



中国石油大学
CHINA UNIVERSITY OF PETROLEUM

Selection Criteria of Oil/gas Reservoirs for CO₂ EOR and Storage

EOR Research Centre
China University of Petroleum, Beijing
Jan.20 2010

Background and Necessity

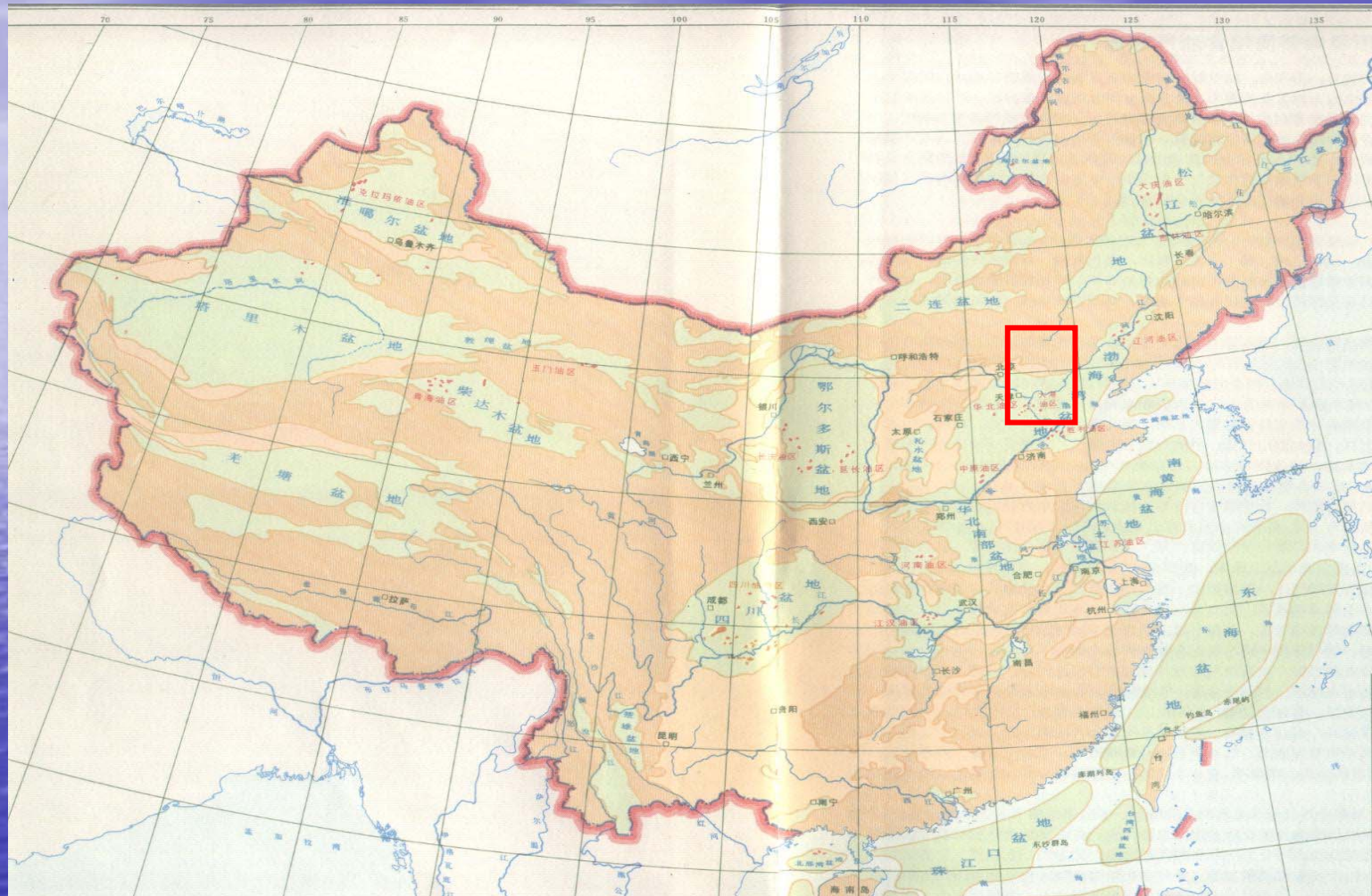
Oil/gas reservoirs are important CO₂ storage site, especially CO₂ EOR can refund the cost of CO₂ storage completely or in some degree.

The selection of oil/gas reservoirs for CO₂ EOR and storage depend on different considerations, including storage potential, safety and security, match of CO₂ sources and oil/gas reservoirs, environmental, economic, et al.

All these considerations base on the geological characteristics, oil/gas reservoir characteristic, oil/water properties, et al.

It is quite necessary to study and make the selection criteria of oil/gas reservoirs for CO₂ EOR and storage. On these criteria, it is easy for the leaders and public to make the site decision.

Basin and Oil Field

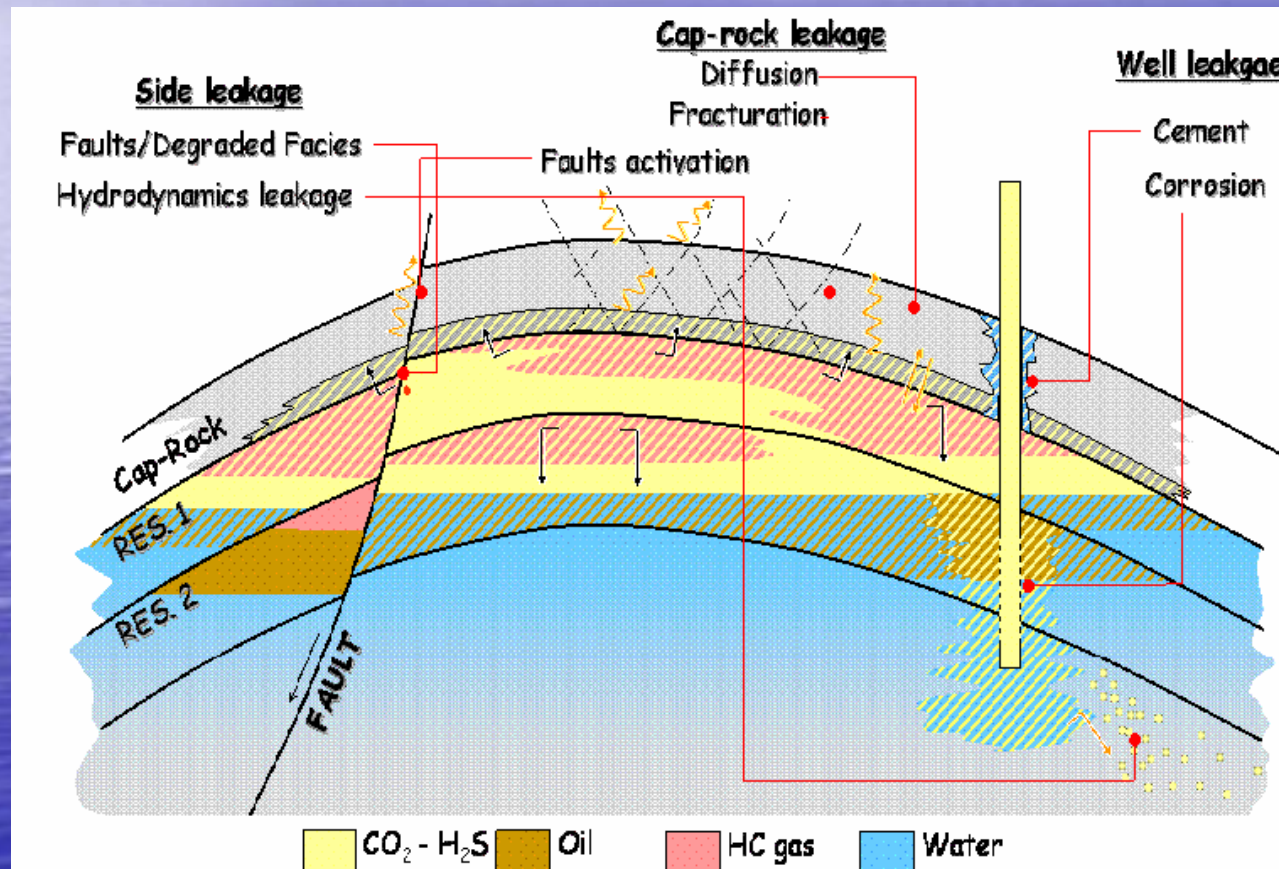


Survey of potential CCS sites in previous study (NZEC)

Task1: Geological characteristics and Oil/gas reservoirs characteristics

- 1. Cap Rock characteristics: Permeability, porosity, composition, thickness, strength of cap rock.
- 2. Permeability, porosity, composition, depth, thickness, area and temperature, CO₂ injectivity of oil/gas reservoirs.

Task1: Geological characteristics and Oil/gas reservoirs characteristics

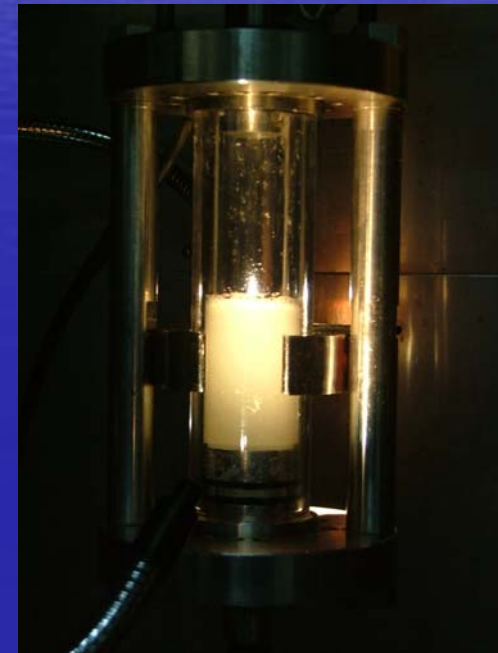
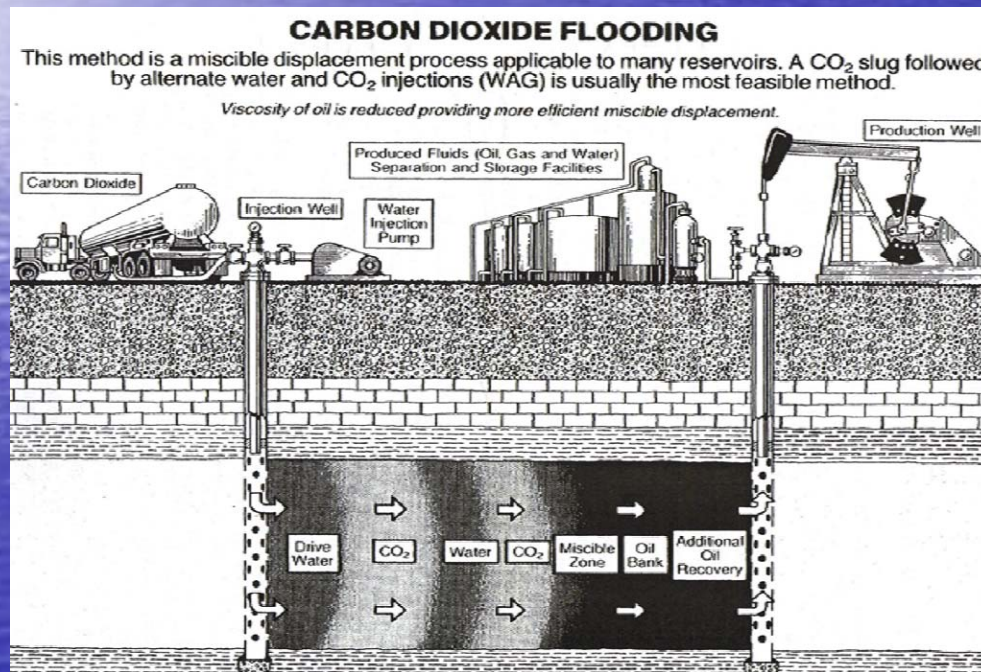


Cap Rock characteristics: Permeability, porosity, composition, thickness, strength of cap rock.

Task 2: Oil/water/CO₂ properties in the reservoir

- 1. Solubility of CO₂ in crude oil, density, viscosity, composition of crude oil in reservoirs.
- 2. Solubility of CO₂ in formation water, density, viscosity, composition, volume of water in reservoirs.
- 3. The property of water and chemicals used for production of oil.

Task 2: Oil/water/CO₂ properties in the reservoir

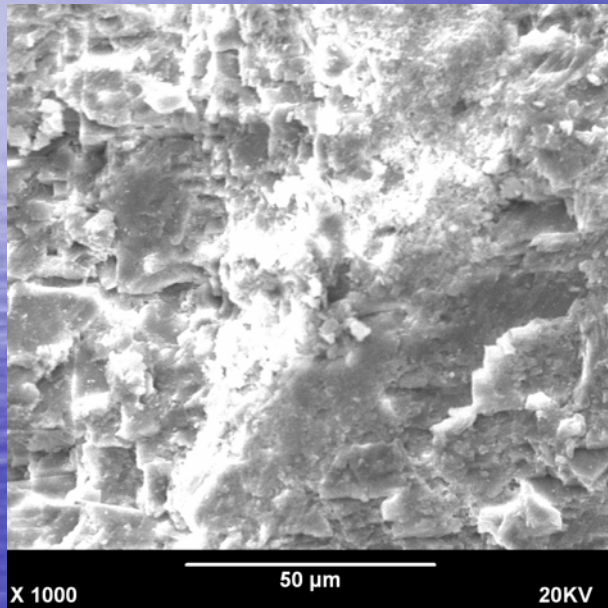


Task 3: The CO₂/water/rock interaction reservoir

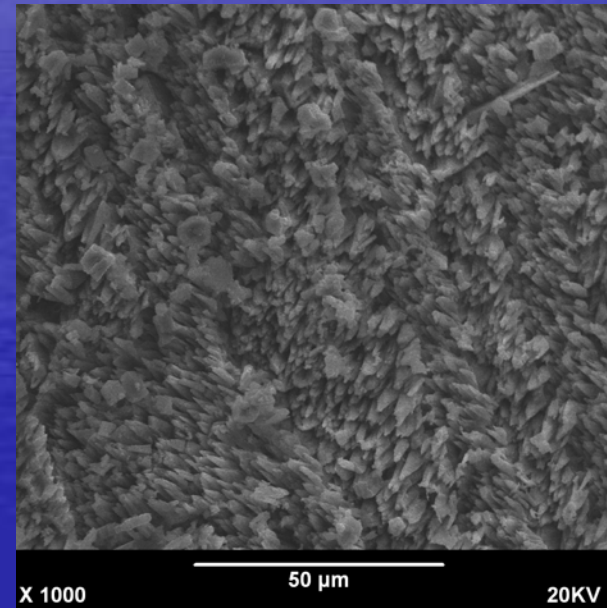
- The CO₂/water/rock interaction in higher pressure and temperature.
- 2. The evaluation of permeability, porosity, composition after the CO₂/water/rock interaction.

Task 3: The CO₂/water/rock interaction

Before Reaction



After Reaction



Pressure: 2 MPa; Temperature: 25 °C; Reaction Time: 20days

Rock Surface Topographic Image

Thanks for your attention

