



## Purdue Terrestrial Observatory

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**Introduction:** The Purdue Terrestrial Observatory (PTO) includes a real-time multi-satellite, remote-sensing, receiving station with the capability to ingest, geo-reference, analyze, archive and distribute data from an array of orbiting multispectral sensors. IndianaView, an affiliate of the USGS sponsored AmericaView program, facilitates access to the state-wide archive of satellite data for a consortium of Indiana-based universities, as well as industries and agencies utilizing spatial data. Another PTO component focuses on technology innovation as related to real-time remote sensing in a high performance computing, high bandwidth environment. The PTO is enabled to disseminate real-time satellite data through connectivity with other universities throughout Indiana utilizing the I-Light fiber optic link, as well as high bandwidth connectivity with an array of national partners through the NSF's XSEDE program. Combining IndianaView archives with PTO's real-time data facilitates change detection, early warning and emergency response to biogenic and anthropogenic disasters.

**Goals:** PTO's primary goals are to:

- Provide near real-time and archival remotely sensed data in support of time-critical multidisciplinary environmental, ecological, agricultural, hydrological, atmospheric and earth science research.
- Train students in the theory, development and applications of satellite remote sensing systems including the acquisition of remotely sensed data directly from satellites.
- Deploy space-based technologies in the service of regional economic development and community engagement.

**Major PTO Components:** The Observatory includes a 3.7 meter geostationary antenna, a 4.5 meter tracking antenna and a dual quad-core processing system. Image data are obtained from NASA's Aqua & Terra MODIS and NOAA's AVHRR sensors.

**Significance:** Information gathered through the Observatory is applicable to a wide range of projects, including: protection of watershed and wetland resources, habitat identification & biodiversity assessment, mitigation of epidemics and epizootics, decision support for sustainable food security, 3D terrain visualization, environmental risk & vulnerability assessment, homeland security preparedness & monitoring, climate change impact mitigation and adaptive response, site specific farming, communication & energy infrastructure mapping and sustainable urban & regional development.



**PTO 4.5 m. tracking antenna/radome on 9 m. tower**

**Image Data Access:** The image data can be accessed and/or viewed from the following sites:

- PTO web site: [www.itap.purdue.edu/pto/](http://www.itap.purdue.edu/pto/)
- IndianaView portal:  
[www.indianaview.org/glovis/index.html](http://www.indianaview.org/glovis/index.html)

### FOR FURTHER READING:

**Gilbert L. Rochon, Dev Niyogi, Alok Chatturvedi, Krishna Madhavan, Raj Arangarasan, Larry Biehl, Joseph Quansah and Souleymane Fall.** "Adopting Multi-Sensor Remote Sensing Datasets and Coupled Models for Disaster Management," Ch. 5, pp. 75-99 in Shailesh Nayak & Siyka Zlatanova, Editors, *Remote Sensing and GIS Technologies for Monitoring and Prediction of Disasters*. Berlin/Heidelberg: Springer, Sept. 10, 2008. ISSN 1863-5520. ISBN: 9783540792581.