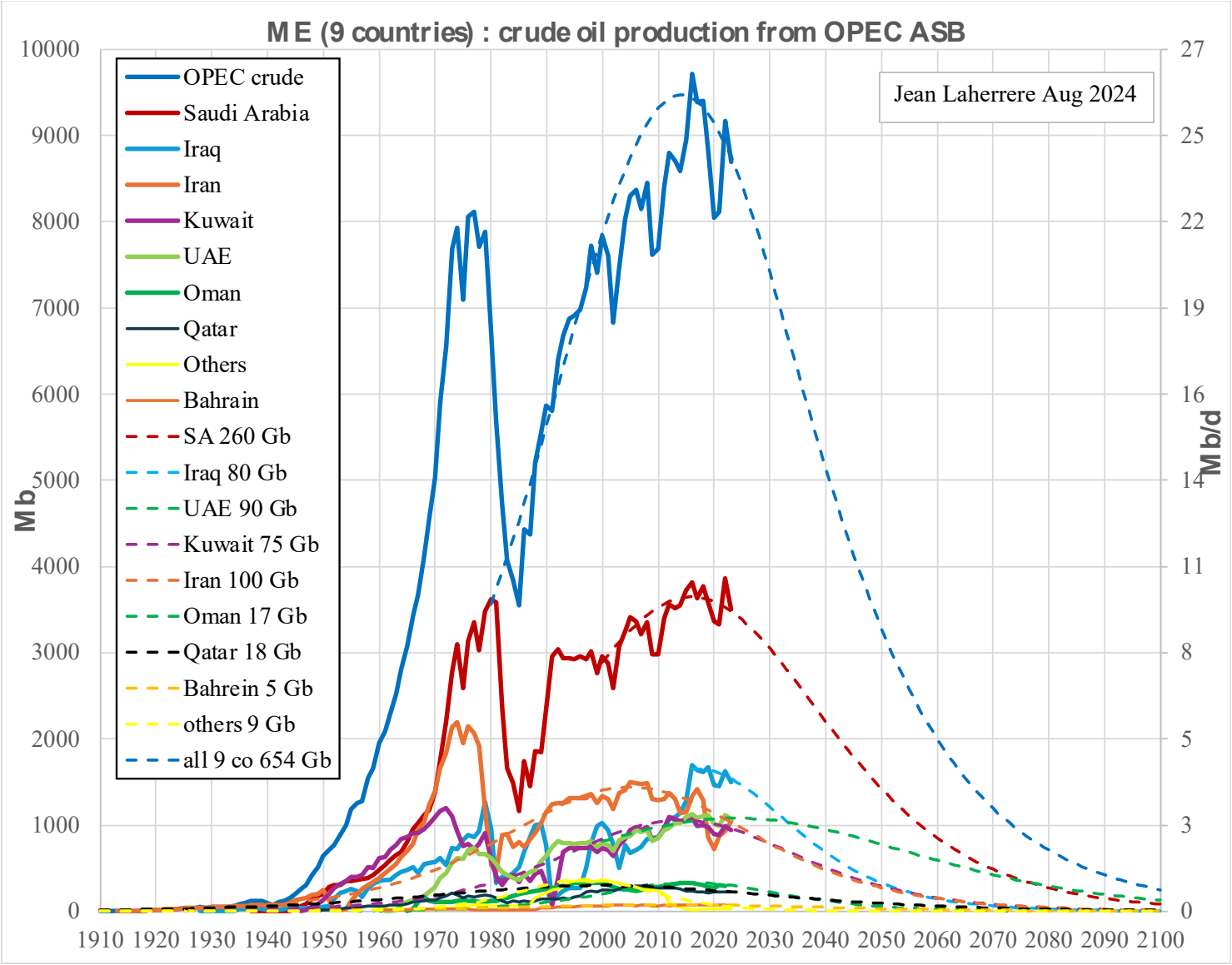
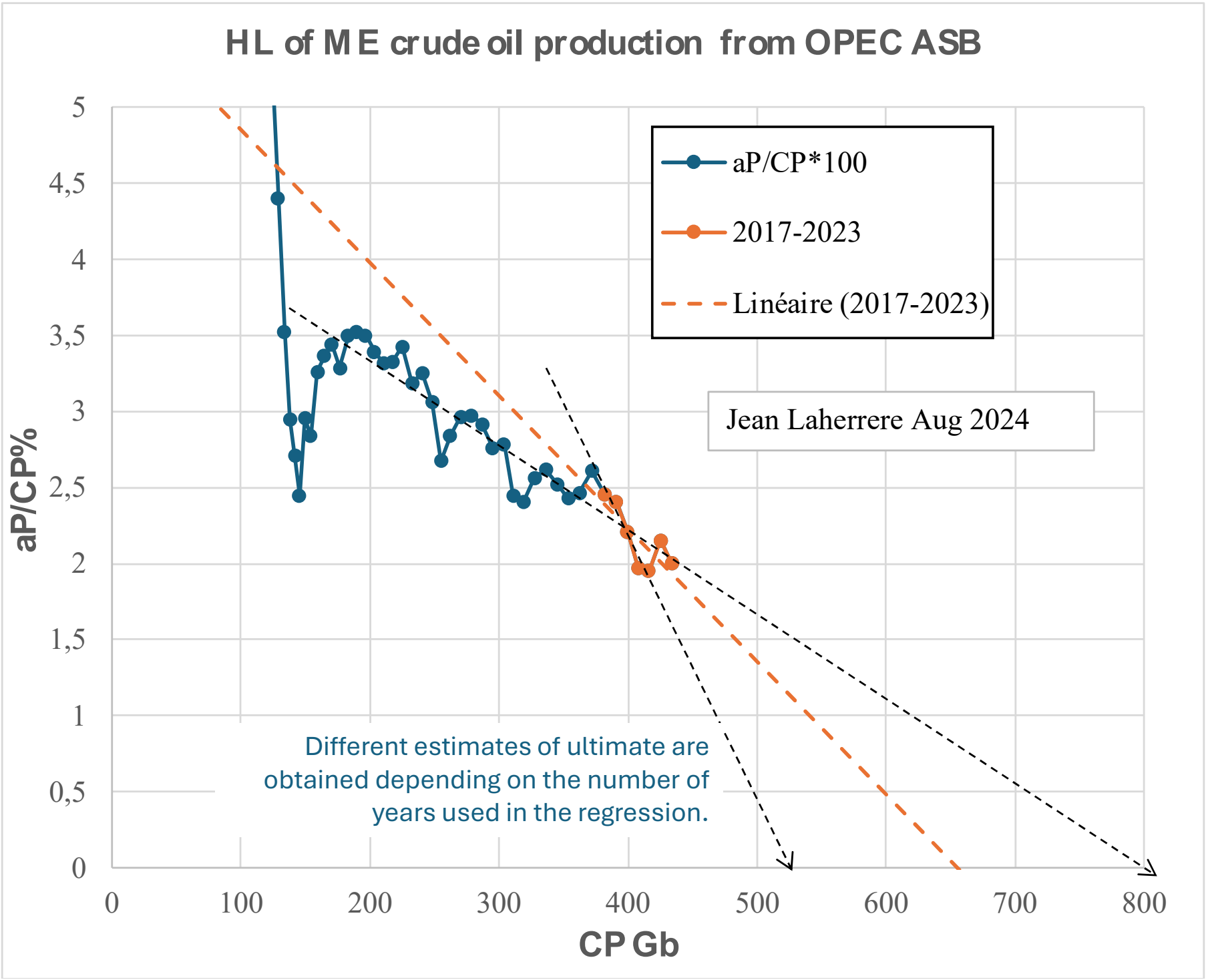
Middle East crude oil production & forecast

Jean Laherrere (+ contribution of Patrick Brocorens)

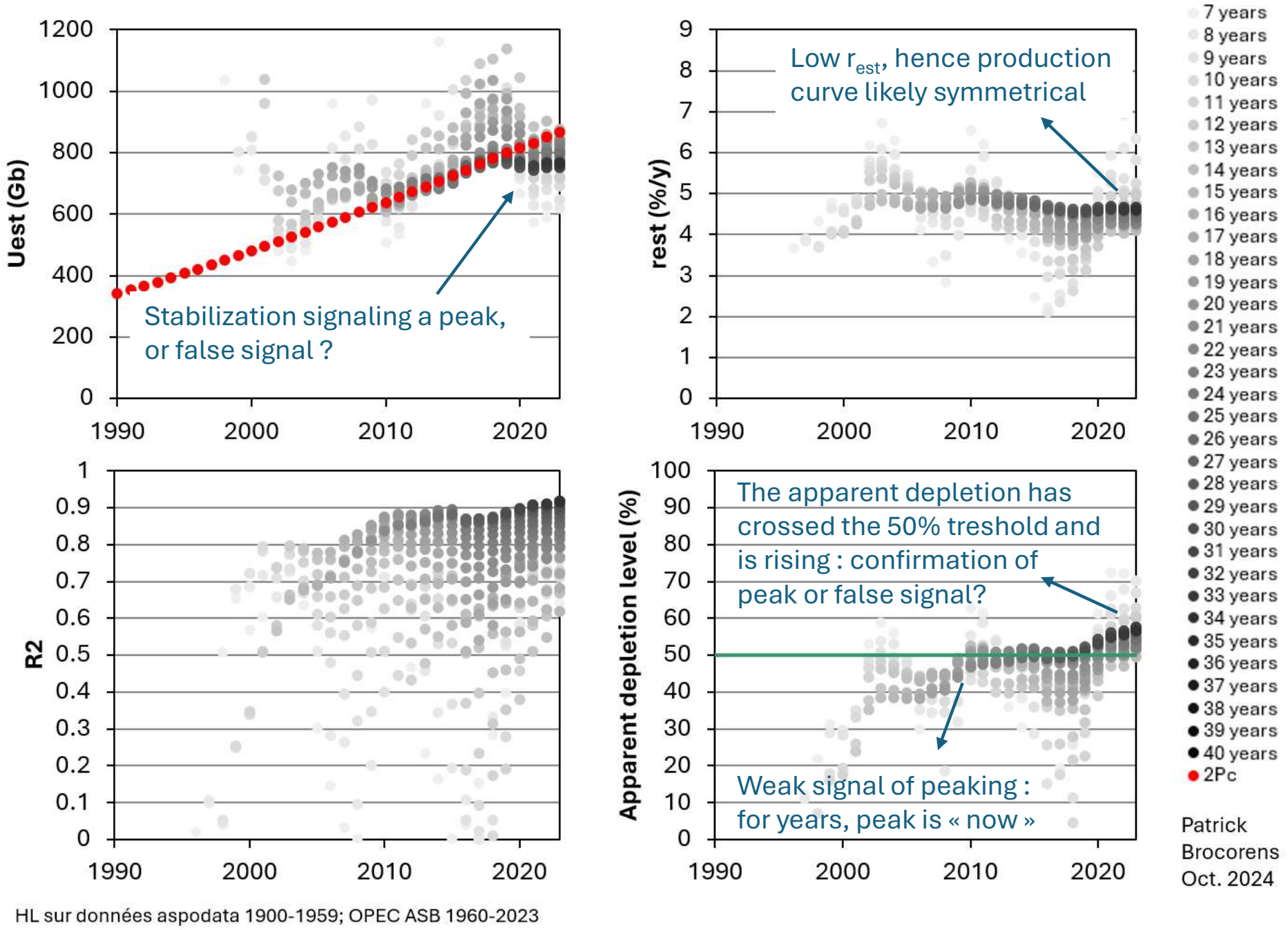
15 octobre 2024

ME crude oil data is from OPEC ASB




HL of M E crude oil production from OPEC ASB
aP/CP*100
2017-2023
Linéaire (2017-2023)
Jean Laherrere Aug 2024
Different estimates of ultimate are obtained depending on the number of years used in the regression.
aP/CP%
CP Gb
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5
0
100
200
300
400
500
600
700
800

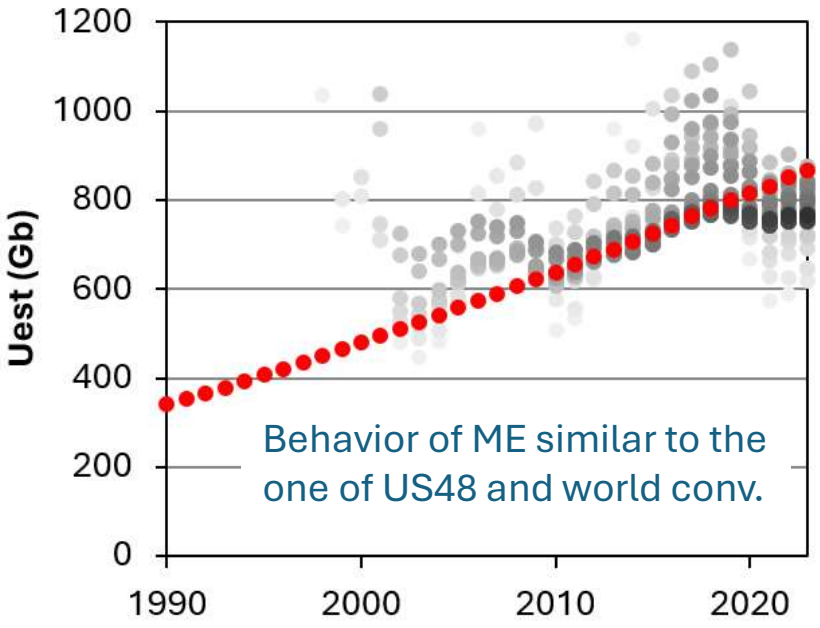
Multiple HL sur ME crude oil production

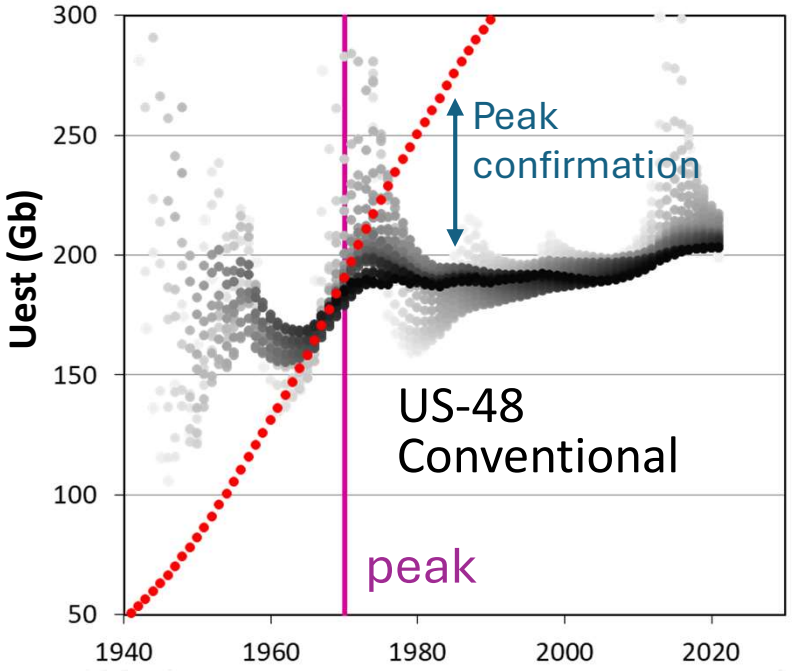


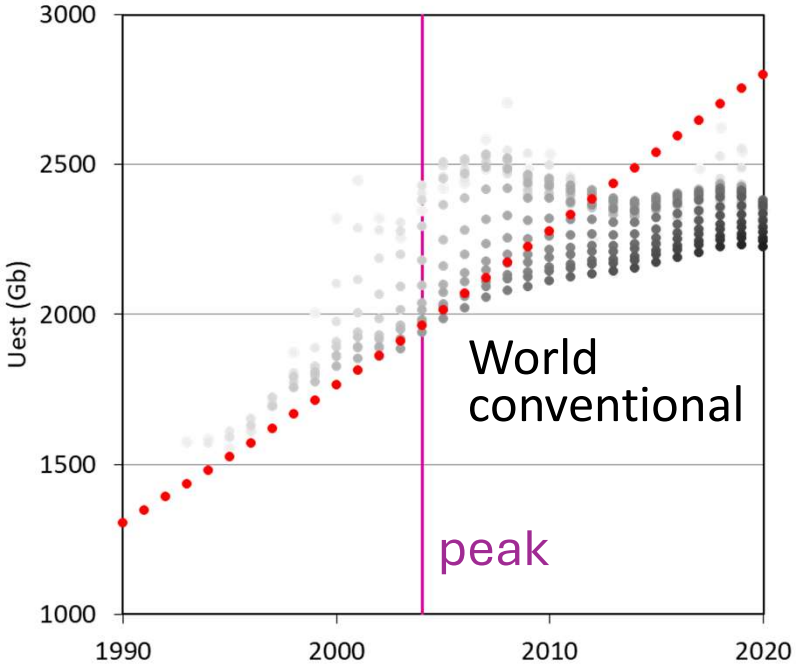
HL sur données aspodata 1900-1959; OPEC ASB 1960-2023

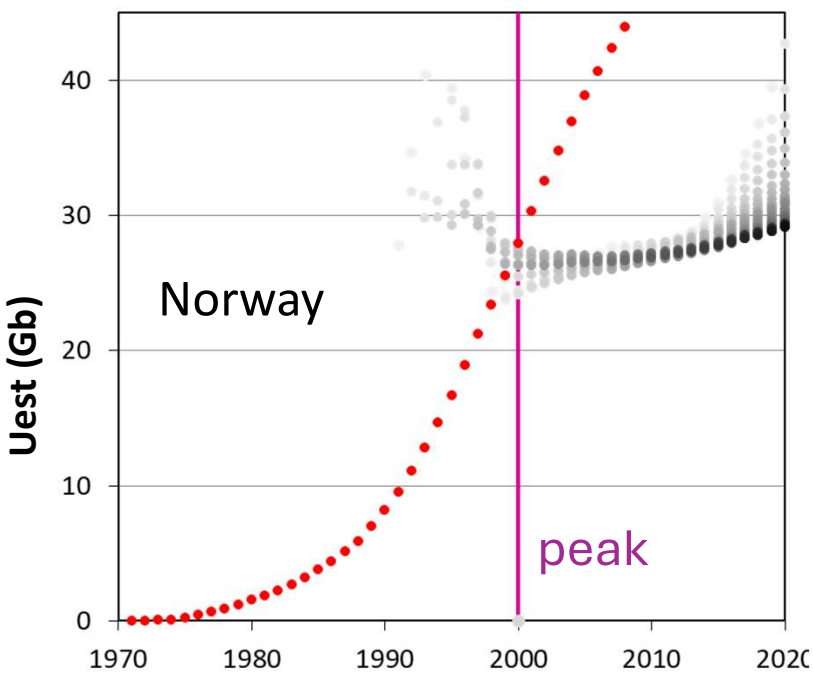
Patrick Brocorens
Oct. 2024

Multiple HL sur ME crude oil production









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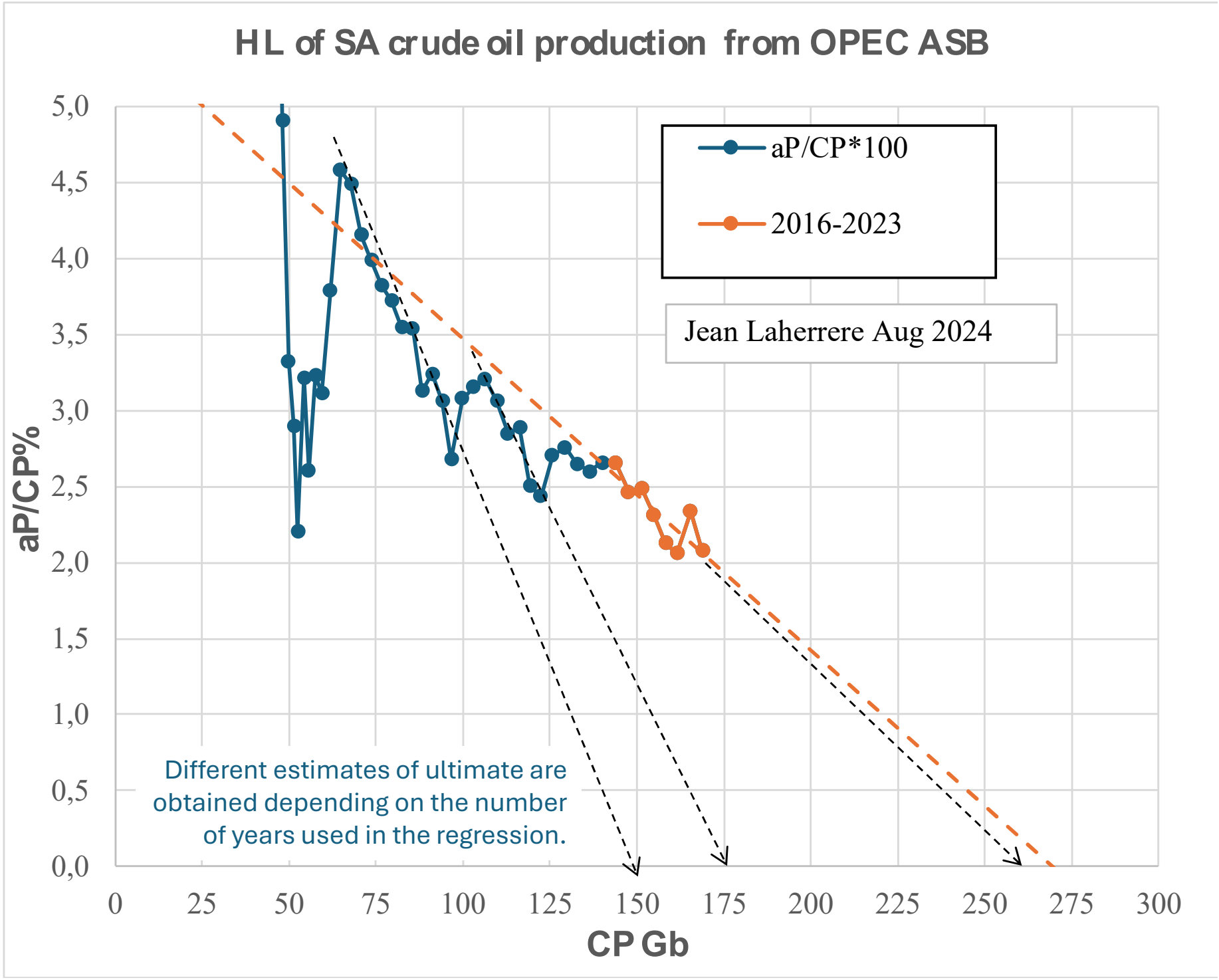
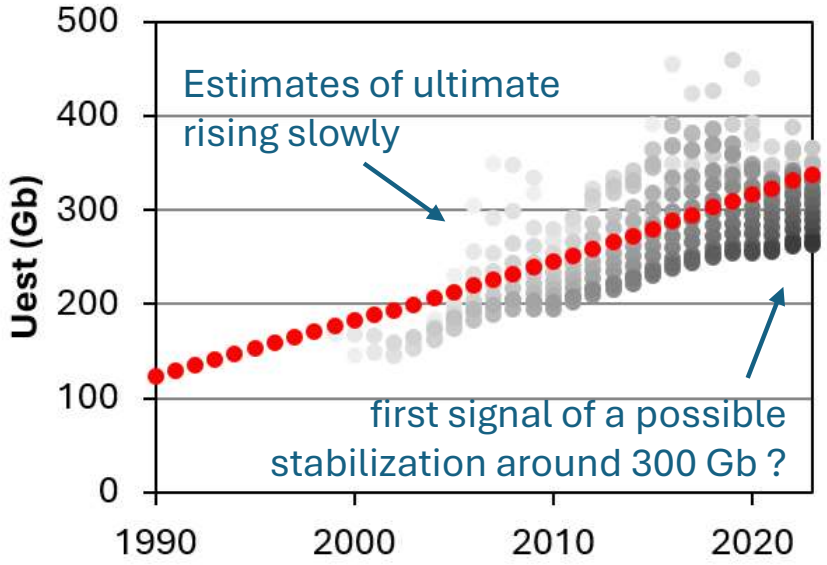
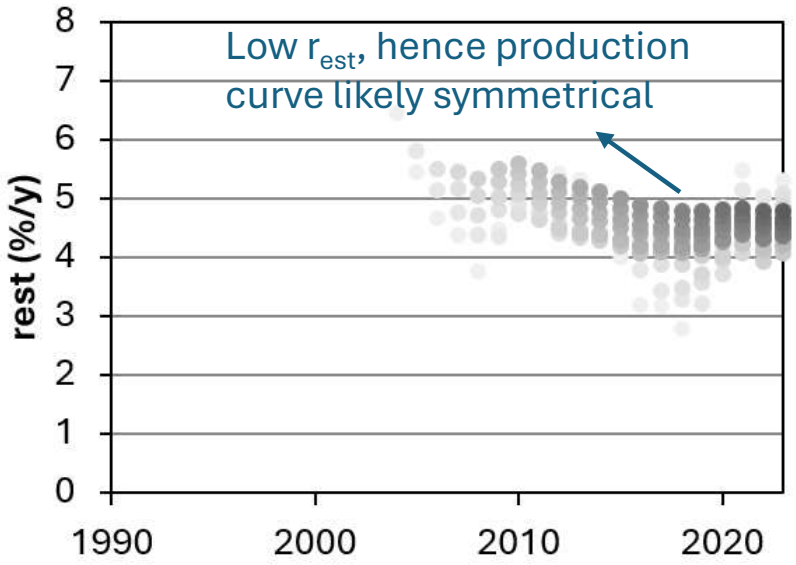
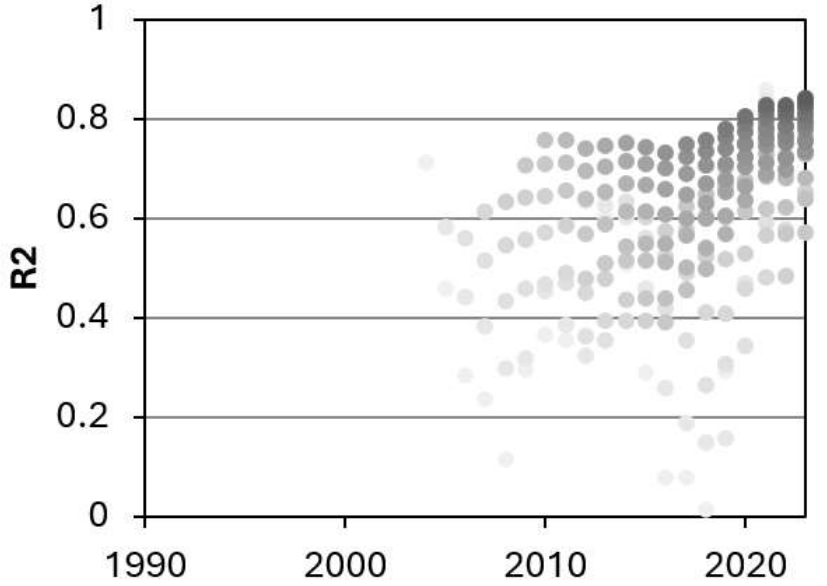
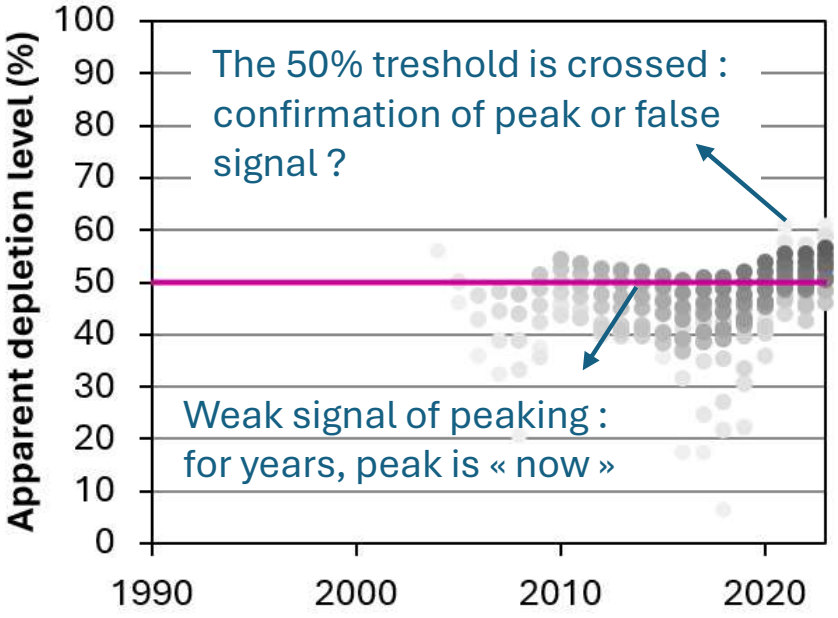

HL of SA crude oil production from OPEC ASB
aP/CP*100
2016-2023
Jean Laherrere Aug 2024
Different estimates of ultimate are obtained depending on the number of years used in the regression.
aP/CP%
CP Gb
5,0
4,5
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
0
25
50
75
100
125
150
175
200
225
250
275
300

Multiple HL sur SA crude oil production









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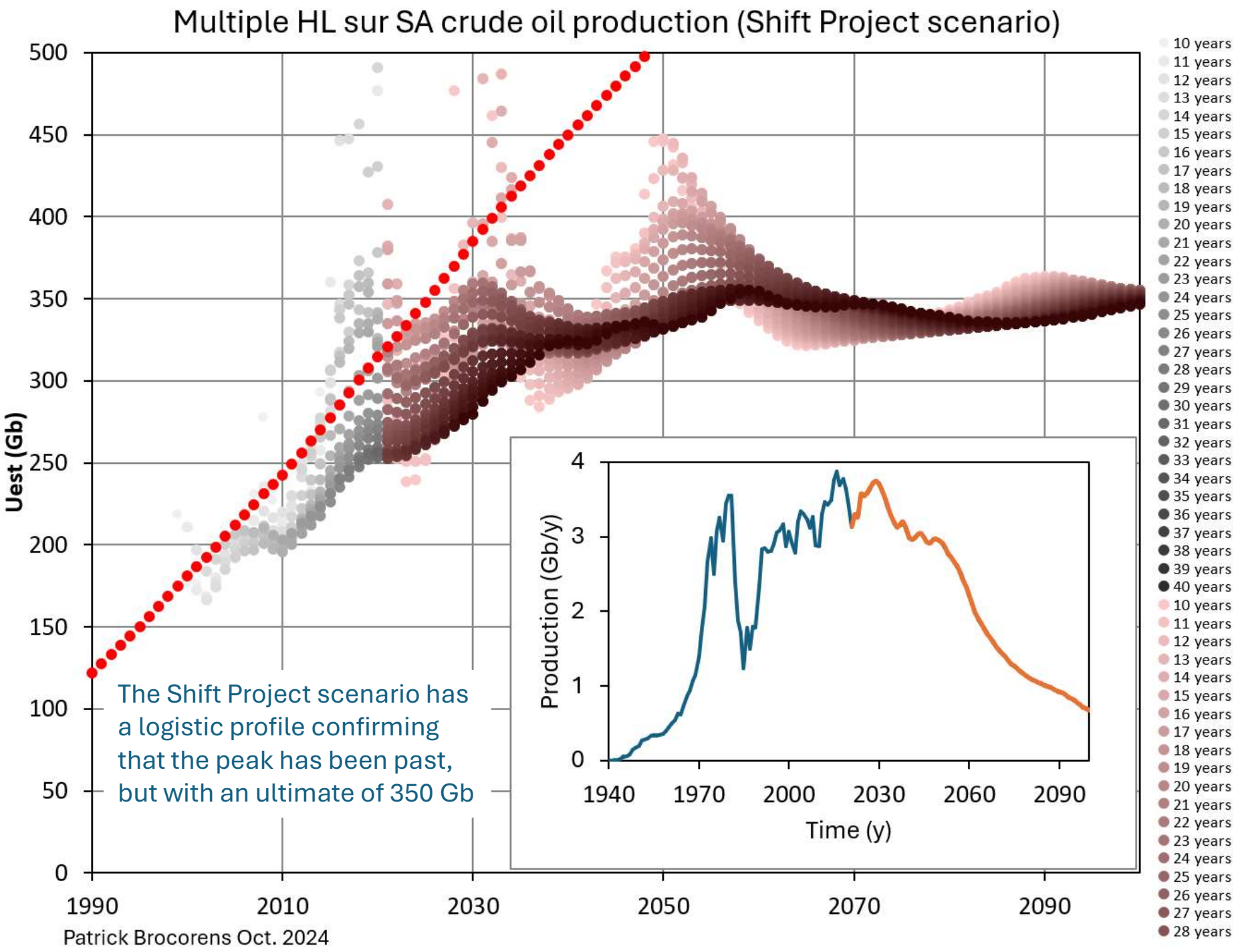
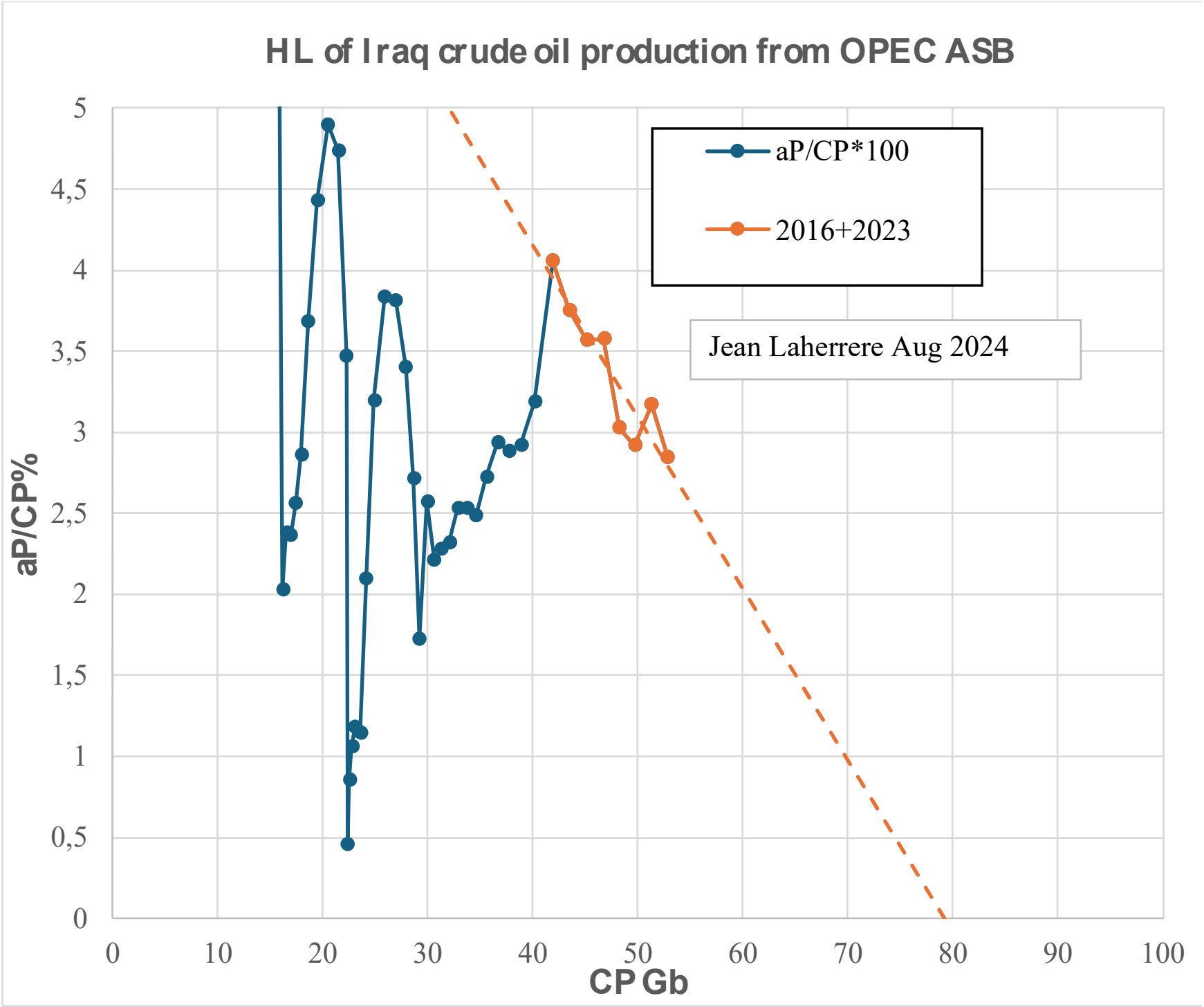
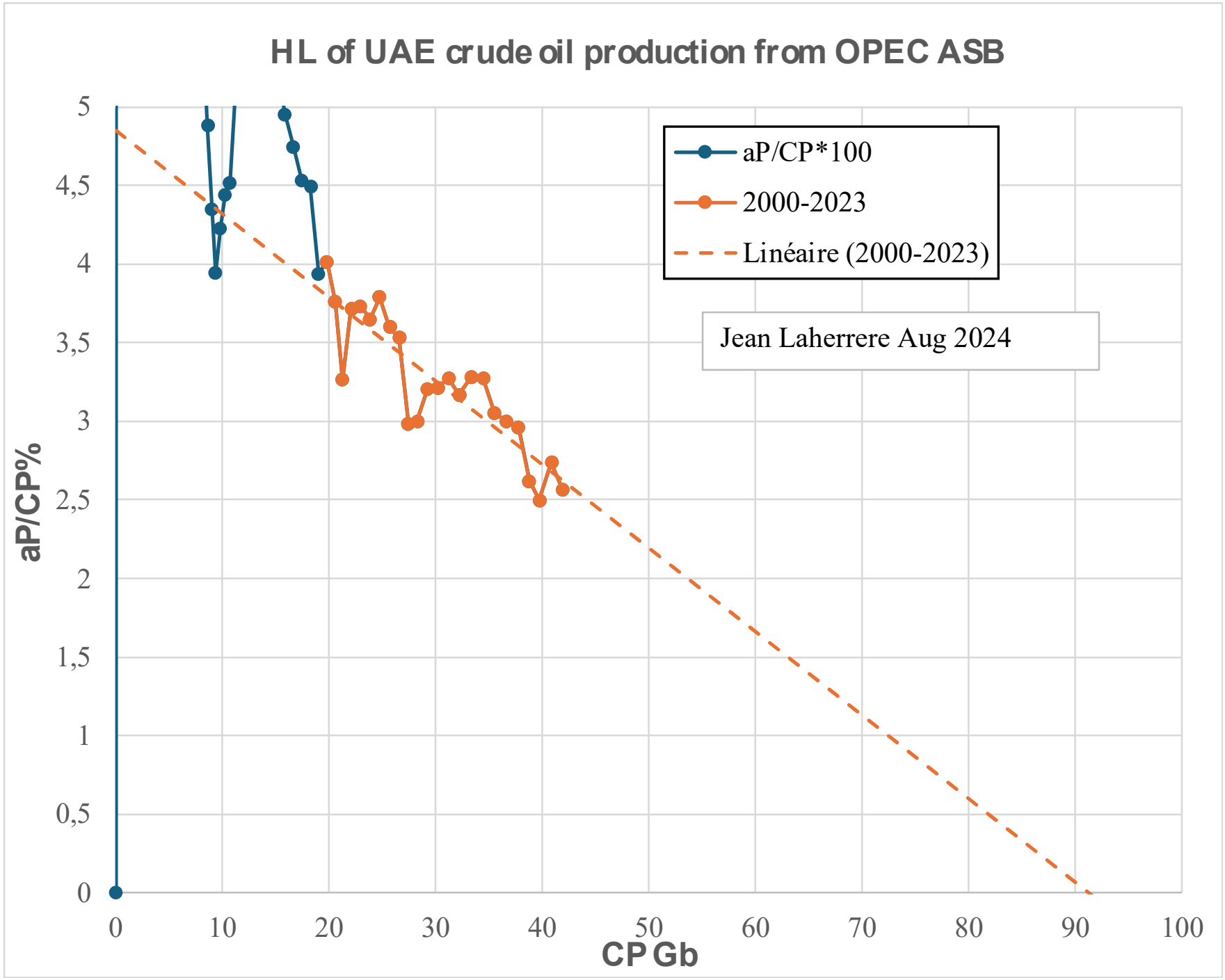
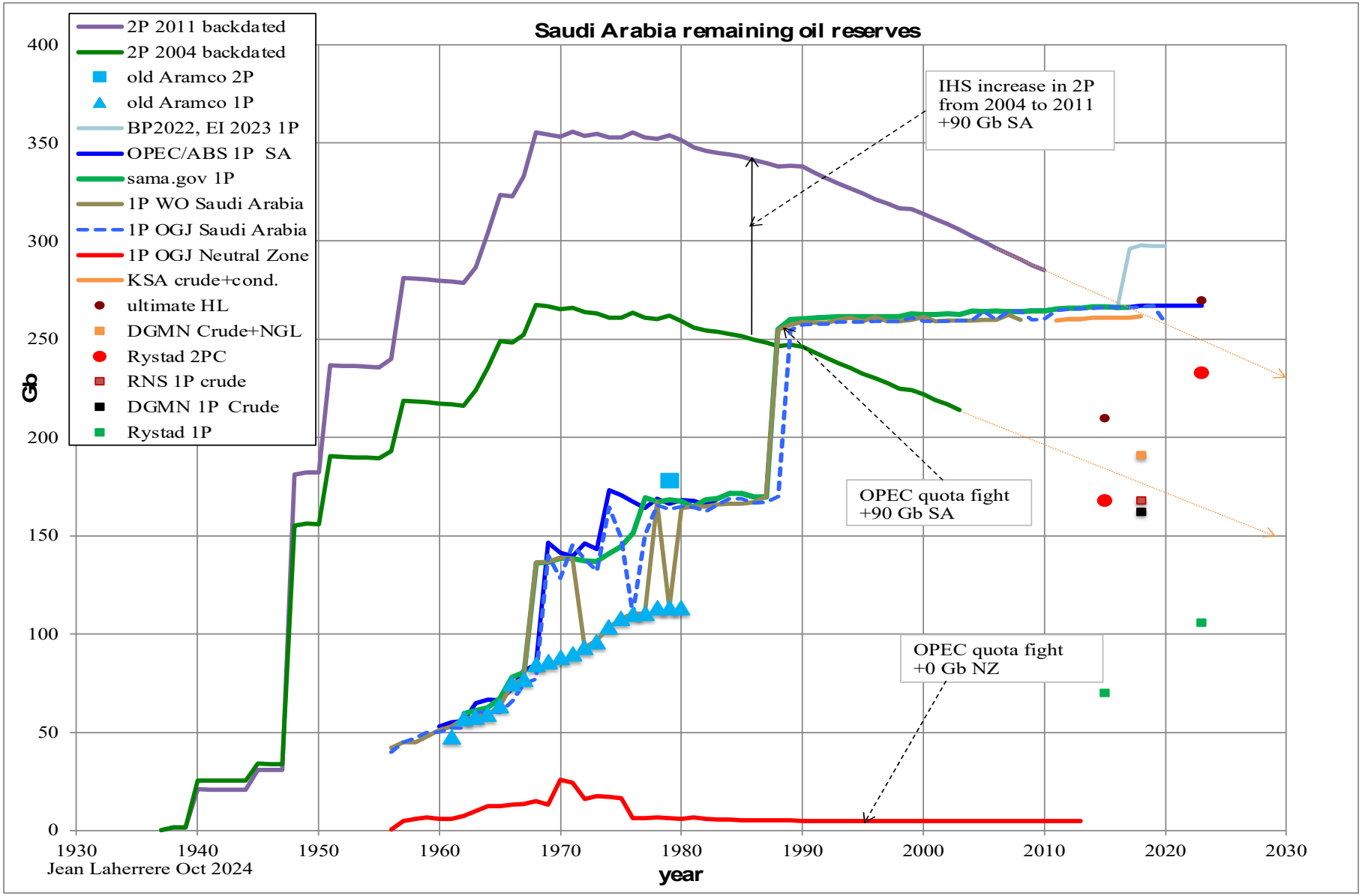
HL sur données aspodata 1900-1959; OPEC ASB 1960-2023


Multiple HL sur SA crude oil production (Shift Project scenario)
Uest (Gb)
500
450
400
350
300
250
200
150
100
50
0
1990
2010
2030
2050
2070
2090
Production (Gb/y)
4
3
2
1
0
1940
1970
2000
2030
2060
2090
Time (y)
The Shift Project scenario has a logistic profile confirming that the peak has been past, but with an ultimate of 350 Gb
Patrick Brocorens Oct. 2024
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years
26 years
27 years
28 years
29 years
30 years
31 years
32 years
33 years
34 years
35 years
36 years
37 years
38 years
39 years
40 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years
26 years
27 years
28 years

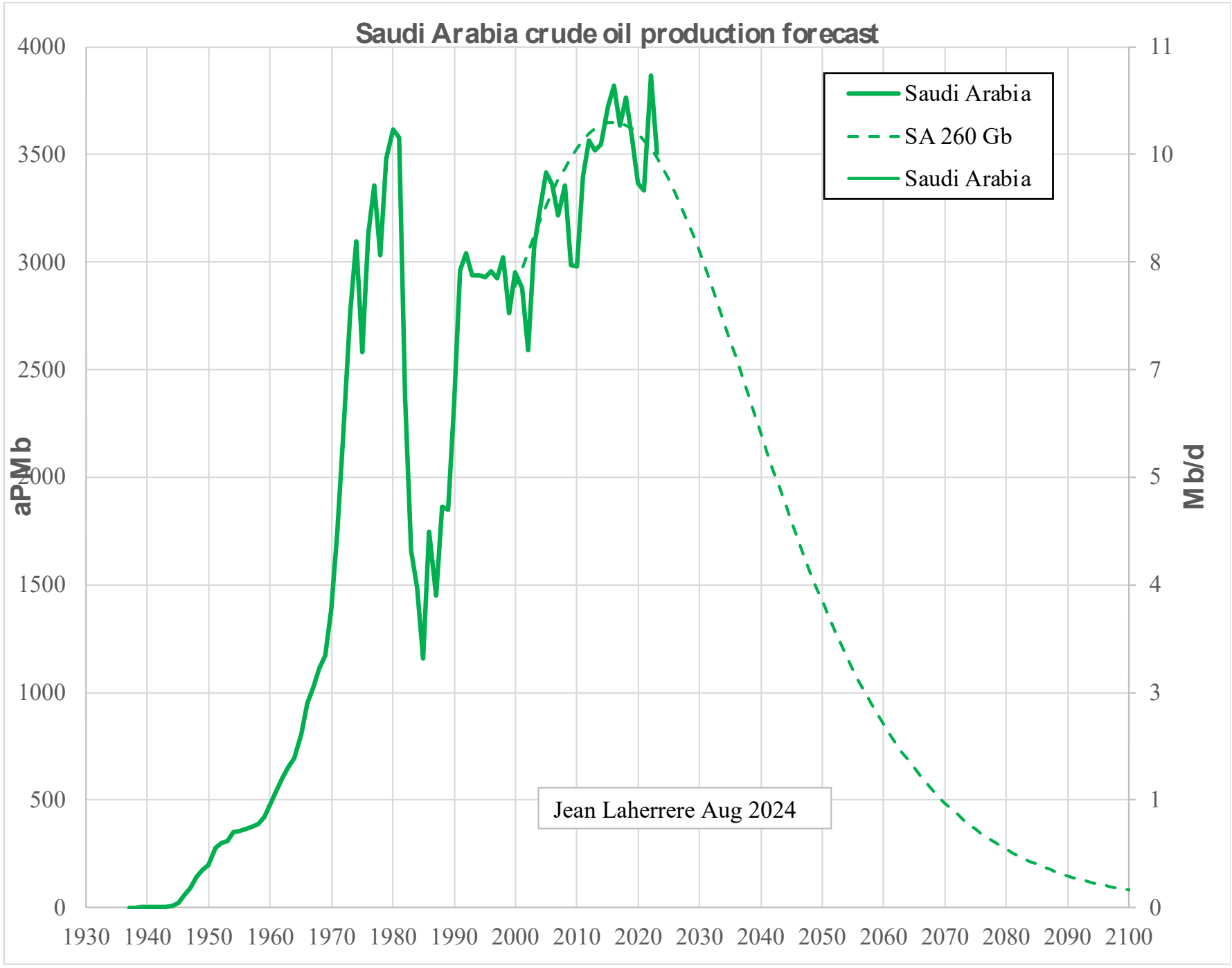

HL of Iraq crude oil production from OPEC ASB
aP/CP*100
2016+2023
Jean Laherrere Aug 2024
aP/CP%
CP Gb
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5
0
10
20
30
40
50
60
70
80
90
100


HL of UAE crude oil production from OPEC ASB
aP/CP*100
2000-2023
Linéaire (2000-2023)
Jean Laherrere Aug 2024
aP/CP%
CP Gb
0
0,5
1
1,5
2
2,5
3
3,5
4
4,5
5
0
10
20
30
40
50
60
70
80
90
100

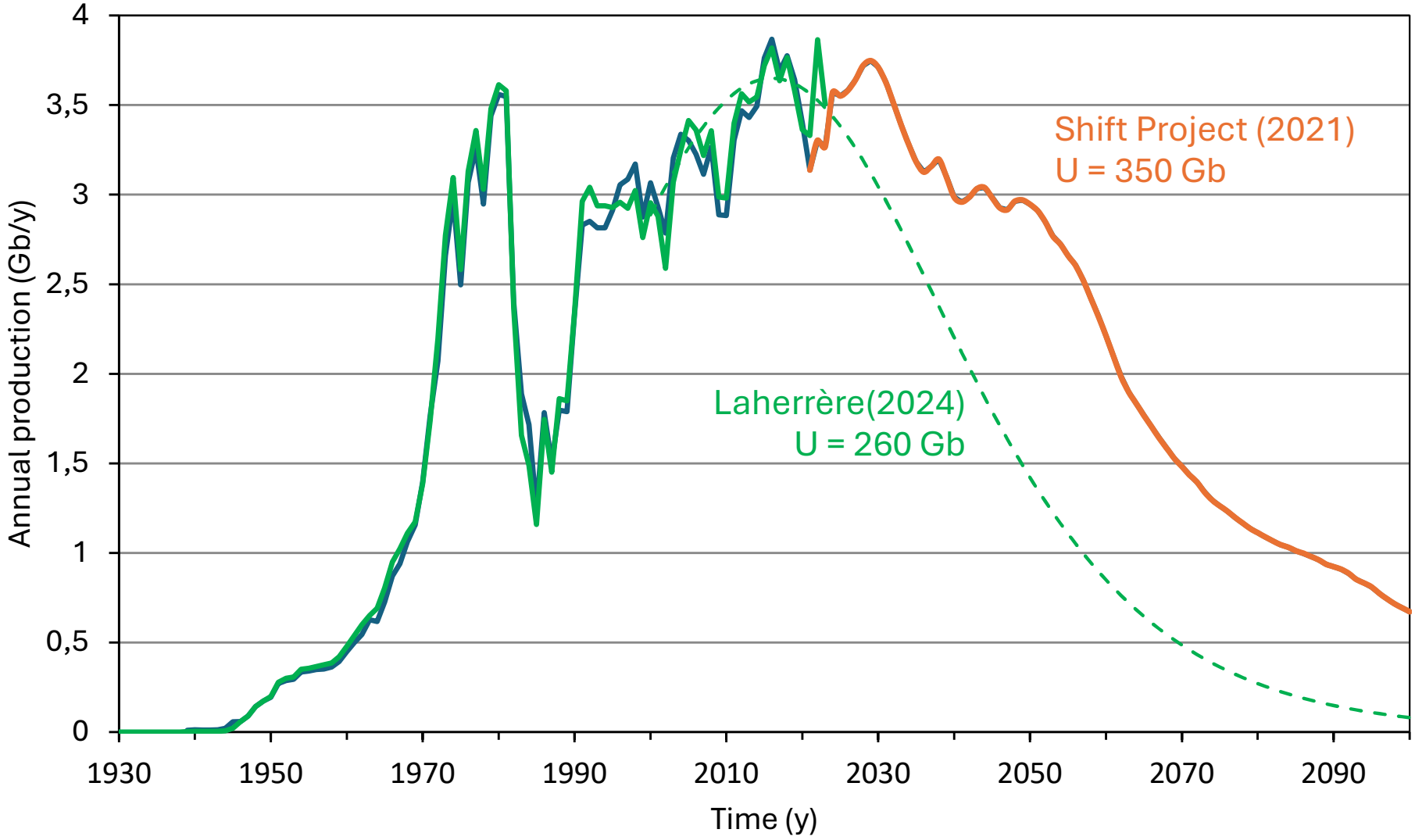
Saudi Arabia remaining oil reserves, which is a mess.



Saudi proven oil reserves are at 260 Gb for the last 30 years, meaning that every year Saudi finds as much oil as it produces: This seems impossible except if proven reserves are in fact the ultimate!

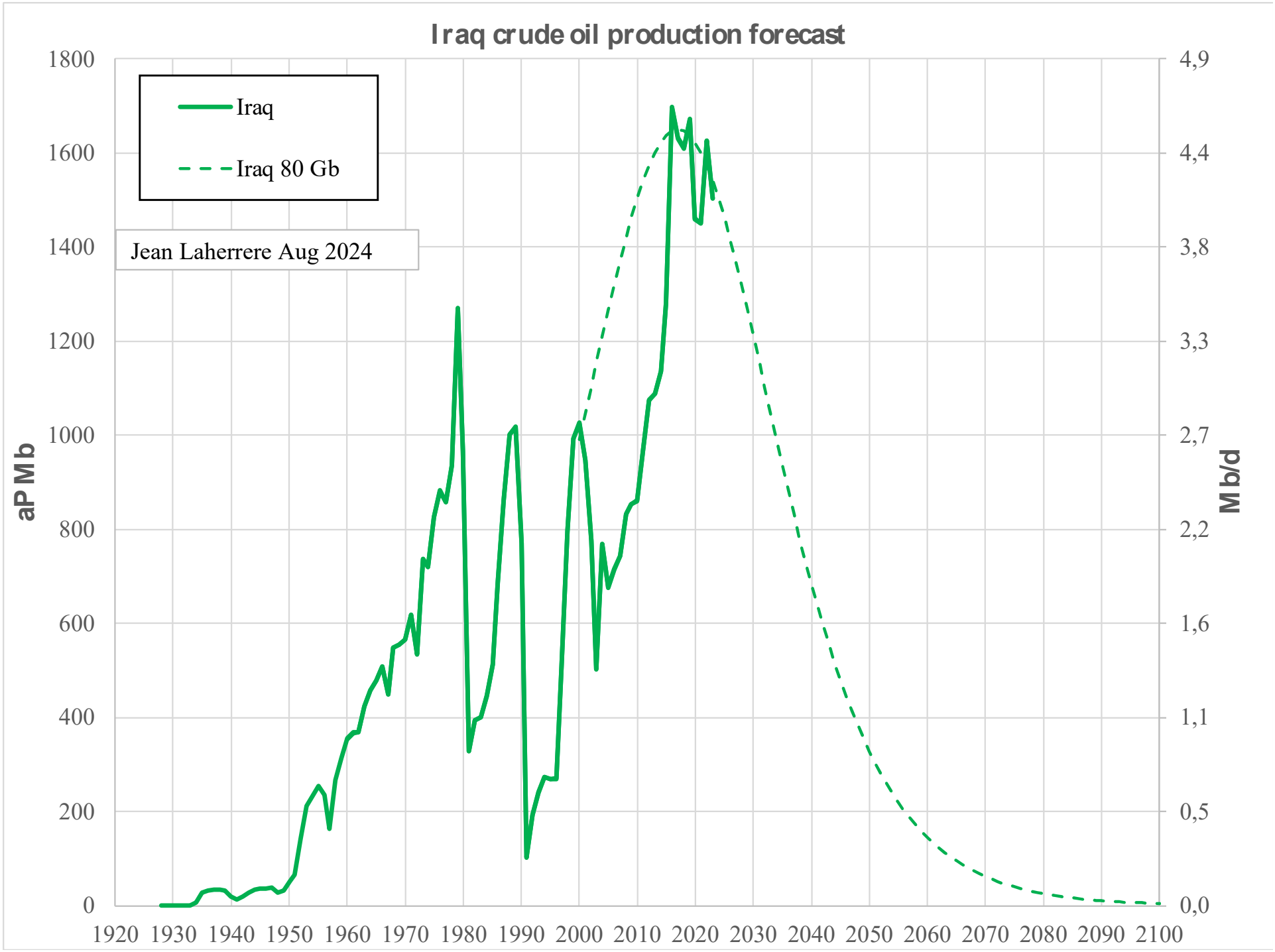

Saudi Arabia crude oil production forecast
aPMb
Mb/d
Saudi Arabia
SA 260 Gb
Saudi Arabia
Jean Laherrere Aug 2024
4000
3500
3000
2500
2000
1500
1000
500
0
11
10
8
7
5
4
3
1
0
1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100

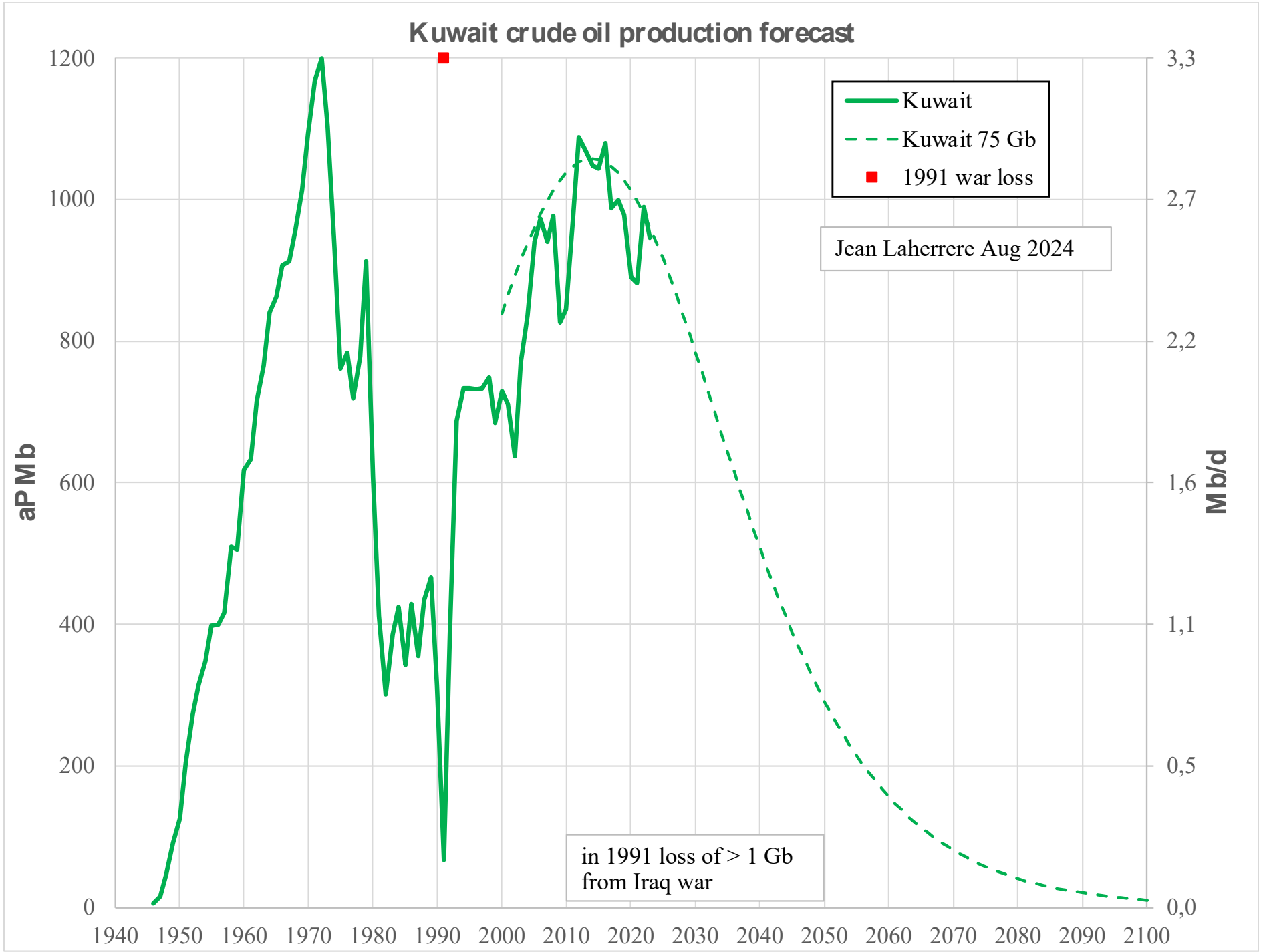
Comparison of the Laherrère and Shift Project[1] forecasts for Saudi Arabia crude oil production.

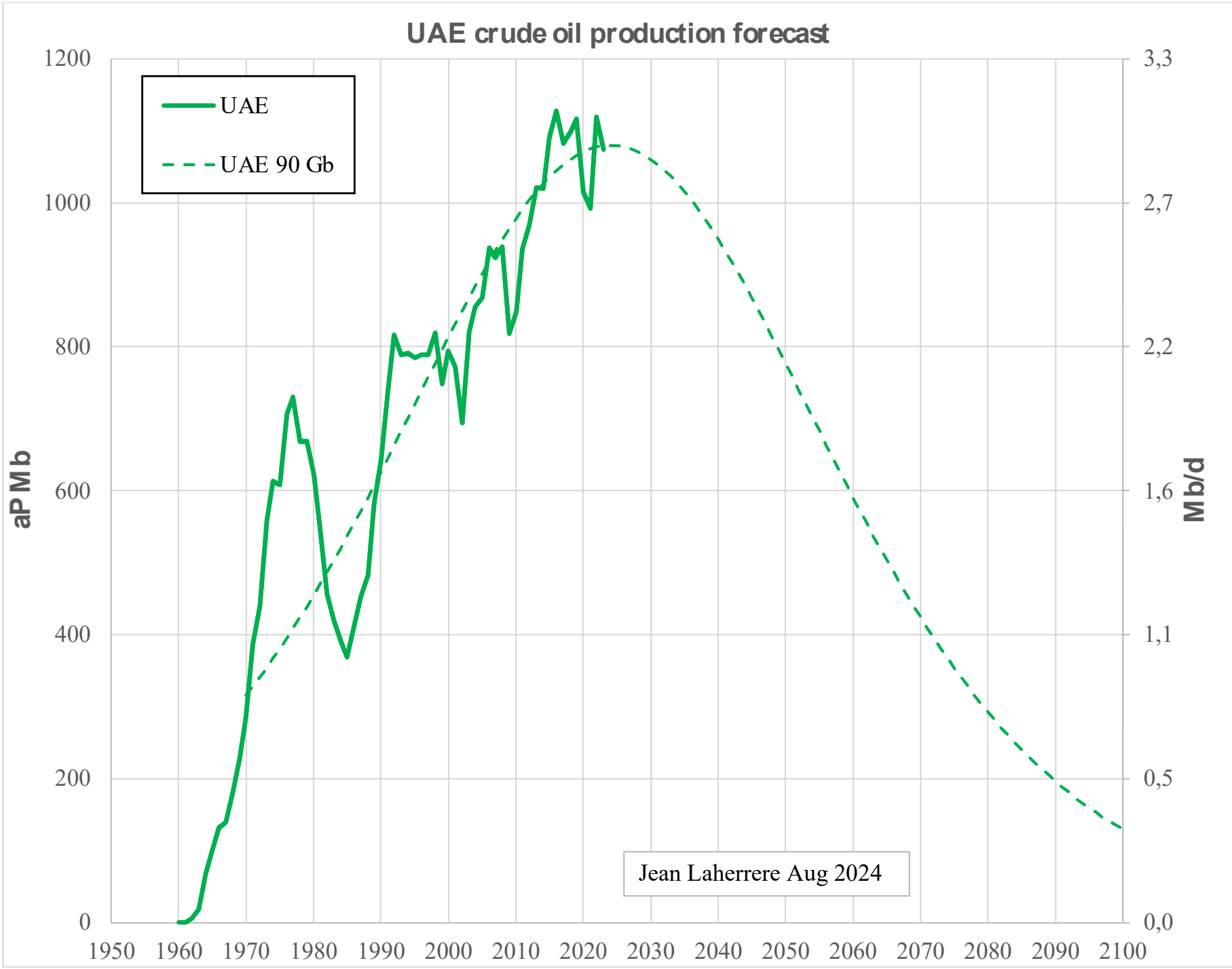


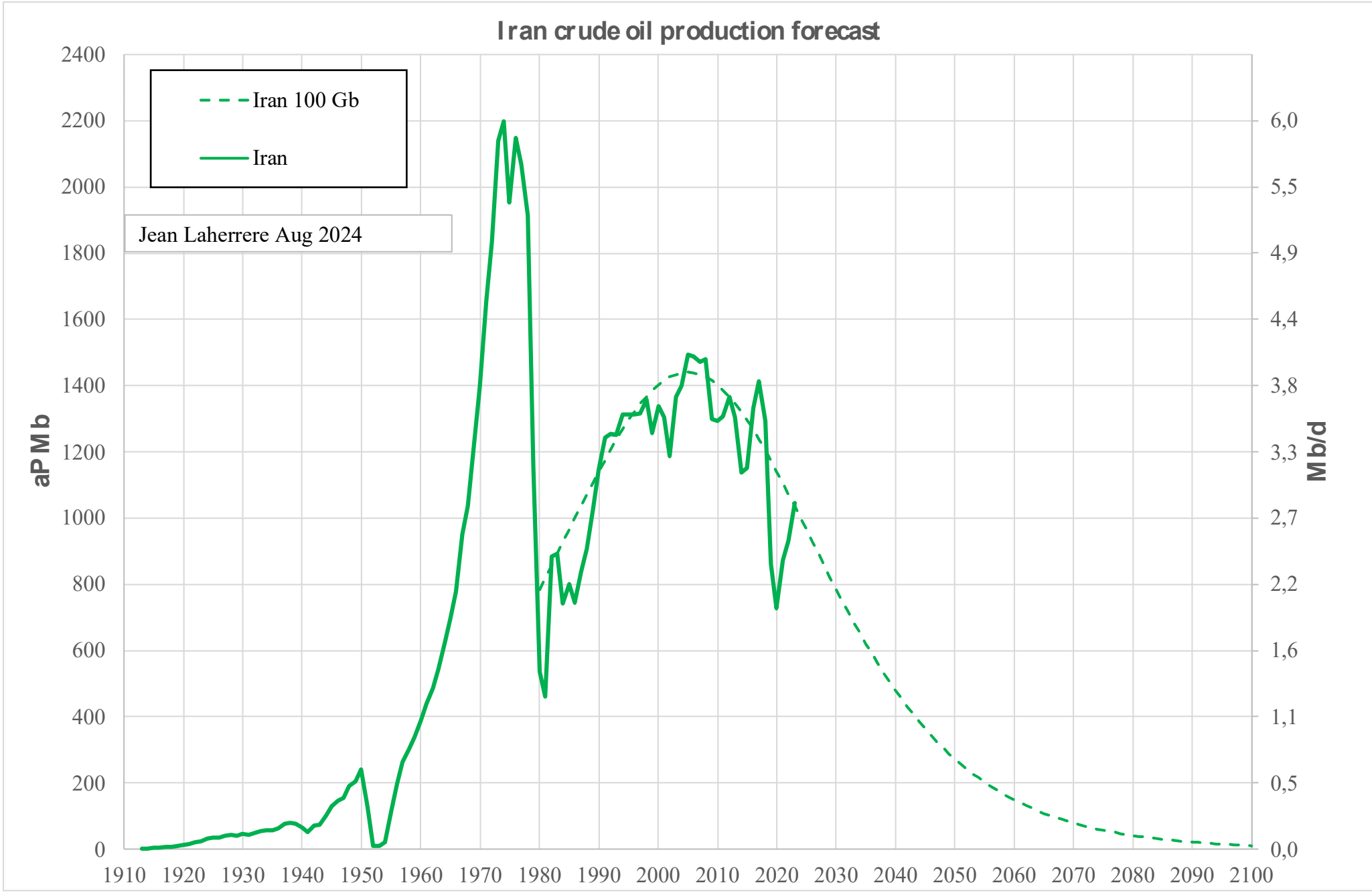
Despite large differences in estimates of ultimate, the Saudi (conventional) crude oil production seems to have peaked, and will be difficult to maintain at its current value after 2030.

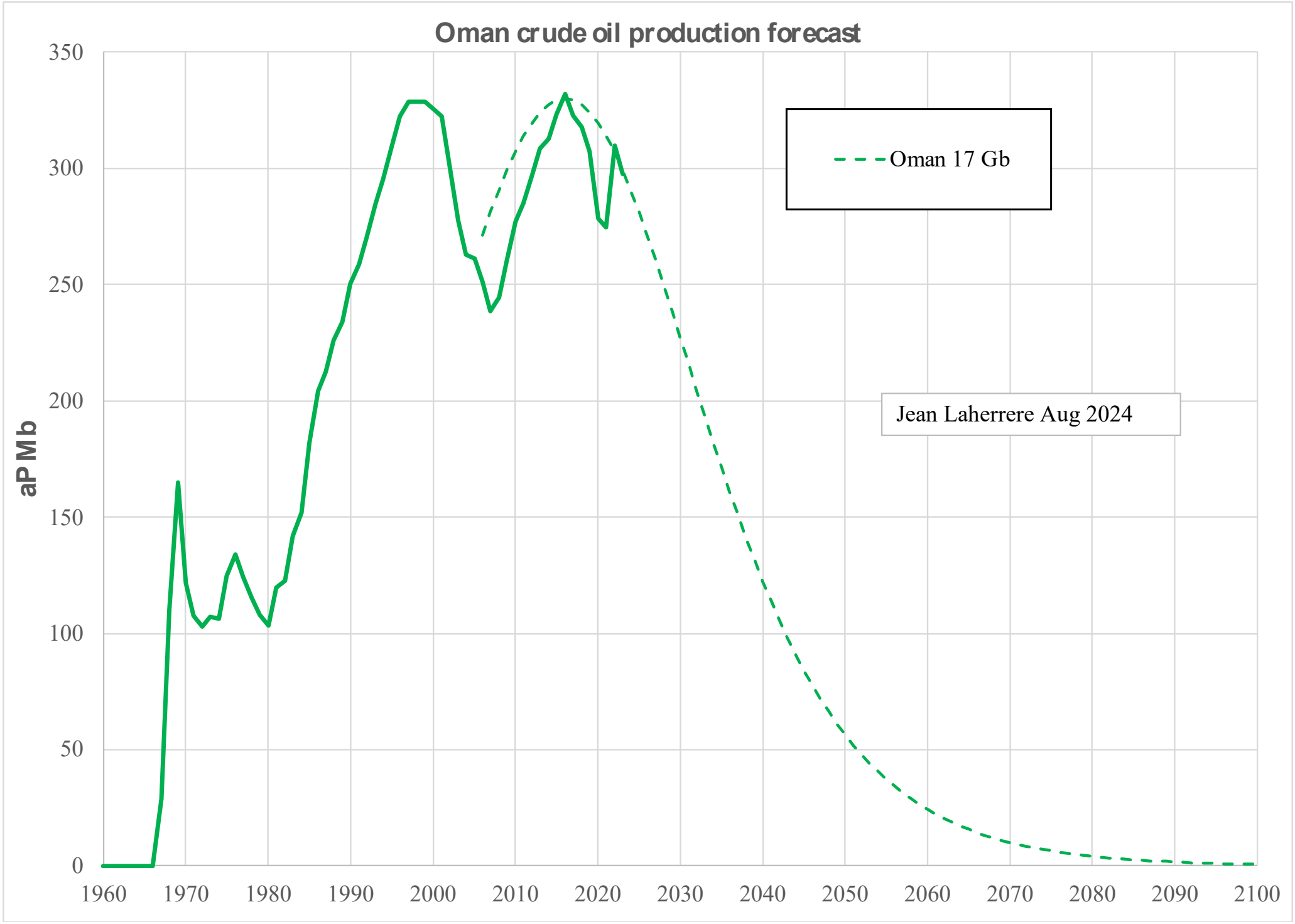
(1) Shift Project. (2021). Approvisionnement pétrolier futur de l'Union européenne : état des réserves et perspectives de production des principaux pays fournisseurs, report for Direction Générale des Relations Internationales et de la Stratégie (DGRIS), Ministère des Armées.


Iraq crude oil production forecast
Iraq
Iraq 80 Gb
Jean Laherrere Aug 2024
aP Mb
M b/d
1800
1600
1400
1200
1000
800
600
400
200
0
4,9
4,4
3,8
3,3
2,7
2,2
1,6
1,1
0,5
0,0
1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100


Kuwait crude oil production forecast
Kuwait
Kuwait 75 Gb
1991 war loss
Jean Laherrere Aug 2024
in 1991 loss of > 1 Gb
from Iraq war
aP Mb
Mb/d
1200
1000
800
600
400
200
0
3,3
2,7
2,2
1,6
1,1
0,5
0,0
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100


UAE crude oil production forecast
UAE
UAE 90 Gb
aP Mb
Mb/d
1200
1000
800
600
400
200
0
3,3
2,7
2,2
1,6
1,1
0,5
0,0
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Jean Laherrere Aug 2024

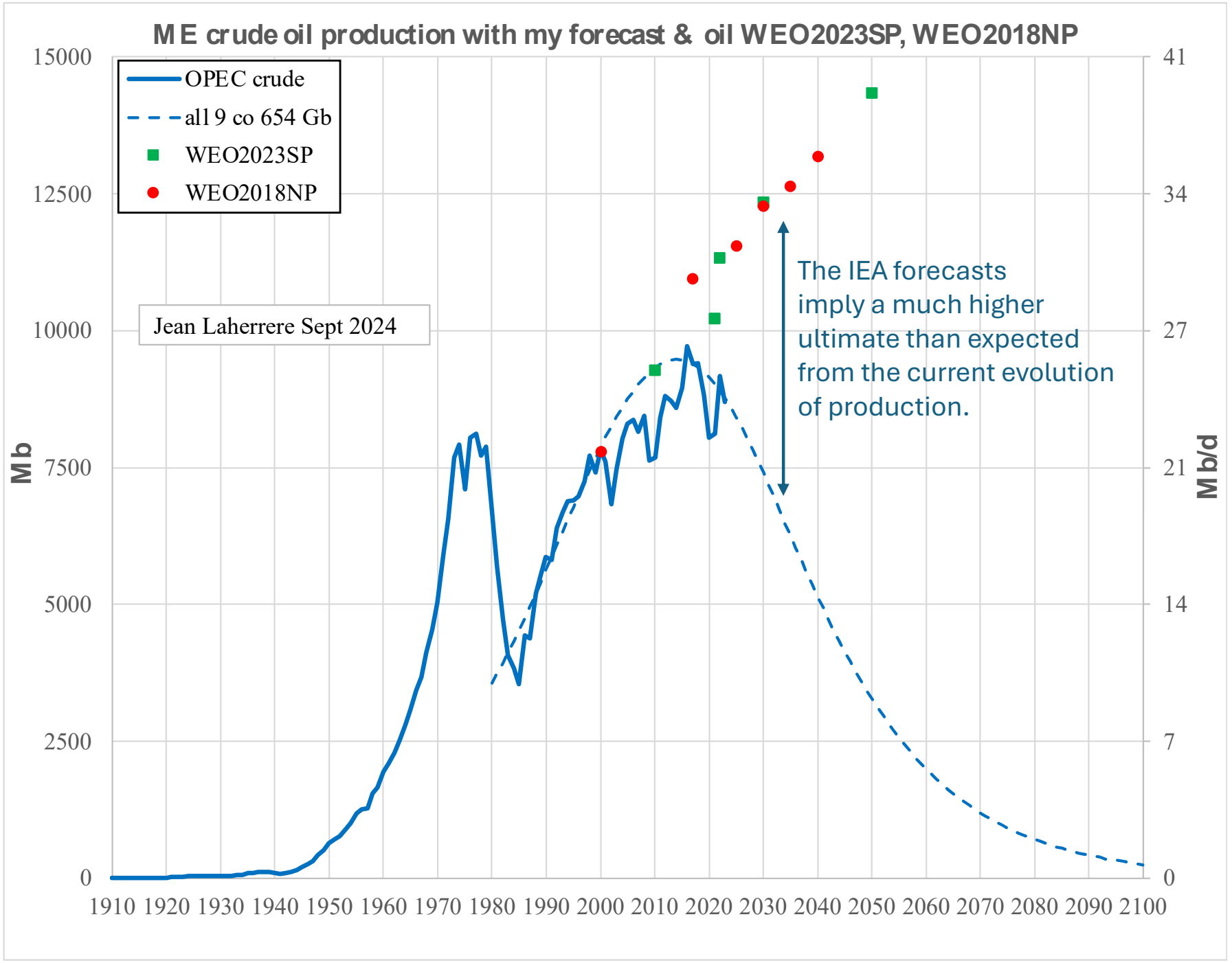

Iran crude oil production forecast
Iran 100 Gb
Iran
Jean Laherrere Aug 2024
aP Mb
Mb/d
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
6,0
5,5
4,9
4,4
3,8
3,3
2,7
2,2
1,6
1,1
0,5
0,0
1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100


Oman crude oil production forecast
aP Mb
350
300
250
200
150
100
50
0
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Oman 17 Gb
Jean Laherrere Aug 2024

Synthesis & comparison with 2018 study

forecast	2024	2024	2024	2024	2024	2018	2018	2018
co	ultimate Gb	CP2023	remaining	peak time	peak Mb/d	ultimate Gb	CP2017 Gb	peak time
SA	260	168,9	91	2022	10,6	350	147,6	2016
Iraq	80	52,8	27	2016	4,6	130	43,5	2030
UAE	90	41,9	48	2016	3,1	90	35,5	2030
Kuwait	75	56	19	1972	3,3	95	47,8	1973
Iran	100	79,9	20	1974	6	105	74,2	1974
Oman	17	13,1	4	2016	3,1	17	11,8	2016
Qatar	18	12,1	6	2008	0,8	30	0,8	2011
subsum 7	640	425	215			817	361	
Barhain	5	3	2	2016	0,2			
others	9	8,6	0	1995	1			
sum 9	654	436	218	2016	26,6			

ME forecast comparison with IEA/WEO2023SP



Conclusion

ME crude oil production data are unreliable because OPEC oil quota fight between members.

HL of ME crude oil production allows to estimate fair ultimates which are lower than my 2018 study.

IEA/WEO2023SP ME crude production 2050 forecast is about 40 Mb/d when my forecast is less than 10 Mb/d: huge difference.

Saudi Arabia proven oil reserves are about 260 Gb for the last 30 years, meaning that every year Saudi finds what they produce:

it is impossible: it is likely that these proven oil reserves are the oil ultimate, meaning that Saudi crude oil production will decline.

The proof is that today Saudi Arabia big project is Jafurah unconventional gas and its condensate (75 Gb) with 110 G$ investment.