Lower San Diego River Dissolved Oxygen Levels

SDRPF RiverWatch

June 19, 2015

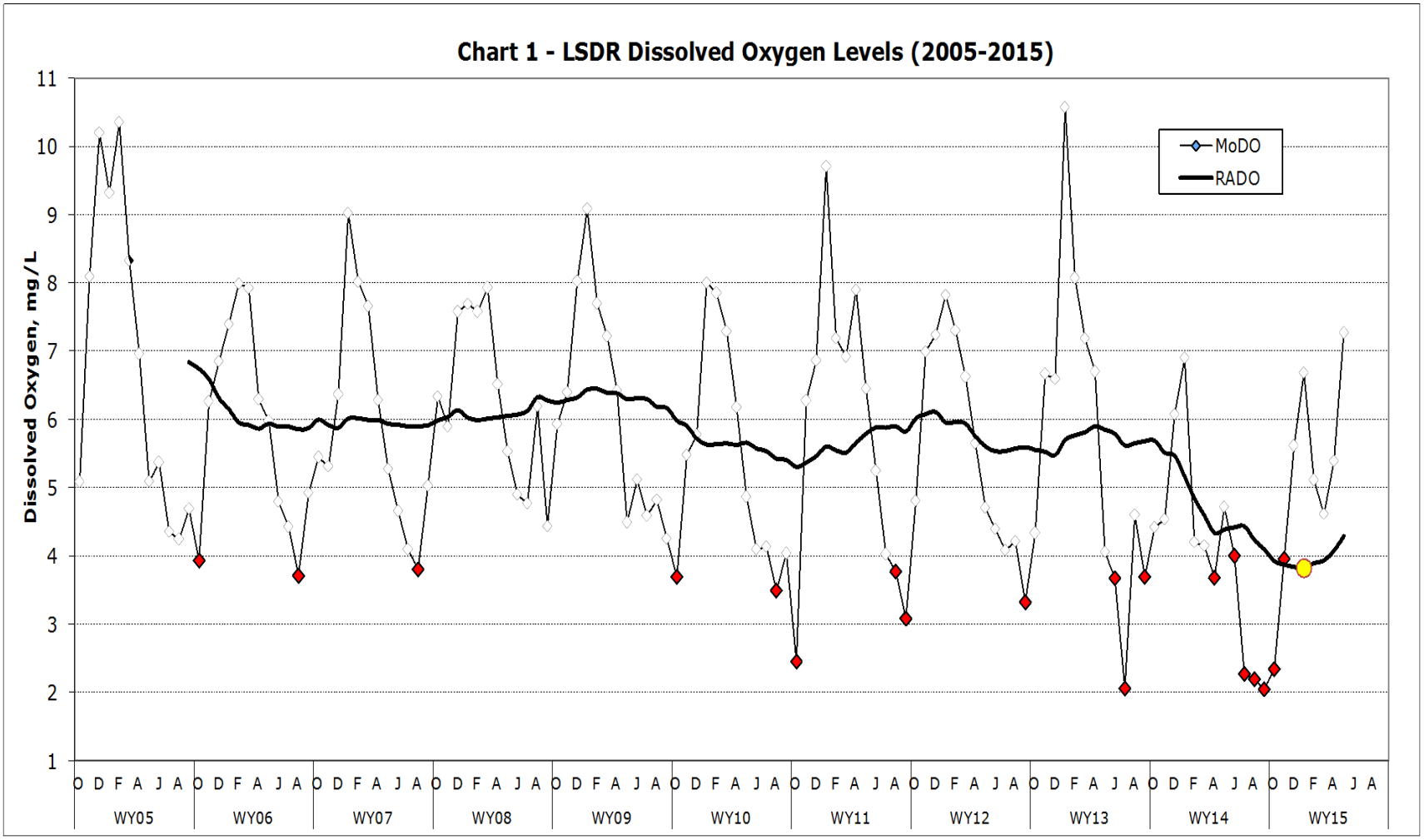


Chart 1 - LSDR Dissolved Oxygen Levels (2005-2015)
Dissolved Oxygen, mg/L
11
10
9
8
7
6
5
4
3
2
1
MoDO
RADO
O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A
WY05
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15

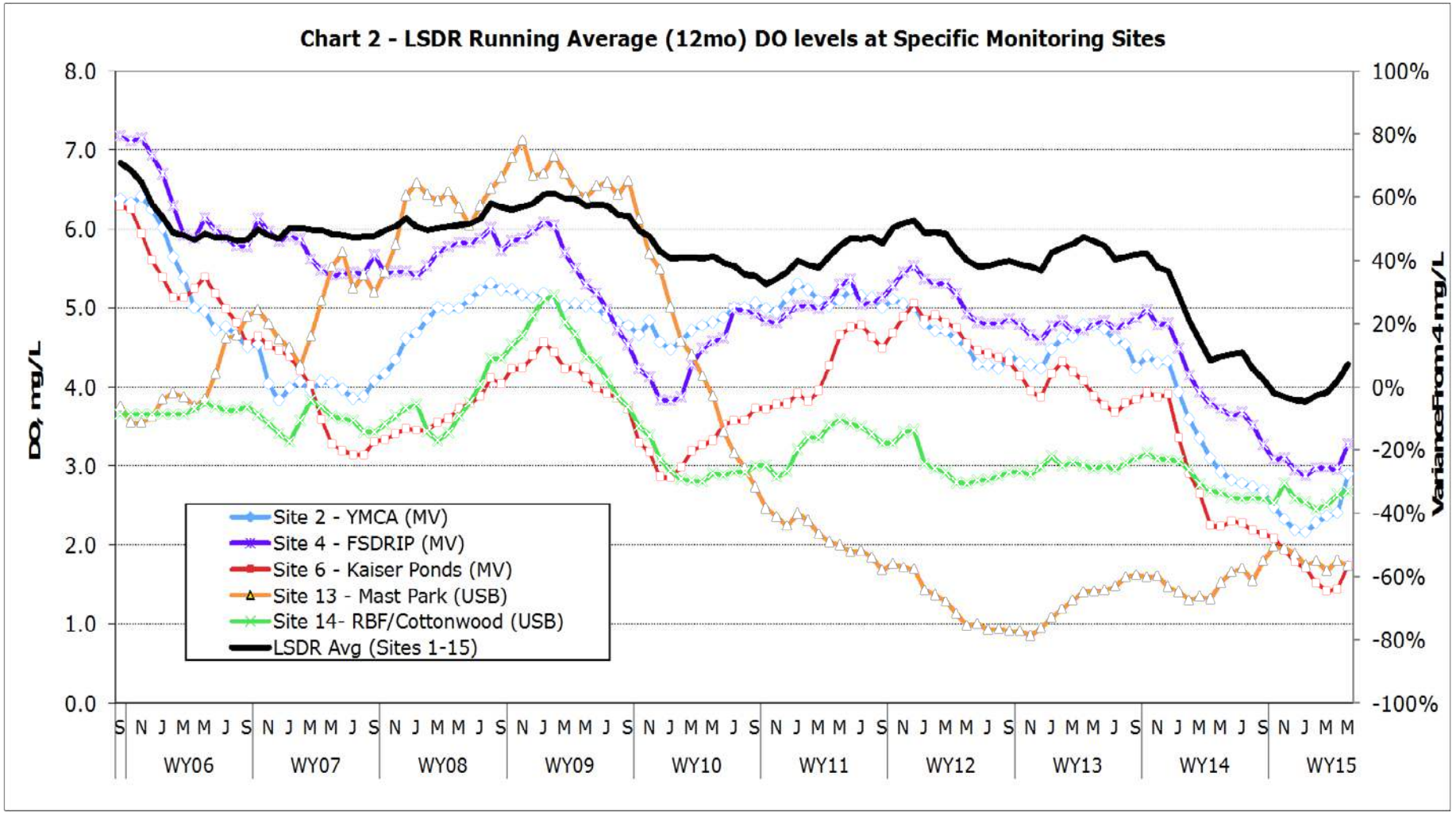


Chart 2 - LSDR Running Average (12mo) DO levels at Specific Monitoring Sites
DO, mg/L
VarianceFrom4mg/L
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
-80%
-100%
Site 2 - YMCA (MV)
Site 4 - FSDRIP (MV)
Site 6 - Kaiser Ponds (MV)
Site 13 - Mast Park (USB)
Site 14- RBF/Cottonwood (USB)
LSDR Avg (Sites 1-15)
S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15

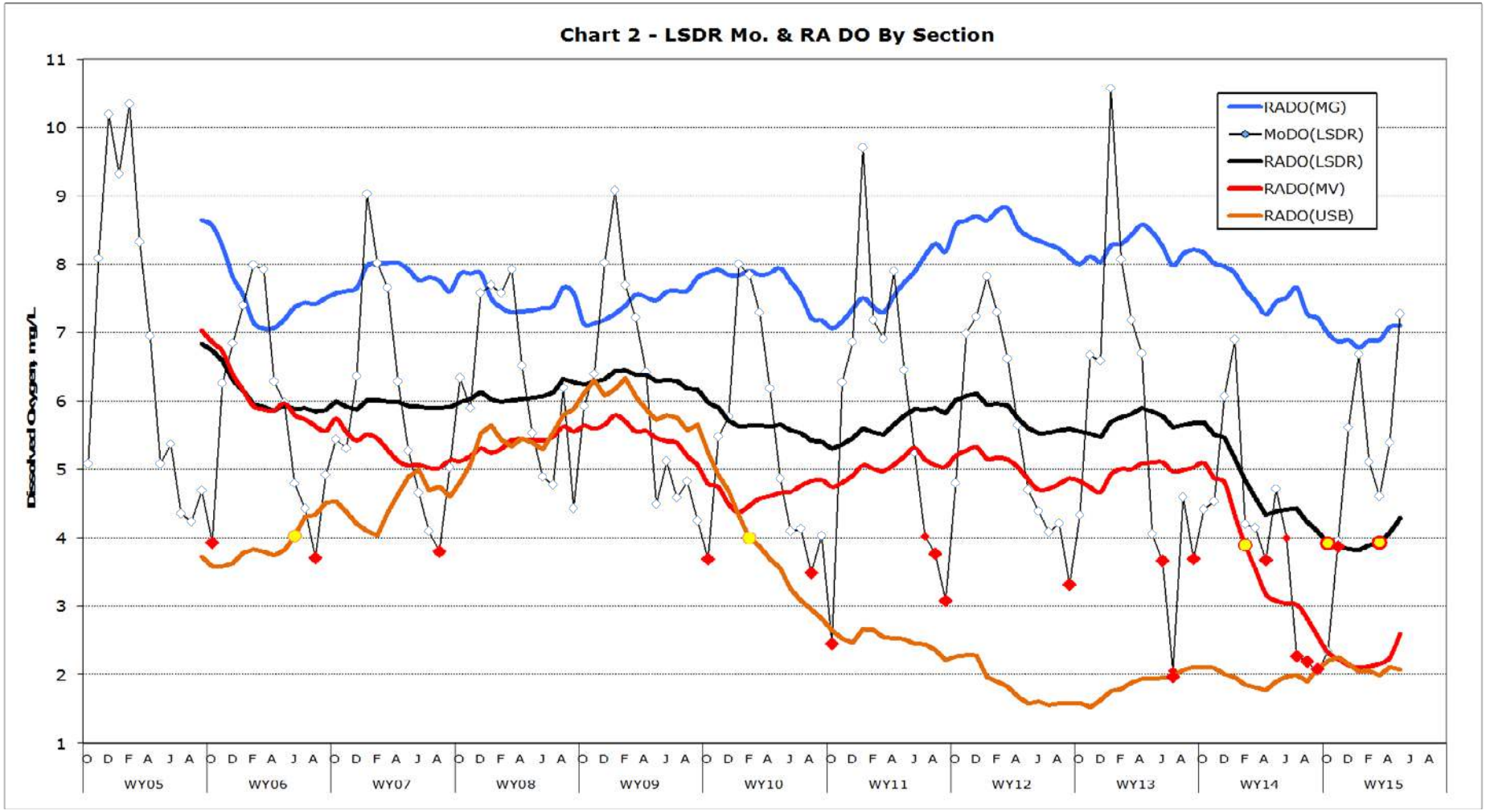


Chart 2 - LSDR Mo. & RA DO By Section
Dissolved Oxygen, mg/L
11
10
9
8
7
6
5
4
3
2
1
RADO(MG)
MoDO(LSDR)
RADO(LSDR)
RADO(MV)
RADO(USB)
O D F A J A
WY05
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15

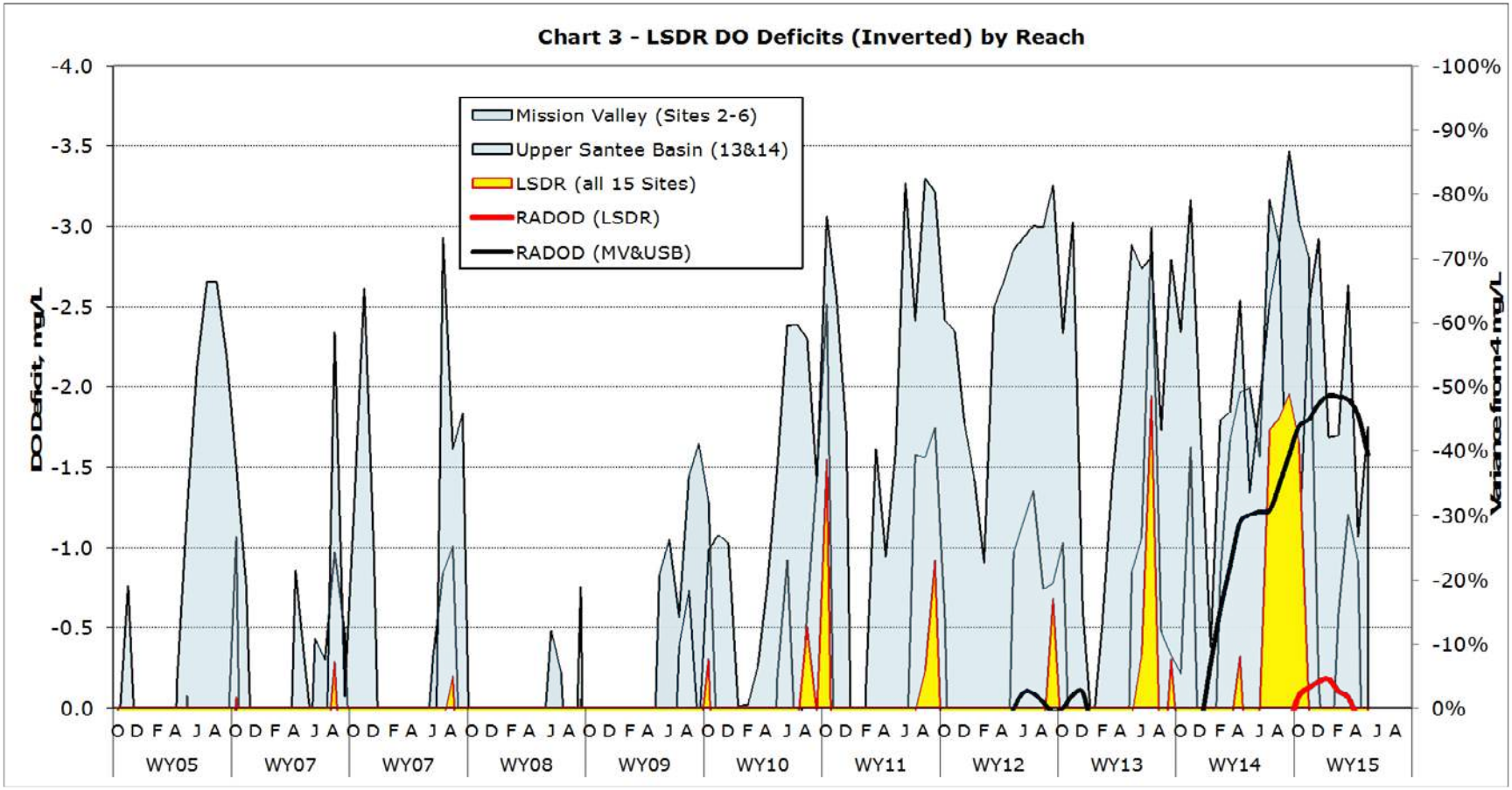


Chart 3 - LSDR DO Deficits (Inverted) by Reach
Mission Valley (Sites 2-6)
Upper Santee Basin (13&14)
LSDR (all 15 Sites)
RADOD (LSDR)
RADOD (MV&USB)
DO Deficit, mg/L
Variance from 4 mg/L
-4.0
-3.5
-3.0
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
-100%
-90%
-80%
-70%
-60%
-50%
-40%
-30%
-20%
-10%
0%
O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A O D F A J A
WY05
WY07
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15

Variance in DO

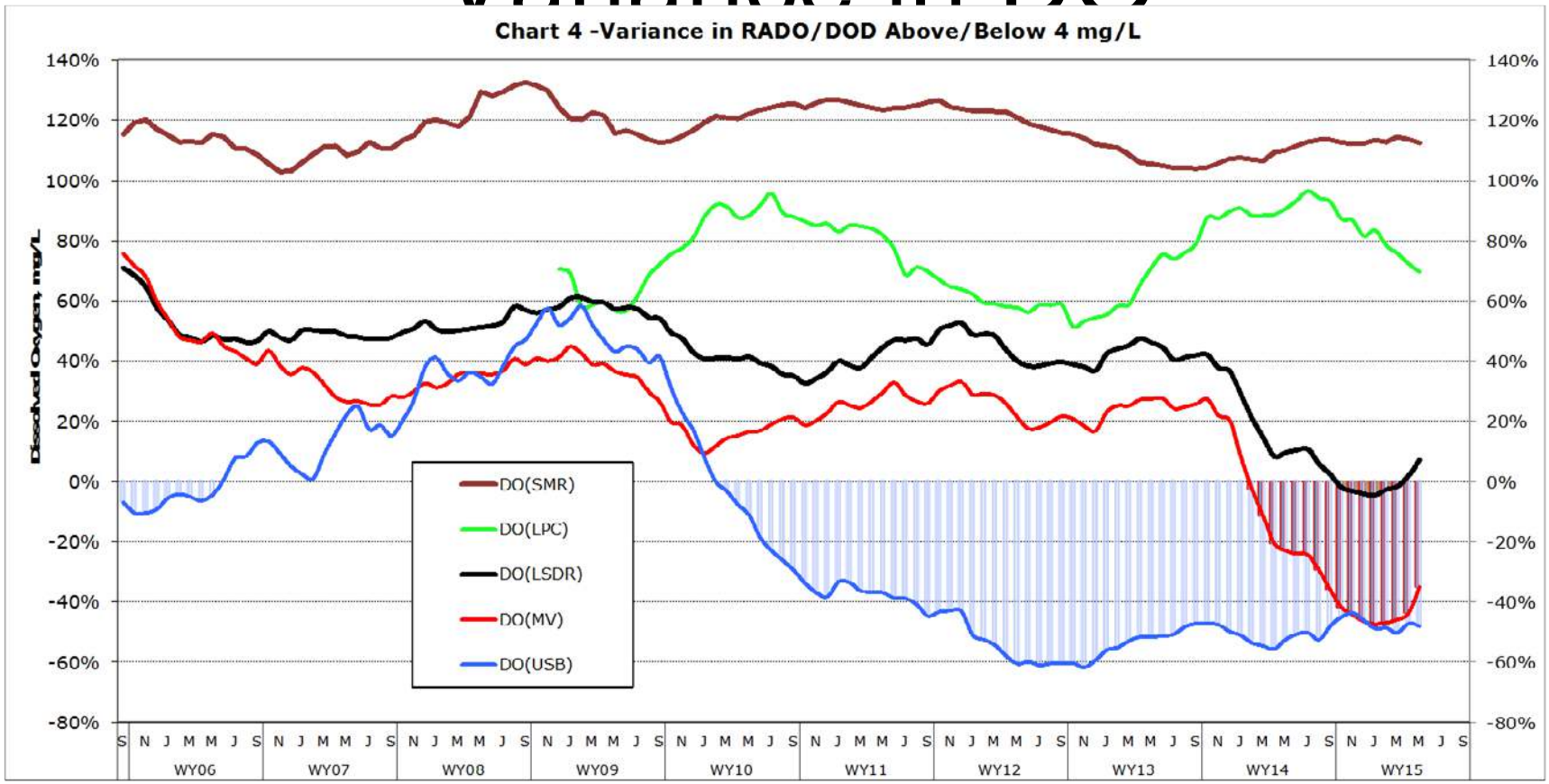
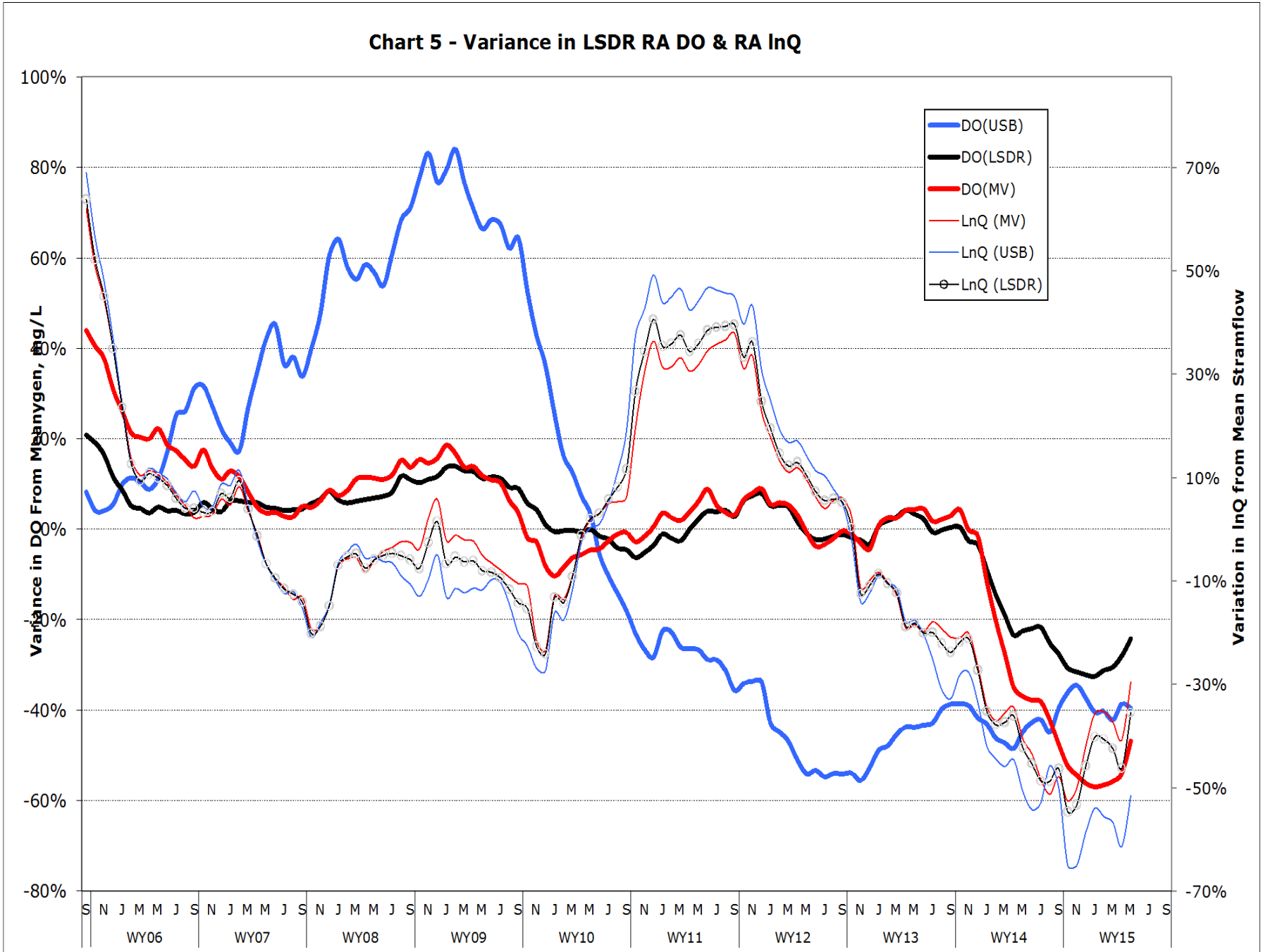


Chart 5 - Variance in LSDR RA DO & RA lnQ

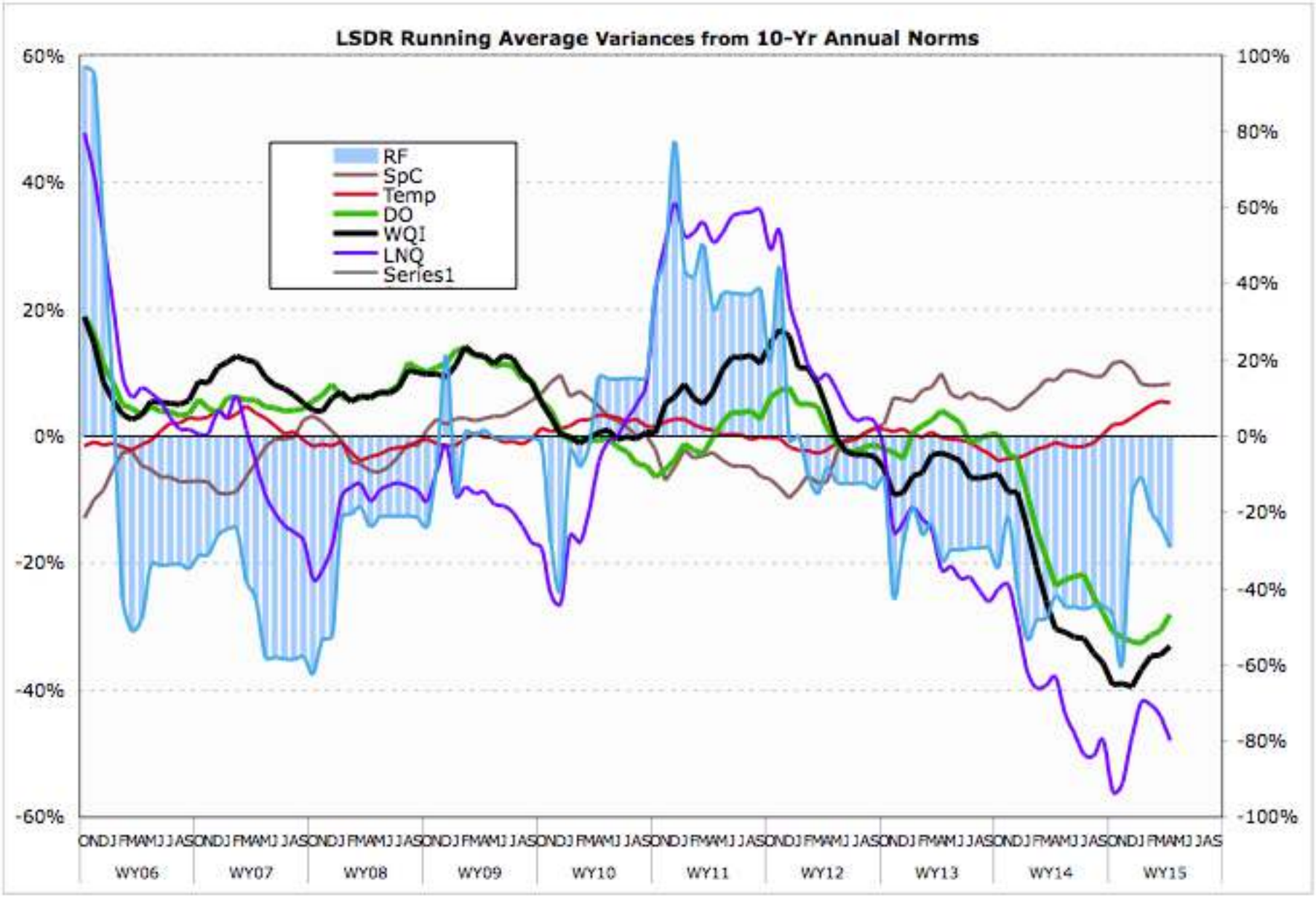


CORRELATIVES

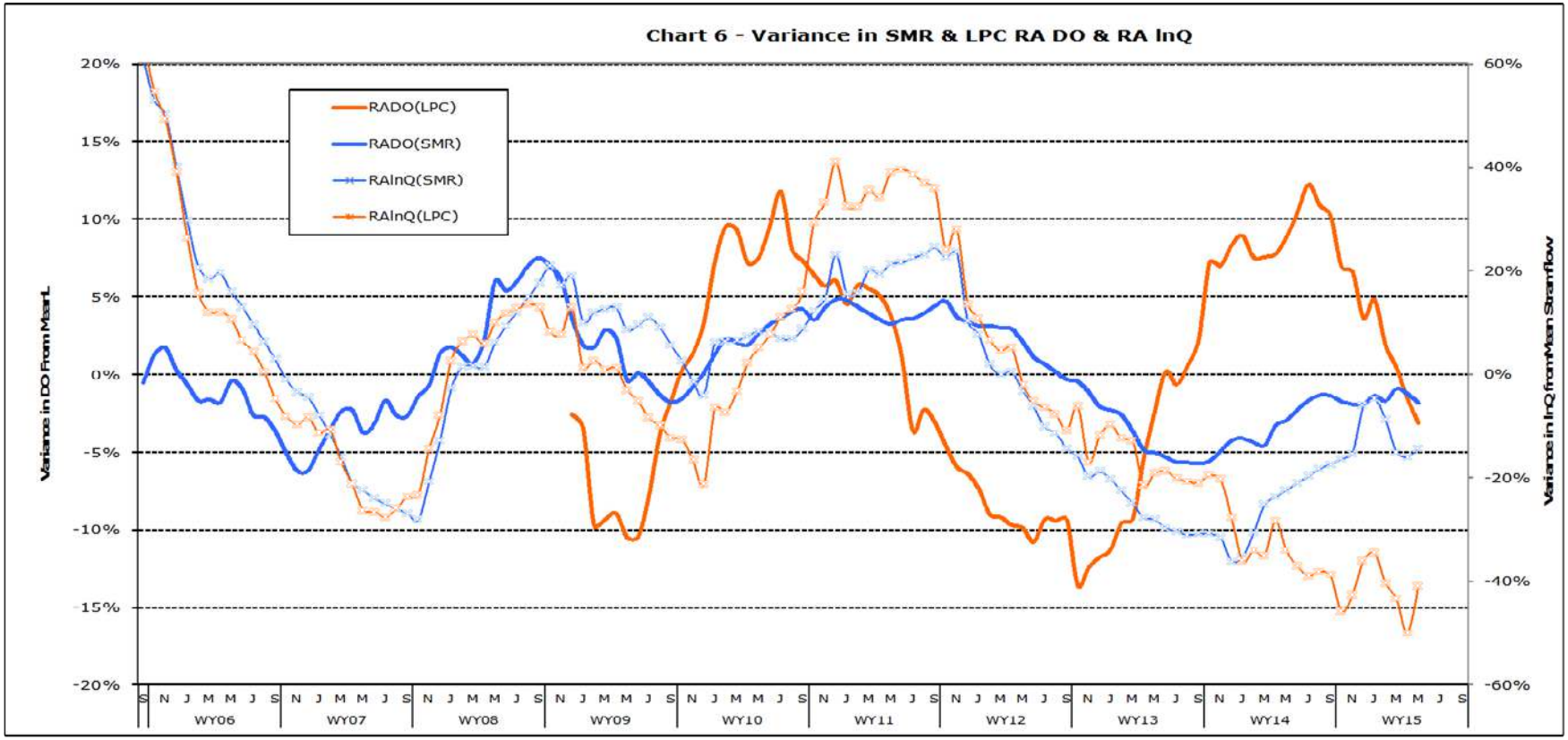
- Less Rainfall = Less Stream Flow = Less Flushing/Scouring = Greater Invasive Aquatic Plant Growth/Death = Greater Organic Load/Detritus = More Oxygen Demand = Less Dissolved Oxygen (More DO Deficit) = Greater Eutrophication = More “Stink” = Poorer Water Quality = Less Happy People

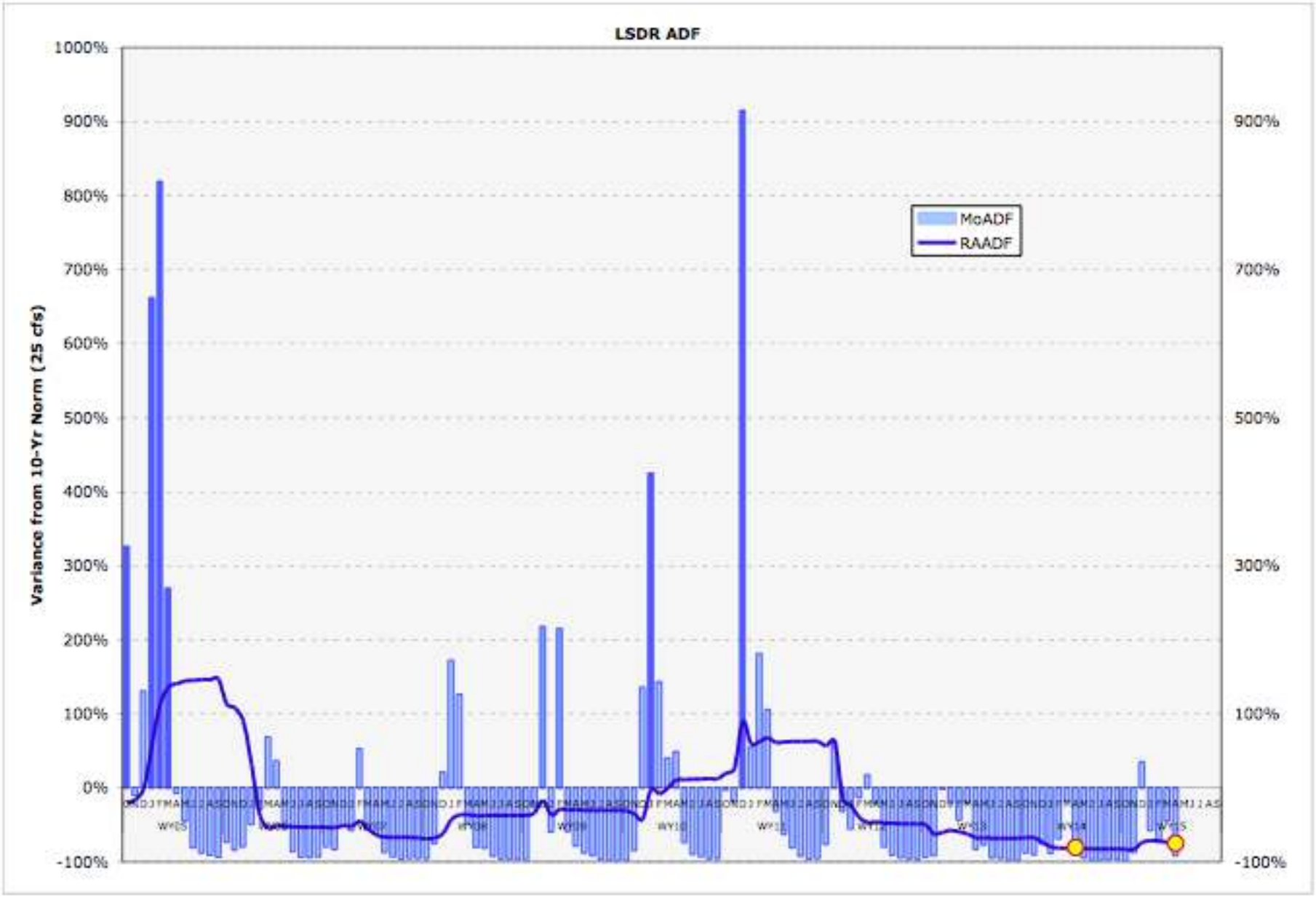
- RF⇓ = ⇓Flow/Flush/Scour = ⇑Detritus (⇑SOD) = ⇓DO (⇑DOD) = ⇑Eutrophication = ⇓WQ

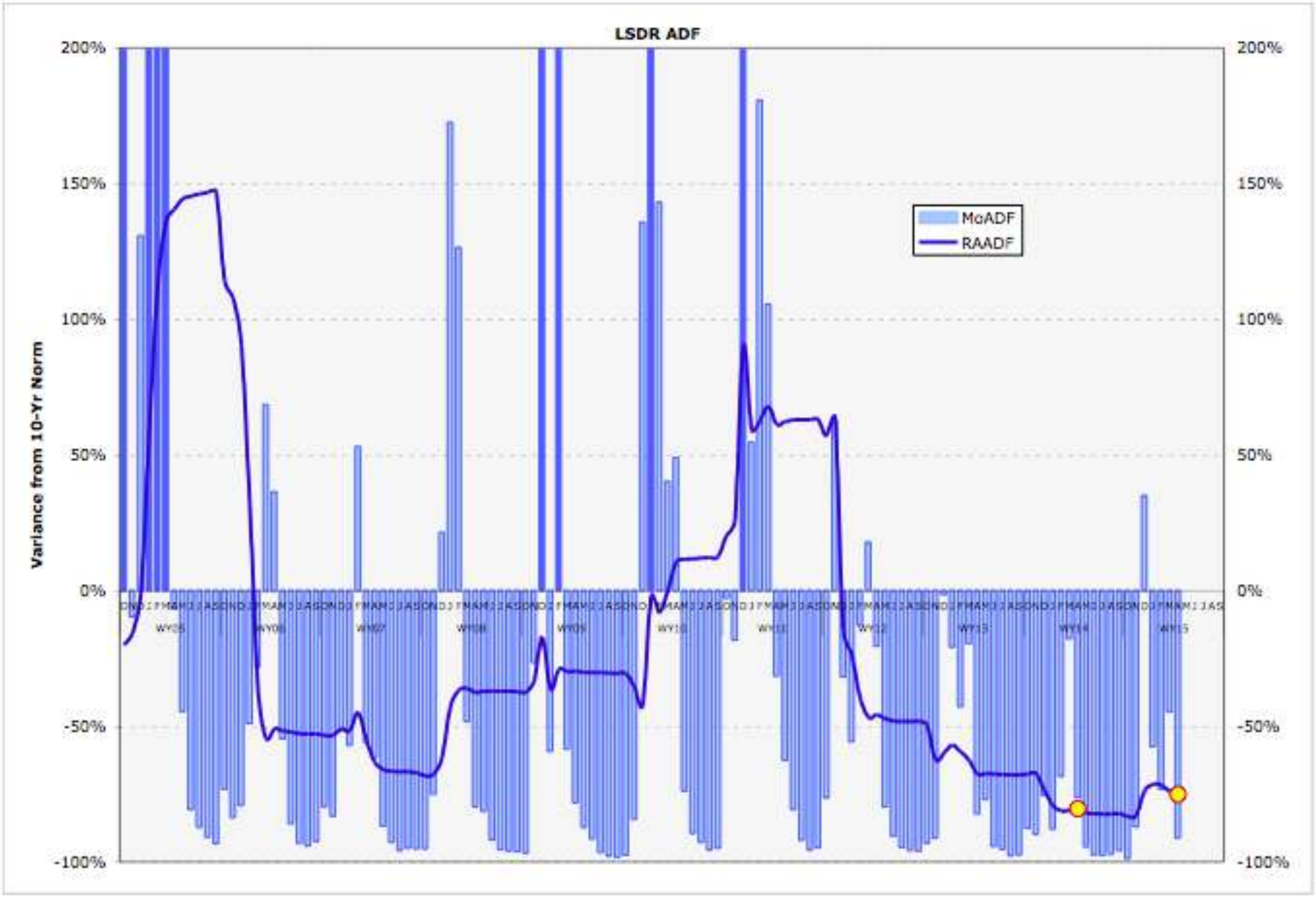
Primary Cause of DOD

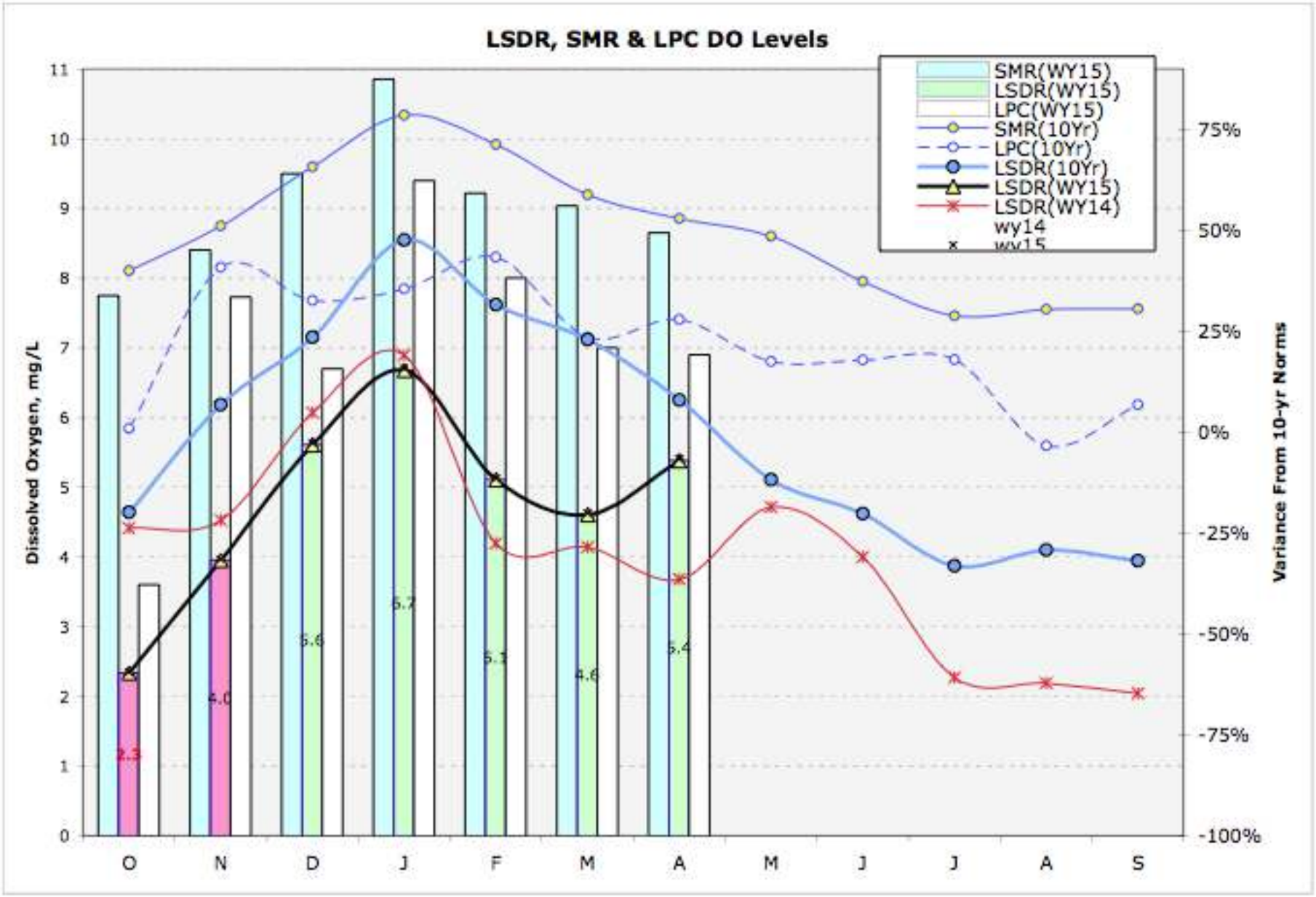

LSDR Running Average Variances from 10-Yr Annual Norms
RF
SpC
Temp
DO
WQI
LNQ
Series1
60%
40%
20%
0%
-20%
-40%
-60%
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
-80%
-100%
OND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J ASOND J FMAMJ J AS
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15

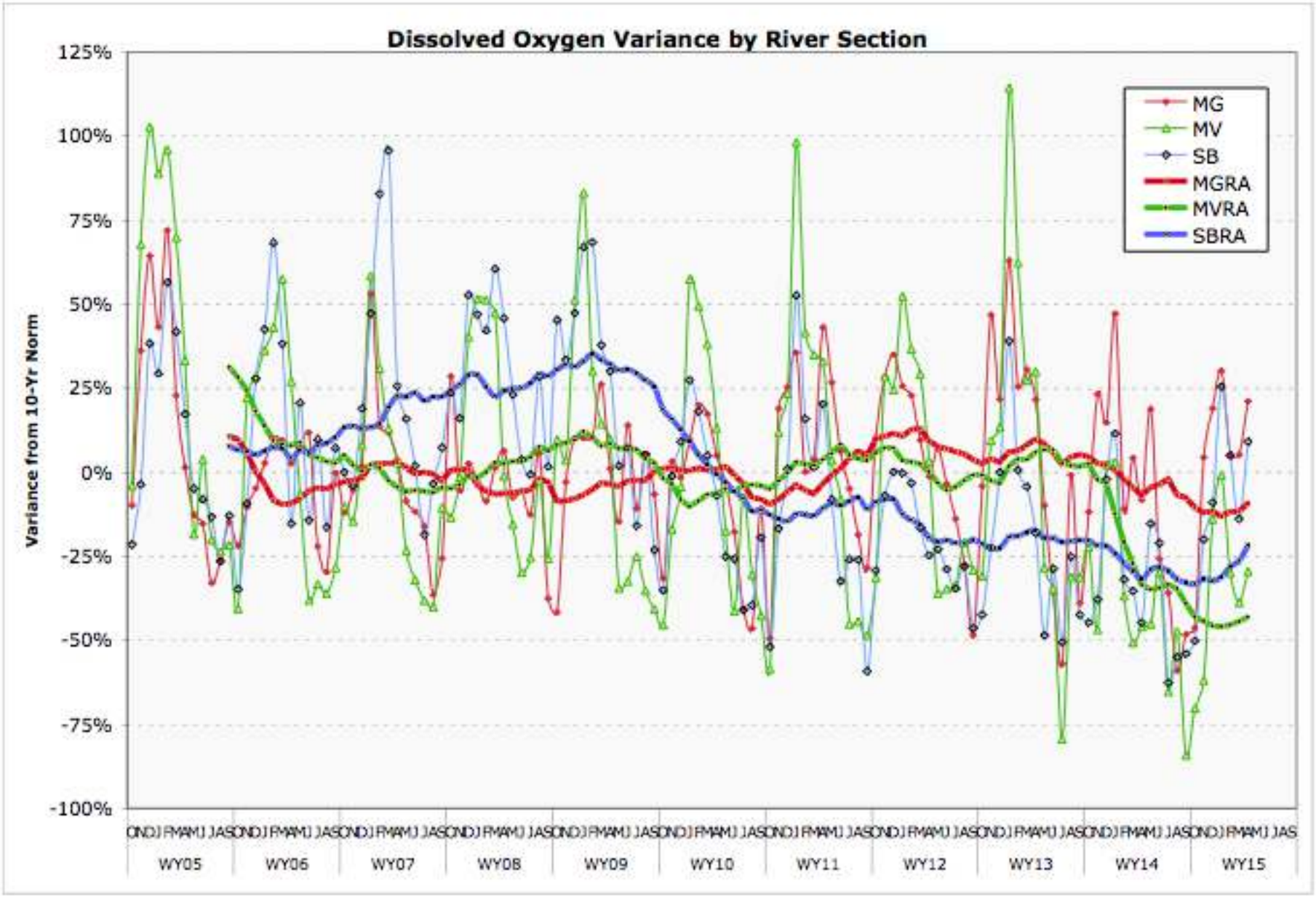
DO & Flow Variance-Others

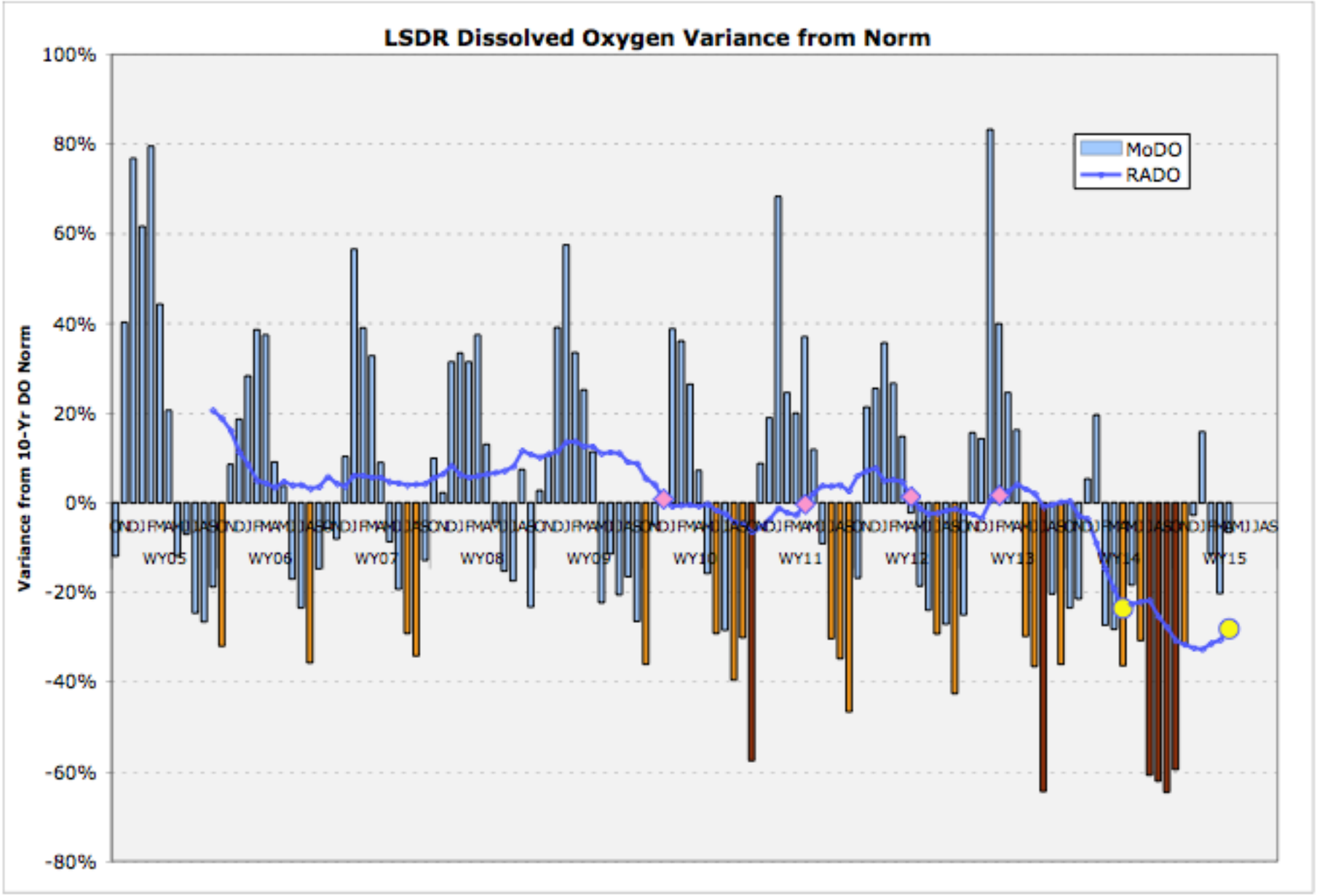



LSDR ADF
Variance from 10-Yr Norm (25 cfs)
1000%
900%
800%
700%
600%
500%
400%
300%
200%
100%
0%
-100%
McADF
RAADF


LSDR ADF
Variance from 10-Yr Norm
200%
150%
100%
50%
0%
-50%
-100%
McADF
RAADF


LSDR, SMR & LPC DO Levels
SMR(WY15)
LSDR(WY15)
LPC(WY15)
SMR(10Yr)
LPC(10Yr)
LSDR(10Yr)
LSDR(WY15)
LSDR(WY14)
wy14
wy15
Dissolved Oxygen, mg/L
Variance From 10-yr Norms
0
1
2
3
4
5
6
7
8
9
10
11
75%
50%
25%
0%
-25%
-50%
-75%
-100%
O
N
D
J
F
M
A
M
J
J
A
S
2.3
4.0
5.6
6.2
5.1
4.6
5.4


Dissolved Oxygen Variance by River Section
Variance from 10-Yr Norm
125%
100%
75%
50%
25%
0%
-25%
-50%
-75%
-100%
MG
MV
SB
MGRA
MVRA
SBRA
OND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JASOND J FMAMJ JAS
WY05
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15


LSDR Dissolved Oxygen Variance from Norm
Variance from 10-Yr DO Norm
100%
80%
60%
40%
20%
0%
-20%
-40%
-60%
-80%
MoDO
RADO
WY05
WY06
WY07
WY08
WY09
WY10
WY11
WY12
WY13
WY14
WY15