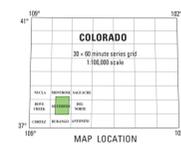


ASTER SWIR detector "scratch":  
propylitic, alunite, and kaolinite  
detections in this region are unreliable

ASTER SWIR detector "scratch":  
dolomite, jarosite, and opal/chalcedony  
detections in this region are unreliable

Base image is derived from multiple sources and served by ESRI  
<http://globe.arcgis.com/arcgis/rest/services/World/MapServer>  
World Geodetic System 1984 (WGS 84)  
Projection: Universal Transverse Mercator, zone 13  
ASTER Scene ID SC.AST\_118.003.2011894123, acquired September 12, 2000 at  
<http://glovis.usgs.gov/>  
Hydrothermal alteration type modeled from mineral assemblages identified through  
spectroscopic analysis of ASTER data described by Rockwell (2009).  
ASTER data orthorectified using a Projective Transform to mosaicked TerraServer  
digital orthophoto quadrangles, digital raster graphics, and a 1/3 arc second digital  
elevation model (~10 m resolution) from the U.S. Geological Survey National  
Elevation Database (NED, <http://ned.usgs.gov/>), provided by USGS Seamless Data  
Distribution System available at <http://seamless.usgs.gov/>.  
Data file name: sanjuans\_aster\_alteration5\_pt-utm.img



**EXPLANATION**  
Alteration type and key mineral assemblages grouped by  
relative net acid production and acid neutralizing capacity

<b>High net acid production (NAP)</b>	<b>Moderate to high acid neutralizing capacity (ANC)</b>
Phyllic (DSP)	Propylitic + sericite + ferric iron
Highly pyritic DSP + hydrous silica	Propylitic + ferric iron
Pyritic (jarosite)	Propylitic + sericite
<b>Moderate to high NAP (variable pyrite content)</b>	Regional propylitic—Fe/Mg sericite + chlorite
Advanced argillic	<b>High ANC</b>
Argillic + ferric iron	propylitic (or carbonate rocks)
Regional propylitic to weak DSP— minor sericite + ferric iron	<b>No significant NAP or ANC</b>
<b>Low to moderate NAP</b>	Hydrous silica—Opal and (or) chalcedony
argillic (or clay-bearing rocks)	Outline of ASTER scene footprint

## Map of Mineralogy, Vegetation, and Hydrothermal Alteration Type Generated From ASTER Satellite Data, San Juan Mountains, Colorado

### Modeled Hydrothermal Alteration Type

By  
**Barnaby W. Rockwell**  
2012

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Suggested citation:  
Rockwell, B.W., 2012, Description and validation of an automated methodology for  
mapping mineralogy, vegetation, and hydrothermal alteration type from ASTER satellite  
imagery with examples from the San Juan Mountains, Colorado, U.S. Geological Survey  
Scientific Investigations Map 3190, 30 p., pamphlet, 5 map sheets, scale 1:100,000.

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