**Oil Migration**

**Last Lecture**
Primary Migration: Expulsion from the source rock
- High % TOC
- Kerogen to liquid transformation
- Microfracturing
- Expulsion

**Today’s Outline**
Secondary Migration
- Driving Force
- Resisting Forces
- Phase Behavior
- Rates of migration
- Efficiency
- Long distance migration

**Secondary Migration**
- Movement from source to trap
- Along carrier bed
- As separate hydrocarbon phase (mostly)

**Capillary Forces**

\[ \Delta p = \frac{2 \gamma \cos \theta}{R} \]

where \( \Delta p \) = Displacement pressure
\( \gamma \) = Oil-water interfacial tension
\( \theta \) = Contact angle of oil and water against the solid
\( R \) = Radius of the pore throat

As \( \gamma \) increases, \( \Delta p \) increases
As \( R \) decreases, \( \Delta p \) increases
As \( R \) decreases, \( \Delta p \) increases
Displacement Pressure vs. Pore Size

Fluid Contacts in a trap

Migration Pathways

Evidence for long distance migration