

1. RIVER SYSTEMS
2. LAKES.
MAIN LAKES

1. River Systems

Restricted by a narrow and long national land and a steep landform, rivers in Japan generally have a short flow route and a steep riverbed slope. Flowing from mountains to lowlands, rivers deposit the sand and gravel and then move into seas. River systems are fully developed in the entire nation and there is not too much difference in the density of river systems between regions. In general, the drainage basins are small in area.

The discharge of a river is strongly influenced by the climate and seasonally fluctuates to a great extent. The rivers on the Pacific Ocean side reach a maximum discharge in the Baiu(rainy) season and the typhoon season. The rivers on the Japan Sea side discharge large amounts of water during the Baiu season but reach a maximum in the snow melting season. In either case, the minimum discharge is in the wintertime. The discharge of rivers in Hokkaido temporarily drops in June through July.

Rivers in Japan are artificially altered for water utilization and conservancy, such as the construction of dams in the mountains, riparian works on the flatlands and construction of dikes.

Salient Points of the Legend and Map Compilation

Rivers : The map shows rivers more than 8 km in length. In the case of tributaries, however, only those more than 6 km in length are shown.

Lakes : In principle, the map shows lakes more than 1 km² in area.

Intermittent streams : This implies that the river water flows only when it rains.

Irrigation canals : Of all the open canals for irrigation purposes, the map shows only the large canals.

Dams : Reservoirs more than 1 km² in area are shown.

Watersheds : The map shows river systems with a drainage basin of more than 500 km² in area. It does not show the places where the watershed is indistinct on the flatland. Incidentally, the name of each river was indicated near its estuary.

Sources

1. Geographical Survey Institute, 1 : 50,000 scale Topographic Maps.
2. Geographical Survey Institute, 1 : 200,000 scale Regional Maps.
3. Ministry of Construction, Hydrological Yearbook, 1959-68.
4. Ministry of Construction, River Control Statistics, 1964.

2. Lakes

In Japan where the volcanic activities and tectonic movements are violent, it is reported that there exist more than 600 lakes. The map shows about 170 lakes.

There are many lakes formed as the result of volcanic activities. The volcanic lakes consist of crater lakes, such as Okama and Onami Ike; caldera lakes, such as Towada Ko and Masyu Ko; and dammed lakes derived from lava and mud flows, such as Taisyō Ike and the Urabandai group of lakes. These lakes are generally deep, and many of them are oligotrophic lakes high in transparency. There also are some special lakes rich in iron content.

Of the lakes on the lowlands, many were formed by erosion and sedimentation of rivers. Sindenmae-Osikiri Numa in Miyagi Prefecture and Naka Numa in Ibaraki Prefecture are the lakes which were formed as a result of the erosion by flood flows of the outer side of the dike, and these lakes are called "Oppori". Oxbow lakes are formed on the trails of meandering rivers, and many of these lakes are observed along the lower reaches of Isikari Gawa (River). Inba Numa and Tega Numa are lakes which were formed at the mouth of a tributary as a result of deposits of sand carried from the main stream. In general, the lakes on the lowlands are eutrophic lakes which are shallow in depth and low in transparency.

A lagoon was formed on the seacoast since it was separated from the sea by a spit or barrier. Many of the lagoons are brackish lakes.

In addition, there are also the lakes which were formed in depressions by movements of the ground, such as Biwa Ko and Suwa Ko, and the lakes which were formed with the valley blocked by landslides. Lakes were sometimes formed by glacial erosion, and there exist two or three extremely small lakes.

The lakes north of the line linking Asino Ko and Biwa Ko normally become ice-bound in the wintertime with the exception of large and deep lakes, such as Tyūzenzi Ko, Inawasiro Ko, Tazawa Ko, Towada Ko, Tōya Ko and Sikotu Ko.

Salient Points of the Legend and Map Compilation

Harmonic lake type : The quantity of trophic salt associated with biological production is in harmony and there is no significant unbalance in production. Depending on the quantities of trophic salt and production, this type is classified into eutrophic lakes, mesotrophic lakes and oligotrophic

lakes.

Many of the shallow lakes on the lowlands constitute eutrophic lakes. The water color is greenish yellow and the transparency is normally less than 4 m. Many deep lakes in the mountains form oligotrophic lakes. The water color is indigo or bluish green and the transparency is normally more than 8 m. The mesotrophic lakes are of intermediate character.

Disharmonic lake type : The quantity of trophic salt is not in harmony and the content of biological production is unbalanced, with the consequence that the living things which inhabit these lakes are limited in species. Depending on the components which make biological production disharmonic, lakes of this type are further divided into many subtypes.

The acidotrophic lake is high in hydrogen-ion concentration, and many of lakes of this type are found in active volcano areas. The siderotrophic lake contains much iron in its water, which is generally acid. The dystrophic lake contains much humus and its trophic salt is small in quantity. These lakes are distributed mainly in peatbogs in high mountain areas and on lowlands north to Aomori Prefecture.

Brackish lake : A lake invaded by seawater. In normal circumstances, it contains more than 500 mg of salt in 1 liter of lake water.

Surface altitude, maximum depth : The surface altitude of a lake seasonally fluctuates to a great extent and is artificially regulated at times. For this reason, the values shown in this map may serve only as a yardstick.

Sources

1. Data from Environment Agency and Geographical Survey Institute.
2. Sinkichi YOSHIMURA, Dissolved Oxygen of the Lake Waters of Japan, Science Reports of the Tōkyō Bunrika Daigaku, Section C, Vol. 2, No. 8, 1937.

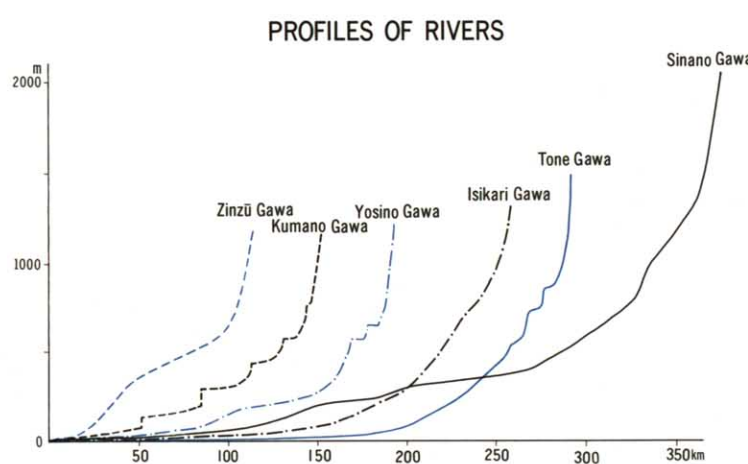
2. Main Lakes

Salient Points of the Legend and Map Compilation

Eight typical lakes of Japan were selected to show depth, bottom characteristics, surrounding topography and river systems.

Source

1. Geographical Survey Institute, 1 : 10,000 scale Lake Bathymetric Maps.



PRINCIPAL LAKES (1974)

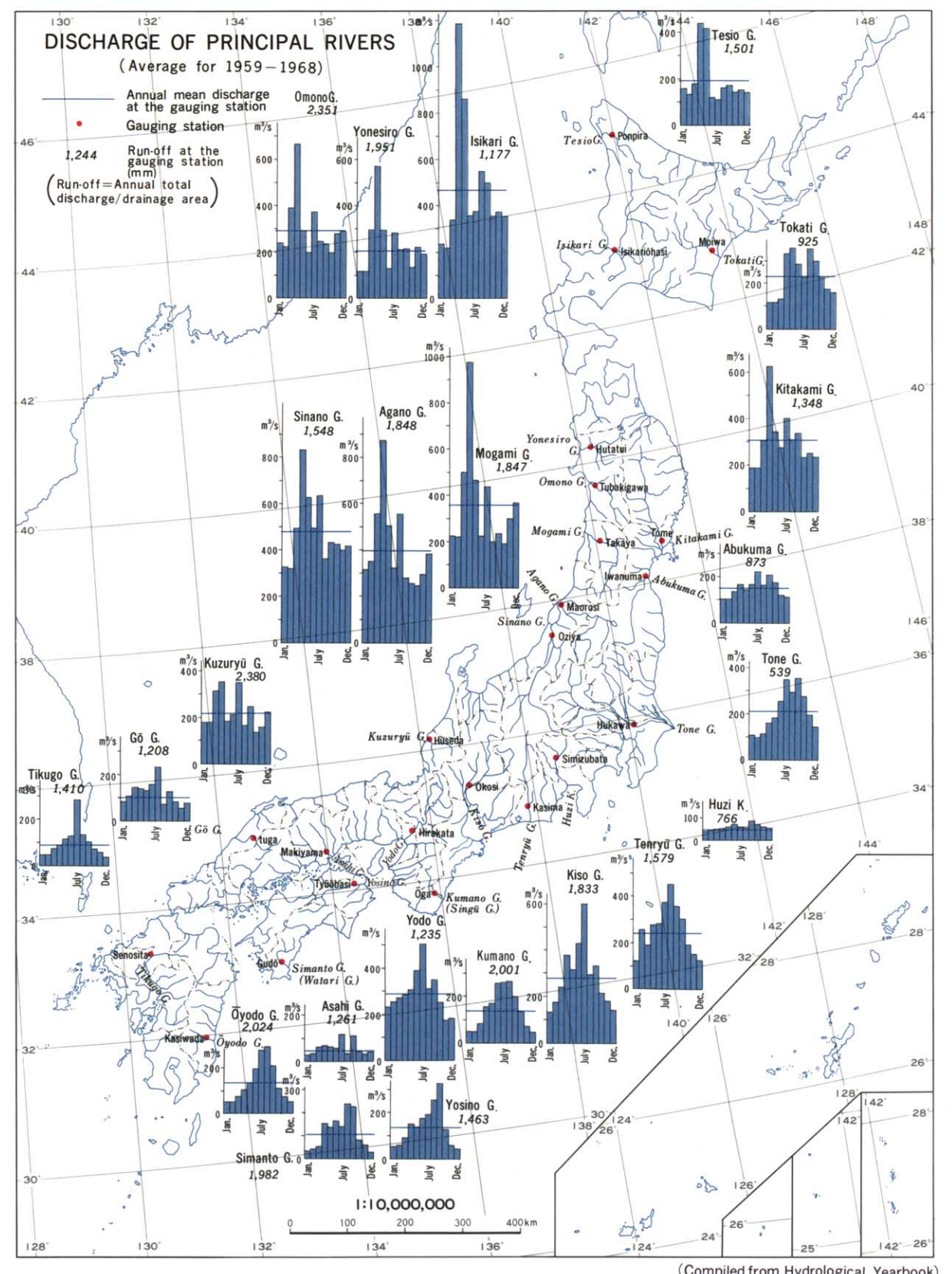
Name	Area	Length of shoreline	Maximum depth	Surface elevation
Biwa Ko	673.9km ²	188.0km	103m	85m
Kasumiga Ura	167.7	138.0	7	0
Saroma Ko	151.7	72.0	20	0
Inawasiro Ko	103.9	49.0	94	514
Naka Umi	99.0	83.5	17	0
Sinzi Ko	79.7	50.0	6	0
Kussyaro Ko	79.7	57.0	118	121
Sikotu Ko	77.3	40.0	360	248
Tōya Ko	69.4	45.5	180	84
Hamana Ko	69.3	92.0	12	0
Ogawara Ko	62.3	52.0	24	0
Towada Ko	59.8	44.0	327	400
Notoro Ko	58.4	32.0	21	0
Hūren Ko	52.0	58.0	11	0
Hatirō Gata	48.3	29.0	5	0
Kita Ura	38.7	68.0	7	0
Abasiri Ko	34.1	44.0	16	0
Akkesi Ko	31.8	25.5	5	0
Tazawa Ko	25.5	20.0	423	249
Kahoku Gata	21.6	26.0	3	5
Zyūsan Ko	20.6	26.5	3	0
Masyū Ko	19.6	20.0	212	351
Suwa Ko	14.1	17.0	8	759
Kuttyaro Ko	14.0	30.5	3	0
Akan Ko	12.7	22.5	37	419
Tyūzenzi Ko	11.5	21.0	163	1269
Ikeda Ko	11.1	14.5	233	66
Hibara Ko	10.4	37.5	31	822
Hi Numa	9.3	22.0	3	0
Tōhutu Ko	9.3	30.0	3	0

(Compiled from Geographical Survey Institute data)

PRINCIPAL RIVERS (1974)

Name	Area of drainage basin (A)	Length of main course of river (L)	Average width(A/L)
Tone Gawa	18,310 km ²	292 km	62.7 km
Isikari Gawa	14,330	254	56.4
Sinano Gawa	12,050	367	32.8
Kitakami Gawa	10,250	230	44.6
Kiso Gawa	9,100	227	40.1
Tokati Kawa	8,400	151	55.6
Yodo Gawa	8,240	75	
Agano Gawa	7,340	238	30.8
Mogami Gawa	7,040	224	31.3
Tesio Gawa	5,590	256	21.8
Abukuma Gawa	5,400	234	23.1
Tenryū Gawa	5,090	213	23.9
Omono Gawa	4,700	130	36.2
Yonesiro Gawa	4,100	123	33.3
Gō Gawa	3,870	194	19.9
Yosino Gawa	3,650	194	18.8
Huzi Kawa	3,570	128	27.9
Naka Gawa	3,260	165	19.8
Ara Kawa	3,040	161	18.9
Kuzuryū Gawa	2,930	111	26.4
Tikugo Gawa	2,860	119	24.0
Zinzū Gawa	2,720	116	23.4
Takahasi Gawa	2,610	111	23.5
Iwaki Gawa	2,540	108	23.3
Kusiro Gawa	2,510	117	21.5
Kumano Gawa	2,420	162	14.9
Simanto Gawa	2,270	192	11.8
Ōyodo Gawa	2,230	103	21.7
Hii Gawa	2,070	153	13.7
Asahi Gawa	2,050	142	14.4
Mabeti Gawa	2,050	124	16.5
Yosio Gawa	2,030	133	15.3
Tokoro Gawa	1,920	108	17.8
Yura Gawa	1,880	119	15.8
Kuma Gawa	1,880	107	17.6
Yahagi Gawa	1,830	117	15.6
Ōta Gawa	1,690	103	16.4
Kino Kawa	1,660	125	13.3
Sagami Gawa	1,650	109	15.1
Siribetu Gawa	1,640	111	14.8
Sendai Gawa	1,610	121	13.3
Niyodo Gawa	1,560	123	12.7
Kuzi Gawa	1,560	120	13.0
Abasiri Gawa	1,370	102	13.4
Ōi Gawa	1,280	160	8.0
Tama Gawa	1,260	121	10.4
Mu Kawa	1,250	125	10.0
Hizi Kawa	1,210	103	11.7
Syō Gawa	1,180	112	10.5
Naka Gawa	880	112	7.9

Drainage basins with over 2,000 km² or main courses with over 100 km length. (Compiled from River Control Statistics)



(Compiled from Hydrological Yearbook)

RIVER SYSTEMS

	Rivers and lakes		Principal watershed
	Intermittent streams		Watershed
	Irrigation canals		
	Dams		

1:2,500,000



