Title: Systematic approach to source-sink matching for geological carbon capture and sequestration
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1) **Data collection**- I have compiled the following data:
   a. Carbon dioxide point sources in the US, categorized into ethylene, hydrogen, steel, ammonia, cement, power and refineries for the U.S., but particularly for TX
   b. Coal and/or lignite trends in TX
   c. Coal and/or lignite mines in TX
   d. Major and minor aquifers of TX
   e. Major oil and gas plays in TX and surrounding regions (LA, OK, NM, AK)
   f. CO_2 pipelines in TX and surrounding regions (LA, OK, NM, AK)
   g. Natural resource areas of TX
2) **Remaining data collection-** I still need to find the following data:
   a. Population data for TX (this will come from the Texas State Data Center, txsdc.utsa.edu, but I've had trouble finding data in the correct format and might have to write my own file.)
   b. Brine bearing formations (the Bureau of Economic Geology has this information, I need to contact the correct person to retrieve it)
   c. Protected areas of TX (TNRIS should have this but I'm finding their website a little bit difficult to decode)
3) **Data analysis:** I am currently looking at the data I have to decide what kind of analysis I should do. Here are some maps I've made:
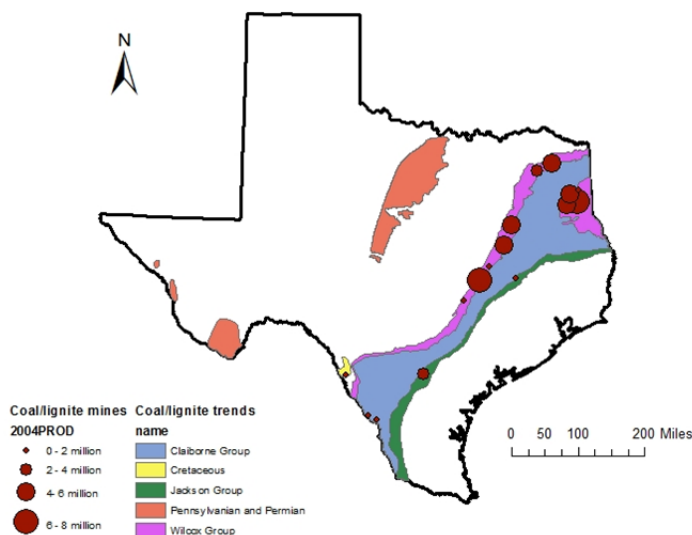

Fig 1: This figure shows the coal/lignite trends (geologic units) in TX and corresponding coal/lignite mines with their relative production (2004 data). TX is 5th in the nation with respect to coal production (EIA 2008). Clean coal facilities are a major application of carbon capture and storage. Coal mines serve as source of CO2.
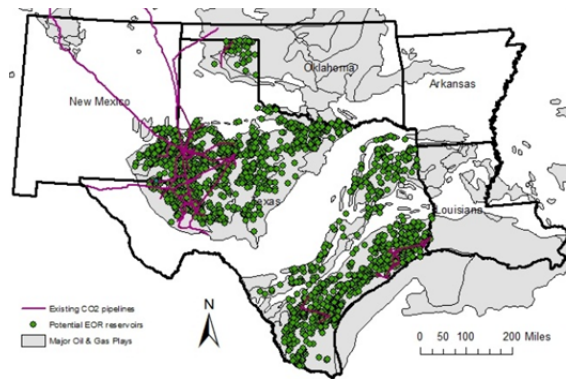
Fig 2: This figure shows the distribution of potential sites for enhanced oil recovery (EOR) within the major oil and gas plays of TX and surrounding regions. EOR is a current application of CO2 injection in the subsurface and can be fertile ground for permanent storage. It also shows existing CO2 pipelines, which are an important consideration in terms of transporting CO2 from sources (below) and sinks (green dots).
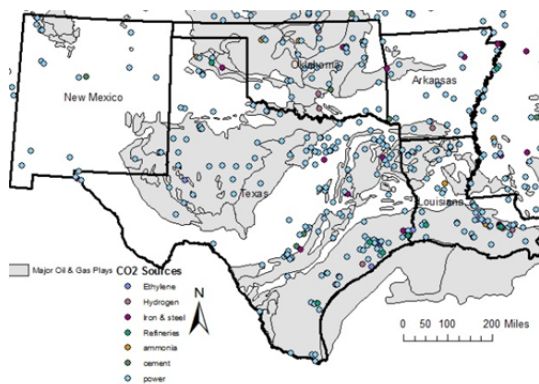

Fig 3: This figure shows the point sources for CO2. Carbon capture and storage technology requires large amounts of CO2 expelled from a single location, such as a power plant or refinery. The best sources are ideally located near a sink.
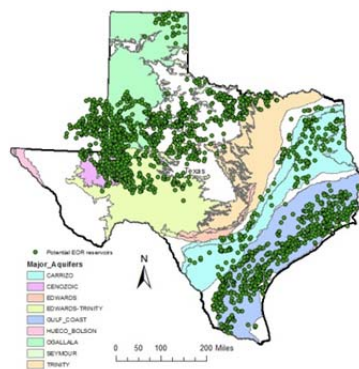

Fig 4: Aquifers in TX in relation to EOR sites, where carbon capture and storage is likely to occur. Ideally, carbon capture and storage will occur stratigraphically far from aquifers.