

# YANNI TIFFANY CAO

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## EDUCATION

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**THE PENNSYLVANIA STATE UNIVERSITY**  
University Park, PA, May 2016

### Master of Science

- **Major:** Geography
- **GPA:** 3.76 / 4.00
- Summer school at Peking university, Beijing, China

**THE PENNSYLVANIA STATE UNIVERSITY**  
University Park, PA, 2014

### Bachelor of Science with distinction

- **Major:** Geography focusing on Geographic Information Science(GIS)
- **Minor:** Information & Science and Technology for Earth and Mineral Sciences
- **GPA:** 3.83 / 4.00
- Summer school at **Harvard University**, MA, USA

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## PROFESSIONAL EXPERIENCE

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**NATIONAL CENTER FOR ATOMOSPHERIC RESEARCH (NCAR)**  
Summer 2015

### Visitor

- Participate in Python big data workshop and Thredds server workshop
- Collaborated with scientists at NCAR to create ArcGIS toolbox to read WRF NetCDF files in GIS software with right projection
- Investigated the impact of geographic coordinate system on the weather numeric model on fugitive methane emissions

**THE PENNSYLVANIA STATE UNIVERSITY**  
Geoinformatics and Earth Observation Laboratory  
2014 – Present

### Research Assistant

- Conduct research on Department of Energy funded project “Continuous, regional methane emissions estimates in northern Pennsylvania gas fields using atmospheric inversions “. The project is referred in White House [President Climate Action Plan](#)
- Collected 600 GB geographic data in Marcellus Pennsylvania and New York
- Solved the problem of evaluating emissions from polyline and polygon data and analyzed pipeline methane emissions using GIS modeling
- Created geovisualization web application using HTML and JavaScript and deployed Geoserver and Thredds server to display GIS layers, NetCDF and GeoJSON files
- Presented at Association of American Geographers (AAG) Chicago annual meeting and American Geophysical Union (AGU)
- Won College of Earth and Mineral Science Centennial Graduate Research Award (\$1000)
- Won Department Academic Enrichment Funding (\$300)

Vegetation Dynamic lab  
2013-2014

### Research Assistant

- Investigate the effects of climate change on treeline in Denali National Park and Preserve, Alaska: 1953-2005
- Classified remote sensing data using ArcGIS and analyzed tree line change using R
- Created [geovisualization application](#) for U.S. National Park Service
- Won the undergraduate research fund

GeoVISTA Center  
2014

### Research Assistant

- Participated in STempo project to extract new big data and political events trends.
- Organized the news RSS feeds and extract text from news

**PIANNING AND INFORMATION CENTER**  
2013

### GIS Intern

- Devoted in Beijing urban planning Road Name Database program, performed spatial analysis, create thematic maps
- Consulted 3D Beijing urban planning system conference

**SHAHNGHAI NORMAL UNIVERSITY**  
2012

### PROJECT PRINCIPAL INVESTIGATOR

- Lead the project of Shanxi Province's cultural heritage research and GIS applications
- Won the Excellent Individual Award

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## AWARDS

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2015	<b>Centennial Graduate Research Award (\$1000)</b>
2015	<b>Academic Enrichment Funding (\$300)</b>
2015	<b>Full Scholarship (\$42,415 per year)</b>
2015	<b>Third prize in business case competition</b> at Shell
2013	<b>Erickson Fund (undergraduate research award) in Geography</b>
2013	<b>John and Elizabeth Holmes Teas (undergraduate academic achievement) Scholarship</b>
2012,2013	<b>Dean's list</b>
2012	<b>Excellent Student Volunteer Award</b>
2011	<b>Second prize (undergraduate academic achievement)of College scholarship</b>
2009	<b>Second Prize in National High School Mathematic Olympic Competition</b>

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## PUBLICATION

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- Isaacs, R.E., **Cao, Y.**, and Taylor, A.H. The effects of climate change and local site controls on vegetation in Denali National Park and Preserve, Alaska. (In Progress)
- Kim, E.K., **Cao, Y.**, Lauvaux, T. Visualization application of Marcellus methane fugitive emissions. (In Progress)
- **Cao, Y.**, Cervone, G., Lauvaux, T., Barkly, Z., Deng, A.J.,Sarmiento, D. The impact of geographic coordinate system on atmospheric model for fugitive methane emission. (In Progress)

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## PRESENTATION

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- **Cao, Y.**, Cervone, G., Lauvaux, T., Barkly, Z., Deng, A.J.,Sarmiento, D.. (2015). Fusion Geographic Information System Data with State-of-the-art Atmospheric Systems: Application to Methane Source Mapping over the Marcellus Shale formation. *American Geophysical Union fall meeting 2016.*
- **Cao,Y.**, Szajkowski, M.. (2015). Visualization web application of the climate change on treeline in Denali National Park and Preserve, Alaska. *The 11th International Conference on Information Systems for Crisis Response and Management.*
- **Cao,Y.**, Szajkowski, M.. (2015). Visualization web application of the climate change on treeline in Denali National Park and Preserve, Alaska. *The 1st China Visualization Conference.*
- **Cao, Y.**, Cervone, G., Taylor, A.H., Barkley, Z., Lauvaux, T., Davis, K.. (2015). Methane emission estimation in the Marcellus shale. *Association of American Geographers Chicago annual meeting.*
- Martins, D., Lauvaux, T., Miles N., Richardson S., Barkley Z., Deng A.J., Gaudet B., Davis K., **Cao Y.**, Taylor A.H., Karion A., Sweeney C., Petron, G., Rella, C., Arata, C.. (2015). Continuous, regional methane emissions estimate in northern Pennsylvania gas fields using atmospheric inversions. *5<sup>th</sup> North American Carbon.*
- **Cao,Y.**, Isaacs, R., Taylor, A.H.. (2015). The effects of climate change on treeline in Denali National Park and Preserve, Alaska:1953-2005. *94th Annual National Conference and Science Symposium.*
- **Cao,Y.**, Isaacs, R., Taylor, A.H.. (2014). The effects of climate change on treeline in Denali National Park and Preserve, Alaska:1953-2005. *Association of American Geographers Tampa annual meeting.*
- **Cao, Y.** Field trip in Qinghai, China. (2013). *Association of American Geographers Los Angeles annual meeting.*

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## LEADERSHIP & VOLUNTEER

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### **INNOVATION & INTERDISCIPLINARY COLLABORATION CUMMUNITY (IICC)**

2015 – Present

### **LEADERSHAPE**

2015

### **GLOBAL ENGAGEMENT LEADERSHIP EXPERIENCE (GELE)**

2013

### **PRESIDENT**

- Facilitate interdisciplinary communication on academic topics, to promote critical and creative thinking, and to spark innovation and support innovative projects in science and technology at Penn State
- Organized more than 20 monthly interdisciplinary workshops
- Initialized the WeChat platform and developed more then 100 members in a month

### **MENTEE**

- Participated in LeaderShape program to share my passion about releasing the power of interdisciplinary collaborations and helping international students involve in local culture.
- Learned to lead with integrity, healthy disregard for the impossible, leadership, ethics, vision, community, possibility and relationships

### **REPRESENTATIVE**

- Participated in multiculture and global leadership discussions and activities
- Represented international students to show the local culture

**OPEN STREET MAP**

2013

**SHANGHAI LUXUN MUSEUM**

2010 - 2012

**SHANGHAI SUNSHINE HOUSE  
FOR PEOPLE WITH DISABILITY**

2012

**GIS VOLUNTEER**

- Digitize open street map to provide humanitarian map for Typhoon Haiyan hazard response.

**VOLUNTEER NARRATOR**

- Volunteered as certificated narrator in the state key museum
- Supervised volunteer's selection and training for university students
- Provided more than 200 hours service and received high evaluation from the tourists

**VOLUNTEER TEACHER**

- Designed classes for people with intellectual disability
- Supervised volunteers' selection and training for university students
- Won the excellent volunteer award

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**OTHER DIMENSIONS**

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- Like Nutella
- Like traditional Chinese Han costume
- Enthusiastic traveler: Traveled 11 counties in a year

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**SKILLS & EXPERTISE**

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- **Classes:** Human/Physical geography, Remote Sensing, Cartography, Spatial Statistic, Data Mining
- **GIS:** ArcGIS, QGIS, ENVI.
- **Data Analysis:** R, python, GeoDa, ArcGIS, Weka, Minitab, SPSS and Excel.
- **Database:** Microsoft Access, SQLite, PostgreSQL.
- **Web Development:** JavaScript, HTML5, CSS, UI Design.
- **Platform:** Linux, Windows, IOS.