

## MESS 0022

GEO 2.23: Fresh/Groundwater and Mineral Resources in Gravity and Magnetic Anomalies of AR<sup>1</sup>, MO, and KY aka the New Madrid Seismic Zone

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Best Viewed at: <https://bit.ly/3eB4yNN>

### ABSTRACT

In this study and continuation of the MESSy GEO series, the author overlays mineral/crystal depositions in the New Madrid Seismic Zone with the G and B field intensity anomalies, in combination with known groundwater and known fracking earthquake data.

**Keywords:** Arkansas - Missouri - Kentucky - New Madrid fault - anomalies - groundwater - earthquakes

<sup>1</sup> Figure 1- Arkansas Mineral Resources; credit: <https://www.thoughtco.com/geologic-maps-of-the-united-states-4122863>  
Overlaid with Magnetic Anomalies; credit: author

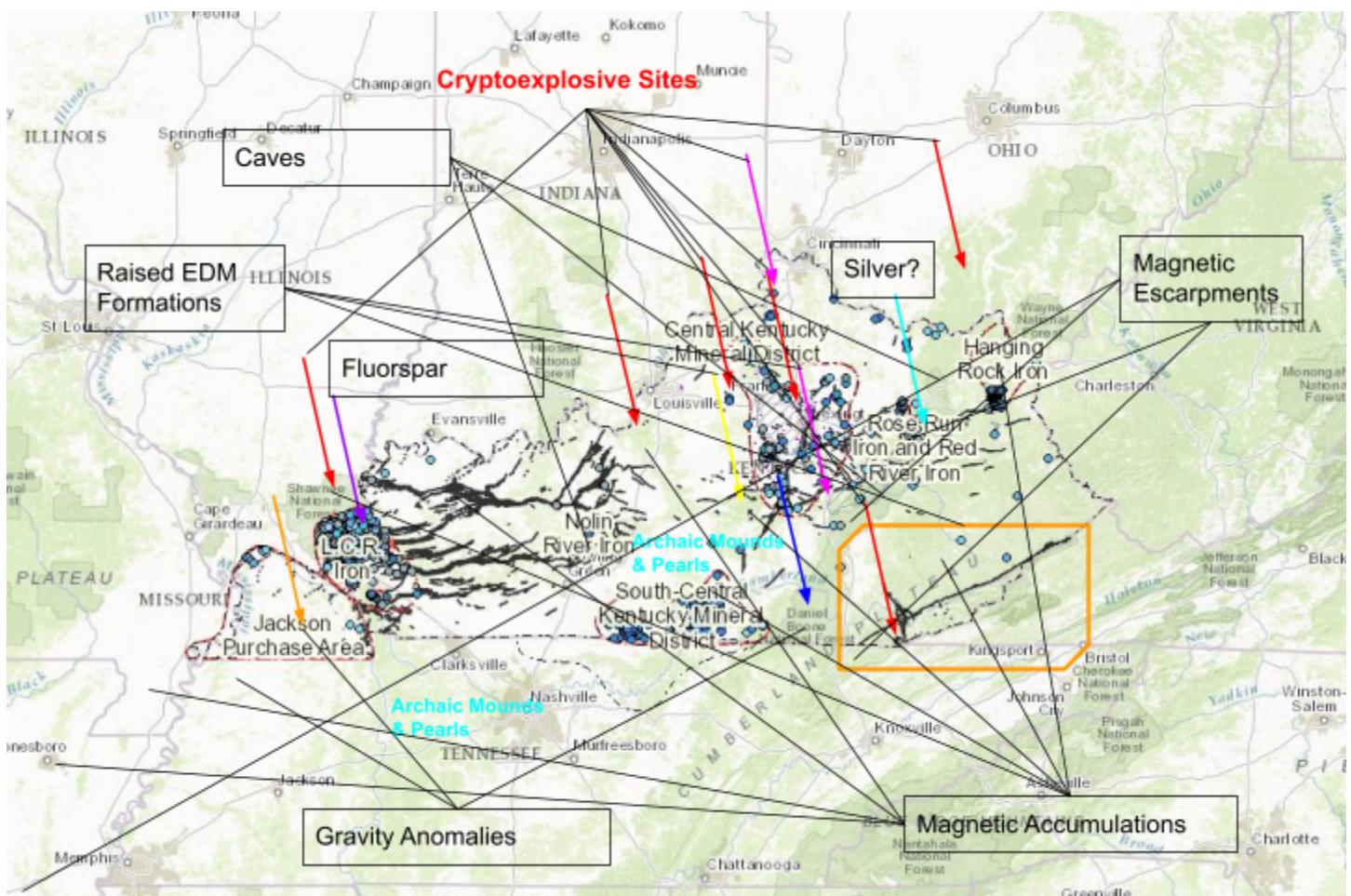


Figure 2 - Minerals of KY overlaid with electrogeology and EPEMC related sites (a few related to mineralogy);  
credit: americangeosciences.org<sup>2</sup>/author

Table 1 - Figure 2 Key

<b>Crypto-explosive</b> <i>L→R</i>	<b>Raised Formations</b>	<b>B Anomalies</b>	<b>G anomalies</b>	<b>Caves</b>
A. Hick's Dome (EB) B. Muldraugh Dome C. Jeptha Knob (KB) D. Big Bone Lick (unknown) E. Big "sink" (PT) F. Middlesboro (KB or EB?) G. Great Serpent Mound (KB)	H. Knobs Region Lichtenburg I. Pilot Knob of Berea, KY* J. Pine Mountain & nearby Stone and/or Black Mountains? K. MAYBEs: a. Pilot Knob SNP b. Pilot Rock c. Green Riv. knob	L. Hot Springs, AR M. New Madrid Seismic zone N. Garden of the Gods, IL O. Kentuckiana Veins P. SC KY Min. District Q. Knobs, KY R. DBNF leyline S. Jellico Bend, TN T. Red Bird DBNF U. Hanging Rock Iron	V. NMSZ, MO aka Jackson Purchase W. Mayfield, KY X. Ywahoo/Natural Arch→Big South Fork	Y. Mammoth Caves NP Z. Fisher Ridge System AA. Crystal Onyx+knob BB. Great Salt Petre Cave and Sand Cave area CC. Carter Caves SNP

Note: Orange A: Mayfield tornado site<sup>3</sup>

Orange B: Pine Mountain flux study<sup>4</sup>

<sup>2</sup> [https://www.americangeosciences.org/sites/default/files/CI\\_Map\\_41\\_minerals\\_ky\\_170503.jpg](https://www.americangeosciences.org/sites/default/files/CI_Map_41_minerals_ky_170503.jpg)

<sup>3</sup> MET 2.1 - KY Tornado New Madrid Zone & magnetics

<sup>4</sup> GEO 2.21 - Andy Hall's Crooked Smile Hypothesis Proven by the Pine Mountain flux

EB refers to electrobolides while KB to kinetic bolides. PT refers to a Perattian Thunderbolt.<sup>5</sup>

The cyan marked locations have interesting or unusual resource information with important EPEMC historical value. It's also interesting to note that several of the Nicotani fortresses (of the Ft. Ancient branches of the Allegewi, often called the Padoucans or "white giants") are directly associated with these sites. For example the Berea, KY "Indianfort Mountain" aka the Pinnacles SNP is located directly proximal to the electrogeological evidence at Dogfoot Hollow<sup>6</sup> and the Pilot Knob, not to be confused with Pilot Knob SNP, which is part of the DBNF leyline, which may likely be electrogeological. However the former Pilot Knob is almost assuredly so, and so is the proximal Indian Fort Mountain.

Separately, Green River Knob is mentioned for its unusual elevation height in the area, but has nothing to do with the green river pearls or Shell Middens, although the entire region's karst or pseudo-karst nature should be taken into account both historically, as the mummies of the world's largest caves are intriguing, and the People of the Caves (Chilokee) are central to many of these discussions. But also because the pseudokarst formations are impossibly overlapped with clear electrical EDM etching (to be shown in future paper), while being correlative or causally proximal to the world's longest caves, 4th largest caves, and some raised knobs with highly unusual etching superiorly oriented to incredible mineral depositions. Issues of the fluorspar and Hick's Dome 'coincidences' were covered in the last MESSy<sup>7</sup>.

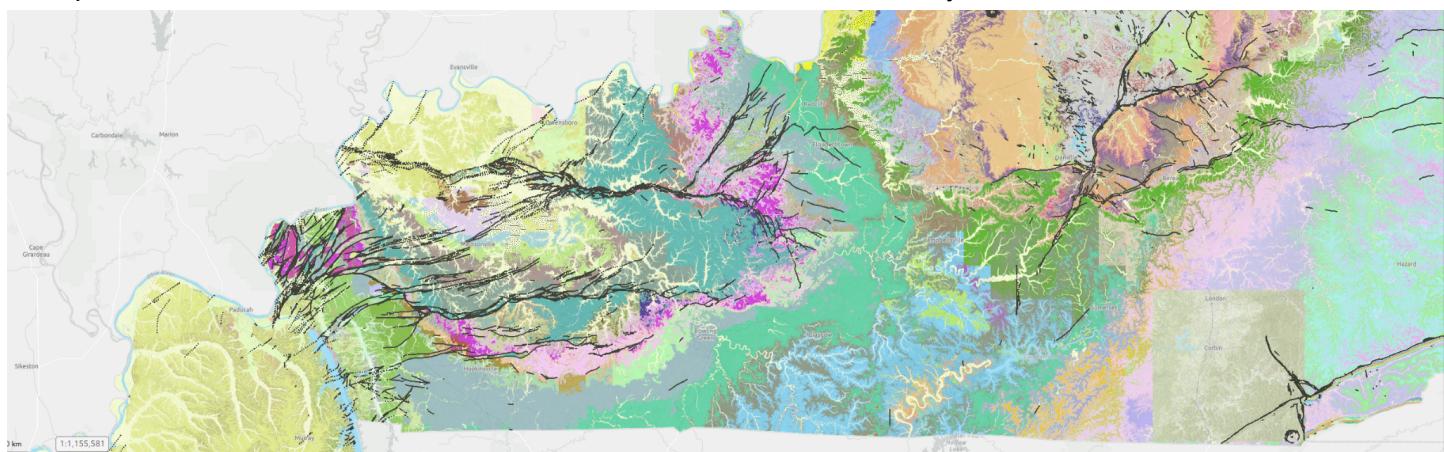


Figure 3 - Kentucky Geological Map Service with Overlay (click image to open/expand); credit: kgs.uky.edu<sup>8</sup>

What we see in Kentucky is an intricate set of faults combined with highly diverse mineral depositions, much of which are associated with the faults, suggesting:

- ❖ Highly unique and useful transmutative electrogeological processes<sup>9</sup>
- ❖ Incredible fluvial mineralization associated with the infamous abundance of water in Kentucky
- ❖ Or a dual combination of them both
  - Correlative or causative?
  - Does the groundwater attract more electrogeological cryptoexplosives than average for other similarly sized regions of the world?
- ❖ Note there is nothing spectacular in the gravity anomaly of Mayfield to suggest a mineralogical cause of the gravity anomaly or the tornado to target the area, so the most likely cause of the long track vector remains the magnetic accumulation intensity signal and the New Madrid Fault, etc.

<sup>5</sup> <https://bit.ly/3ghCbok>

<sup>6</sup> [https://www.academia.edu/49456803/Trip\\_Report\\_Pebble\\_Beach\\_Red\\_River\\_Gorge](https://www.academia.edu/49456803/Trip_Report_Pebble_Beach_Red_River_Gorge)

<sup>7</sup>  MESS0021: GEO 2.22 - New Madrid Zone and Blue Ridge: Magmaflux

<sup>8</sup> <https://kgs.uky.edu/kgeode/geomap/>

<sup>9</sup> <https://www.geochemicalperspectivesletters.org/article1744/>

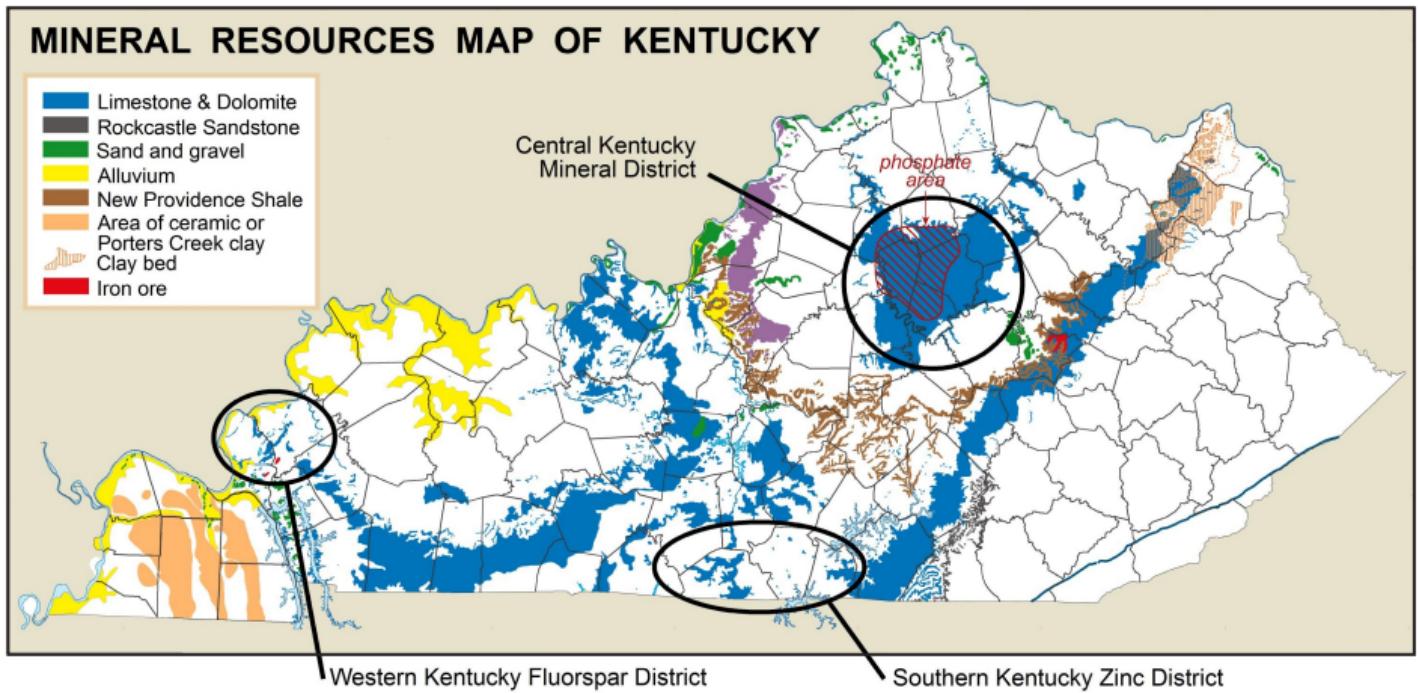


Figure 4 - Mineral Resource Map of Kentucky; credit: uky.edu/S. Mardon<sup>10</sup>

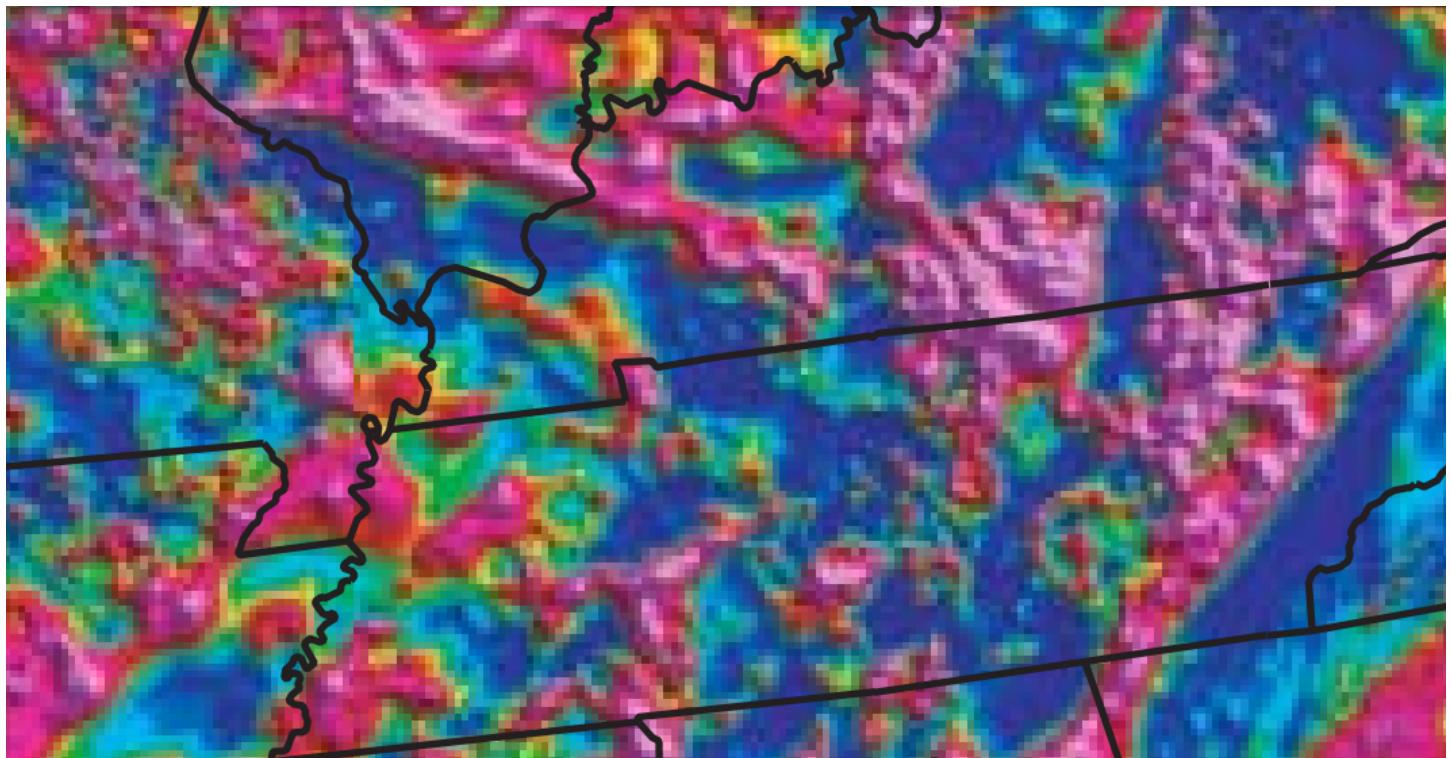


Figure 5 - Closeup of the Magnetic Anomalies in the NMSZ; note the magnetic escarpment at the fluorspar district; and the magnetic accumulations in the Big South Fork region, and the escarpment in the lower DBNF; also note the magnetic accumulation at Mayfield, KY! Credit: USGS<sup>11</sup>

<sup>10</sup> <https://www.uky.edu/KGS/education/factsheet/indmin.pdf>

<sup>11</sup> [https://pubs.usgs.gov/sm/mag\\_map/mag\\_s.pdf](https://pubs.usgs.gov/sm/mag_map/mag_s.pdf)

Figure 6 - Western Kentucky Fluorspar District; credit: uky.edu/KY Geological Survey<sup>12</sup>

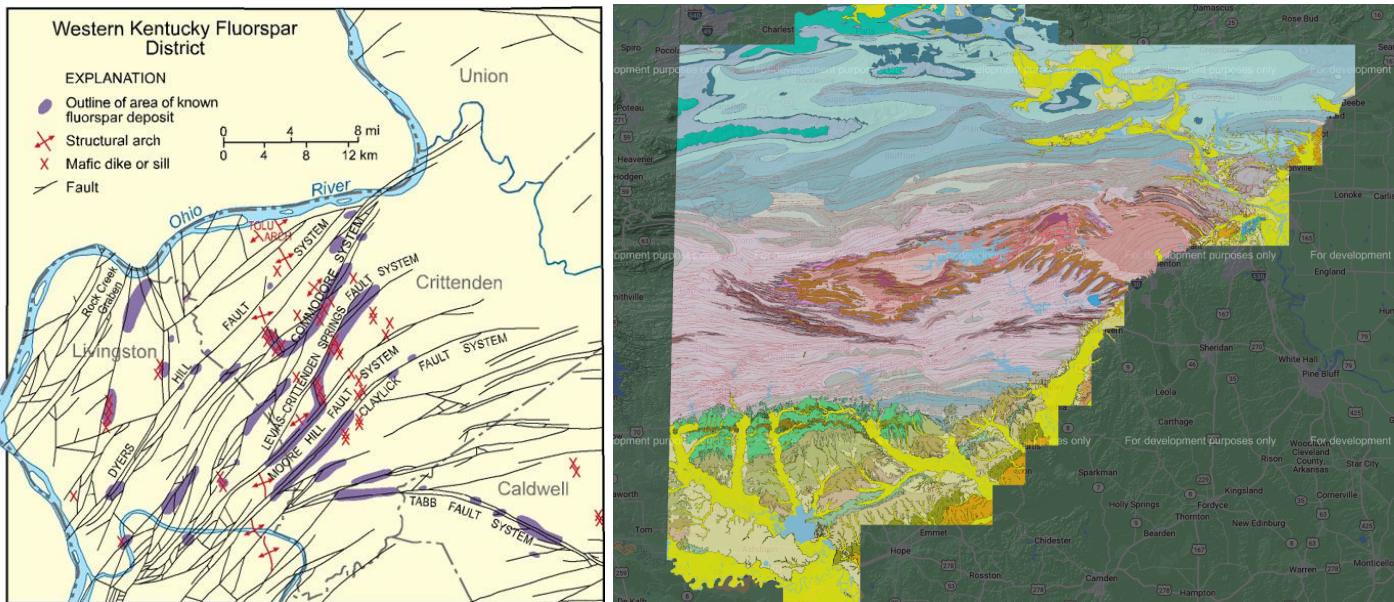


Figure 7 - Arkansas Surface Geology Map (click image to expand/explore); credit: geology.arkansas.gov<sup>13</sup>

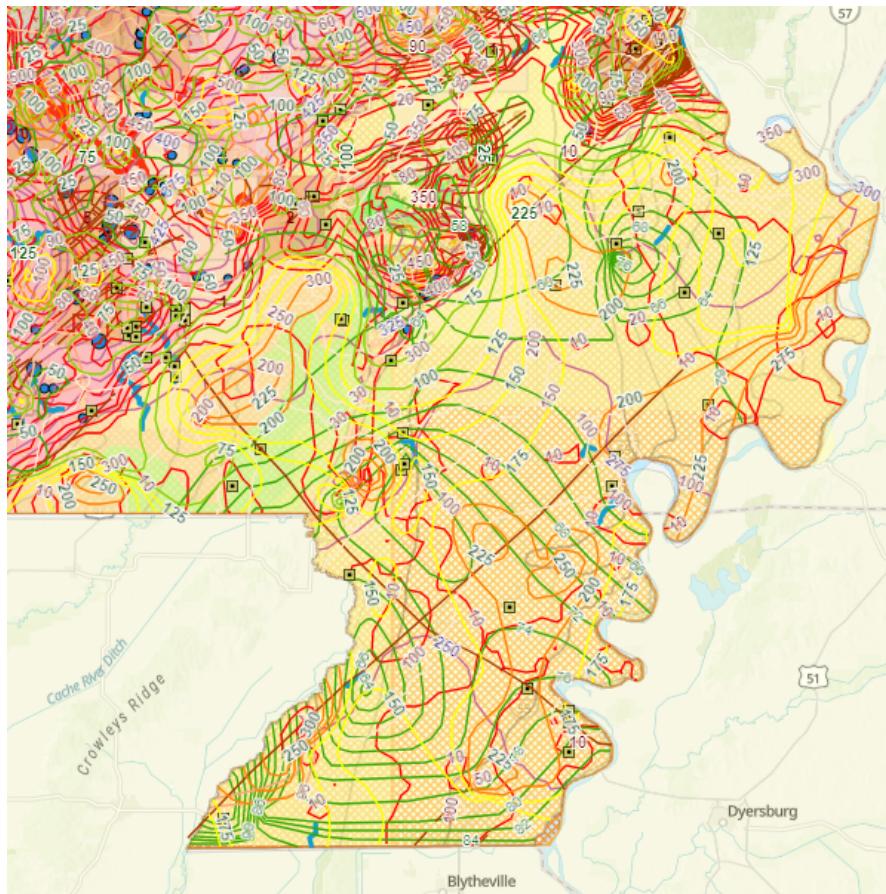


Figure 8 - Missouri Surface Geology Map (click image to expand/explore); credit: Missouri Geological Survey<sup>14</sup>

<sup>12</sup> [https://www.uky.edu/KGS/minerals/im\\_fluorspardistrict.php](https://www.uky.edu/KGS/minerals/im_fluorspardistrict.php)

<sup>13</sup> <https://www.geology.arkansas.gov/geology/surface-geology-web-map.html>

<sup>14</sup> <https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=3ac3a61da4af4834811503a24a3cb935>

Analysis topics on these states can be reserved for later consumption. For now the community should familiarize itself with the tools. Note the AR tool is anemic in both form and function, while the MO tool is extremely utilitarian. The KY tool is detailed and extensive but cumbersome over slow internet and memory intensive. There doesn't appear to be an overt reason for the magnetic peak in the Missouri "dangle". But the dendritic formations in mineral deposits in the hot springs region of Arkansas are undoubtedly an incredibly poignant factor in the origins of these long track tornadoes. Perhaps the area, given its piezoelectric history (and killing birds after earthquakes<sup>15 16</sup>) is attractive to Birkeland Current (magnetic flux tubes) connecting to the Van Allen Belts or sun, etc., and this enabled the proton density pump on Dec. 10, 2021 to cycle up some powerful supercells.

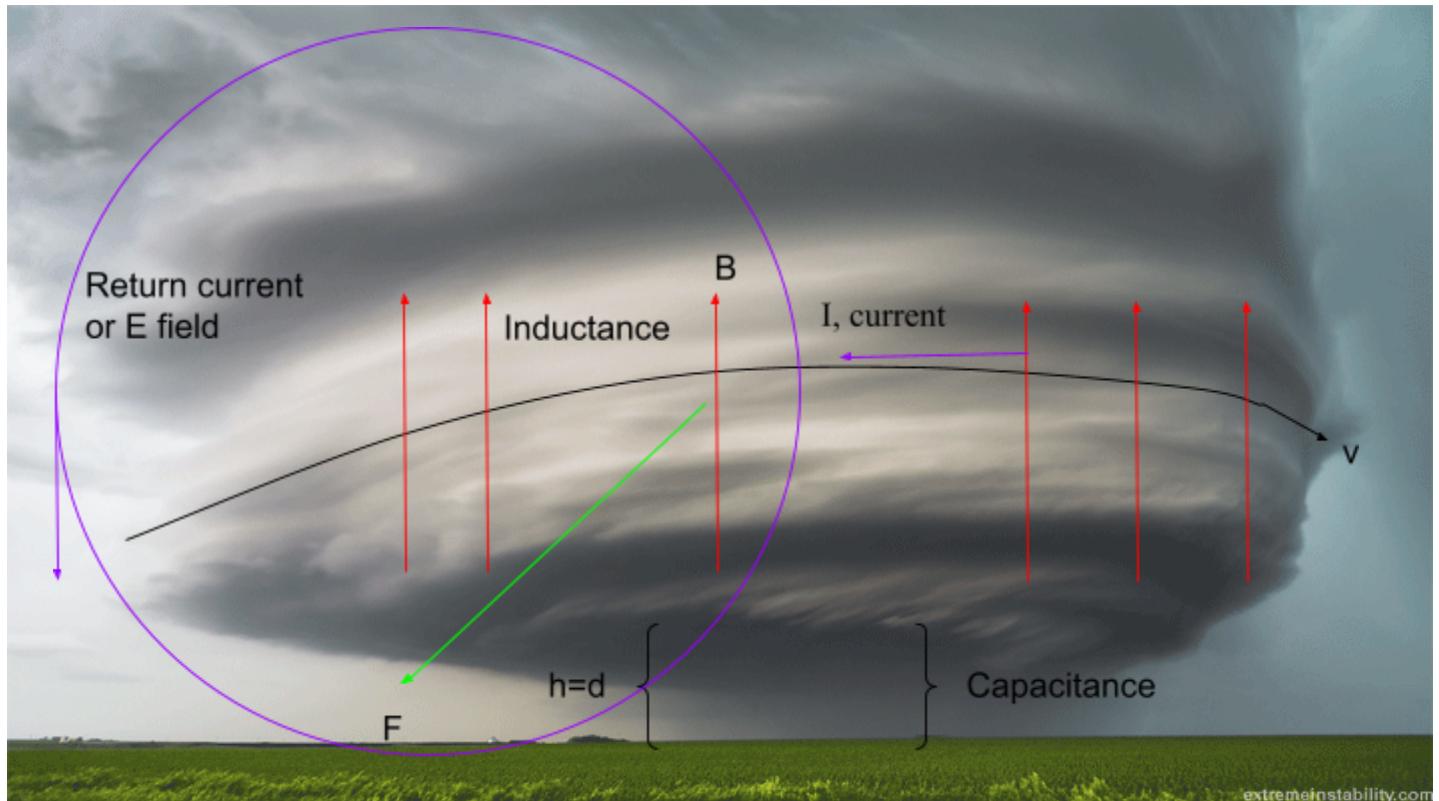


Figure 9 - Supercell Columnar induction and capacitance demonstration; credit: photostability.com/author

The point is to demonstrate why we should expect the system to respond (primarily) to magnetic flux, if there are clear definitive tracks. We should test this theory with long tracks in KY in the Kentuckiana Region.

<sup>15</sup> <https://phys.org/news/2011-01-labs-clues-birds-die-arkansas.html>

<sup>16</sup> <https://foodfreedom.wordpress.com/2011/01/02/massive-fish-kill-and-1000s-of-birds-fall-from-the-sky-in-arkansas/>

When we compare Figures 1 and 4, we see interesting magnetic overlays:

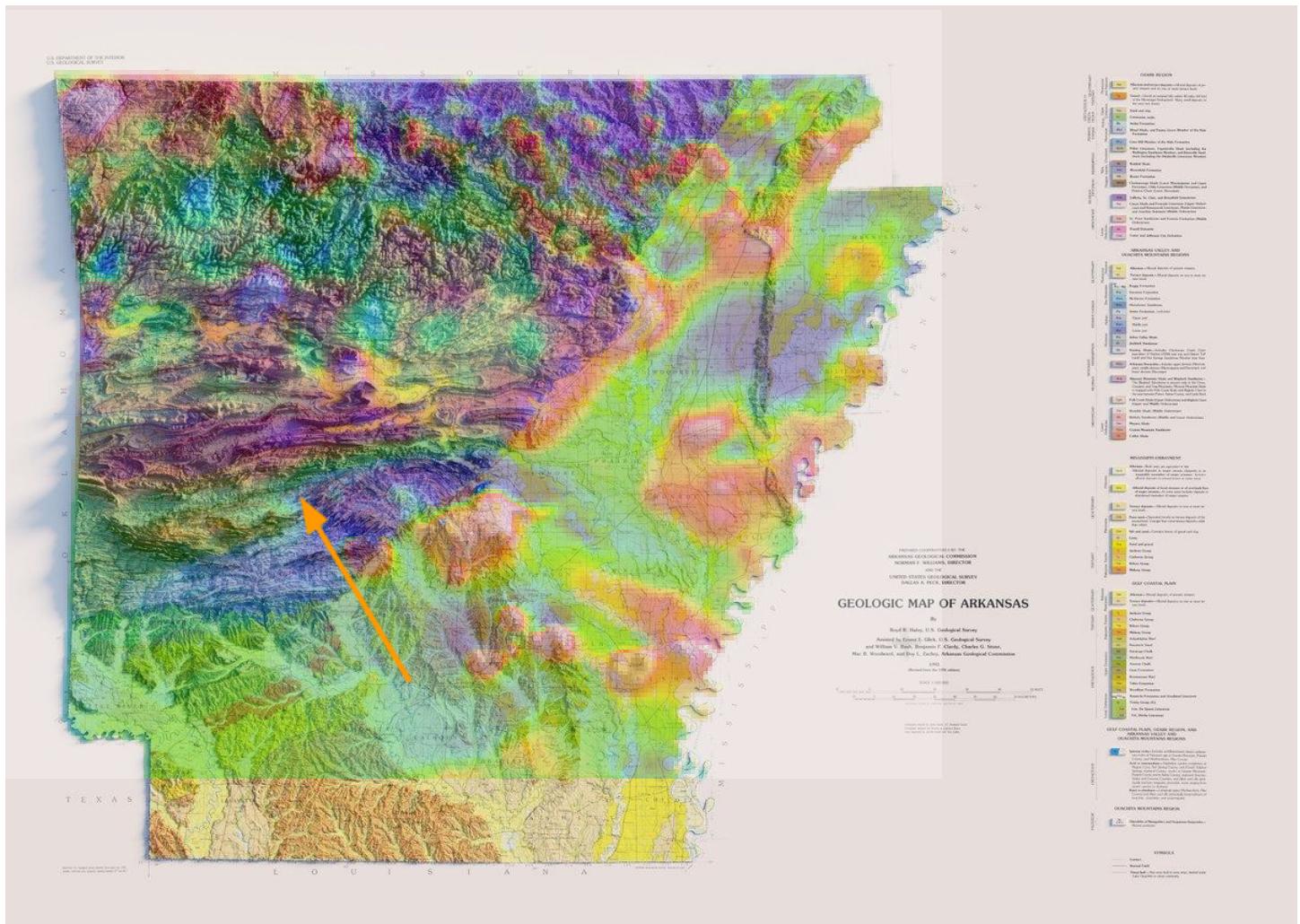


Figure 10 - Arkansas Geology Map overlaid with Magnetic Anomaly; credit: pbs.twimg.com/S. Conway/author<sup>17</sup>

Comparing with Figure 1, we can see that the Magnetic escarpment (purple) and the Accumulation (green), both constitute a bipolar arrangement, just like the Piedmont area east of the Blue Ridge Mountains<sup>18</sup>

But here we see the magnetism accumulation **inside** the Escarpment is associated with the mountains EAST of the Hot Springs NP region, shown with an orange arrow.

Also, note that the boundary of the upper Arkansas mineral deposition change, while associated with a fault and several non New Madrid fault earthquakes, is at a different vector (angle) from the magnetic accumulation flux associated with the Tornado patterns seen in MET 2.1.

There is also a magnetic escarpment in the central northeast of the state, which appears to be bisected by a range of minerals that trail towards the New Madrid fault. But on both ends are accumulations. The upper northwest corner of the state also has a total change in crystalline pattern, associated with the Ozarks, and there is a massive magnetic accumulation there... but in the southwest a similar intensity appears without any mountainous association. It appears to be a mere Miss. bedrock. The mystery has only heightened, although now we have more resolution on the data.

<sup>17</sup> <https://pbs.twimg.com/media/EytEUsbWqAMpvrV.jpg> (click image to expand)

<sup>18</sup> MESS0018: GEO 2.2 - Magnetic Anomalies in VA and KY

## Groundwater

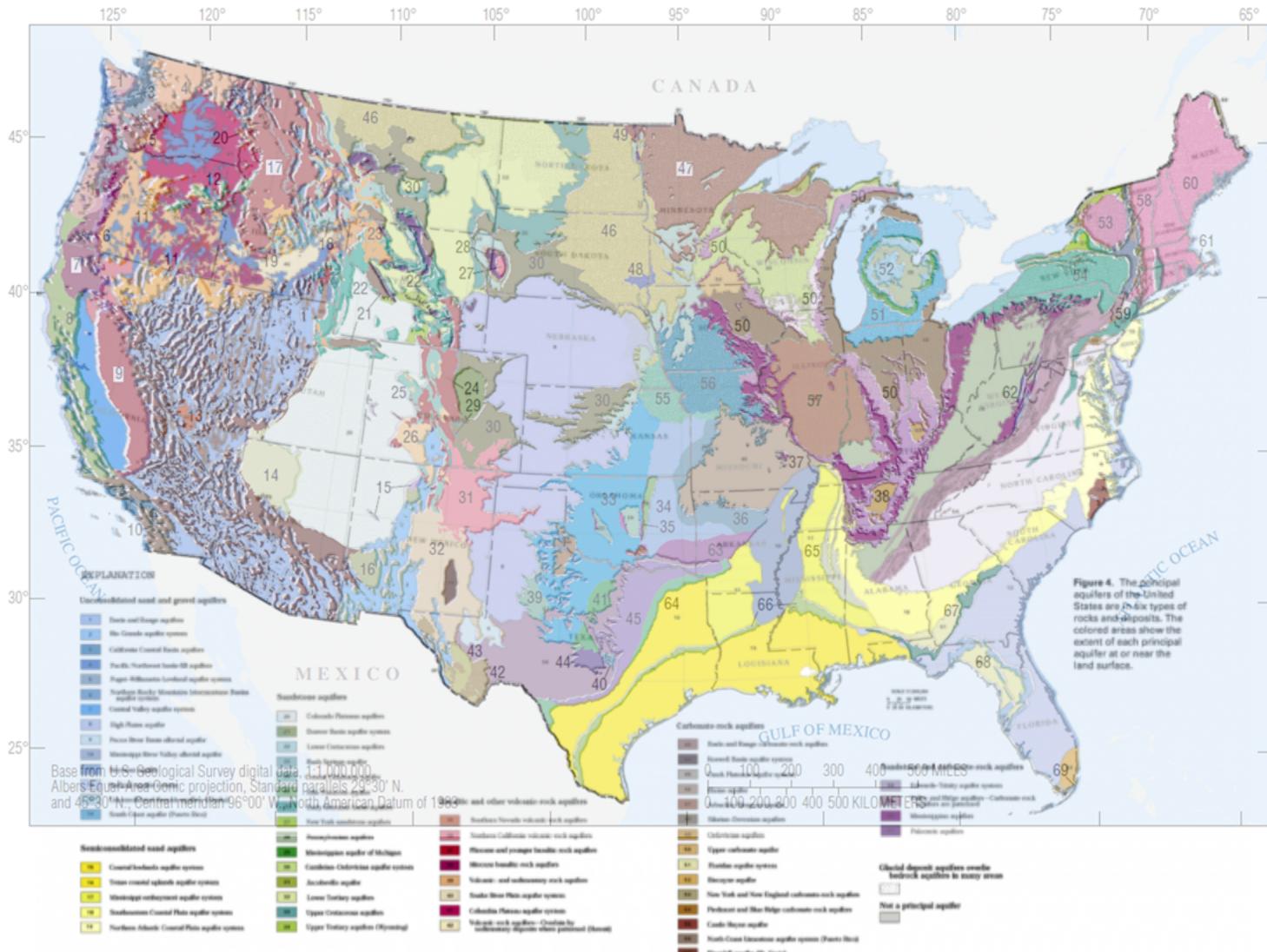


Figure 11 - Primary<sup>19</sup> and Secondary<sup>20</sup> Water Regions overlaid; credit: USGS

Immediately we see some unique behaviors in the AR→MO Reelfoot Rift: homogeneity in the groundwater with the origins of the tornado flux, but division (because of the river) with the overall flow of the long track tornadoes.

We also see homogeneity in the Pine Mountain flux, with immediate difference (as expected) with the area inside the Crooked Smile Keystone and upper Tennessee. In fact we also see differences in the VA Piedmont with the Blue Ridge flux, as expected, and is yet not exactly as expected with magnetic anomalies. Water is not magnetic, so this is to be expected.

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<https://www.e-education.psu.edu/earth111/sites/www.e-education.psu.edu.earth111/files/Module6/Earth111Mod6AFig14.png>

<sup>20</sup> [https://water.usgs.gov/oqw/highlights/images/map/2020-08\\_SecondaryHydrogeoRegionsFig3.png](https://water.usgs.gov/oqw/highlights/images/map/2020-08_SecondaryHydrogeoRegionsFig3.png)

## Fracking and Earthquake Data

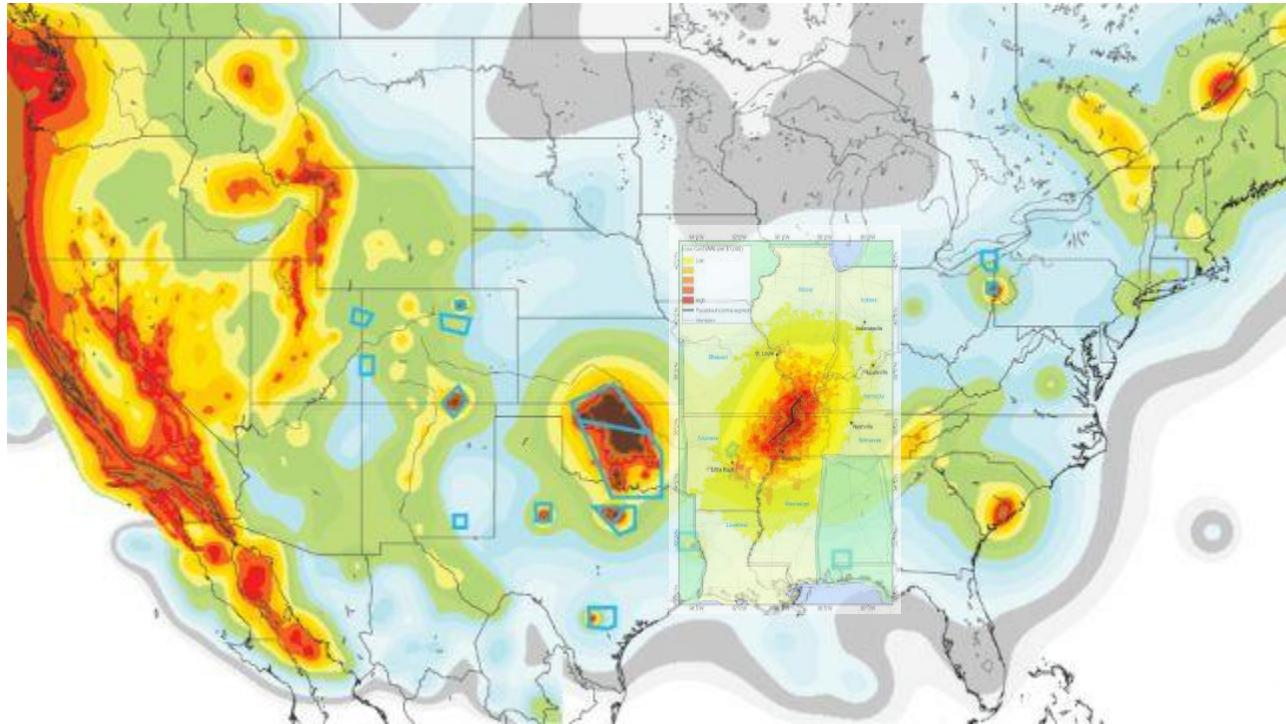


Figure 12 - Fracking Study Map overlaid with Earthquake data (transparency); credit: TuftsNow/TU<sup>21</sup> & RMS<sup>22</sup>

There doesn't appear to be any major fracking in the area, though some companies want to do it; which is insane<sup>23</sup>. But the author's thoughts are that there is little evidence that fluid injection has anything whatsoever to do *directly* with the tornado activity/production, but that if fracking does affect the Arkansas geology, and generate piezoelectric responses, then perhaps that could, in theory, create strong storms. A sort of "butterfly effect." But compared to solar wind proton density, and magnetic flux, that seems rather unlikely. It does, in fact, seem strained, as compared to typical electrogeometeorology (EGM) theory.

Fracking near the Alleghenies seems to be a reasonable further study, if one considers that chain as related to the DBNF leyline, albeit only as the chain spreads out as it heads northwest, losing the profundity of power seen in the Big South Fork, Wildcat Mountain/Laurel/Rockcastle River, and Red River Gorge subregions.

## Conclusion

The author concludes that the primary EGM mechanism for the generation of long track tornadoes is presence of homogenous water table in a piezoelectric (magnetic escarpment?) strong area, combined with a strong magnetic flux line that leads towards other highly charged mineralogic zones, but not necessarily a gravity anomaly. It appears, at this time, that Mayfield, KY is merely poorly placed for this risk profile, and not the particular target of an obviously interesting EGM phenomenon. Further statistical research and

<sup>21</sup> <https://now.tufts.edu/2019/05/03/study-suggests-earthquakes-are-triggered-well-beyond-fluid-injection-zones>

<sup>22</sup> [http://www.cusec.org/documents/scenarios/2012\\_Scenario\\_RMS\\_New\\_Madrid.pdf](http://www.cusec.org/documents/scenarios/2012_Scenario_RMS_New_Madrid.pdf)

<sup>23</sup> <https://gaither4il.com/2017/06/13/fracking-on-the-new-madrid-seismic-zone-a-no-go/>

mineral-heavy analysis would be needed to get more precise, or at least precise enough to produce prediction models that utilize GOES data and EGM data (like radar) to make correct predictions about when/where a tornado or earthquake is likely to develop in relation to a low pressure earth spot and known faulty region.

## References

1. "Geologic Maps of the 50 United States," ThoughtCo.com, 2022,  
<https://www.thoughtco.com/geologic-maps-of-the-united-states-4122863>
2. "MESS0019: Electrometeorology 2.1 -The 2021 Mayfield, Kentucky Tornado Track and the New Madrid gravity & magnetic anomalies," Academia, Sf. R. Careaga, 2022,  
[https://www.academia.edu/88366336/MESS0019\\_Electrometeorology\\_2\\_1\\_The\\_2021\\_Mayfield\\_Kentucky\\_Tornado\\_Track\\_and\\_the\\_New\\_Madrid\\_gravity\\_and\\_magnetic\\_anomalies](https://www.academia.edu/88366336/MESS0019_Electrometeorology_2_1_The_2021_Mayfield_Kentucky_Tornado_Track_and_the_New_Madrid_gravity_and_magnetic_anomalies)
3. MESS0020: GEO 2.21 - Andy Hall's Crooked Smile Hypothesis Proven by the Pine Mountain flux," Academia, Sf. R. Careaga, 2022,  
[https://www.academia.edu/88439735/MESS0020\\_GEO\\_2\\_21\\_Any\\_Halls\\_Crooked\\_Smile\\_Hypothesis\\_Proven\\_by\\_the\\_Pine\\_Mountain\\_flux](https://www.academia.edu/88439735/MESS0020_GEO_2_21_Any_Halls_Crooked_Smile_Hypothesis_Proven_by_the_Pine_Mountain_flux)
4. "Proposed Discovery of Perattian Thunderbolt of the Gods Strike Location in Versailles, KY Comparison of Predicted Models and LiDAR scans of Big Sink location in Woodford County; Addendum for Plasmaglyphs and the Megafauna Extinction," Research Gate, Sf. R. Careaga, 2019,  
[https://www.researchgate.net/publication/332831733\\_Proposed\\_Discovery\\_of\\_Perattian\\_Thunderbolt\\_of\\_the\\_Gods\\_Strike\\_Location\\_in\\_Versailles\\_KY\\_Comparison\\_of\\_Predicted\\_Models\\_and\\_LiDAR\\_scans\\_of\\_Big\\_Sink\\_location\\_in\\_Woodford\\_County\\_Addendum\\_for\\_Plasmaglyph](https://www.researchgate.net/publication/332831733_Proposed_Discovery_of_Perattian_Thunderbolt_of_the_Gods_Strike_Location_in_Versailles_KY_Comparison_of_Predicted_Models_and_LiDAR_scans_of_Big_Sink_location_in_Woodford_County_Addendum_for_Plasmaglyph)
5. "Trip Report: Pebble Beach, Red River Gorge," Academia, Sf. R. Careaga, 2021,  
[https://www.academia.edu/49456803/Trip\\_Report\\_Pebble\\_Beach\\_Red\\_River\\_Gorge](https://www.academia.edu/49456803/Trip_Report_Pebble_Beach_Red_River_Gorge)
6. "MESS0021 - GEO 2.22: New Madrid Zone and Blue Ridge Mountain Chain -Magmaflux," Academia, Sf. R. Careaga, 2022,  
[https://www.academia.edu/88670070/MESS0021\\_GEO\\_2\\_22\\_New\\_Madrid\\_Zone\\_and\\_Blue\\_Ridge\\_Mountain\\_Chain\\_Magmaflux](https://www.academia.edu/88670070/MESS0021_GEO_2_22_New_Madrid_Zone_and_Blue_Ridge_Mountain_Chain_Magmaflux)
7. "Minerals Fact Sheet," UK Kentucky Geological Survey, S. Mardon,  
<https://www.uky.edu/KGS/education/factsheet/indmin.pdf>
8. "Magnetic Anomaly Map of North America," [https://pubs.usgs.gov/sm/mag\\_map/mag\\_s.pdf](https://pubs.usgs.gov/sm/mag_map/mag_s.pdf)
9. "Western Kentucky Fluorspar District," UK/Kentucky Geological Survey, 2022,  
[https://www.uky.edu/KGS/minerals/im\\_fluorspardistrict.php](https://www.uky.edu/KGS/minerals/im_fluorspardistrict.php)
10. "Arkansas Geology Web Map,"<https://www.geology.arkansas.gov/geology/surface-geology-web-map.html>
11. "4 and 20 blackbirds, and 4,000, dead in the sky," Phys.org, J. Nuss AP, 2011,  
<https://phys.org/news/2011-01-labs-clues-birds-die-arkansas.html>
12. "Massive fish kill and 1000s of birds fall from the sky in Arkansas," Food Freedom, 2011,  
<https://foodfreedom.wordpress.com/2011/01/02/massive-fish-kill-and-1000s-of-birds-fall-from-the-sky-in-arkansas/>
13. "MESS0018: GEO 2.2 -Electrogeology evidence in macrolytic magnetic and gravitic field anomalies in VA, NC, and KY," Sf. R. Careaga, 2022,  
[https://www.academia.edu/88366256/MESS0018\\_GEO\\_2\\_2\\_Electrogeology\\_evidence\\_in\\_macrolytic\\_magnetic\\_and\\_gravitic\\_field\\_anomalies\\_in\\_VA\\_NC\\_and\\_KY](https://www.academia.edu/88366256/MESS0018_GEO_2_2_Electrogeology_evidence_in_macrolytic_magnetic_and_gravitic_field_anomalies_in_VA_NC_and_KY)
14. "Study suggests earthquakes are triggered well beyond fluid injection zones," Tufts Now, M.silver, 2019,  
<https://now.tufts.edu/2019/05/03/study-suggests-earthquakes-are-triggered-well-beyond-fluid-injection-zones>
15. "Risk Implications of Alternative Views of New Madrid Seismic Hazard," RMS Special Report, 2011,  
[http://www.cusec.org/documents/scenarios/2012\\_Scenario\\_RMS\\_New\\_Madrid.pdf](http://www.cusec.org/documents/scenarios/2012_Scenario_RMS_New_Madrid.pdf)
16. "Fracking on the New Madrid Seismic Zone a No Go," Gaither Campaign for Rural America," K. Gaither, 2017,  
<https://gaither4il.com/2017/06/13/fracking-on-the-new-madrid-seismic-zone-a-no-go/>