CONCORDE
ENERGY, INC

Paris Basin France

A Potential

Multi-billion barrel

Oil resource

SPEE Luncheon
April 10, 2013
Denver, Colorado

“Progress in prospecting….sometimes seems slow and the results all too meager in proportion to the money that has been spent,

but wildcatting is likely to continue for many years because something is always turning up to sustain the interest.”

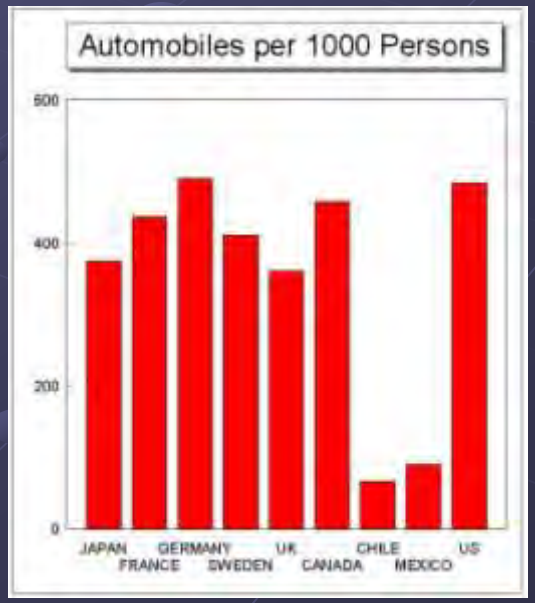
E. L. Estabrook, 1924

Paris Basin Oil Resource Play

- New oil resource play in Europe
- Rich type II source rock section – basin models suggest over 1,000 BBO generated in basin (high API gravity, low viscosity)
- Stratigraphy and lithology similar to successful analog plays (Bakken)
- Multiple objectives – conventional and unconventional
- Geology and geochemistry of objectives are well documented by regional studies
- Wells drilled for deeper objectives have ubiquitous oil indications in source rock intervals. Recent competitor activity reports positive result.
- Very attractive fiscal and political environment (historically)
- Premium market
- Large contiguous land blocks with excellent term.
- Rural environment – operations feasible

France Facts

- GDP $2.77 Trillion (3rd largest EU)
- Oil Production 72 MBO/day (4.1%)
- Oil Imports 1,666 MBO/day (95.9%)
- Refining Capacity 1,800 MBO/day
- Unemployment 10.9%
- Population 63.1 Million
- 29.6 Million cars
- Over 5 Million trucks



Paris Basin Vision

Unconventional Oil Plays are not possible without application of *advanced technology*.

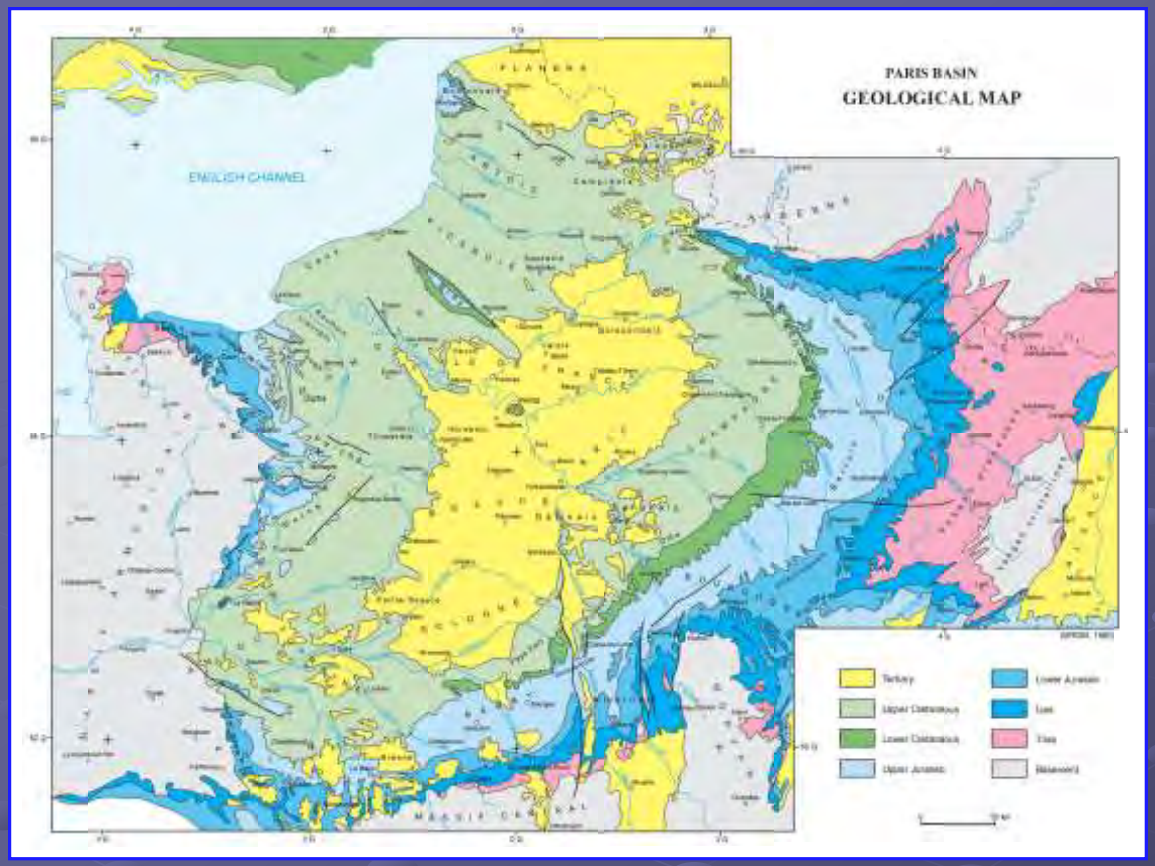
The recurring theme among the visionary companies active in these extraordinary plays is revisiting previously maligned areas and applying *new drilling and completion techniques*.

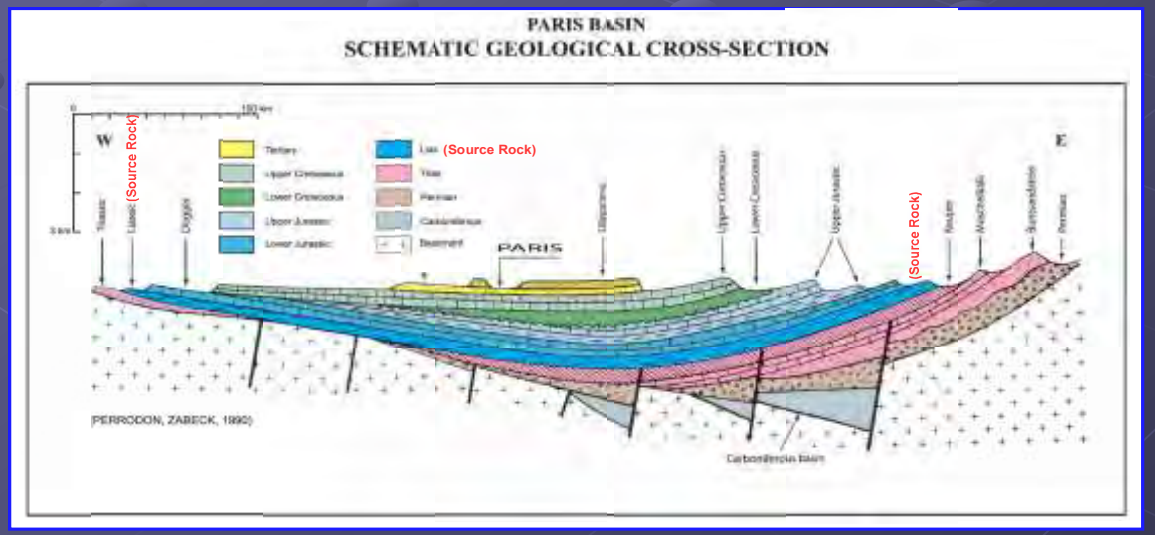
The key to reach *repeatability and economic productivity* is when a certain technique fails, we gain new knowledge and try the next innovation.

Paris Basin Characterization

1 meter = 3.28 feet

1 metric ton =~ 7.15 Barrels (oil)

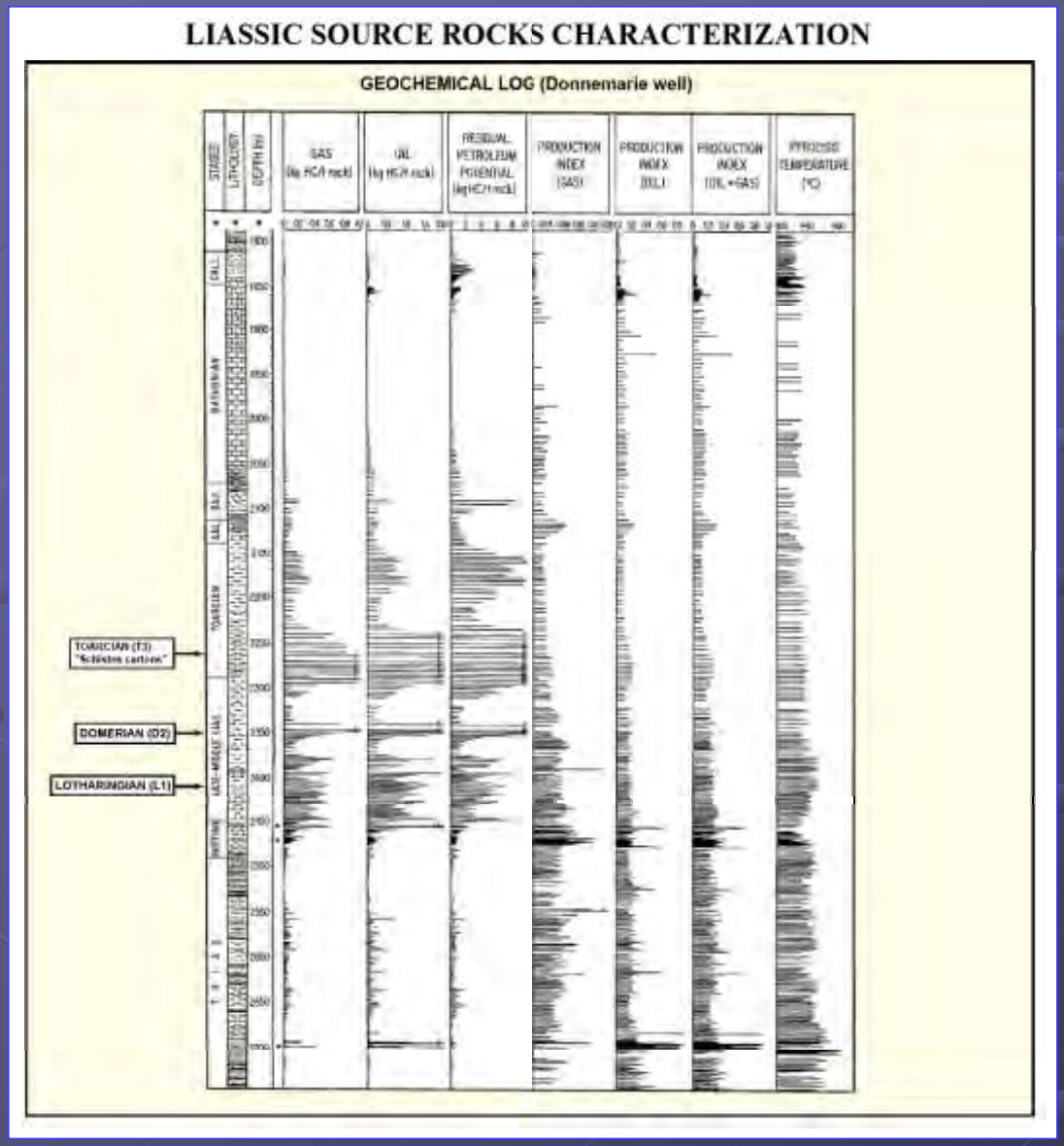




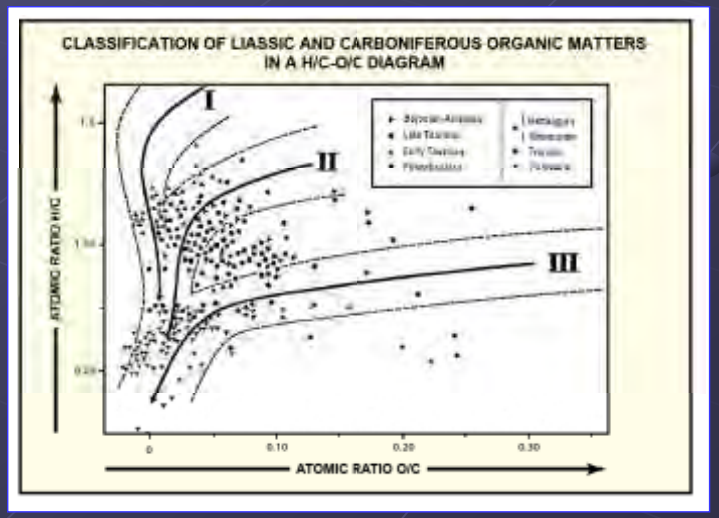
Paris Basin Geology

- Simple structural setting
- Extensional tectonic regime
- Thick Jurassic source rock section
- Under-explored oily basin
- Unconventional plays unexploited

Liassic Source Rock Characterization



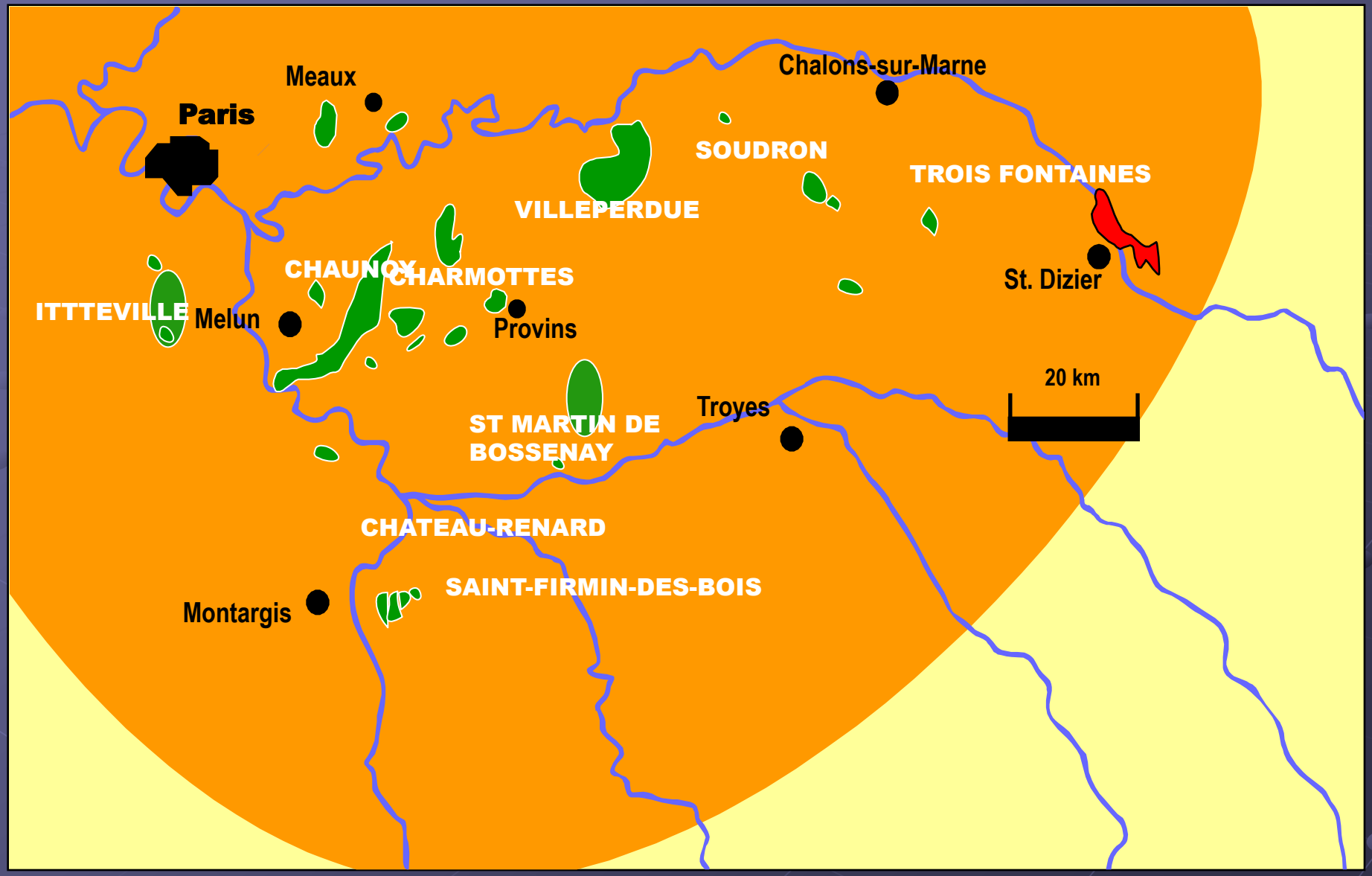
- Thick source rock section (up to 600 meters thick)
- Oil prone kerogen types
- Sufficient burial and thermal history



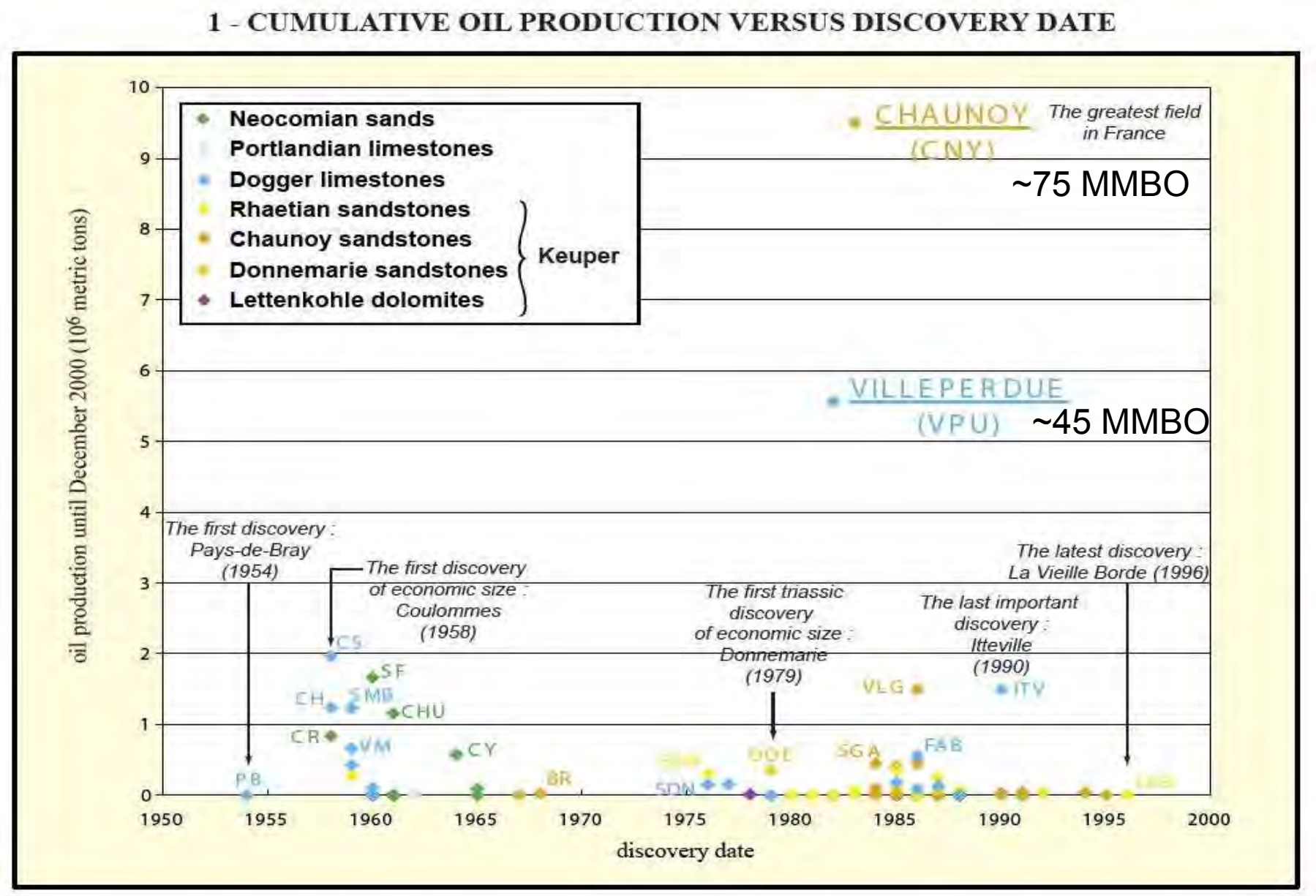
Paris Basin Regional Geology

- Intracratonic basin formed due to down-warping associated with crustal cooling.
- The Basin was dominated by extensional forces from Permian though Jurassic time, compression shortening began in the Cretaceous and continued into the Tertiary.
- Marine sedimentation began in the Permian and continued into the Tertiary.
- More than 3000m of sediments have accumulated in the Basin center.
- Hydrocarbon exploration began in the mid-20th century.
- Significant oil reservoirs have been discovered in conventional traps, structural and stratigraphic, from the Triassic Keuper sands, Jurassic Bathonian carbonates and Cretaceous Neocomien sands.
- Lightly explored by world standards, there have been less than 1000 exploration wells drilled in the basin. Only 30% have actually penetrated the Liassic. (Paris Basin covers an area the size of Ohio)

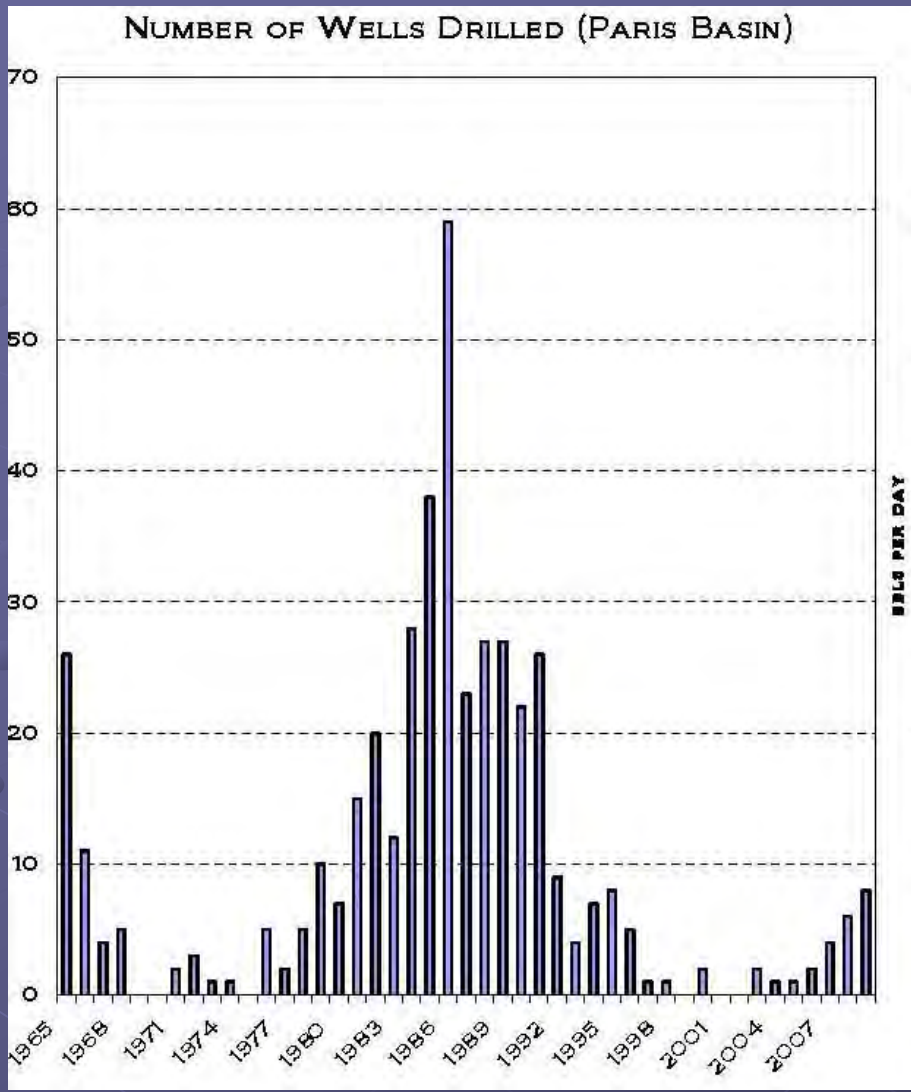
Paris Basin Oil Fields

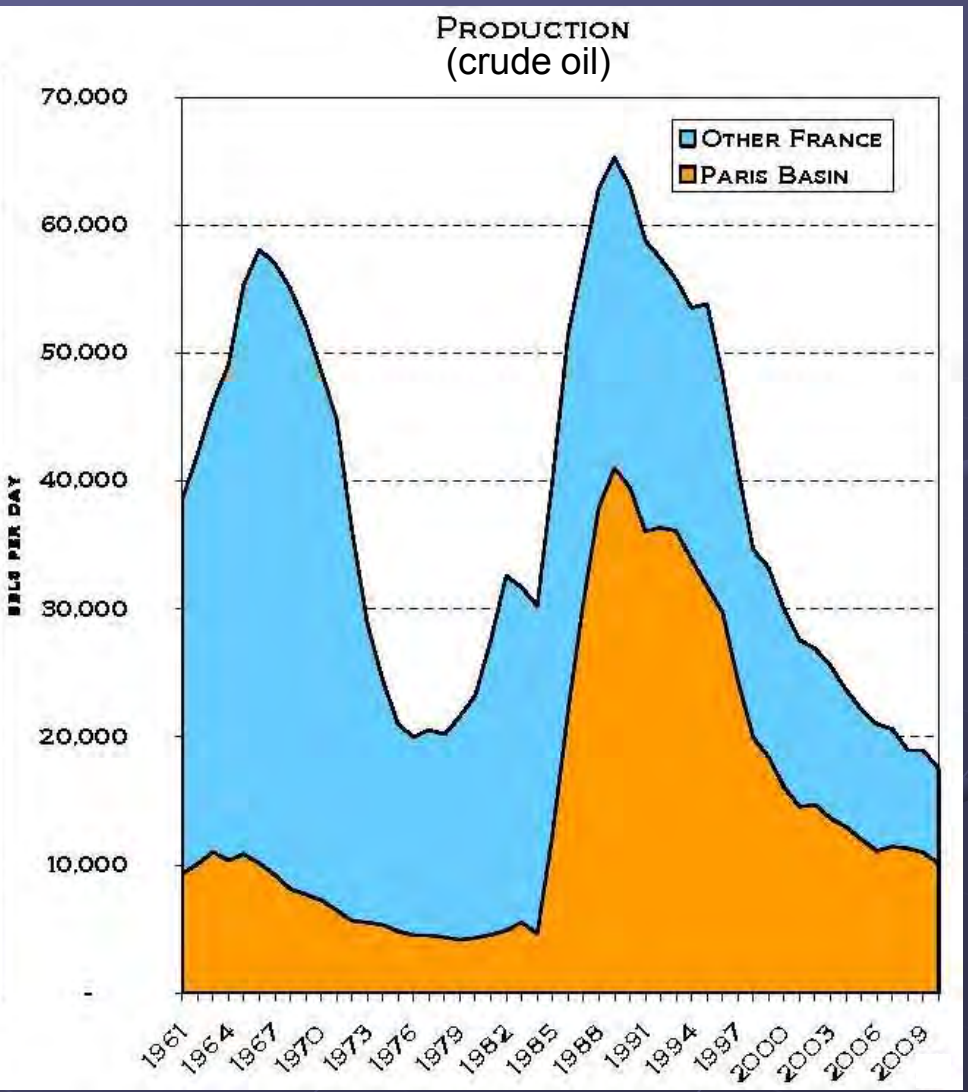


Paris Basin Petroleum Development History



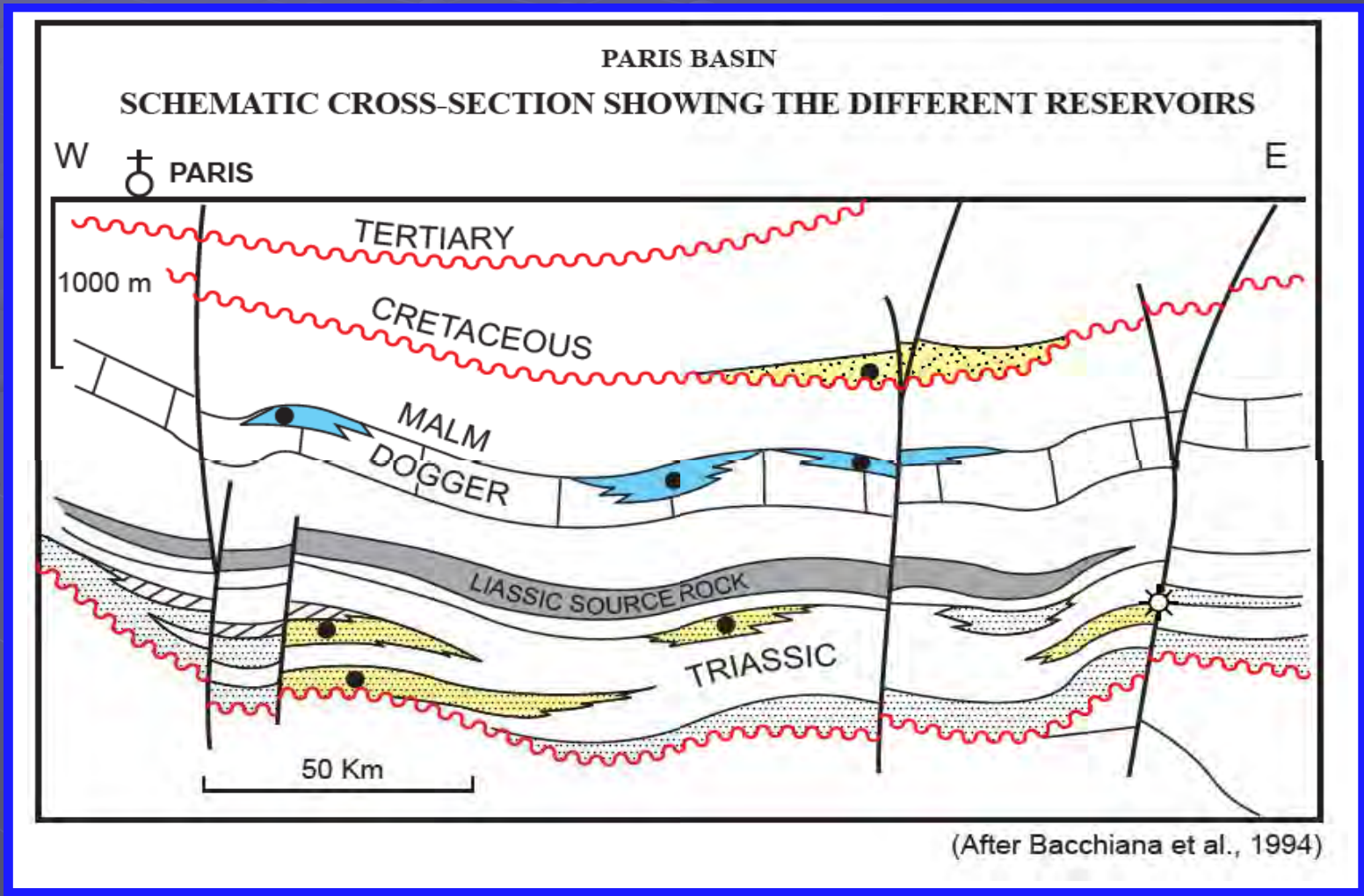
Paris Basin Petroleum Development History



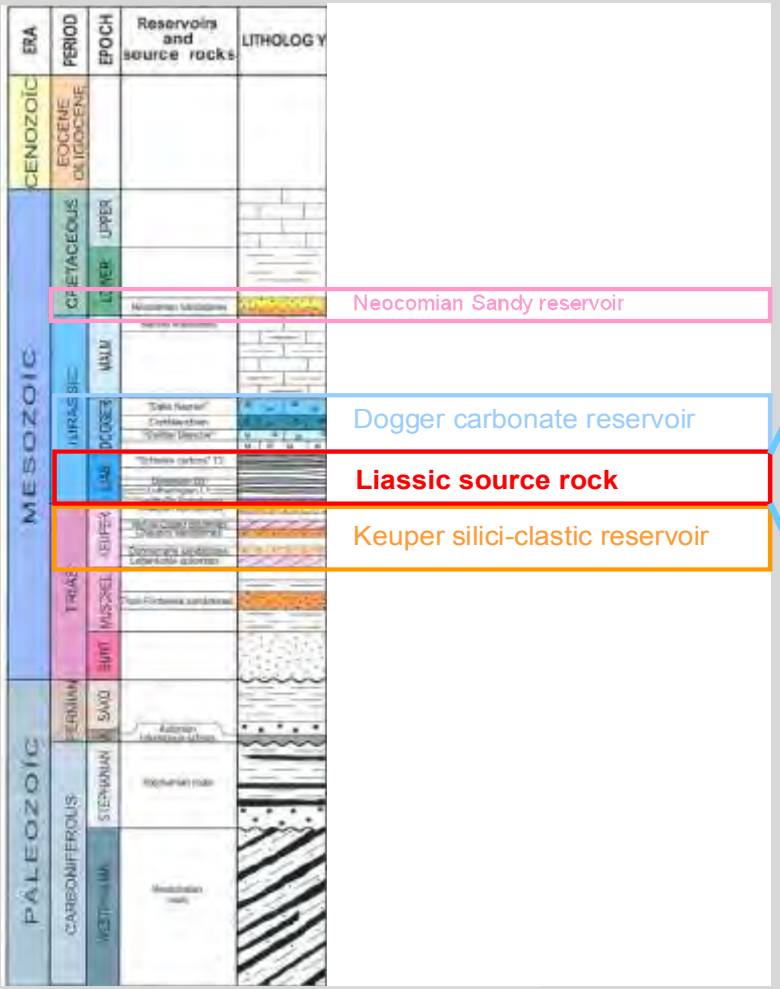


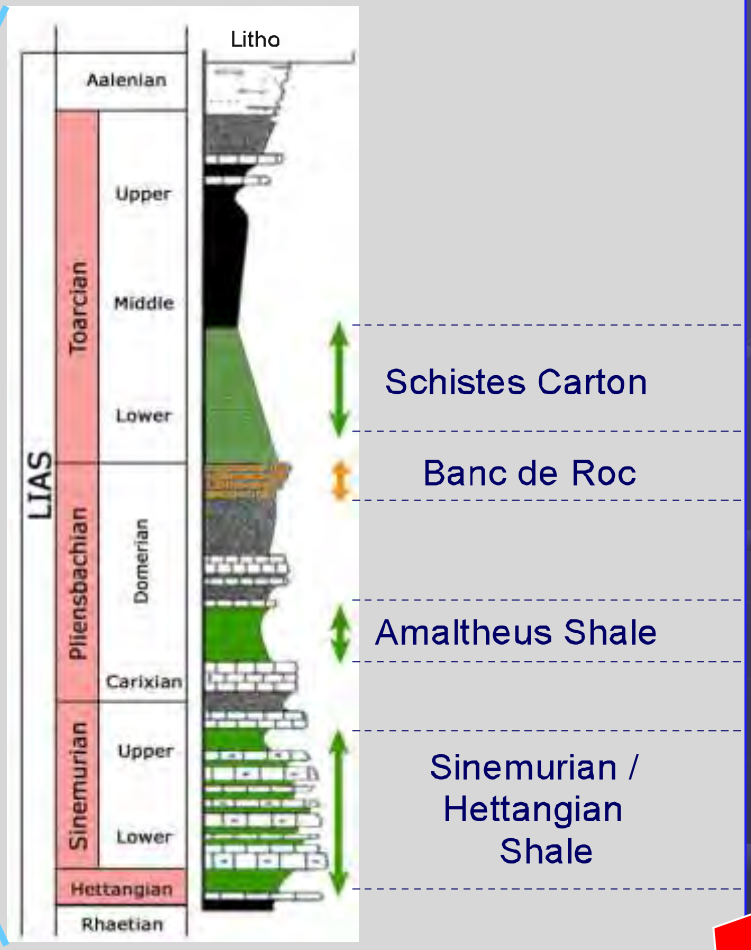
Under-explored basin – Conventional and Unconventional Objectives

Paris Basin Hydrocarbon Habitat



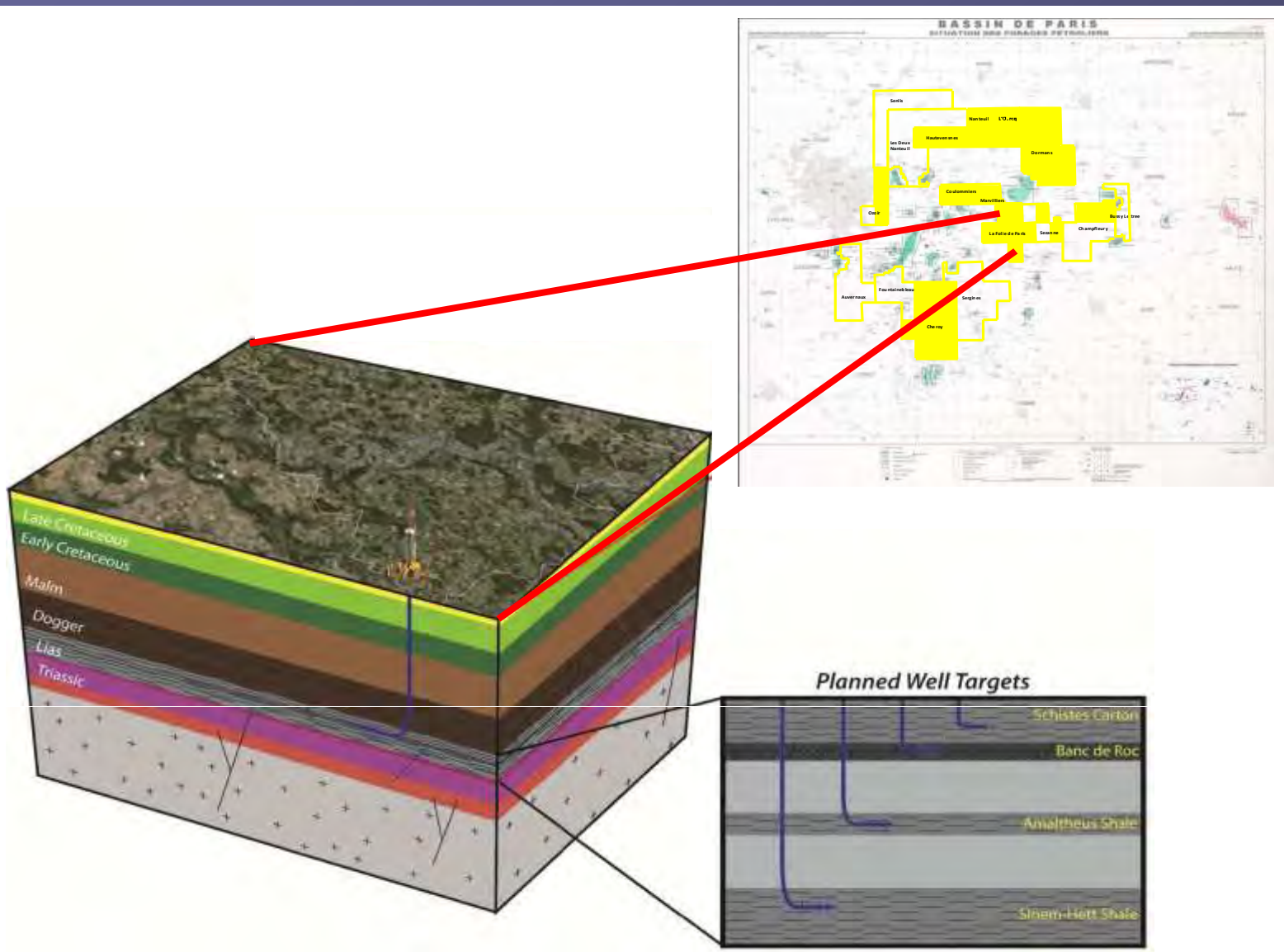
Paris Basin Stratigraphic Column



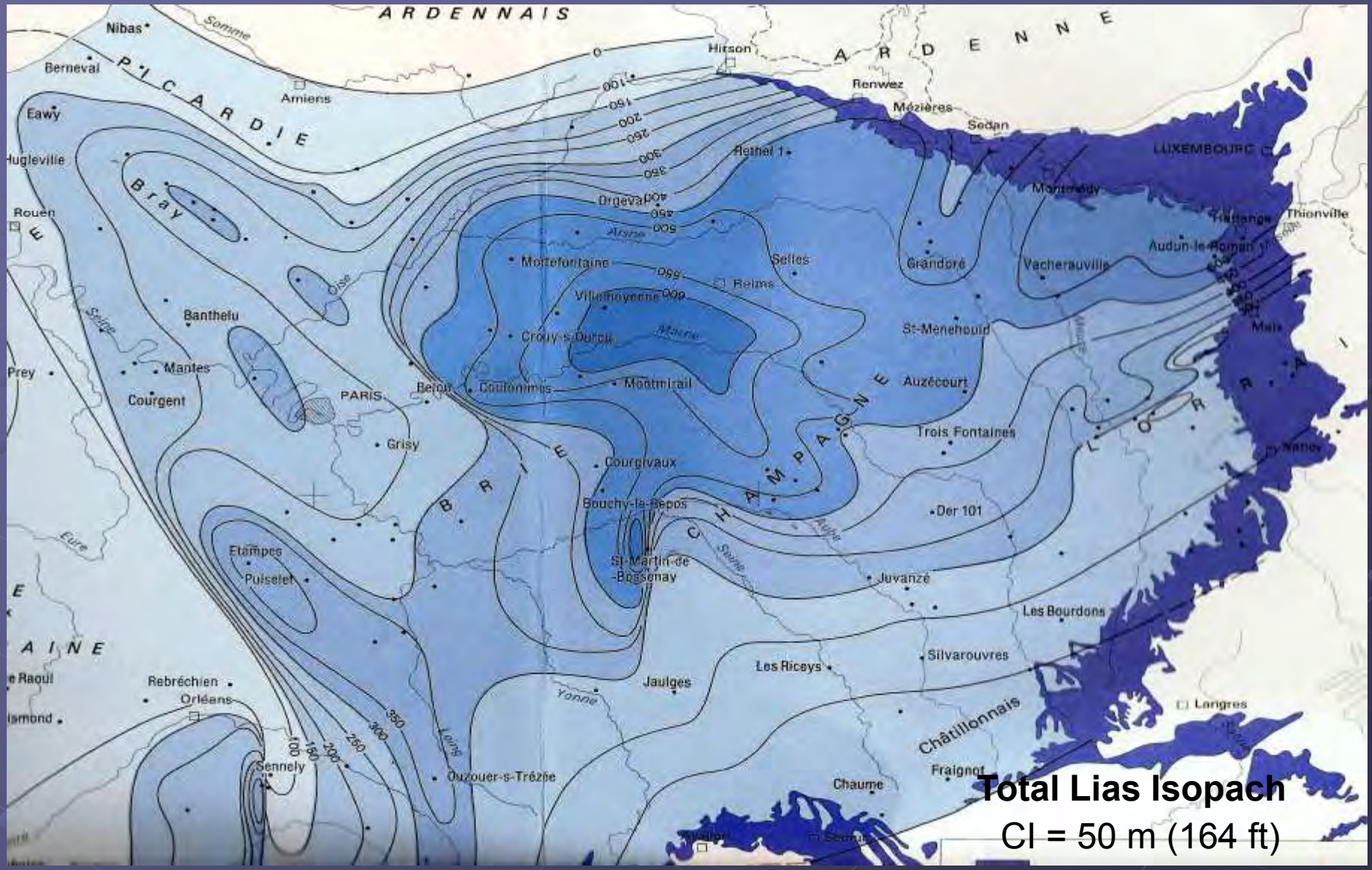


Multiple source rock intervals interbedded with carbonates !!!

Notional Evaluation Targets

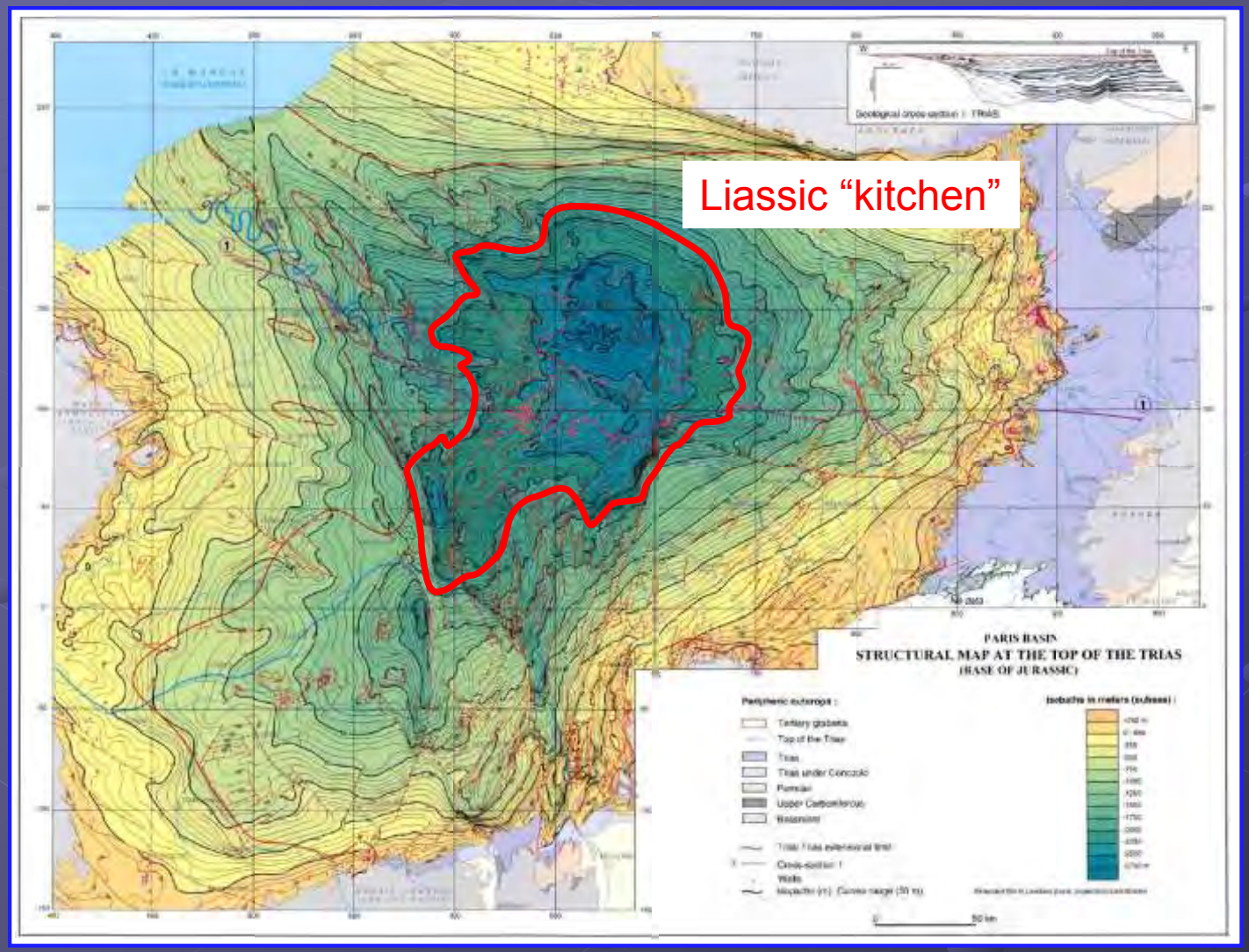


Paris Basin Liassic Isopach



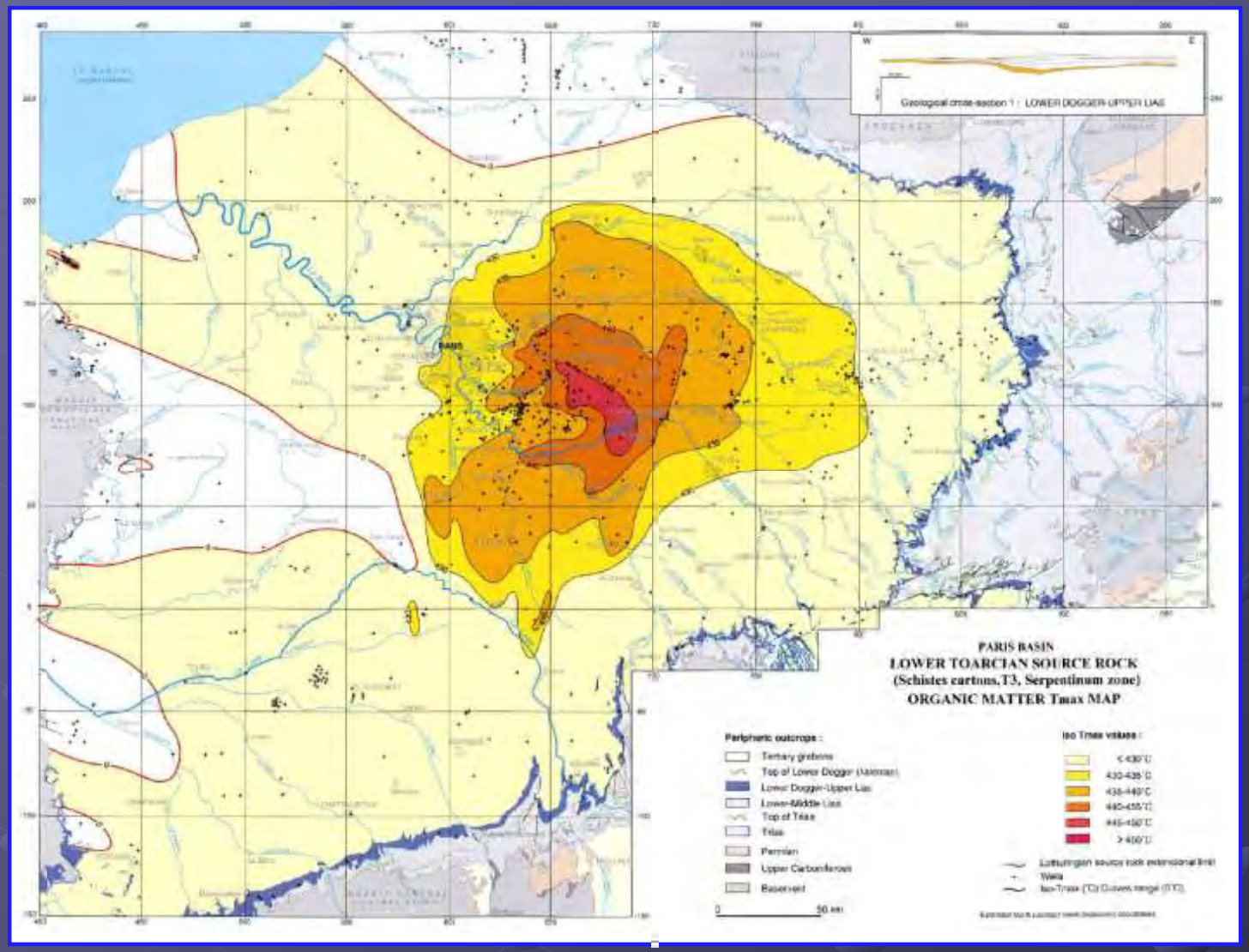
Thick (up to 2,000') source rock interval

Paris Basin Base Jurassic Structure Map



Structure provides proxy for source rock oil maturity window

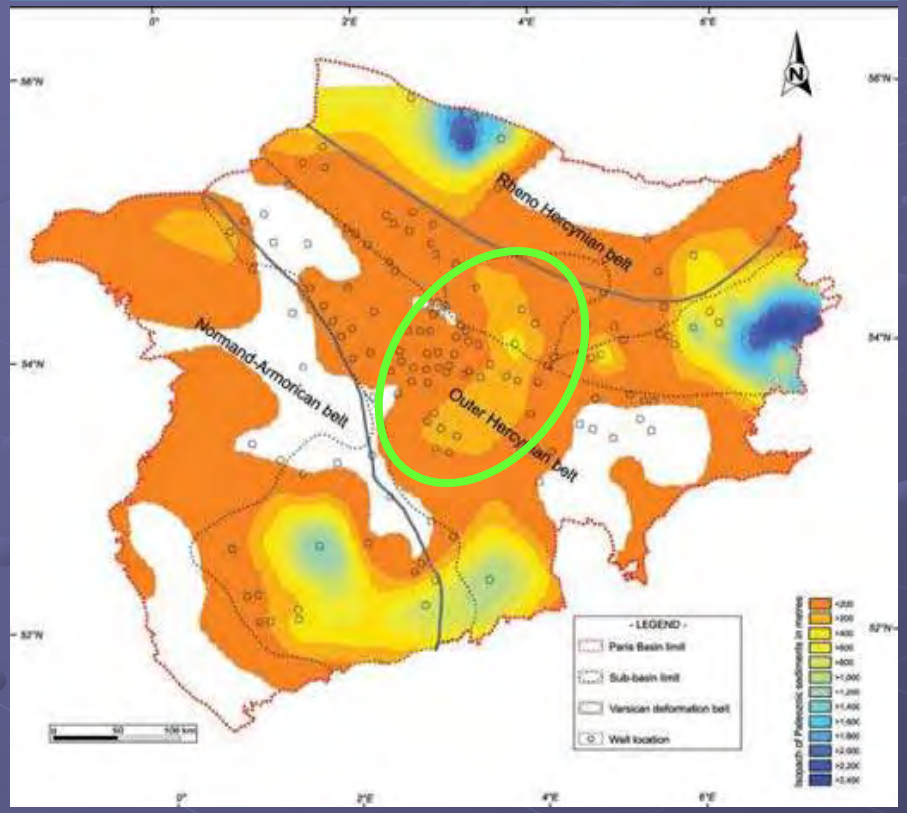
Paris Basin Schistes Cartons Tmax



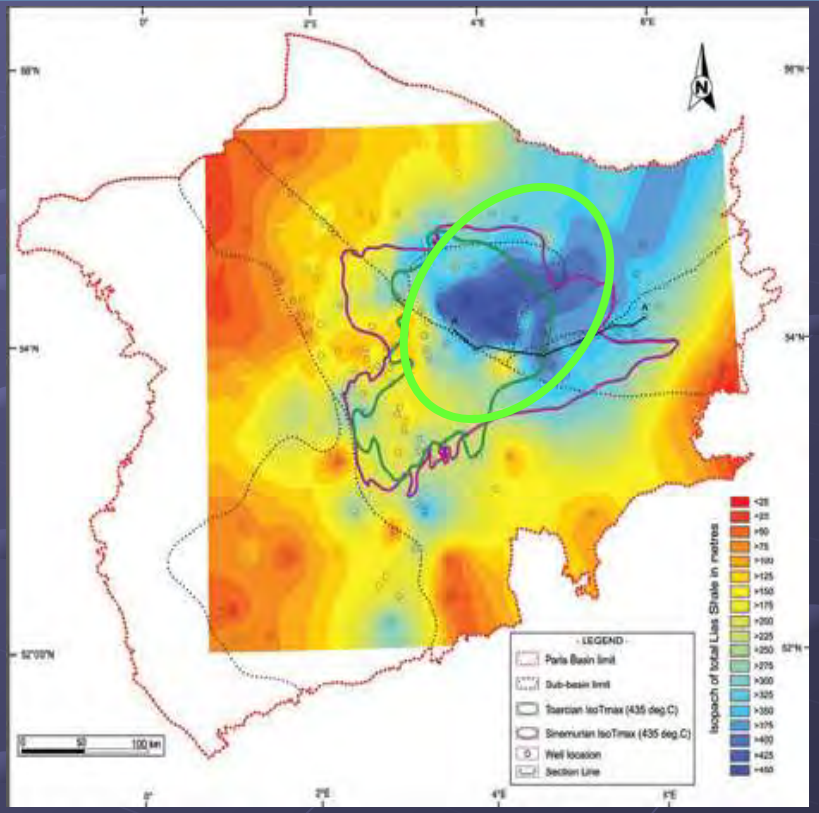
Geochemical data confirms oil generation model and play fairway

Paris Basin Lias Isopach and Thermal Maturity

Isopach map of Lias shale



Thermal maturity appears optimum across Concorde acreage



Exploration Focus

- Thick Lias deposition
- Optimum thermal maturity
- Rich TOC

Paris Basin – Areal Extent of "Kitchen"

SOURCE ROCKS	AREAS (Km2) Oil Prod	AREAS (Km2) Oil Expulsion
Late Toarcian	9500	Immature
Early Toarcian "Schistes Cartons"	11000	1700
Lotharingian	19000	6000
Sinemurian Hettangian	22000	9000

-Source: Poulet, M & Espitalie, J
"Hydrocarbon Migration in the Paris Basin"
Editions Technip 1987, Paris pg 145.

Paris Basin Oil Expulsion Model

SOURCE ROCKS	Petrol. Pot. (MM T/Km2)	Petrol Generated (Billions Barrels)	Petrol Expelled (Billions Barrels)
Late Toarcian	3-5	209.0 - 342.0	---
Early Toarcian "Schistes Cartons"	3-5	242.0 – 396.0	37.4 – 61.2
Lotharingian	2-3	277.4 – 418.0	96.0 – 132.0
Sinemurian Hettangian	2-3	321.2 – 484.0	131.4 – 198.0
TOTALS		1,049.6 – 1,640.0	264.8 – 391.2

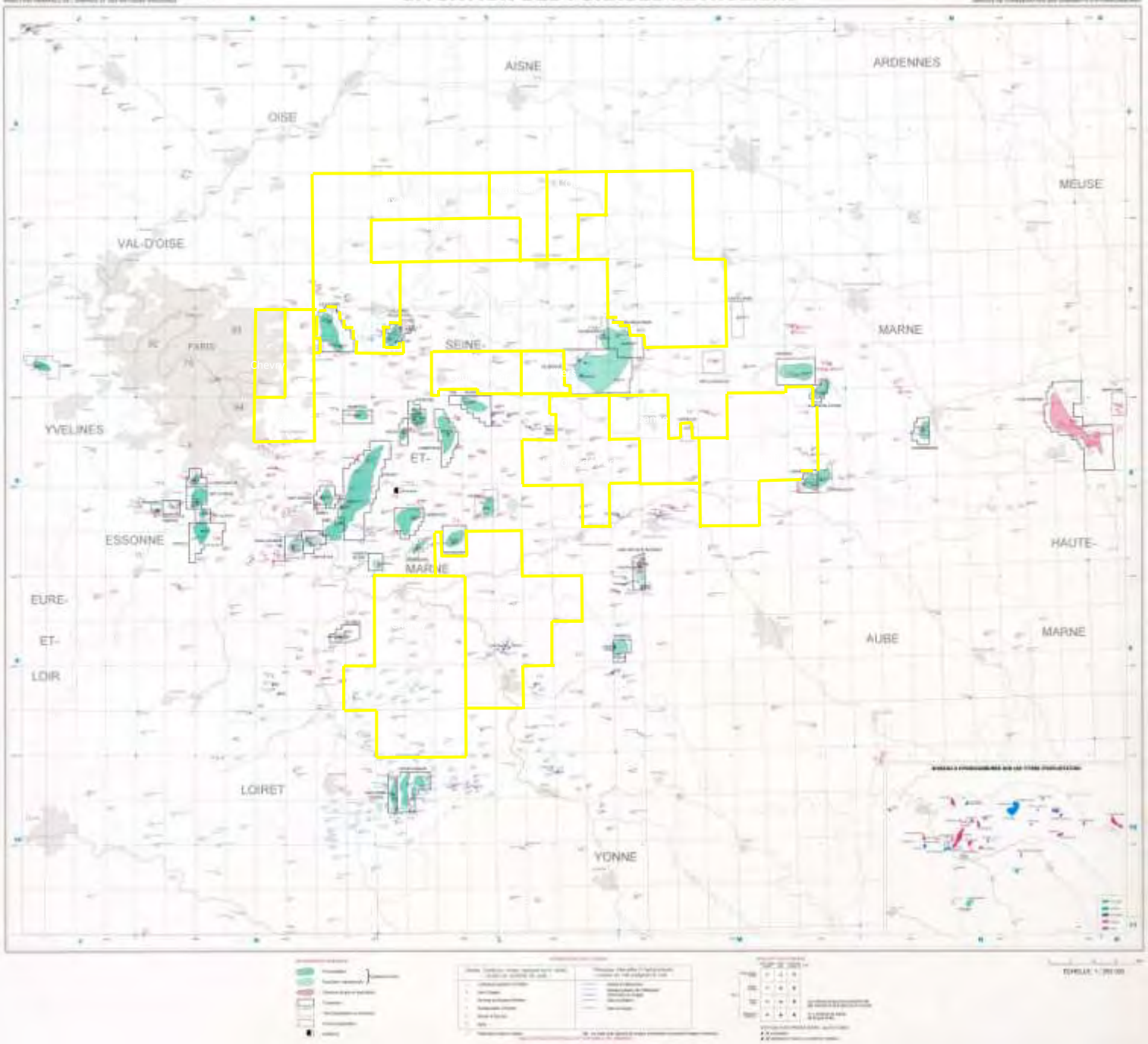
-Source: Poulet, M & Espitalie, J
"Hydrocarbon Migration in the Paris Basin"
Editions Technip 1987, Paris pg 131 - 171.

Paris Basin Liassic Shows & Flows

Well	Date	Toarcian - Domerian	Pliensbachien	Hettangian	Oil, Gas shows, fract	Oil kick/flow
R A P - Montmirail - 1	1950			●	● ●	
PETROREP - Crouy-sur Ourcq - 1	1958			●	●	
MOBIL - Latilly - 1	1958			●	●	
MOBIL - Villemoyenne - 1	1958			●	● ●	
RAP - Nangis - 1	1959		●			●
PETROREP - Montlevée - 1	1959	●			●	
PETROREP - Coulommes Belou - 1	1959	●			●	
RAP - Essises - 1	1960			●		●
PETROREP - Coulommes CS42	1969	●		●	●	
SNEA (P) - Connantre - 1	1981			●		● ●
Esso REP - Leudon - 1	1981		●			●
Esso REP - Melarchez-1	1983	●	●			●
SNEA (P) - Herme – 1	1985	●	●		●	●
Esso REP Champotran 1	1985		●		● ●	
Esso Rep - Malnoue – 1	1985	●	●	●	● ●	
Total - Cerneux 102 (S17)	1986	●				●
SNEA (P) Sommesous 1	1987			●	●	
Esso Rep - Saint Lazare - 1	1987	●	●		●	
Esso Rep - Malnoue - 7D	1988		●			●
PETROREP - Lailly - 1	1989		●	●		● ●
Esso REP - Glairet - 1	1990	●	●		●	
LUNDIN - Cense Ormat - 1	2003		●			● ●

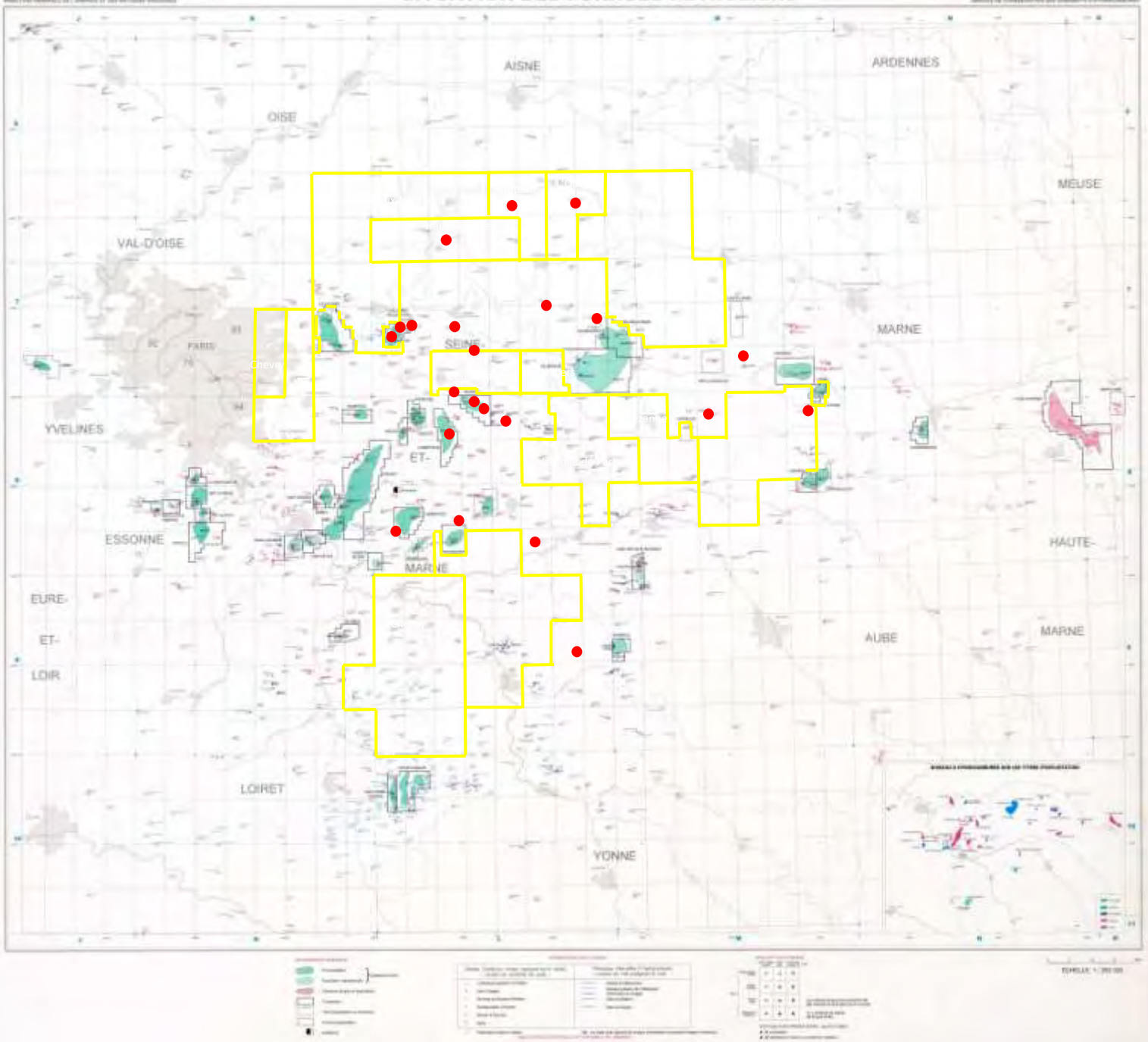
BASSIN DE PARIS

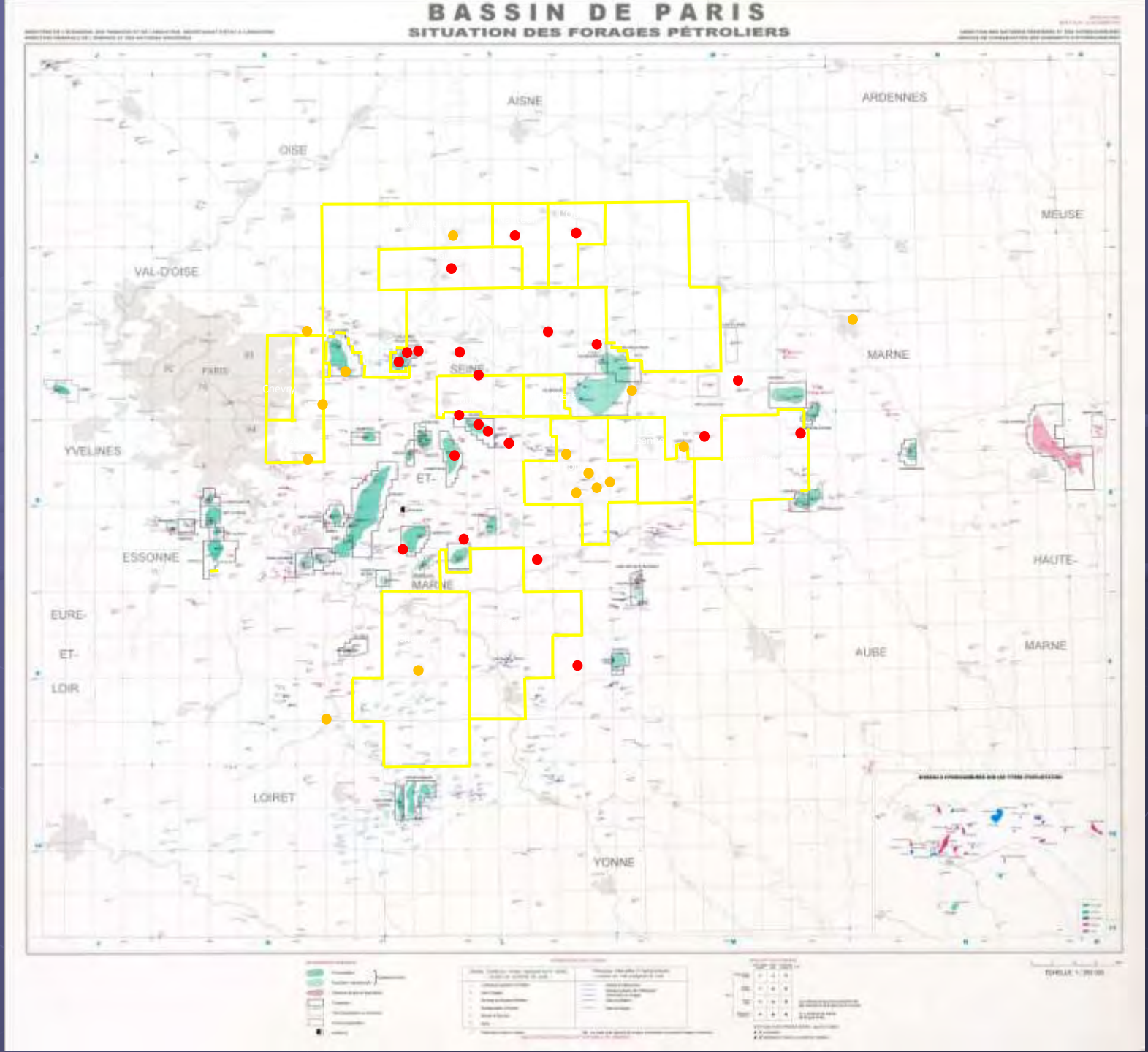
SITUATION DES FORAGES PÉTROLIERS



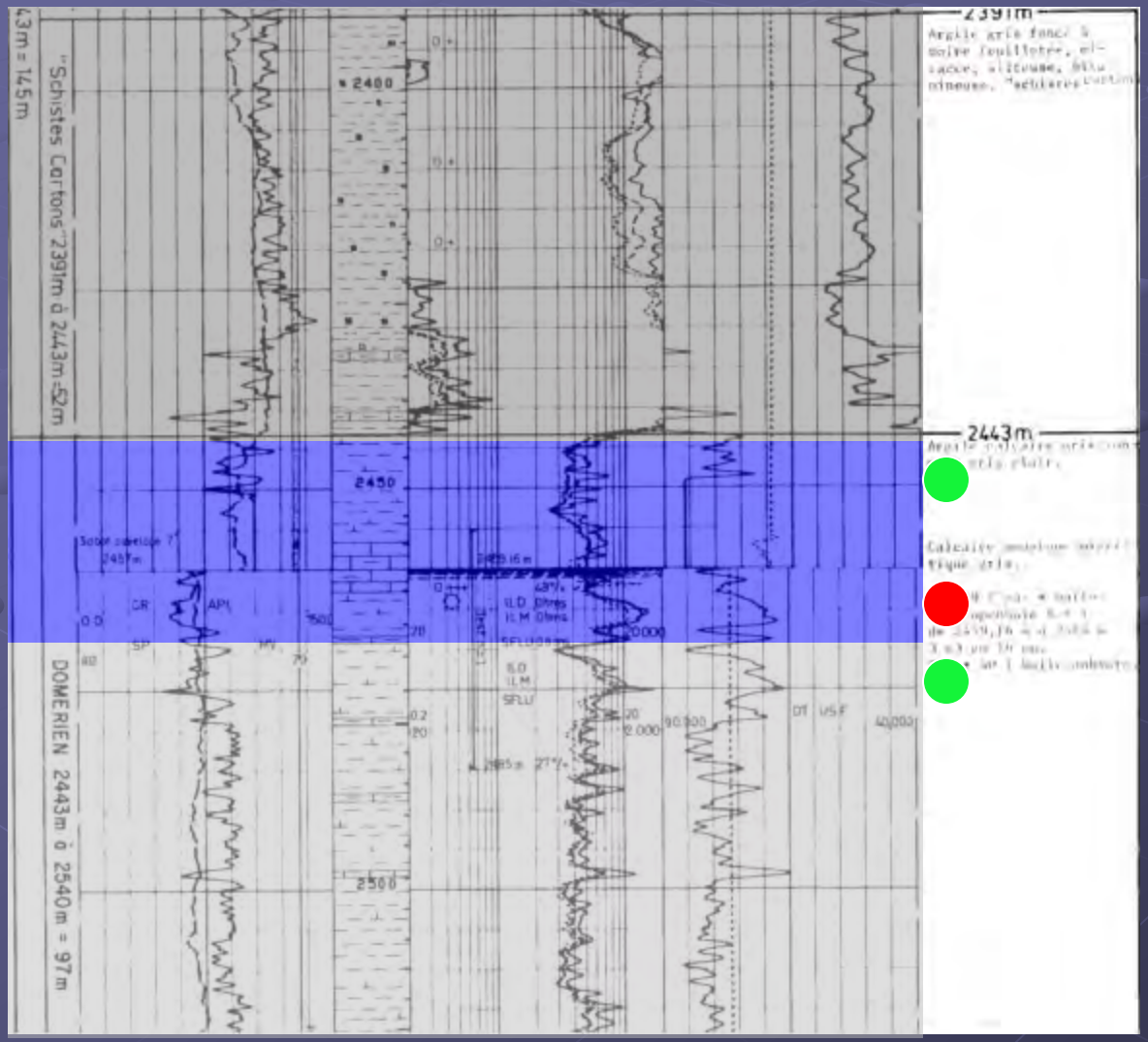
BASSIN DE PARIS

SITUATION DES FORAGES PÉTROLIERS




BASSIN DE PARIS
SITUATION DES FORAGES PÉTROLIERS
AISNE
ARDENNES
OISE
MEUSE
VAL-D'OISE
MARNE
SEINE
YVELINES
ESSONNE
HAUTE-
MARNE
EURE-
ET-
LOIR
AUBE
MARNE
LOIRET
YONNE

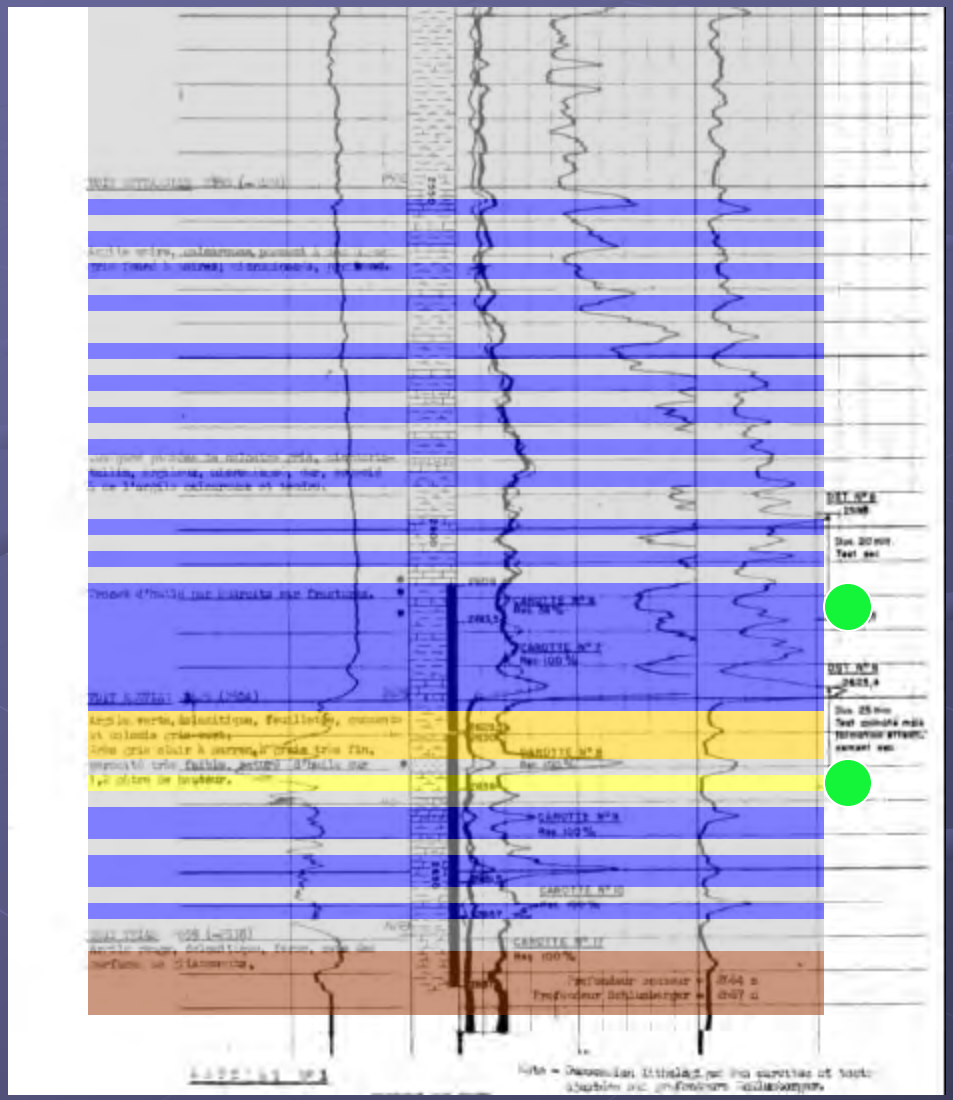
Paris Basin Melarchez Example



Melarchez #1Bis

Banc du Roc

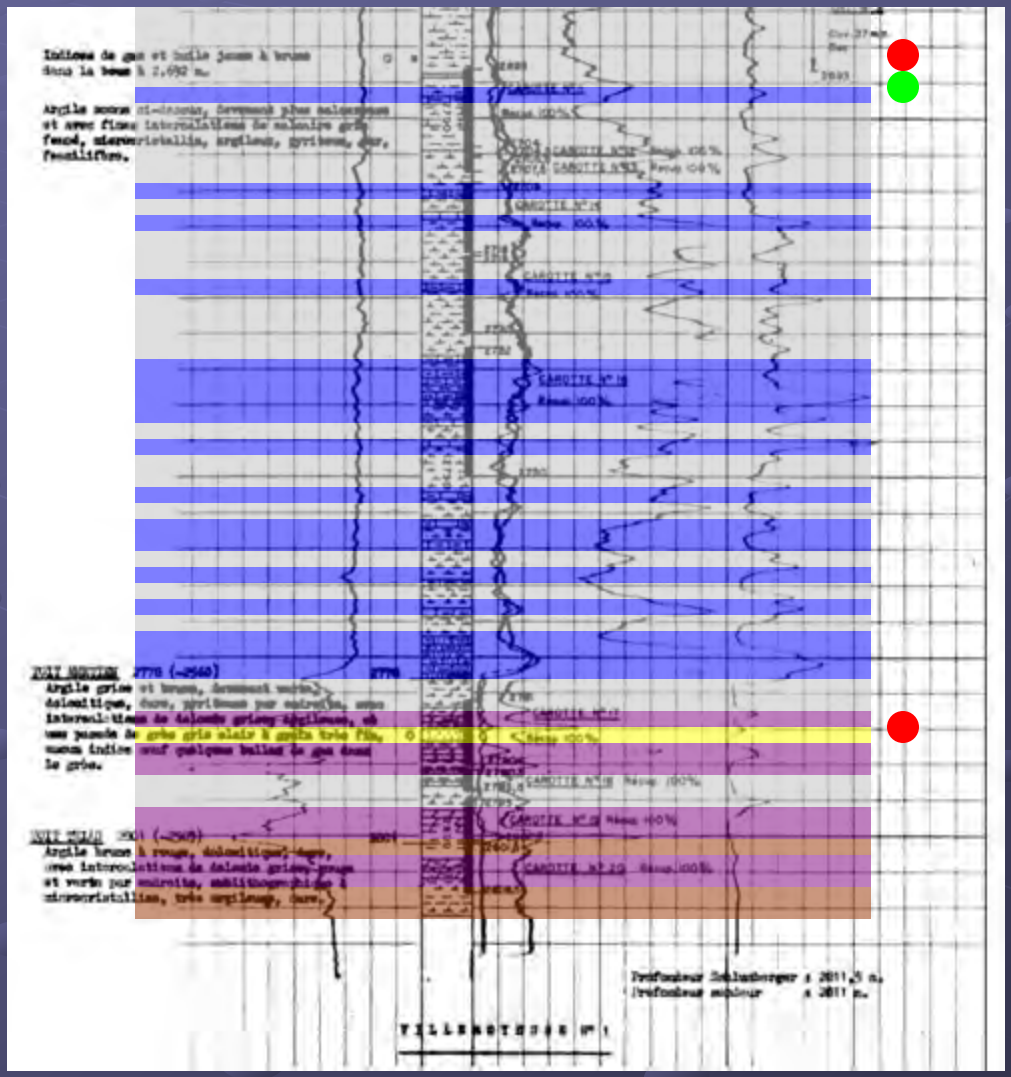
Paris Basin Latilly Example



Latilly #1

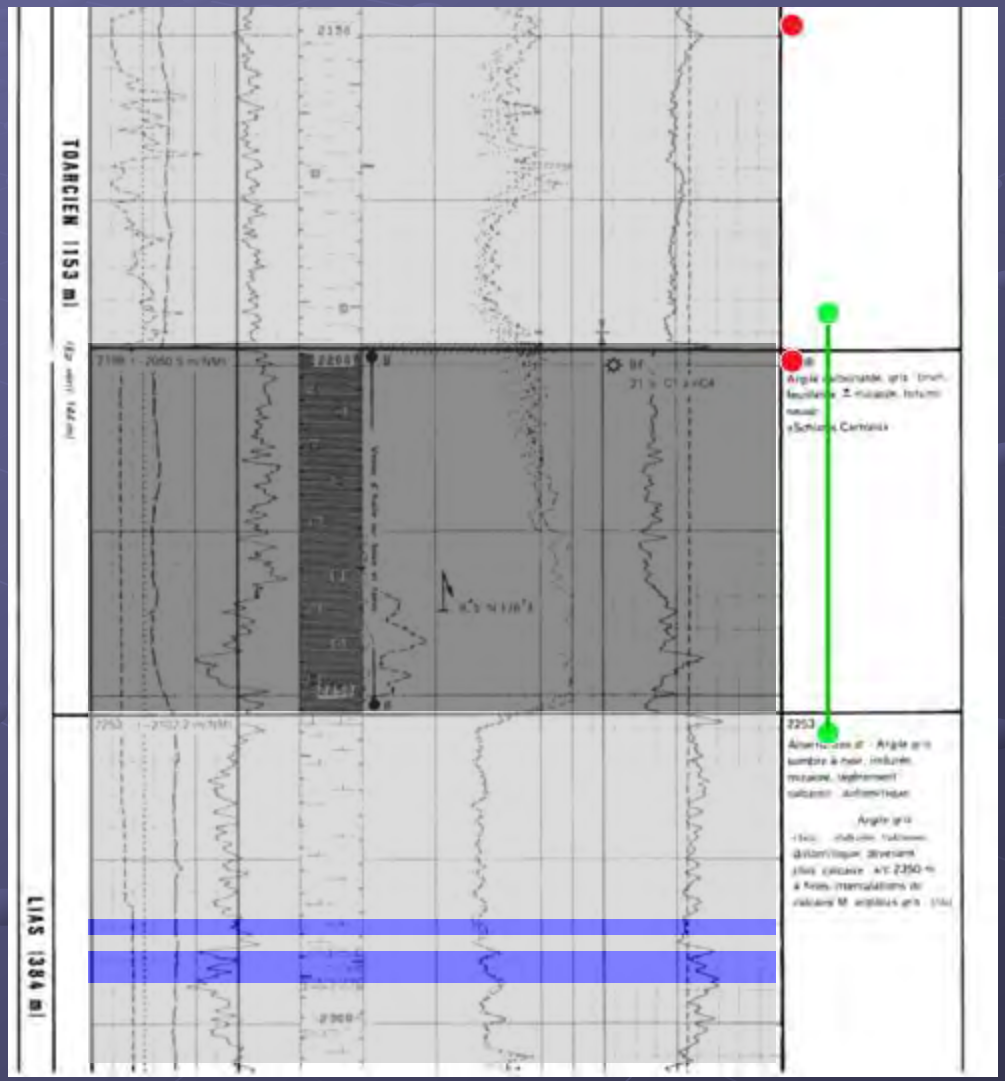
Hettangian “Shale”

Villemoyen #1
Hettangian “Shale”



Herme #1 D

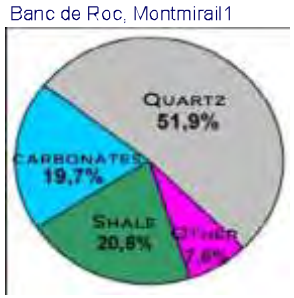
Liassic Toarcian Shale

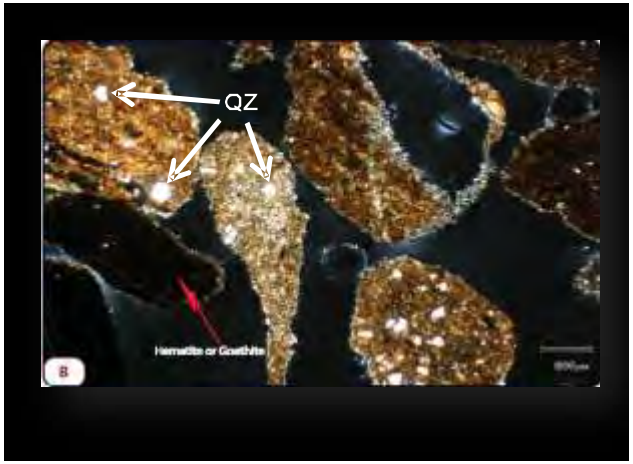


Paris Basin XRD and Petrography

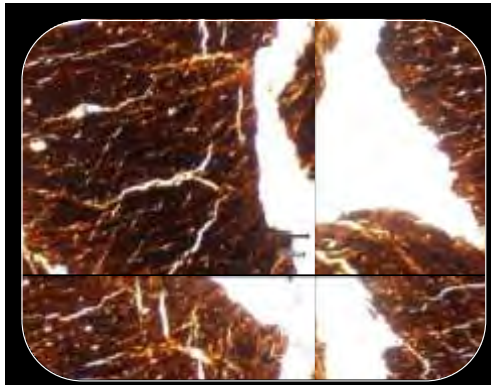
b

- High Quartz content:
  - XRD analysis
  - Thin Sections

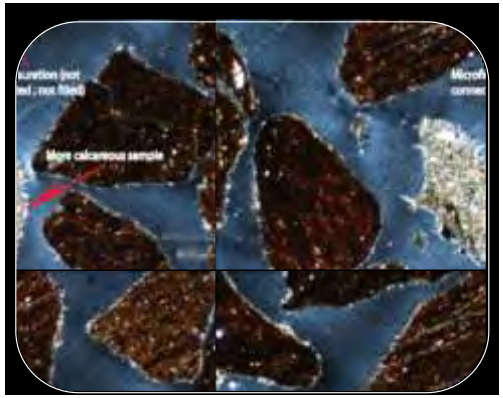




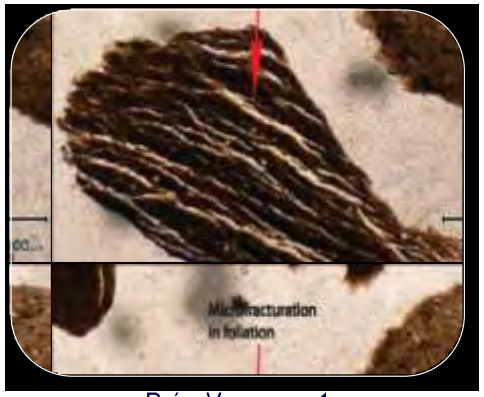
- Microfracturation :



Essises 1



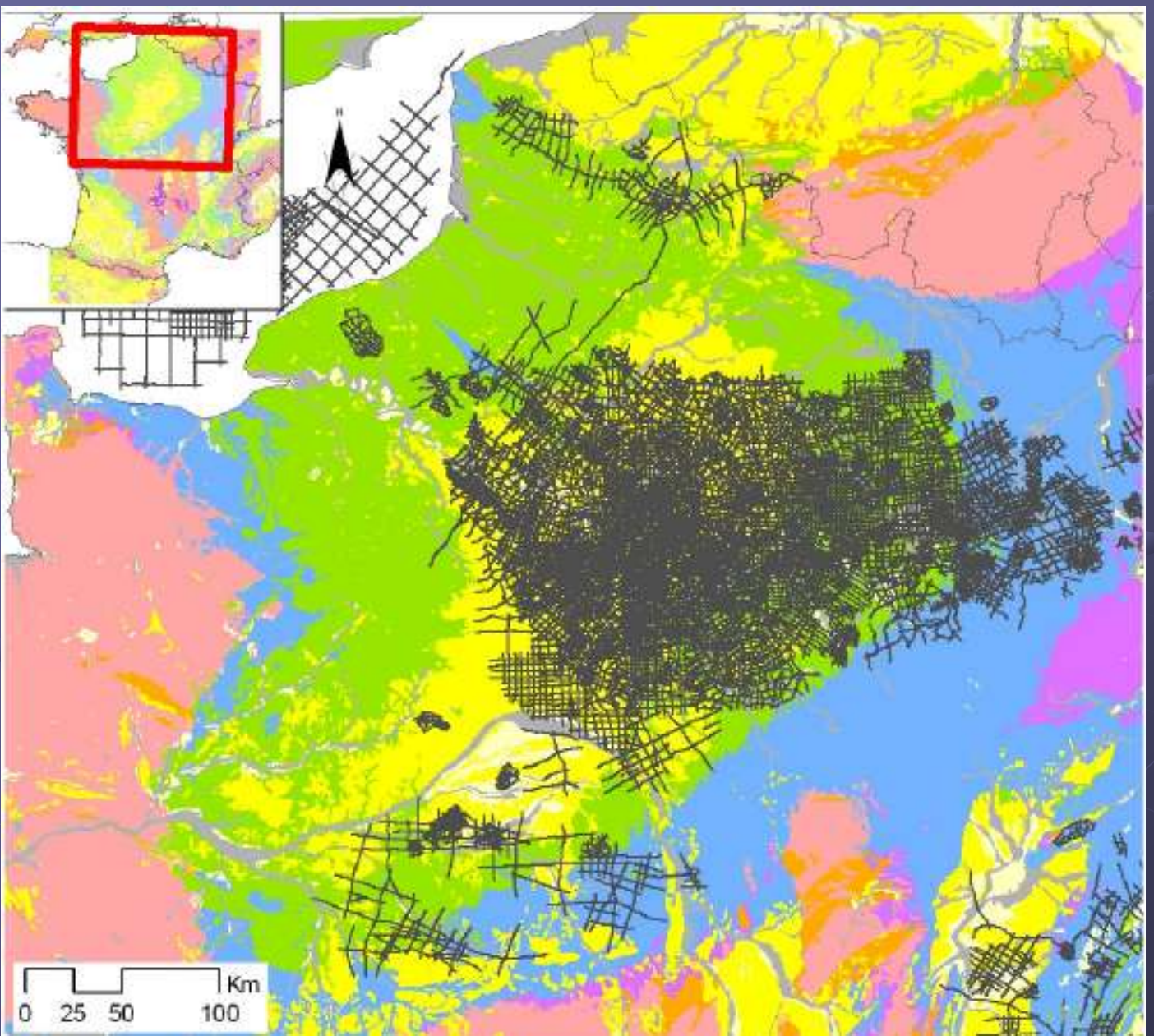
Mélarchez 1



Pré Verson 1

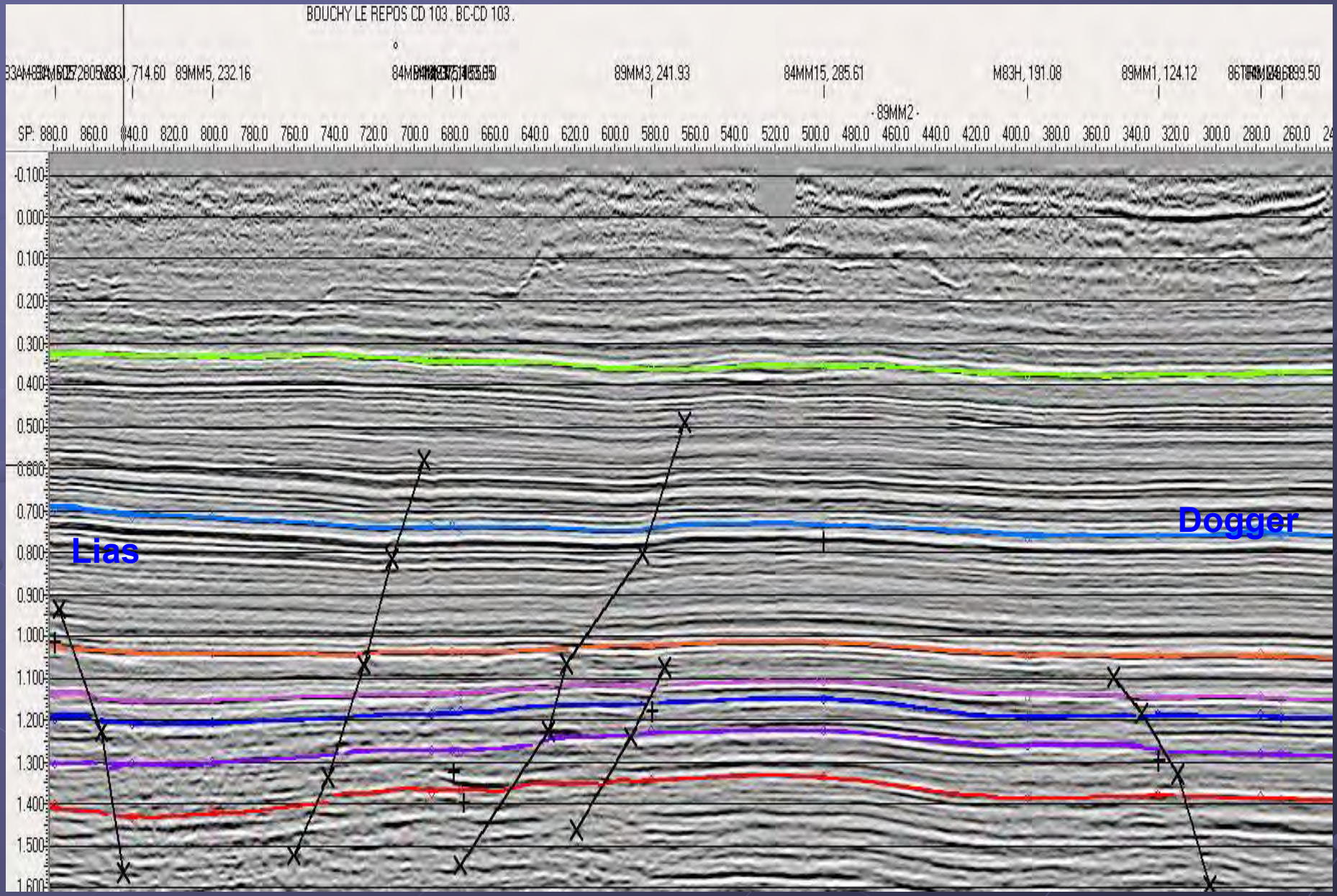
- Overpressure indications: Oil & Gas Kicks, 1 Blow Out

Paris Basin Seismic Coverage

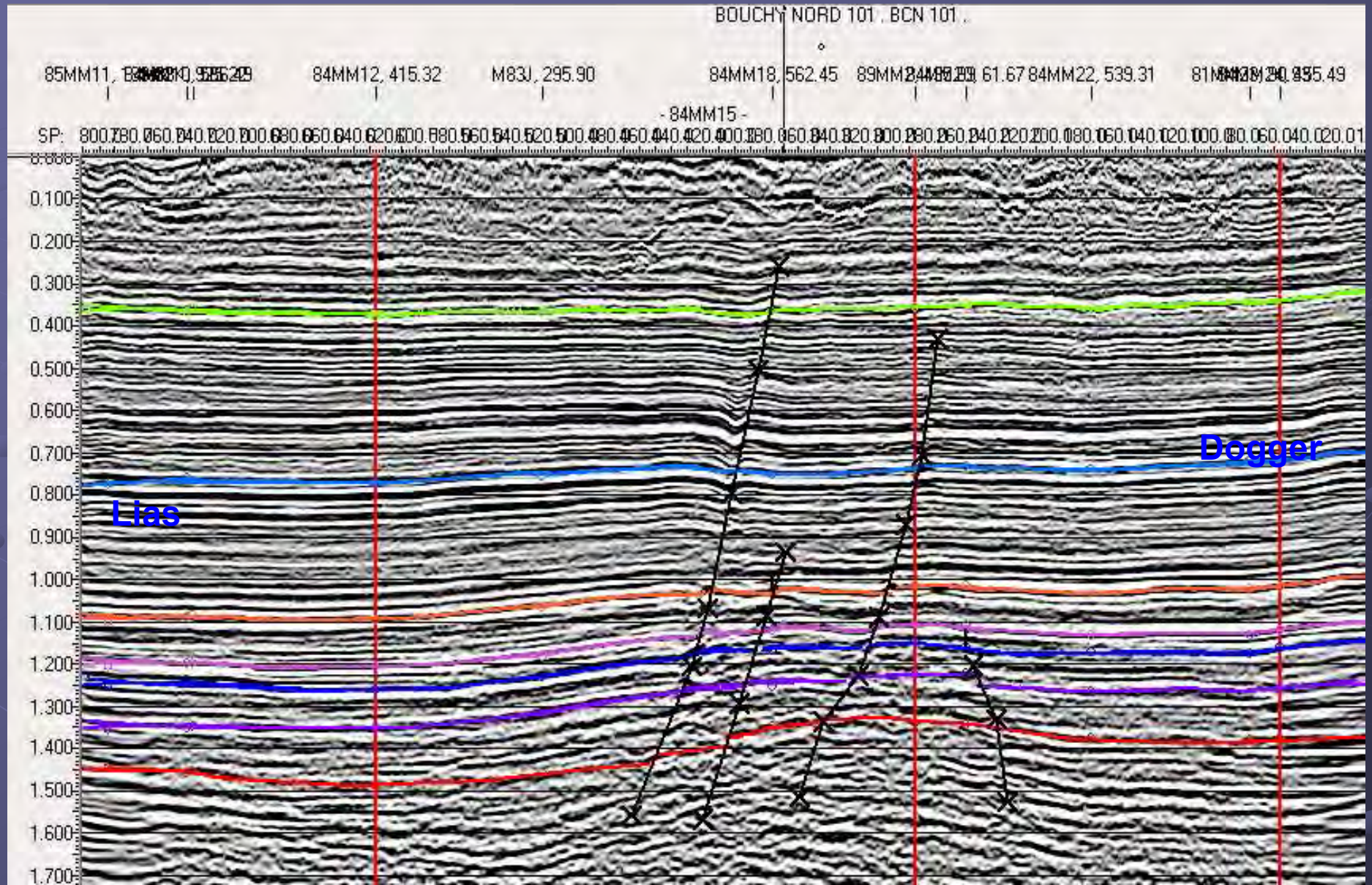


- Seismic profiles acquired in the Paris Basin since 1970

Paris Basin Seismic Example

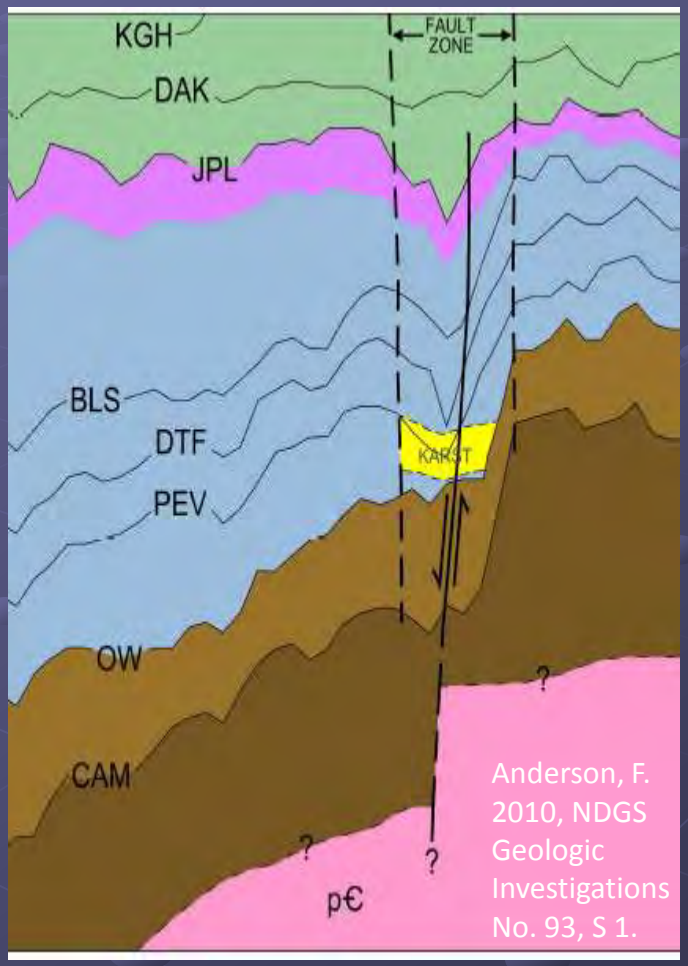


Paris Basin Seismic Example



Seismic Example Bakken Analog

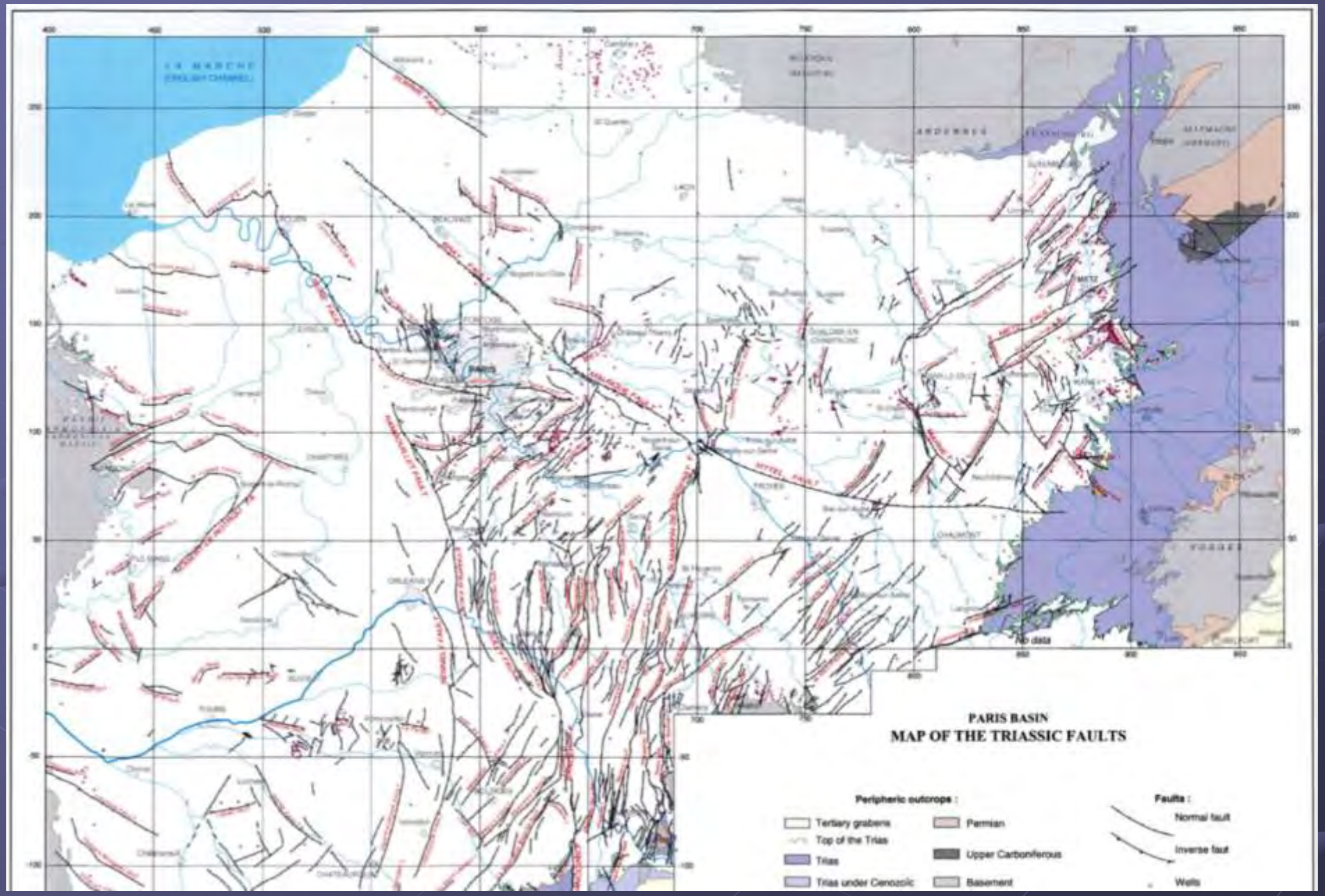
Bakken 2D Seismic Line showing subtle faulting



Bakken Interpretation

In the Bakken Play, basement block movements can migrate upward and be observed on the surface as lineaments. This character is also observed in the Paris Basin.

Paris Basin Fault Map at Triassic



Paris Basin – Sh max

Borehole breakout analysis indicates stress anisotrophy – Sh max NW-SE

Critical Success Factors

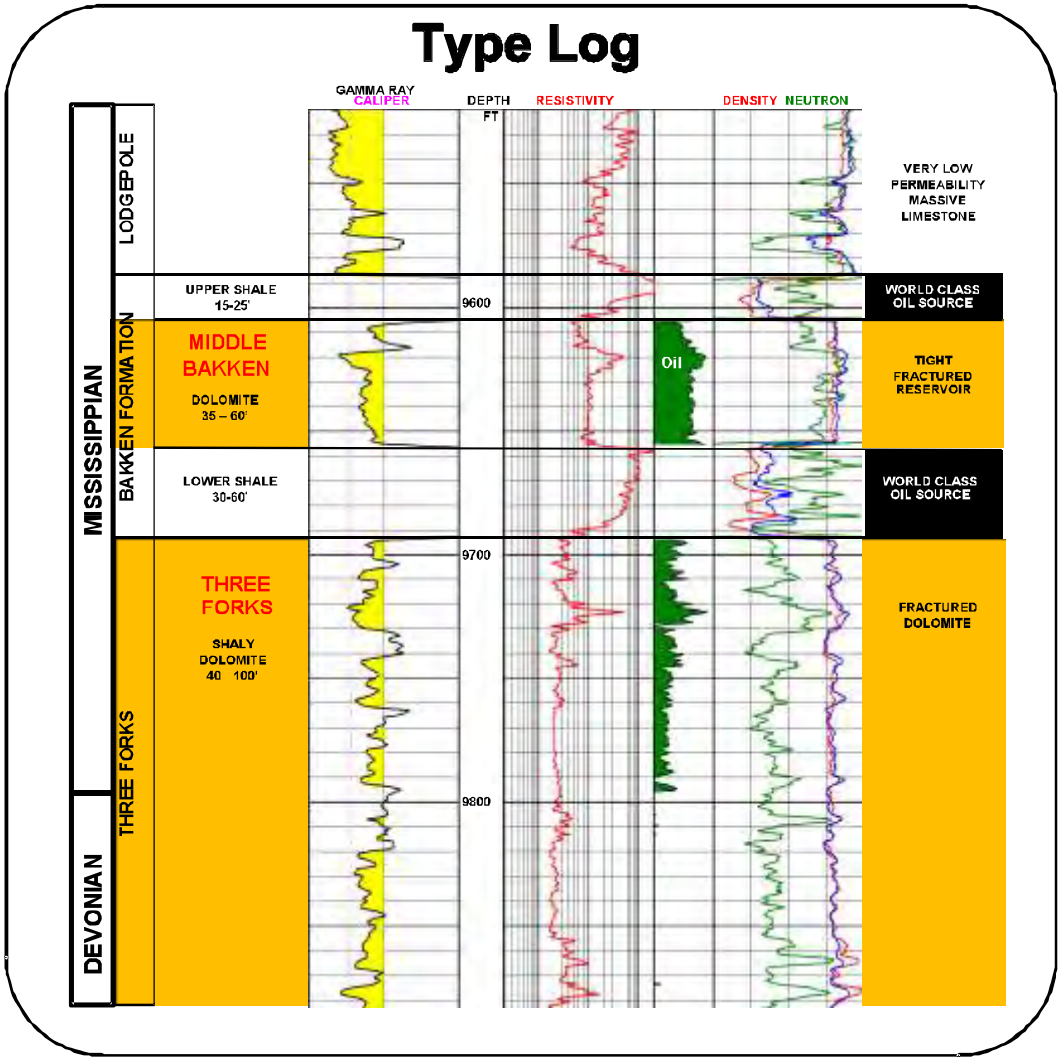
Oil Shale Plays

- OOIP …. Need significant resource
- Thickness …. Frac Containment- Zonal Sep & Resource
- Natural Fractures …. Storage & Transport
- Maturation …. Mature Kerogen - Active generation?
- Catagenesis …. Kerogen maturation
- Stress – Anisotropy …. Orientation(s) of frac vs wellbore
- Brittleness …. High Young's and Low Poisson's ... please?
- Mineralogy …. Clays, Type-Volume, Pyrite, Calcite fill?
- Permeability …. Pore Throats vs Micro Fractures
- Oil Gravity – Viscosity …. Fluid flow-recovery efficiency

Paris Basin
Bakken Analog Study

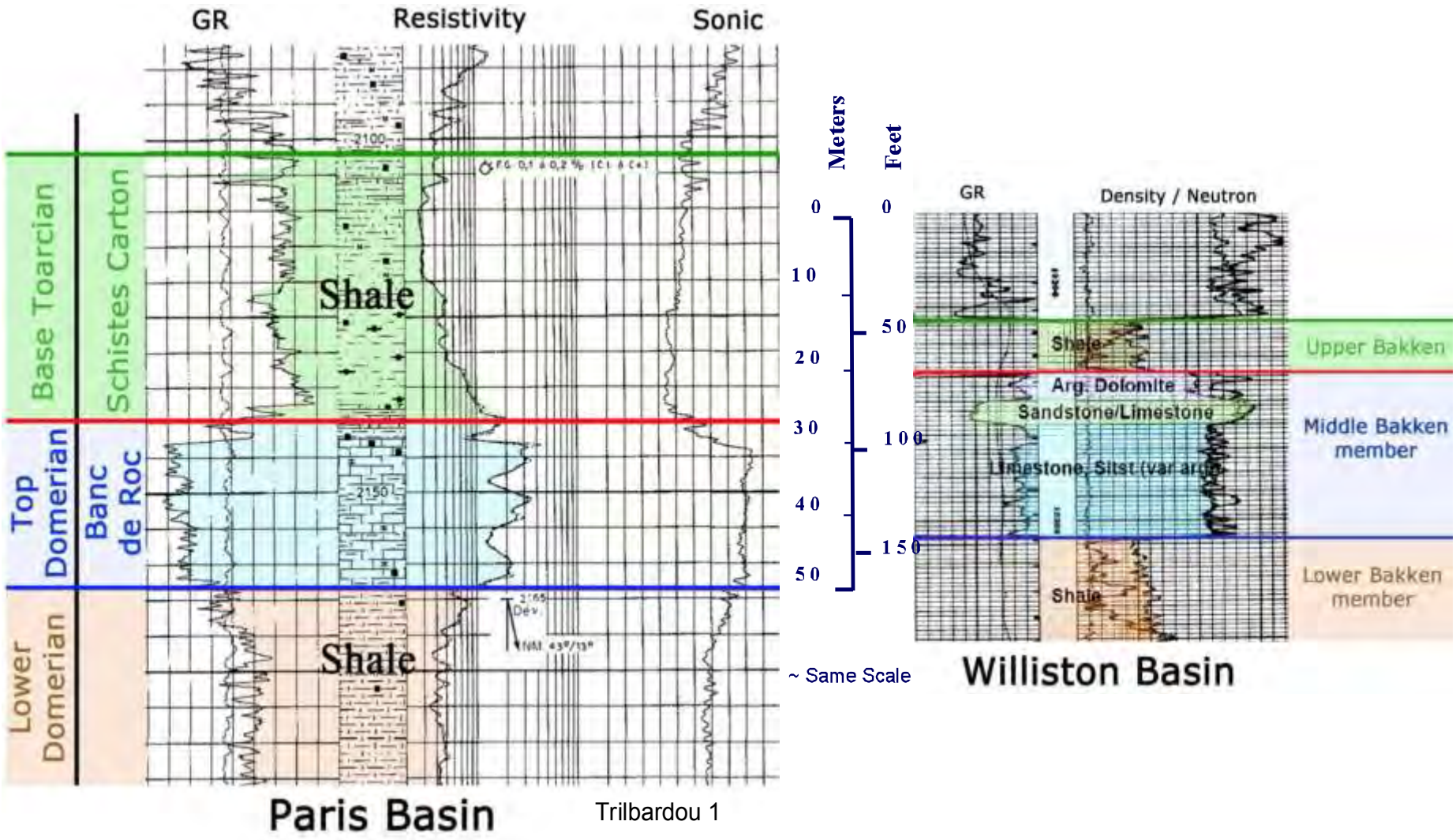
Bakken Analog – Similar Stratigraphic Configuration

Horizontal Bakken/Three Forks

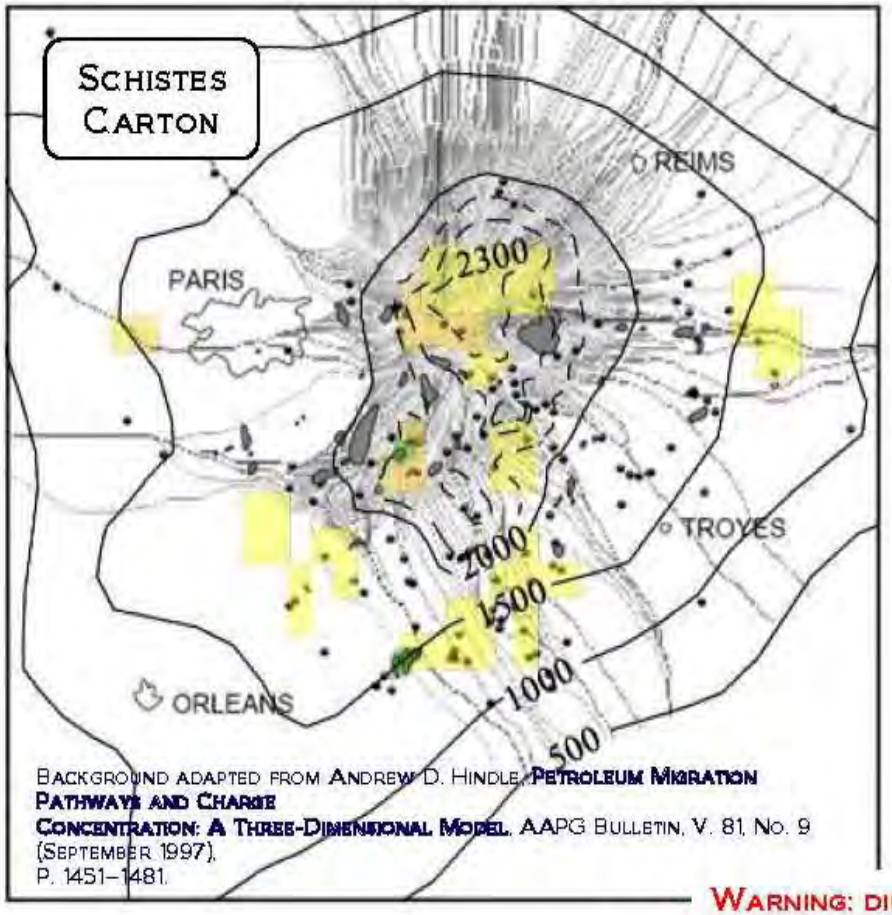


- World Class Oil Shales Sourced Both Bakken and Three Forks Formations
- Bakken Dolomite Average Oil-in-Place 7.0MM Barrels/Section
- Three Forks Estimated Average Oil-in-Place 6.5MM Barrels/Section

Paris Basin – Bakken Comparison



Paris Basin-Bakken Burial Depth Comparison



BACKGROUND ADAPTED FROM ANDREW D. HINDLE, **PETROLEUM MIGRATION PATHWAYS AND CHARGE CONCENTRATION: A THREE-DIMENSIONAL MODEL**, AAPG BULLETIN, V. 81, NO. 9 (SEPTEMBER 1997), P. 1451–1481.

WARNING: DIFFERENT SCALE!

Oil Field Oil Show 0 50 km Oil Discovery 0 100 km

CONTOUR INTERVAL: 500 M

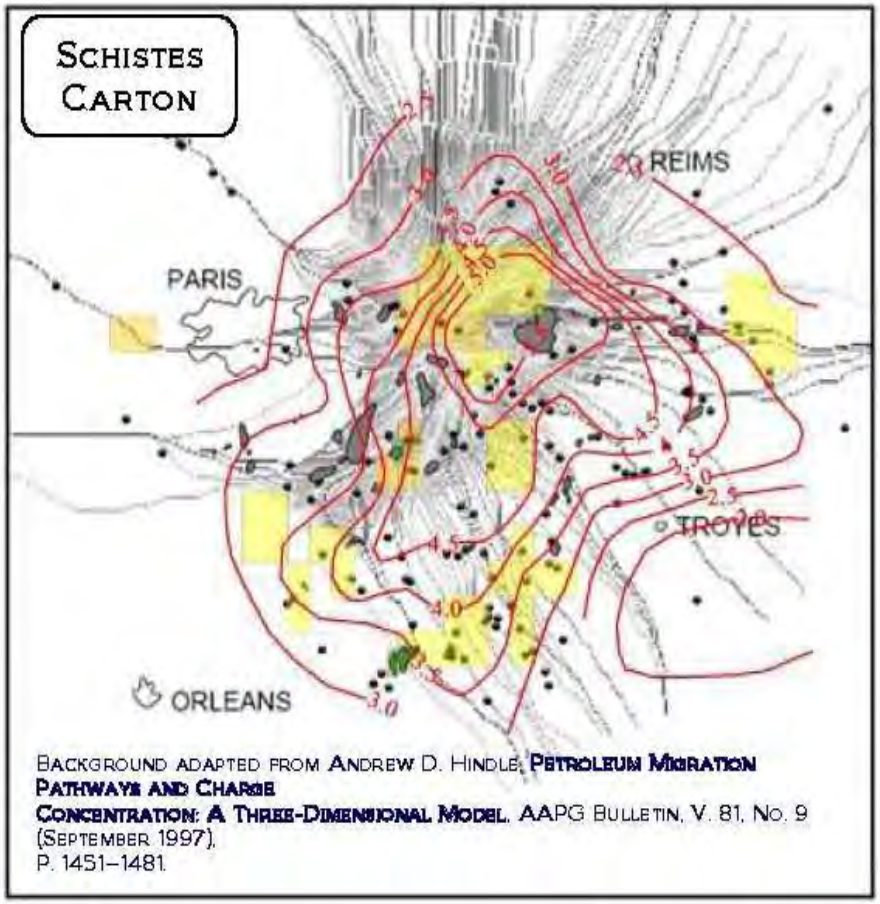
FROM G. BESSEREAU, **PARIS BASIN REGIONAL REPORT**, INSTITUT FRAÇAIS DU PÉTROLE, AUGUST 1996

FROM FRED F. MEISSNER AND RICHARD B. BANKS, **COMPUTER SIMULATION OF HYDROCARBON GENERATION, MIGRATION, AND ACCUMULATION UNDER HYDRODYNAMIC CONDITIONS**, ORAL PRESENTATION AT AAPG INTERNATIONAL CONFERENCE AND EXHIBITION, OCTOBER 15-18, 2000, BALI, INDONESIA

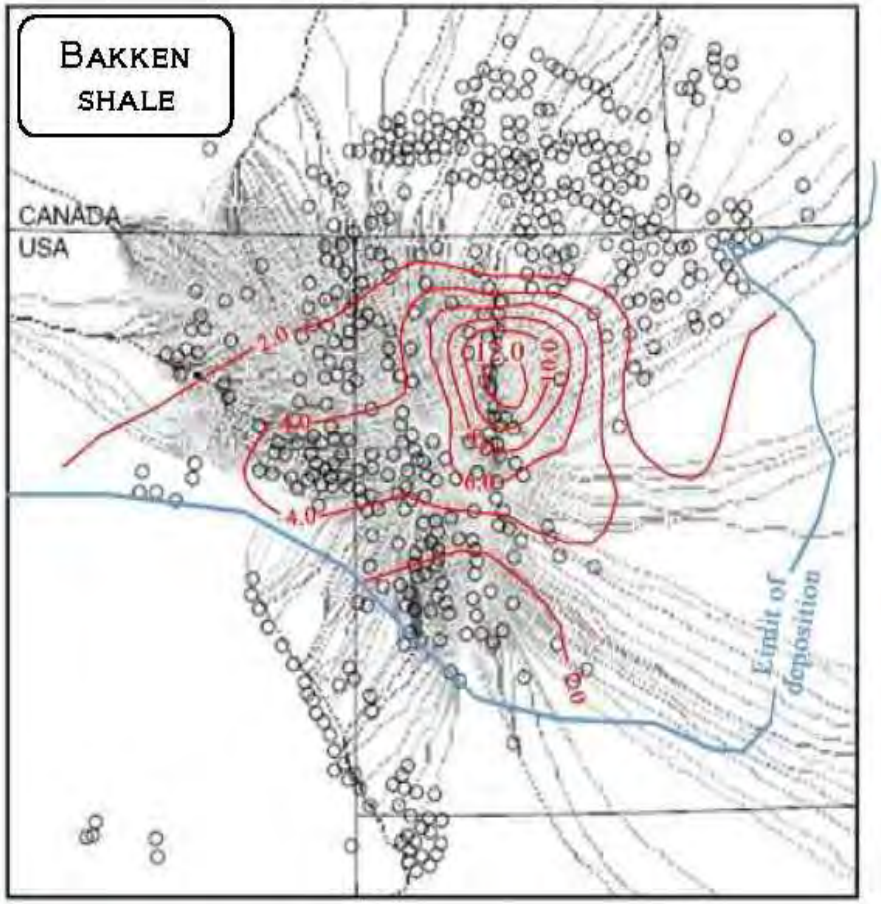
PARIS BASIN

WILLISTON BASIN

Paris Basin – Bakken TOC Comparison



Background adapted from Andrew D. Hindle, **Petroleum Migration Pathways and Charge Concentration: A Three-Dimensional Model**, AAPG Bulletin, V. 81, No. 9 (September 1997), P. 1451–1481.



Oil Field Oil Show 0 50 km TOC IN WEIGHT % Oil Discovery 0 100 km

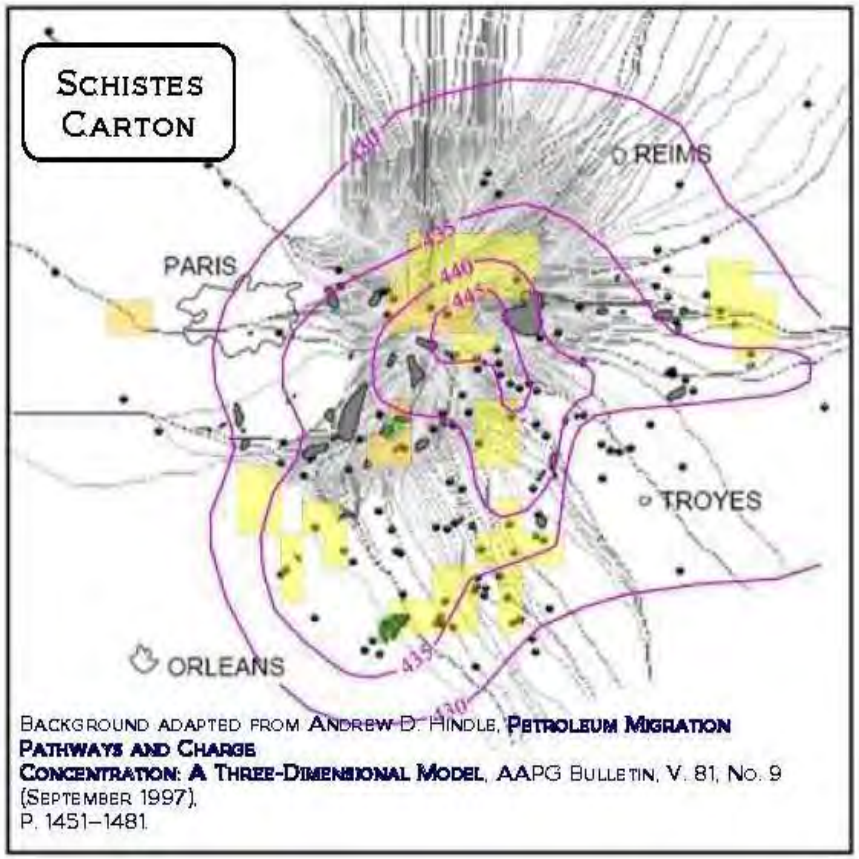
From G. Bessereau, **Paris Basin Regional Report**, Institut Fraçais du pétrole, August 1996

From Fred F. Meissner and Richard B. Banks, **Computer Simulation of Hydrocarbon Generation, Migration, and Accumulation under Hydrodynamic Conditions**, Oral Presentation at AAPG International Conference and Exhibition, October 15-18, 2000, Bali, Indonesia

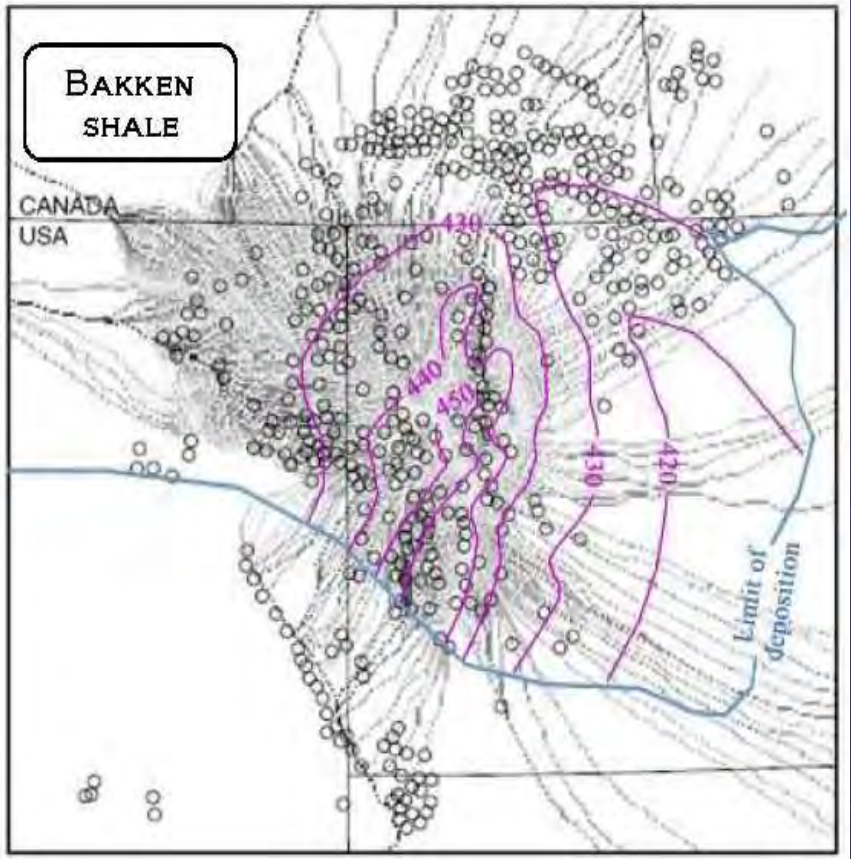
Paris Basin

Williston Basin

Paris Basin – Bakken Tmax Comparison



Background adapted from Andrew D. Hindle, **Petroleum Migration Pathways and Charge Concentration: A Three-Dimensional Model**, AAPG Bulletin, V. 81, No. 9 (September 1997), P. 1451–1481.



Oil Field Oil Show 0 50 km

Tmax in °C

Oil Discovery 0 100 km

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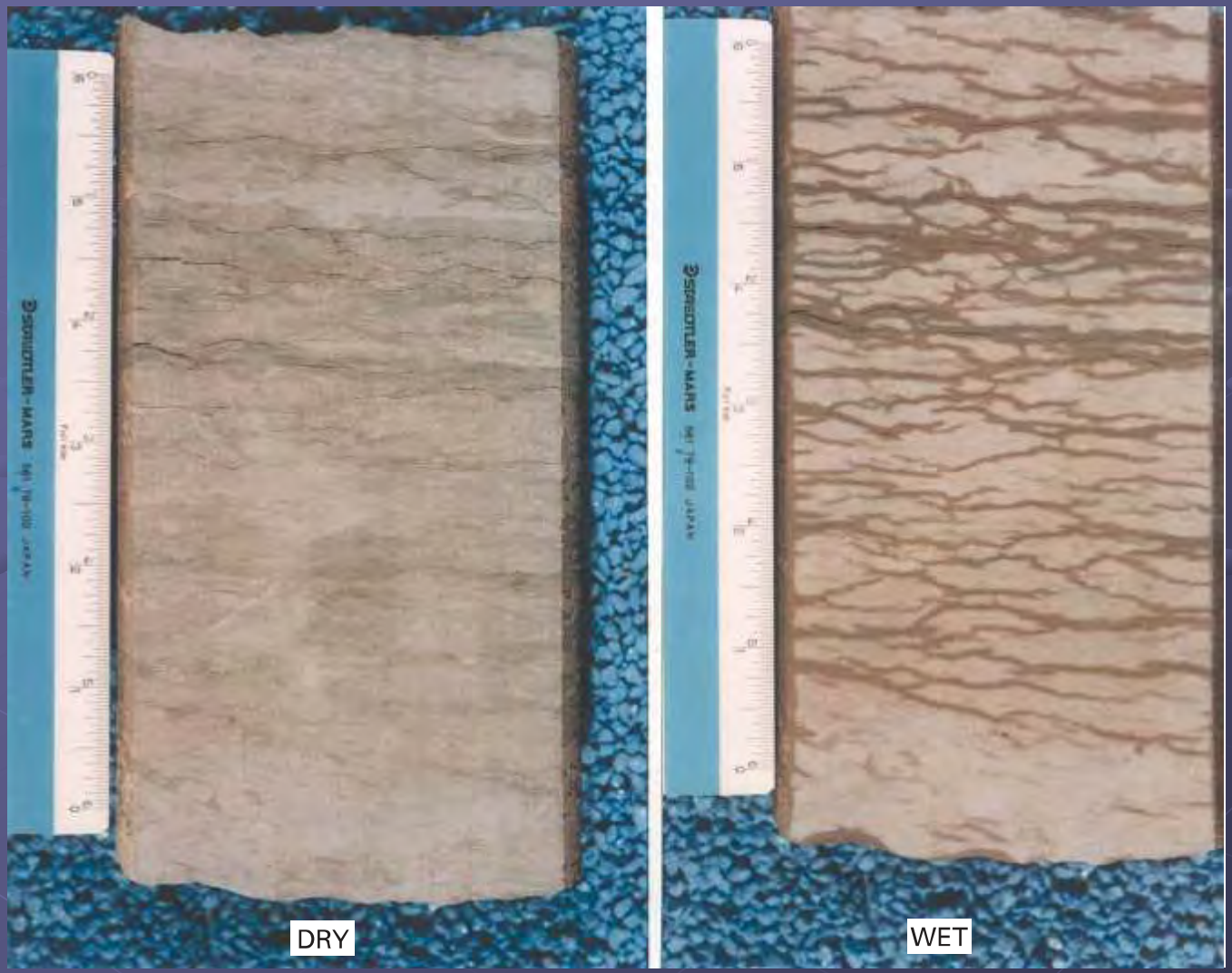
Paris Basin

Williston Basin

Tmax corresponds to the temperature of maximum of hydrocarbon formation during the programmed pyrolysis run.

Bakken Analog – Oil Production from Source Rocks

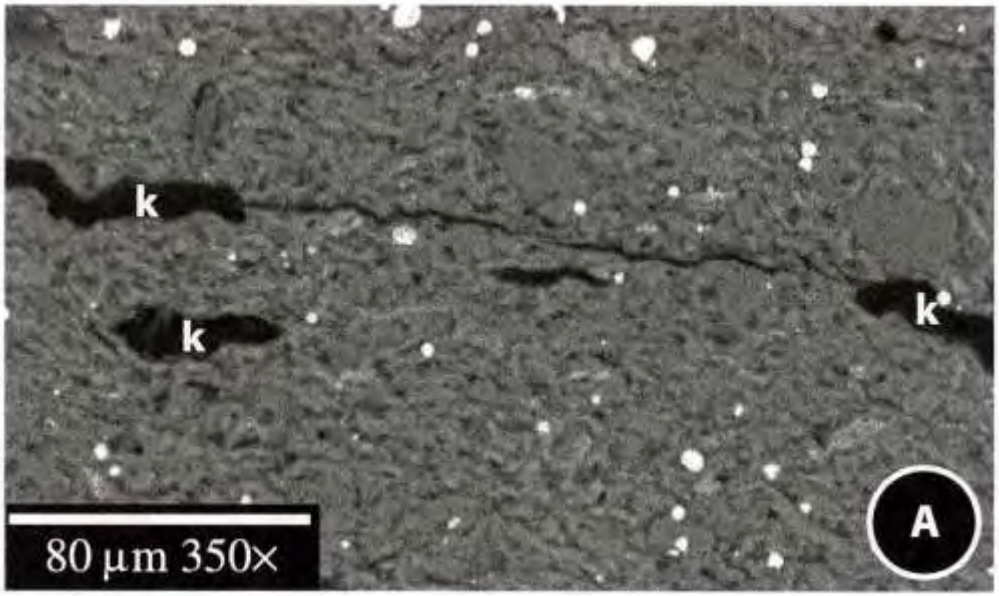
Micro-fractures in Bakken Formation

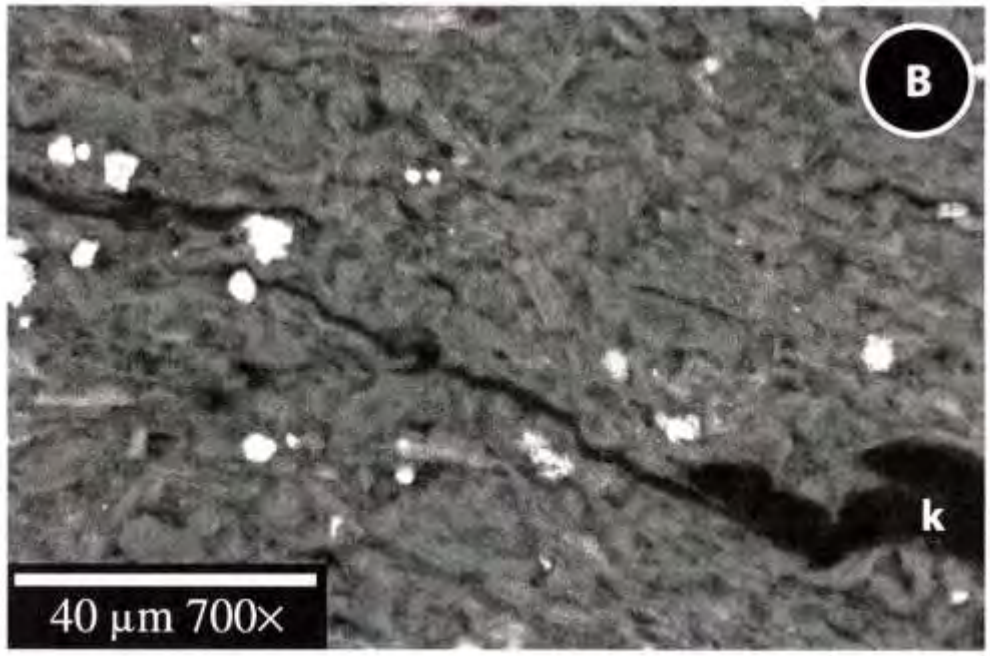


Slabbed sandstone displaying reticulated horizontal fracture network in dry and wet condition. Sample from Bakken Middle Member (Shell 33-23-154 USA, Sec 23 T146N R104W).

Why Maturity Matters

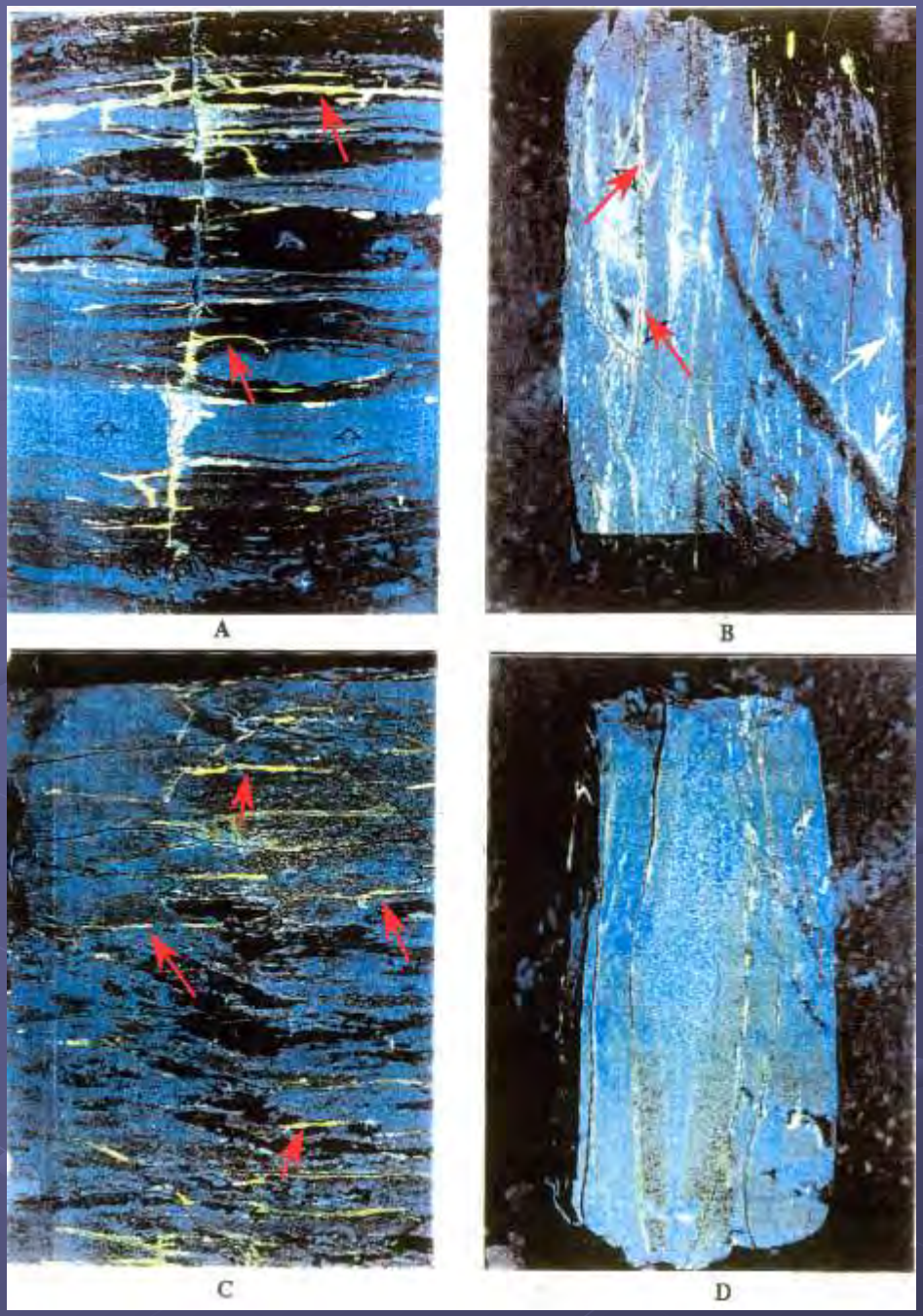
- ***Catagenesis in mature source rocks***
- ***Large strength anisotropy***
- ***Super-lithostatic pore pressure***
- ***Horizontal micro-fracture propagation***





- Catagenesis in shale source rocks creates its own porosity and permeability.
- Horizontal micro-fractures coalesce and connect with vertical macro-fractures.
- This mechanism accounts for migration of oil from impermeable source rocks

Backscatter electron images of polished finely laminated black shale samples showing micro-fractures that have originated within or along the edges of kerogen particles. (Example from Dunkirk Shale – Devonian, New York. After Lash and Engelder 2005)



Whole core example of horizontal oil-filled micro-fractures in mechanical communication with vertical macro-fracture in over-pressured source rock (Tuscaloosa Marine Shale).

(A - 12,325.0-12,325.3') 20% enlargement black light photo of intact vertical fracture and smaller horizontal associated micro-fractures with gold oil fluorescence.

(B- 12,329.5') Gold oil fluorescence along along horizontal fractures

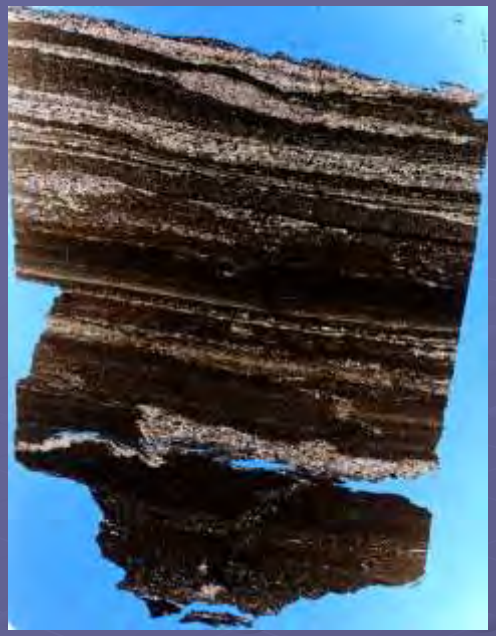
(C- 12,329.5') 4" long core section with horizontal fractures and oil fluorescence.

(D- 12,330') 2" long section of highly pyritized core.

(Red arrow = oil fluorescence White arrow = mineral fluorescence)

From Unocal #1 I.J. Lambert 53-6

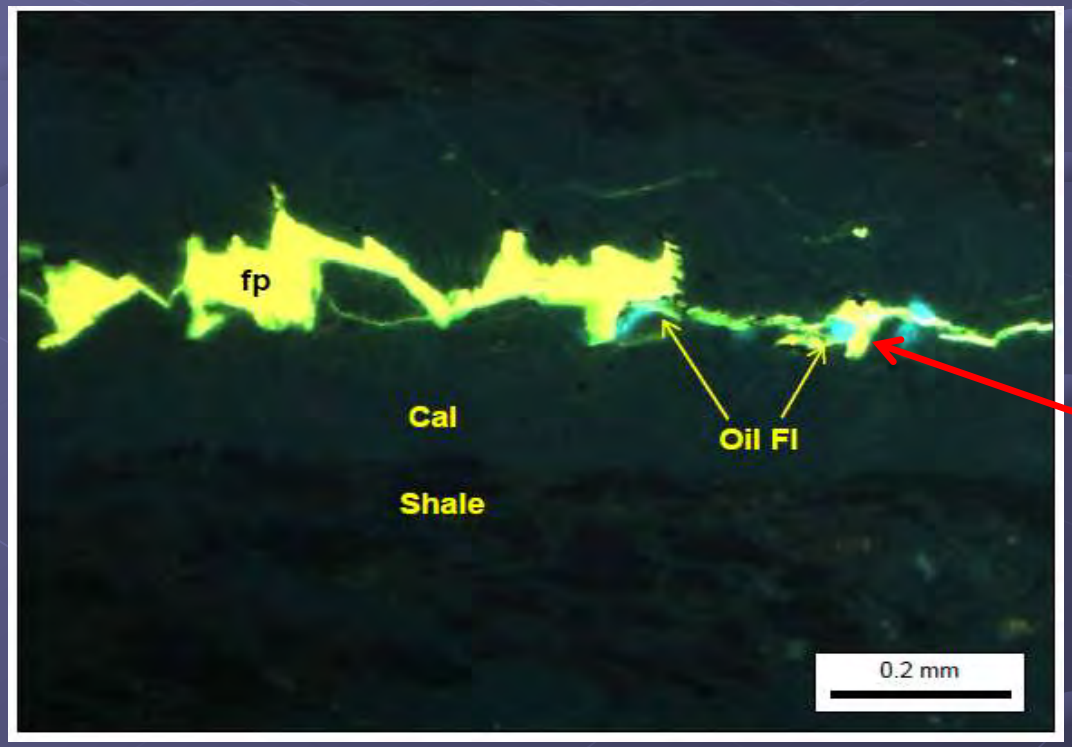
****NOTE** Core was photographed 5 days after retrieval and intensity of fluorescence is diminished due to evaporation. Red arrows highlight oil fluorescence.**



Niobrara thin section photomicrograph example

Catagenesis has propagated horizontal micro-fractures

Pathway and storage for hydrocarbon charge



Thin Sections of Niobrara showing presence of fine grain clastic laminations, natural fractures and oil saturation

Bakken Analogy Summary

Rock Types - Deposition

	Paris Basin Liassic	Bakken
TOC	0-12% (avg 5%)	0-40% (avg 10%)
Tmax	445 deg C	445 deg C
Source Rock	Type II	Type II
Organic Matter	Marine Plankton + Anaerobic Bacteria	Marine Plankton + Anaerobic Bacteria
Depositional Environment	Marine and Oxygen Restricted	Marine and Oxygen Restricted
Adjacent Water Prod Zone	None	Lodgepole

Bakken Analogy Summary

Reservoir Characteristics

	Paris Basin Liassic	Bakken
Brittle Layer	Banc de Roc Lime	Mid Bakken Dolomite
Quartz Content	26 – 58 %	20 – 68 %
Net Meters (ft)	1 – 40 m (4 - 130 ft)	2 – 20 m (7-66 ft)
Porosity %	9 - 12% (avg 10%)	3 – 10% (avg 5%)
Permeability	Up to 5.0 md	0.05 – 0.5 md
Oil Gravity	34 - 38 deg API	42 deg API

Paris Basin France

Premier Unconventional Resource Opportunity?

- Thick, rich, and mature oil source rock
- Structurally simple basin
- Stratigraphy offers reservoir and mechanical lithofacies favorable for exploitation
- Active hydrocarbon generation and slight over-pressure
- Moderate drilling depths
- Existing petroleum production infrastructure
- Proximal premium market

Paris Basin

- Possible multi-billion barrel oil resource
- 3rd largest modern economy in Europe
- Small vocal environmental faction has successfully urged government to ban hydraulic fracture stimulation
- Government slowly “studying” stimulation to develop policy
- Oil resource exploration on hold
- What’s next???????