

## **Using Landsat ETM+ data to discriminate volcanic rocks around El'gygytgyn Crater, Siberia**

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The Okhotsk-Chukotka Volcanic Field (OCVF) around Lake El'gygytgyn in northeastern Siberia presents a chance to use Landsat ETM+ satellite data to discriminate volcanic units and produce a geologic map based on the satellite data. The OCVF is a Mid to Late Cretaceous, extrusive, Andean type subduction complex, ranging in composition from basalts to andesites, dacites, and rhyolites. Our goal is to evaluate spectral variability within mapped volcanic units and to identify any unmapped regions with similar spectral signatures.

Using the maximum likelihood supervised classification technique we have produced strong correlations to a 1998 geologic map produced by Belyi and Belaya. We further discuss two subset regions of the study area; the first, a region where the classification produces similar geologic boundaries as Belyi and Belaya's geologic map; and the second region, where the classification was not as effective at producing results similar to Belyi and Belaya's geologic map.

Many challenges are introduced when selecting Regions of Interest (ROIs) for supervised classification, such as removing clouds, shadows, snow, and vegetation signatures. These challenges can be mitigated by using masking techniques. Furthermore, a refinement in selecting ROIs has resolved many regions that were not strongly correlated in the first classification. This refinement involves collecting ROIs to cover the range of local incidence angles. This refinement tries to account for all the spectral variabilities encountered in these geologic units.