The Pennsylvania State Seismic Network (PASEIS)

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July 31, 2018

Mission

- Monitor natural and man-made seismicity across Pennsylvania
- Investigate induced earthquakes related to natural gas production and wastewater disposal
- Report event information to the PA Department of Natural Resources and the PA Department of Environmental Protection

History of building the PA state seismic network

- 2006-2010 Establishment of the first 6 permanent PASEIS stations – DCNR
- 2009 Carbon sequestration technical assessment - DCNR
  - *25 portable seismic stations*
- 2010 Purchase of 4 USArray stations from IRIS – DCNR
- 2013 Earthquake monitoring during USArray - DCNR
  - *Support for temporary network to densify the USArray network, develop seismicity catalog*
- 2015 Expand the 10-station permanent network to 30 stations and provide seismic event information – DCNR and DEP

Equipment

- Guralp CMG3T
- Nanometrics Compact Trillium
- RefTek RT130 recorders

Datalogger

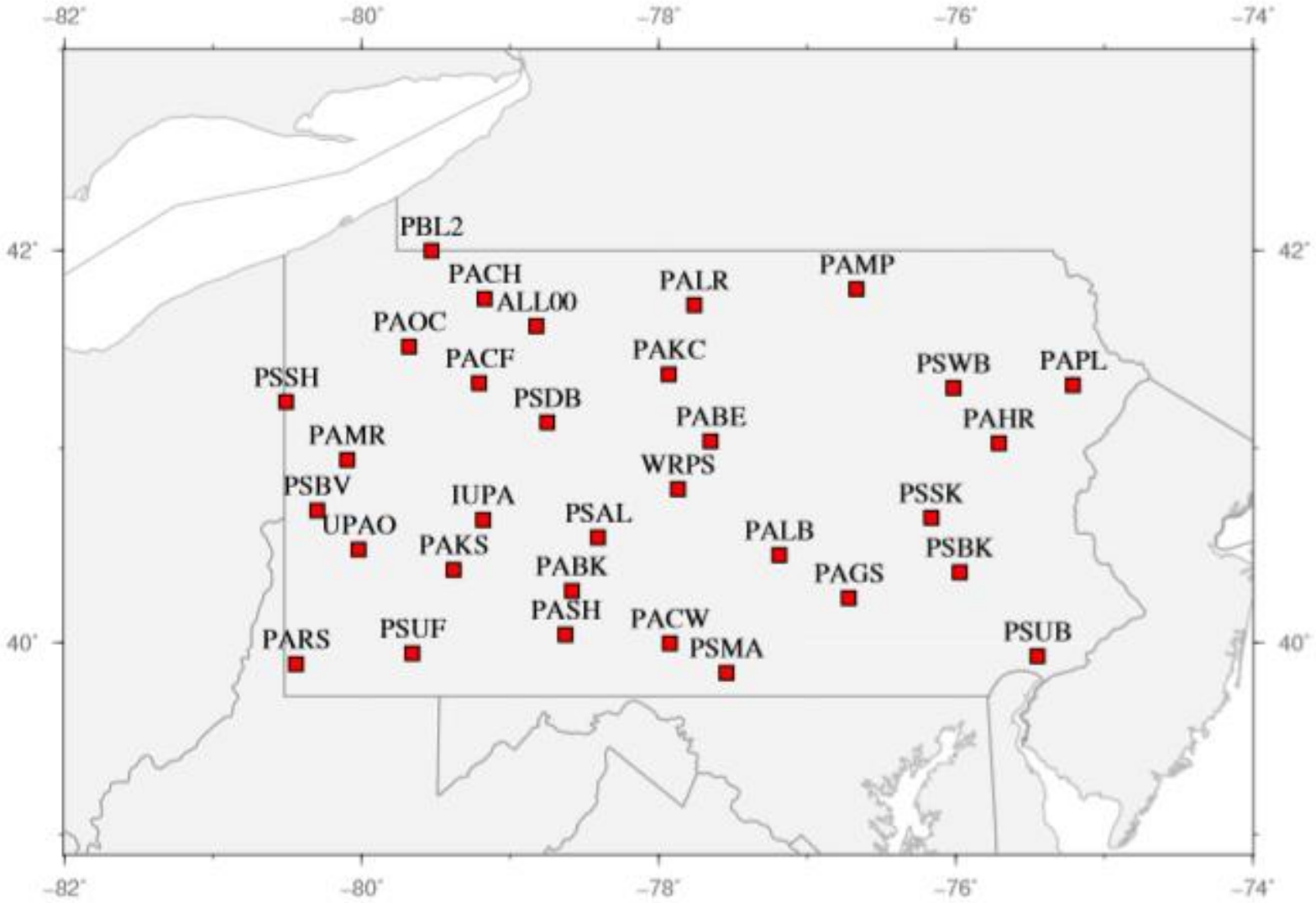
GPS Clock

3-component ground motion sensor (vertical, north-south, east-west)

- 21 Trillium Compact with RefTek RT130
- 4 CMG3T with RefTek RT130
- 5 CMG3T with built-in DM24

- Located at PA state parks, Penn State campuses, and Indiana University of Pennsylvania
- Utilize existing AC power and ethernet connections

Station Map


-82°
-80°
-78°
-76°
-74°
42°
40°
PBL2
PACH
ALL00
PAOC
PACF
PSSH
PSDB
PAMR
PSBV
UPAO
IUPA
PAKS
PSAL
PABK
PASH
PARS
PSUF
PALR
PAMP
PAKC
PABE
WRPS
PACW
PSMA
PALB
PAGS
PSWB
PAPL
PAHR
PSSK
PSBK
PSUB

Data

- Data transmitted real-time from seismic stations to an earthworm system for automatic event location
- Data sent to IRIS DMC for archiving
- Automatic event detections are refined and posted to paseis.geosc.psu.edu
- PA DCNR and DEP are notified of events

Minor earthquake measures near city

Posted: Tuesday, April 19, 2016 12:08 am

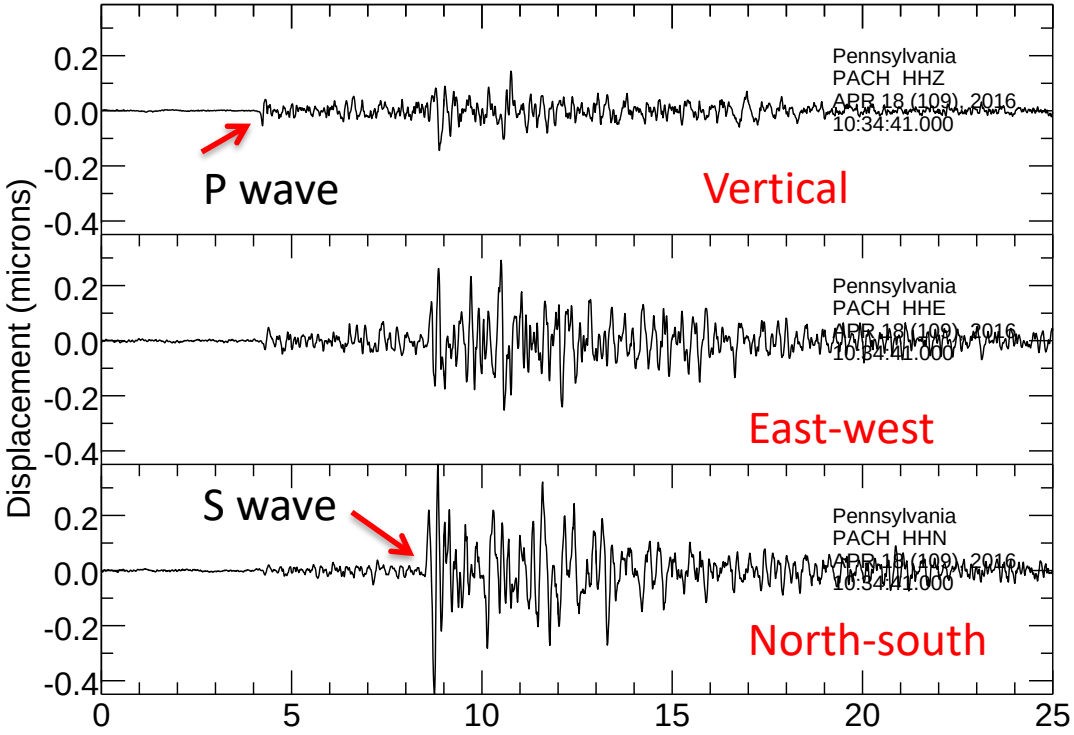
By Stella Ruggiero **sruggiero@titusvilleherald.com** | **0 comments**

A small earthquake, which was likely too weak to be noticed by anyone other than geologists, measured in the Titusville area on Monday, around 6:34 a.m.

The quake was magnitude 2.2, according to AccuWeather meteorologist Jordan Root. He said it was fairly weak on the scale, and not likely felt by many people, or maybe no one at all. As of late Monday afternoon, Root had received no reports of anyone experiencing the quake.

Magnitude 2.2
Time: 2016/04/18 06:34:40 local
Depth 3.3 miles (5.2 km)
Near Titusville, PA

PACH
(Chapman State Park)



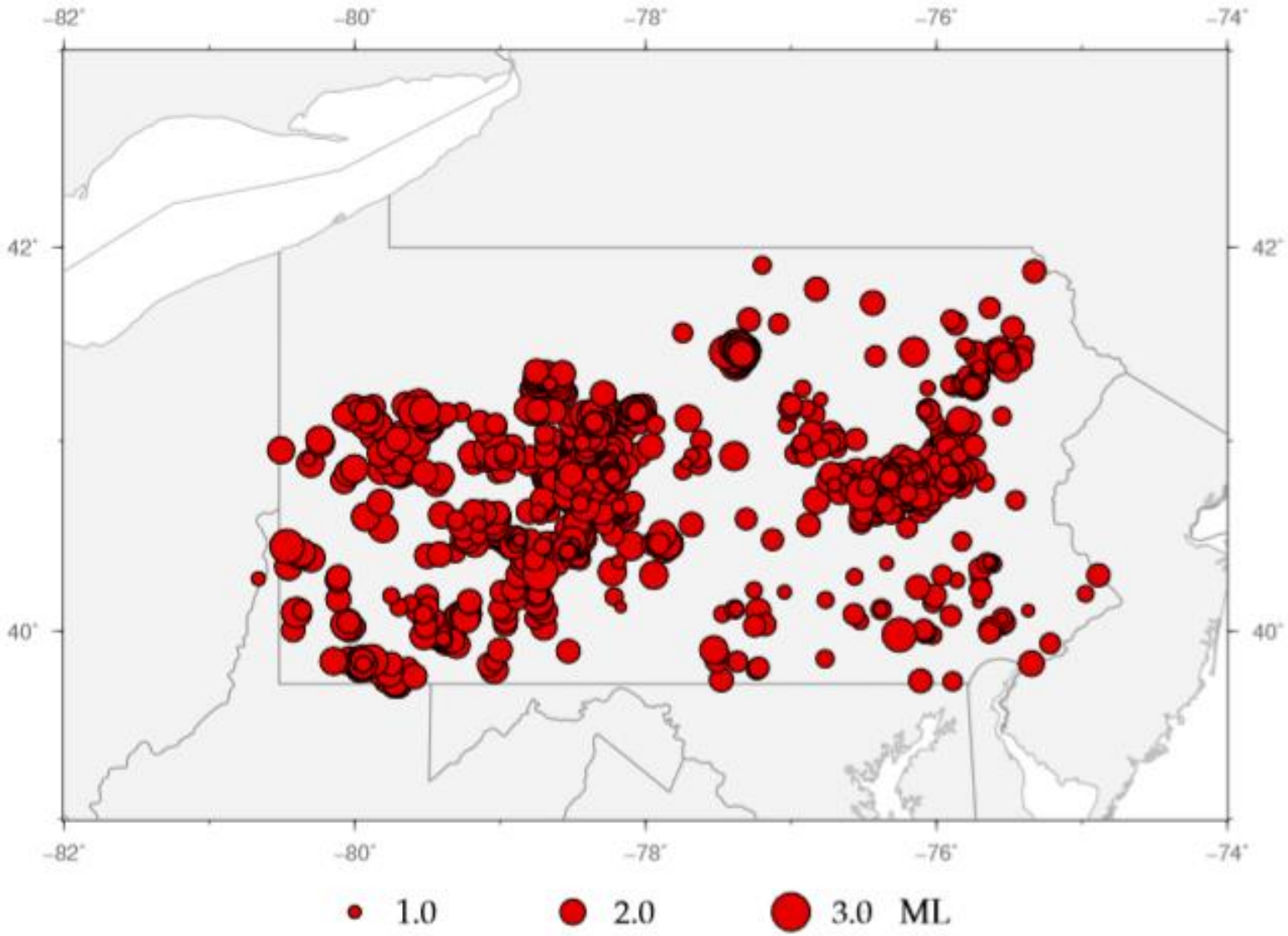
1 micron = 0.001 millimeter

Figure courtesy of C. Ammon

Seismicity

- Much of the seismic activity in PA is a result of coal mine blasting
- Natural seismicity in several areas
- Increased natural gas production and wastewater disposal has caused concerns for induced seismicity

Mine blasts 2/2013-6/2018



Earthquakes 2/2013 - 6/2018