

# **Spin-up scheme test for Phase 7 Estuary Model**

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# Model spin-up for scenario simulation

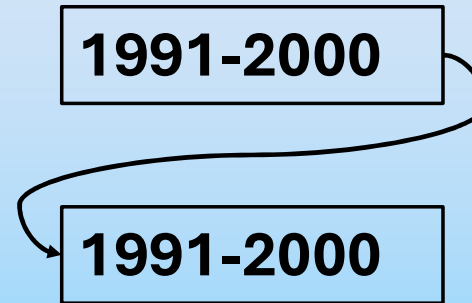
Phase 6

Spin-up:

1991-2000

Simulation:

1991-2000



Phase 7

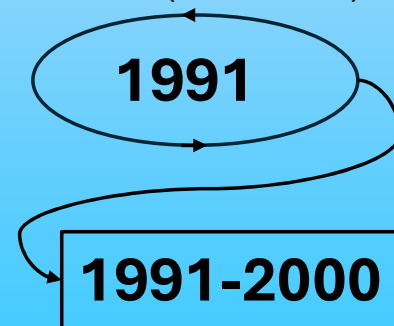
Spin-up:

1991

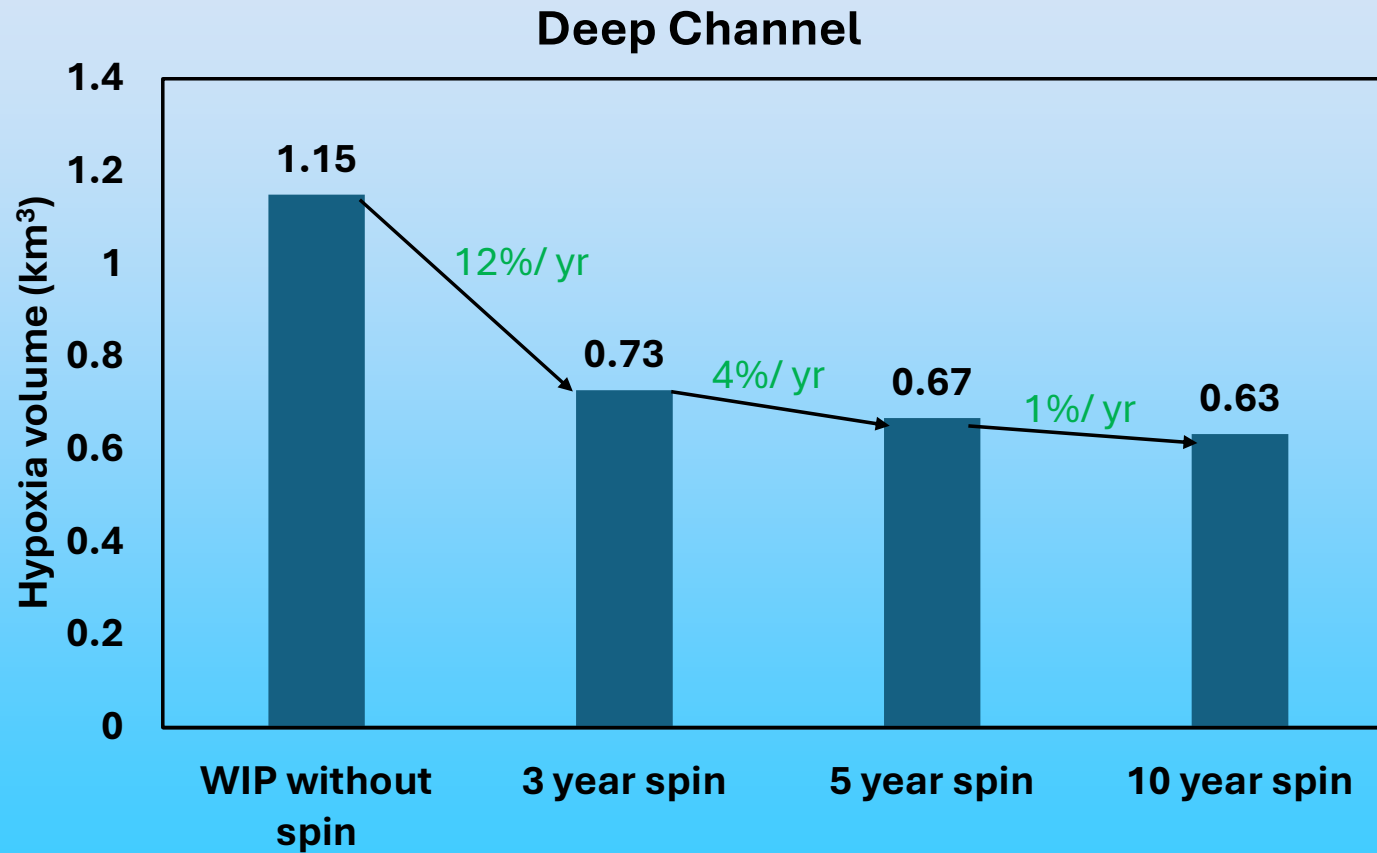
N times (3, 5 and 10)

Simulation:

1991-2000



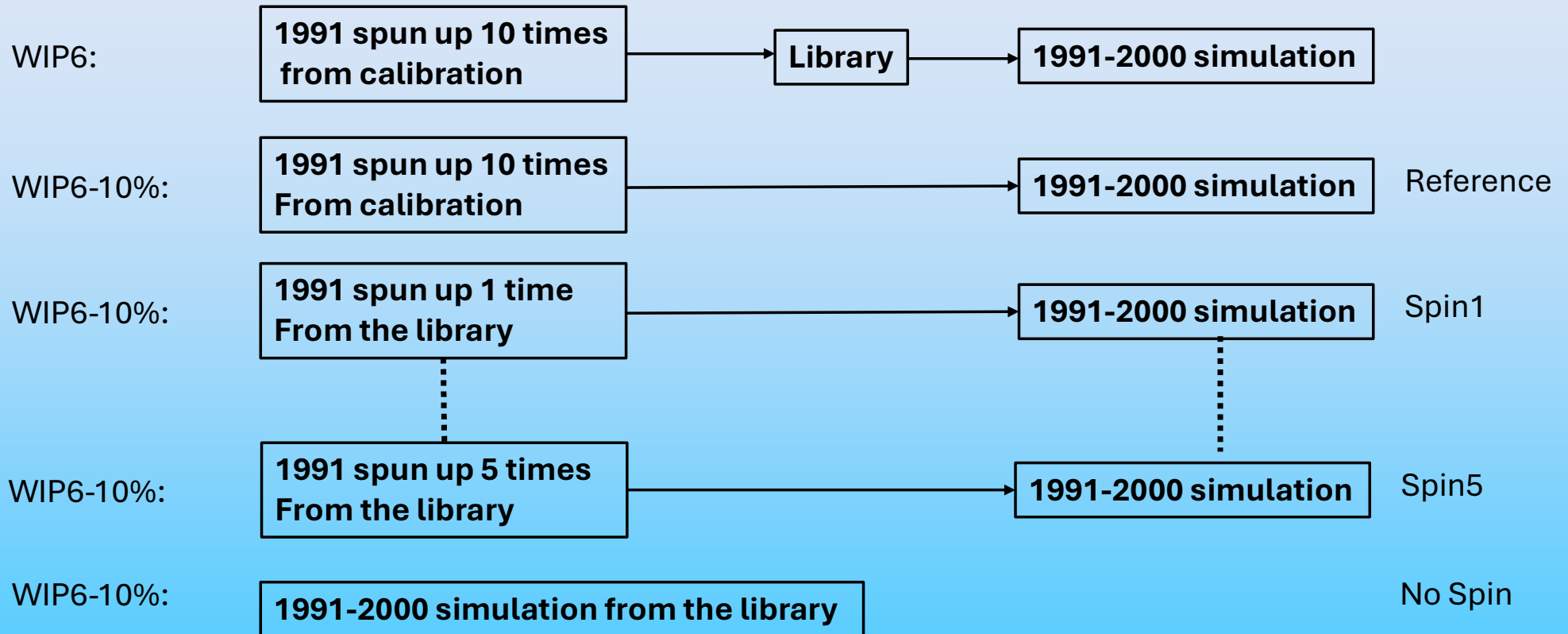
# Average summer DC hypoxia volume of spin-up runs (Jun.-Sep., 1991-200)



# Comparison of Phase 6 and 7 spin-up in terms of criteria assessment (DC)

Scenario	name	Spin3	Spin5	SPin10	SpinP6
Run	name	RUN11bwipspin3	RUN11bwipspin5	RUN11bwipspin9	RUN11bwipspinP6
Nitrogen	loading	195TN	195TN	195TN	195TN
Phosphorous	loading	13.7TP	13.7TP	13.7TP	13.7TP
Start	End	1993_1995	1993_1995	1993_1995	1993_1995
Cbseg	State	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC
CB3MH	MD	0.00%	0.00%	0.00%	0.00%
CB4MH	MD	8.76%	7.73%	7.18%	8.57%
CB5MH_MD	MD	0.00%	0.00%	0.00%	0.00%
CB5MH_VA	VA	0.00%	0.00%	0.00%	0.00%
POTMH_MD	MD	0.00%	0.00%	0.00%	0.00%
RPPMH	VA	0.00%	0.00%	0.00%	0.00%
CHSMH	MD	0.00%	0.00%	0.00%	0.00%
EASMH	MD	0.94%	0.36%	0.02%	0.71%
PATMH	MD	0.00%	0.00%	0.00%	0.00%

# Test of the spin-up library concept



# Test of the library concept (DC)

Scenario	name	Cal	WIP6	WIP6-10%- Ref	WIP6-10%- NoSpin	WIP6-10%- Spin1	WIP6-10%- Spin2	WIP6-10%- Spin3	WIP6-10%- Spin4	WIP6-10%- Spin5
Run	name	RUN14v	RUN14vwip	RUN14vwip1 Op	RUN14vwip1 Oplib	RUN14vwip1 Oplibspin1	RUN14vwip1 Oplibspin2	RUN14vwip1 Oplibspin3	RUN14vwip1 Oplibspin4	RUN14vwip1 Oplibspin5
Nitrogen	loading	325TN	195TN	176TN	176TN	176TN	176TN	176TN	176TN	176TN
Phosphorus	loading	21.9TP 1993_199	13.7TP	12.3TP	12.3TP	12.3TP	12.3TP	12.3TP	12.3TP	12.3TP
Start	End	5	1993_1995	1993_1995	1993_1995	1993_1995	1993_1995	1993_1995	1993_1995	1993_1995
Cbseg	State	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC	DO_I_DC
CB3MH	MD	7.22%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CB4MH	MD	45.61%	11.15%	7.66%	8.04%	7.74%	7.52%	7.33%	7.20%	7.11%
CB5MH_MD	MD	24.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CB5MH_VA	VA	3.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
POTMH_MD	MD	19.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RPPMH	VA	14.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CHSMH	MD	16.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EASMH	MD	18.26%	0.71%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
PATMH	MD	22.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			10 yr spin up with 1991 WIP6 load	10 yr spin up with 1991 WIP6- 10% load	No spin up with WIP6 library	10 yr spin up with 1991 WIP6 load	1 yr spin up with WIP6 library	2 yr spin up with WIP6 library	3 yr spin up with WIP6 library	5 yr spin up with WIP6 library

# Serial evaluation of spin-up convergence

scenario	du	cbseg	year1	year2	WIP6-	
					10%_10spin+run	WIP6-10%_noSpin
RUN14vwiç	OWsum	PAXOH	1991	1993	1.44%	1.55%
RUN14vwiç	OWsum	PAXOH	1992	1994	3.31%	3.59%
RUN14vwiç	OWsum	PAXOH	1993	1995	5.79%	6.15%
RUN14vwiç	OWsum	PAXOH	1994	1996	7.59%	7.93%
RUN14vwiç	OWsum	PAXOH	1995	1997	4.63%	4.66%
RUN14vwiç	OWsum	PAXOH	1996	1998	1.93%	1.93%
RUN14vwiç	OWsum	PAXOH	1997	1999	5.23%	5.23%
RUN14vwiç	OWsum	PAXOH	1998	2000	3.07%	3.07%

scenario	du	cbseg	year1	year2	WIP6-	
					10%_10spin+run	WIP6-10%_noSpin
RUN14vwi	DW	CB4MH	1991	1993	2.64%	3.18%
RUN14vwi	DW	CB4MH	1992	1994	3.34%	3.67%
RUN14vwi	DW	CB4MH	1993	1995	4.37%	4.57%
RUN14vwi	DW	CB4MH	1994	1996	5.43%	5.61%
RUN14vwi	DW	CB4MH	1995	1997	4.53%	4.67%
RUN14vwi	DW	CB4MH	1996	1998	10.59%	10.68%
RUN14vwi	DW	CB4MH	1997	1999	8.12%	8.23%
RUN14vwi	DW	CB4MH	1998	2000	10.15%	10.23%

scenario	du	cbseg	year1	year2	WIP6-	
					10%_10spin+run	WIP6-10%_noSpin
RUN14vwip1	DC	CB4MH	1991	1993	2.93%	4.13%
RUN14vwip1	DC	CB4MH	1992	1994	6.66%	6.98%
RUN14vwip1	DC	CB4MH	1993	1995	7.66%	8.04%
RUN14vwip1	DC	CB4MH	1994	1996	9.27%	9.59%
RUN14vwip1	DC	CB4MH	1995	1997	5.04%	5.30%
RUN14vwip1	DC	CB4MH	1996	1998	11.55%	11.78%
RUN14vwip1	DC	CB4MH	1997	1999	4.22%	4.41%
RUN14vwip1	DC	CB4MH	1998	2000	2.60%	2.72%

# Recommendation

