ENVIRONMENT & SOCIETY

Issue: Management of the intersection of infrastructure, vegetation, and geocomputation.

Lesson inquiry: How does geospatial information transform the efficiency of cities?

Career connection: Hsiao-Chien Shih, E Source utility consulting firm.

GEOGRAPHIC QUESTIONS:

- *What is the difference between relative and absolute location?*
- *How can vegetation impact the power grid?*

RELATED GEOGRAPHY CAREERS:

- *Geographic Information Systems Technologists & Technicians*
- *Surveying & Mapping Technicians*
- *Environmental Restoration Planners*
- *Urban & Regional Planners*

Photo: Transmission lines

APPLICATIONS:

- *Vegetation management*
- *Gas leak prediction*
- *Storm-outage prediction*
- *Grid investment optimization*
- *Maintenance unitization*
- *Risk Calculation*

INTERVIEW DIGEST: HSIAO-CHIEN SHIH

"I often think about how my learning as an undergraduate and graduate student could contribute to for a better world, especially in urban areas. The knowledge of remote sensing, GIS, and geocomputation perfectly helped me achieve the goal of helping the world toward to a decarbonizing future, and I am glad that I have the opportunity to apply my knowledge in the utility industry"
-Hsiao-Chien Shih

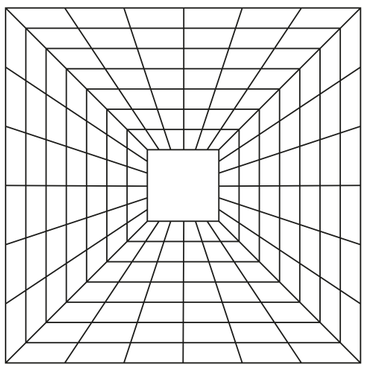
Photo: Hsiao-Chien Shih smiles in front of the Encinitas Flower Fields

LESSON ACTIVITY EXAMPLE:

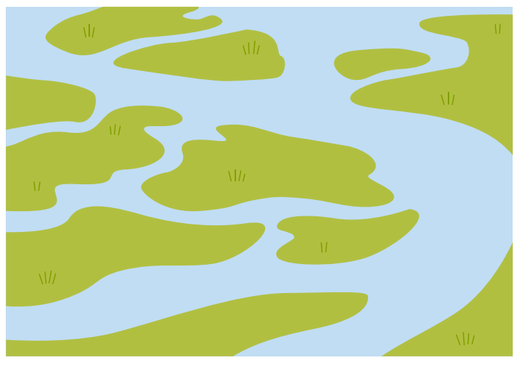
Have students download QGIS and discuss the difference between it and ESRI products (open source vs licensed). Have students complete the QGIS tutorial. Give direct instruction(lecture) on NAIP and National Hydrology Data. Explain to the students the next task will be an inquiry-based learning activity. The students are to explore the potential uses of QGIS with NAIP and National Hydrology Data to make real-world connections. Have students write down their hypothesized applications on sticky notes and place them in no particular arrangement on a wall or designated area. Discuss the responses then have students group them into similar categories, come up with labels, and discuss how they came to their conclusions.

GLOSSARY:

ABSOLUTE/ RELATIVE LOCATION

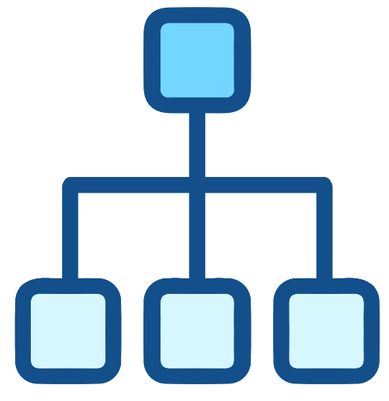


SPATIAL SCALE



VEGETATION

INFRASTRUCTURE



POWERGRID

SKILLS:

- Remote Sensing
- Image Processing
- Geometry calculation
- Python
- Data Visualization
- Granular Data Analysis

Photo: Aerial view of a San Diego Estuary

BACKGROUND RESOURCES:

- *Absolute and relative location examples*
- *The three Ps of outage management article*

DATA:

- *Sentinel-2*
- *National Agriculture Imagery Program (NAIP)*
- *National Hydrology data*
- *GDAL*
- *The Open Source Geospatial Foundation (OSGeo)*
- *Granular Data*

{ RppforCs : ENCODING GEOGRAPHY }

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