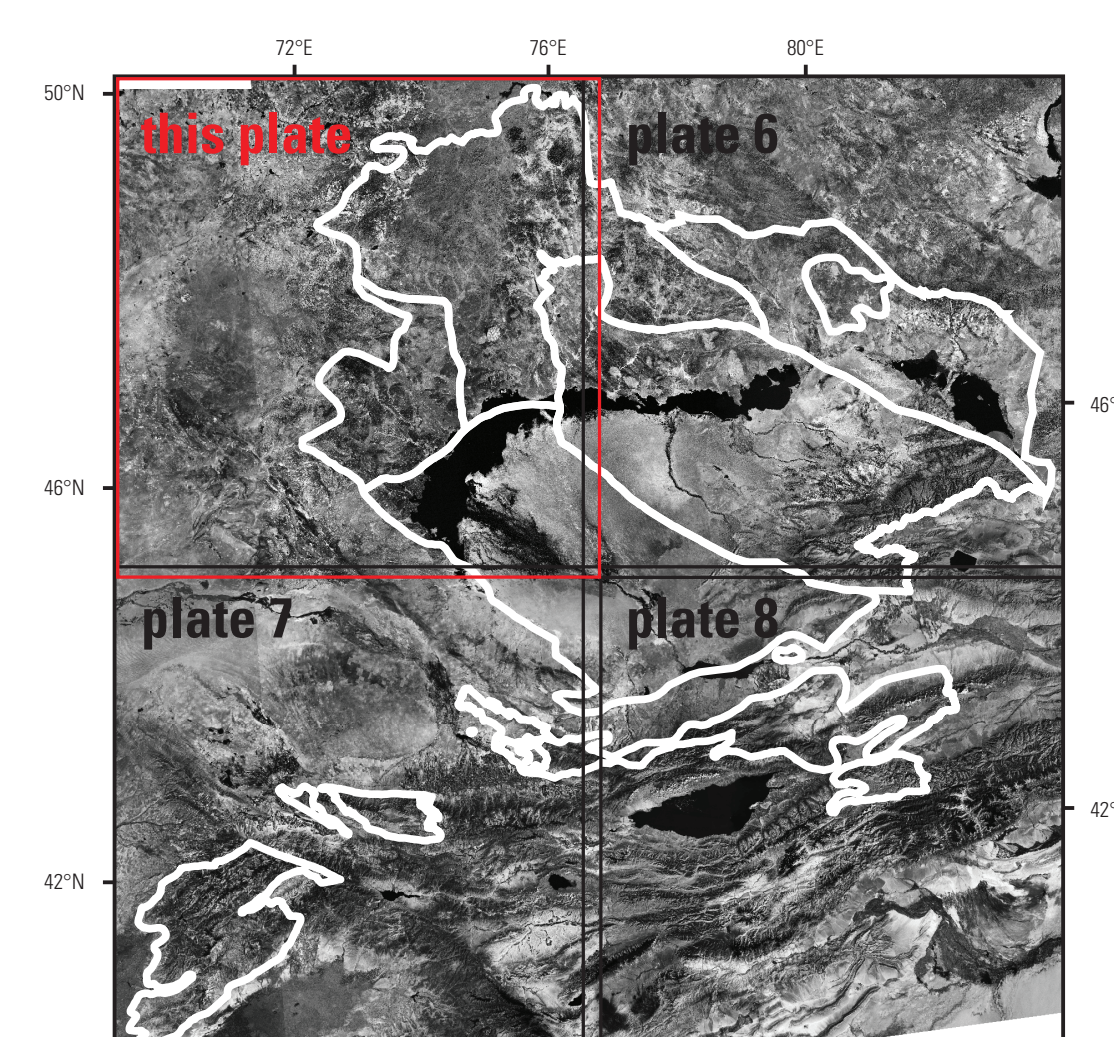
Base is Landsat Thematic Mapper, band 2 grayscale image (<http://landsat.usgs.gov/>)
Universal Transverse Mercator projection



Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) hydrothermal alteration data were used to map potential porphyry copper sites. See table 2-1 (available online only at <http://pubs.usgs.gov/sir/2010/5090/v1/>) for physical characteristics and locations of potential porphyry copper sites, listed by site number.



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 and Potential Porphyry Copper Sites 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 rocks
 Permissive tract boundary
 Potential porphyry copper site

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This map was printed on an electronic platter directly from digital files. Dimensional calibration may vary between electronic platters and between X and Y directions of the same platter, and paper may change size due to atmospheric conditions; therefore, scale and proportions may not be true to scale of this map.

For sale by U.S. Geological Survey, Information Services, Box 2598, Federal Center, Denver, CO 80225, 1-888-ASK-USGS
 Digital files available at <http://pubs.usgs.gov/of/2010/5956/>
 Cited as: Mans, J.C., 2014, ASTER hydrothermal alteration map and potential porphyry copper zones of northwestern part of study area, central Kazakhstan, western Central Asia, plate in Berger, B.R., Mans, J.C., Dunning, P.D., Phillips, J.D., Hammarstrom, J.M., Zientek, M.L., Dickin, C.L., and Drex, L.J., with contributions from Alexeev, D., Seaburne, R., and Herrington, R.J., 2014, Porphyry copper assessment of western Central Asia: U.S. Geological Survey Scientific Investigations Report 2013-0890-N, 219 p., 8 plates, and spatial data, <http://dx.doi.org/10.26309/20130890N>