

Supplementary Table 1: Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC% (POC/TSS%) and Chl-a for the different sampling sites of the Yellow River mainstream during 2003, 2006, 2007 and 2009 investigations. *Italics stand for reservoirs.*

Date	Distance to the river mouth	Sampling station	Q (m ³ /s)	TSS (mg/L)	POC (mg/L)	DOC (mg/L)	POC%	DOC/POC	Chl-a (ug/L)
OCT. 2003									
	3400	Xingcheng	823.53	1236.75	9.58	1.59	0.77	0.17	1.21
	3345	Baishiqiao	823.00	1612.75	9.62	1.89	0.60	0.20	1.12
	1150	Tongguan	2315.00	2470.00	18.17	3.09	0.74	0.17	0.81
	1025	<i>Sanmengxia</i>		<i>175.25</i>	<i>1.65</i>	<i>3.19</i>	<i>0.94</i>	<i>1.93</i>	<i>0.66</i>
	883	<i>Xiaolangdi</i>		<i>21.10</i>	<i>1.48</i>	<i>3.12</i>	<i>7.01</i>	<i>2.11</i>	<i>2.44</i>
	786	Huayuankou	588.00	4213.33	17.52	2.75	0.42	0.16	1.36
	104	Lijin	1823.50	8400.00	27.38	3.09	0.33	0.11	2.45
NOV. 2006									
	3400	Xingcheng	802.00	190.68	0.84	1.57	0.44	1.87	2.84
	3345	Baishiqiao	802.00	707.33	1.67	1.69	0.24	1.01	2.86
	2900	Yinchuan	636.00	663.67	4.24	1.87	0.64	0.44	2.98
	2200	Baotou	433.00	564.50	4.04	1.96	0.72	0.48	3.56
	1150	Tongguan	500.00	1308.33	6.07	2.62	0.46	0.43	0.81
	1025	<i>Sanmengxia</i>		<i>31.33</i>	<i>1.23</i>	<i>2.74</i>	<i>3.93</i>	<i>2.22</i>	<i>2.43</i>
	883	<i>Xiaolangdi</i>		<i>3.78</i>	<i>0.27</i>	<i>2.76</i>	<i>7.12</i>	<i>10.26</i>	<i>2.81</i>
	786	Huayuankou	440.00	505.00	2.48	2.19	0.49	0.88	2.80
	104	Lijin	328.00	549.25	3.62	2.59	0.66	0.71	2.77
JUL. 2007									
	4300	Lajia		328.00	2.11	2.38	0.64	1.13	2.36
	3722	Guide	562.00	136.50	0.65	1.58	0.48	2.43	1.99

Supplementary Table 1(continued): Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC% (POC/TSS%) and Chl-a for the different sampling sites of the Yellow River mainstream during 2003, 2006, 2007 and 2009 investigations. *Italics stand for reservoirs.*

Distance to the river mouth	Sampling station	Q (m ³ /s)	TSS (mg/L)	POC (mg/L)	DOC (mg/L)	POC%	DOC/POC	Chl-a (ug/L)
3345	Lanzhou	1040.00	360.00	1.57	2.06	0.44	1.32	3.72
2900	Yinchuan	830.00	8188.00	20.64	2.21	0.25	0.11	9.31
1150	Tongguan	130.00	6578.00	25.00	3.75	0.38	0.15	21.50
786	Huayuankou	525.00	413.00	2.26	2.83	0.55	1.25	22.00
104	Lijin		207.00	1.30	2.88	0.63	2.22	
JUL. 2009								
4850	Dari	298.00	91.42	2.01	2.93	2.20	1.46	0.53
4300	Lajia	500.00	143.62	2.61	2.97	1.82	1.14	0.82
3722	Guide	468.00	489.42	3.77	3.29	0.77	0.87	0.46
3500	<i>Liujiaxia</i>		5.28	0.31	3.67	5.80	11.99	5.93
3345	Lanzhou	1080.00	249.76	2.12	2.59	0.85	1.22	0.85
2900	Yinchuan	855.00	1493.83	8.59	3.27	0.57	0.38	1.24
2200	Baotou	310.00	394.56	2.60	2.47	0.66	0.95	7.40
1150	Tongguan	183.00	575.54	6.14	3.43	1.07	0.56	122.41
883	<i>Xiaolangdi</i>		5.53	1.38	4.04	24.87	2.94	0.68
786	Huayuankou	800.00	452.50	3.08	2.86	0.68	0.93	11.10
104	Lijin	210.00	220.57	1.42	1.89	0.64	1.33	12.48

Supplementary Table 2: Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC%(POC/TSS%) and Chl-a for the annual investigation at the Huayuankou station during 2005.11 and 2006.11. *Italics stand for the water and sediment regulation (WSR) period.*

y/m/d	Q (m ³ /s)	TSS (mg/L)	POC (mg/L)	DOC (mg/L)	POC%	Chl-a (ug/L)	DOC/POC
2005/11/26	725.00	502.00	1.37	3.36	0.27	5.28	2.46
2005/12/2	638.00	184.00	1.07	3.49	0.58	5.20	3.27
2005/12/9	622.00	239.00	1.10	3.03	0.46	6.73	2.77
2005/12/16	492.00	209.00	1.07	2.73	0.51	6.38	2.54
2005/12/23	590.00	284.00	1.16	2.68	0.41	6.22	2.32
2005/12/30	347.00	361.00	1.25	2.51	0.35	4.18	2.01
2006/1/5	440.00	206.00	1.08	2.69	0.52	6.46	2.50
2006/1/9	460.00	270.67	1.89	2.61	0.70	5.04	1.38
2006/1/15	297.00	168.67	1.51	3.16	0.89	2.76	2.09
2006/1/24	325.00	54.00	1.21	2.74	2.25	1.35	2.26
2006/2/1	316.00	58.67	1.46	3.08	2.49	4.89	2.11
2006/2/7	290.00	79.33	1.82	3.40	2.29	2.06	1.87
2006/2/13	265.00	204.00	2.30	3.53	1.13	4.02	1.53
2006/2/20	570.00	253.33	2.47	3.70	0.98	7.09	1.50
2006/2/27	735.00	86.67	1.71	3.34	1.97	5.83	1.96
2006/3/6	1190.00	354.00	3.02	3.19	0.85	1.82	1.06
2006/3/16	1150.00	675.00	3.38	3.72	0.50	4.42	1.10
2006/3/20	1150.00	373.33	3.74	3.29	1.00	2.53	0.88
2006/3/24	1120.00	522.00	3.10	3.35	0.59	4.02	1.08
2006/3/27	1060.00	213.00	2.24	2.66	1.05	0.83	1.19
2006/4/3	1040.00	329.00	3.71	2.66	1.13	1.35	0.72

Supplementary Table 2 (continued): Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC%(POC/TSS%) and Chl-a for the annual investigation at the Huayuankou station during 2005.11 and 2006.11. *Italics stand for the water and sediment regulation (WSR) period.*

y/m/d	Q (m ³ /s)	TSS (mg/L)	POC (mg/L)	DOC (mg/L)	POC%	Chl-a (ug/L)	DOC/POC
2006/4/10	895.00	443.00	2.52	2.46	0.57	1.33	0.98
2006/4/14	880.00	372.00	3.91	2.55	1.05	0.70	0.65
2006/4/19	1250.00	654.00	2.96	2.35	0.45	1.61	0.79
2006/4/25	1030.00	692.00	2.99	2.31	0.43	1.17	0.77
2006/5/9	1080.00	577.00	3.62	2.28	0.63	1.02	0.63
2006/5/16	1070.00	502.00	2.65	2.56	0.53	1.46	0.97
2006/5/17	890.00	582.00	2.78	2.52	0.48	1.90	0.91
2006/5/18	880.00	240.72	2.78	2.60	1.15	1.17	0.93
2006/5/23	945.00	480.70	2.55	2.71	0.53	0.76	1.06
2006/5/26	1150.00	468.00	1.70	2.86	0.36	0.64	1.68
2006/5/30	1230.00	198.20	2.97	2.95	1.50	0.86	0.99
2006/6/2	1130.00	479.00	1.69	2.83	0.35	1.17	1.68
2006/6/7	1400.00	338.00	3.07	2.96	0.91	2.41	0.96
2006/6/13	2700.00	1830.00	3.73	3.12	0.20	1.87	0.84
2006/6/16	3300.00	1660.00	3.42	3.60	0.21	2.19	1.05
2006/6/23	3720.00	1740.00	3.57	3.76	0.21	0.96	1.06
2006/6/28	3630.00	2576.00	3.90	3.69	0.15	2.51	0.95
2006/7/2	1120.00	1844.00	3.76	3.64	0.20		0.97
2006/7/5	1120.00	706.00	4.78	3.54	0.68	2.56	0.74
2006/7/14	532.00	627.00	3.43	3.40	0.55	3.19	0.99
2006/7/18	505.00	574.42	1.49	3.60	0.26	1.86	2.42

Supplementary Table 2 (continued): Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC% (POC/TSS%) and Chl-a for the annual investigation at the Huayuankou station during 2005.11 and 2006.11. *Italics stand for the water and sediment regulation (WSR) period.*

y/m/d	Q (m³/s)	TSS (mg/L)	POC (mg/L)	DOC (mg/L)	POC%	Chl-a (ug/L)	DOC/POC
2006/7/25	1200.00	456.56	1.72	3.50	0.38	1.82	2.03
2006/7/27	1470.00	202.38	1.61	3.10	0.79	2.38	1.93
2006/8/1	1320.00	318.82	1.79	3.00	0.56	1.66	1.68
2006/8/8	1000.00	859.52	4.51	3.05	0.52	4.30	0.68
2006/8/15	830.00	159.78	1.46	3.15	0.91	2.41	2.15
2006/8/22	680.00	104.83	1.19	3.54	1.13	3.90	2.98
2006/8/29	620.00	71.88	0.95	3.26	1.32	3.04	3.42
2006/9/5	1200.00	829.70	4.86	3.02	0.59	1.19	0.62
2006/9/12	600.00	263.44	1.74	3.30	0.66	3.44	1.90
2006/9/16	610.00	289.00	1.91	3.58	0.66	1.41	1.87
2006/9/19	460.00	121.44	1.41	3.70	1.16	1.56	2.63
2006/9/26	1370.00	828.28	3.56	2.94	0.43	3.20	0.83
2006/10/4	600.00	141.32	1.38	3.19	0.98	2.20	2.31
2006/10/9	720.00	97.59	1.51	3.52	1.55	2.46	2.33
2006/10/17	525.00	112.35	1.73	3.34	1.54	1.47	1.93
2006/10/23	550.00	120.02	1.27	3.57	1.06	0.89	2.80
2006/10/31	420.00	96.88	1.04	3.67	1.07	3.11	3.54
2006/11/7	446.00	100.71	1.16	3.57	1.15	2.52	3.07

Supplementary Table 3: Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC% (POC/TSS%) and Chl-a during the 2008 water and sediment regulation (WSR) period at the Lijin station.

m/d	Q (m ³ /s)	TSS(mg/L)	POC(mg/L)	DOC(mg/L)	POC%	chl-a (ug/L)	DOC/POC
Before water and sediment regulation period							
6-16	378	340	4.66	2.84	1.37	8.76	0.61
6-17	374	352	4.36	2.69	1.24	2.78	0.62
6-18	358	386	2.31	2.86	0.6	7.26	1.24
6-19	302	344.5	4.19	2.66	1.22	2.75	0.63
6-20	289	320.5	4.06	2.74	1.27	2.57	0.67
6-21	270	395	4.3	2.68	1.09	2.96	0.62
6-22	263	506	4.56	2.61	0.9	2.67	0.57
Water and sediment regulation period							
6-23	1330	1476	5.21	2.53	0.35	2.4	0.49
6-24	2740	1986	12.42	2.83	0.63	5.72	0.23
6-25	3080	3176	11.74	2.59	0.37	1.71	0.22
6-26	3120	2554	11.44	2.5	0.45	2.7	0.22
6-27	3180	2452	14.86	2.7	0.61	1.33	0.18
6-28	3730	2758	12.65	2.59	0.46	1.27	0.2
6-29	4040	3194	14.16	2.41	0.44	2.64	0.17
6-30	4110	2574	12.35	2.51	0.48	2.74	0.2
7-1	4030	2214	10.64	2.5	0.48	1.55	0.23
7-2	3880	2023.75	9.93	2.8	0.49	2.37	0.28
7-3	3760	1472.5	9.6	2.78	0.65	2.3	0.29
7-4	2920	6242	29.95	2.63	0.48	1.18	0.09
7-5	2790	18460	107.44	2.85	0.58	8.5	0.03

Supplementary Table 3 (continued): Overview of discharge (Q), total suspended solid (TSS), particulate organic carbon (POC), dissolved organic carbon (DOC), POC% (POC/TSS%) and Chl-a during the 2008 water and sediment regulation (WSR) period at the Lijin station.

m/d	Q (m ³ /s)	TSS(mg/L)	POC(mg/L)	DOC(mg/L)	POC%	chl-a (ug/L)	DOC/POC
7-6	2010	27105.71	188.28	2.94	0.69	8.55	0.02
7-7	1240	19392	126.36	2.67	0.65	11.35	0.02
7-8	1080	25234.29	175.48	2.85	0.7	15.22	0.02
7-9	600	19685.71	123.56	2.79	0.63	14.98	0.02
7-10	465	11214.29	72.05	2.61	0.64	9.13	0.04
After water and sediment regulation period							
7-11	375	4908.57	20.87	2.99	0.43	5.17	0.14
7-12	295	4868	19.58	2.83	0.4	6.12	0.14

Supplementary Table 4: Overview of Return flow, actual discharge and water consumption of each reach along the Yellow River during 2001-2010.

Parameter	Distance to the river mouth (km)	Sampling station	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Return flow (km³/a)													
	3345	Lanzhou	0.77	0.90	0.73	0.69	0.66	0.64	0.43	0.41	0.44	0.50	0.66
	2002	Toudaoguai	5.86	5.59	5.81	3.47	4.53	4.67	5.35	4.84	4.90	5.04	5.25
	1267	Longmen	0.01	0.02	0.01	0.11	0.11	0.15	0.14	0.15	0.17	0.15	0.14
	1025	Sanmengxia	0.39	0.38	0.51	0.68	0.71	0.70	0.74	0.78	0.79	0.82	0.99
	786	Huayuankou	0.19	0.19	0.14	0.16	0.16	0.13	0.23	0.22	0.26	0.27	0.31
	104	Lijin	0.16	0.18	0.15	0.11	0.12	0.11	0.12	0.12	0.12	0.13	0.17
Actual discharge (km³/a)													
	3345	Lanzhou	25.97	23.56	23.58	21.97	23.85	29.11	29.89	30.70	28.51	30.47	31.40
	2002	Toudaoguai	14.02	11.33	12.28	11.56	12.76	15.02	17.49	18.93	16.41	16.96	19.12
	1267	Longmen	15.72	13.94	15.66	16.23	15.85	16.92	19.96	20.59	17.76	17.83	20.73
	1025	Sanmengxia	16.31	14.26	15.21	23.61	16.87	21.14	21.20	24.27	21.08	21.97	25.01
	786	Huayuankou	16.53	16.55	19.56	27.27	24.05	25.70	28.11	26.97	23.61	23.22	27.63
	104	Lijin	4.86	4.65	4.19	19.26	19.88	20.68	19.17	20.40	14.56	13.29	19.30
Water consumption (km³/a)													
	3345	Lanzhou						41.09	27.61	34.63	29.52	37.84	30.69
	2002	Toudaoguai						38.17	25.80	33.10	27.85	35.12	28.76
	1267	Longmen						40.72	29.39	35.51	30.00	36.81	31.05
	1025	Sanmengxia						48.35	34.50	43.48	37.19	45.20	39.80
	786	Huayuankou						55.55	40.04	49.01	40.04	47.99	45.77
	104	Lijin						58.02	40.81	50.92	40.11	48.37	48.22

Supplementary Table 5: Overview of Discharges (Q) and precipitation (P) of every month at the Huayuankou station during 2005.11 and 2006.11

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Agu	Sep	Oct	Nov
Q (km³)	2.16	1.45	1.01	1.09	2.97	2.50	2.84	6.79	2.28	2.39	2.15	1.56	1.20
P (mm)	4.90	2.30	25.80	17.80	5.40	37.00	65.50	82.90	181.90	162.10	50.00	0	58.70

Supplementary Table 6: Overview of the COD values for the different sampling sites of the Yellow River mainstream during 2006 investigaiton

Distance to the river mouth(km)	Sampling station	COD (mg/L)
3400	Xingcheng	1.42
3345	Baishiqiao	1.65
2900	Yinchuan	2.42
2200	Baotou	2.21
1150	Tongguan	3.85
1025	Sanmengxia	3.49
883	Xiaolangdi	3.33
768	Huayuankou	2.59
104	Lijin	3.28

Supplementary Table 7: Overview of the discharges of each hydrological station at each month of 2003 (km³). *Italic font means sampling month.*

Distance to the river mouth	station	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
3911	Tangnaihai	0.23	0.24	0.39	0.57	0.98	1.32	2.13	3.16	3.81	<i>2.67</i>	1.10	0.54
3345	Lanzhou	0.95	0.80	0.77	1.10	2.00	1.98	1.99	2.42	2.85	3.38	2.25	1.50
2002	Toudaoguai	0.57	0.87	1.57	0.60	0.42	0.20	0.42	0.97	2.33	<i>1.50</i>	1.34	0.78
1267	longmen	0.65	1.05	1.70	1.11	0.54	0.69	0.81	1.72	2.85	<i>2.31</i>	1.72	1.09
1150	Tongguan	0.71	1.02	1.62	1.28	0.67	0.63	0.96	2.79	5.88	<i>6.03</i>	2.72	1.83
1025	Sanmengxia	0.51	0.95	1.32	1.05	0.62	0.73	0.86	2.52	5.83	<i>5.46</i>	2.28	1.48
883	Xiaolangdi	0.37	0.37	1.44	1.18	1.20	1.55	0.87	0.63	3.34	<i>3.96</i>	3.73	2.17
786	Huayuankou	0.45	0.39	1.48	1.26	1.16	1.56	1.22	1.10	5.47	<i>6.16</i>	4.41	2.62
104	Lijin	0.08	0.08	0.10	0.08	0.10	0.15	0.34	0.56	4.85	<i>6.59</i>	4.17	2.17

Supplementary Table 8: Overview of the discharges of each hydrological station at each month of 2006 (km³). *Italic font means sampling month.*

Distance to the river mouth	station	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
3911	Tangnaihai	0.59	0.52	0.61	0.75	0.98	1.61	2.20	1.56	2.01	1.88	<i>0.92</i>	0.50
3345	Lanzhou	1.49	1.26	1.72	3.08	3.40	3.45	3.24	2.84	2.88	2.73	2.20	1.62
2002	Toudaoguai	1.04	1.14	2.44	2.50	1.06	0.93	1.71	1.92	2.22	0.77	<i>0.94</i>	0.83
1267	longmen	1.10	1.38	2.84	2.30	1.24	1.31	1.74	2.33	2.70	1.18	<i>0.96</i>	0.89
1150	Tongguan	1.06	1.61	2.92	2.44	1.82	1.40	1.89	2.45	3.50	1.75	<i>1.33</i>	1.16
1025	Sanmengxia	0.96	1.42	2.89	1.96	1.51	1.60	1.73	2.18	3.47	1.37	<i>1.10</i>	0.99
883	Xiaolangdi	0.80	1.12	2.64	2.52	2.66	6.71	1.89	2.10	1.88	1.30	<i>1.03</i>	1.11
786	Huayuankou	1.01	1.09	2.97	2.50	2.84	6.79	2.28	2.39	2.15	1.56	<i>1.20</i>	1.33
104	Lijin	0.86	0.43	0.51	0.85	2.00	5.73	2.21	2.45	2.01	0.95	<i>0.73</i>	0.45

Supplementary Table 9: Overview of the discharges of each hydrological station at each month of 2007 (km³). *Italic font means sampling month.*

Distance to the river mouth	station	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
3911	Tangnaihai	0.37	0.32	0.58	0.76	0.80	3.24	<i>3.75</i>	2.38	2.75	2.18	1.18	0.60
3345	Lanzhou	1.37	1.17	1.34	2.20	3.13	3.06	<i>3.67</i>	3.38	3.50	<i>3.67</i>	2.53	1.66
2002	Toudaoguai	0.99	1.22	2.23	1.28	0.81	1.56	<i>1.43</i>	2.00	2.90	1.72	1.81	0.98
1267	longmen	0.93	1.34	2.51	1.50	0.87	1.61	<i>1.66</i>	2.03	2.90	2.13	1.92	1.18
1150	Tongguan	1.12	1.48	2.54	1.29	0.76	1.47	<i>2.58</i>	2.89	3.60	3.54	2.30	1.48
1025	Sanmengxia	1.02	1.39	2.42	1.17	0.69	1.79	<i>2.58</i>	2.81	3.60	3.21	2.29	1.31
883	Xiaolangdi	0.71	0.67	1.81	2.11	1.59	4.46	<i>2.81</i>	2.97	1.77	2.55	1.76	1.44
786	Huayuankou	0.80	0.65	2.04	2.20	1.51	4.15	<i>3.27</i>	4.21	2.18	2.81	1.84	1.32
104	Lijin	0.57	0.26	0.63	0.39	0.44	2.40	<i>3.59</i>	4.79	2.09	2.49	1.84	0.93

Supplementary Table 10: Overview of the discharges of each hydrological station at each month of 2009 (km³). *Italic font means sampling month.*

Distance to the river mouth	station	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
3911	Tangnaihai	0.51	0.53	0.73	1.14	1.88	2.77	<i>4.50</i>	4.15	4.04	3.32	1.78	0.98
3345	Lanzhou	1.43	1.05	2.04	3.21	3.35	3.40	<i>2.76</i>	2.71	3.29	3.19	2.46	1.60
2002	Toudaoguai	0.78	0.97	2.50	2.64	0.80	0.95	<i>0.90</i>	1.30	2.75	1.44	0.85	1.11
1267	longmen	0.84	1.32	2.45	2.58	0.84	1.31	<i>1.06</i>	1.10	2.80	1.45	1.09	1.00
1150	Tongguan	0.87	1.43	2.45	2.38	1.19	1.28	<i>1.03</i>	1.71	3.84	1.91	1.41	1.14
1025	Sanmengxia	0.83	1.59	2.64	2.54	1.36	1.72	<i>1.05</i>	1.67	4.10	1.69	1.48	1.31
883	Xiaolangdi	1.13	1.99	1.58	1.84	1.24	4.48	<i>1.61</i>	1.04	1.87	2.15	1.39	1.19
786	Huayuankou	1.17	2.03	1.86	1.92	1.36	4.38	<i>1.93</i>	1.27	2.03	2.25	1.63	1.41
104	Lijin	0.53	0.28	0.47	0.40	0.58	2.55	<i>2.53</i>	1.02	1.32	1.53	1.21	0.88

Supplementary Table 11: Overview of the temperature variations during the one year observation during 11, 2005 and 11, 2006 at the Huayuankou station (°C).

station	Month												
	11	12	1	2	3	4	5	6	7	8	9	10	11
Huayuankou	11.5	1.9	0.3	3.9	11.5	17.2	21.9	27.8	27.1	26.1	21.2	19.0	10.9