

5. CALCUL DE BILAN HYDROLOGIQUE DU BARRAGE DE BOALI

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1. Objectifs

Les objectifs ici sont de stimuler l'arrivée d'eau du barrage de BOALI construit à BOALI sur la rivière MBALI, pour étudier le bilan hydrologique du barrage pendant 35 ans, de 1964 à 1998, afin d'analyser la fréquence de la pénurie d'eau du barrage, et pour établir des données de base pour l'estimation de l'arrivée d'eau de sécheresse probable de la rivière MBALI. L'arrivée d'eau de base à libérer du barrage est fixée à l'arrivée d'eau minimale requise pour la production d'électricité ou $20 \text{ m}^3/\text{sec}$. et $25 \text{ m}^3/\text{sec}$.

2. Bassin fluvial

Emplacement	: Latitude N $4^{\circ}50'$ - N $5^{\circ}50'$, Longitude E $17^{\circ}00'$ - E $18^{\circ}05'$
Altitude	: env. 550 m - 700 m
Bassin versant	: 4.560 km^2 (rivières BOALI, MBALI)
Précipitations annuelles	: env. 1.540 mm (BOSSEMBELE, moyenne 1964-1998)

Dans le bassin fluvial, le climat de savane tropicale domine (saison sèche: décembre-janvier, saison des pluies: mars-novembre). Il n'y a pas de zone montagneuse à pentes raides, mais des zones de collines à pente relativement douce du point de vue topographique. Les roches métamorphiques précambriniennes sont considérées comme la principale roche de base de la région, incluant le bassin, du point de vue géologique. La latérite et le sol latéritique couvrent la majeure partie de la région. Du point de vue morphologique, le système hydrologique est considéré être dans son état naturel. Il n'y a pas de prise d'eau de grande envergure. Le barrage de BOALI, achevé en novembre 1990, a permis de fournir $20 \text{ m}^3/\text{sec}$ aux centrales électriques de BOALI I et II même pendant la saison sèche après août 1991.

3. Méthode d'analyse

(1) Calcul du bilan hydrologique du barrage de BOALI

La fréquence de la pénurie en eau a été étudiée sur la base des conditions requises pour la libération d'eau du barrage de BOALI pour la production d'électricité de $20 \text{ m}^3/\text{sec}$ et $25 \text{ m}^3/\text{sec}$. Le traitement des données a été fait comme indiqué ci-dessous.

a. Afflux d'eau au barrage comme données d'entrée ou arrivée d'eau journalière Qin (Qi)

1964-1984:

l'arrivée d'eau moyenne mensuelle MUBALI est supposée être l'arrivée d'eau journalière du mois.

(Les données de arrivée d'eau journalière ne sont pas disponibles.)

1985 - oct. 1990:

Arrivée d'eau journalière observée de MUBALI-ICOT utilisée quand disponible et arrivée d'eau calculée par Modèle de réservoir est utilisée pour les périodes sans données d'observation.

Nov. 1990 - oct. 1992:

Le barrage étant en service, le débit ICOT est le débit du barrage. Il n'y a pas de relevés de niveau d'eau du barrage ou bien ils ne sont pas disponibles, aussi Qin ne peut pas être calculé par la méthode suivante (3). A partir des éléments précités, la valeur simulée par Modèle de Réservoir est utilisée comme Qin.

Nov. 1992 - 1998:

Qin dérivé du niveau d'eau du barrage et du débit ICOT (voir (3) ci-dessous) sont sélectionnés.

- b. Les précipitations mensuelles (1964-1984) et journalières (1985-1998) à BOSSEMBELÉ sont utilisées pour estimer les précipitations à la surface du réservoir. Pour les périodes sans observation, les précipitations journalières sont couvertes par corrélation avec celles de BANGUI-MPOKO.
- c. L'évaporation de la surface du réservoir a été calculée à partir de l'évaporation moyenne mensuelle (1991, 1992 et 1994) à BOSSEMBELÉ multipliée par le facteur d'évaporation.
- d. L'infiltration est négligée dans l'étude. Le débit ICOT inclut l'eau de surface en provenance du sous-sol et du corps du barrage. L'eau souterraine en provenance de l'eau de stockage du réservoir est considérée être une quantité négligeable. (La méthode suivante de (3) n'exige pas d'élément d'infiltration.)

Formule de base pour le bilan hydrologique

$$V_j =$$

où:

V_j : volume d'eau de réserve le jour j (m^3)

V_{in} : débit d'eau au réservoir (m^3/d)

$$V_{in} = Qin * 86400$$

V_{out} : débit d'eau du réservoir (m^3/d)

$$V_{out} = Qout * 86400$$

P : précipitation sur le réservoir (m^3/d)

$$P = P (mm) * A/1000$$

E : évaporation du réservoir (m^3/d)

$$E = Ke * E (mm) * A/1000$$

I : infiltration à partir du réservoir, négligée dans l'étude

Qin, Qi : débit d'eau au réservoir (m^3/s)

Qout, Qo : débit d'eau du réservoir (m^3/s)
 S : surface d'eau du réservoir (m^2) $A = f(H)$
 Ke : facteur d'évaporation, 0,8 dans l'étude
 WL : niveau d'eau du réservoir (m) $WL = H + 548,50$
 H : profondeur d'eau du réservoir au-dessus de EL 548,50 m(m), $H = f(V)$

Les relations H-A et H-V sont présentées ci-dessous et sur la Fig. 1.

$$A = f(H) = 58727 * H^{1,98569}$$

$$V = f(H) = 68163 * H^{2,59972}$$

$$H = f(V) = (V / 68163)^{(1 / 2,59972)}$$

Dans le calcul du bilan hydrologique, les données d'entrée sont Qin, P et E et les données de sortie sont Qout et WL.

$$Qout = Qof + Qv$$

$$Qof = 120 * Hof^{1,5} \quad (WL > 572,00 \text{ or } Hof > 0)$$

$$Qof = 0 \quad (WL \leq 572,00)$$

$$Qg = 0 \quad (Qof \geq Qb)$$

$$Qg = Qb - Qof \quad (Qof < Qb)$$

Mais quant $WL < LWL + 1,00$, $Qg = Qin$

où:

Qof : débordement du déversoir (m^3/s)
 Qg : flux libéré par vanne de commande (m^3/s)
 Hof : profondeur d'eau déversée au-dessus du sommet du déversoir (m),
 Qb : débit de base, 2 cas $20 \text{ m}^3/\text{s}$ et $25 \text{ m}^3/\text{s}$
 LWL : niveau d'eau minimum requis pour la production d'électricité: 552,00 m

Dans le calcul d'arrivée d'eau au barrage, Qin est dérivé du relevé de niveau d'eau du réservoir WL, Qout (débit observé à ICOT), P et E.

(2) Analyse de l'écoulement de la rivière MBALI

Pour obtenir le débit journalier à BOALI, une analyse de l'écoulement à long terme et à débit faible a été effectuée sur une période allant de 1985 à 1998.

Supplément de données avant l'achèvement du barrage:

Janvier-juin 1985, février, mars et août 1986, décembre 1988

Estimation de l'arrivée d'eau au barrage:

Novembre 1990 - octobre 1992

La méthode Modèle de Réservoir, qui est largement utilisée et donne de bons résultats, et a une bonne réputation à la fois au Japon et à l'étranger a été sélectionnée. D'après les manuels du Dr. Sugawara, de bons résultats peuvent être obtenus avec 4 réservoirs dans les régions humides comme le Japon et des réservoirs à 4 zones x 4 strates sont recommandés pour les régions semi-arides et les régions à saison sèche. La structure en 4x4 réservoirs a été sélectionnée pour cette étude. Les paramètres définis selon la méthode d'expérimentation systématique sont indiqués sur la Fig.2. Les précipitations journalières comme données d'entrée sont pondérées par les précipitations moyennes de BOSSEMBELE et de BANGUI-M'POKO. La Fig. 3 indique les résultats du calcul par Modèle de Réservoir.

(3) Calcul de l'arrivée d'eau au barrage

Les données de niveau d'eau du bassin pour la période allant de novembre 1992 à la fin 1998 permettent de calculer le volume d'eau stocké et la surface d'eau du réservoir. L'arrivée d'eau au barrage Qin est calculée à partir du niveau d'eau du barrage et du débit du barrage Qout ou de la valeur d'observation ICOT pour ladite période. Bien qu'il soit possible d'utiliser le relevé de débit à la sortie du barrage comme Qout, le débit ICOT est jugé plus fiable (par exemple dans la comparaison des valeurs 1993). L'arrivée d'eau au barrage d'abord calculée est modérée de moyenne sur 5 jours. Le Tableau 1 donne un exemple de fiche de calcul et le Tableau 2 les résultats.

4. Résultats de l'analyse

Le Tableau 3 donne un exemple de fiche de calcul pour le bilan hydrologique du barrage de BOALI pendant 35 ans, de 1964 à 1998, et les résultats sont indiqués sur les Fig. 4 et 5 et résumé dans le Tableau 4, et sur les Fig. 6 et 7. Il n'y a pas de pénurie d'eau en cas de débit de base Q_b de $20 \text{ m}^3/\text{sec}$. Il y a eu pénurie en 1988 et 1990 avec un débit de Q_b de $25 \text{ m}^3/\text{sec}$. Pour le Q_b de $20 \text{ m}^3/\text{sec}$, la période de répétition est estimée à plus de 20-30 ans ou le taux de sécurité a plus de 95% (taux de risque inférieur à 5%). Pour Q_b de $20 \text{ m}^3/\text{sec}$, l'intervalle de récurrence de la pénurie d'eau est considéré de 15-20 ans environ, ou taux de sécurité de plus ou moins 94% (taux de risque: env. 6%).

5. Considération

La simulation du bilan hydrologique de 35 ans, de 1964 à 1998, a mis au clair les points suivants. La première période à la fin des années 1960 est une période à eau abondante avec une dépendance moindre du barrage. Dans les années 1970, Qin est souvent inférieur à Q_b , mais le niveau d'eau du réservoir ne baisse pas tellement. Dans les années 1980, l'écoulement

ainsi que les précipitations dans le bassin ont considérablement diminué, ce qui s'est traduit par une nette tendance aux pénuries d'eau et aux sécheresses. Le niveau d'eau du barrage descend souvent assez bas. Le rétablissement après les sécheresses a été réalisé dans une certaine mesure dans les années 1990.

Le calibrage du Modèle de Réservoir a permis de découvrir des années adaptées et des années moins adaptées. Mais cela est jugé inévitable, parce qu'il n'existe qu'une seule station d'observation pluviométrique dans ce grand bassin et qu'il y a une autre station éloignée du bassin parmi les stations d'observation pluviométrique qui ont normalement de données utiles et disponibles. Pour décider de la structure du modèle et des paramètres, l'accent a été mis sur l'adaptation aux conditions hydrographiques de la période de sécheresse, qui influence le plus la baisse de niveau d'eau du barrage.

Tableau 1 Exemple de calcul d'arrivée d'eau au barrage de Boali(1993)

Arrivée d'eau (Qin) au barrage de Boali dérivée du niveau d'eau du réservoir et du débit (Q-Icot)

Year : 1993												
Month	Date	WL	V	dV	Q-Icot	Vout	A	P	E	Vin	Qin	Qin(mv.sv.)
		m	10³m³	10³m³	m³/s	10³m³	10³m³	10³m³	10³m³	10³m³	m³/s	m³/s
	572.40	261,215					32,056				Qin	
Jan.	1	572.39	260,930	-284	30.9	2,670	32,029	0	128	2,514	29.1	28.2
	2	572.39	260,930	0	30.8	2,651	32,029	0	128	2,789	32.3	29.3
	3	572.39	260,930	0	30.3	2,618	32,029	0	128	2,746	31.8	31.3
	4	572.39	260,930	0	30.2	2,609	32,029	0	128	2,737	31.7	31.7
	5	572.39	260,930	0	30.1	2,601	32,029	0	128	2,729	31.6	30.7
	6	572.39	260,930	0	29.6	2,557	32,029	0	128	2,686	31.1	29.6
	7	572.38	260,647	-284	29.4	2,540	32,003	0	128	2,384	21.6	28.8
	8	572.37	260,363	-284	27.7	2,393	31,976	0	128	2,238	25.9	27.3
	9	572.37	260,363	0	26.5	2,290	31,976	0	128	2,418	28.0	26.4
	10	572.36	260,079	-283	25.8	2,229	31,950	0	128	2,074	24.0	25.4
	11	572.36	260,079	0	25.1	2,169	31,950	0	128	2,296	26.6	24.8
	12	572.35	259,796	-283	24.5	2,117	31,923	0	128	1,961	22.7	24.3
	13	572.34	259,513	-283	24.4	2,108	31,896	0	128	1,953	22.6	24.6
	14	572.34	259,513	0	24.3	2,100	31,896	0	128	2,227	25.8	24.3
	15	572.34	259,513	0	23.8	2,056	31,896	0	128	2,184	25.3	24.1
	16	572.34	259,513	0	23.7	2,048	31,896	0	128	2,175	25.2	24.5
	17	572.33	259,230	-283	23.6	2,039	31,870	0	128	1,884	21.8	24.3
	18	572.33	259,230	0	23.1	1,996	31,870	0	127	2,123	24.6	24.0
	19	572.33	259,230	0	23.0	1,987	31,870	0	127	2,115	24.5	23.7
	20	572.33	259,230	0	22.4	1,935	31,870	0	127	2,063	23.9	23.3
	21	572.33	259,230	0	22.3	1,927	31,870	0	127	2,054	23.8	23.0
	22	572.32	258,947	-283	21.8	1,884	31,843	0	127	1,728	20.0	22.0
	23	572.32	258,947	0	21.6	1,866	31,843	0	127	1,994	23.1	21.7
	24	572.31	258,665	-283	21.1	1,823	31,817	0	127	1,668	19.3	20.3
	25	572.31	258,665	0	20.8	1,797	31,817	0	127	1,924	22.3	20.1
	26	572.30	258,383	-282	18.5	1,598	31,790	0	127	1,443	16.7	19.5
	27	572.30	258,383	0	17.8	1,538	31,790	0	127	1,665	19.3	19.6
	28	572.30	258,383	0	18.3	1,581	31,790	0	127	1,708	19.8	18.3
	29	572.30	258,383	0	18.3	1,581	31,790	0	127	1,708	19.8	18.8
	30	572.29	258,101	-282	17.7	1,529	31,764	0	127	1,374	15.9	16.5
	31	572.29	258,101	0	17.7	1,529	31,764	0	127	1,656	19.2	17.0
Feb.	1	572.29	258,101	0	17.7	1,529	31,764	978	127	678	7.8	18.4
	2	572.29	258,101	0	23.1	1,996	31,764	178	127	1,945	22.5	18.9
	3	572.30	258,383	282	21.7	1,875	31,790	0	127	2,284	26.4	19.6
	4	572.29	258,101	-282	21.1	1,823	31,764	57	127	1,611	18.6	22.5
	5	572.29	258,101	0	21.0	1,814	31,764	0	127	1,941	22.5	21.8
	6	572.29	258,101	0	21.0	1,814	31,764	0	127	1,941	22.5	20.2
	7	572.28	257,819	-282	20.9	1,806	31,737	0	127	1,651	19.1	20.7
	8	572.27	257,537	-282	20.3	1,754	31,711	0	127	1,599	18.5	19.7
	9	572.27	257,537	0	19.6	1,693	31,711	0	127	1,820	21.1	19.1
	10	572.26	257,255	-282	18.9	1,633	31,684	0	127	1,478	17.1	18.6
	11	572.26	257,255	0	18.3	1,581	31,684	0	127	1,708	19.8	19.1
	12	572.25	256,974	-281	18.3	1,581	31,658	0	127	1,426	16.5	18.0
	13	572.25	257,086	113	18.3	1,581	31,668	0	127	1,820	21.1	17.9
	14	572.24	256,693	-394	18.8	1,624	31,631	0	127	1,357	15.7	17.9
	15	572.23	256,412	-281	18.3	1,581	31,605	0	127	1,427	16.5	17.8
	16	572.23	256,412	0	18.3	1,581	31,605	0	126	1,708	19.8	16.4
	17	572.22	256,131	-281	17.6	1,521	31,578	0	126	1,366	15.8	19.0
	18	572.20	255,570	-561	19.2	1,659	31,525	0	126	1,224	14.2	19.3
	19	572.22	256,131	561	20.8	1,797	31,578	0	126	2,484	28.8	18.8
	20	572.21	255,850	-281	19.7	1,702	31,552	0	126	1,548	17.9	19.4
	21	572.20	255,570	-280	18.9	1,633	31,525	0	126	1,479	17.1	19.9
	22	572.20	255,570	0	17.7	1,529	31,525	0	126	1,655	19.2	17.5
	23	572.19	255,290	-280	18.3	1,581	31,499	0	126	1,427	16.5	16.6
	24	572.18	255,009	-280	18.7	1,616	31,473	0	126	1,462	16.9	17.1
	25	572.16	254,450	-560	18.3	1,581	31,420	0	126	1,147	13.3	16.4
	26	572.16	254,450	0	18.0	1,555	31,420	0	126	1,681	19.5	16.2
	27	572.15	254,170	-279	17.7	1,529	31,394	0	126	1,375	15.9	15.2
	28	572.14	253,891	-279	17.2	1,486	31,367	0	126	1,332	15.4	15.5
Mar.	1	572.12	253,333	-558	17.0	1,469	31,315	0	125	1,036	12.0	15.6
	2	572.11	253,054	-279	18.6	1,607	31,288	191	125	1,263	14.6	15.0
	3	572.11	253,054	0	18.6	1,607	31,288	0	125	1,732	20.0	14.7
	4	572.09	252,497	-557	18.0	1,555	31,236	0	125	1,123	13.0	15.4
	5	572.07	251,941	-556	19.0	1,642	31,183	0	125	1,210	14.0	15.2
	6	572.05	251,386	-555	20.2	1,745	31,131	0	125	1,315	15.2	7.8
	7	572.03	250,831	-555	18.7	1,616	31,078	0	125	1,186	13.7	9.2
	8	572.02	250,554	-277	18.1	1,564	31,052	2,859	124	-1,448	-16.8	9.8
	9	572.02	250,554	0	18.6	1,607	31,052	0	124	1,731	20.0	10.0
	10	572.01	250,277	-277	18.5	1,598	31,026	0	124	1,446	16.7	11.0
	11	572.00	250,001	-277	18.0	1,555	30,999	0	124	1,403	16.2	17.0
	12	572.00	250,001	0	17.2	1,486	30,999	0	124	1,610	18.6	14.6
	13	571.99	249,724	-276	15.2	1,313	30,973	0	124	1,161	13.4	13.9

Year : 1993

Month	Date	WL m	V 10^3 m^3	dV 10^3 m^3	Q-ICD m^3/s	Vout 10^3 m^3	A 10^3 m^2	P 10^3 m^3	E 10^3 m^3	Vin 10^3 m^3	Qin m^3/s	Qin(mv av) m^3/s
	14	571.97	239,172	-552	13.1	1,132	30,921	0	124	703	8.1	13.4
	15	571.97	239,172	0	11.7	1,011	30,921	0	124	1,135	13.1	13.5
	16	571.96	248,896	-276	15.7	1,356	30,895	37	124	1,167	13.5	12.6
	17	571.96	248,896	0	17.8	1,538	30,895	0	124	1,661	19.2	14.7
	18	571.93	248,069	-827	17.0	1,469	30,816	0	124	766	8.9	14.8
	19	571.93	248,069	0	17.1	1,477	30,816	0	123	1,601	18.5	15.4
	20	571.91	247,519	-550	18.6	1,607	30,764	0	123	1,180	13.7	14.0
	21	571.90	247,244	-275	18.3	1,581	30,738	0	123	1,429	16.5	14.7
	22	571.88	246,695	-549	17.3	1,495	30,686	0	123	1,069	12.4	14.8
	23	571.86	246,147	-548	17.1	1,477	30,634	0	123	1,052	12.2	13.9
	24	571.86	246,147	0	17.9	1,547	30,634	0	123	1,659	19.3	13.9
	25	571.83	245,326	-821	17.0	1,469	30,556	0	123	770	8.9	13.6
	26	571.82	245,053	-273	18.5	1,598	30,530	0	122	1,447	16.8	14.9
	27	571.79	244,234	-819	18.9	1,633	30,452	0	122	936	10.8	12.9
	28	571.78	243,962	-273	15.9	1,374	30,426	0	122	1,223	14.2	13.1
	29	571.76	243,417	-544	18.8	1,624	30,374	0	122	1,202	13.9	12.2
	30	571.74	242,873	-544	17.6	1,521	30,322	231	121	868	10.0	12.2
	31	571.72	242,330	-543	17.0	1,469	30,270	0	121	1,047	12.1	11.5
Apr.	1	571.70	241,788	-542	16.0	1,382	30,219	0	97	937	10.8	9.7
	2	571.68	241,247	-542	15.5	1,339	30,167	0	97	894	10.4	9.4
	3	571.65	240,436	-811	17.5	1,512	30,089	338	97	460	5.3	9.7
	4	571.63	239,896	-540	13.6	1,175	30,038	0	96	732	8.5	9.4
	5	571.62	239,627	-270	15.7	1,356	30,012	0	96	1,183	13.7	11.3
	6	571.61	239,357	-269	19.3	1,668	29,986	723	96	771	8.9	12.2
	7	571.61	239,357	0	19.5	1,685	29,986	42	96	1,739	20.1	15.0
	8	571.58	238,550	-807	18.2	1,572	29,909	21	96	841	9.7	16.1
	9	571.59	238,819	269	19.8	1,711	29,935	108	96	1,968	22.8	17.2
	10	571.58	238,550	-269	21.0	1,814	29,909	0	96	1,641	19.0	15.5
	11	571.58	238,550	0	20.8	1,797	29,909	661	96	1,232	14.3	17.4
	12	571.55	237,745	-805	19.9	1,719	29,832	0	96	1,010	11.7	16.1
	13	571.54	237,477	-268	21.4	1,849	29,806	0	95	1,676	19.4	15.5
	14	571.52	236,942	-536	21.1	1,823	29,755	0	95	1,383	16.0	13.2
	15	571.50	236,407	-535	21.0	1,814	29,703	0	95	1,375	15.9	16.6
	16	571.47	235,606	-801	21.0	1,814	29,627	6	95	1,103	12.8	13.9
	17	571.46	235,339	-267	21.0	1,814	29,601	0	95	1,643	19.0	16.5
	18	571.42	234,275	-1,064	20.8	1,797	29,499	343	95	484	5.6	17.4
	19	571.45	235,073	798	19.1	1,650	29,575	0	94	2,543	29.4	17.0
	20	571.45	235,073	0	18.9	1,633	29,575	0	95	1,728	20.0	15.9
	21	571.42	234,275	-798	18.9	1,633	29,499	0	95	930	10.8	18.2
	22	571.40	233,744	-531	18.9	1,633	29,448	0	94	1,196	13.8	14.9
	23	571.39	233,479	-265	18.9	1,633	29,422	0	94	1,462	16.9	15.4
	24	571.38	233,214	-265	18.6	1,607	29,397	327	94	1,110	12.8	15.9
	25	571.40	233,744	530	15.4	1,331	29,448	0	94	1,955	22.6	15.9
	26	571.38	233,214	-530	18.1	1,564	29,397	0	94	1,128	13.1	15.1
	27	571.36	232,684	-530	19.0	1,642	29,346	0	94	1,206	14.0	17.0
	28	571.34	232,155	-529	20.8	1,797	29,295	232	94	1,130	13.1	15.6
	29	571.34	232,155	0	21.0	1,814	29,295	0	94	1,908	22.1	16.8
	30	571.32	231,627	-528	21.0	1,814	29,244	0	94	1,380	16.0	16.6
May	1	571.31	231,363	-264	21.0	1,814	29,218	0	94	1,644	19.0	17.1
	2	571.28	230,573	-790	21.0	1,814	29,142	0	93	1,118	12.9	16.1
	3	571.27	230,310	-263	20.0	1,728	29,117	239	93	1,319	15.3	16.5
	4	571.26	230,047	-263	19.5	1,685	29,091	0	93	1,515	17.5	15.0
	5	571.25	229,784	-263	19.6	1,693	29,066	0	93	1,524	17.6	14.7
	6	571.22	228,997	-787	19.6	1,693	28,990	0	93	1,000	11.6	21.3
	7	571.19	228,212	-785	19.6	1,693	28,914	0	93	1,001	11.6	14.0
	8	571.28	230,573	2,361	19.6	1,693	29,142	0	93	4,147	48.0	10.3
	9	571.15	227,168	-3,405	19.5	1,685	28,813	0	93	-1,627	-18.8	11.4
	10	571.13	226,647	-521	19.0	1,642	28,762	1,282	92	-69	-0.8	11.3
	11	571.12	226,386	-260	18.9	1,633	28,737	0	92	1,465	17.0	4.4
	12	571.09	225,607	-780	18.9	1,633	28,661	0	92	945	10.9	11.6
	13	571.07	225,088	-519	18.9	1,633	28,611	0	92	1,206	14.0	13.3
	14	571.06	224,829	-259	18.9	1,633	28,586	0	92	1,465	17.0	14.5
	15	571.02	223,794	-1,035	18.9	1,633	28,485	26	91	664	7.7	15.1
	16	571.03	224,052	258	18.9	1,633	28,510	0	91	1,983	22.9	15.1
	17	571.01	223,535	-517	18.7	1,616	28,460	0	91	1,190	13.8	14.9
	18	570.99	223,019	-516	20.2	1,745	28,410	85	91	1,235	14.3	16.3
	19	570.97	222,504	-515	20.9	1,806	28,360	0	91	1,381	16.0	14.4
	20	570.95	221,990	-514	21.0	1,814	28,310	122	91	1,269	14.7	14.8
	21	570.92	221,219	-270	21.0	1,814	28,235	0	91	1,135	13.1	14.6
	22	570.90	220,707	-513	21.0	1,814	28,185	0	90	1,392	16.1	14.9
	23	570.87	219,939	-768	21.0	1,814	28,110	25	90	1,112	12.9	14.4
	24	570.86	219,684	-256	20.9	1,806	28,085	124	90	1,517	17.6	14.9
	25	570.83	218,918	-765	20.4	1,763	28,010	0	90	1,087	12.6	14.5
	26	570.81	218,409	-509	20.3	1,754	27,960	0	90	1,334	15.4	15.5
	27	570.79	217,900	-509	20.3	1,754	27,910	137	89	1,198	13.9	14.6

Year : 1993

Month	Date	WL	V	dV	O-1001	Vout	A	P	E	Vin	Qin	Qin(mv,av.)
			m	10 ³ m ³	m ³ /s	10 ³ m ³	m ³ /s	m ³ /s				
	28	570.78	217,646	-254	20.3	1,754	27,886	17	89	1,572	18.2	15.7
	29	570.76	217,138	-508	20.3	1,754	27,836	237	89	1,099	12.7	17.2
	30	570.75	216,885	-254	20.3	1,754	27,811	8	89	1,581	18.3	17.3
	31	570.76	217,138	-254	20.3	1,754	27,836	136	89	1,960	22.7	18.3
June	1	570.74	216,632	-507	20.2	1,745	27,786	50	89	1,277	14.8	20.6
	2	570.75	216,885	253	20.2	1,745	27,811	83	89	2,004	23.2	21.8
	3	570.76	217,138	254	20.2	1,745	27,836	0	89	2,088	24.2	19.8
	4	570.77	217,392	-254	20.2	1,745	27,861	0	89	2,088	24.2	19.9
	5	570.77	217,392	0	20.2	1,745	27,861	744	89	1,091	12.6	19.3
	6	570.76	217,138	-254	20.2	1,745	27,836	242	89	1,338	15.5	18.6
	7	570.76	217,138	0	20.2	1,745	27,836	100	89	1,734	20.1	17.7
	8	570.76	217,138	0	19.9	1,719	27,836	39	89	1,769	20.5	19.1
	9	570.76	217,138	0	19.0	1,642	27,836	22	89	1,708	19.8	21.2
	10	570.76	217,138	0	18.9	1,633	27,836	42	89	1,680	19.4	23.4
	11	570.79	217,900	762	18.9	1,633	27,910	231	89	2,253	26.1	22.7
	12	570.83	218,918	1,018	18.9	1,633	28,010	25	89	2,715	31.4	20.0
	13	570.82	218,663	-255	18.9	1,633	27,985	0	90	1,468	17.0	20.9
	14	570.81	218,409	-255	18.9	1,633	27,960	957	90	511	5.9	20.0
	15	570.83	218,918	509	18.9	1,633	28,010	159	89	2,072	24.0	18.9
	16	570.85	219,428	510	18.3	1,581	28,060	300	90	1,881	21.8	21.7
	17	570.87	219,939	511	19.7	1,702	28,110	56	90	2,247	26.0	26.2
	18	570.90	220,707	768	21.1	1,823	28,185	0	90	2,681	31.0	28.8
	19	570.93	221,476	769	21.6	1,866	28,260	268	90	2,458	28.4	31.1
	20	570.96	222,762	1,286	21.0	1,814	28,385	0	90	3,191	36.9	33.2
	21	571.02	223,794	1,032	21.0	1,814	28,485	94	91	2,843	32.9	33.2
	22	571.07	225,088	1,294	21.7	1,875	28,611	71	91	3,189	36.9	34.5
	23	571.12	226,386	1,299	14.8	1,279	28,737	0	92	2,669	30.9	32.9
	24	571.16	227,429	1,042	21.5	1,858	28,838	0	92	2,992	34.6	32.0
	25	571.19	228,212	784	19.1	1,650	28,914	0	92	2,526	29.2	30.4
	26	571.22	228,997	785	18.3	1,581	28,990	0	93	2,459	28.5	28.8
	27	571.25	229,784	787	18.9	1,633	29,066	17	93	2,495	28.9	25.8
	28	571.26	230,047	263	18.9	1,633	29,091	29	93	1,960	22.7	21.1
	29	571.26	230,047	0	18.9	1,633	29,091	0	93	1,726	20.0	19.9
	30	571.26	230,047	0	18.9	1,633	29,091	1,260	93	466	5.4	17.9
Jul	1	571.27	230,310	263	18.9	1,633	29,117	0	70	1,966	22.8	19.7
	2	571.27	230,310	0	18.9	1,633	29,117	96	70	1,607	18.6	19.1
	3	571.31	231,363	1,053	18.9	1,633	29,218	0	70	2,756	31.9	26.2
	4	571.31	231,363	0	18.9	1,633	29,218	245	70	1,458	16.9	26.8
	5	571.38	233,214	1,850	18.9	1,633	29,397	12	70	3,542	41.0	30.1
	6	571.40	233,744	530	18.9	1,633	29,448	0	71	2,234	25.9	27.5
	7	571.45	235,073	1,329	18.9	1,633	29,575	0	71	3,033	35.1	31.8
	8	571.50	236,407	1,334	18.9	1,633	29,703	1,417	71	1,621	18.8	27.6
	9	571.56	238,013	1,607	18.9	1,633	29,858	3	71	3,308	38.3	28.2
	10	571.59	238,819	806	18.9	1,633	29,935	1,063	72	1,448	16.8	29.5
	11	571.63	239,896	1,077	18.9	1,633	30,038	0	72	2,782	32.2	31.7
	12	571.70	241,788	1,892	18.9	1,633	30,219	18	72	3,579	41.4	27.8
	13	571.76	243,417	1,629	18.9	1,633	30,374	768	73	2,567	29.7	32.8
	14	571.83	245,326	1,909	18.9	1,633	30,556	1,989	73	1,625	18.8	36.2
	15	571.90	247,244	1,918	18.9	1,633	30,738	0	73	3,625	42.0	35.7
	16	571.99	249,724	2,430	19.7	1,702	30,973	0	74	4,256	49.3	40.8
	17	572.06	251,663	1,939	22.1	1,909	31,157	579	74	3,344	38.7	53.0
	18	572.15	254,170	2,507	26.9	2,324	31,394	128	75	4,778	55.3	48.3
	19	572.33	259,230	5,060	20.3	1,754	31,870	0	75	6,889	79.7	47.9
	20	572.32	258,947	-283	22.1	1,909	31,843	16	76	1,687	19.5	54.7
	21	572.37	260,363	1,415	31.2	2,696	31,976	210	76	3,977	46.0	57.1
	22	572.47	263,208	2,845	39.6	3,421	32,243	42	77	6,302	72.9	56.9
	23	572.53	264,924	1,716	49.2	4,251	32,403	222	77	5,822	67.4	66.4
	24	572.60	266,935	2,011	56.5	4,882	32,591	188	78	6,782	78.5	71.5
	25	572.63	267,800	865	61.4	5,305	32,671	430	78	5,818	67.3	70.3
	26	572.65	268,377	577	64.3	5,556	32,725	65	78	6,146	71.1	69.1
	27	572.65	268,377	0	66.3	5,728	32,725	0	79	5,807	67.2	66.3
	28	572.65	268,377	0	65.5	5,659	32,725	177	79	5,561	64.4	67.5
	29	572.65	268,377	0	65.0	5,616	32,725	399	79	5,295	61.3	66.6
	30	572.67	268,956	578	66.0	5,702	32,779	0	79	6,359	73.6	67.1
	31	572.68	269,245	289	67.7	5,849	32,806	456	79	5,762	66.7	71.1
Aug.	1	572.68	269,245	0	69.0	5,962	32,806	16	79	6,024	69.1	73.2
	2	572.71	270,114	859	73.2	6,324	32,887	0	79	7,273	84.2	71.3
	3	572.72	270,404	290	76.5	6,610	32,914	779	79	6,199	71.8	80.9
	4	572.75	271,276	872	83.0	7,171	32,995	3	79	8,119	94.0	82.5
	5	572.76	271,567	291	80.8	6,981	33,022	0	79	7,351	85.1	78.4
	6	572.75	271,276	-291	79.9	6,903	32,995	0	79	6,692	77.5	75.5
	7	572.75	271,276	0	79.5	6,869	32,995	1,458	79	5,490	63.5	72.8
	8	572.75	271,276	0	69.7	6,022	32,995	1,128	79	4,973	57.6	72.1
	9	572.75	271,276	0	80.8	6,981	32,995	102	79	6,958	80.5	72.3
	10	572.75	271,276	0	81.0	6,998	32,995	43	79	7,035	81.4	74.2

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Month	Date	WL	V	dV	O-100T	Vout	A	P	E	Vin	Qin	Qin(av.)
			m	10 ³ m ³	10 ³ m ³	m ³ /s	10 ³ m ³	m ³ /s	m ³ /s			
	11	572.75	271,276	0	77.5	6,696	32,995	0	79	6,775	78.4	76.4
	12	572.74	270,985	-291	75.6	6,532	32,968	0	79	6,320	73.2	74.3
	13	572.72	270,404	-581	74.3	6,420	32,914	0	79	5,918	68.5	71.2
	14	572.71	270,114	-290	72.4	6,255	32,887	0	79	6,044	70.0	70.5
	15	572.69	269,535	-580	72.0	6,221	32,833	16	79	5,701	66.0	75.0
	16	572.70	269,824	-290	70.7	6,108	32,860	20	79	6,457	74.7	75.2
	17	572.75	271,276	1,452	78.0	6,739	32,995	0	79	8,270	95.7	75.7
	18	572.75	271,276	0	76.8	6,635	32,995	703	79	6,012	69.6	78.0
	19	572.74	270,985	-291	75.2	6,497	32,968	30	79	6,256	72.4	77.0
	20	572.74	270,985	0	76.5	6,610	32,968	0	79	6,689	77.4	72.4
	21	572.72	270,404	-581	75.7	6,540	32,914	0	79	6,039	69.9	69.9
	22	572.71	270,114	-290	75.2	6,497	32,887	0	79	6,286	72.8	68.1
	23	572.69	269,535	-580	70.2	6,065	32,833	645	79	4,920	56.9	66.6
	24	572.67	268,956	-579	70.4	6,083	32,779	92	79	5,490	63.5	63.3
	25	572.67	268,956	0	68.9	5,953	32,779	0	79	6,032	69.8	63.3
	26	572.66	268,656	-289	65.0	5,616	32,752	793	79	4,612	53.4	67.2
	27	572.67	268,956	289	68.4	5,910	32,779	3	79	6,274	72.6	72.8
	28	572.69	269,535	579	69.8	6,031	32,833	59	79	6,629	76.7	79.4
	29	572.73	270,695	1,160	76.9	6,644	32,941	0	79	7,883	91.2	87.7
	30	572.77	271,858	1,163	85.3	7,370	33,049	142	79	8,471	98.0	91.9
	31	572.80	272,733	874	90.8	7,845	33,130	172	79	8,627	99.9	97.1
Sept.	1	572.83	273,609	876	94.8	8,191	33,211	1,067	106	8,106	93.8	103.0
	2	572.85	274,194	585	97.2	8,398	33,266	242	106	8,847	102.4	110.2
	3	572.90	275,660	1,466	109.0	9,418	33,401	549	106	10,441	120.8	114.6
	4	572.95	277,131	1,471	116.0	10,022	33,537	0	107	11,600	134.3	123.3
	5	572.98	278,016	885	120.0	10,368	33,619	828	107	10,532	121.9	128.6
	6	573.00	278,607	591	129.0	11,146	33,674	0	108	11,844	137.1	130.7
	7	573.02	279,198	592	129.0	11,145	33,728	704	108	11,141	128.9	128.8
	8	573.02	279,198	0	130.0	11,232	33,728	3	108	11,337	131.2	130.3
	9	573.01	278,902	-296	130.0	11,232	33,701	263	108	10,781	124.8	128.5
	10	573.01	278,902	0	128.0	11,059	33,701	0	108	11,167	129.2	127.2
	11	573.01	278,902	0	127.0	10,973	33,701	0	108	11,081	128.2	126.5
	12	573.00	278,607	-296	125.0	10,800	33,674	13	108	10,599	122.7	125.7
	13	573.01	278,902	296	126.0	10,886	33,701	263	108	11,027	127.6	123.9
	14	573.00	278,607	-296	123.0	10,627	33,674	0	108	10,439	120.8	118.5
	15	573.00	278,607	0	120.0	10,368	33,674	88	108	10,388	120.2	115.0
	16	572.97	277,721	-886	116.0	10,022	33,592	502	108	8,742	101.2	110.2
	17	572.95	277,131	-590	111.0	9,590	33,537	17	107	9,091	105.2	103.4
	18	572.93	276,542	-589	109.0	9,418	33,483	0	107	8,936	103.4	99.1
	19	572.90	275,660	-882	106.0	9,158	33,401	871	107	7,513	87.0	97.5
	20	572.89	275,356	-294	102.0	8,813	33,374	77	107	8,549	98.9	95.1
	21	572.87	274,780	-587	98.4	8,502	33,320	0	107	8,022	92.8	92.3
	22	572.86	274,487	-293	95.5	8,251	33,293	17	107	8,048	93.1	89.9
	23	572.85	274,194	-293	91.6	7,914	33,266	0	107	7,728	89.4	85.3
	24	572.81	273,024	-1,169	88.1	7,612	33,157	73	106	6,476	74.9	82.9
	25	572.79	272,441	-584	84.7	7,318	33,103	285	106	6,555	75.9	80.6
	26	572.79	272,441	0	84.4	7,292	33,103	391	106	7,007	81.1	77.6
	27	572.78	272,149	-291	83.7	7,232	33,076	0	106	7,046	81.6	77.3
	28	572.77	271,858	-291	81.2	7,016	33,049	377	106	6,453	74.7	76.1
	29	572.75	271,276	-582	78.6	6,791	32,995	0	106	6,315	73.1	72.7
	30	572.73	270,695	-581	75.5	6,523	32,941	0	106	6,048	70.0	70.8
Oct.	1	572.72	270,404	-290	72.4	6,255	32,914	527	105	5,543	64.2	69.5
	2	572.72	270,404	0	71.1	6,143	32,914	0	105	6,248	72.3	66.9
	3	572.71	270,114	-290	69.9	6,039	32,887	3	105	5,851	67.7	66.4
	4	572.69	269,535	-580	68.7	5,936	32,833	263	105	5,198	60.2	64.9
	5	572.69	269,535	0	66.6	5,754	32,833	0	105	5,859	67.8	66.9
	6	572.68	269,245	-290	67.3	5,815	32,806	755	105	4,875	56.4	68.7
	7	572.71	270,114	869	71.0	6,134	32,887	0	105	7,109	82.3	71.1
	8	572.72	270,404	290	72.0	6,221	32,914	0	105	6,616	76.6	71.1
	9	572.72	270,404	0	71.2	6,152	32,914	0	105	6,257	72.4	71.6
	10	572.71	270,114	-290	71.1	6,143	32,887	92	105	5,866	67.9	69.9
	11	572.71	270,114	0	71.2	6,152	32,887	1,191	105	5,066	58.6	72.8
	12	572.71	270,114	0	73.3	6,350	32,887	69	105	6,387	73.9	73.7
	13	572.75	271,276	1,162	78.4	6,774	32,995	184	105	7,857	90.9	76.9
	14	572.74	270,985	-291	79.3	6,852	32,968	0	106	6,666	77.2	81.9
	15	572.75	271,276	291	79.2	6,843	32,995	0	105	7,239	83.8	77.3
	16	572.76	271,567	291	79.3	6,852	33,022	0	106	7,248	83.9	79.0
	17	572.75	271,276	-291	80.5	6,955	32,995	2,391	106	4,379	50.7	84.1
	18	572.79	272,441	1,165	85.8	7,413	33,103	106	106	8,578	99.3	86.8
	19	572.82	273,317	876	92.2	7,966	33,184	73	106	8,875	102.7	88.7
	20	572.83	273,609	292	93.5	8,078	33,211	46	106	8,430	97.6	99.1
	21	572.83	273,609	0	93.7	8,096	33,211	126	106	8,076	93.5	96.6
	22	572.85	274,194	585	94.7	8,182	33,266	0	106	8,873	102.7	94.2
	23	572.83	273,609	-585	93.6	8,087	33,211	140	106	7,469	86.4	92.2

Year : 1993

Month	Date	WL	V	dV	Q : COT	Vout	A	P	E	Vin	Qin	Qin(mv.ay.)
		m	$10^3 m^3$	$10^3 m^3$	m^3/s	$10^3 m^3$	m^3/s	m^3/s				
	24	572.83	273,609	0	92.2	7,966	33,211	206	106	7,866	91.0	89.4
	25	572.82	273,317	-292	89.5	7,733	33,184	0	106	7,547	87.3	85.1
	26	572.80	272,733	-584	85.1	7,353	33,130	0	106	6,875	79.6	83.6
	27	572.79	272,441	-292	83.2	7,188	33,103	0	106	7,003	81.1	81.6
	28	572.78	272,149	-291	82.4	7,119	33,076	89	106	6,844	79.2	77.7
	29	572.78	272,149	0	79.8	6,895	33,076	0	106	7,001	81.0	75.7
	30	572.75	271,276	-873	76.3	6,592	32,995	0	106	5,825	67.4	73.5
	31	572.73	270,693	-581	75.4	6,515	32,941	0	106	6,039	69.9	70.0
Nov.	1	572.72	270,404	-290	72.3	6,247	32,914	0	105	6,062	70.2	67.4
	2	572.70	269,824	-580	69.8	6,031	32,860	237	105	5,319	61.6	65.4
	3	572.70	269,824	0	66.7	5,763	32,860	0	105	5,868	67.9	63.9
	4	572.68	269,245	-579	65.4	5,651	32,806	197	105	4,979	51.6	62.3
	5	572.67	268,956	-289	64.5	5,573	32,779	0	105	5,388	62.4	61.8
	6	572.66	268,666	-289	64.3	5,556	32,752	0	105	5,371	62.2	59.2
	7	572.65	268,377	-289	62.5	5,400	32,725	141	105	5,072	58.7	58.8
	8	572.63	267,800	-577	60.6	5,236	32,671	0	105	4,763	55.1	58.4
	9	572.62	267,512	-288	59.5	5,141	32,645	144	105	4,813	55.7	57.1
	10	572.62	267,512	0	59.0	5,098	32,645	0	104	5,202	60.2	56.2
	11	572.61	267,223	-288	57.1	4,985	32,618	0	104	4,802	55.6	53.8
	12	572.60	266,935	-288	56.6	4,890	32,591	0	104	4,707	54.5	54.1
	13	572.59	266,647	-288	55.0	4,752	32,564	0	104	4,368	52.9	51.8
	14	572.57	266,072	-575	52.7	4,553	32,510	0	104	4,082	47.2	59.2
	15	572.56	265,785	-287	50.8	4,389	32,483	0	104	4,206	48.7	48.6
	16	572.55	265,498	-287	49.8	4,303	32,457	0	104	4,120	47.7	46.9
	17	572.54	265,211	-287	48.7	4,208	32,430	0	104	4,025	46.6	45.8
	18	572.53	264,924	-287	46.4	4,009	32,403	0	104	3,826	44.3	44.1
	19	572.52	264,638	-287	44.0	3,802	32,376	0	104	3,619	41.9	42.5
	20	572.51	264,352	-286	42.2	3,646	32,350	0	104	3,463	40.1	40.2
	21	572.50	264,065	-286	42.0	3,629	32,323	0	104	3,446	39.9	39.7
	22	572.49	263,779	-286	40.8	3,525	32,296	323	103	3,019	34.9	39.6
	23	572.49	263,779	0	40.3	3,482	32,296	0	103	3,585	41.5	39.1
	24	572.49	263,779	0	40.3	3,482	32,296	0	103	3,585	41.5	38.6
	25	572.48	263,494	-286	39.9	3,447	32,269	0	103	3,265	37.8	39.5
	26	572.47	263,208	-286	39.3	3,396	32,243	0	103	3,213	37.2	38.4
	27	572.47	263,208	0	38.5	3,326	32,243	0	103	3,430	39.7	37.8
	28	572.46	262,923	-285	37.7	3,257	32,216	0	103	3,075	35.6	35.8
	29	572.46	262,923	0	37.5	3,240	32,216	0	103	3,343	38.7	36.7
	30	572.45	262,638	-285	37.2	3,214	32,189	615	103	2,417	28.0	35.8
Dec.	1	572.46	262,923	285	36.8	3,180	32,216	0	129	3,593	41.6	37.2
	2	572.46	262,923	0	37.2	3,214	32,216	309	129	3,034	35.1	36.6
	3	572.47	263,208	285	37.6	3,249	32,243	0	129	3,663	42.4	38.8
	4	572.46	262,923	-285	37.6	3,249	32,216	0	129	3,092	35.8	38.3
	5	572.46	262,923	0	37.6	3,249	32,216	0	129	3,378	39.1	38.5
	6	572.46	262,923	0	37.5	3,240	32,216	0	129	3,369	39.0	37.0
	7	572.46	262,923	0	36.8	3,189	32,216	168	129	3,141	36.4	38.4
	8	572.46	262,923	0	36.4	3,145	32,216	274	129	3,000	34.7	38.5
	9	572.47	263,208	285	37.9	3,275	32,243	0	129	3,689	42.7	38.6
	10	572.47	263,208	0	38.4	3,318	32,243	0	129	3,447	39.9	37.6
	11	572.47	263,208	0	37.6	3,249	32,243	0	129	3,378	39.1	37.5
	12	572.45	262,638	-571	36.7	3,171	32,189	0	129	2,729	31.6	35.5
	13	572.44	262,353	-285	35.8	3,093	32,163	0	129	2,937	34.0	34.6
	14	572.43	262,068	-285	34.9	3,015	32,136	0	129	2,859	33.1	32.9
	15	572.43	262,068	0	33.6	2,903	32,136	0	129	3,032	35.1	32.6
	16	572.42	261,783	-285	32.7	2,825	32,109	0	129	2,669	30.9	31.6
	17	572.41	261,499	-284	31.6	2,730	32,083	0	128	2,574	29.8	31.3
	18	572.40	261,215	-284	30.9	2,670	32,056	0	128	2,514	29.1	29.7
	19	572.40	261,215	0	30.1	2,601	32,056	0	128	2,729	31.6	28.9
	20	572.39	260,930	-284	28.8	2,488	32,029	0	128	2,333	27.0	28.2
	21	572.38	260,647	-284	28.7	2,480	32,003	0	128	2,324	26.9	28.3
	22	572.37	260,363	-284	28.4	2,454	31,976	0	128	2,298	26.6	26.9
	23	572.37	260,363	0	27.9	2,411	31,976	0	128	2,538	29.4	26.5
	24	572.36	260,079	-283	26.6	2,298	31,950	0	128	2,143	24.8	26.7
	25	572.35	259,796	-283	26.5	2,290	31,923	0	128	2,134	24.7	26.0
	26	572.35	259,796	0	26.4	2,281	31,923	0	128	2,409	27.9	25.2
	27	572.34	259,513	-283	25.1	2,169	31,896	0	128	2,013	23.3	24.6
	28	572.34	259,513	0	23.8	2,056	31,896	0	128	2,184	25.3	24.6
	29	572.33	259,230	-283	23.6	2,039	31,870	0	128	1,884	21.8	23.2
	30	572.33	259,230	0	23.1	1,996	31,870	0	127	2,123	24.6	23.0
	31	572.32	258,947	-283	23.0	1,987	31,843	0	127	1,832	21.2	23.3
Total			32,536,598	-2,267		1,310,628	#####	44,591	38,059	1,301,829		
Mean		572.11	253,525	-6	41.6	3,591	31,318	122	104	3,567	41.3	41.3
Max.		573.02	279,198.3	5,039.8	130.0	11,232.0	33,723	2,859.2	129.0	11,844.1	137.1	130.7
Min.		570.74	216,631.7	-3,405.2	11.7	1,010.9	27,786.2	0.0	69.8	-1,627.1	-18.8	4.4

Tableau 2 Exemple de résultat du calcul d'arrivée d'eau au barrage de Boali

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1985

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	32.8	22.7	14.2	10.4	8.6	7.9	19.0	41.4	75.6	83.8	85.6	37.5
2	32.4	22.4	14.0	14.1	8.6	7.9	21.0	43.3	77.9	77.7	84.4	35.9
3	32.0	22.0	13.8	10.6	8.5	7.8	18.7	51.4	89.9	72.5	83.4	34.9
4	31.8	21.7	13.6	10.2	8.3	7.8	14.6	64.9	88.9	69.9	86.6	34.0
5	31.4	21.4	13.3	10.2	18.7	7.8	23.1	73.9	94.2	66.7	86.9	33.1
6	31.0	21.0	13.1	10.2	16.4	7.8	25.9	79.6	95.3	64.5	86.8	32.4
7	30.8	20.7	12.9	10.8	12.0	7.8	28.2	84.8	100.0	62.0	86.4	31.5
8	30.4	20.4	12.7	10.0	8.2	7.8	28.8	84.5	94.7	57.8	86.3	29.7
9	30.0	20.1	12.5	10.0	8.2	9.0	28.4	84.4	85.2	54.4	84.5	30.1
10	29.7	19.7	12.3	9.9	8.2	7.7	23.3	84.5	81.0	55.3	84.6	29.5
11	29.4	19.4	12.1	9.9	8.2	7.7	19.1	85.7	71.1	67.7	87.8	28.7
12	29.0	19.1	12.0	9.8	8.2	7.7	18.4	88.1	67.7	72.5	87.0	28.1
13	28.7	18.8	11.9	9.7	8.2	7.7	18.3	89.5	87.7	72.2	87.1	28.0
14	28.3	18.5	19.2	9.6	8.2	7.7	17.6	90.9	120.0	70.4	88.4	28.0
15	28.1	18.2	14.5	9.5	12.6	15.2	14.8	92.7	108.0	65.6	84.6	27.4
16	27.8	17.9	11.6	9.4	9.2	17.7	14.3	91.5	101.0	61.4	81.7	27.3
17	27.6	17.5	11.6	9.4	13.5	13.4	18.4	89.1	90.3	62.3	76.9	27.3
18	27.3	17.2	11.5	9.3	9.8	9.8	30.1	89.6	86.9	62.3	72.3	27.9
19	27.1	17.0	11.4	9.2	8.1	8.1	38.4	90.1	84.5	59.9	65.8	27.9
20	26.8	16.7	11.3	9.1	8.1	8.0	41.0	89.7	82.4	62.4	59.7	26.6
21	26.4	16.4	11.2	14.5	8.1	7.8	54.7	90.8	78.3	64.2	55.9	26.5
22	26.1	16.1	11.2	10.8	8.1	24.9	66.1	91.0	77.3	64.2	50.3	25.8
23	25.7	15.8	11.1	9.7	8.1	22.0	69.2	92.1	90.1	60.3	46.0	25.1
24	25.4	15.5	11.0	9.0	8.2	19.6	68.0	91.8	90.5	57.5	42.4	24.4
25	25.1	15.3	10.9	8.9	8.1	17.1	64.5	93.3	84.1	60.3	40.8	23.8
26	24.7	15.0	11.0	8.9	8.1	14.5	61.5	92.9	77.6	62.3	39.4	23.4
27	24.4	14.7	10.8	8.8	8.1	16.1	54.3	92.2	73.1	62.7	38.6	23.0
28	24.0	14.5	10.7	8.8	8.1	14.0	47.4	76.6	72.1	66.3	38.4	22.5
29	23.7	-	10.7	8.7	8.0	13.5	45.7	62.8	71.8	69.4	37.7	22.4
30	23.4	-	10.6	8.7	8.0	13.5	47.5	63.2	80.4	82.0	37.6	21.7
31	23.0	-	10.5	-	8.0	-	44.2	75.0	-	85.6	-	21.1
Total	864.3	515.7	379.4	298.2	288.9	345.4	1,084.5	2,511.3	2,577.6	2,056.1	2,073.9	865.5
Mean	27.9	18.4	12.2	9.9	9.3	11.5	35.0	81.0	85.9	66.3	69.1	27.9
Max.	120.0	Q356= 7.8	Q186= 25.4									
Min.	7.7	Q276= 12.0	Q96= 64.2									

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1986

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	20.3	15.9	10.4	6.8	4.5	6.8	10.7	70.3	66.8	151.0	65.4	25.1
2	20.3	15.6	10.3	6.3	4.0	6.1	20.7	68.3	72.7	144.0	64.9	25.1
3	19.7	15.4	10.2	6.1	5.0	6.7	20.7	66.2	73.7	141.0	55.4	25.1
4	19.6	15.1	10.1	6.4	6.8	10.2	26.3	65.7	78.5	147.0	49.6	24.7
5	19.0	14.9	10.0	6.2	7.4	9.4	31.8	64.0	83.2	156.0	48.8	23.0
6	18.9	14.6	9.8	5.4	6.5	8.0	36.1	61.7	78.3	160.0	48.4	21.8
7	18.9	14.3	9.7	5.0	9.4	7.5	41.4	60.3	77.8	158.0	45.9	21.3
8	18.4	14.1	9.5	4.8	6.9	12.8	46.1	59.9	75.3	144.0	41.4	20.0
9	18.0	21.0	9.4	4.3	6.1	17.8	50.0	63.6	75.6	133.0	39.4	19.6
10	17.7	16.0	9.3	4.3	5.3	16.0	37.7	62.6	76.0	126.0	36.9	18.9
11	17.7	14.0	9.2	4.1	4.5	13.8	24.7	61.1	82.3	115.0	34.5	18.4
12	17.2	13.6	9.2	4.0	6.0	14.7	23.2	58.7	91.0	98.5	32.8	18.3
13	16.8	13.5	9.1	4.0	12.2	13.7	31.8	56.8	96.2	86.8	32.0	18.3
14	16.5	13.4	8.9	3.7	11.4	13.9	35.8	54.9	102.0	78.1	30.9	17.8
15	16.0	13.2	8.9	3.5	7.9	10.9	45.1	57.6	107.0	70.5	29.9	17.7
16	15.7	13.0	8.8	3.2	6.3	9.3	47.0	57.0	112.0	65.6	29.4	17.2
17	15.4	12.7	8.8	2.9	11.6	11.4	52.7	54.5	114.0	62.5	27.8	17.1
18	15.1	12.5	8.7	2.6	14.5	11.9	63.1	60.4	116.0	59.3	27.3	17.4
19	14.8	12.4	8.6	2.4	13.4	9.2	73.3	65.0	125.0	58.7	27.3	17.6
20	14.3	12.2	8.6	2.4	16.6	8.7	76.5	62.6	112.0	60.1	26.5	16.6
21	14.2	12.0	8.4	2.2	14.3	9.5	77.9	60.4	104.0	56.0	25.8	16.0
22	14.2	11.8	8.3	2.1	14.8	11.8	79.3	58.0	102.0	54.8	25.2	16.0
23	14.2	11.6	8.2	2.2	16.2	9.2	79.9	56.2	97.9	58.0	25.1	16.0
24	13.7	11.3	8.1	3.8	15.0	7.3	84.1	55.3	96.6	61.3	25.1	15.5
25	13.6	11.1	8.0	5.1	15.3	6.4	94.0	53.1	101.0	62.6	24.8	15.1
26	13.6	10.9	7.9	6.7	15.9	5.7	93.6	53.3	107.0	65.2	25.7	14.5
27	13.1	10.7	7.9	6.7	13.1	5.2	92.4	60.9	109.0	66.4	25.2	14.2
28	13.0	10.5	7.8	5.4	10.7	4.7	98.4	59.3	112.0	65.6	25.4	14.2
29	12.5	-	7.8	4.7	8.8	4.3	104.0	57.7	135.0	66.4	25.8	14.7
30	12.3	-	7.7	4.5	7.5	4.2	100.0	55.4	151.0	67.5	25.2	15.1
31	12.1	-	7.7	-	6.5	-	95.1	53.1	-	65.6	-	15.9
Total	496.8	377.3	275.2	131.7	304.4	287.1	1,793.4	1,853.7	2,930.9	2,904.5	1,047.8	568.2
Mean	16.0	13.5	8.9	4.4	9.8	9.6	57.9	59.8	97.7	93.7	34.9	18.3
Max.	160.0	Q356=	3.7	Q186=	16.8							
Min.	2.1	Q276=	9.7	Q96=	57.6							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1987

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	15.9	7.9	6.2	22.0	5.4	8.2	52.8	41.9	52.7	48.3	21.7	11.0
2	14.9	7.9	7.6	19.5	4.6	16.3	69.9	30.5	63.4	42.7	19.4	17.5
3	14.2	7.9	8.0	14.5	4.1	14.9	47.1	36.5	64.4	43.8	18.0	15.3
4	13.1	7.7	6.8	12.2	3.8	8.0	31.7	37.5	59.5	45.8	17.1	15.2
5	13.0	7.5	5.6	10.4	3.2	7.8	27.5	34.4	56.6	50.9	16.5	14.3
6	13.0	7.5	5.0	12.2	3.0	13.0	25.7	29.3	56.6	54.6	16.0	14.1
7	12.5	7.5	4.6	24.1	4.0	14.2	21.7	25.8	67.7	52.9	16.0	12.8
8	12.5	7.5	4.6	22.1	4.0	22.2	16.9	20.5	74.4	57.4	15.5	13.2
9	12.1	7.2	4.6	15.9	3.5	28.8	15.0	15.1	69.9	55.0	15.1	12.5
10	12.1	7.1	4.1	9.2	3.2	31.9	15.9	13.7	59.5	50.8	14.5	12.4
11	11.6	6.8	3.9	7.9	4.1	33.3	16.0	13.2	56.6	45.2	13.9	11.2
12	11.6	6.8	3.8	7.2	4.0	30.8	16.5	15.9	51.7	40.8	13.3	10.2
13	11.6	6.6	3.8	6.1	3.6	24.6	16.6	18.1	47.9	35.6	12.8	10.1
14	11.6	6.4	3.7	5.6	3.3	19.0	19.3	16.6	45.9	38.4	12.5	8.9
15	11.6	6.5	3.5	5.3	3.7	15.3	28.1	14.6	45.0	43.3	12.1	9.0
16	11.6	6.8	3.5	5.4	2.6	15.3	31.1	21.8	44.0	43.0	11.6	8.5
17	11.6	6.8	3.4	7.1	2.3	24.8	27.4	36.3	38.5	39.0	11.7	7.9
18	11.6	6.5	3.2	8.2	2.1	28.4	23.3	44.7	30.2	36.6	12.7	8.1
19	11.1	6.4	3.2	7.4	1.8	26.4	22.9	45.0	28.0	33.3	13.5	7.6
20	11.1	6.4	3.2	6.2	2.4	27.5	20.6	55.8	29.5	31.6	13.7	7.5
21	10.6	6.4	3.1	7.6	6.7	21.7	17.7	57.2	37.6	29.7	15.3	7.4
22	10.6	6.1	2.9	8.0	5.5	21.9	23.4	63.9	44.0	30.8	16.9	7.0
23	10.2	5.9	3.1	7.3	4.8	22.1	22.7	71.3	69.9	33.8	15.8	6.4
24	10.2	5.9	3.2	6.2	6.0	28.4	17.2	71.4	58.6	39.1	14.8	6.4
25	9.7	6.1	3.3	6.9	7.2	27.6	17.2	68.1	57.6	42.2	14.2	6.1
26	9.7	6.4	5.4	12.7	5.6	24.6	20.0	62.5	58.6	47.0	14.2	6.1
27	9.0	6.0	11.0	11.7	4.3	24.0	20.1	60.6	51.7	41.4	13.9	6.1
28	8.7	6.0	37.1	9.3	3.5	23.8	27.0	62.0	45.9	34.7	12.8	6.7
29	8.7	-	31.1	7.1	7.4	34.9	29.1	57.7	51.7	29.7	10.9	5.8
30	8.5	-	20.9	6.1	9.5	45.3	31.8	50.3	45.9	25.9	9.8	5.5
31	8.2	-	19.8	-	5.9	-	40.8	48.9	-	23.4	-	5.2
Total	352.5	190.6	232.9	311.2	135.1	685.0	813.0	1,241.1	1,563.5	1,266.7	436.2	295.8
Mean	11.4	6.8	7.5	10.4	4.4	22.8	26.2	40.0	52.1	40.9	14.5	9.5
Max.	74.4	Q356=	3.2	Q186=	13.5							
Min.	1.8	Q276=	7.1	Q96=	28.4							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1988

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.0	2.7	1.4	1.3	6.9	6.8	118.0	23.1	100.0	183.0	94.8	44.9
2	5.5	3.0	0.9	1.0	5.6	6.2	122.0	22.9	106.0	199.0	90.4	43.1
3	5.4	2.9	1.3	1.3	8.1	17.3	122.0	21.6	121.0	188.0	86.6	41.4
4	6.1	2.8	1.0	1.0	9.4	21.0	124.0	22.0	132.0	177.0	86.7	39.8
5	8.1	2.6	0.7	0.7	9.3	28.1	121.0	24.6	132.0	162.0	85.3	39.3
6	7.1	2.6	1.1	1.0	5.6	29.8	119.0	35.5	133.0	154.0	78.2	39.1
7	5.8	2.4	0.8	1.0	4.9	34.7	113.0	32.2	133.0	148.0	69.8	38.9
8	5.7	2.4	0.7	0.9	4.2	34.9	108.0	37.6	135.0	143.0	64.1	38.6
9	7.8	4.2	3.4	0.3	4.7	20.6	104.0	56.9	137.0	136.0	60.1	38.4
10	7.1	3.5	6.3	0.1	16.6	21.4	103.0	72.4	141.0	131.0	56.7	38.1
11	6.7	2.9	4.9	0.3	17.9	35.1	85.6	68.4	156.0	128.0	54.2	37.8
12	5.9	3.8	4.6	0.1	13.6	38.5	73.2	59.3	199.0	132.0	51.8	37.5
13	5.0	3.3	4.1	0.1	8.5	31.7	61.9	42.3	145.0	124.0	49.9	37.2
14	4.1	3.2	3.8	0.4	6.3	26.8	46.6	49.0	137.0	110.0	47.5	36.9
15	4.2	3.6	3.5	0.6	4.7	29.5	42.5	50.3	144.0	102.0	45.9	36.5
16	4.3	3.3	4.5	0.6	3.9	29.5	38.3	47.7	161.0	97.4	43.7	36.2
17	4.3	3.2	5.3	1.5	3.8	29.4	35.7	46.7	168.0	97.5	42.6	35.9
18	4.4	2.9	4.2	2.2	3.8	33.7	31.1	39.3	163.0	98.0	41.4	35.5
19	4.1	2.9	3.3	3.4	3.9	36.2	26.0	33.6	144.0	105.0	41.1	35.2
20	4.0	2.9	2.8	6.1	6.1	52.4	22.5	31.1	130.0	116.0	40.2	34.9
21	3.8	2.9	3.3	5.7	12.0	62.2	20.7	40.8	122.0	119.0	38.7	34.5
22	3.7	2.3	3.9	12.8	13.8	76.2	19.0	39.8	119.0	113.0	39.3	34.2
23	3.5	1.8	3.4	13.2	11.0	79.2	18.5	44.7	117.0	110.0	38.5	33.9
24	3.5	1.6	3.6	9.1	15.4	79.5	29.5	74.5	119.0	110.0	37.6	33.7
25	3.5	1.5	3.1	7.4	16.6	83.0	26.3	88.7	120.0	103.0	36.7	33.4
26	3.4	1.4	2.6	7.1	17.9	87.2	26.1	92.4	119.0	96.3	35.8	33.1
27	3.1	1.4	2.7	6.3	20.9	89.0	34.3	90.9	121.0	98.4	35.0	32.7
28	2.9	1.4	2.2	6.0	24.5	103.0	36.7	88.5	126.0	104.0	34.8	32.4
29	2.9	1.4	2.0	5.5	19.1	113.0	33.5	90.3	130.0	99.3	34.1	32.1
30	2.7	-	1.9	5.0	12.1	114.0	29.5	95.9	140.0	97.6	34.0	31.7
31	2.6	-	1.2	-	8.8	-	24.2	98.9	-	96.3	-	25.0
Total	146.1	76.8	88.2	102.0	319.8	1,449.9	1,915.7	1,661.9	4,050.0	3,877.8	1,595.5	1,121.6
Mean	4.7	2.6	2.8	3.4	10.3	48.3	61.8	53.6	135.0	125.1	53.2	36.2
Max.	199.0	Q356=	0.7	Q186=	31.1							
Min.	0.1	Q276=	4.2	Q96=	73.2							

*** Données de débit journalier de la rivière ***
 Station : Arrivée d'eau estimée au barrage de Boali
 Rivière : MBALI
 Année : 1989

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	20.3	10.6	5.7	6.7	4.6	35.1	32.7	46.6	216.0	110.0	50.7	32.8
2	20.7	10.2	5.4	6.1	4.6	34.9	26.3	40.1	209.0	122.0	49.8	32.5
3	20.3	10.2	5.5	5.2	5.0	35.2	23.8	35.2	202.0	125.0	49.3	32.4
4	19.6	10.2	7.9	5.0	6.1	39.7	26.1	33.2	189.0	125.0	49.8	31.6
5	18.9	10.2	8.4	4.5	5.9	31.0	25.4	33.3	181.0	129.0	48.1	30.9
6	18.3	10.0	6.6	4.3	4.9	20.5	22.1	37.3	183.0	123.0	48.4	29.6
7	17.8	9.5	6.1	4.1	5.0	14.2	24.0	51.2	187.0	122.0	49.6	29.1
8	17.7	9.2	6.0	4.0	5.3	12.1	44.4	57.2	185.0	118.0	47.5	28.4
9	17.1	8.7	5.7	3.8	5.6	12.1	45.5	60.0	181.0	110.0	45.2	34.0
10	16.5	8.3	5.7	3.6	6.0	22.5	38.1	65.0	152.0	104.0	44.9	32.2
11	16.0	8.2	5.7	4.4	9.4	15.3	35.5	65.8	146.0	100.0	44.0	34.3
12	16.0	7.9	5.7	4.6	12.7	12.4	35.9	70.7	146.0	95.6	43.1	35.3
13	15.4	7.9	5.7	4.1	20.9	17.0	28.2	72.1	141.0	91.7	42.2	36.1
14	14.9	7.9	5.7	3.8	21.6	20.4	26.5	72.2	141.0	88.8	42.4	34.1
15	14.8	7.9	5.4	3.8	18.7	38.5	26.5	73.7	123.0	94.2	40.0	32.4
16	14.5	7.7	5.2	4.1	13.9	35.1	26.5	89.5	113.0	92.4	38.6	32.3
17	13.9	7.5	5.0	3.5	13.5	36.6	36.6	89.5	106.0	91.1	38.1	31.6
18	13.6	7.5	5.0	3.5	13.5	31.0	31.0	97.2	104.0	92.2	37.5	30.2
19	13.6	7.2	4.6	3.2	11.0	31.9	27.7	104.0	97.6	93.2	36.7	28.2
20	13.1	6.8	4.6	3.2	15.7	33.0	21.0	109.0	88.2	89.1	35.0	26.9
21	13.0	6.3	5.2	3.9	15.8	32.9	16.7	110.0	130.0	89.6	34.0	25.5
22	12.5	6.1	5.0	4.5	14.3	31.0	17.8	121.0	109.0	85.1	32.5	24.5
23	12.3	6.1	4.8	5.9	11.2	29.1	23.1	124.0	99.0	84.1	31.8	24.4
24	12.1	6.0	4.6	6.1	14.7	25.9	32.4	123.0	99.0	78.4	33.3	24.8
25	12.1	5.7	4.6	5.4	19.0	22.4	44.1	141.0	106.0	73.4	33.1	25.0
26	12.1	5.7	4.9	6.3	24.9	18.8	47.9	153.0	100.0	69.4	32.4	24.5
27	12.1	5.7	5.0	6.2	34.4	28.5	52.0	159.0	102.0	66.6	31.6	24.4
28	11.6	5.7	6.1	7.4	53.9	29.2	55.5	156.0	104.0	64.4	30.9	23.8
29	11.6	-	14.4	6.0	44.9	30.5	51.8	156.0	106.0	60.6	30.2	23.7
30	11.1	-	13.6	5.0	41.1	32.7	59.1	193.0	109.0	57.7	30.1	22.7
31	11.1	-	8.9	-	37.7	-	52.2	223.0	-	53.3	-	21.8
Total	464.6	220.9	192.6	142.0	515.8	809.5	1,056.4	2,961.8	4,154.8	2,898.9	1,200.8	900.0
Mean	15.0	7.9	6.2	4.7	16.6	27.0	34.1	95.5	138.5	93.5	40.0	29.0
Max	223.0	Q356=	4.0	Q186=	26.5	-	-	-	-	-	-	-
Min.	3.2	Q276=	9.2	Q96=	49.6	-	-	-	-	-	-	-

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1990

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	16.5	12.1	5.4	2.6	4.9	45.8	5.7	17.3	81.8	57.9	39.2	40.3
2	16.5	12.1	5.2	2.5	4.1	36.8	5.8	23.9	78.3	59.9	38.4	38.9
3	16.0	12.1	5.3	2.2	4.2	31.1	13.9	14.3	77.1	59.8	58.9	37.3
4	16.0	12.1	5.0	2.2	5.6	27.5	17.0	11.6	81.0	55.5	56.4	35.6
5	16.0	11.6	5.0	2.2	4.9	17.1	9.4	10.7	82.9	49.4	54.2	34.8
6	15.5	10.4	5.0	2.2	4.6	13.1	6.9	10.6	81.1	45.4	51.7	33.1
7	15.5	9.5	5.0	2.1	4.3	11.9	7.1	9.2	77.4	41.1	50.5	32.1
8	15.5	9.2	4.6	1.8	4.1	13.0	6.6	7.2	74.9	35.2	48.0	30.6
9	15.5	8.8	4.6	1.8	4.7	14.1	5.6	8.2	71.3	34.3	45.4	28.9
10	15.5	8.3	4.6	1.8	6.4	13.0	5.0	18.2	54.0	37.1	48.5	32.7
11	15.5	8.2	4.5	1.8	8.0	11.8	4.8	21.9	44.2	35.0	45.9	28.4
12	15.5	7.9	4.2	1.8	8.2	9.5	4.9	22.6	42.7	33.4	59.7	26.7
13	15.5	7.9	4.0	1.8	6.7	7.9	5.4	33.1	61.2	34.6	58.0	26.0
14	15.4	7.9	4.0	1.8	5.6	7.7	7.1	33.0	55.5	32.1	55.7	25.1
15	14.8	7.4	3.8	1.8	8.1	8.1	7.1	25.8	44.7	34.9	53.3	23.8
16	14.2	7.3	3.8	1.8	8.7	7.5	6.2	30.5	52.6	38.3	50.9	22.5
17	13.6	7.2	3.8	1.7	8.4	6.6	7.8	43.6	72.8	36.1	53.8	21.2
18	12.8	7.1	3.8	1.7	7.8	9.4	8.0	54.6	65.8	43.8	57.5	20.0
19	12.5	6.8	3.7	1.7	13.3	15.0	8.0	61.2	64.4	47.5	55.1	19.8
20	12.5	6.5	3.5	1.7	12.5	22.6	9.2	61.2	65.7	45.6	52.8	19.7
21	12.1	6.4	3.5	1.7	9.7	23.4	12.3	55.8	72.3	41.3	51.6	19.6
22	12.1	6.4	3.5	1.7	7.2	13.8	20.9	54.6	83.8	44.5	49.1	19.5
23	12.1	6.1	3.5	1.7	9.2	13.3	14.1	60.5	73.7	42.3	48.1	19.3
24	12.1	6.0	3.5	1.7	23.9	11.9	9.1	67.9	67.5	40.4	47.4	19.1
25	12.1	5.7	3.5	1.7	28.9	8.5	7.1	71.0	72.6	41.5	46.6	18.9
26	12.1	5.7	3.5	1.7	30.5	7.8	7.1	71.7	69.9	46.0	45.6	18.6
27	12.4	5.7	3.5	1.9	35.3	8.4	7.6	81.3	64.0	44.3	44.7	18.4
28	14.7	5.7	3.2	3.5	39.9	7.9	7.7	84.9	58.6	39.6	43.6	18.3
29	15.5	-	3.2	3.3	43.6	6.6	8.0	82.5	54.8	37.1	42.5	18.1
30	13.2	-	2.9	5.7	48.8	5.7	8.7	80.5	54.8	33.9	41.4	17.9
31	12.1	-	2.7	-	52.1	-	12.9	79.0	-	35.0	-	17.7
Total	441.3	228.1	125.0	64.1	464.0	436.9	266.9	1,308.4	2,001.4	1,302.8	1,494.4	782.9
Mean	14.2	8.1	4.0	2.1	15.0	14.6	8.6	42.2	66.7	42.0	49.8	25.3
Max.	84.9	Q356=	1.7	Q186=	13.9							
Min.	1.7	Q276=	6.5	Q96=	39.9							

*** Données de débit journalier de la rivière ***
 Station : Arrivée d'eau estimée au barrage de Boali
 Rivière : MBALI
 Année : 1991

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	17.5	10.4	7.3	6.9	16.1	12.0	32.8	87.6	143.2	113.8	97.6	59.6
2	17.3	10.2	7.2	7.1	15.5	11.8	33.3	85.8	141.1	122.8	98.6	57.4
3	17.0	10.0	7.2	6.9	14.9	11.6	37.5	84.7	139.0	131.1	109.4	55.0
4	16.8	9.8	7.2	17.4	14.3	11.3	35.6	91.7	148.2	129.6	106.3	52.7
5	16.6	9.6	7.2	14.9	14.4	10.9	35.6	89.9	146.5	126.5	108.3	50.4
6	16.3	9.5	7.2	11.3	14.7	10.6	33.7	97.3	144.2	124.4	113.3	48.1
7	16.1	9.3	7.2	8.3	12.9	10.2	31.7	102.0	141.7	121.7	110.0	46.0
8	15.9	9.1	7.2	7.7	12.5	9.7	30.6	100.1	139.5	120.1	106.8	44.0
9	15.7	8.9	7.1	16.6	12.0	9.5	32.5	98.0	136.7	126.3	105.0	42.1
10	15.4	8.8	7.1	26.4	11.4	9.1	33.3	100.0	133.8	123.6	101.7	40.4
11	15.2	8.6	7.1	24.0	11.1	8.6	42.0	97.9	132.1	127.4	98.3	38.8
12	15.0	8.4	7.1	27.3	10.1	8.1	49.5	96.8	129.0	124.1	95.0	37.7
13	14.7	8.2	7.1	28.2	9.8	19.7	49.1	96.6	127.2	120.8	92.2	37.5
14	14.5	8.0	7.1	26.0	9.5	29.3	47.6	94.0	128.8	117.7	90.6	37.4
15	14.3	7.9	7.1	24.6	9.0	28.5	46.6	91.6	126.6	114.2	89.0	37.1
16	14.0	7.7	7.1	22.5	10.9	26.4	45.0	96.7	123.1	111.2	87.2	36.8
17	13.8	7.5	7.1	20.3	8.5	26.2	54.3	94.0	122.3	120.1	85.4	36.4
18	13.5	7.3	7.0	19.7	8.3	40.9	54.9	91.4	118.7	120.3	83.5	36.1
19	13.3	7.3	7.0	19.8	8.1	38.9	62.0	94.5	115.0	119.8	81.6	35.8
20	13.1	7.3	7.3	19.6	7.9	36.8	62.5	103.1	112.4	116.8	79.7	35.4
21	12.8	7.3	7.0	19.4	10.5	35.2	61.0	100.9	112.0	113.3	78.7	35.1
22	12.6	11.7	7.0	19.1	7.9	33.2	66.2	99.5	108.3	110.7	76.6	34.8
23	12.4	7.3	7.0	18.7	21.0	31.0	64.6	98.1	105.3	120.1	74.4	34.4
24	12.1	7.3	7.0	18.3	17.8	28.7	75.9	118.7	108.3	119.4	72.7	34.1
25	11.9	8.5	7.0	17.7	15.1	28.7	76.2	117.8	106.9	115.9	70.9	33.8
26	11.7	7.3	6.9	18.1	17.0	31.2	77.4	117.9	103.1	112.9	69.0	33.4
27	11.5	8.5	6.9	20.6	14.5	29.0	77.1	121.9	105.0	109.3	67.1	33.1
28	11.3	7.3	12.9	20.0	14.6	28.9	75.5	125.0	101.3	107.1	65.1	32.8
29	11.0	-	9.5	17.0	12.1	28.8	77.1	126.8	120.4	103.4	63.2	32.4
30	10.8	-	6.9	16.5	12.7	33.8	89.9	124.5	117.0	104.5	61.6	32.1
31	10.6	-	6.9	-	12.5	-	89.0	129.4	-	101.3	-	31.7
Total	434.6	238.9	227.9	541.1	387.4	678.4	1,679.9	3,174.3	3,736.6	3,650.0	2,638.9	1,232.5
Mean	14.0	8.5	7.4	18.0	12.5	22.6	54.2	102.4	124.6	117.7	88.0	39.8
Max.	148.2	Q356=	7.0	Q186=	32.4	-	-	-	-	-	-	-
Min.	6.9	Q276=	11.5	Q96=	94.0	-	-	-	-	-	-	-

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1992

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	31.4	21.0	12.7	9.4	7.4	24.4	46.9	80.5	102.1	80.9	85.7	41.1
2	31.1	20.7	12.5	8.6	11.2	30.4	49.5	84.1	98.6	77.5	87.0	39.3
3	30.7	20.4	12.3	8.6	13.7	29.0	55.1	82.3	109.4	77.3	88.7	35.7
4	30.4	20.1	12.0	8.6	9.7	31.3	53.4	96.3	106.2	83.6	89.3	35.2
5	30.1	19.7	11.8	8.5	7.3	29.1	51.5	99.8	102.9	80.4	93.5	34.2
6	29.7	19.4	11.7	8.5	7.3	26.9	49.5	99.7	101.1	77.1	91.2	33.4
7	29.4	19.1	11.5	8.4	7.3	27.0	54.0	108.5	97.8	74.4	93.4	32.7
8	29.0	18.8	11.3	8.3	7.3	25.6	57.9	107.2	103.6	71.1	100.2	32.7
9	28.7	18.5	11.1	8.2	7.3	25.3	56.0	105.6	103.9	68.5	102.2	31.7
10	28.4	18.2	10.9	8.1	7.9	27.9	54.4	104.2	103.6	67.2	103.1	32.0
11	28.0	17.9	10.7	8.0	13.0	25.6	54.5	113.8	104.1	67.3	104.1	32.1
12	27.7	17.6	10.5	7.9	9.2	31.8	53.2	118.4	105.4	64.8	102.6	30.8
13	27.3	17.3	10.4	7.8	7.3	29.4	52.2	117.0	107.3	64.1	96.2	30.2
14	27.0	16.9	10.3	7.7	7.3	34.0	60.0	115.6	106.0	62.0	94.8	30.3
15	26.7	16.6	10.2	7.6	19.6	33.6	63.5	115.3	103.0	60.7	92.8	29.6
16	26.3	16.4	10.1	7.5	16.2	51.7	61.9	122.0	100.5	59.4	90.5	28.8
17	26.0	16.1	10.0	7.5	14.3	49.8	61.9	119.9	98.5	66.3	87.5	28.0
18	25.6	15.8	9.9	7.5	13.2	48.2	61.4	117.7	98.3	63.2	82.7	27.8
19	25.3	15.5	9.8	7.5	13.4	46.3	59.4	115.3	95.2	61.0	77.9	26.2
20	25.0	15.2	9.7	7.4	28.9	50.9	57.3	112.8	92.1	62.7	74.0	24.7
21	24.6	14.9	13.9	8.9	29.7	49.0	56.7	110.1	89.2	60.2	70.0	24.1
22	24.3	14.7	10.3	7.4	27.5	46.9	61.4	107.2	86.9	58.1	65.9	23.5
23	24.0	14.4	9.5	7.4	29.9	50.7	61.9	115.4	84.9	68.4	62.8	23.0
24	23.6	14.1	9.4	7.4	27.8	48.6	67.6	117.7	83.0	65.6	59.7	23.2
25	23.3	13.9	9.4	7.4	29.9	47.5	65.9	115.3	81.3	68.8	57.1	22.8
26	23.0	13.6	9.2	7.4	27.8	45.3	64.8	113.3	80.5	66.7	55.3	22.4
27	22.7	13.4	9.1	7.9	25.7	42.9	68.1	114.0	77.7	64.1	53.2	22.1
28	22.3	13.1	9.0	7.4	28.9	42.2	66.0	111.0	76.2	62.0	51.6	21.9
29	22.0	12.9	8.9	7.4	28.4	42.0	71.1	108.0	85.5	68.7	48.2	21.6
30	21.7	-	8.8	7.4	26.2	41.3	83.2	107.6	83.0	66.6	44.8	22.4
31	21.4	-	8.7	-	24.5	-	82.3	104.4	-	65.8	-	22.8
Total	816.7	486.2	325.5	237.6	535.3	1,134.6	1,862.4	3,360.0	2,867.5	2,104.7	2,406.3	886.0
Mean	26.3	16.8	10.5	7.9	17.3	37.8	60.1	108.4	95.6	67.9	80.2	28.6
Max.	122.0	Q356=	7.4	Q186=	30.8							
Min.	7.3	Q276=	16.1	Q96=	68.5							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1993

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	28.2	18.4	15.6	9.7	17.1	20.6	19.7	73.2	103.0	69.5	67.4	37.2
2	29.3	18.9	15.0	9.4	16.1	21.8	19.1	77.3	110.2	66.9	65.4	36.6
3	31.3	19.6	14.7	9.7	16.5	19.8	26.2	80.9	114.6	66.4	63.9	38.8
4	31.7	22.5	15.4	9.4	15.0	19.9	26.8	82.5	123.3	64.9	62.3	38.3
5	30.7	21.8	15.2	11.3	14.7	19.3	30.1	78.4	128.6	66.9	61.8	38.5
6	29.6	20.2	7.8	12.2	21.3	18.6	27.5	75.5	130.7	68.7	59.2	37.0
7	28.8	20.7	9.2	15.0	14.0	17.7	31.8	72.8	128.8	71.1	58.8	38.4
8	27.3	19.7	9.8	16.1	10.3	19.1	27.0	72.1	130.3	71.1	58.4	38.5
9	26.4	19.1	10.0	17.2	11.4	21.2	28.2	72.3	128.5	71.6	57.1	38.6
10	25.4	18.6	11.0	15.5	11.3	23.4	29.5	74.2	127.2	69.9	56.2	37.6
11	24.8	19.1	17.0	17.4	4.4	22.7	31.7	76.4	126.5	72.8	55.8	37.5
12	24.3	18.0	14.6	16.1	11.6	20.0	27.8	74.3	125.7	73.7	54.1	35.5
13	24.6	17.9	13.9	15.5	13.3	20.9	32.8	71.2	123.9	76.9	51.8	34.6
14	24.3	17.9	13.4	15.2	14.5	20.0	36.2	70.5	118.5	81.9	50.2	32.9
15	24.1	17.8	13.5	16.6	15.1	18.9	35.7	75.0	115.0	77.3	48.6	32.6
16	24.5	16.4	12.6	13.9	15.1	21.7	40.8	75.2	110.2	79.0	46.9	31.6
17	24.3	19.0	14.7	16.5	14.9	26.2	53.0	75.7	103.4	84.1	45.8	31.3
18	24.0	19.3	14.8	17.4	16.3	28.8	48.5	78.0	99.1	86.8	44.1	29.7
19	23.7	18.8	15.4	17.0	14.4	31.1	47.9	77.0	97.5	88.7	42.5	28.9
20	23.3	19.4	14.0	15.9	14.8	33.2	54.7	72.4	95.1	99.1	40.2	28.2
21	23.0	19.9	14.7	18.2	14.6	33.2	57.1	69.9	92.3	96.6	39.7	28.3
22	22.0	17.5	14.8	14.9	14.9	34.5	56.9	68.1	89.9	94.2	39.6	26.9
23	21.7	16.6	13.9	15.4	14.4	32.9	66.4	66.6	85.3	92.2	39.1	26.5
24	20.3	17.1	13.9	15.9	14.9	32.0	71.5	63.3	82.9	89.4	38.6	26.7
25	20.1	16.4	13.6	15.9	14.5	30.4	70.3	63.3	80.6	85.1	39.5	26.0
26	19.5	16.2	14.0	15.1	15.5	28.8	69.7	67.2	77.6	83.6	38.4	25.2
27	19.6	15.2	12.9	17.0	14.6	25.8	66.3	72.8	77.3	81.6	37.8	24.6
28	18.3	15.5	13.1	15.6	15.7	21.1	67.5	78.4	76.1	77.7	35.8	24.6
29	18.8	-	12.2	16.8	17.2	19.9	66.6	87.7	72.7	75.7	36.7	23.2
30	16.5	-	12.2	16.6	17.3	17.9	67.1	91.9	70.8	73.5	35.8	23.0
31	17.0	-	11.5	-	18.3	-	71.1	97.1	-	70.0	-	23.3
Total	747.5	517.5	414.3	448.3	454.0	721.6	1,405.6	2,331.0	3,145.6	2,427.0	1,471.5	980.4
Mean	24.1	18.5	13.4	14.9	14.6	24.1	45.3	75.2	104.9	78.3	49.0	31.6
Max.	130.7	Q356=	10.3	Q186=	27.3							
Min.	4.4	Q276=	17.0	Q96=	66.6							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1994

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	22.9	17.5	12.6	11.3	14.0	12.9	21.0	61.1	161.8	100.3	78.6	45.2
2	22.3	18.1	12.3	12.2	15.2	15.2	22.3	61.9	153.9	102.0	82.3	44.0
3	21.7	17.3	12.3	11.4	24.2	19.9	22.6	60.6	150.2	105.1	83.4	42.5
4	21.4	17.0	12.1	9.0	23.7	18.4	28.1	61.0	147.1	108.8	83.2	41.0
5	20.4	16.6	13.2	10.4	26.0	20.4	30.6	60.5	147.6	111.7	84.1	38.9
6	20.7	15.8	13.0	10.4	29.4	22.7	32.0	57.9	142.2	112.9	81.7	38.6
7	20.3	15.3	14.0	10.8	34.1	23.0	32.7	54.3	141.5	107.9	81.3	38.4
8	20.6	15.6	13.8	14.3	33.2	24.4	33.2	56.7	139.8	107.3	80.6	37.7
9	21.1	15.9	13.9	16.5	34.8	28.7	34.2	53.6	137.7	108.2	80.6	36.9
10	21.7	16.2	12.4	16.4	32.9	28.2	34.1	56.9	132.1	109.3	78.9	36.2
11	22.2	17.1	13.0	19.9	32.3	26.4	32.6	61.4	132.2	110.7	76.3	35.3
12	22.0	17.8	12.6	19.1	27.7	28.5	32.7	67.0	131.6	120.7	74.4	33.8
13	21.9	18.0	12.6	18.8	24.3	26.0	32.4	68.5	131.9	126.4	71.7	33.7
14	20.6	17.3	12.4	17.2	20.7	23.7	30.0	75.4	136.1	126.6	69.4	33.0
15	20.4	16.2	13.8	17.1	20.4	24.0	31.4	71.6	140.9	128.1	66.7	32.4
16	19.5	13.7	13.4	13.7	17.4	25.8	32.7	78.2	145.1	129.3	65.5	31.9
17	19.2	11.1	12.8	13.0	17.4	22.1	36.2	79.8	146.7	123.1	62.2	31.9
18	18.2	8.9	12.9	11.4	17.4	25.2	37.3	87.6	143.4	119.2	60.4	30.7
19	18.6	8.2	13.8	11.1	16.8	28.6	37.9	93.6	139.3	116.0	58.1	30.8
20	18.7	8.8	13.2	10.3	15.2	28.0	38.3	108.0	136.5	114.7	56.3	30.9
21	18.1	10.9	12.7	10.9	15.0	29.0	36.2	110.4	124.7	112.5	55.0	30.3
22	17.7	12.0	13.5	10.7	15.0	32.2	34.2	125.2	122.4	114.8	53.9	29.8
23	18.0	13.8	13.2	10.3	14.2	29.8	35.8	140.4	117.9	111.6	53.5	28.9
24	17.9	13.6	11.4	10.2	14.2	28.7	36.5	155.6	114.8	111.4	52.6	28.7
25	17.9	13.6	11.7	10.8	13.1	29.4	35.7	163.7	110.6	106.6	51.9	28.5
26	18.5	13.3	12.3	10.0	12.4	28.3	41.3	180.6	109.1	102.9	50.1	28.3
27	18.2	13.2	11.1	9.9	12.9	26.9	46.0	181.4	105.8	92.1	49.1	28.2
28	18.4	12.2	11.1	6.5	12.0	26.1	50.2	179.4	104.0	85.0	47.7	29.3
29	18.4	-	11.2	10.7	10.4	23.0	54.9	175.6	100.6	79.2	46.8	28.2
30	17.8	-	12.6	12.8	11.4	21.1	60.1	174.4	97.7	76.8	46.5	26.8
31	17.1	-	11.5	-	13.3	-	60.8	162.8	-	74.7	-	26.3
Total	612.4	404.9	392.6	377.3	621.0	746.5	1,123.9	3,125.3	3,945.2	3,355.8	1,982.5	1,037.1
Mean	19.8	14.5	12.7	12.6	20.0	24.9	36.3	100.8	131.5	108.3	66.1	33.5
Max.	181.4	Q356=	10.3	Q186=	28.7	-	-	-	-	-	-	-
Min.	6.5	Q276=	16.4	Q96=	66.7	-	-	-	-	-	-	-

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1995

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	25.6	18.2	14.6	18.5	13.8	15.2	20.7	55.4	60.2	84.8	89.3	41.3
2	25.1	17.4	14.4	18.9	15.8	14.6	21.3	60.5	63.1	90.7	89.0	40.9
3	25.9	17.8	16.8	19.5	16.6	15.1	23.6	53.8	64.0	96.1	85.0	41.2
4	25.6	17.0	16.8	16.9	16.8	14.2	22.7	54.2	66.2	100.2	86.4	40.6
5	24.8	16.3	17.1	16.3	14.9	15.5	20.2	57.4	66.4	106.6	85.4	39.8
6	24.6	16.3	15.5	16.6	15.8	14.6	15.0	54.8	68.1	105.6	84.3	40.3
7	24.9	16.1	14.9	15.2	16.0	17.0	15.2	53.1	66.0	111.0	80.4	38.3
8	24.0	16.2	13.3	13.2	16.9	16.9	14.0	52.6	76.8	108.2	78.1	38.4
9	23.7	16.4	12.7	15.1	16.6	16.6	12.9	54.8	77.3	106.3	77.0	37.8
10	24.1	16.4	12.2	14.1	18.7	14.9	20.9	53.2	77.8	103.3	75.1	37.2
11	23.2	15.9	14.3	13.7	18.8	15.9	22.0	52.0	80.0	106.1	73.8	36.2
12	22.8	17.0	17.5	14.3	17.9	16.0	21.8	51.0	85.9	108.1	71.3	35.7
13	23.2	16.3	18.1	10.2	17.0	16.5	24.6	50.4	77.9	111.4	70.9	35.1
14	22.9	16.3	18.5	11.9	16.4	13.4	26.4	53.4	77.5	108.3	68.2	35.4
15	22.5	16.4	18.6	13.1	17.2	13.6	19.8	58.1	73.4	109.4	66.9	35.1
16	22.1	17.0	15.0	13.7	16.6	12.5	21.2	58.5	76.5	107.8	64.4	35.4
17	21.8	16.9	16.5	13.9	14.5	11.7	21.7	62.3	80.4	105.2	63.4	35.5
18	21.5	16.3	17.3	14.7	14.6	10.8	22.2	61.4	85.0	106.9	59.5	34.5
19	21.2	16.0	17.3	13.1	15.6	14.0	22.1	57.4	88.7	110.0	57.8	34.0
20	21.0	15.2	17.8	13.4	15.6	13.1	29.0	52.5	96.6	111.0	54.9	33.7
21	20.8	14.7	21.7	13.7	15.2	15.3	30.0	46.9	95.7	111.6	53.0	33.4
22	21.0	14.4	18.4	12.9	15.7	15.1	34.4	40.8	90.9	112.5	51.2	32.5
23	20.3	14.7	18.0	16.8	15.4	16.3	37.3	40.1	86.0	108.4	49.9	32.2
24	19.4	14.6	19.3	16.9	14.6	16.5	40.1	40.3	81.4	104.7	48.8	31.9
25	18.7	14.1	20.6	16.9	14.5	16.5	38.4	39.7	77.9	103.3	47.1	30.7
26	18.7	14.0	20.9	16.3	14.1	16.4	41.1	45.7	73.6	102.7	47.1	30.1
27	17.5	14.5	22.6	16.9	13.9	17.0	41.8	48.8	68.0	101.2	46.6	30.1
28	17.4	14.3	21.8	15.8	12.9	13.9	40.8	49.6	70.4	100.5	45.0	28.8
29	17.7	-	21.2	15.6	12.9	15.0	52.4	51.0	77.3	102.0	43.9	28.1
30	17.6	-	20.8	13.8	14.7	16.9	52.7	54.8	78.9	96.0	43.6	26.6
31	18.1	-	20.4	-	15.0	-	51.3	58.0	-	93.5	-	26.2
Total	678.1	446.7	544.9	451.8	485.1	451.0	877.5	1,622.2	2,308.0	3,233.3	1,957.6	1,077.1
Mean	21.9	16.0	17.6	15.1	15.6	15.0	28.3	52.3	76.9	104.3	65.3	34.7
Max.	112.5	Q356=	12.9	Q186=	22.2							
Min.	10.2	Q276=	16.3	Q96=	53.4							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1996

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	26.5	21.4	14.8	16.4	15.6	24.2	77.2	114.3	190.8	139.4	128.1	62.1
2	26.1	20.4	16.4	16.1	16.2	30.4	80.8	113.3	195.6	140.3	125.3	61.8
3	27.2	20.1	18.7	15.1	18.2	34.8	83.8	115.0	195.6	142.5	120.8	61.0
4	26.7	19.0	18.7	14.5	21.5	37.8	88.2	118.1	187.2	142.3	117.2	61.0
5	26.1	18.4	19.4	14.5	22.0	41.5	88.4	116.6	184.0	143.5	113.1	59.5
6	25.8	17.9	19.6	14.4	20.0	47.5	90.5	107.0	175.6	145.7	109.5	60.1
7	25.5	18.6	17.4	13.6	20.2	42.4	89.6	115.3	167.7	148.0	104.3	59.1
8	24.5	18.6	16.0	12.9	18.0	42.2	86.8	117.1	161.6	155.5	100.3	58.3
9	23.5	18.6	16.2	13.6	15.8	43.3	79.1	121.8	153.4	161.3	95.8	57.4
10	23.3	18.5	16.4	13.8	16.7	44.5	78.1	127.4	154.4	168.9	92.5	56.6
11	23.0	18.2	16.7	13.4	15.4	44.5	78.2	135.2	158.9	169.2	88.5	56.0
12	23.4	17.5	17.5	15.1	15.1	43.1	78.2	138.1	162.2	174.8	84.7	55.4
13	23.8	16.4	16.4	16.4	19.7	38.9	75.8	141.1	165.5	171.4	81.0	54.0
14	24.4	16.0	13.4	15.9	17.3	34.7	81.2	143.4	168.7	169.5	79.1	54.0
15	24.3	15.9	11.8	15.9	14.6	30.0	86.2	137.7	168.2	165.6	77.6	53.3
16	23.5	15.8	12.3	16.4	15.6	24.5	89.1	142.3	165.0	165.0	75.3	52.7
17	23.2	16.2	11.8	14.8	14.6	19.4	88.9	137.1	162.3	161.8	76.8	51.4
18	22.7	16.1	12.2	11.4	11.2	20.9	94.2	135.7	157.9	157.5	75.2	50.8
19	22.1	16.2	15.8	11.3	13.5	23.4	98.9	134.3	159.1	154.3	74.6	49.4
20	21.9	15.2	16.7	11.4	15.2	31.1	91.9	139.4	154.6	150.2	72.1	49.5
21	21.8	14.1	16.7	12.8	10.1	33.2	91.9	137.8	154.9	148.2	71.7	48.1
22	20.9	13.9	17.2	12.6	12.9	34.3	94.9	141.0	152.8	143.4	69.3	48.1
23	15.9	15.0	18.0	17.3	14.3	38.4	96.2	138.8	153.4	144.3	68.2	47.4
24	18.5	15.1	15.6	14.6	15.7	44.6	96.3	144.1	152.6	145.2	67.1	47.4
25	18.8	16.2	18.1	15.4	21.8	45.7	105.4	155.2	154.9	143.2	67.8	46.7
26	19.7	16.9	17.5	13.8	28.1	54.5	106.7	161.6	148.4	143.1	67.9	46.6
27	20.8	16.0	17.9	15.1	31.3	65.2	109.7	163.6	144.6	144.8	66.6	45.0
28	25.4	15.6	18.3	12.2	34.7	70.9	110.3	174.2	141.8	140.9	67.3	45.0
29	23.0	15.5	19.6	14.0	35.8	70.4	111.9	177.4	141.0	139.0	65.4	44.1
30	22.5	-	16.9	13.0	31.0	75.5	106.9	181.2	136.9	137.6	64.6	38.3
31	21.9	-	16.8	-	30.9	-	108.5	182.3	-	133.2	-	35.5
Total	716.7	493.3	510.8	427.7	602.7	1,231.9	2,843.7	4,307.2	4,870.0	4,689.6	2,567.7	1,615.6
Mean	23.1	17.0	16.5	14.3	19.4	41.1	91.7	138.9	162.3	151.3	85.6	52.1
Max.	195.6	Q356=	12.6	Q186=	45.7							
Min.	10.1	Q276=	18.0	Q96=	113.1							

*** Données de débit journalier de la rivière ***

Station : Arrivée d'eau estimée au barrage de Boali

Rivière : MBALI

Année : 1997

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	34.7	27.3	17.8	21.9	28.0	20.4	54.9	48.9	108.2	62.8	69.6	37.3
2	37.2	26.0	18.3	23.4	24.7	21.8	55.8	49.6	105.1	63.0	69.8	37.3
3	40.8	26.0	18.1	23.4	22.8	24.7	55.1	51.5	99.0	61.5	68.0	37.0
4	40.0	24.8	17.4	27.5	22.6	21.7	55.1	55.0	95.7	61.9	68.6	36.4
5	39.5	25.0	17.4	22.4	22.1	23.3	51.5	61.2	92.5	62.1	70.2	35.2
6	38.9	23.8	17.7	22.3	21.8	24.2	45.5	64.0	90.2	65.6	68.7	34.5
7	39.2	24.0	17.0	22.2	22.4	23.0	42.6	71.3	88.5	65.9	67.2	34.5
8	38.6	23.6	17.1	21.5	22.3	23.6	37.8	76.7	87.3	67.4	70.2	33.2
9	40.2	23.7	17.2	21.7	20.1	23.6	34.8	81.2	81.6	66.5	67.2	32.8
10	40.5	22.4	18.1	20.9	20.5	22.3	29.6	81.4	82.5	65.9	65.1	32.3
11	40.5	21.9	17.7	18.7	20.8	20.4	33.6	80.6	79.4	66.0	62.5	32.0
12	39.9	21.3	18.6	14.2	21.0	24.8	33.9	79.4	75.7	69.2	61.3	31.0
13	40.3	20.1	17.6	15.6	20.5	27.9	34.2	77.9	72.0	67.6	56.0	31.2
14	39.3	20.1	12.7	15.7	24.1	29.8	35.7	80.9	72.6	68.1	52.1	29.8
15	38.8	20.1	13.9	11.1	23.5	26.9	42.7	79.6	68.8	66.9	48.1	29.1
16	37.6	20.1	15.3	13.2	25.4	35.4	42.3	83.3	63.3	65.5	47.2	27.6
17	37.6	20.2	15.3	18.3	22.7	34.3	41.6	84.4	63.8	59.7	41.7	27.6
18	36.3	20.3	16.0	17.7	22.8	31.0	41.9	83.8	63.9	58.9	43.5	26.3
19	35.6	19.3	20.3	18.3	20.3	33.6	39.9	81.7	64.6	54.1	45.7	26.6
20	33.4	19.7	18.5	23.5	20.0	40.5	37.3	84.1	65.1	52.2	46.0	26.7
21	33.3	20.1	18.9	22.4	15.6	33.2	35.1	79.9	67.8	49.9	45.8	26.9
22	31.1	18.7	18.7	22.5	17.6	37.2	34.2	74.5	68.9	50.1	48.1	25.6
23	30.8	19.1	20.0	21.9	18.2	34.1	35.3	75.8	71.1	49.2	47.1	25.9
24	29.9	18.6	20.8	20.9	17.3	34.7	37.8	75.1	71.7	50.5	45.8	25.7
25	29.1	17.8	18.1	21.6	17.0	38.0	38.1	75.2	73.4	53.1	45.3	25.5
26	28.4	17.6	18.7	20.8	19.6	44.2	40.0	77.8	74.6	56.1	42.7	25.4
27	29.2	19.2	19.8	23.2	19.2	45.1	41.8	82.4	73.2	56.6	40.5	26.2
28	28.8	18.3	17.8	24.9	17.2	54.3	42.8	86.5	70.8	61.6	39.1	26.1
29	27.8	-	18.3	25.8	16.6	54.8	44.9	94.6	70.3	64.0	37.8	25.2
30	28.8	-	17.4	26.5	19.5	54.6	44.7	99.0	68.6	65.9	36.8	24.7
31	27.7	-	21.4	-	19.3	-	45.1	101.0	-	66.2	-	24.6
Total	1,093.7	599.3	551.9	624.1	645.5	963.5	1,285.5	2,378.3	2,329.9	1,894.0	1,617.7	920.4
Mean	35.3	21.4	17.8	20.8	20.8	32.1	41.5	76.7	77.7	61.1	53.9	29.7
Max.	108.2	Q356=	15.7	Q186=	34.2	-	-	-	-	-	-	-
Min.	11.1	Q276=	22.1	Q96=	55.1	-	-	-	-	-	-	-

*** Données de débit journalier de la rivière ***
 Station : Arrivée d'eau estimée au barrage de Boali
 Rivière : MBALI
 Année : 1998

Unit : m³/sec

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	22.8	21.4	15.0	12.5	14.8	15.9	20.7	37.1	132.0	140.1	137.4	62.3
2	22.5	20.5	16.2	13.9	16.7	13.5	19.9	41.9	136.8	143.1	133.9	60.3
3	22.5	18.8	18.1	13.0	16.2	13.6	21.3	39.5	139.7	143.0	132.1	59.0
4	21.2	19.0	19.5	12.2	16.3	14.0	22.0	39.6	129.4	139.4	131.8	58.5
5	21.2	19.3	20.3	13.5	15.9	13.2	21.1	40.3	120.9	135.1	132.5	57.2
6	22.6	19.0	21.9	11.6	17.9	13.7	19.7	45.4	123.4	133.3	131.6	55.9
7	22.8	20.9	20.4	10.6	17.1	16.3	21.3	47.9	122.9	135.4	130.3	55.8
8	22.6	19.1	17.9	10.5	20.4	15.3	17.4	57.0	126.6	137.6	129.5	55.0
9	23.3	19.8	15.4	9.3	25.0	21.7	21.8	65.4	125.7	138.4	128.0	54.6
10	23.3	19.1	12.9	8.1	32.0	27.1	25.7	71.3	133.7	143.9	126.4	55.9
11	22.0	19.0	8.2	7.2	33.0	34.2	28.7	71.2	130.0	149.6	125.5	55.9
12	20.5	17.6	6.5	8.3	35.7	39.4	38.0	74.6	125.0	150.7	123.5	54.9
13	19.7	18.7	9.0	9.5	34.6	47.2	43.9	77.8	126.4	148.6	119.6	55.1
14	20.3	16.8	9.7	11.1	31.2	45.7	40.7	77.1	132.1	148.9	113.0	54.2
15	19.1	15.7	10.2	11.5	29.6	45.5	41.1	81.4	137.9	146.1	107.5	52.6
16	20.4	14.5	12.5	13.9	27.8	42.8	43.6	82.6	146.9	143.1	99.8	51.5
17	20.3	14.6	14.4	11.6	25.4	39.6	41.3	75.0	155.5	142.2	91.8	51.3
18	20.1	14.3	11.2	12.1	22.7	36.9	45.7	74.6	157.3	145.0	85.5	49.2
19	18.7	15.1	10.9	11.9	20.5	33.5	54.9	71.7	159.6	146.5	81.9	48.2
20	19.8	15.3	11.8	12.4	17.7	31.6	57.6	73.2	156.8	150.6	78.7	48.0
21	17.4	16.0	12.6	13.2	16.1	27.6	59.2	78.4	149.0	151.2	76.3	47.2
22	19.3	15.4	11.6	13.8	15.0	28.1	59.7	89.4	146.1	152.0	76.1	46.4
23	19.9	15.2	12.4	13.4	14.0	25.9	61.9	91.4	142.7	152.5	74.6	46.3
24	20.6	15.8	13.2	13.0	13.9	26.9	58.3	98.4	140.0	150.3	72.5	45.7
25	19.9	16.1	13.5	11.0	13.4	21.0	59.3	98.0	135.7	145.8	69.6	45.2
26	22.9	16.0	13.8	10.0	11.7	21.6	56.8	99.3	135.2	145.1	68.1	44.5
27	21.1	15.3	14.1	10.4	13.3	18.9	55.4	100.0	131.5	142.8	66.9	43.7
28	21.5	15.4	13.8	12.1	14.6	17.4	47.6	104.2	131.7	141.6	65.3	43.7
29	22.8	-	13.1	13.6	14.8	14.8	43.7	105.3	134.4	142.4	64.7	42.5
30	21.8	-	13.5	13.8	15.3	19.1	40.2	119.2	138.8	141.8	63.5	41.9
31	20.6	-	12.0	-	17.6	-	39.2	125.6	-	138.5	-	41.4
Total	653.9	483.9	425.6	349.0	630.2	782.1	1,228.0	2,353.5	4,103.5	4,464.8	3,037.8	1,583.9
Mean	21.1	17.3	13.7	11.6	20.3	26.1	39.6	75.9	136.8	144.0	101.3	51.1
Max.	159.6	Q356=	10.0	Q186=	32.0	-	-	-	-	-	-	-
Min.	6.5	Q276=	16.2	Q96=	77.1	-	-	-	-	-	-	-

Tableau 3 Exemple de calcul du bilan hydrologique du barrage de Boali(1988)

Spill Way 572.00 m
LWL : 552.00 m
548.50 m

Year : 1988 Outflow dischar 25.00 m³/s																
Month	Day	WL	Wd	Y	A	P	Evp	Qin	Qof	Qr	Qout	Pv	Evap	Qinv	Qouly	
		m	m	x1000 m²	x1000 m²	mm	mm	m³/s	m³/s	m³/s	m³/s	x1000m³	x1000m³	x1000 m	x1000 m	
		564.63	16.13	94,014	14,467											
Jan.	1	564.51	16.01	92,226	14,473	0.0	5.0	5.0	0.0	25.0	25.0	0.0	58.7	431.1	2160.0	
2	564.40	15.90	90,479	14,263	0.0	5.0	5.5	0.0	25.0	25.0	0.0	57.9	470.9	2160.0		
3	564.33	15.83	89,524	14,148	56.0	5.0	5.4	0.0	25.0	25.0	798.7	57.1	463.1	2160.0		
4	564.22	15.72	87,832	13,943	0.0	5.0	6.1	0.0	25.0	25.0	0.0	56.6	524.4	2160.0		
5	564.11	15.61	86,320	13,759	0.0	5.0	8.1	0.0	25.0	25.0	0.0	55.8	703.3	2160.0		
6	564.00	15.50	84,721	13,564	0.0	5.0	7.1	0.0	25.0	25.0	0.0	55.0	616.0	2160.0		
7	563.88	15.38	83,006	13,354	0.0	5.0	5.8	0.0	25.0	25.0	0.0	54.3	459.4	2160.0		
8	563.75	15.25	81,281	13,142	0.0	5.0	5.7	0.0	25.0	25.0	0.0	53.4	489.0	2160.0		
9	563.64	15.14	79,746	12,952	0.0	5.0	7.8	0.0	25.0	25.0	0.0	52.6	677.4	2160.0		
10	563.52	15.02	78,144	12,753	0.0	5.0	7.1	0.0	25.0	25.0	0.0	51.8	610.0	2160.0		
11	563.40	14.90	76,544	12,549	0.0	5.0	6.7	0.0	25.0	25.0	0.0	51.0	580.6	2160.0		
12	563.28	14.78	74,816	12,336	0.0	5.0	5.9	0.0	25.0	25.0	0.0	50.2	512.4	2160.0		
13	563.14	14.64	73,037	12,111	0.0	5.0	5.0	0.0	25.0	25.0	0.0	49.3	430.3	2160.0		
14	562.99	14.49	71,182	11,875	0.0	5.0	4.1	0.0	25.0	25.0	0.0	48.4	353.4	2160.0		
15	562.85	14.35	69,335	11,639	0.0	5.0	4.2	0.0	25.0	25.0	0.0	47.5	360.3	2160.0		
16	562.70	14.20	67,501	11,403	0.0	5.0	4.3	0.0	25.0	25.0	0.0	46.6	373.2	2160.0		
17	562.55	14.05	65,671	11,166	0.0	5.0	4.3	0.0	25.0	25.0	0.0	45.6	375.0	2160.0		
18	562.40	13.90	63,849	10,928	0.0	5.0	4.4	0.0	25.0	25.0	0.0	44.7	382.8	2160.0		
19	562.24	13.74	61,996	10,686	0.0	5.0	4.1	0.0	25.0	25.0	0.0	43.7	350.8	2160.0		
20	562.08	13.58	60,140	10,441	0.0	5.0	4.0	0.0	25.0	25.0	0.0	42.7	347.3	2160.0		
21	561.92	13.42	58,265	10,191	0.0	5.0	3.8	0.0	25.0	25.0	0.0	41.8	326.6	2160.0		
22	561.75	13.25	56,388	9,933	0.0	5.0	3.7	0.0	25.0	25.0	0.0	40.8	323.1	2160.0		
23	561.58	13.08	54,490	9,683	0.0	5.0	3.5	0.0	25.0	25.0	0.0	39.8	302.4	2160.0		
24	561.40	12.90	52,592	9,424	0.0	5.0	3.5	0.0	25.0	25.0	0.0	38.7	300.7	2160.0		
25	561.22	12.72	50,695	9,163	0.0	5.0	3.5	0.0	25.0	25.0	0.0	37.7	300.7	2160.0		
26	561.03	12.53	48,788	8,899	0.0	5.0	3.4	0.0	25.0	25.0	0.0	36.7	289.4	2160.0		
27	560.84	12.34	46,858	8,629	0.0	5.0	3.1	0.0	25.0	25.0	0.0	35.6	265.2	2160.0		
28	560.64	12.14	44,915	8,354	0.0	5.0	2.9	0.0	25.0	25.0	0.0	34.5	252.3	2160.0		
29	560.44	11.94	42,973	8,077	0.0	5.0	2.9	0.0	25.0	25.0	0.0	33.4	250.6	2160.0		
30	560.22	11.72	41,010	7,793	0.0	5.0	2.7	0.0	25.0	25.0	0.0	32.3	229.8	2160.0		
31	560.01	11.51	39,047	7,507	0.0	5.0	2.6	0.0	25.0	25.0	0.0	31.2	228.1	2160.0		
Feb.	1	559.78	11.28	37,088	7,217	0.0	5.0	2.7	0.0	25.0	25.0	0.0	30.0	230.7	2160.0	
2	559.55	11.05	35,160	6,929	0.0	5.0	3.0	0.0	25.0	25.0	0.0	28.9	260.9	2160.0		
3	559.31	10.81	33,224	6,636	0.0	5.0	2.9	0.0	25.0	25.0	0.0	27.7	252.3	2160.0		
4	559.06	10.56	31,279	6,337	0.0	5.0	2.8	0.0	25.0	25.0	0.0	26.5	241.1	2160.0		
5	558.82	10.32	29,435	6,049	17.9	5.0	2.6	0.0	25.0	25.0	113.4	25.3	228.1	2160.0		
6	558.55	10.05	27,477	5,740	0.0	5.0	2.6	0.0	25.0	25.0	0.0	24.2	226.4	2160.0		
7	558.27	9.77	25,500	5,421	0.0	5.0	2.4	0.0	25.0	25.0	0.0	23.0	205.6	2160.0		
8	557.97	9.47	23,524	5,097	0.0	5.0	2.4	0.0	25.0	25.0	0.0	21.7	205.6	2160.0		
9	557.68	9.18	21,707	4,794	0.0	5.0	4.2	0.0	25.0	25.0	0.0	20.4	363.7	2160.0		
10	557.37	8.87	19,837	4,475	1.5	5.0	3.5	0.0	25.0	25.0	7.2	19.2	301.5	2160.0		
11	557.04	8.54	17,955	4,154	19.6	5.0	2.9	0.0	25.0	25.0	87.1	17.9	248.8	2160.0		
12	556.83	8.19	16,147	3,824	0.0	5.0	3.8	0.0	25.0	25.0	0.0	16.6	328.3	2160.0		
13	556.31	7.81	14,253	3,476	0.0	5.0	3.3	0.0	25.0	25.0	0.0	15.3	280.8	2160.0		
14	555.89	7.39	12,357	3,117	0.0	5.0	3.2	0.0	25.0	25.0	0.0	13.9	278.2	2160.0		
15	555.44	6.94	10,431	2,751	0.0	5.0	3.6	0.0	25.0	25.0	0.0	12.5	306.7	2160.0		
16	554.93	6.43	8,601	2,384	0.0	5.0	3.3	0.0	25.0	25.0	0.0	11.0	280.8	2160.0		
17	554.34	5.84	6,706	1,955	0.0	5.0	3.2	0.0	25.0	25.0	0.0	9.5	274.8	2160.0		
18	553.63	5.13	4,792	1,512	0.0	5.0	2.9	0.0	25.0	25.0	0.0	7.8	254.0	2160.0		
19	552.72	4.22	2,879	1,024	0.0	5.0	2.9	0.0	25.0	25.0	0.0	6.0	252.3	2160.0		
20	552.72	4.22	2,875	1,023	0.0	5.0	2.9	0.0	2.9	2.9	0.0	4.1	252.3	252.3		
21	552.72	4.22	2,870	1,022	0.0	5.0	2.9	0.0	2.9	2.9	0.0	4.1	249.7	249.7		
22	552.71	4.21	2,866	1,021	0.0	5.0	2.3	0.0	2.3	2.3	0.0	4.1	195.3	195.3		
23	552.71	4.21	2,862	1,020	0.0	5.0	1.8	0.0	1.8	1.8	0.0	4.1	156.4	156.4		
24	552.71	4.21	2,858	1,019	0.0	5.0	1.6	0.0	1.6	1.6	0.0	4.1	140.8	140.8		
25	552.71	4.21	2,854	1,018	0.0	5.0	1.5	0.0	1.5	1.5	0.0	4.1	126.1	126.1		
26	552.70	4.20	2,850	1,017	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4		
27	552.70	4.20	2,846	1,016	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4		
28	552.70	4.20	2,842	1,015	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	124.4	124.4		
29	552.70	4.20	2,838	1,013	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	123.6	123.6		
Mar.	1	552.69	4.19	2,834	1,012	0.0	5.0	1.4	0.0	1.4	1.4	0.0	4.1	119.2	119.2	
2	552.69	4.19	2,830	1,011	0.0	5.0	0.9	0.0	0.9	0.9	0.0	4.0	75.9	75.9		
3	552.69	4.19	2,826	1,010	0.0	5.0	1.3	0.0	1.3	1.3	0.0	4.0	108.0	108.0		
4	552.70	4.20	2,840	1,014	18.3	5.0	1.0	0.0	1.0	1.0	18.5	4.0	84.9	84.9		
5	552.70	4.20	2,836	1,013	0.0	5.0	0.7	0.0	0.7	0.7	0.0	4.1	58.7	58.7		
6	552.69	4.19	2,832	1,012	0.0	5.0	1.1	0.0	1.1	1.1	0.0	4.1	95.9	95.9		
7	552.69	4.19	2,828	1,011	0.0	5.0	0.8	0.0	0.8	0.8	0.0	4.0	70.2	70.2		
8	552.69	4.19	2,824	1,010	0.0	5.0	0.7	0.0	0.7	0.7	0.0	4.0	64.5	64.5		
9	552.69	4.19	2,820	1,008	0.0	5.0	3.4	0.0	3.4	3.4	0.0	4.0	290.3	290.3		
10	552.69	4.19	2,820	1,008	4.0	5.0	6.3	0.0	6.3	6.3	4.0	4.0	540.0	540.0		
11	552.68	4.18	2,816	1,007	0.0	5.0	4.9	0.0	4.9	4.9	0.0	4.0	426.0	426.0		
12	552.69	4.19	2,829	1,011	16.8	5.0	4.6	0.0	4.6	4.6	16.9	4.0	399.2	399.2		

Year : 1988															
Month	Day	Outflow discharge $25.00 \text{ m}^3/\text{s}$													
		SL	WD	V	A	P	Evap	Qin	Qot	Qv	Qout	Pv	Evapv	Qinv	Qoutv
	13	552.69	4.19	2,828	1,011	3.5	5.0	4.1	0.0	4.1	4.1	3.5	4.0	352.5	352.5
	14	552.69	4.19	2,824	1,010	0.0	5.0	3.8	0.0	3.8	3.8	0.0	4.0	328.3	328.3
	15	552.69	4.19	2,820	1,009	0.0	5.0	3.5	0.0	3.5	3.5	0.0	4.0	303.3	303.3
	16	552.69	4.18	2,816	1,007	0.0	5.0	4.5	0.0	4.5	4.5	0.0	4.0	385.3	385.3
	17	552.69	4.19	2,830	1,011	17.6	5.0	5.3	0.0	5.3	5.3	17.7	4.0	455.3	455.3
	18	552.69	4.19	2,826	1,010	0.0	5.0	4.2	0.0	4.2	4.2	0.0	4.0	359.4	359.4
	19	552.69	4.19	2,822	1,009	0.0	5.0	3.3	0.0	3.3	3.3	0.0	4.0	287.7	287.7
	20	552.69	4.19	2,818	1,008	0.0	5.0	2.8	0.0	2.8	2.8	0.0	4.0	244.5	244.5
	21	552.68	4.18	2,814	1,007	0.0	5.0	3.3	0.0	3.3	3.3	0.0	4.0	288.6	288.6
	22	552.69	4.19	2,827	1,011	17.6	5.0	3.9	0.0	3.9	17.7	4.0	332.6	332.6	
	23	552.69	4.19	2,823	1,009	0.0	5.0	3.4	0.0	3.4	3.4	0.0	4.0	292.9	292.9
	24	552.69	4.19	2,820	1,009	0.6	5.0	3.6	0.0	3.6	3.6	0.6	4.0	308.4	308.4
	25	552.68	4.18	2,816	1,007	0.0	5.0	3.1	0.0	3.1	3.1	0.0	4.0	264.4	264.4
	26	552.68	4.18	2,812	1,006	0.0	5.0	2.6	0.0	2.6	2.6	0.0	4.0	220.3	220.3
	27	552.68	4.18	2,808	1,005	0.5	5.0	2.7	0.0	2.7	2.7	0.5	4.0	235.0	235.0
	28	552.68	4.18	2,804	1,004	0.0	5.0	2.2	0.0	2.2	2.2	0.0	4.0	190.9	190.9
	29	552.68	4.18	2,800	1,003	0.0	5.0	2.0	0.0	2.0	2.0	0.0	4.0	171.1	171.1
	30	552.67	4.17	2,797	1,002	0.3	5.0	1.9	0.0	1.9	1.9	0.3	4.0	159.8	159.8
	31	552.67	4.17	2,793	1,001	0.0	5.0	1.2	0.0	1.2	1.2	0.0	4.0	102.8	102.8
Apr.	1	552.67	4.17	2,789	1,000	0.0	4.0	1.3	0.0	1.3	1.3	0.0	3.2	114.0	114.0
	2	552.68	4.18	2,802	1,004	15.8	4.0	1.0	0.0	1.0	1.0	15.8	3.2	89.9	89.9
	3	552.67	4.17	2,799	1,003	0.0	4.0	1.3	0.0	1.3	1.3	0.0	3.2	112.3	112.3
	4	552.67	4.17	2,796	1,002	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	85.8	85.8
	5	552.67	4.17	2,792	1,001	0.0	4.0	0.7	0.0	0.7	0.7	0.0	3.2	57.5	57.5
	6	552.67	4.17	2,789	1,000	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	84.1	84.1
	7	552.67	4.17	2,786	999	0.0	4.0	1.0	0.0	1.0	1.0	0.0	3.2	84.0	84.0
	8	552.67	4.17	2,783	998	0.0	4.0	0.9	0.0	0.9	0.9	0.0	3.2	81.3	81.3
	9	552.67	4.17	2,781	1,001	11.3	4.0	0.3	0.0	0.3	11.3	3.2	26.3	26.3	
	10	552.67	4.17	2,788	1,000	0.0	4.0	0.1	0.0	0.1	0.1	0.0	3.2	10.2	10.2
	11	552.67	4.17	2,784	999	0.0	4.0	0.3	0.0	0.3	0.3	0.0	3.2	28.9	28.9
	12	552.67	4.17	2,793	1,001	12.0	4.0	0.1	0.0	0.1	0.1	12.0	3.2	9.6	9.6
	13	552.70	4.20	2,841	1,014	51.2	4.0	0.1	0.0	0.1	0.1	51.3	3.2	9.0	9.0
	14	552.70	4.20	2,838	1,013	0.0	4.0	0.4	0.0	0.4	0.4	0.0	3.2	38.6	38.6
	15	552.70	4.20	2,835	1,013	0.0	4.0	0.6	0.0	0.6	0.6	0.0	3.2	52.0	52.0
	16	552.70	4.20	2,851	1,017	18.8	4.0	0.6	0.0	0.6	0.6	19.0	3.2	51.8	51.8
	17	552.70	4.20	2,850	1,017	2.8	4.0	1.5	0.0	1.5	1.5	2.8	3.3	127.0	127.0
	18	552.70	4.20	2,847	1,016	0.3	4.0	2.2	0.0	2.2	2.2	0.3	3.3	191.8	191.8
	19	552.70	4.20	2,847	1,016	3.2	4.0	3.4	0.0	3.4	3.4	3.3	3.3	291.2	291.2
	20	552.70	4.20	2,844	1,015	0.0	4.0	6.1	0.0	6.1	6.1	0.0	3.3	528.8	528.8
	21	552.70	4.20	2,843	1,015	1.9	4.0	5.7	0.0	5.7	5.7	1.9	3.2	488.2	488.2
	22	552.70	4.20	2,838	1,014	0.0	4.0	12.8	0.0	12.8	12.8	0.0	3.2	1105.9	1105.9
	23	552.70	4.20	2,840	1,014	3.7	4.0	13.2	0.0	13.2	13.2	3.8	3.2	1140.5	1140.5
	24	552.70	4.20	2,837	1,013	0.0	4.0	9.1	0.0	9.1	9.1	0.0	3.2	782.8	782.8
	25	552.69	4.19	2,833	1,012	0.0	4.0	7.4	0.0	7.4	7.4	0.0	3.2	637.6	637.6
	26	552.69	4.19	2,830	1,011	0.0	4.0	7.1	0.0	7.1	7.1	0.0	3.2	614.3	614.3
	27	552.69	4.19	2,827	1,010	0.0	4.0	6.3	0.0	6.3	6.3	0.0	3.2	541.7	541.7
	28	552.69	4.19	2,824	1,010	0.0	4.0	6.0	0.0	6.0	6.0	0.0	3.2	519.3	519.3
	29	552.69	4.19	2,820	1,009	0.0	4.0	5.5	0.0	5.5	5.5	0.0	3.2	477.8	477.8
	30	552.69	4.19	2,817	1,008	0.0	4.0	5.0	0.0	5.0	5.0	0.0	3.2	433.7	433.7
May	1	552.69	4.19	2,831	1,011	16.5	4.0	6.9	0.0	6.9	6.9	16.6	3.2	531.8	531.8
	2	552.70	4.20	2,842	1,014	14.2	4.0	5.6	0.0	5.6	5.6	14.4	3.2	484.7	484.7
	3	552.70	4.20	2,839	1,014	0.0	4.0	8.1	0.0	8.1	8.1	0.0	3.2	699.0	699.0
	4	552.70	4.20	2,835	1,013	0.0	4.0	9.4	0.0	9.4	9.4	0.0	3.2	811.3	811.3
	5	552.70	4.20	2,844	1,016	15.4	4.0	9.3	0.0	9.3	9.3	15.6	3.2	799.2	799.2
	6	552.70	4.20	2,844	1,015	0.0	4.0	5.6	0.0	5.6	5.6	0.0	3.3	487.3	487.3
	7	552.70	4.20	2,841	1,014	0.0	4.0	4.9	0.0	4.9	4.9	0.0	3.2	426.0	426.0
	8	552.70	4.20	2,838	1,013	0.0	4.0	4.2	0.0	4.2	4.2	0.0	3.2	360.3	360.3
	9	552.70	4.20	2,835	1,013	0.0	4.0	4.7	0.0	4.7	4.7	0.0	3.2	406.1	406.1
	10	552.69	4.19	2,831	1,012	0.0	4.0	16.6	0.0	16.6	16.6	0.0	3.2	1434.2	1434.2
	11	552.69	4.19	2,828	1,011	0.0	4.0	17.9	0.0	17.9	17.9	0.0	3.2	1546.6	1546.6
	12	552.69	4.19	2,825	1,010	0.0	4.0	13.6	0.0	13.6	13.6	0.0	3.2	1175.0	1175.0
	13	552.69	4.19	2,830	1,011	8.2	4.0	8.5	0.0	8.5	8.5	8.3	3.2	731.8	731.8
	14	552.69	4.19	2,827	1,010	0.0	4.0	6.3	0.0	6.3	6.3	0.0	3.2	546.0	546.0
	15	552.69	4.19	2,824	1,009	0.0	4.0	4.7	0.0	4.7	4.7	0.0	3.2	409.5	409.5
	16	552.70	4.20	2,845	1,015	24.8	4.0	3.9	0.0	3.9	3.9	25.0	3.2	339.6	339.6
	17	552.70	4.20	2,842	1,015	0.0	4.0	3.8	0.0	3.8	3.8	0.0	3.2	324.9	324.9
	18	552.70	4.20	2,839	1,014	0.0	4.0	3.8	0.0	3.8	3.8	0.0	3.2	324.9	324.9
	19	552.70	4.20	2,836	1,013	0.0	4.0	3.9	0.0	3.9	3.9	0.0	3.2	337.0	337.0
	20	552.70	4.20	2,841	1,014	8.4	4.0	6.1	0.0	6.1	6.1	8.5	3.2	527.9	527.9
	21	552.70	4.20	2,848	1,016	10.7	4.0	12.0	0.0	12.0	12.0	10.9	3.2	1036.8	1036.8
	22	552.71	4.21	2,854	1,018	9.1	4.0	13.8	0.0	13.8	13.8	9.2	3.3	1192.3	1192.3
	23	552.72	4.22	2,876	1,024	24.1	4.0	11.0	0.0	11.0	11.0	24.5	3.3	950.4	950.4
	24	552.72	4.22	2,873	1,023	0.5	4.0	15.4	0.0	15.4	15.4	0.5	3.3	1330.6	1330.6
	25	552.72	4.22	2,870	1,022	0.2	4.0	16.6	0.0	16.6	16.6	0.2	3.3	1434.2	1434.2
	26	552.71	4.21	2,867	1,021	0.0	4.0</td								

Year : 1988

Outflow discharge: 25.00 m³/s

Month	Day	SL	Ed	V	A	P	Exap	Qin	Qoi	Qv	Qout	Pv	Evapv	Qinv	Qoutv
				x1000 m ³	x1000 m ³	mm	mm	m ³ /s	m ³ /s	m ³ /s	m ³ /s	x1000 m ³	x1000 m ³	x1000 m ³	x1000 m ³
	30	552.71	4.21	2,858	1,019	3.1	4.0	12.1	0.0	12.1	12.1	3.2	3.3	1045.4	1045.4
	31	552.72	4.22	2,881	1,025	26.0	4.0	8.8	0.0	8.8	8.8	26.5	3.3	762.0	762.0
June	1	552.72	4.22	2,881	1,025	2.5	4.0	6.8	0.0	6.8	6.8	2.6	3.3	584.9	584.9
	2	552.72	4.22	2,877	1,024	0.0	4.0	6.2	0.0	6.2	6.2	0.0	3.3	538.3	538.3
	3	552.72	4.22	2,875	1,023	0.5	4.0	17.3	0.0	17.3	17.3	0.5	3.3	1494.7	1494.7
	4	552.72	4.22	2,872	1,023	0.2	4.0	21.0	0.0	21.0	21.0	0.2	3.3	1814.4	1814.4
	5	552.86	4.36	3,140	1,095	3.7	4.0	28.1	0.0	25.0	25.0	3.8	3.3	2427.8	2160.0
	6	553.03	4.59	3,572	1,208	19.1	4.0	29.8	0.0	25.0	25.0	20.9	3.5	2574.7	2160.0
	7	553.47	4.97	4,406	1,418	0.0	4.0	34.7	0.0	25.0	25.0	0.0	3.9	2998.1	2160.0
	8	553.82	5.32	5,266	1,625	6.4	4.0	34.9	0.0	25.0	25.0	9.1	4.5	3015.4	2160.0
	9	553.68	5.18	4,910	1,540	18.1	4.0	20.6	0.0	25.0	25.0	29.4	5.2	1779.8	2160.0
	10	553.57	5.07	4,641	1,476	30.4	4.0	21.4	0.0	25.0	25.0	46.8	4.9	1849.0	2160.0
	11	553.92	5.42	5,509	1,682	0.0	4.0	35.1	0.0	25.0	25.0	0.0	4.7	3032.6	2160.0
	12	554.33	5.83	6,670	1,947	0.0	4.0	38.5	0.0	25.0	25.0	0.0	5.4	3326.4	2160.0
	13	554.52	6.02	7,264	2,078	10.9	4.0	31.7	0.0	25.0	25.0	21.2	6.2	2738.9	2160.0
	14	554.58	6.03	7,453	2,119	19.1	4.0	26.8	0.0	25.0	25.0	39.7	6.6	2315.5	2160.0
	15	554.70	6.20	7,840	2,202	2.8	4.0	29.5	0.0	25.0	25.0	5.9	6.8	2548.8	2160.0
	16	554.82	6.32	8,222	2,284	0.0	4.0	29.5	0.0	25.0	25.0	0.0	7.0	2548.8	2160.0
	17	554.93	6.43	8,609	2,365	6.0	4.0	29.4	0.0	25.0	25.0	13.7	7.3	2540.2	2160.0
	18	555.17	6.67	9,447	2,539	39.7	4.0	33.7	0.0	25.0	25.0	93.9	7.6	2911.7	2160.0
	19	555.42	6.92	10,406	2,734	0.0	4.0	36.2	0.0	25.0	25.0	0.0	8.1	3127.7	2160.0
	20	556.01	7.51	12,902	3,222	50.2	4.0	52.4	0.0	25.0	25.0	137.2	8.7	4527.4	2160.0
	21	556.70	8.20	16,173	3,829	20.9	4.0	62.2	0.0	25.0	25.0	67.3	10.3	5374.1	2160.0
	22	557.49	8.99	20,585	4,603	0.0	4.0	76.2	0.0	25.0	25.0	0.0	12.3	6583.7	2160.0
	23	558.25	9.75	25,369	5,400	25.3	4.0	79.2	0.0	25.0	25.0	116.5	14.7	6842.9	2160.0
	24	558.91	10.41	30,101	6,154	7.4	4.0	79.5	0.0	25.0	25.0	40.0	17.3	6868.8	2160.0
	25	559.54	11.04	35,092	6,919	0.0	4.0	83.0	0.0	25.0	25.0	0.0	19.7	7171.2	2160.0
	26	560.18	11.68	40,638	7,739	28.0	4.0	87.2	0.0	25.0	25.0	193.7	22.1	7534.1	2160.0
	27	560.80	12.30	46,425	8,568	36.4	4.0	89.0	0.0	25.0	25.0	281.7	24.8	7889.6	2160.0
	28	561.45	12.95	53,136	9,498	0.0	4.0	103.0	0.0	25.0	25.0	0.0	27.4	8899.2	2160.0
	29	562.14	13.64	60,729	10,519	2.1	4.0	113.0	0.0	25.0	25.0	19.9	30.4	9763.2	2160.0
	30	562.78	14.29	68,611	11,546	21.5	4.0	114.0	0.0	25.0	25.0	226.2	33.7	9849.6	2160.0
Jul.	1	563.44	14.94	76,954	12,604	29.0	3.0	118.0	0.0	25.0	25.0	334.8	27.7	10195.2	2160.0
	2	564.04	15.54	85,304	13,636	0.0	3.0	122.0	0.0	25.0	25.0	0.0	30.2	10540.8	2160.0
	3	564.61	16.11	93,655	14,644	0.2	3.0	122.0	0.0	25.0	25.0	2.7	32.7	10540.8	2160.0
	4	565.16	16.66	102,195	15,653	1.5	3.0	124.0	0.0	25.0	25.0	22.0	35.1	10713.6	2160.0
	5	565.66	17.16	110,471	16,613	1.2	3.0	121.0	0.0	25.0	25.0	18.8	37.6	10454.4	2160.0
	6	566.14	17.64	118,553	17,533	0.0	3.0	119.0	0.0	25.0	25.0	0.0	39.9	10281.6	2160.0
	7	566.56	18.06	126,114	18,381	0.0	3.0	113.0	0.0	25.0	25.0	0.0	42.1	9763.2	2160.0
	8	566.96	18.46	133,421	19,189	9.8	3.0	108.0	0.0	25.0	25.0	180.1	44.1	9331.2	2160.0
	9	567.31	18.81	140,201	19,929	0.0	3.0	104.0	0.0	25.0	25.0	0.0	46.1	8985.6	2160.0
	10	567.66	19.16	146,942	20,657	2.5	3.0	103.0	0.0	25.0	25.0	49.8	47.8	8899.2	2160.0
	11	567.91	19.41	152,128	21,212	0.0	3.0	85.6	0.0	25.0	25.0	0.0	49.6	7395.8	2160.0
	12	568.12	19.62	156,443	21,670	9.5	3.0	73.2	0.0	25.0	25.0	201.5	50.9	6324.5	2160.0
	13	568.27	19.77	159,594	22,002	0.7	3.0	61.9	0.0	25.0	25.0	15.2	52.0	5348.2	2160.0
	14	568.36	19.86	161,408	22,193	0.0	3.0	46.6	0.0	25.0	25.0	0.0	52.8	4026.2	2160.0
	15	568.43	19.93	162,867	22,346	0.0	3.0	42.5	0.0	25.0	25.0	0.0	53.3	3672.0	2160.0
	16	568.48	19.98	163,862	22,461	0.0	3.0	38.3	0.0	25.0	25.0	0.0	53.8	3309.1	2160.0
	17	568.52	20.02	164,833	22,552	0.0	3.0	35.7	0.0	25.0	25.0	0.0	53.9	3084.5	2160.0
	18	568.54	20.04	165,306	22,601	0.0	3.0	31.1	0.0	25.0	25.0	0.0	54.1	2687.0	2160.0
	19	568.54	20.04	165,338	22,605	0.0	3.0	26.0	0.0	25.0	25.0	0.0	54.2	2246.4	2160.0
	20	568.53	20.03	165,067	22,576	0.0	3.0	22.5	0.0	25.0	25.0	0.0	54.3	1944.0	2160.0
	21	568.51	20.01	164,642	22,532	0.0	3.0	20.7	0.0	25.0	25.0	0.0	54.2	1788.5	2160.0
	22	568.50	20.00	164,421	22,509	15.6	3.0	19.0	0.0	25.0	25.0	351.5	54.1	1641.6	2160.0
	23	568.48	19.98	163,893	22,454	3.9	3.0	18.5	0.0	25.0	25.0	87.8	54.0	1598.4	2160.0
	24	568.53	20.03	165,047	22,574	36.5	3.0	29.5	0.0	25.0	25.0	819.6	54.9	2548.8	2160.0
	25	568.53	20.03	165,106	22,580	0.0	3.0	26.3	0.0	25.0	25.0	0.0	54.2	2272.3	2160.0
	26	568.55	20.05	165,368	22,608	9.8	3.0	26.1	0.0	25.0	25.0	221.3	54.2	2255.0	2160.0
	27	568.58	20.08	166,133	22,688	0.7	3.0	34.3	0.0	25.0	25.0	15.8	54.3	2963.5	2160.0
	28	568.63	20.13	167,089	22,787	0.0	3.0	36.7	0.0	25.0	25.0	0.0	54.5	3170.9	2160.0
	29	568.68	20.16	167,769	22,858	0.0	3.0	33.5	0.0	25.0	25.0	0.0	54.7	2894.4	2160.0
	30	568.67	20.17	168,103	22,893	0.0	3.0	29.5	0.0	25.0	25.0	0.0	54.9	2548.8	2160.0
	31	568.67	20.17	167,997	22,882	0.8	3.0	24.2	0.0	25.0	25.0	18.3	54.9	2090.9	2160.0
Aug.	1	568.66	20.16	167,799	22,861	0.9	3.0	23.1	0.0	25.0	25.0	20.6	54.9	1995.8	2160.0
	2	568.65	20.15	167,613	22,842	2.2	3.0	22.9	0.0	25.0	25.0	50.3	54.9	1978.6	2160.0
	3	568.64	20.14	167,349	22,814	3.7	3.0	21.6	0.0	25.0	25.0	84.5	54.8	1866.2	2160.0
	4	568.63	20.13	167,135	22,792	4.4	3.0	22.0	0.0	25.0	25.0	100.4	54.8	1900.8	2160.0
	5	568.63	20.13	167,242	22,803	8.6	3.0	24.6	0.0	25.0	25.0	196.0	54.7	2125.4	2160.0
	6	568.68	20.18	168,311	22,914	9.5	3.0	35.5	0.0	25.0	25.0	216.6	54.7	3067.2	2160.0
	7	568.72	20.22	169,219	23,009	14.9	3.0	32.2	0.0	25.0</					

Outflow discharge 25.00 m³/s																
Month	Day	WL	WD	V	A	P	Evap	Qin	Qof	Qv	Qout	Pv	Evapv	Qinv	Qoutv	
		m	d	x1000 m³	x1000 m²	mm	mm	m³/s	m³/s	m³/s	m³/s	x1000m³	x1000m³	x1000 m³	x1000 m³	
16	569.74	21.24	192.284	25.368	10.6	3.0	47.7	0.0	25.0	25.0	266.6	60.4	4121.3	2160.0		
17	569.82	21.32	194.131	25.554	1.3	3.0	46.7	0.0	25.0	25.0	33.0	60.9	4034.9	2160.0		
18	569.87	21.37	195.305	25.672	0.0	3.0	39.3	0.0	25.0	25.0	0.0	61.3	3395.9	2160.0		
19	569.90	21.40	196.059	25.747	2.8	3.0	33.6	0.0	25.0	25.0	71.9	61.6	2603.0	2160.0		
20	569.93	21.43	196.274	25.819	9.7	3.0	31.1	0.0	25.0	25.0	249.7	61.8	2687.0	2160.0		
21	569.99	21.49	198.077	25.949	0.0	3.0	40.8	0.0	25.0	25.0	0.0	62.0	3525.1	2160.0		
22	570.04	21.54	199.293	26.071	0.0	3.0	39.8	0.0	25.0	25.0	0.0	62.3	3438.7	2160.0		
23	570.16	21.66	202.223	26.363	49.5	3.0	44.7	0.0	25.0	25.0	1290.5	62.6	3862.1	2160.0		
24	570.33	21.83	206.516	26.790	3.0	3.0	74.5	0.0	25.0	25.0	79.1	63.3	6436.8	2160.0		
25	570.58	22.08	212.507	27.381	20.6	3.0	88.7	0.0	25.0	25.0	551.9	64.3	7663.7	2160.0		
26	570.80	22.30	218.265	27.946	0.0	3.0	92.4	0.0	25.0	25.0	0.0	65.7	7983.4	2160.0		
27	571.03	22.53	223.984	28.504	3.3	3.0	90.9	0.0	25.0	25.0	92.2	67.1	7853.8	2160.0		
28	571.24	22.74	229.544	29.043	5.0	3.0	88.5	0.0	25.0	25.0	142.5	68.4	7646.4	2160.0		
29	571.45	22.95	235.131	29.581	0.5	3.0	90.3	0.0	25.0	25.0	14.5	69.7	7801.9	2160.0		
30	571.68	23.18	241.218	30.164	1.1	3.0	95.9	0.0	25.0	25.0	32.5	71.0	8285.8	2160.0		
31	571.91	23.41	247.531	30.765	0.0	3.0	98.9	0.0	25.0	25.0	0.0	72.4	8545.0	2160.0		
Sept.	1	572.21	23.71	255.854	31.552	63.1	4.0	100.0	0.0	25.0	25.0	1941.3	98.4	8640.0	2160.0	
2	572.45	23.95	262.751	32.200	0.0	4.0	106.0	11.6	13.4	25.0	0.0	101.0	9158.4	2160.0		
3	572.71	24.21	270.012	32.877	2.5	4.0	121.0	36.7	0.0	36.7	80.5	103.0	10454.4	3171.4		
4	572.94	24.44	276.700	33.498	47.0	4.0	132.0	71.3	0.0	71.3	1545.2	105.2	11404.8	6156.4		
5	573.00	24.50	278.618	33.675	0.0	4.0	132.0	108.6	0.0	108.6	0.0	107.2	11404.8	9379.3		
6	573.04	24.54	279.873	33.791	7.3	4.0	133.0	120.1	0.0	120.1	245.8	107.8	11491.2	10374.1		
7	573.06	24.56	280.351	33.835	4.0	4.0	133.0	127.8	0.0	127.8	135.2	108.1	11491.2	11040.5		
8	573.08	24.58	280.840	33.880	6.8	4.0	135.0	130.8	0.0	130.8	230.1	108.3	11664.0	11297.3		
9	573.09	24.59	281.227	33.915	6.5	4.0	137.0	133.8	0.0	133.8	220.2	108.4	11836.8	11561.6		
10	573.10	24.60	281.579	33.948	1.5	4.0	141.0	136.3	0.0	136.3	50.9	108.5	12182.4	11772.2		
11	573.16	24.66	283.459	34.121	14.0	4.0	156.0	138.5	0.0	138.5	475.3	108.6	13478.4	11965.0		
12	573.32	24.82	288.998	34.546	16.5	4.0	199.0	150.6	0.0	150.6	563.0	109.2	17193.6	13008.1		
13	573.21	24.71	284.856	34.249	0.7	4.0	145.0	181.5	0.0	181.5	24.2	110.5	12528.0	15683.8		
14	573.14	24.64	282.656	34.065	2.1	4.0	137.0	159.7	0.0	159.7	71.9	109.6	11836.8	13799.1		
15	573.16	24.66	283.308	34.107	23.2	4.0	144.0	146.1	0.0	146.1	790.3	109.0	12441.6	12671.0		
16	573.19	24.69	284.189	34.188	0.1	4.0	161.0	149.6	0.0	149.6	3.4	109.1	13810.4	12823.5		
17	573.23	24.73	285.398	34.299	6.5	4.0	168.0	155.3	0.0	155.3	222.2	109.4	14515.2	13419.9		
18	573.22	24.72	285.262	34.286	0.0	4.0	163.0	163.3	0.0	163.3	0.0	109.8	14093.2	14109.0		
19	573.17	24.67	283.563	34.130	0.0	4.0	144.0	162.4	0.0	162.4	0.0	109.7	12441.6	14031.2		
20	573.11	24.61	281.759	33.964	4.1	4.0	130.0	151.2	0.0	151.2	139.9	109.2	11232.0	13066.3		
21	573.06	24.56	280.243	33.825	3.4	4.0	122.0	139.6	0.0	139.6	115.5	108.7	10540.8	12063.8		
22	573.02	24.52	279.177	33.726	0.0	4.0	119.0	130.1	0.0	130.1	0.0	108.2	10281.6	11239.0		
23	573.00	24.50	278.559	33.669	1.5	4.0	117.0	123.5	0.0	123.5	50.6	107.9	10108.8	10669.4		
24	573.00	24.50	278.481	33.662	2.7	4.0	119.0	119.7	0.0	119.7	90.9	107.7	10281.6	10343.1		
25	573.00	24.50	278.507	33.664	2.0	4.0	120.0	119.2	0.0	119.2	67.3	107.7	10368.0	10301.9		
26	573.00	24.50	278.500	33.664	4.0	4.0	119.0	119.4	0.0	119.4	134.7	107.7	10281.6	10315.4		
27	573.03	24.53	279.612	33.765	32.0	4.0	119.0	119.3	0.0	119.3	1077.2	107.7	10454.4	10311.8		
28	573.04	24.54	279.381	33.791	11.6	4.0	126.0	126.2	0.0	126.2	391.7	108.1	10886.4	10900.7		
29	573.07	24.57	280.538	33.852	17.1	4.0	130.0	127.8	0.0	127.8	577.8	108.1	11232.0	11044.7		
30	573.09	24.59	281.378	33.929	7.4	4.0	140.0	131.9	0.0	131.9	250.5	108.3	12096.0	11398.3		
Oct.	1	573.23	24.73	285.552	34.313	9.6	4.0	183.0	137.2	0.0	137.2	325.7	108.6	15811.2	11854.9	
2	573.34	24.84	288.719	34.603	8.2	4.0	199.0	164.3	0.0	164.3	281.4	109.8	17193.6	14197.5		
3	573.34	24.84	288.824	34.613	0.7	4.0	188.0	185.8	0.0	185.8	24.2	110.7	16243.2	16052.1		
4	573.31	24.81	287.916	34.530	0.7	4.0	177.0	186.5	0.0	186.5	24.2	110.8	15292.8	16114.4		
5	573.26	24.76	286.226	34.375	0.0	4.0	162.0	180.3	0.0	180.3	0.0	110.5	13996.8	15575.7		
6	573.21	24.71	284.835	34.247	0.0	4.0	154.0	168.8	0.0	168.8	0.0	110.0	13305.6	14587.2		
7	573.17	24.67	283.726	34.145	0.0	4.0	148.0	159.6	0.0	159.6	0.0	109.6	12787.2	13786.7		
8	573.15	24.65	283.193	34.096	11.1	4.0	143.0	152.3	0.0	152.3	379.0	109.3	12355.2	13157.9		
9	573.12	24.62	282.026	33.989	1.5	4.0	136.0	148.8	0.0	148.8	51.1	109.1	11750.4	12856.7		
10	573.08	24.58	281.079	33.902	1.6	4.0	131.0	141.3	0.0	141.3	54.4	108.8	11318.4	12210.9		
11	573.06	24.56	280.504	33.849	4.9	4.0	128.0	135.3	0.0	135.3	166.1	108.5	11059.2	11692.0		
12	573.06	24.56	280.448	33.844	0.8	4.0	132.0	131.7	0.0	131.7	27.1	108.3	11404.8	11380.0		
13	573.05	24.55	280.062	33.808	10.6	4.0	124.0	131.4	0.0	131.4	358.7	108.3	10713.6	11349.5		
14	572.99	24.49	278.337	33.643	0.6	4.0	110.0	129.0	0.0	129.0	20.3	108.2	9504.0	11141.9		
15	572.93	24.45	277.048	33.530	6.9	4.0	102.0	118.4	0.0	118.4	232.2	107.7	8812.8	10226.2		
16	572.91	24.41	275.916	33.425	3.5	4.0	97.4	110.6	0.0	110.6	117.4	107.3	8415.4	9557.4		
17	572.89	24.39	275.252	33.364	0.0	4.0	97.5	103.9	0.0	103.9	0.0	107.0	8424.0	8981.1		
18	572.90	24.40	275.682	33.403	21.5	4.0	98.0	100.1	0.0	100.1	717.3	106.8	8467.2	8647.9		
19	572.92	24.42	276.371	33.467	17.6	4.0	105.0	102.6	0.0	102.6	587.9	106.9	9072.0	8863.1		
20	572.95	24.45	277.076	33.532	0.0	4.0	116.0	106.6	0.0	106.6	0.0	107.1	10022.4	9211.8		
21																

Year : 1988	Outflow discharge: 25.00 m ³ /s														
Month	Day	WL	WD	V	A	P	Evap	Qin	Qof	Qr	Qout	Pv	Evapv	Qinv	Qoutv
		m	m	x1000 m ³	x1000 m ³	mm	mm	m ³ /s	m ³ /s	m ³ /s	m ³ /s	x1000m ³	x1000m ³	x1000m ³	
	1	572.85	24.35	274,175	33,264	9.1	4.0	90.4	95.1	0.0	95.1	302.9	106.5	7810.6	8220.2
	2	572.85	24.35	274,243	33,270	24.3	4.0	86.6	93.9	0.0	93.9	308.3	106.4	7492.2	8115.6
	3	572.85	24.35	274,243	33,270	24.3	4.0	86.7	94.3	0.0	94.3	308.3	106.4	7490.3	8115.6
	4	572.83	24.33	273,478	33,199	0.0	4.0	86.7	94.3	0.0	94.3	308.3	106.4	7490.3	8115.6
	5	572.81	24.31	272,965	33,152	0.0	4.0	85.3	90.0	0.0	90.0	0.0	106.2	7359.9	7776.8
	6	572.78	24.28	272,086	33,070	0.0	4.0	78.2	87.2	0.0	87.2	0.0	106.1	6756.5	7529.9
	7	572.74	24.24	270,898	32,560	0.0	4.0	69.8	82.3	0.0	82.3	0.0	105.8	6030.7	7112.3
	8	572.70	24.20	268,771	32,855	0.0	4.0	64.1	75.9	0.0	75.9	0.0	105.5	5538.2	6550.0
	9	572.68	24.16	268,810	32,766	0.0	4.0	60.1	70.0	0.0	70.0	0.0	105.1	5192.6	6048.3
	10	572.64	24.14	267,982	32,608	0.0	4.0	56.7	65.1	0.0	65.1	0.0	104.8	4898.9	5922.2
	11	572.61	24.11	267,298	32,625	0.0	4.0	54.2	60.9	0.0	60.9	0.0	104.6	4682.9	5262.6
	12	572.59	24.09	266,698	32,569	0.0	4.0	51.8	57.5	0.0	57.5	0.0	104.4	4475.5	4971.0
	13	572.57	24.07	266,185	32,521	0.0	4.0	49.9	54.6	0.0	54.6	0.0	104.2	4311.4	4719.6
	14	572.56	24.06	265,617	32,473	0.0	4.0	47.5	52.2	0.0	52.2	0.0	104.1	4104.0	4508.1
	15	572.54	24.04	265,238	32,432	0.0	4.0	45.9	49.8	0.0	49.8	0.0	103.9	3965.8	4301.3
	16	572.53	24.03	264,785	32,390	0.0	4.0	43.7	47.7	0.0	47.7	0.0	103.8	3775.7	4124.9
	17	572.51	24.01	264,416	32,356	0.0	4.0	42.6	45.7	0.0	45.7	0.0	103.6	3680.6	3945.5
	18	572.50	24.00	264,088	32,325	0.0	4.0	41.4	44.0	0.0	44.0	0.0	103.5	3577.0	3801.4
	19	572.49	23.99	263,862	32,304	0.0	4.0	41.1	42.5	0.0	42.5	0.0	103.4	3551.0	3674.5
	20	572.49	23.99	263,644	32,283	0.0	4.0	40.2	41.5	0.0	41.5	0.0	103.4	3473.3	3587.5
	21	572.48	23.98	263,380	32,259	0.0	4.0	38.7	40.6	0.0	40.6	0.0	103.3	3343.7	3504.7
	22	572.47	23.97	263,267	32,248	0.0	4.0	39.3	39.4	0.0	39.4	0.0	103.2	3395.5	3405.0
	23	572.47	23.97	263,127	32,235	0.0	4.0	38.5	38.9	0.0	38.9	0.0	103.2	3326.4	3362.7
	24	572.46	23.96	262,952	32,220	0.0	4.0	37.6	38.3	0.0	38.3	0.0	103.2	3248.6	3310.6
	25	572.46	23.96	262,781	32,203	0.0	4.0	36.7	37.6	0.0	37.6	0.0	103.1	3170.9	3249.3
	26	572.45	23.95	262,588	32,185	0.0	4.0	35.8	36.8	0.0	36.8	0.0	103.0	3093.1	3182.3
	27	572.44	23.94	262,398	32,167	0.0	4.0	35.0	36.0	0.0	36.0	0.0	103.0	3024.0	3111.8
	28	572.44	23.94	262,259	32,154	0.0	4.0	34.8	35.2	0.0	35.2	0.0	102.9	3006.7	3042.4
	29	572.43	23.93	262,110	32,140	0.0	4.0	34.1	34.6	0.0	34.6	0.0	102.9	2946.2	2992.2
	30	572.43	23.93	262,006	32,130	0.0	4.0	34.0	34.0	0.0	34.0	0.0	102.8	2937.6	2938.7
Dec.	1	572.46	23.96	262,853	32,209	0.0	5.0	44.9	33.6	0.0	33.6	0.0	128.5	1877.0	2501.5
	2	572.47	23.97	263,235	32,245	0.0	5.0	43.1	37.1	0.0	37.1	0.0	128.8	3719.5	3209.0
	3	572.47	23.97	263,329	32,254	0.0	5.0	41.4	38.8	0.0	38.8	0.0	129.0	3573.9	3350.8
	4	572.47	23.97	263,253	32,247	0.0	5.0	39.8	39.2	0.0	39.2	0.0	129.0	3439.1	3386.0
	5	572.47	23.97	263,153	32,238	0.0	5.0	39.3	38.9	0.0	38.9	0.0	129.0	3392.0	3357.6
	6	572.47	23.97	263,084	32,231	0.0	5.0	39.1	38.5	0.0	38.5	0.0	129.0	3376.7	3322.2
	7	572.48	23.98	263,491	32,269	14.7	5.0	38.9	38.1	0.0	38.1	473.8	128.9	3357.0	3294.5
	8	572.47	23.97	263,349	32,256	3.0	5.0	38.6	39.9	0.0	39.9	96.8	129.1	3336.7	3447.1
	9	572.47	23.97	263,145	32,237	0.0	5.0	38.4	39.3	0.0	39.3	0.0	129.0	3316.5	3393.4
	10	572.46	23.96	262,992	32,222	0.0	5.0	38.1	38.4	0.0	38.4	0.0	128.9	3294.1	3316.4
	11	572.46	23.96	262,869	32,211	0.0	5.0	37.8	37.7	0.0	37.7	0.0	128.9	3266.5	3260.2
	12	572.45	23.95	262,770	32,202	0.2	5.0	37.5	37.2	0.0	37.2	6.4	128.8	3238.4	3214.9
	13	572.45	23.95	262,676	32,193	0.0	5.0	37.2	36.8	0.0	36.8	0.0	128.8	3213.3	3178.5
	14	572.45	23.95	262,588	32,185	0.0	5.0	36.9	36.4	0.0	36.4	0.0	128.8	3184.9	3144.0
	15	572.45	23.95	262,504	32,177	0.0	5.0	36.5	36.0	0.0	36.0	0.0	128.7	3156.2	3111.8
	16	572.44	23.94	262,422	32,169	0.0	5.0	36.2	35.7	0.0	35.7	0.0	128.7	3127.4	3081.1
	17	572.44	23.94	262,341	32,161	0.0	5.0	35.9	35.3	0.0	35.3	0.0	128.7	3098.5	3051.1
	18	572.44	23.94	262,260	32,154	0.0	5.0	35.5	35.0	0.0	35.0	0.0	128.6	3069.5	3021.7
	19	572.43	23.93	262,179	32,146	0.0	5.0	35.2	34.6	0.0	34.6	0.0	128.6	3040.4	2992.5
	20	572.43	23.93	262,098	32,139	0.0	5.0	34.9	34.3	0.0	34.3	0.0	128.6	3011.1	2953.4
	21	572.43	23.93	262,017	32,131	0.0	5.0	34.5	34.0	0.0	34.0	0.0	128.6	2981.8	2934.3
	22	572.44	23.94	262,427	32,170	15.3	5.0	34.2	33.6	0.0	33.6	491.6	128.5	2952.4	2905.3
	23	572.43	23.93	262,178	32,146	0.0	5.0	33.9	35.3	0.0	35.3	0.0	128.7	2932.2	3053.1
	24	572.43	23.93	261,998	32,129	0.0	5.0	33.7	34.3	0.0	34.3	0.0	128.6	2910.2	2962.9
	25	572.42	23.92	261,856	32,116	0.0	5.0	33.4	33.5	0.0	33.5	0.0	128.5	2885.3	2888.6
	26	572.42	23.92	261,737	32,105	0.0	5.0	33.1	33.0	0.0	33.0	0.0	128.5	2856.8	2848.0
	27	572.41	23.91	261,631	32,095	0.0	5.0	32.7	32.5	0.0	32.5	0.0	128.4	2828.1	2805.6
	28	572.41	23.91	261,533	32,086	0.0	5.0	32.4	32.0	0.0	32.0	0.0	128.4	2799.3	2768.3
	29	572.41	23.91	261,441	32,077	0.0	5.0	32.1	31.6	0.0	31.6	0.0	128.3	2770.4	2734.1
	30	572.40	23.90	261,353	32,069	0.0	5.0	31.7	31.3	0.0	31.3	0.0	128.3	2741.4	2701.9
	31	572.38	23.88	260,713	32,009	0.0	5.0	25.0	30.9	0.0	30.9	0.0	128.3	2159.2	2670.9
Total								1,631	1,524					26,735	19,555
Mean		563.42	14.92	128,513	16,695	4.5	4.2	44.8	28.7	11.1	39.8	73.0	53.4	3,872.7	3,436.9
Max.		573.34	24.84	288,824	34,613	63.1		199.0	186.5	25.0	186.5	1,941.3	129.1	17,193.6	16,114.4
Min.		552.67	4.17	2,783	998			0.1	0.0	0.0	0.1	0.0	3.2	9.0	9.0

WT : Water level

WL : Water level

WD : Water depth

V : Storage volume

A: Water surface area

P : Precipitation

Evap : Evaporation

Qin : Inflow

QoS : Overflow

Q_v : Valve flow

Qout : Out flow

Pv : Precipitation volume

Evapov : Evaporation volume

Qinv : Inflow volume

Qoutv : Outflow volume

Tableau4 Sommaire du calcul d'arrivée d'eau au barrage de Boali

Year	Qb = 25 m3/s						Qb = 20 m3/s			
	Vmin	WLmin	Vmin-r	Qo-min	Period when Qo<Qb	Insufficient V	Vmin	WLmin	Vmin-r	Qo-min
	(MCM)	(m)	(%)	(m3/s)	(day)	(MCM)	(MCM)	(m)	(%)	(m3/s)
1964	216	570.72	84	25.0			240	571.64	93	20.0
1965	254	572.16	99	25.0			259	572.33	101	23.0
1966	249	571.96	96	25.0			259	572.31	100	20.9
1967	251	572.04	97	25.0			259	572.33	100	22.3
1968	260	572.36	101	26.1			260	572.36	101	26.1
1969	260	572.36	101	25.5			260	572.36	101	25.5
1970	262	572.42	101	32.3			262	572.42	101	32.3
1971	212	570.55	82	25.0			242	571.72	94	20.0
1972	165	568.52	64	25.0			216	570.72	84	20.0
1973	51	561.22	20	25.0			135	567.06	52	20.0
1974	68	562.74	26	25.0			160	568.27	62	20.0
1975	137	567.13	53	25.0			199	570.03	77	20.0
1976	249	571.95	96	25.0			259	572.31	100	20.7
1977	205	570.26	79	25.0			244	571.77	94	20.0
1978	154	567.99	60	25.0			214	570.63	83	20.0
1979	155	568.08	60	25.0			216	570.73	84	20.0
1980	145	567.57	56	25.0			199	570.04	77	20.0
1981	172	568.87	67	25.0			218	570.78	84	20.0
1982	171	568.81	66	25.0			218	570.78	84	20.0
1983	57	561.82	22	25.0			121	566.29	47	20.0
1984	63	562.35	25	25.0			141	567.36	55	20.0
1985	76	563.34	29	25.0			152	567.89	59	20.0
1986	19	557.17	7	25.0			100	565.01	39	20.0
1987	3	552.61	1	25.0			83	563.87	32	20.0
1988	3	552.67	1	0.1	106	179	6	554.15	2	20.0
1989	51	561.21	20	25.0			111	565.70	43	20.0
1990	3	552.80	1	4.8	37	47	53	561.45	21	20.0
1991	62	562.23	24	25.0			138	567.22	54	20.0
1992	125	566.47	48	25.0			174	568.93	67	20.0
1993	141	567.36	55	25.0			205	570.26	79	20.0
1994	129	566.70	50	25.0			195	569.85	76	20.0
1995	125	566.47	48	25.0			204	570.24	79	20.0
1996	162	568.40	63	25.0			217	570.75	84	20.0
1997	210	570.46	81	25.0			249	571.95	96	20.0
1998	138	567.19	53	25.0			205	570.27	79	20.0
average	143	566.20	55	24.0			191	569.19	74	20.9
min.	3	552.61	1	0.1			6	554.15	2	20.0

FIG.IV.3.a)- MBAU A BOALI- COURBE HAUTEUR- VOLUME

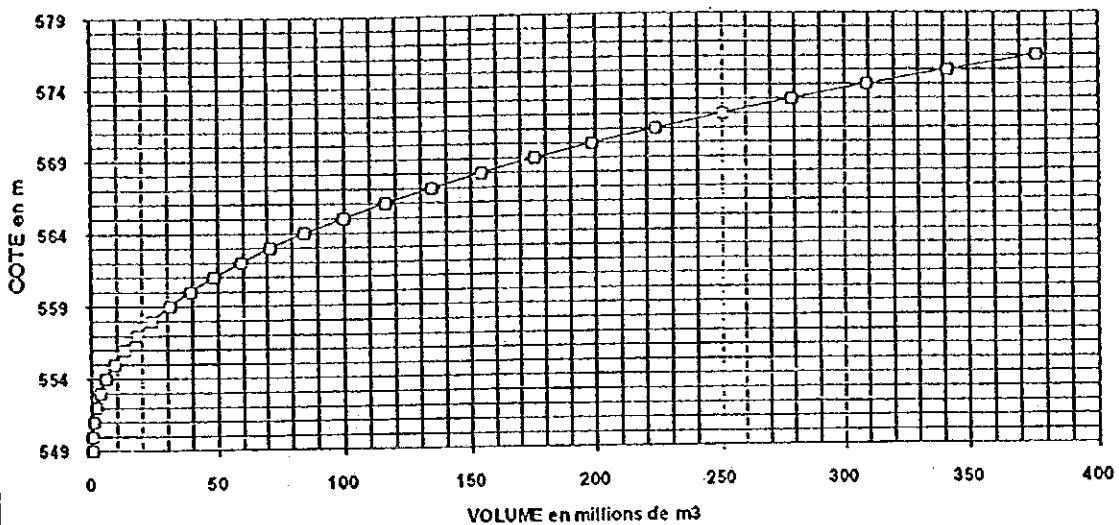


FIG. IV.3.b)- MBAU A BOALI- COURBE HAUTEUR- SURFACE

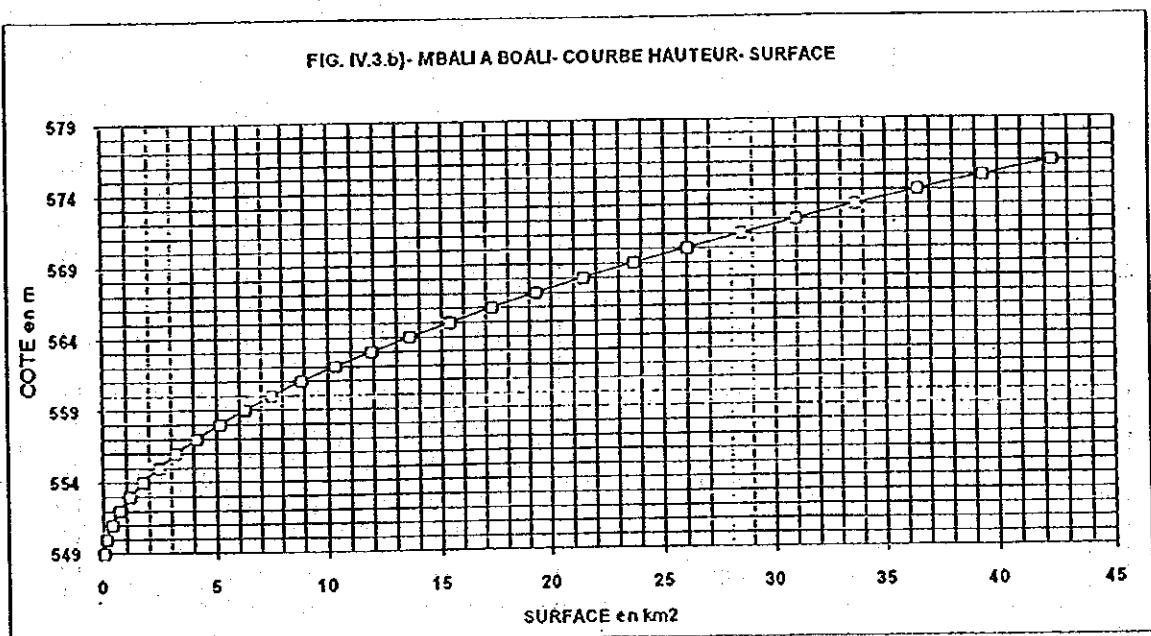


Fig. 1 Courbes H-V et H-A du barrage de Boali

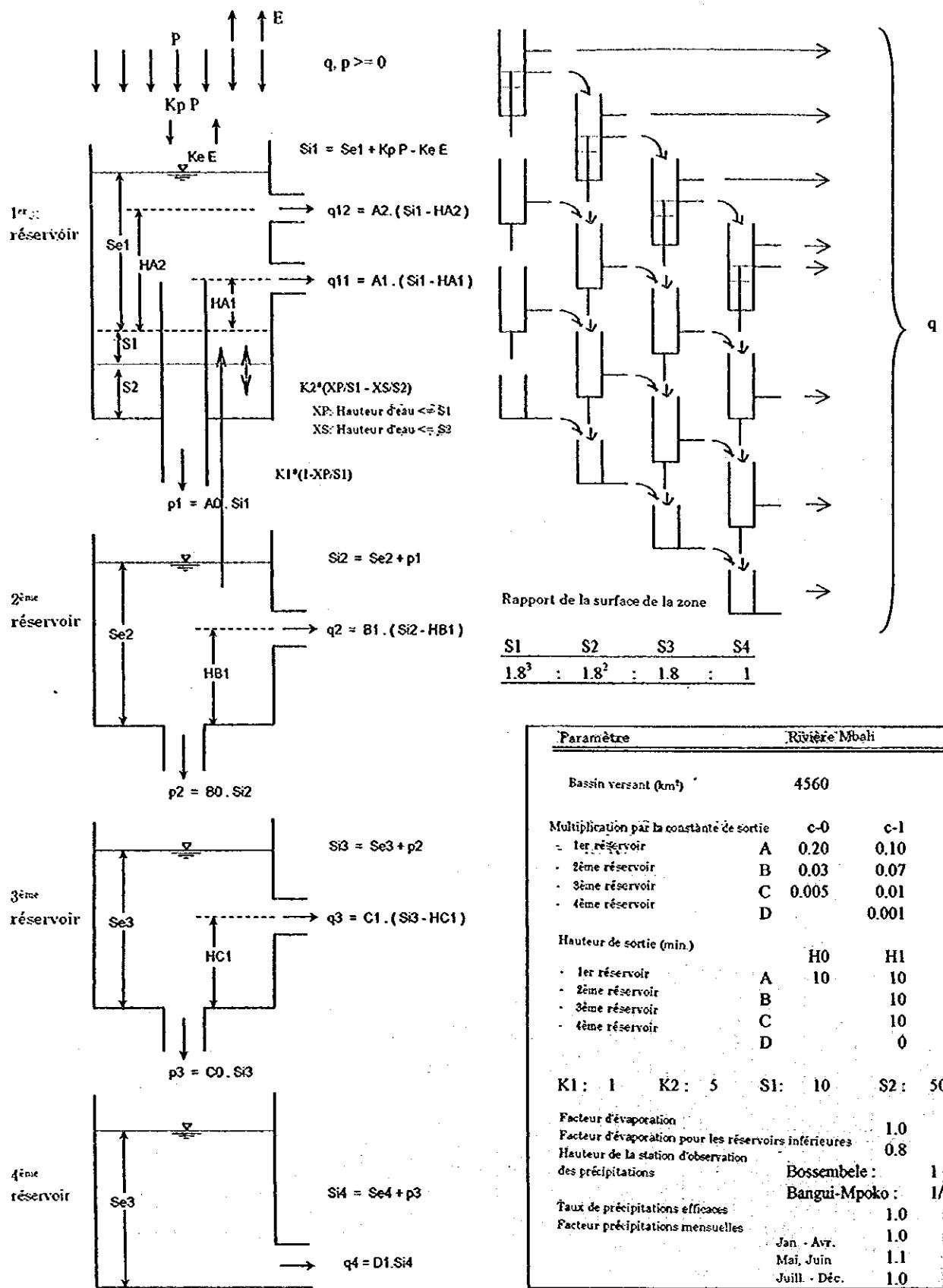


Fig. 2 Structure et paramètres du modèle de réservoir sélectionné

Hydrograph à Bossémielle et Courbes de débit à Boali-ICOT (1985)

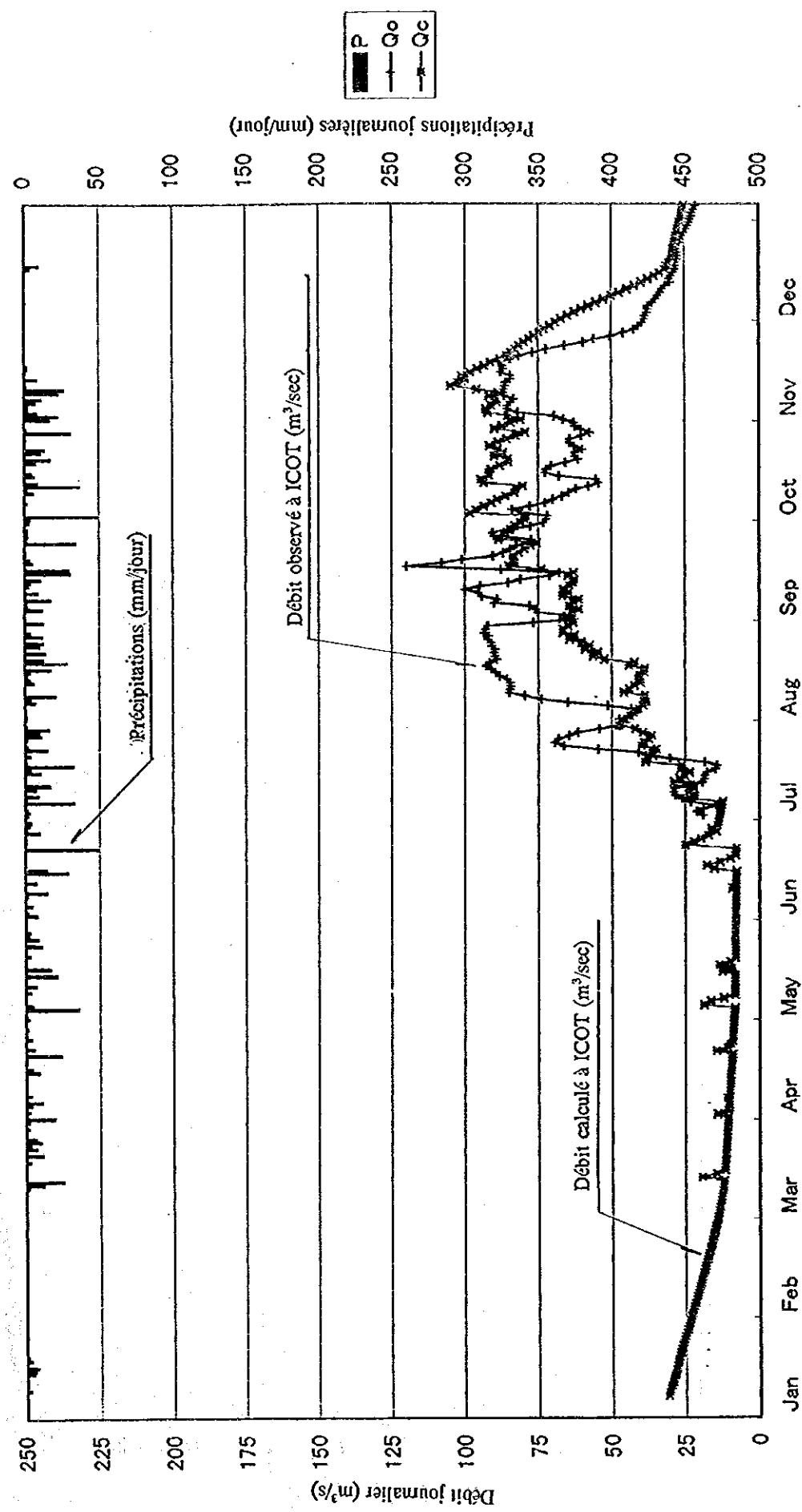
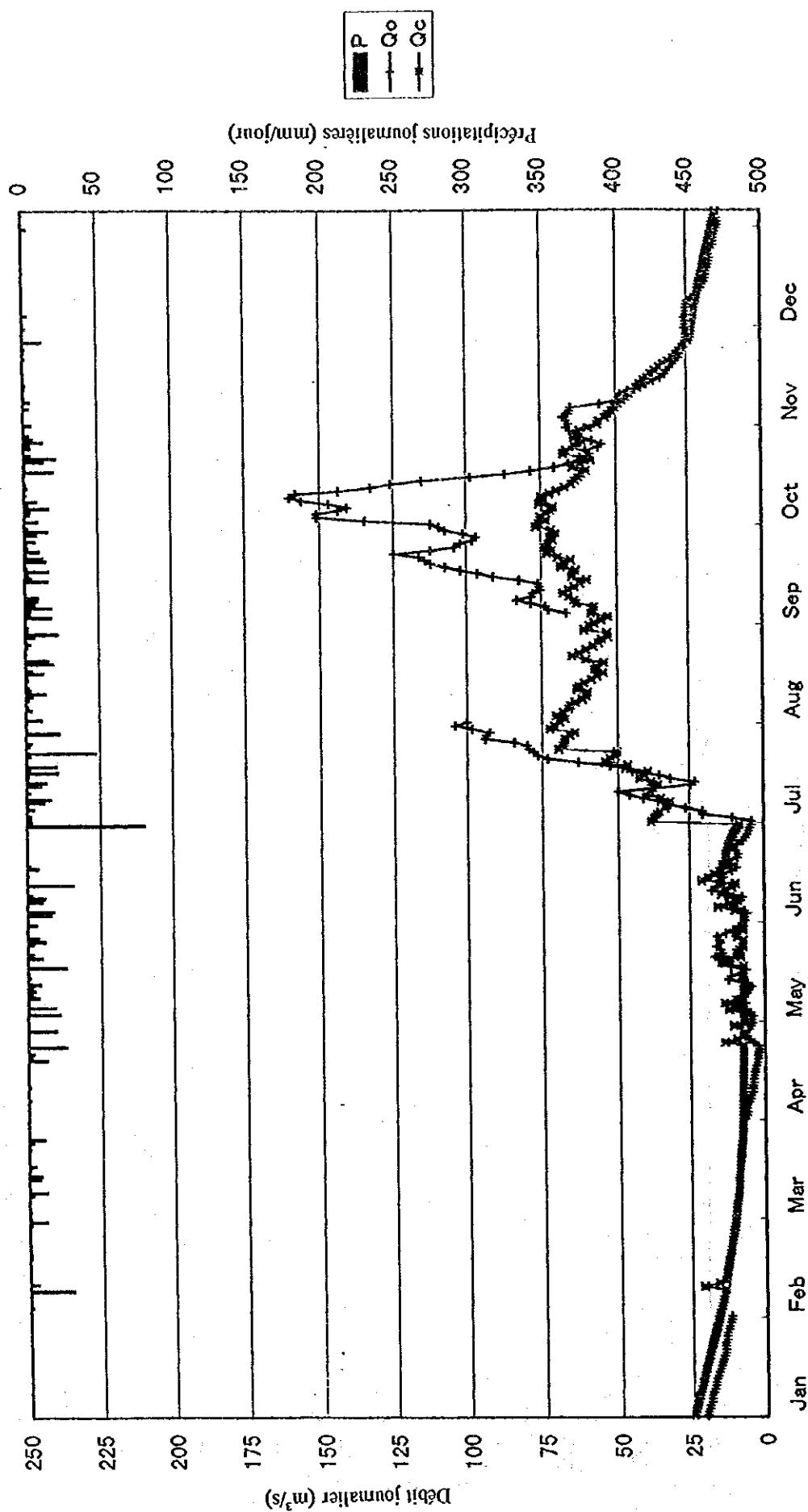
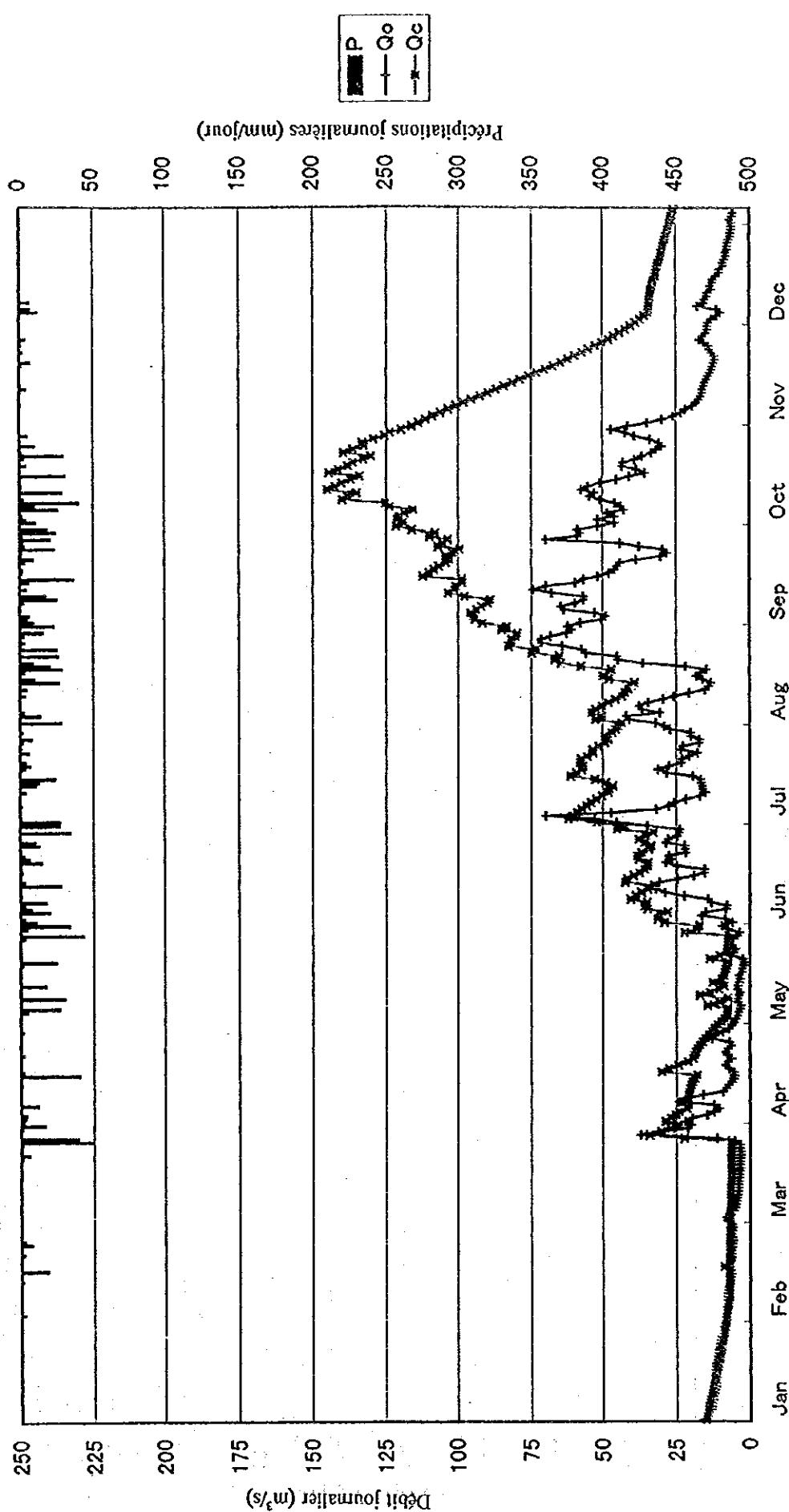


Fig.3 Résultat du calcul de Modèle de Réservoir

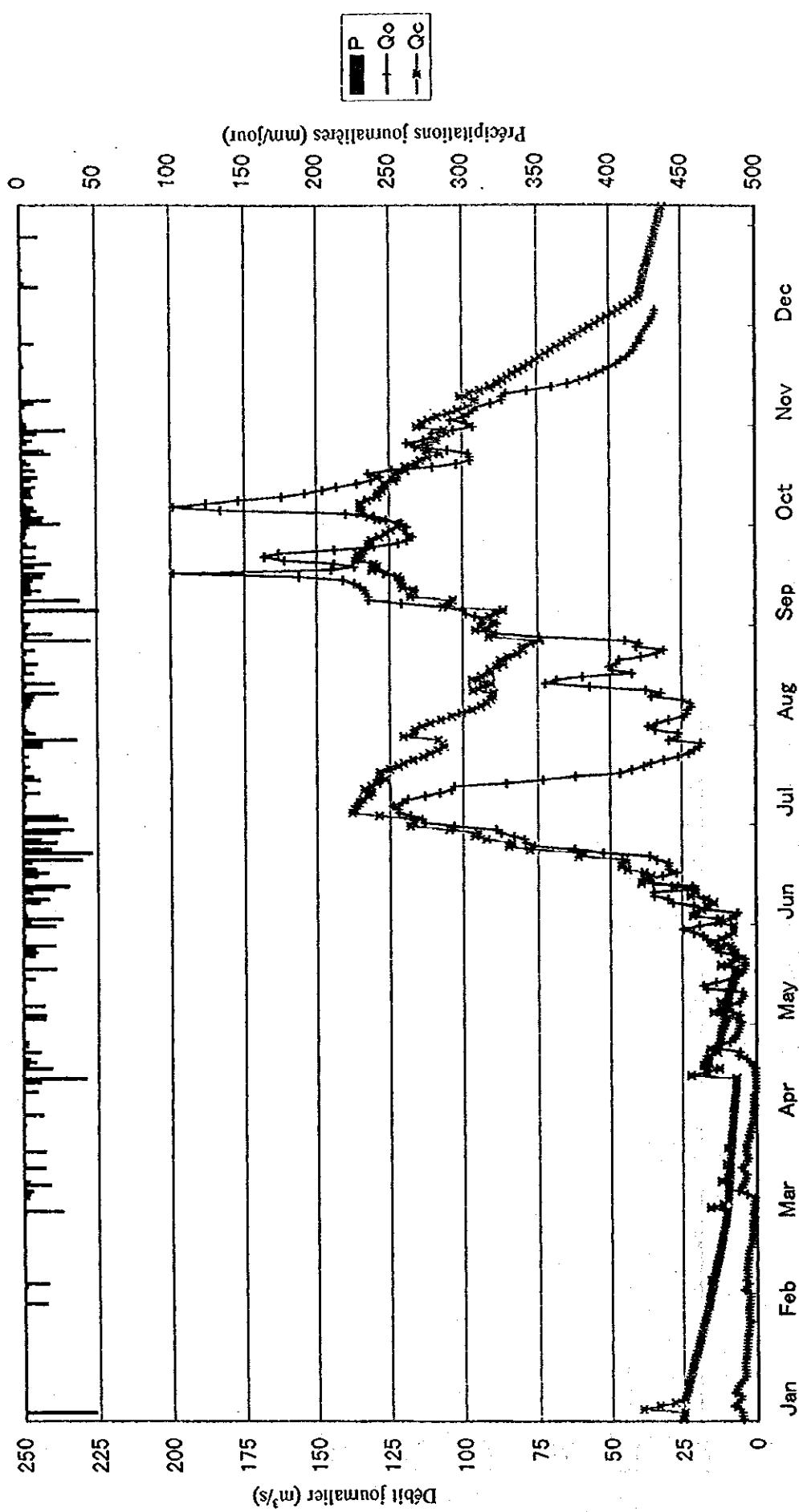
Hycograph à Boisembelle en Courbe d'écoulement & Boali-YCOT (1986)



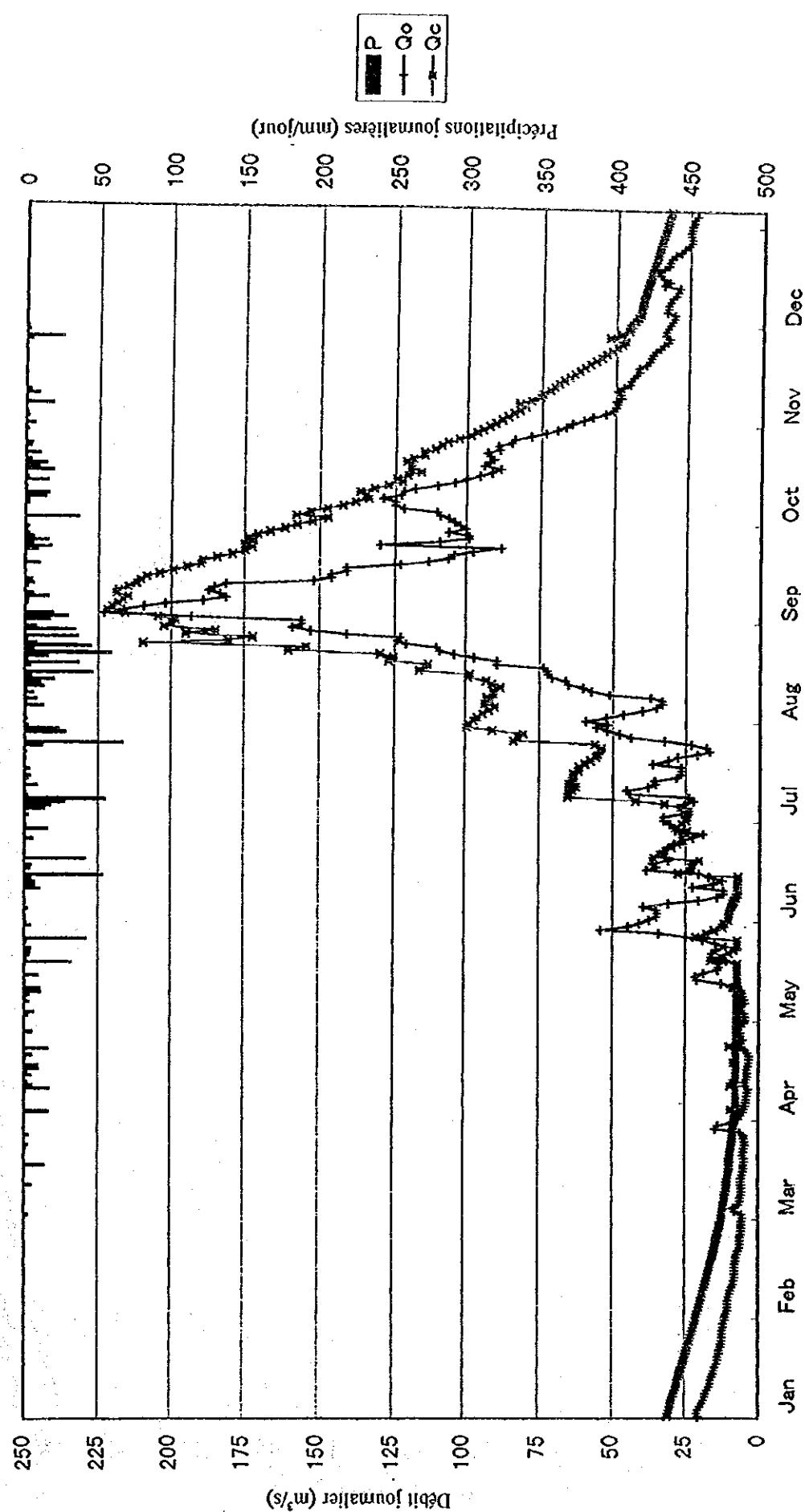
Hyéograph à Bossembé et Courbes de débit à Boali/COT (1987)



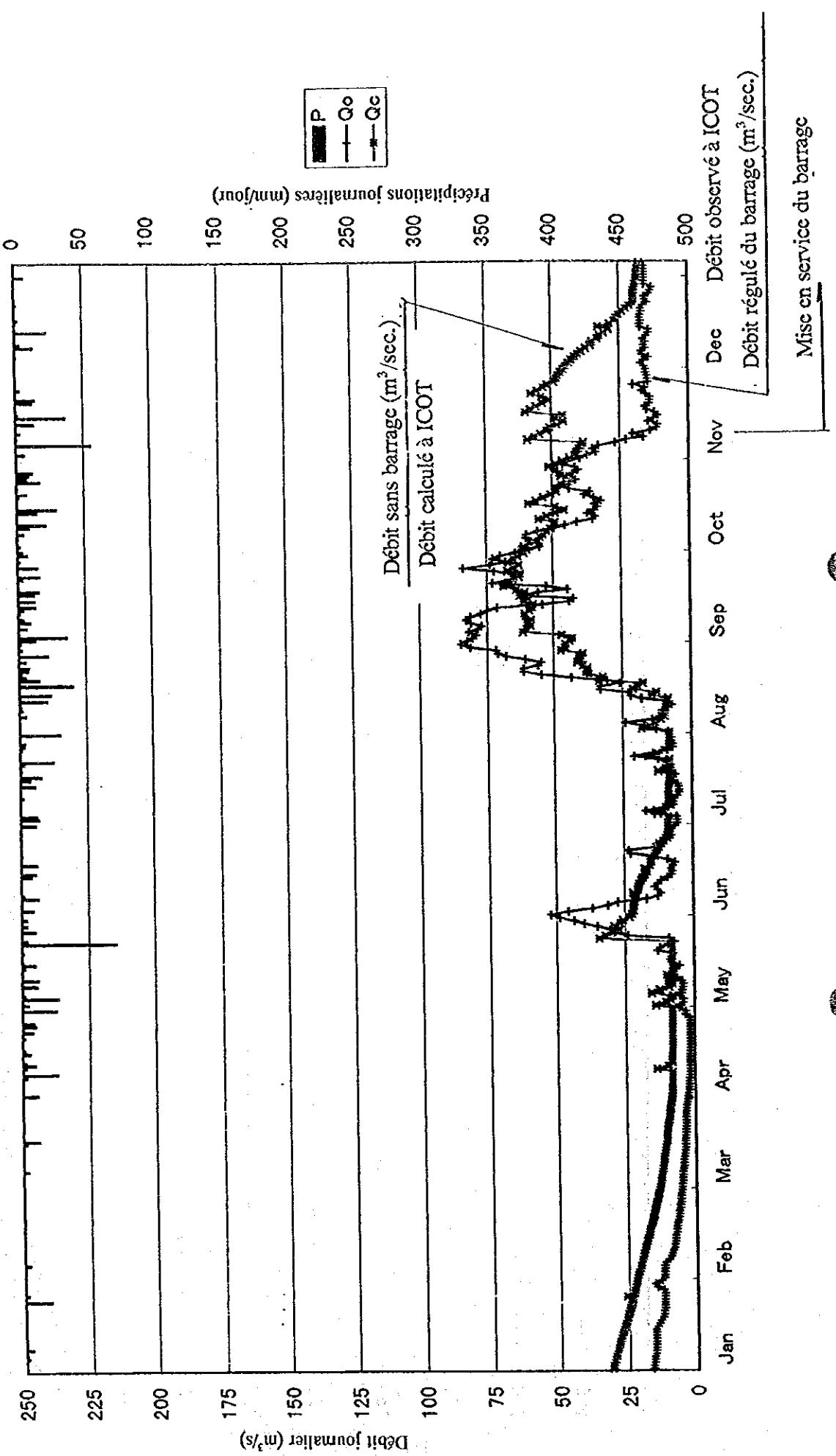
Hydrograph à Bosssemble et Courbes de débit à Boali-ICOT (1988)



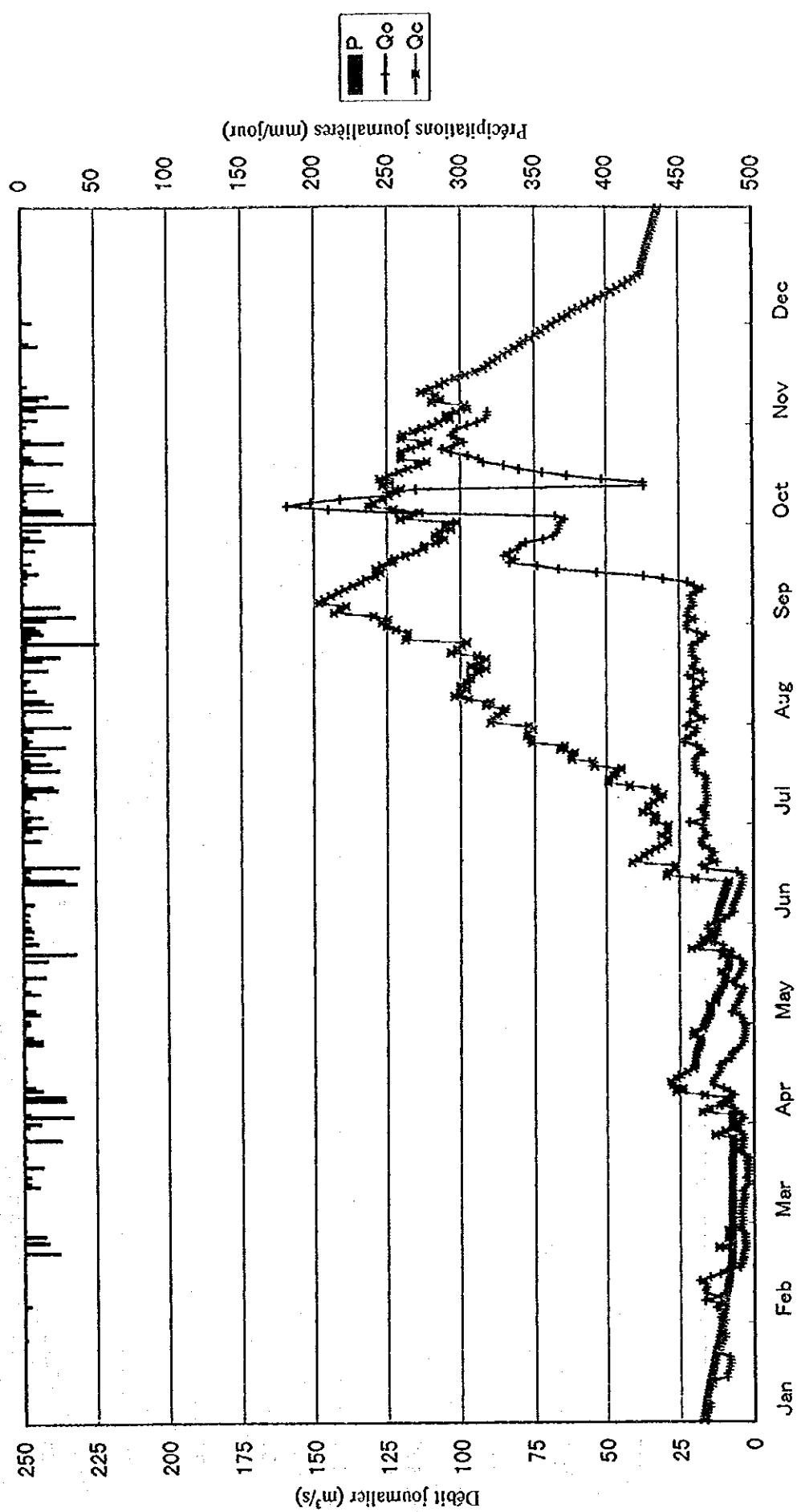
Hycograph à Bossémbéle et Courbe de débit à Boali-ICOT (1989)



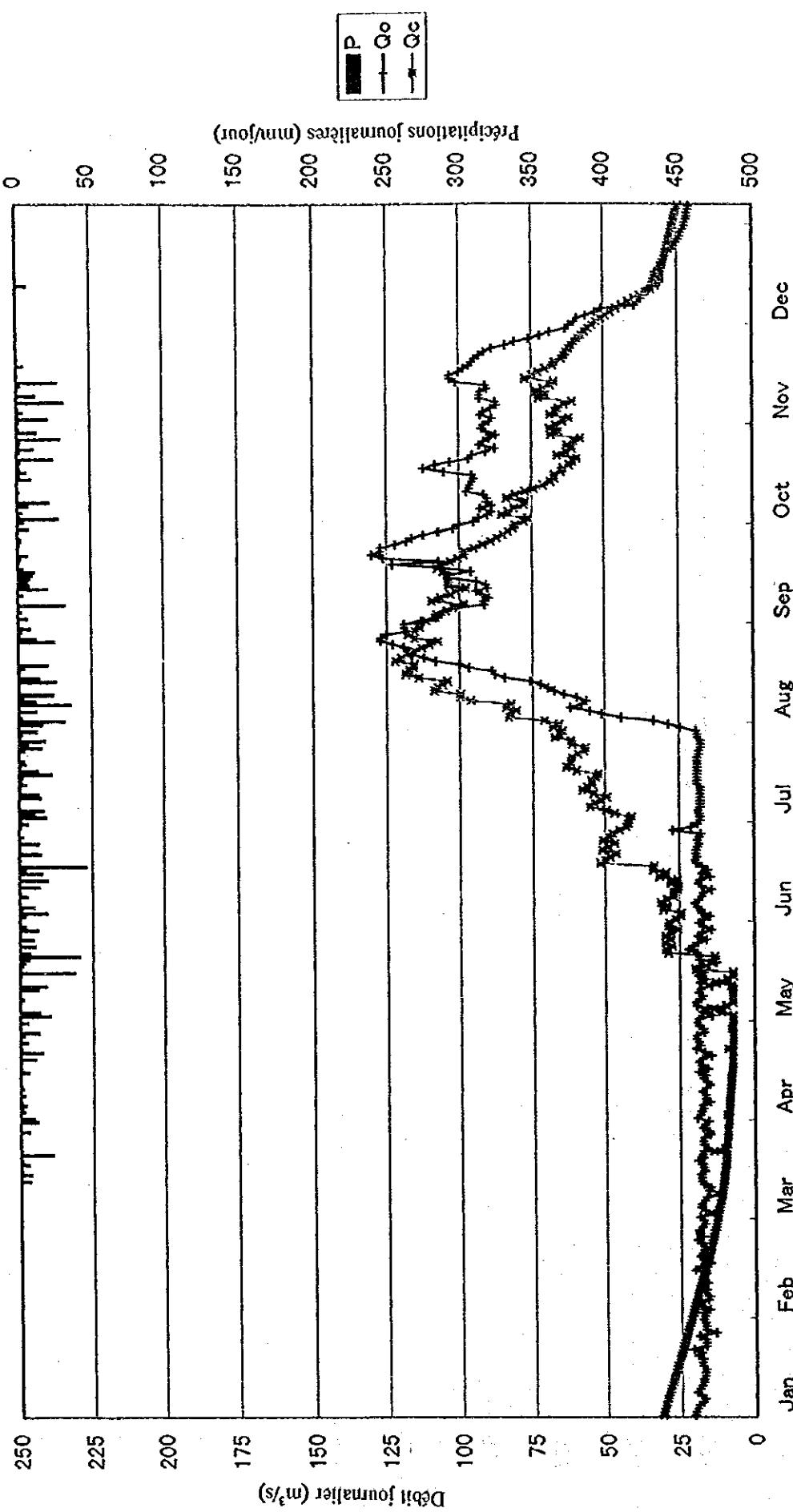
Hydrograph à Bossembele et Courbes de débit à Boali-ICOT (1990)



Hydrograph à Bossombé et Courbes de débit à Boali-ICOT (1991)



Hydrograph à Bossémbélé et Courbes de débit à Boali-ICOT (1992)



Bilan hydrologique du barrage de BOALI(1964)

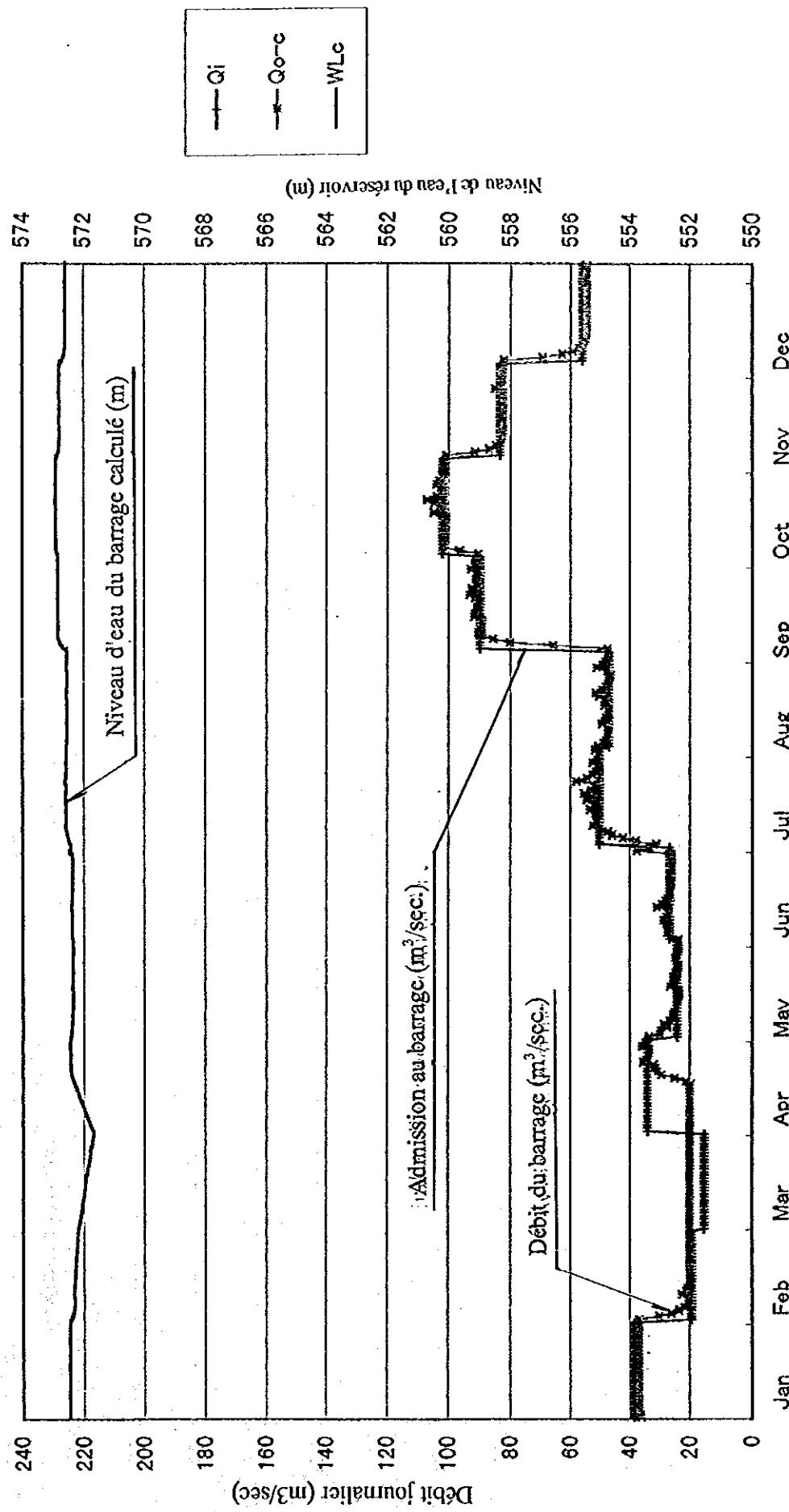
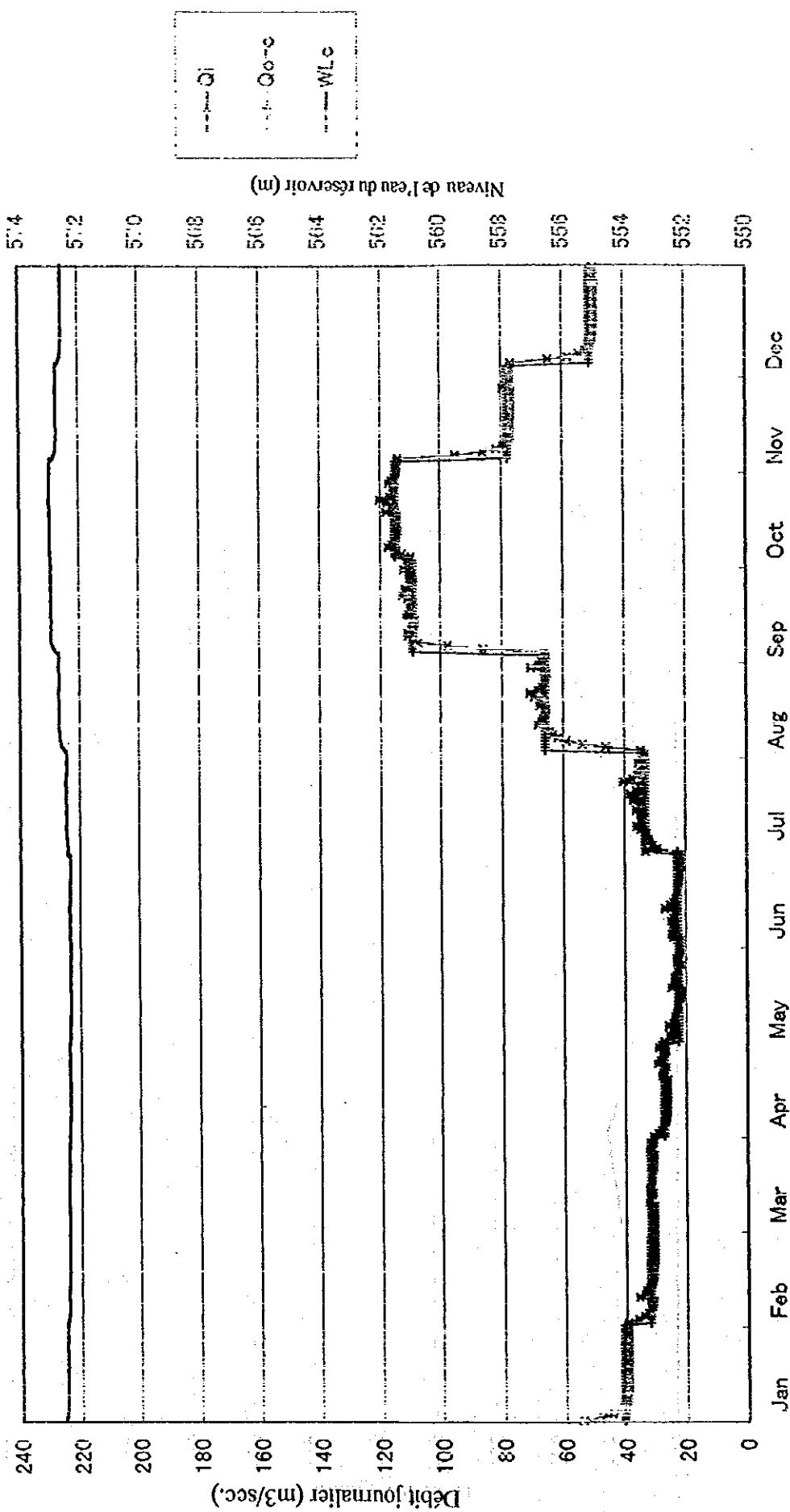
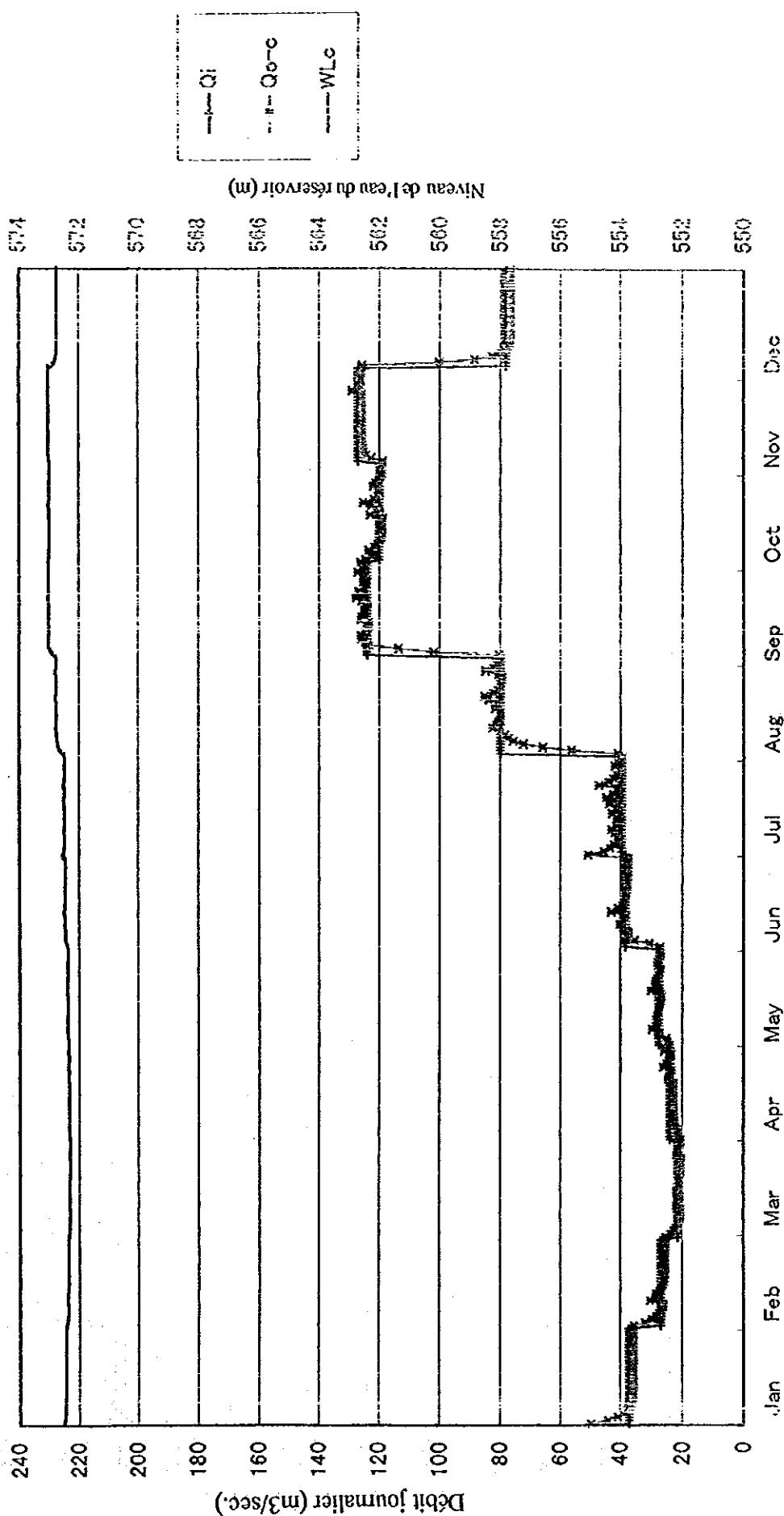


Fig. 4. Bilan hydrologique du barrage de Boali ($Q_b = 20\text{m}^3/\text{sec}$) 1964~1998

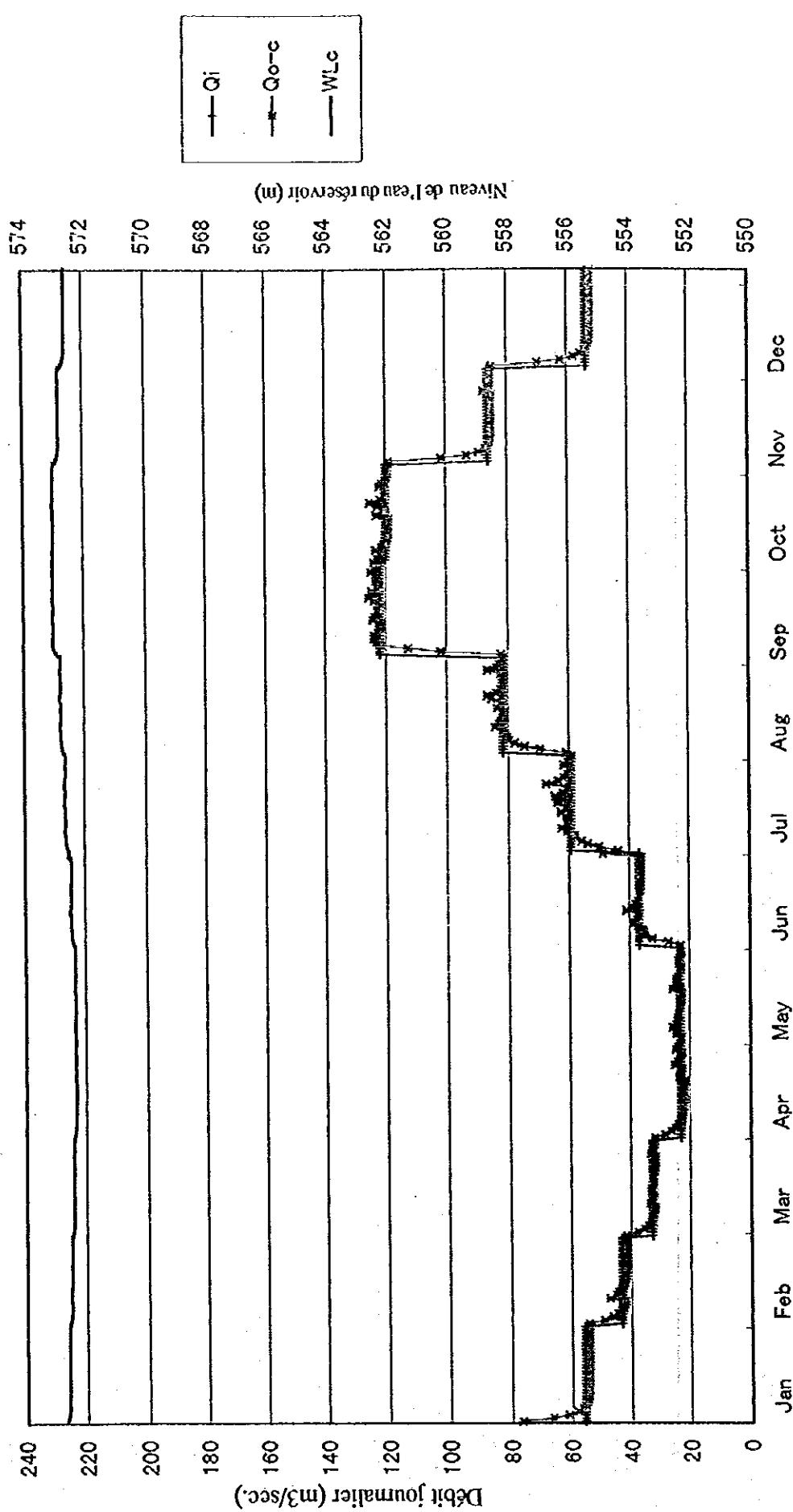
Bilan hydrologique du barrage de BOALI(1965)



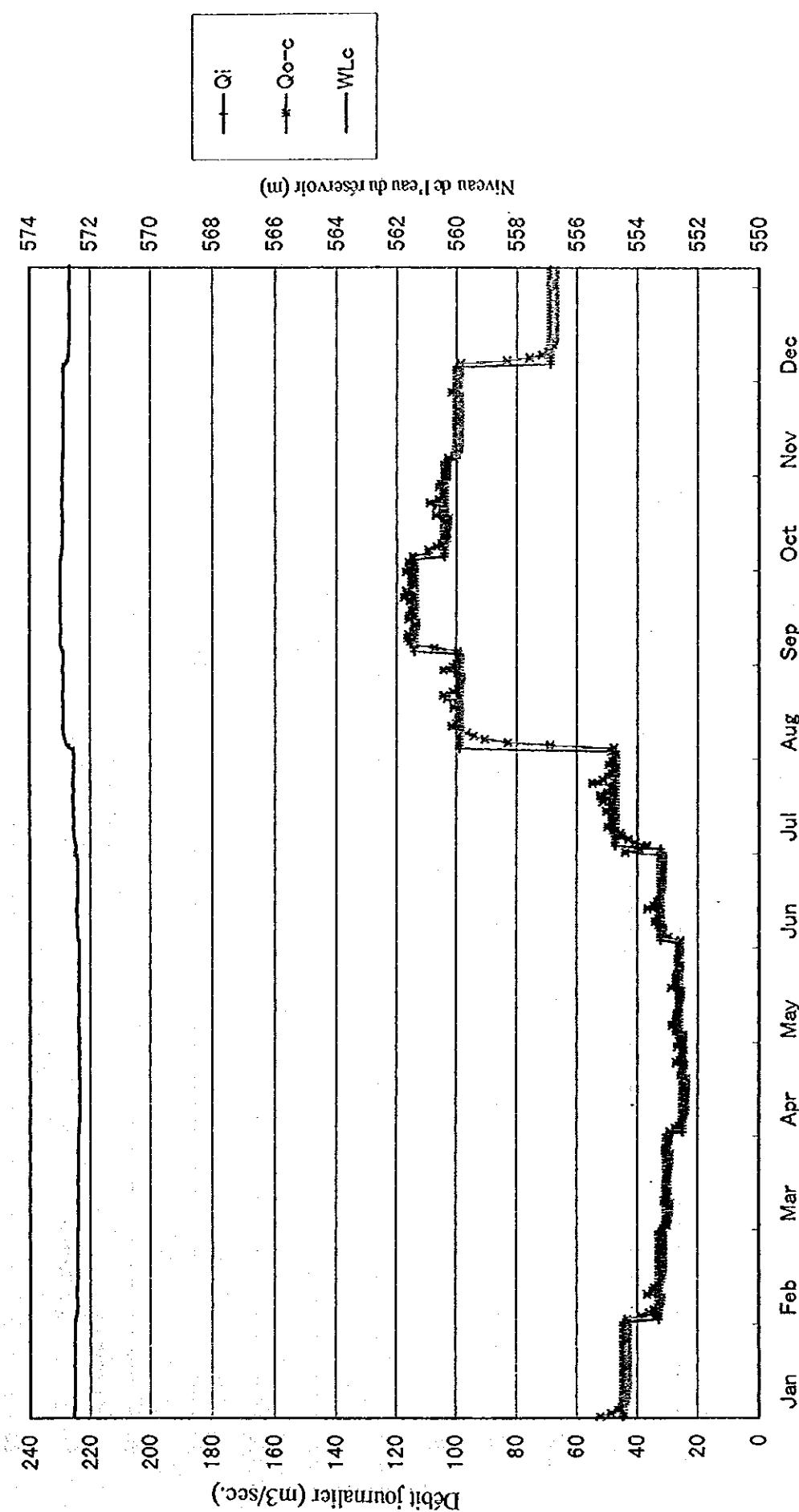
Bilan hydrologique du barrage de BOALL(1966)



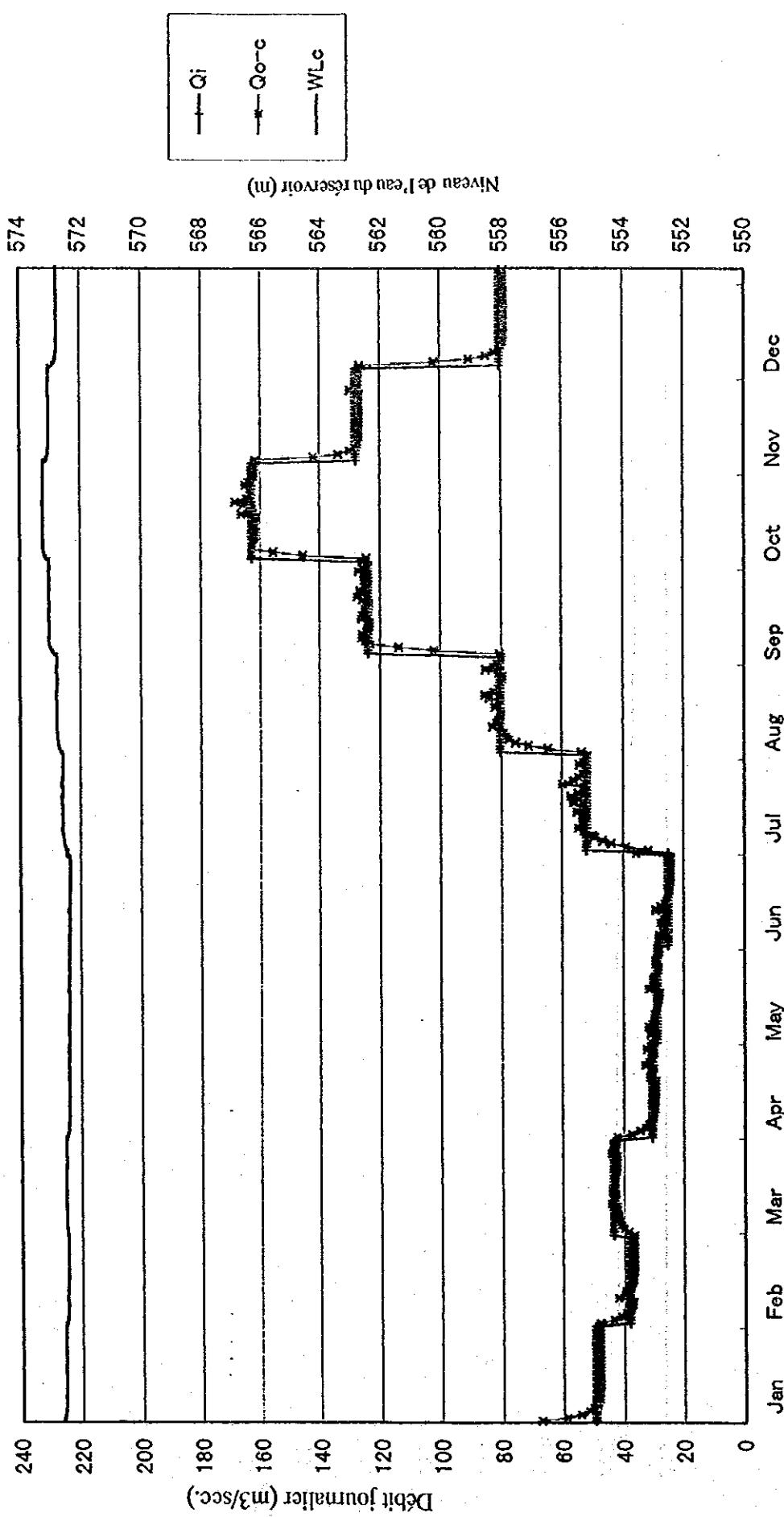
Bilan hydrologique du barrage de BOALL(1967)



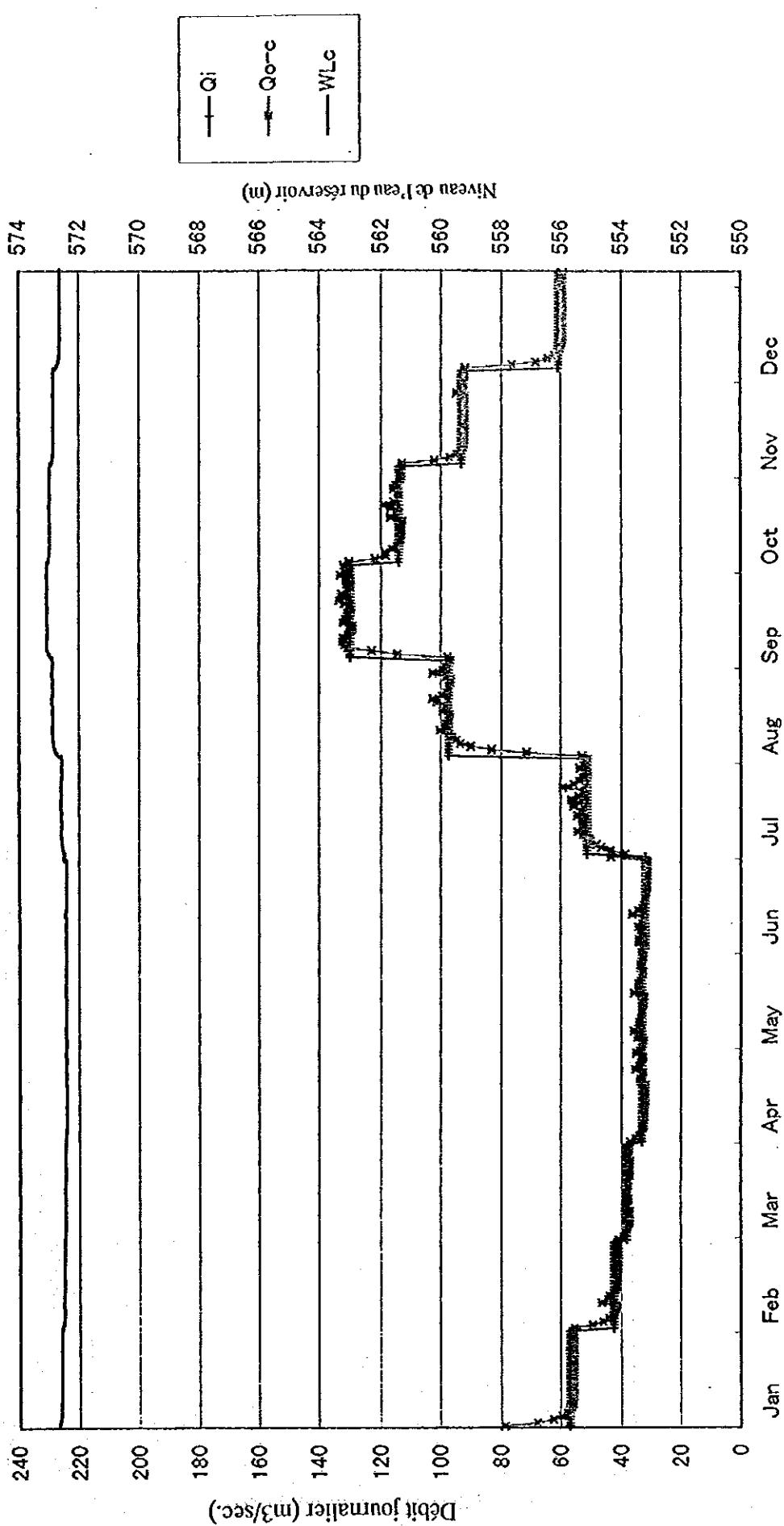
Bilan hydrologique du barrage de BOALLI(1968)



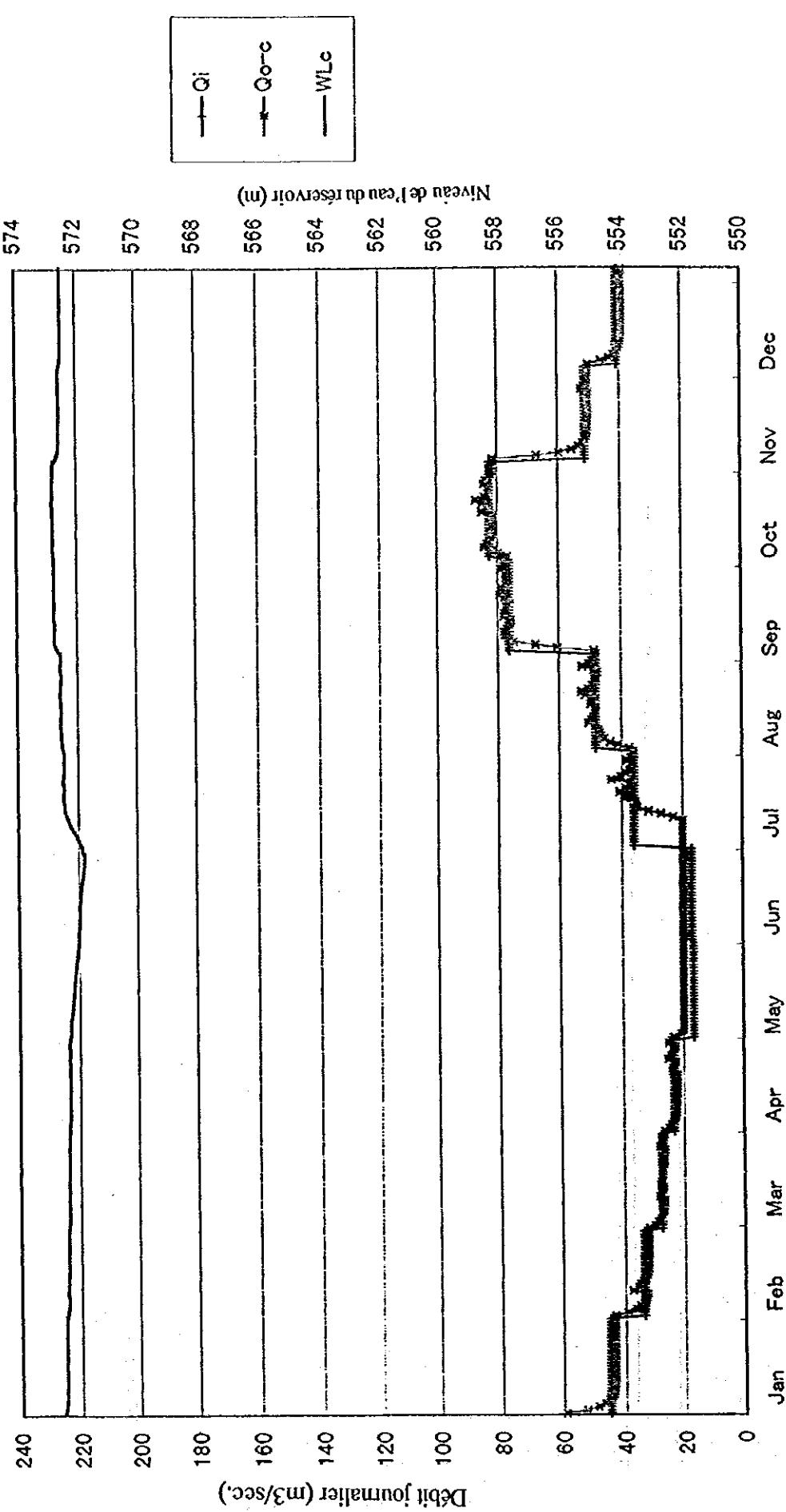
Bilan hydrologique du barrage de BOALLI(1969)



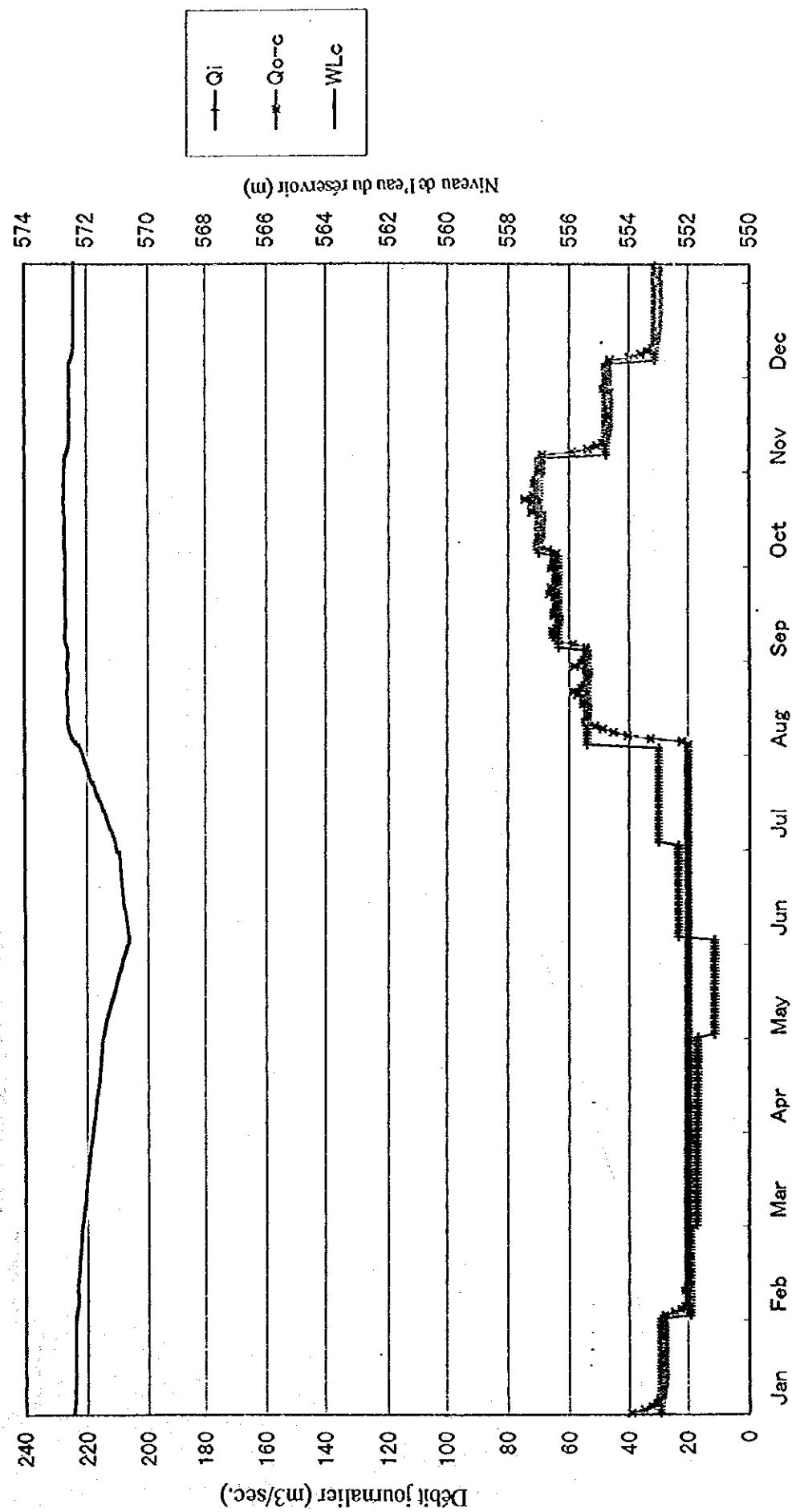
Bilan hydrologique du barrage de BOALL(1970)



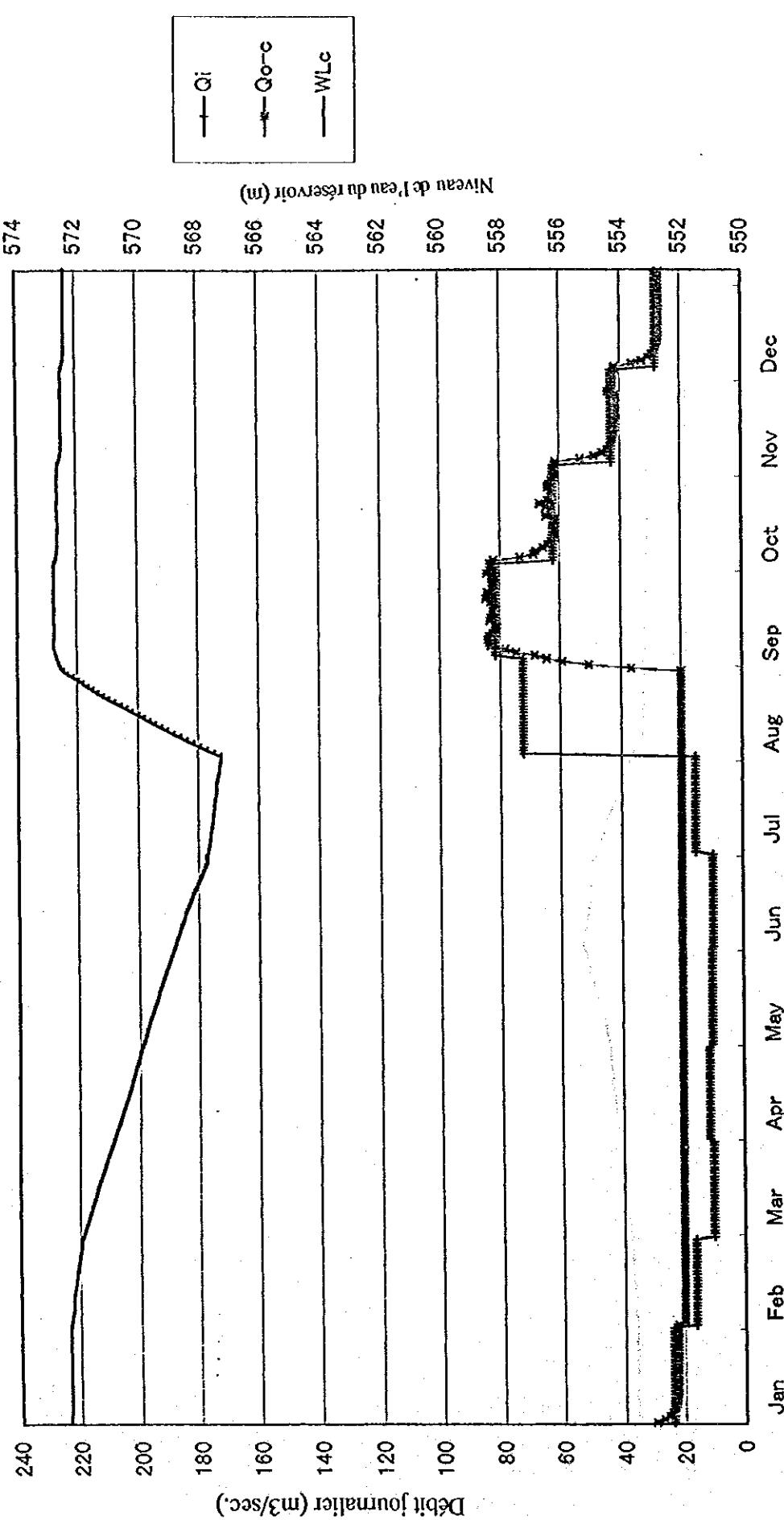
Bilan hydrologique du barrage de BOALI(1971)



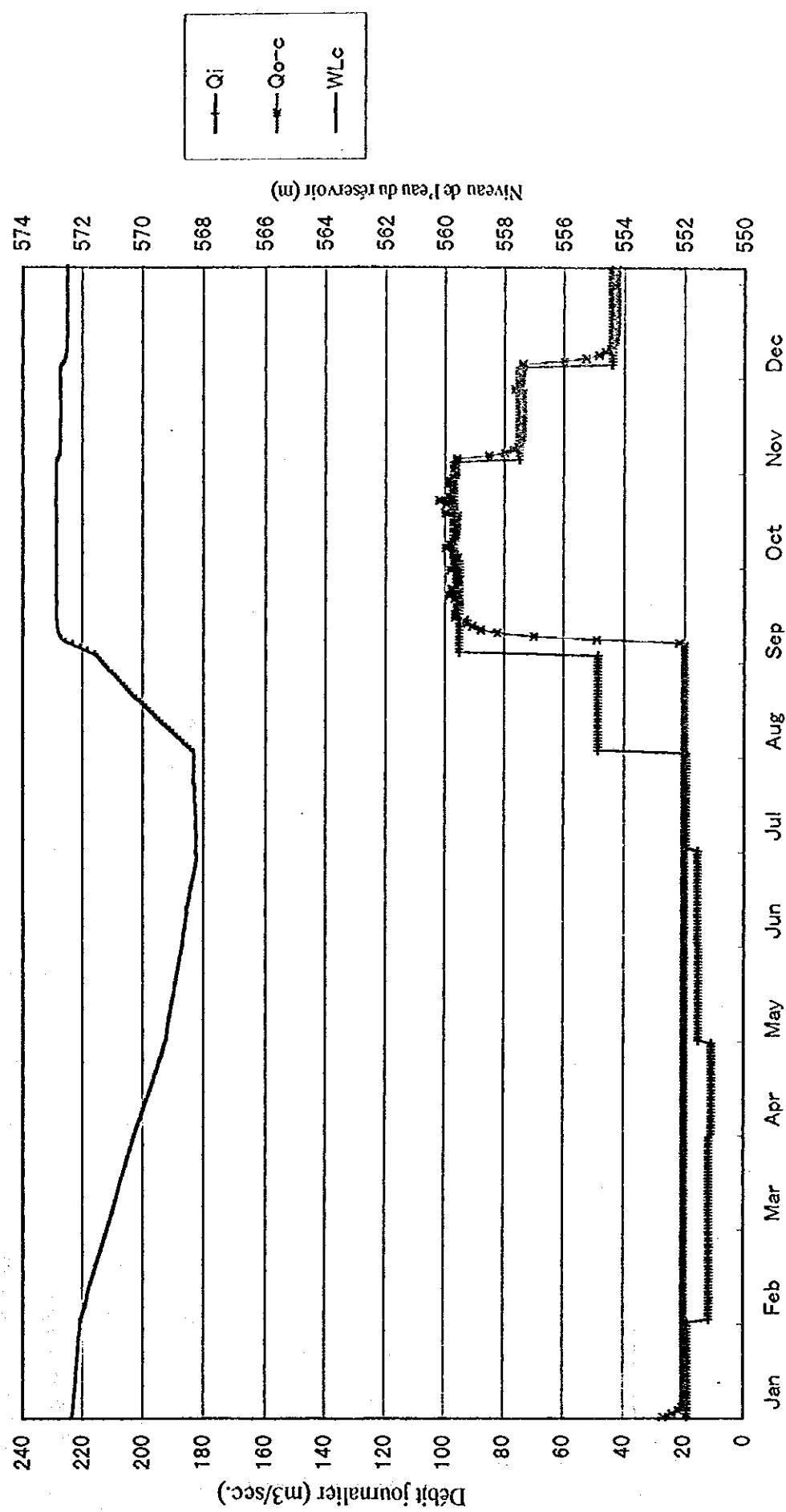
Bilan hydrologique du barrage de BOALL(1972)



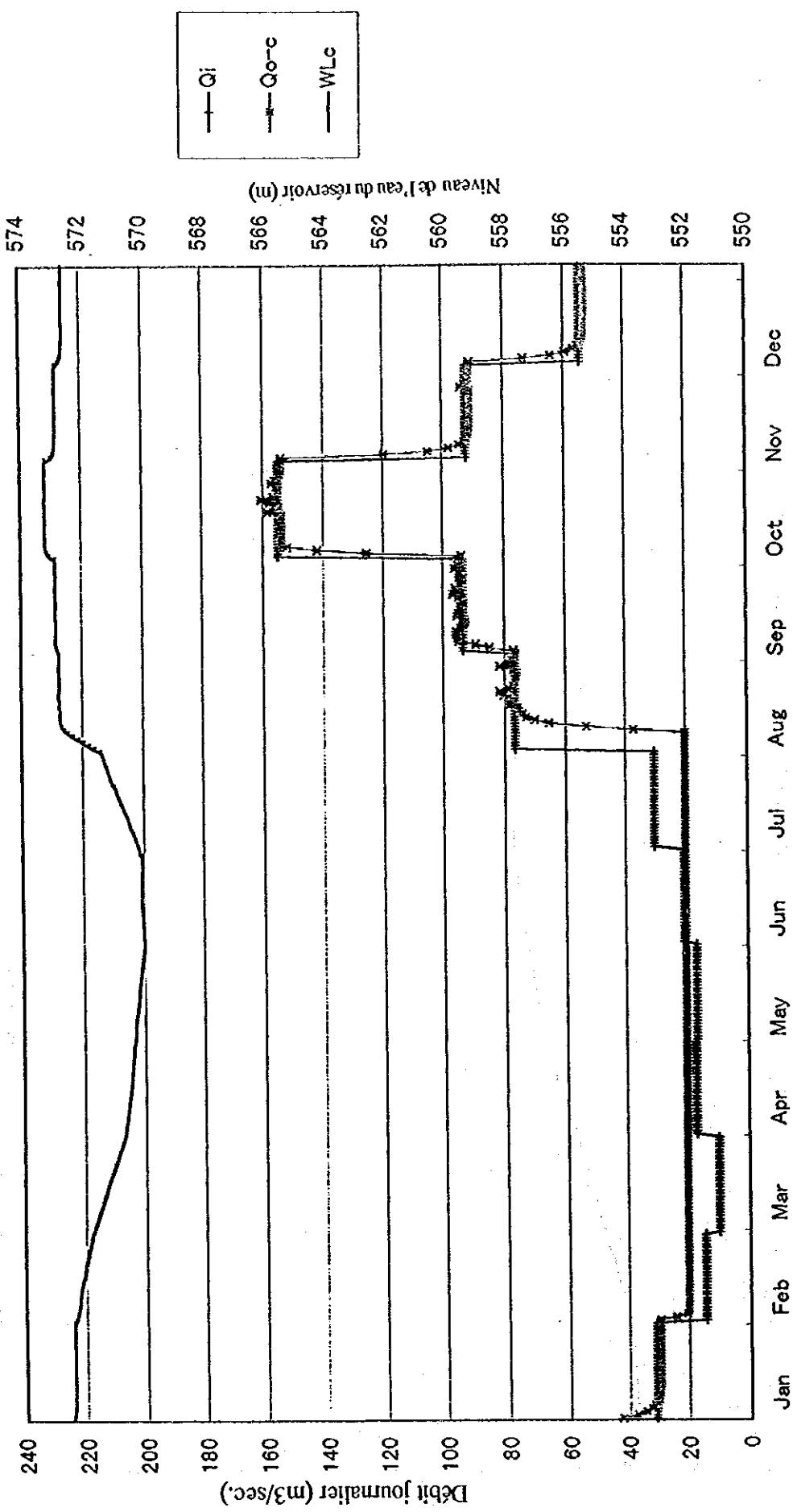
Bilan hydrologique du barrage de BOALLI(1973)



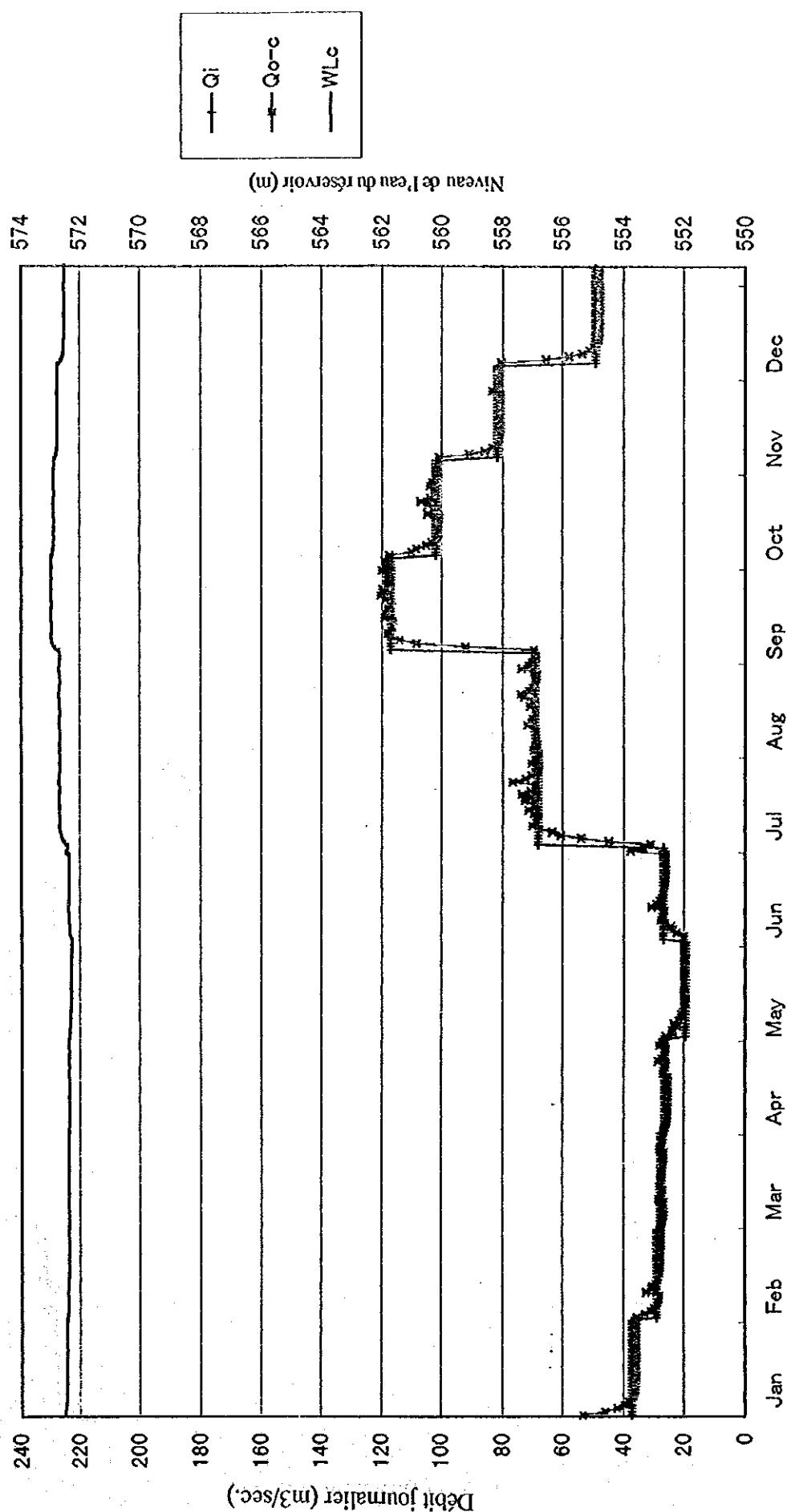
Bilan hydrologique du barrage de BOALI(1974)



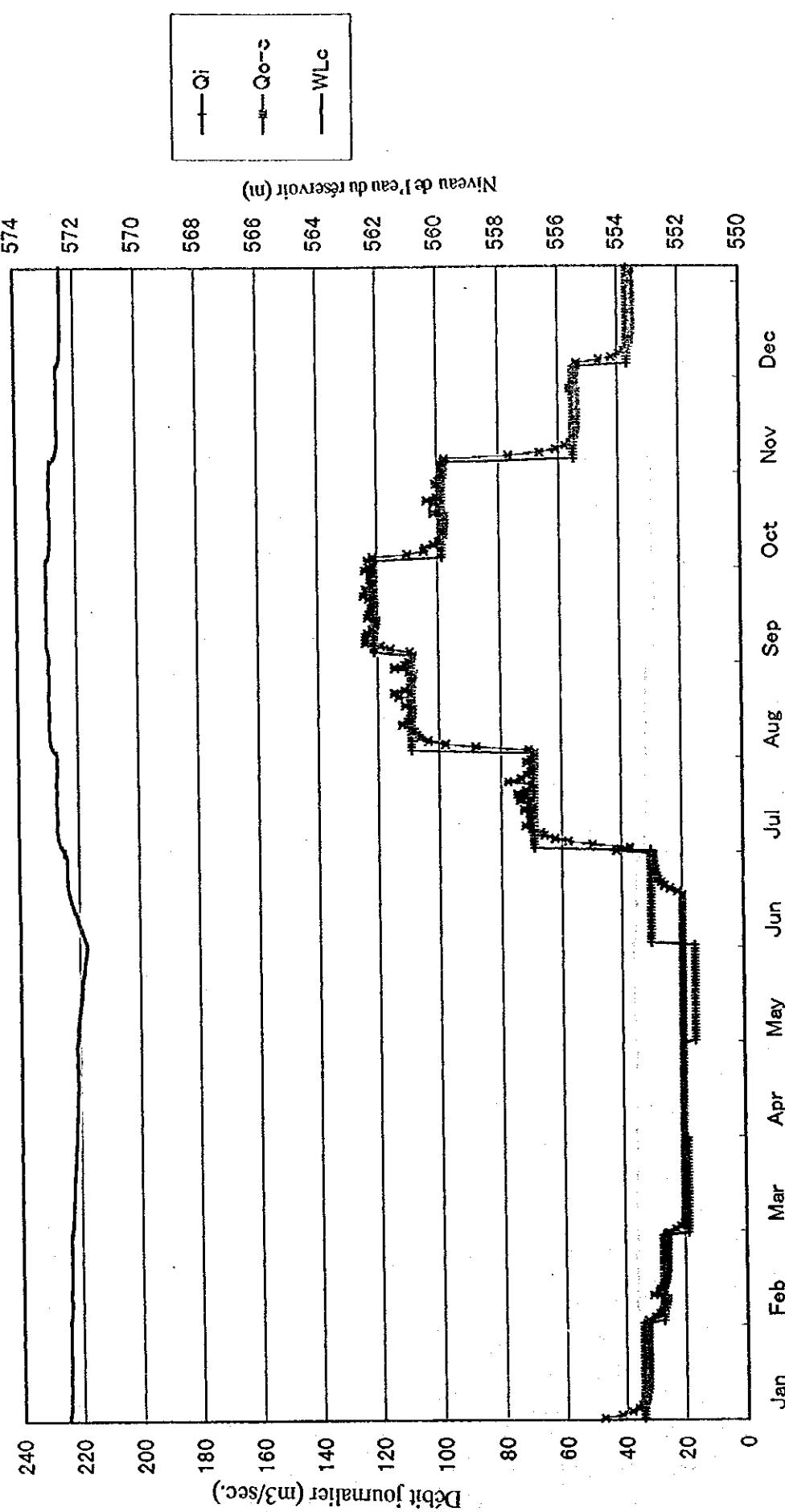
Bilan hydrologique du barrage de BOALL(1975)



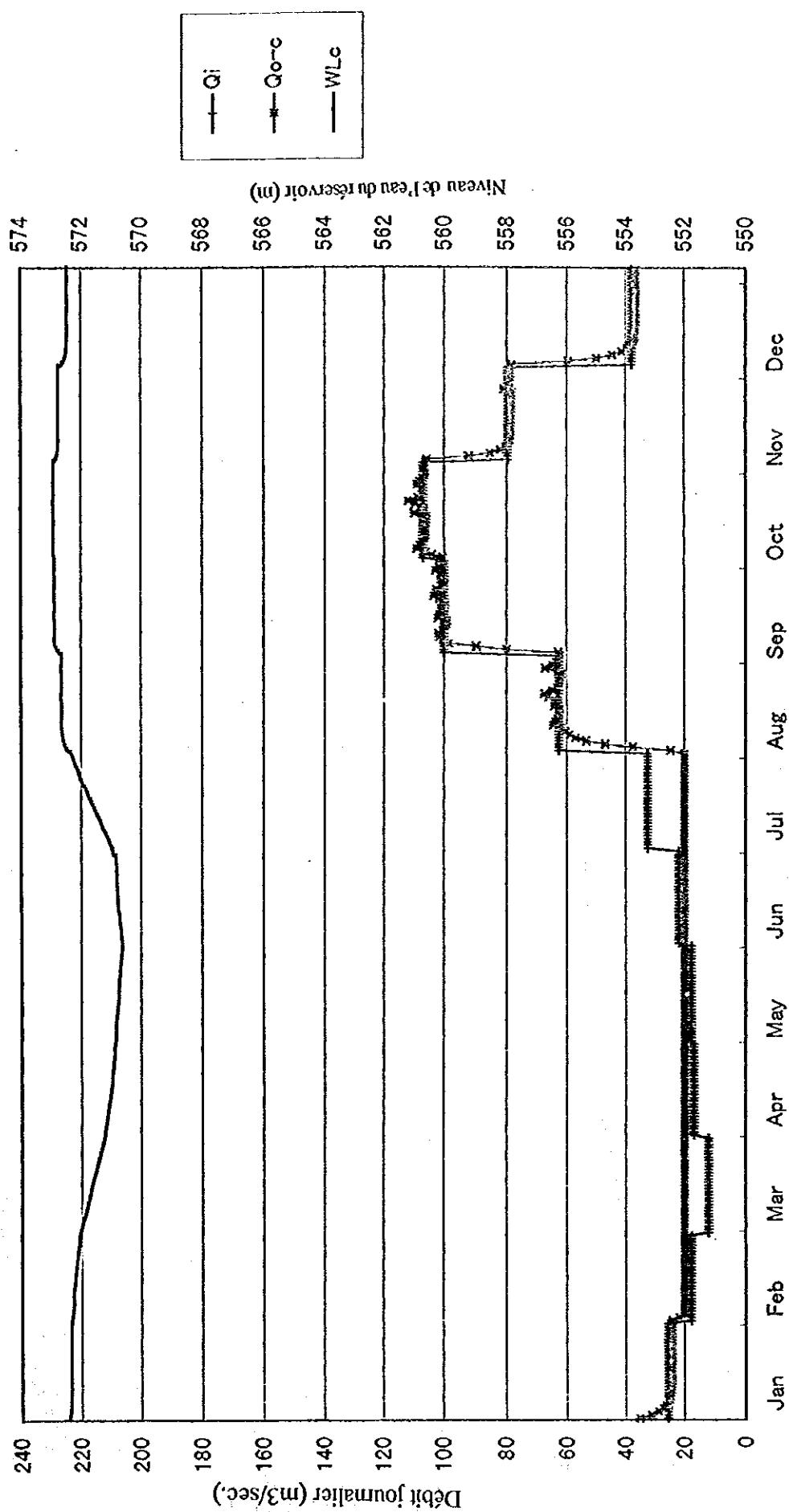
Bilan hydrologique du barrage de BOALL(1976)



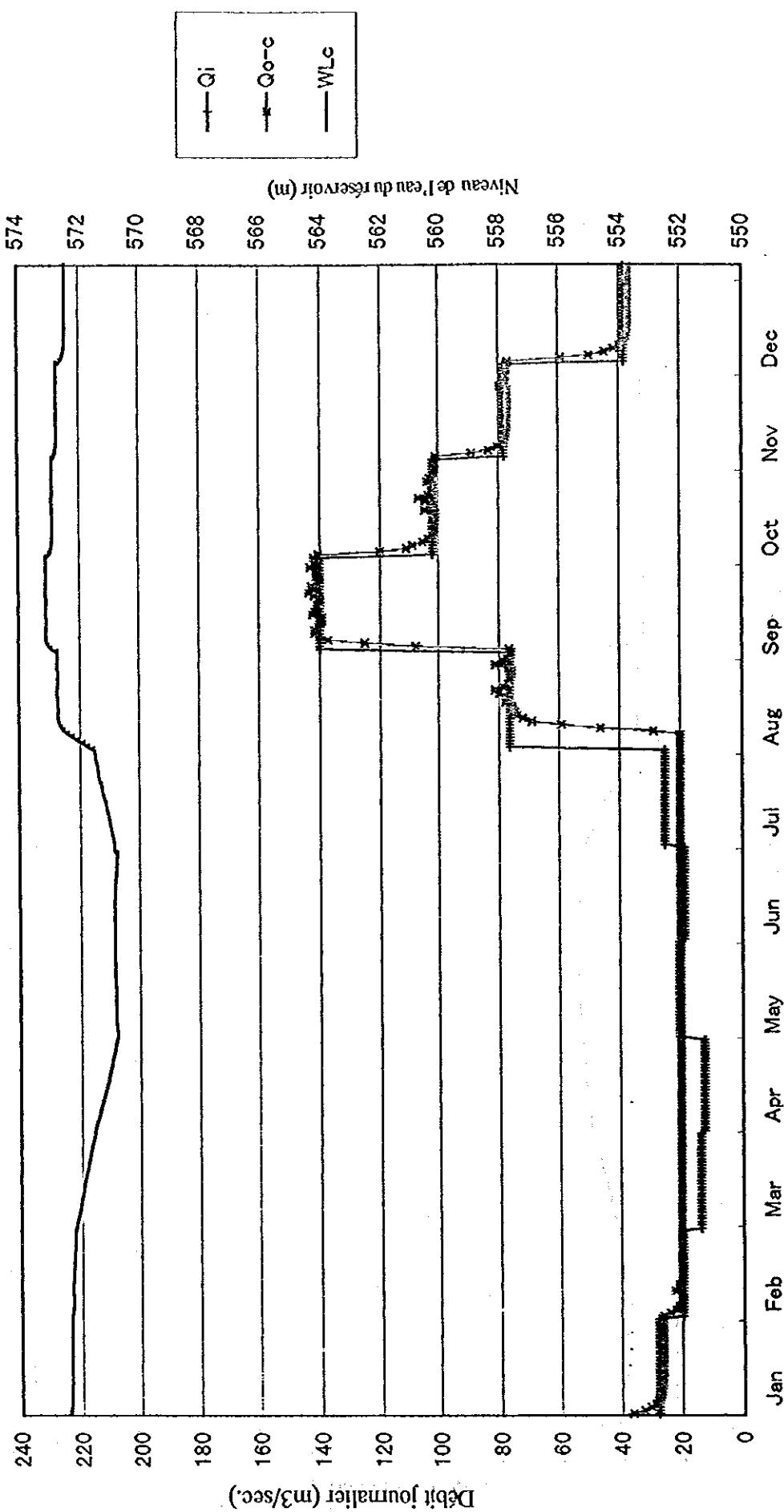
Bilan hydrologique du barrage de BOALI(1977)



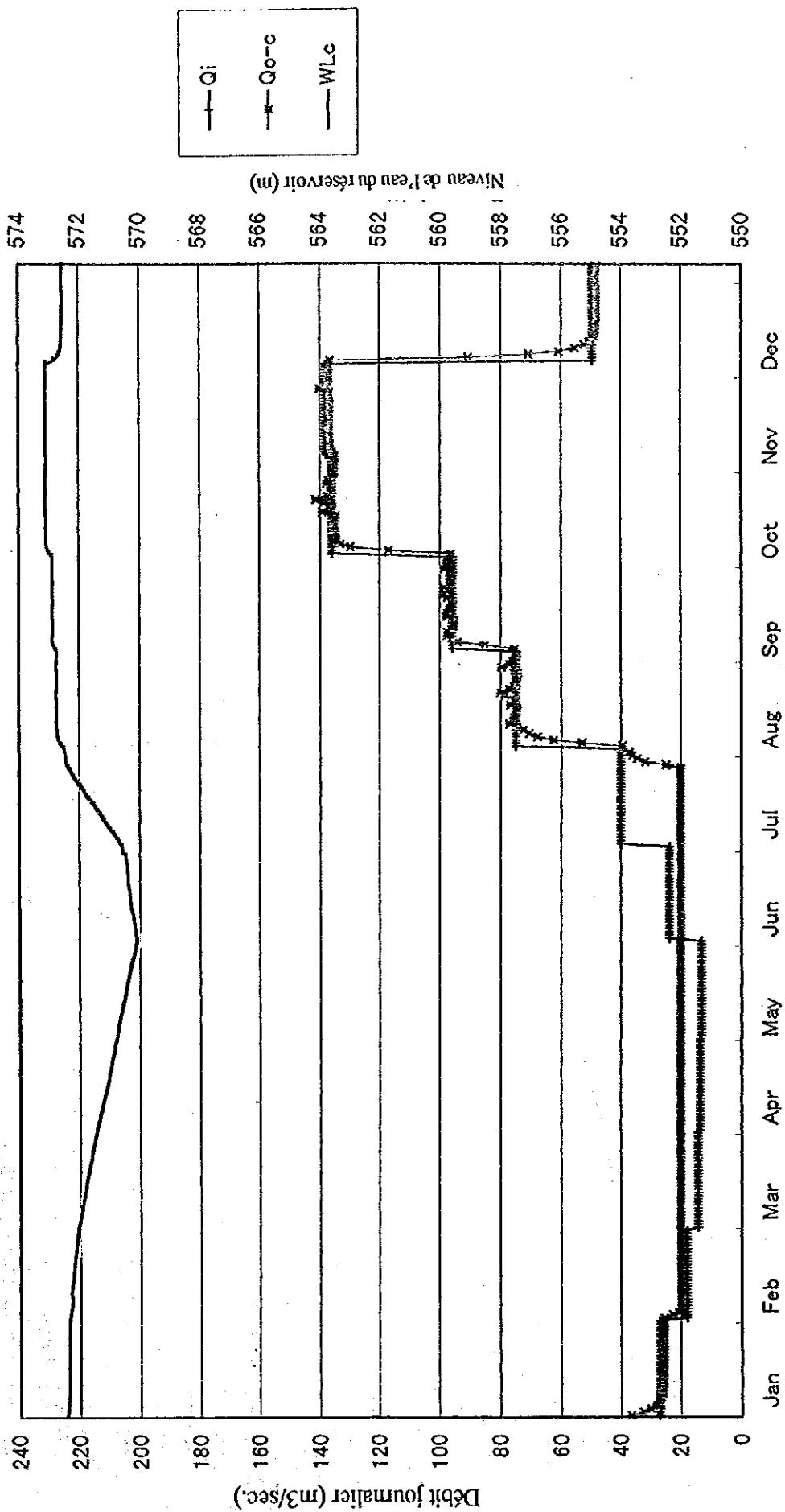
Bilan hydrologique du barrage de BOALL(1978)



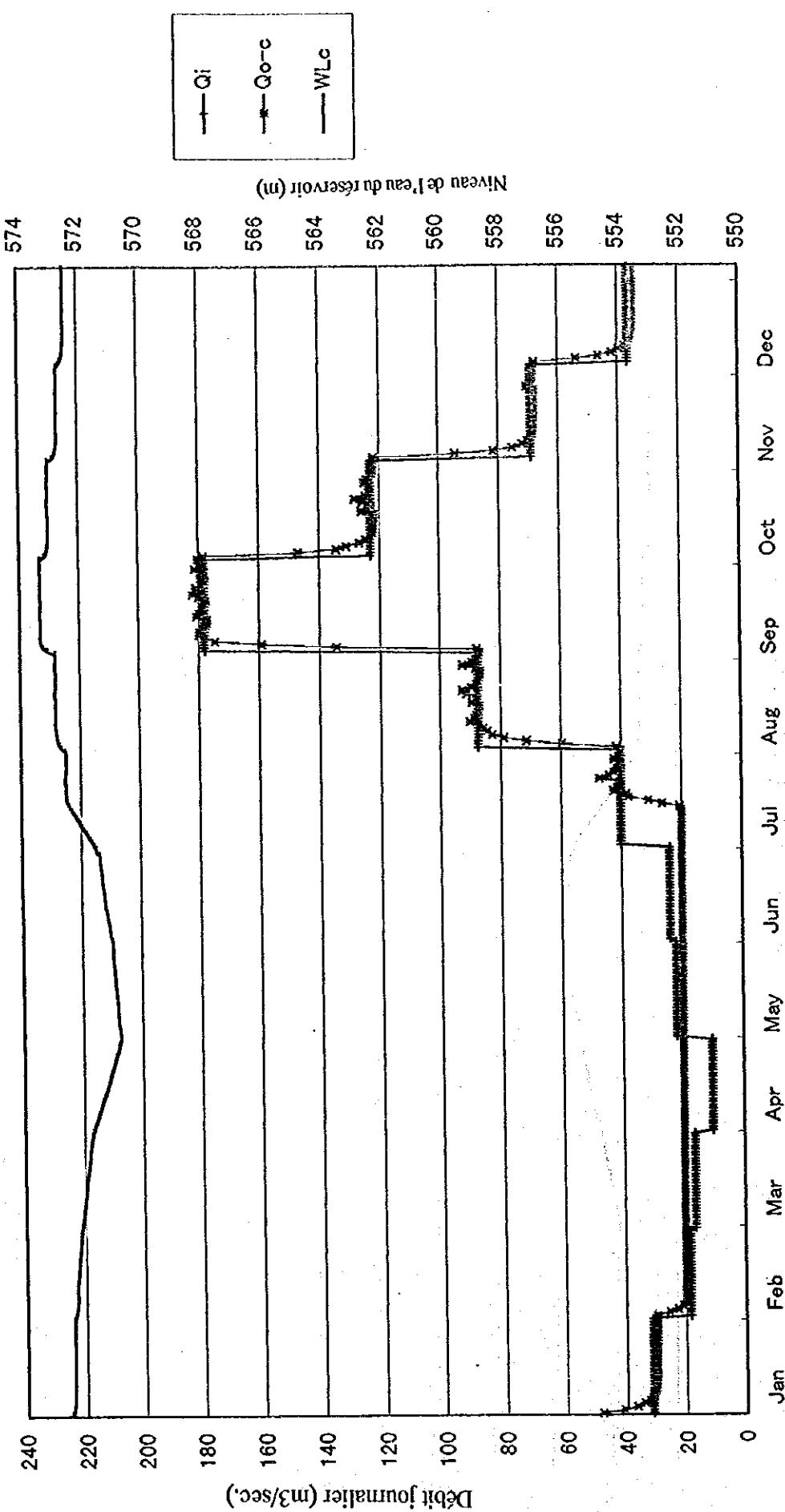
Bilan hydrologique du barrage de BOALLI(1979)



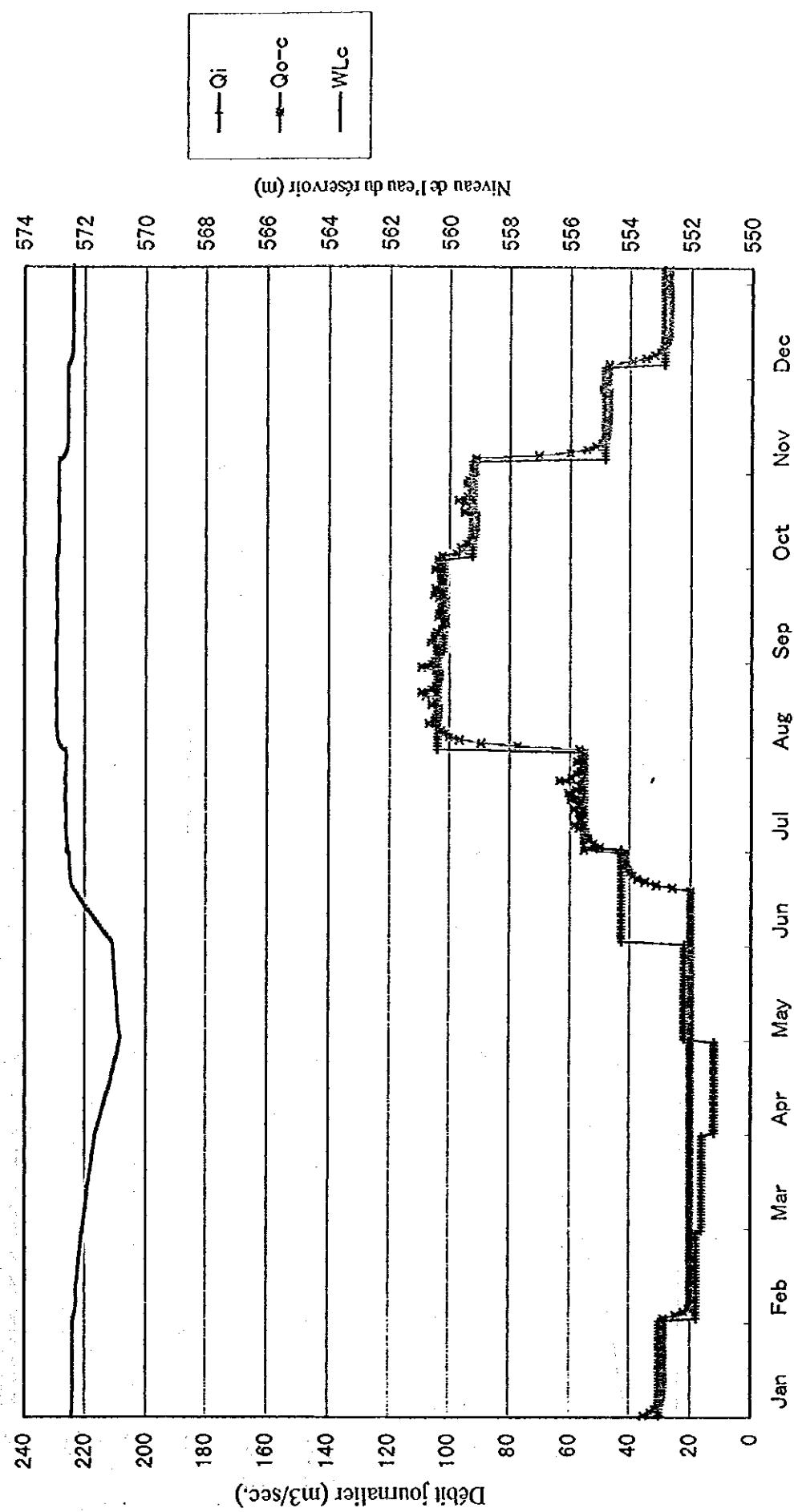
Bilan hydrologique du barrage de BOAII(1980)



Bilan hydrologique du barrage de BOALI(1981)



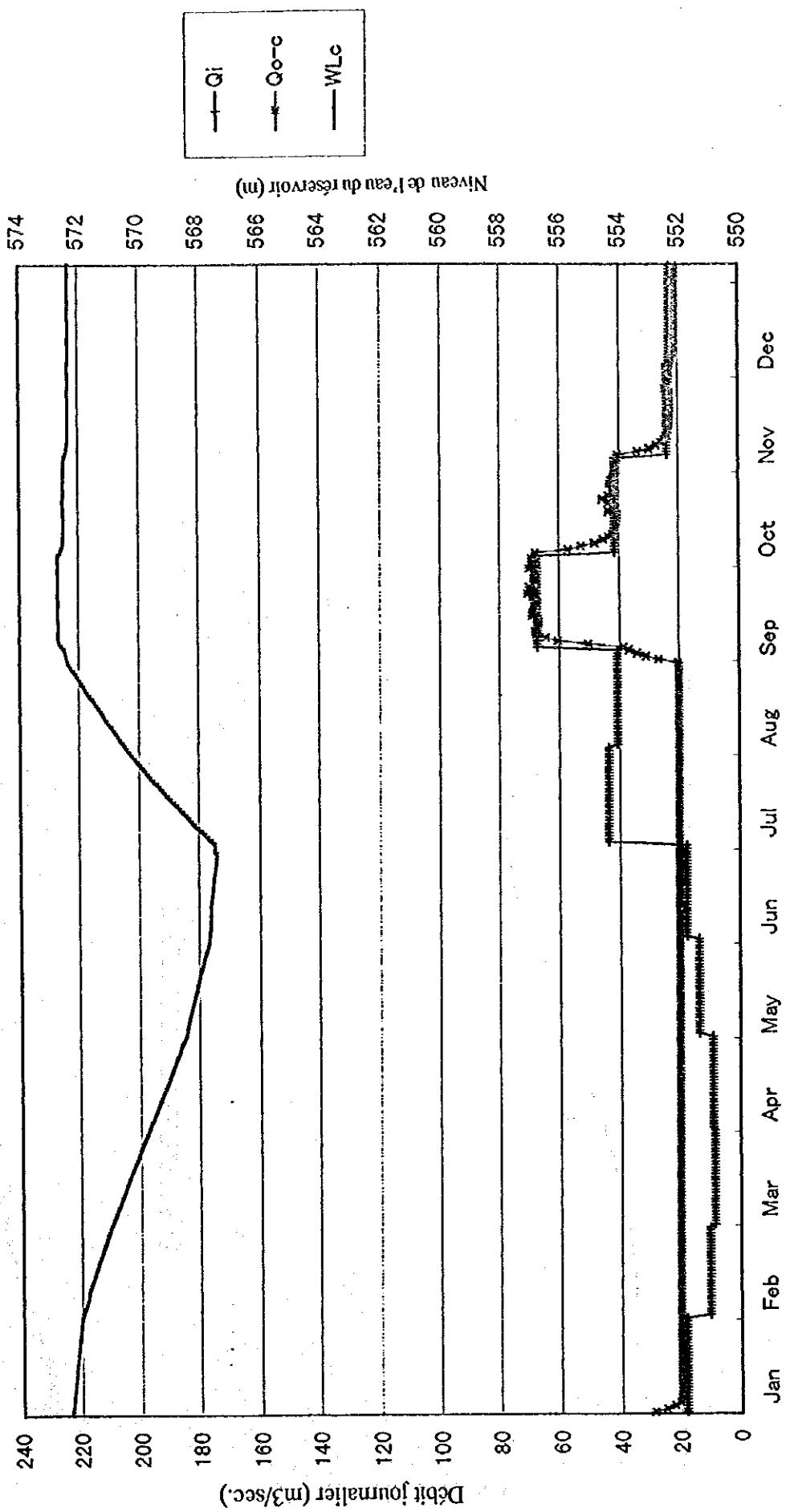
Bilan hydrologique du barrage de BOAUI(1982)



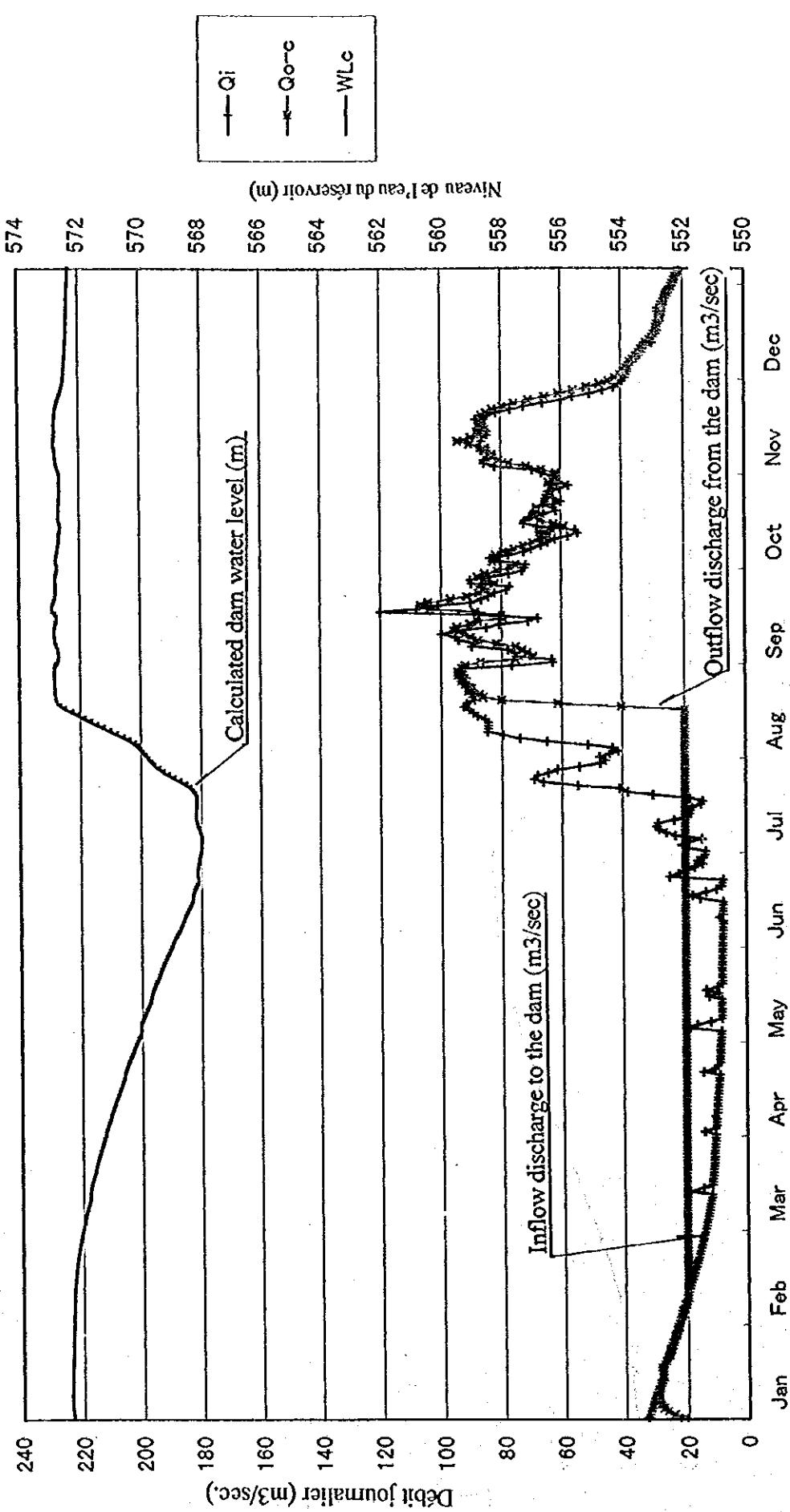
Bilan hydrologique du barrage de BOALI(1983)



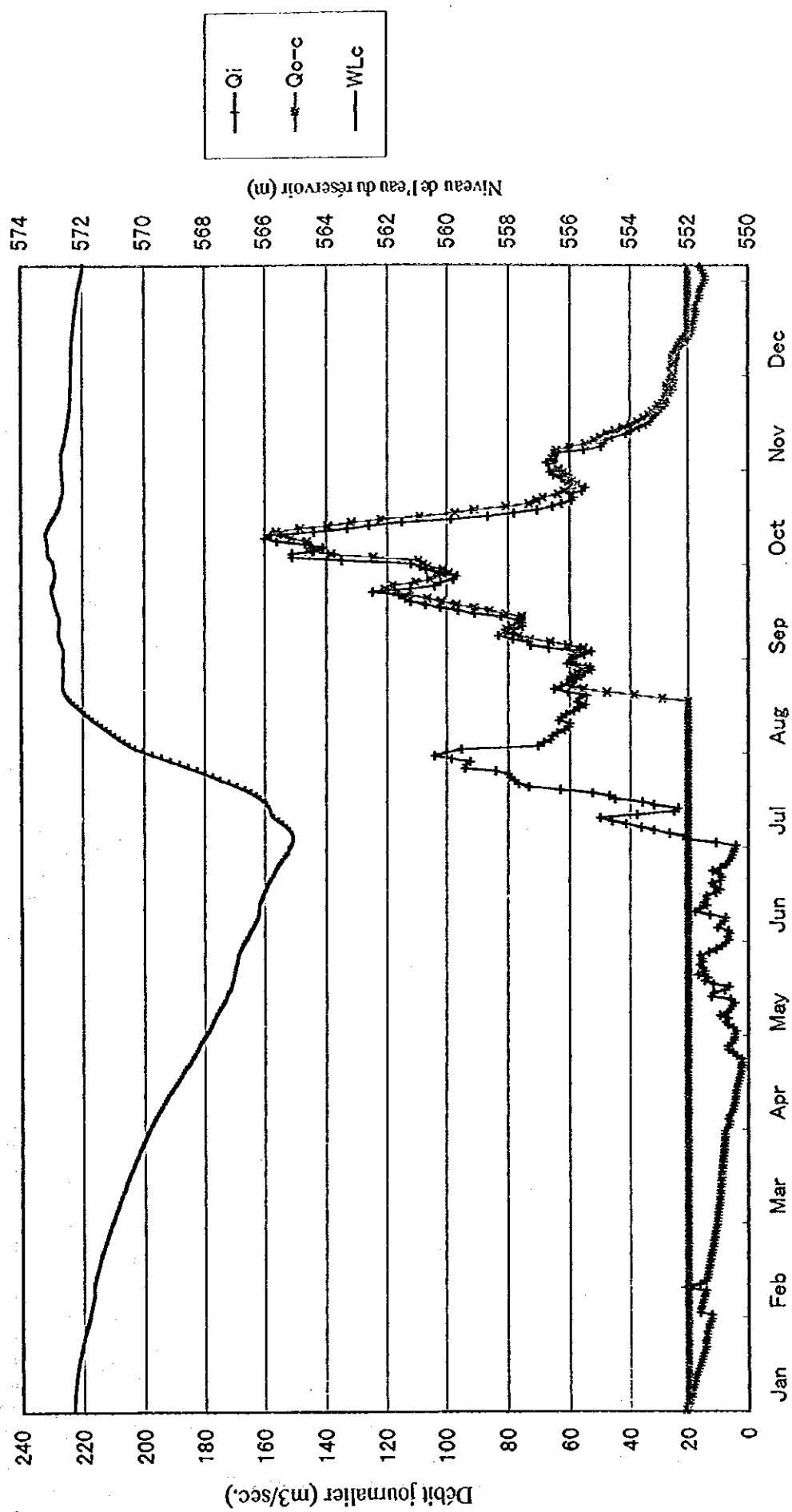
Bilan hydrologique du barrage de BOALL(1984)



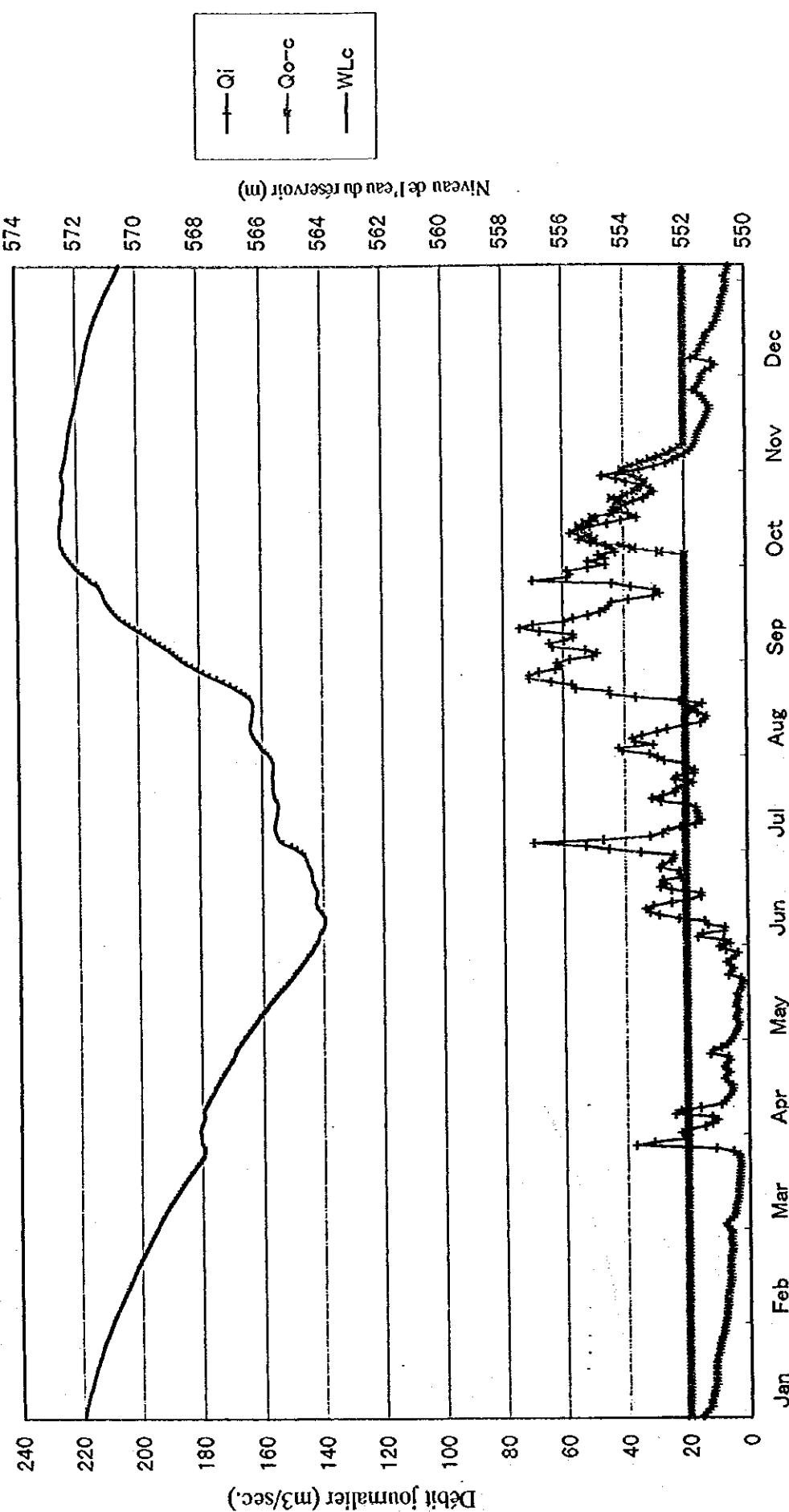
Bilan hydrologique du barrage de BOALI(1985)



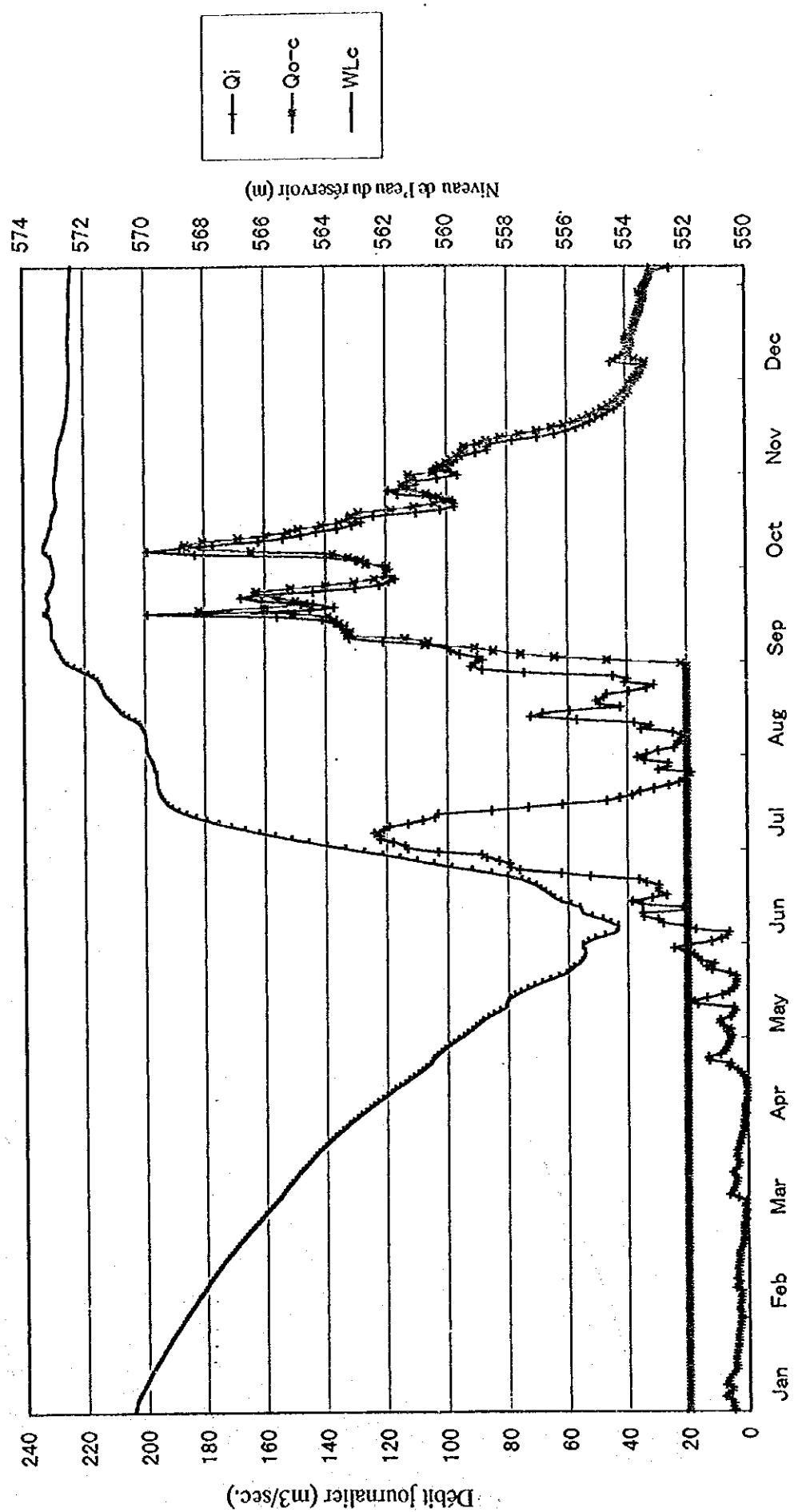
Bilan hydrologique du barrage de BOALI(1986)



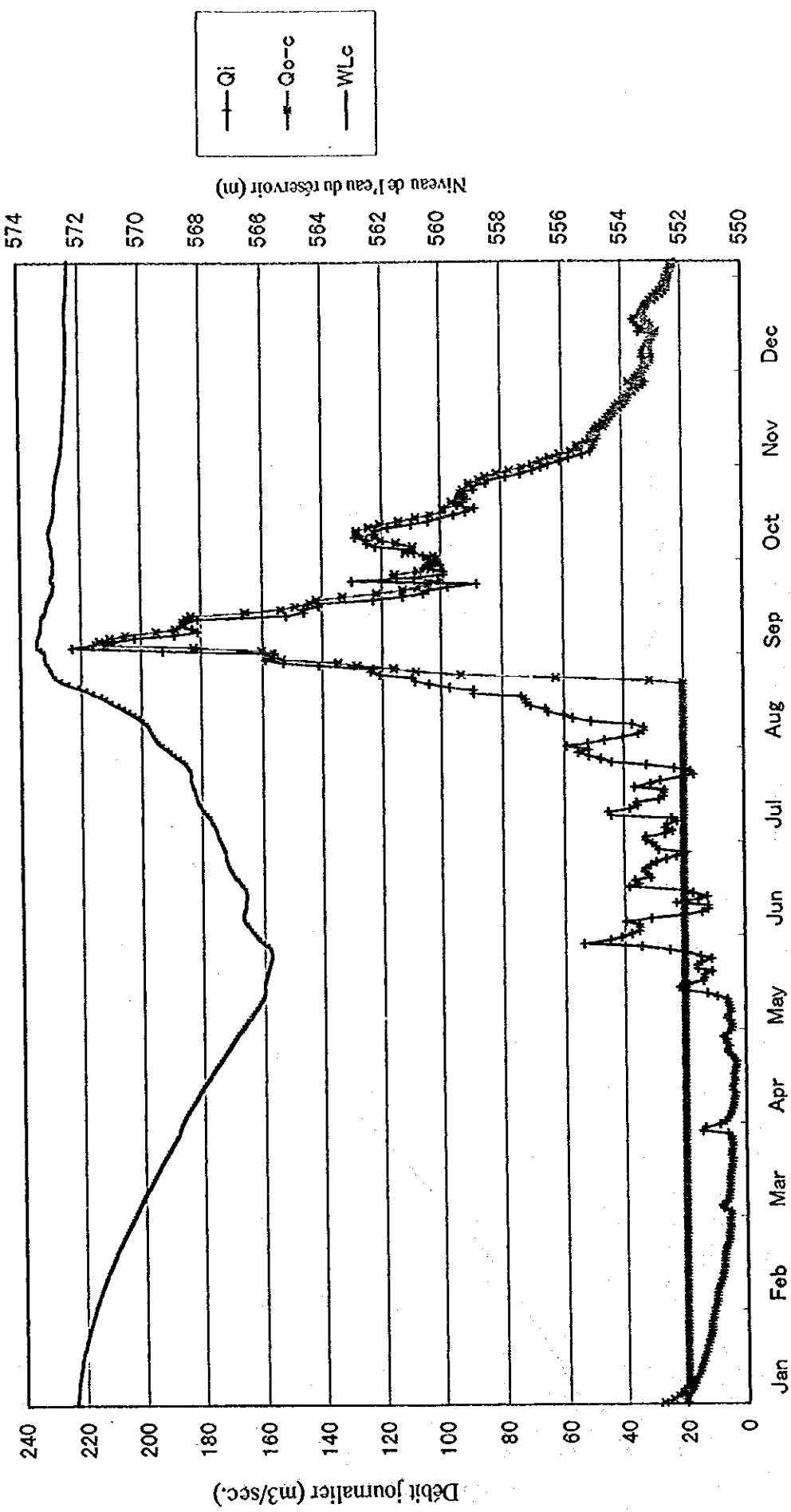
Bilan hydrologique du barrage de BOALL(1987)



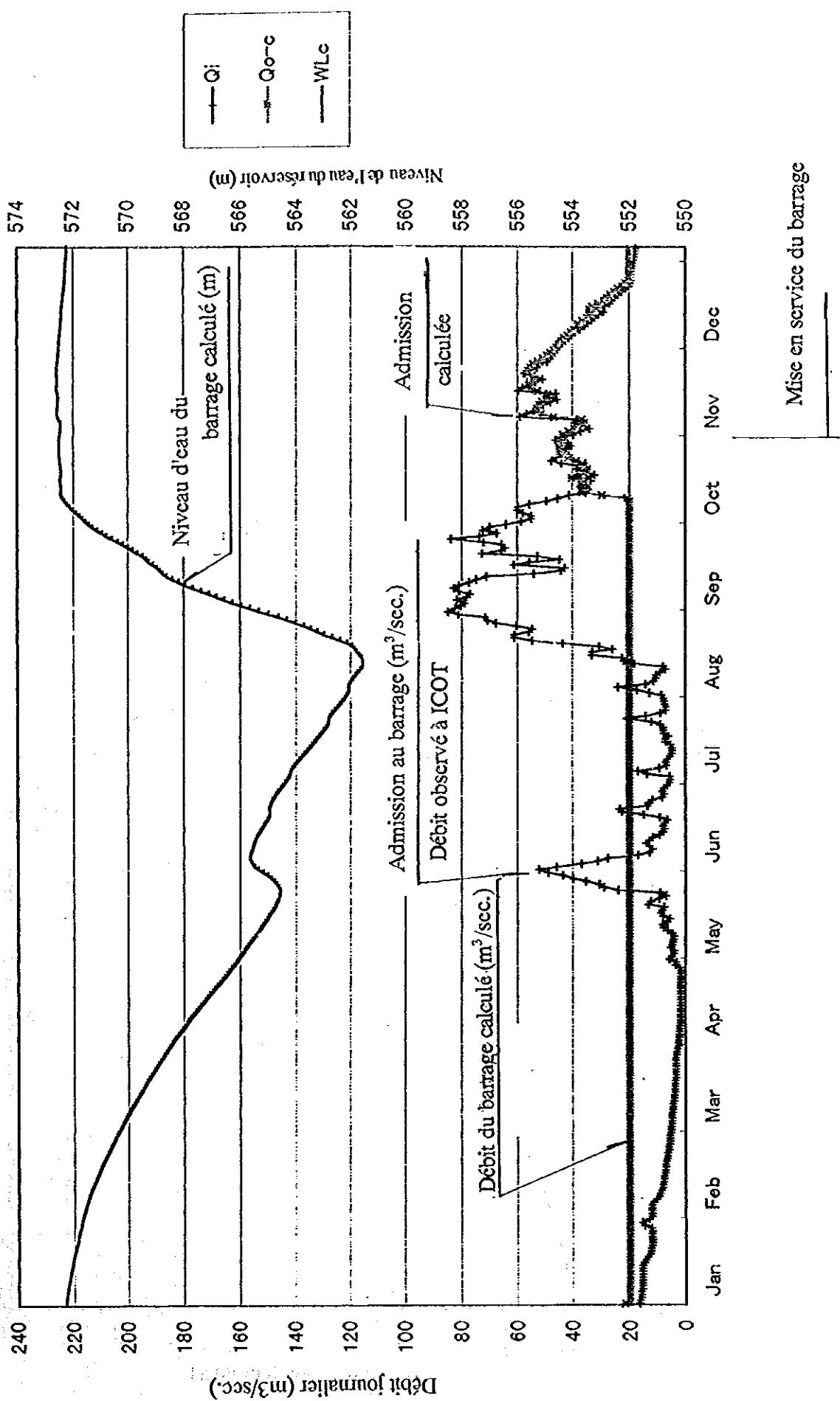
Bilan hydrologique du barrage de BOALI(1988)



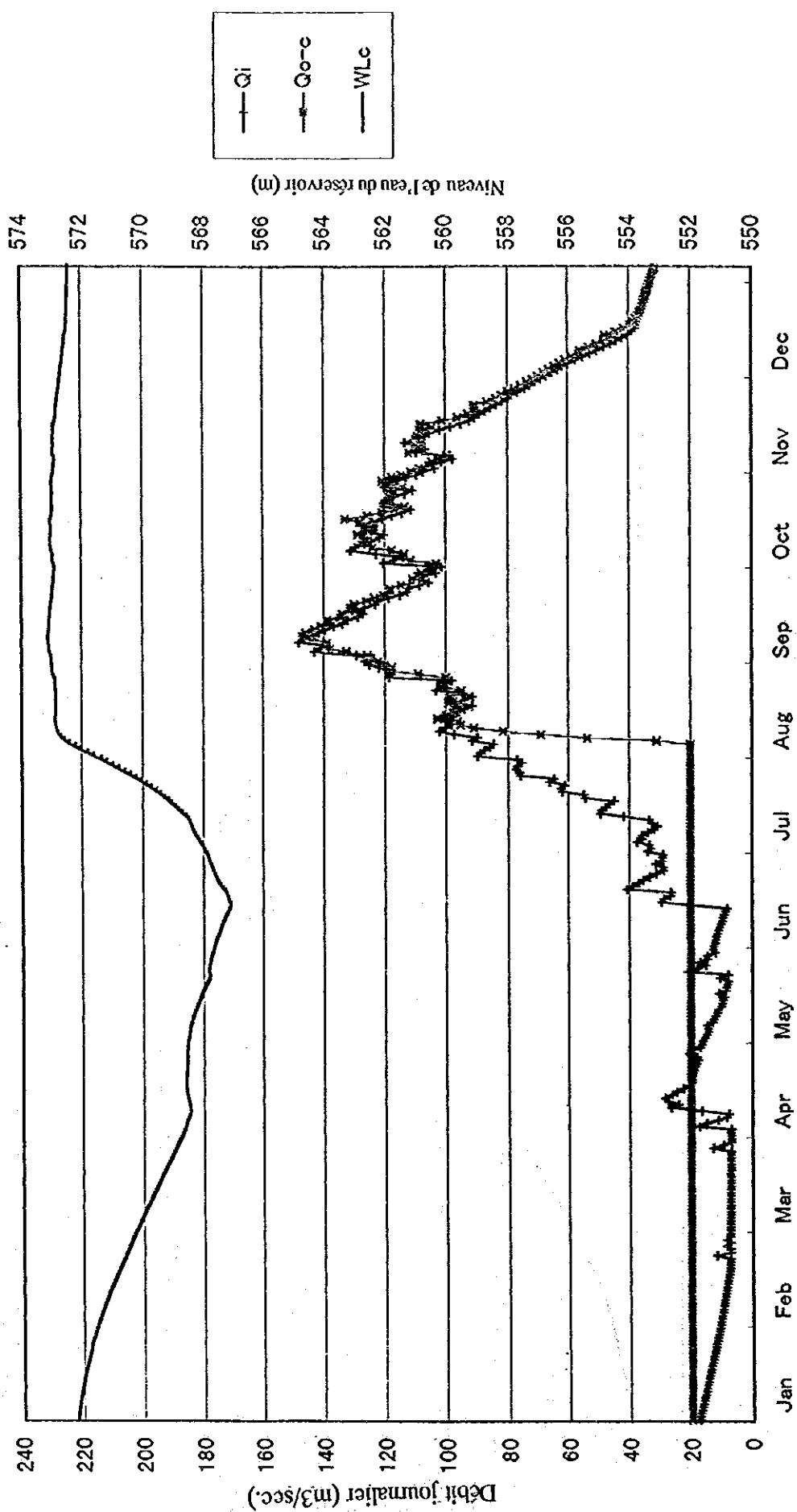
Bilan hydrologique du barrage de BOALI(1989)



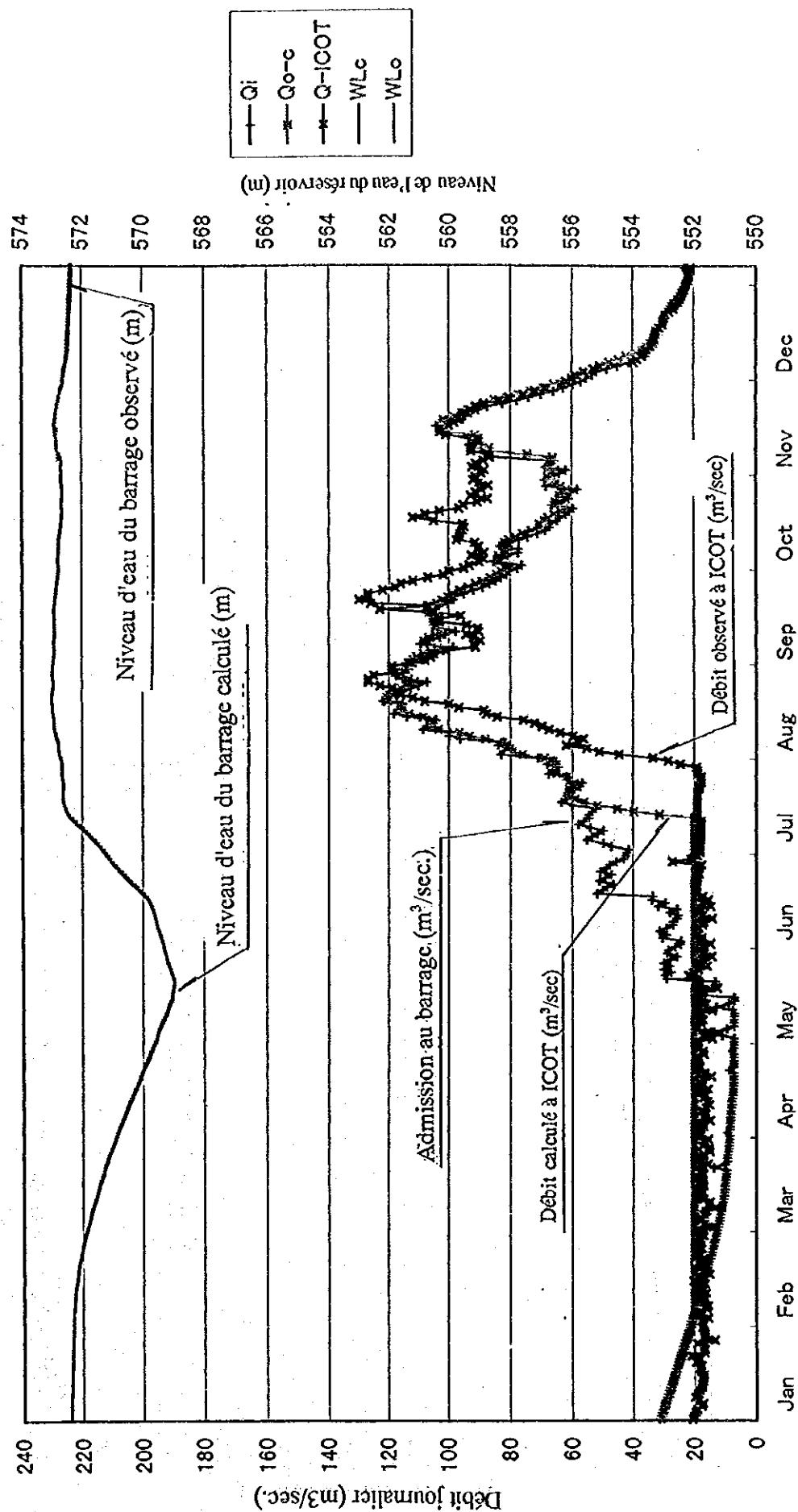
Bilan hydrologique du barrage de BOALI(1990)



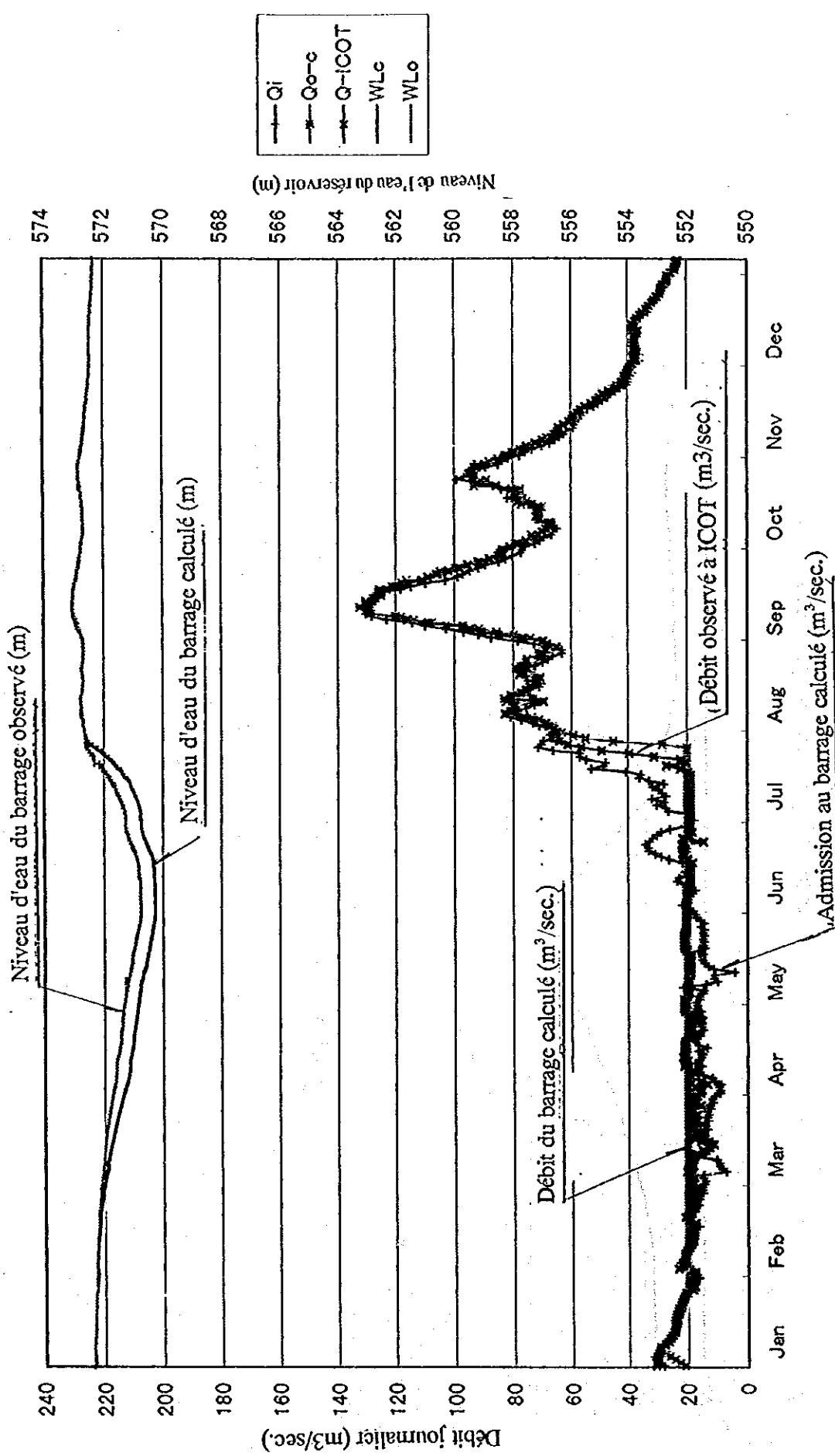
Bilan hydrologique du barrage de BOALL(1991)



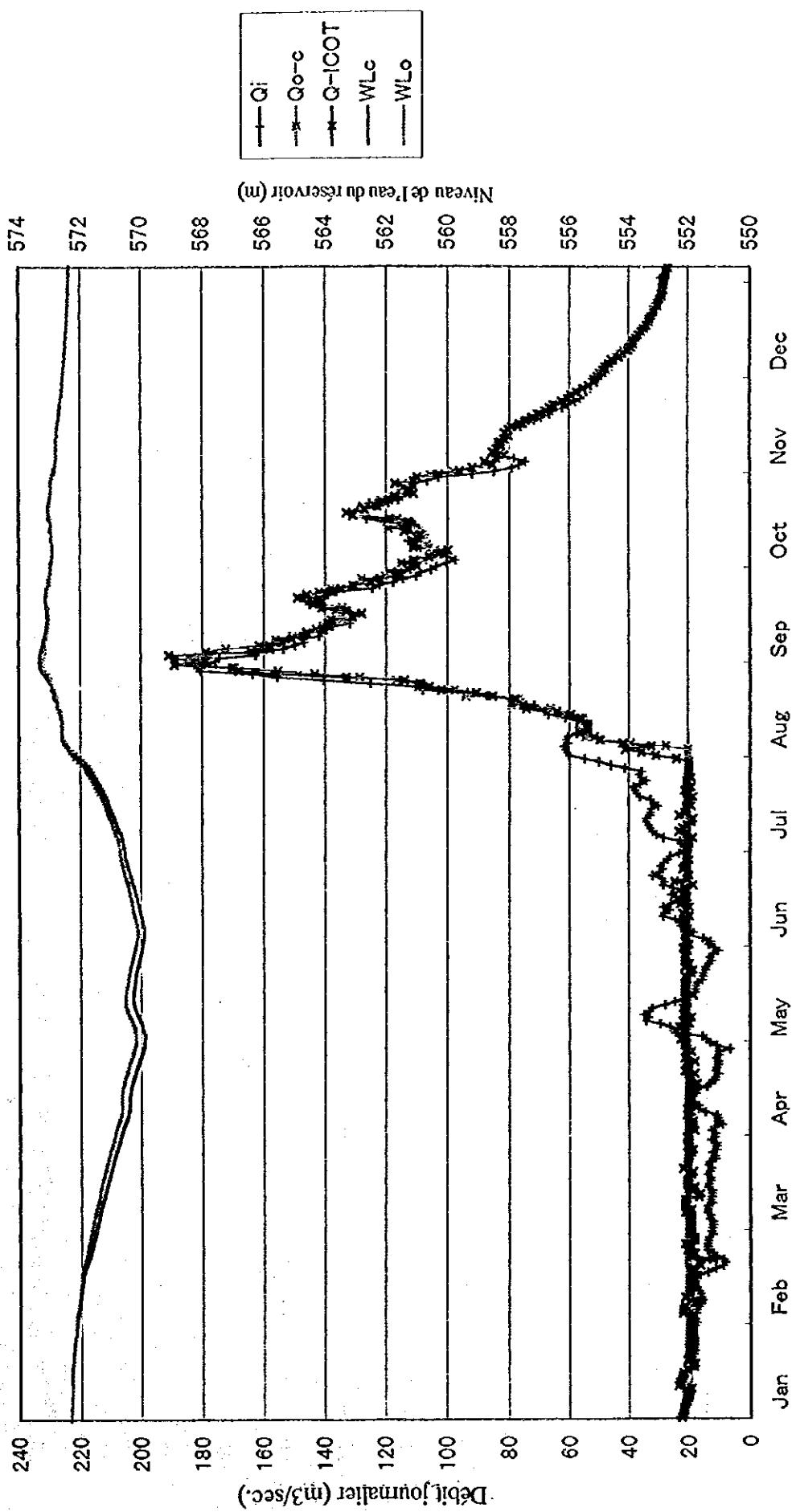
Bilan hydrologique du barrage de BOAII(1992)



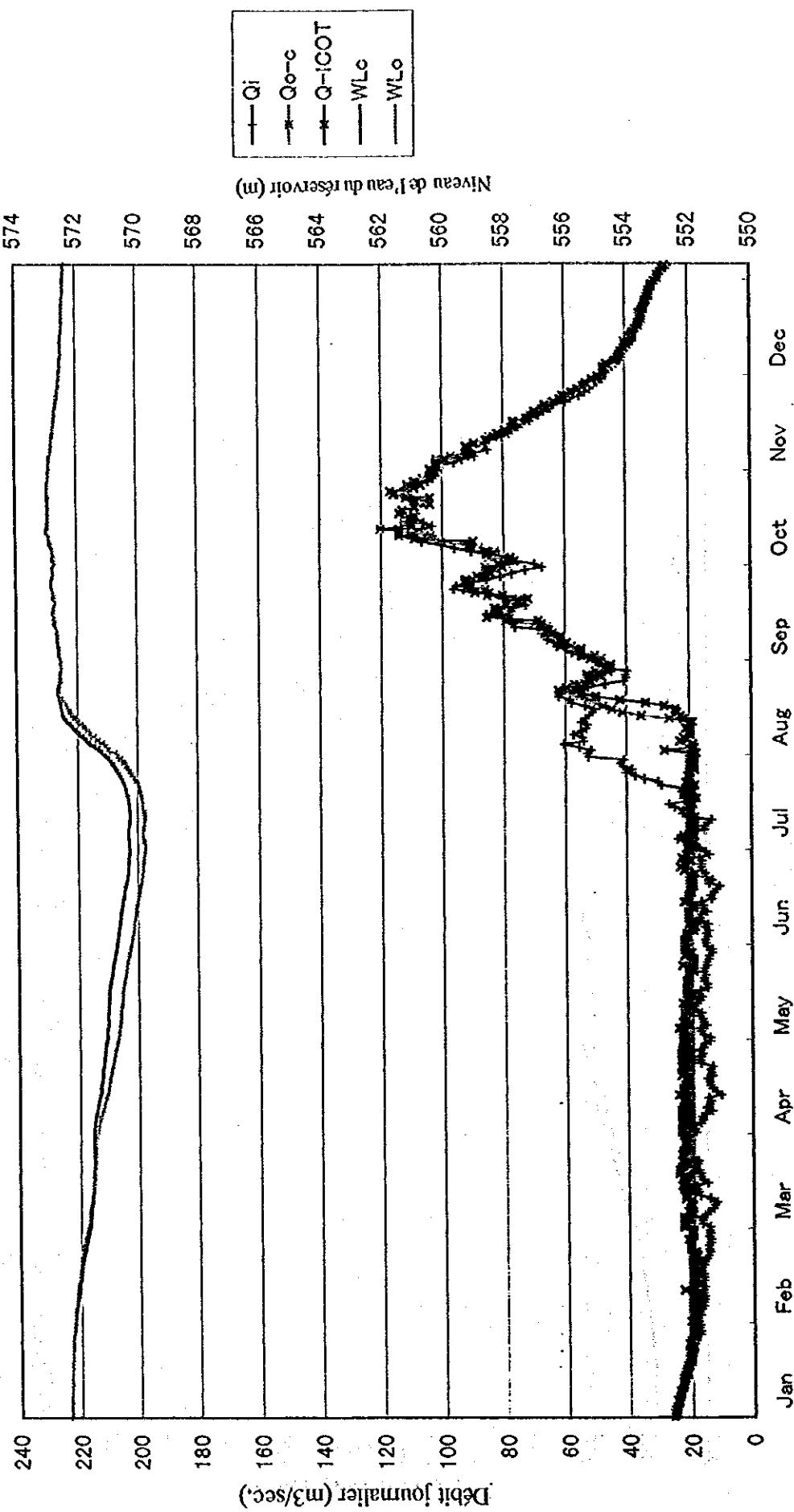
Bilan hydrologique du barrage de BOALI(1993)



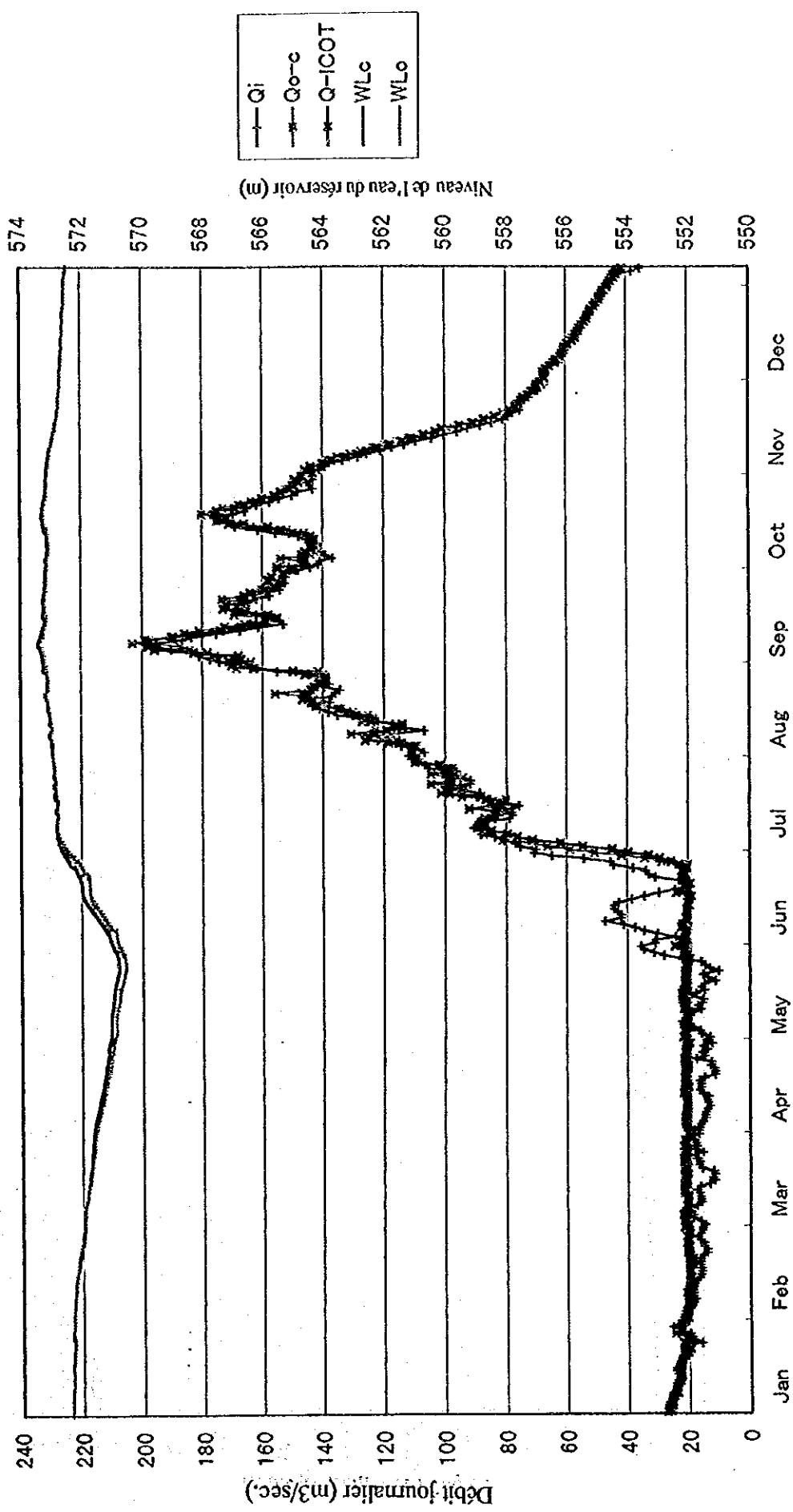
Bilan hydrologique du barrage de BOALI(1994)



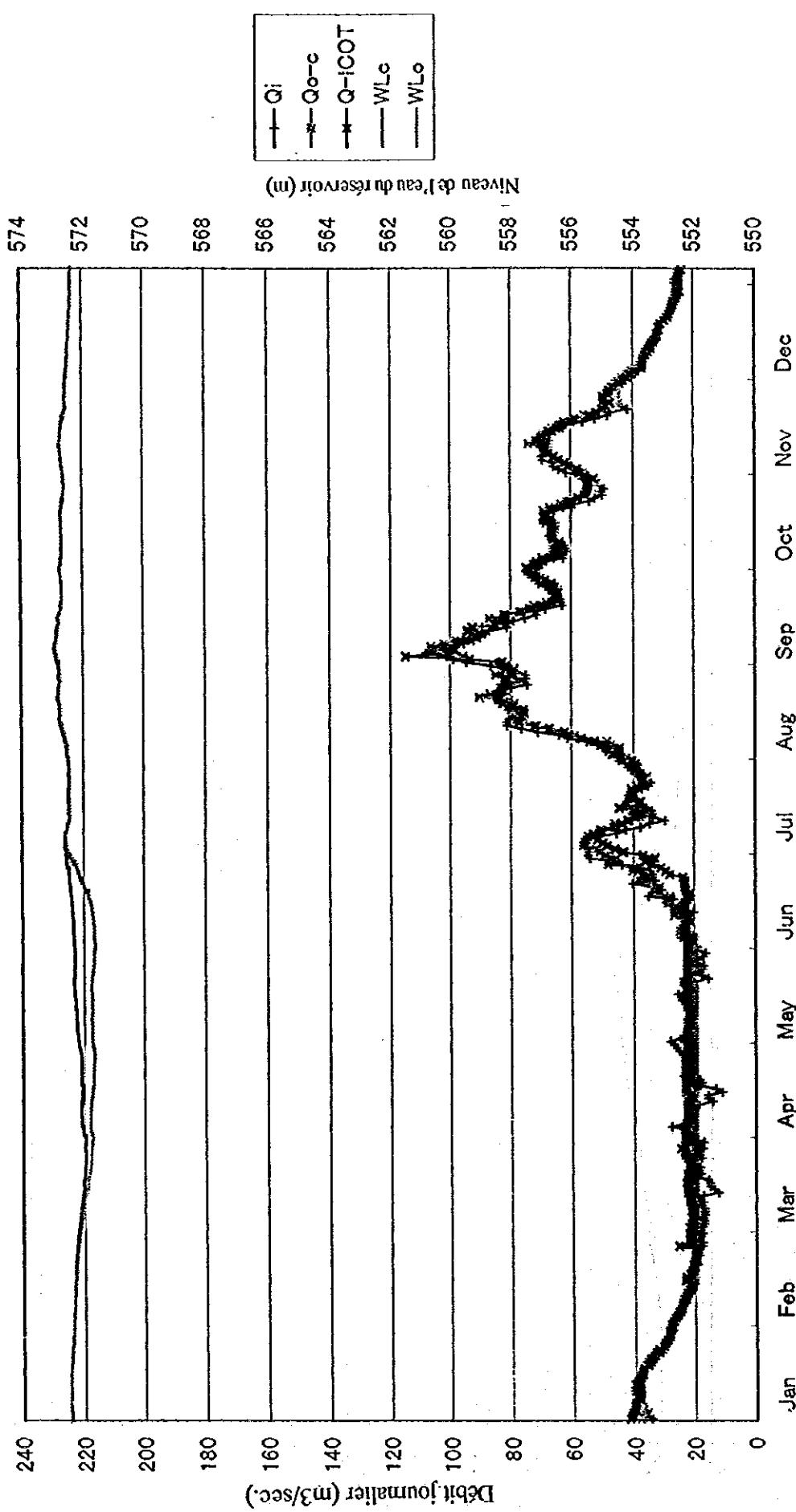
Bilan hydrologique du barrage de BOALI(1995)



Bilan hydrologique du barrage de BOALI(1996)



Bilan hydrologique du barrage de BOALI(1997)



Bilan hydrologique du barrage de BOALL(1998)

