Modeling Fate and Transport of Nutrients and Heavy Metals in the Waters of a Tropical Mexican Lake to Predict Pollution Scenarios

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Water

Supplementary Information

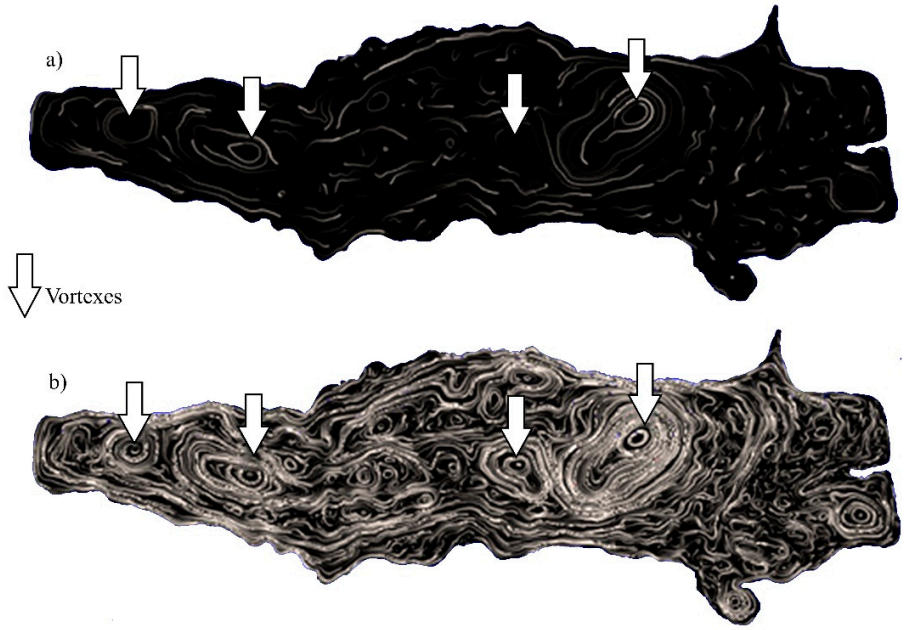


Figure S1. a) transport of one particle from the moment it enters until it leaves the lake b) transport of ten particles from the moment it enters until it leaves the lake.

Table S1. Description and GPS location of water sampling sites of Lake Chapala (May 2014 and May 2015).

Site	Name	GPS coordinates	
S1	Jocotepec	20°16′41.9″N	103°24′46.9″W
S2	San Juan Cosala	20°16′52.6″N	103°20′28.7″W
S3	San Luis Soyatlan	20°12′24.9″N	103°17′37.5″W
S4	P1/2	20°14′11.4″N	103°15′31.2″W
S5	Chapala	20°17′17.3″N	103°12′10.8″W
S6	Acueducto	20°18′23.9″N	103°08′21.8″W
S7	Tuxcueca	20°10′20.8″N	103°09′47.2″W
S8	Tizapan	20°11′37.5″N	103°02′17.9″W
S9	Depocentro	20°15′09.2″N	103°03′21.3″W
S10	Mezcala	20°19′16.5″N	103°01′42.5″W
S11	El Fuerte	20°18′00.4″N	102°46′47.8″W
S12	Jamay	20°16′51.1″N	102°43′30.0″W
S13	Lerma	20°12′32.3″N	102°46′00.5″W
SE1	R2	20°15'22.06"N	103°21′2.97″W
SE2	R5	20°14′39.2″N	103°15′55.67″W
SE3	R9	20°15′07.1″N	103°03′17.4″W

SE4	R12	20°16′01.9″N	102°54′53.3″W
SE5	R15	20°13′10.2″N	102°55′51.7″W
SE6	R16	20°18′00.4″N	102°46′47.8″W
SE7	R17	20°13'19.80"N	102°45'58.50"W

Table S2. Dispersion coefficient values (D_x and D_y) of selected contaminants in twelve zones of Lake Chapala (May 2014).

Zone	$D_x \times 10^4$ ($m^2\ s^{-1}$)				$D_y \times 10^4$ ($m^2\ s^{-1}$)				E_{xx}***
	Ni_{part}*	Ni_{diss}*	NO_3^-	PO_4^{3-}	Ni_{part}*	Ni_{diss}*	NO_3^-	PO_4^{3-}	Pa-s
1	DVF**	DVF**	DVF**	2	DVF**	DVF**	DVF**	2	47.8
2	2	1	1	4	4	1	2	6	48.8
3	3	7	1	4.6	5	5	2	6	49.0
4	7	7	DVF**	5	7.5	6	DVF**	4	49.0
5	2	4	3	4	1	8	2.5	6	48.8
6	DVF**	1	DVF**	5	DVF**	5	DVF**	5	49.1
7	2	4	2	3.7	6	9	3	5	49.5
8	2	3	2	3	4	4.5	2	3	48.9
9	3	1	3	4	1.6	1	2	5	49.5
10	DVF**	DVF**	1	10	DVF**	DVF**	1	10	47.9
11	0.5	1	DVF**	2	0.9	1	DVF**	2	47.5
12	DVF**	DVF**	DVF**	2	DVF**	DVF**	DVF**	3	48.0

*part =particulate; diss=dissolved.

**DVF=Dominant Velocity Fields

***Lerma river flow rate: Q_{Lerma}= 9 $m^3\ s^{-1}$.

Table S3. Dispersion (D_x and D_y) and Eddy viscosity E_{xx} coefficient values of selected contaminants in twelve zones of Lake Chapala (May 2015).

Zone	$D_x \times 10^4$ (m^2s^{-1})			$D_y \times 10^4$ (m^2s^{-1})			E_{xx} *** Pa-s
	Zn_{tot}*	NO_3^-	PO_4^{3-}	Zn_{tot}*	NO_3^-	PO_4^{3-}	
1	DVF**	DVF**	DVF**	DVF**	DVF**	DVF**	47.6
2	1	1	10	1.5	2	12	48.5
3	1	1	12	1.5	2	16	49.0
4	1.3	DVF**	16	2.5	DVF**	24	49.0
5	6	3	16	4.9	2.5	43	48.8
6	DVF**	DVF**	43	DVF**	DVF**	29	49.1
7	5	2	23	7.5	3	27	49.5
8	8	2	20	7	2	18	48.9
9	9	3	19	8	2	25	49.5
10	DVF**	1	19	DVF**	1	11	47.9
11	1	DVF**	10	1	DVF**	19	47.5
12	DVF**	DVF**	10	DVF**	DVF**	17	48.0

*tot=total.
**DVF=Dominant Velocity Fields
*** Lerma river flow rate: Q_{Lerma} = 2.5 m^3s^{-1}.