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Supplement of

Levee system transformation in coevolution between humans and water systems along the Kiso River, Japan

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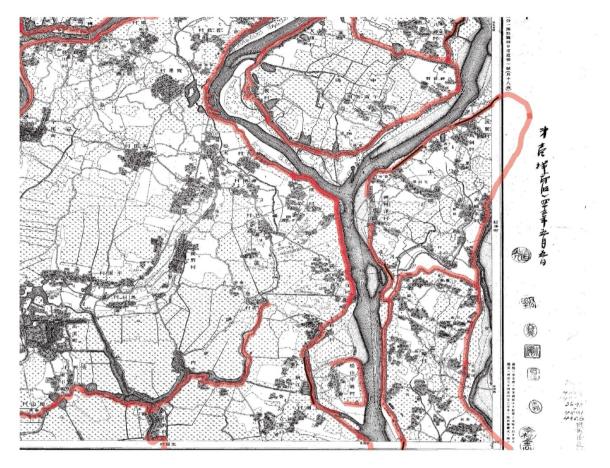*Correspondence to:* Shinichiro Nakamura (shinichiro@civil.nagoya-u.ac.jp)

Table S1 List of historic maps which used in this study. The year in the column indicates the survey year for each map.

Maps of Survey Bureau, Army Department, General Staff Headquarters, Imperial Japanese Army（SAGIJ maps）［Scale: 1:20,000］

Era		1890s
	Shimoike	1891
	Takada-cho	1891
	Tarui	1891
	Ikeno-mura	1891
	Kuwana	1891
	Fukaya-mura	1891
	Ohta-mura	1891
	Takasu	1891
	Funatsuki-mura	1891
	Ogaki	1891
Name of map (area)	Kitagata-cho	1891
	Kiso-kako	1891
	Kanie-cho	1891
	Tsushima-cho	1891
	Inazawa-cho	1891
	Takehana-cho	1891
	Kasamatsu-cho	1891
	Gifu	1891
	Kagamihara	1891
	Inuyama	1891

Maps of Geospatial Information Authority of Japan (GIAJ maps) [Scale: 1:25,000]

Era		1920s	1930s	1940s	1960s	1980s	1990s	2000s
Name of map (area)	Komano	1920	1932	1959	1968	1984	1992	2007
	Yoro	1920	1932	1959	1968	1984	1992	2007
	Ogaki	1920	1932	1947	1970	1988	1994	2007
	Ikeno	1920	1932	1947	1970	1984	1994	2007
	Kuwana	1920	1932	1947	1968	1984	1993	2007
	Yatomi	1920	1932	1947	1968	1984	1993	2000
	Tsushima	1920	1932	1959	1968	1984	1992	2007
	Takehana	1920	1932	1959	1968	1984	1992	2007
	Gifu-seibu	1920	1932	1947	1970	1988	1994	2007
	Kitagata	1920	1932	1947	1970	1988	1994	2007
	Ichinomiya	1920	1932	1947	1968	1986	1992	2007
	Kagamihara	1920	1932	1947	1970	1987	1992	2007
	Gifu-hokubu	1920	1932	1947	1970	1987	1992	2007
	Inuyama	1920	1932	1947	1970	1987	1992	1997

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Figure S1 Example of a historical map. Levee marks were visually identified and converted to shape data. This map is based on the Map of Survey Bureau, Army Department, General Staff Headquarters, Imperial Japanese Army [Scale: 1:20,000] published by Geospatial Information Authority of Japan.

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Table S2 List of data source of the historical evolution of the levee lengths and sociohydrological components in the Kiso River basin. The period covered is 1885-2015. The duration of each data period depends on the data availability.

Data name	Data period	Source
(a) Lengths of indigenous discontinuous and modern continuous levees	1891–2007	Created by the authors in this study from the maps. See methods of data creation in the main body.
(b) Annual maximum discharges and design floods of the Kiso, Nagara, and Ibi Rivers	Annual maximum discharges: 1895–2005 Design floods: 1887–2010	Ministry of Land, Infrastructure, Transport and Tourism (MLIT): Draft document on design floods, Kiso River System Basic Policy for River Improvement, 2007.
(c) Total dam storage within the Kiso River basin (Misogawa, Agigawa, Maruyama, Iwaya, Ataki, Yokoyama, and Tokuyama dams)	1885–2010	Compiled by the authors the data from the dam construction years and storages described in the "Ministry of Land, Infrastructure, Transport and Tourism (MLIT): Draft document on design floods, Kiso River System Basic Policy for River Improvement, 2007."
(d) Population within the basin	1920–2015	Compiled by the authors from "Census of Population, e–Stat, the National Statistics Office, Ministry of Internal Affairs and Communications. https://www.e–stat.go.jp/"
(e) Paddy fields area and urban area within the basin	1891–2007	Created by the authors in this study from the maps. See methods of data creation in the main body.
(f) Rice production (Gifu Prefecture)	1960–2015	Compiled by the authors from "Production and Agricultural Income Statistics, e–Stat, the National Statistics Office, Ministry of Internal Affairs and Communications. https://www.e–stat.go.jp/"
(g) Land subsidence (at the lowest point of the Kiso River, Kuwana City)	1961–2015	Subsidence Research Association of Three Prefectures in the Tokai Region: Subsidence in the Nobi Plain in 2016, 2017
(h) Number of flood fighters (Gifu Prefecture)	1964–2015	Provided by the Gife Prefectural Government

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