



### Motivation

Our main goal is to make processed satellite imagery of Antarctica more accessible by providing a tool that facilitates quick, large-scale visualization of this data.

Improving geological research in this area has the potential to help solve the world's greatest challenges in the following areas:

- Energy
- Natural resources
- Environment and climate change
- Natural hazards and disasters



# Visualization of Remote Sensing Data in Antarctica Joe Carter, Kass Coxen, Zach Spielberger, Beck Bohnker, Logan Garrett Clients: Dr. Heathery Lynch & Dr. Mark Salvatore Mentor: Andrew Abraham

## Solution Overview

Back-end Preprocessing of GeoTiff images

Terracotta Map tile server with GeoTiff ingestion

Glacie	es Indicium Geological Survey Visualizer			
Details 🟮				
host: http://capstone.rabb	pitlabs.us:8000			
Band keys Reset Blue Dolerite Granite Green Ice Red Shadow				
Grevscale	~			
Region Keys Exp	port Map			
Shackleton Glacier Mount Cole Mount Greenlee Mount Speed Mount Wendland Nilsen Peak Taylor Nunatak				

GeoTIFFs

into Terracotta



#### Architecture



start server

## Challenges



my

Using a haversine formula, we can find which region has the shortest distance to the center of each image.

63

<b>ESII</b>

	Unit	Integration	Usability
•	Automated Code coverage	Preprocess => Frontend	<ul><li>Admins</li><li>End Users</li></ul>

#### Outcomes



Before this application, it was not easy for others to view our clients' largescale processed satellite images of Antarctica.

Now anyone can have access to this data!

## Future Updates



**Filter** by imagery contents analysis **Search** functionality Scale bars

**Front-end** Simple navigation visualization

map of Antarctica





Keying the region and band into the filename allows us to quickly find the source data in our regional hierarchy.

#### ng

Map Projection Update: Polar Stereographic (View Earth from above South Pole) Interpolate bands as RGB