

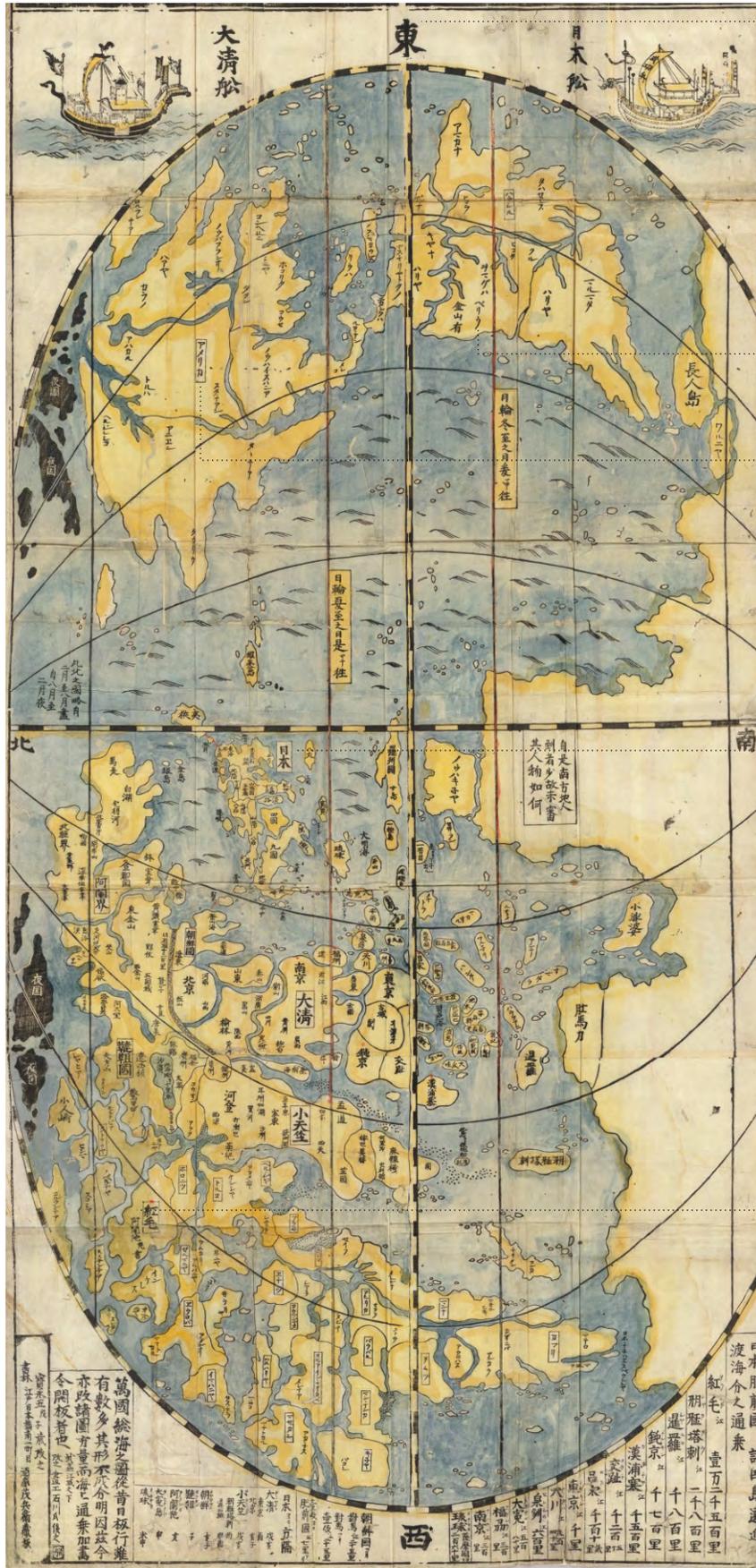
Part 2

The orphan tsunami みなしご津波

A PACIFIC TSUNAMI flooded Japanese shores in January 1700. The waters drove villagers to high ground, damaged salt kilns and fishing shacks, drowned paddies and crops, ascended a castle moat, entered a government storehouse, washed away more than dozen buildings, and spread flames that consumed twenty more. Return flows contributed to a nautical accident that sank tons of rice and killed two sailors. Samurai magistrates issued rice to afflicted villagers and requested lumber for those left homeless. A village headman received no advance warning from an earthquake; he wondered what to call the waves (quote, opposite).

These glimpses of the 1700 tsunami in Japan survive in old documents written by samurai, merchants, and peasants. Several generations of Japanese researchers have combed such documents to learn about historical earthquakes and tsunamis. In 1943 an earthquake historian included two accounts of the flooding of 1700 in an anthology of old Japanese accounts of earthquakes and related phenomena. By the early 1990s the event had become Japan's best-documented tsunami of unknown origin.

Part 2 of this book contains a chapter for each of six main Japanese villages or towns from which the 1700 tsunami is known. Each chapter begins with a summary of main points, a geographical and historical introduction, and the content of the tsunami account itself. Other parts of the chapters explore related human and natural history. Concluding estimates of tsunami height reappear in Part 3 as clues for defining hazards in North America.



East at top;
north to left.

ベリウ Beru
Peru

アメリカ Amerika
America

日本 Nippon
Japan

紅毛 Kōmō
The Red Haired
[Holland]

壹万二千五百里 12,500 ri
[50,000 km;
listed as
Holland's
distance
from
Japan]

Literate hosts 文字を使える人たち

In Japan, the 1700 tsunami reached a society ready to write about it.

THE YEAR 1700, though almost a century earlier than the first written records from northwestern North America, comes late in the written history of Japan. The year belongs, moreover, to an era of Japanese stability, bureaucracy, and literacy that promoted record-keeping.

That era began with national pacification early in the 17th century. By 1700, the country had known almost a century of peace for the first time in 500 years. Many in its military class were making their livings as bureaucrats. Samurai did paperwork for the Tokugawa shogun, the national leader in Edo (now Tokyo). They also administered the hinterlands as vassals of regional land barons, the daimyo.

Reading and writing extended beyond this ruling elite to commoners urban and rural. Booksellers offered poetry, short stories, cookbooks, farm manuals, and children's textbooks. Merchants tracked goods and services in an economy driven by bustling cities. Peasants prepared documents for villages they headed.

The accounts of the 1700 tsunami accordingly come from representatives of three social classes. The writers were military men employed by daimyo domains (p. 44, 70), merchants in business and local government (p. 53, 85), and peasants serving as village officials (p. 70, 77).

PERIOD MAPS open windows into the society in which those samurai, merchants, and peasants wrote. Such maps help introduce each of the six chapters in this part of the book. As a further introduction to a bygone time and place, consider the career of a commercial mapmaker and two of the products he sold: a decorative map of the world (opposite) and a travel map of Japan (overleaf).

Ishikawa Tomonobu wrote and drew in the decades around 1700. In addition to making maps, he illustrated calendars and novellas, composed linked-verse poetry and humorous fiction, and published travel guides and courtesan evaluations. Like many of his contemporaries, including the short-story writer Ihara Saikaku and the playwright Chikamatsu Monzaemon (p. 63), Ishikawa worked in a tradition, *ukiyo*, or floating world, that focused on daily life and its fleeting pleasures.

Ishikawa's world map, descended from 16th-century European compilations, was modeled on 17th-century

Japanese surveyors' certificates. The map served as an interior decoration hung lengthwise, east to the top. A companion sheet contained portraits of the world's peoples.

The map depicts an ocean between the Japanese islands from the Americas. Japanese phonetic symbols identify America and Peru. Chinese characters for "The Red Haired" denote Holland, Japan's sole European trading partner between 1639 and 1854.

The travel map, "Nihon kaisan chōriku zu," depicts Japan "sea to mountains." Ishikawa issued its first edition in 1691, woodblock printed and hand colored. The version on the overleaf dates from 1694.

Ishikawa makes "Nihon kaisan" useful to the traveler by fitting his subject into a rectangular format and by filling margins with tourist information. Marginal tables give travel distances, domestic and international. Half the domestic table gives distances by land; the other half, distances by sea. Additional tables name the most important shrine in each county of each province. The lower left corner of the map provides an almanac on solstices, equinoxes, phases of the moon, and tides. Above it, signs of the Chinese zodiac denote twelve compass directions (p. 43).

Frequent travelers in Ishikawa's Japan included daimyo and their entourages, who journeyed to Edo every year or two for required attendance upon the shogun. A square or circle on the travel map represents each daimyo domain. An adjoining label gives a measure of daimyo status—the domain's official valuation in terms of rice yield (p. 71)—and the name of the daimyo himself.

The ukiyo artist further depicts cities, castles, highways, fishermen, merchant marines, and urban samurai. Roofs represent the urban sprawl of the shogun's capital, Edo, its population soon to surpass one million. The Tōkaidō, or Eastern Sea Road, wends its way toward Kyoto, the imperial capital since A.D. 794. Fifty-three way stations await travelers seeking overnight accommodations.

Just off the Tōkaidō, the pines of Miho beckon from a floating-world island. On a peninsula rendered more accurately on page 26, in a village of 300 peasants, a farmer or fisherman will soon write the most vivid and inquisitive of Japan's accounts of the orphan tsunami of 1700 (p. 78-79).

ON JAPAN under the Tokugawa shoguns, see Totman (1993). Chibbett (1977, p. 123) reviews the origins of *ukiyo-e*, floating-world pictures and paintings. ISHIKAWA TOMONOBU (or Ishikawa Ryūsen) is profiled in a Japanese literary encyclopedia, *Nihon Koten Bungaku Daijiten Henshū I'inkai*, (1983, p. 129). ISHIKAWA'S WORLD MAP, "Bankoku sōkaizu" ("General world map"), is reproduced courtesy of the East Asian Library, University of California, Berkeley. Unno (1994, p. 404-409) traces its origins to 16th-century Chinese copies of European maps. Those copies, and Ishikawa's version as well, retain 16th-century European speculation on an enormous southern continent and on the shape of

western North America. The Chinese copies were made under the direction of Matteo Ricci (1552-1610), a Jesuit missionary. Examples soon reached Japan; by 1605, Jesuits in Kyoto were using Ricci maps to teach geography. A Japanese adaptation of the Ricci model appeared by 1645. In his version, Ishikawa revised Ricci's Asian geography and stylized other parts of the map. His 12,500-ri distance to Holland, listed also on the tourist map overleaf (p. 30), exceeds Earth's circumference (40,074 km at the equator) if his *ri* equals 3.93 km (the conventional conversion; Nelson and Haig, 1997, p. 1268).

Tourist map, 1694



International distances

Holland, 12,500 ri (see footnote, p. 29)

Domestic distances by major roads, such as the Tōkaidō (right), and by sea

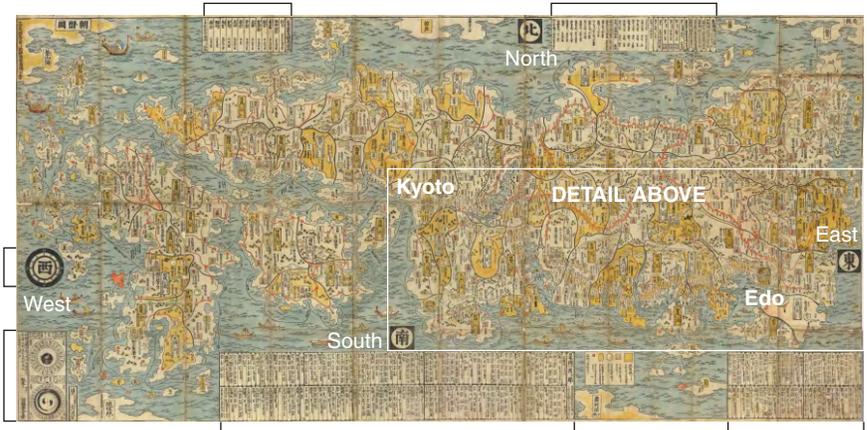
Ezo (now Hokkaido) was then held mostly by Ainu, a native people.

Land area distorted artfully at right



Compass (p. 43)

Solstices, equinoxes, zodiac, moons, tides



Temples and shrines listed by *kuni* (ancient province) and *gun* (county)



- **Mount Fuji**
- **Province boundary** (shown more exactly on official map, next page). Suruga 駿河 province contained seven *gun* 七郡, or counties.
- **Sumpu castle**, site of earliest known writing of "tsunami" (p. 41)
- **Tōkaidō**, the "Eastern Sea Road," connected imperial Kyoto and shogunal Edo. One of 53 way stations.
- **Miho** 三保, source of an account of the 1700 tsunami (p. 76-79)

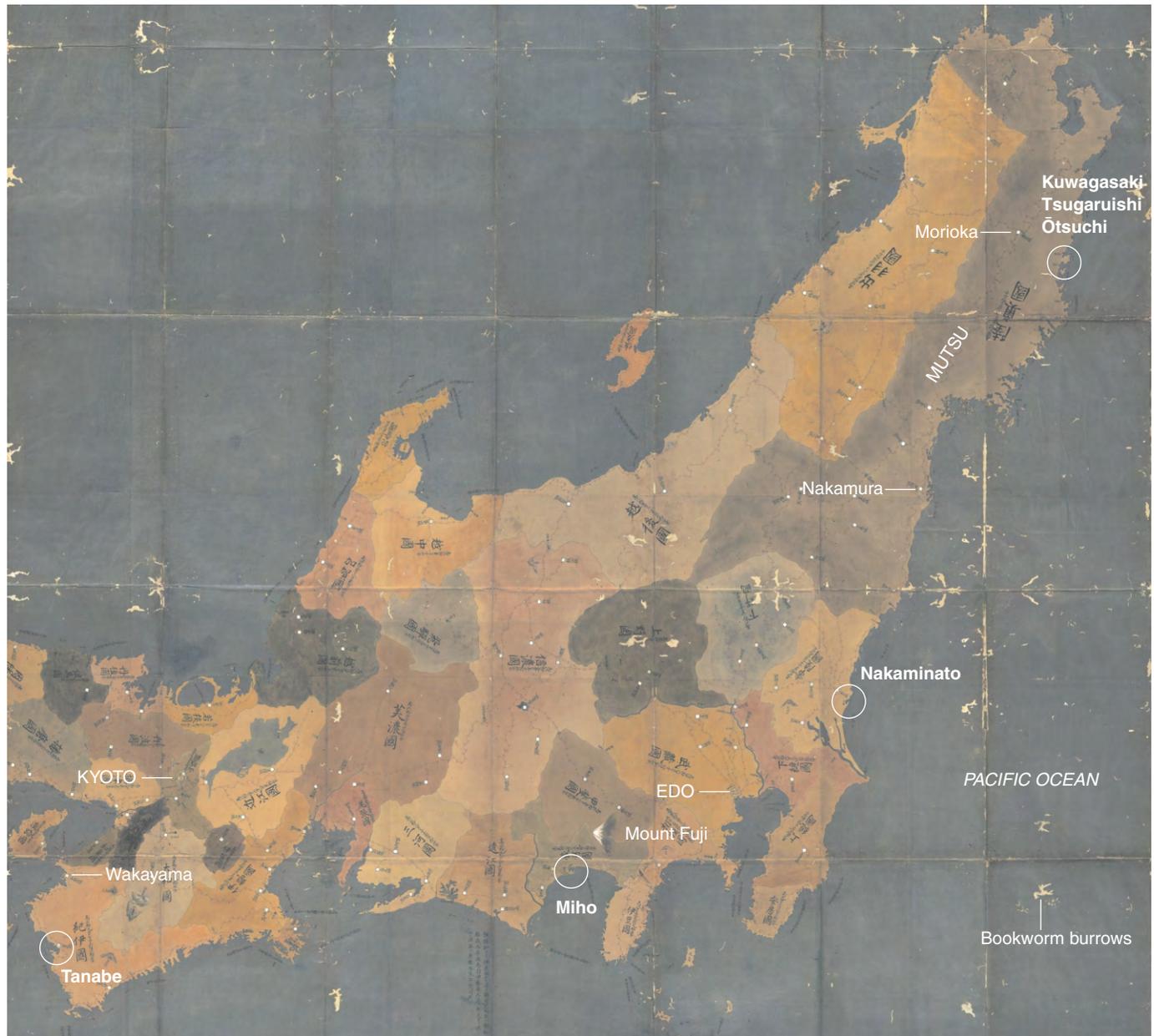


Edo 江戸, the Tokugawa shoguns' capital. Population approaching one million in 1700 (p. 61). Became Tokyo in 1868.

"NIHON KAISAN CHŌRIKU ZU," by Ishikawa Tomonobu (p. 29), 1694 edition (Akioka, 1997, p. 214), fills a sheet nearly 1.7 m by 1.2 m. Walter (1994, p. 194) likens the geographic distortion to that in a subway map. Courtesy of East Asian Library, University of California, Berkeley. More excerpts, p. 43, 70-72.

Wetted places 浸水した地域

The orphan tsunami flooded sites along nearly 1000 kilometers of Japan's Pacific coast.



Part 2 of this book follows the January 1700 tsunami southwestward along Japan's Pacific coast from Kuwagasaki to Tanabe.

1702

THE TOKUGAWA SHOGUNATE, which ruled Japan from 1603 to 1867, ordered the entire country mapped five times. The fourth such mapping, in 1697-1702, produced a sheet for each of Japan's 83 ancient provinces at 1:21,600 scale (slightly larger than the standard scale of today's 7.5-minute topographic maps in the United States). From these detailed maps the shogunate compiled "Genroku Nihon sōzu," above, a map of all Japan in the Genroku era (Unno, 1994, p. 397, 472).

THE MAP DEPICTS the provinces in various earth tones. Bookworms (p. 87) made the burrows that unfold in symmetrical pairs.

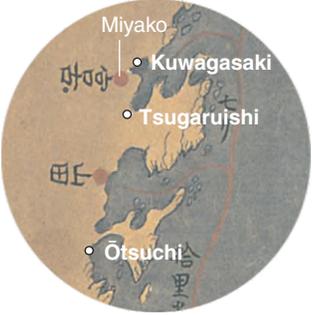
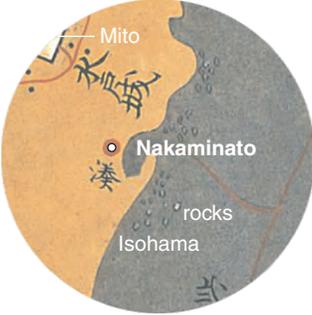
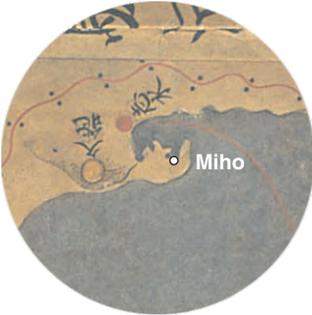
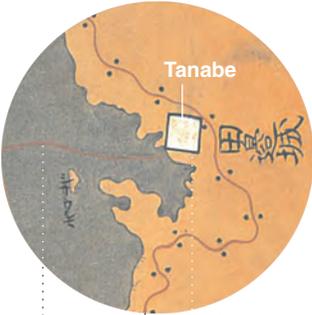
FROM THE COLLECTION of Ashida Koreto (1877-1960); "Genroku Nihon sōzu" is map 09-110 of Ashida Bunko Hensan I'inkai (2004, p. 154). The entire map, now in two pieces, spans 3.1 by 4.4 meters. Courtesy of the library of Meiji University, Tokyo.



PLACES FLOODED by the 1700 tsunami in Japan include Kuwagasaki, Tsugaruishi, Ōtsuchi, Miho, and Tanabe. Some of the accounts mention damage in additional villages. In one account, the tsunami takes the form of rough seas that initiate a nautical accident near Nakaminato. The writers represent

three of their society's four main classes: the *bushi*, or samurai; farmers and other peasants; and merchants (p. 53).

The main accounts grace the next two pages. We parse them, from north to south, in the six chapters that follow.

	PLACE	OTHER SITES where account was written or where tsunami entered	WRITERS	LOSSES
	<ul style="list-style-type: none"> 📍 port ● village □ castle town 		<ul style="list-style-type: none"> 士 samurai 農 peasant 商 merchant 	<ul style="list-style-type: none"> ↪ buildings ▤ fields or crops ⌚ salt kilns
	<p>Kuwagasaki p. 36-49</p> <ul style="list-style-type: none"> 📍 Adjoined Miyako, where Morioka-han had a district office. Nearly 300 houses 	The tsunami account originated in Miyako. It was delivered inland to Morioka, where it entered administrative records of Morioka-han.	士 Magistrates in Miyako and scribes in Morioka castle	↪ 13 houses destroyed by flooding, 20 more by a concurrent fire
	<p>Tsugaruishi p. 50-57</p> <ul style="list-style-type: none"> ● Along a farmed plain and a river known for crook-nose salmon. Nearly 200 houses 	The writer describes losses along the nearby bayshore and mentions, as hearsay, the flooding and fire in Kuwagasaki.	商 Family that later purchased samurai status	↪ Houses destroyed by flooding along bayshore near Tsugaruishi
	<p>Ōtsuchi p. 58-65</p> <ul style="list-style-type: none"> 📍 Like Miyako, headquarters of an administrative district of Morioka-han 	The tsunami account originated in Ōtsuchi. A summary survived there, as do details in administrative records in Morioka. Losses were said to have been reported to Edo.	士 Magistrates in Ōtsuchi and scribes in Morioka castle	<p><i>Damaged:</i></p> <ul style="list-style-type: none"> ↪ 2 ⌚ 2 ▤ paddies and fields
	<p>Nakaminato p. 66-75</p> <ul style="list-style-type: none"> 📍 Transferred cargo between seagoing ships and river boats that plied inland waterways to Edo 	The account focuses on a shipwreck in rocks offshore of Isohama village, nearby. The cargo originated in Nakamura-han. Officials of Mito-han investigated.	<ul style="list-style-type: none"> 農 The boat's crew and officials of Isohama village 士 Officials of Mito-han 	Two sailors killed and nearly 30 tons of rice sunk in an accident caused mainly by a storm
	<p>Miho p. 76-83</p> <ul style="list-style-type: none"> ● Picturesque place near the Tōkaidō. Population 300 	The account remained in Miho, where it was later included in an anthology of headmen's writings.	農 Village headman	No damage reported
	<p>Tanabe p. 84-92</p> <ul style="list-style-type: none"> □ Capitol of a sector of Wakayama-han. Population no less than 2600 <p>-han, daimyo domain</p>	Farming or fishing settlements near Tanabe: Atonoura, Mera, Mikonohama, and Shinjō	商 Mayor of Tanabe, also serving as district mayor of surrounding villages	▤ Rice paddies and wheat crops lost in Atonoura, Mera, Mikonohama, and Shinjō. Government storehouse flooded in Shinjō
	<p>Shipping route</p> <p>Road with paired dots at intervals of 1 ri (4 km)</p> <p>Castle</p>			

Primary sources 根本史料

Handwritten Japanese text in vertical columns, reading from right to left. The text is a historical account of the 1703 tsunami, starting with the date '一十二月廿四日' (December 24, 1703).

MIHO
三保
"Miho-mura
yōji oboe"
『三保村
用事覚』
p. 78-79

EACH ACCOUNT BEGINS at its upper right. The columns read from top to bottom and from right to left (headnote, p. 39). The account reappears with transliteration and translation on the pages identified in italics below the document title.

Each title is enclosed by quotation marks (『 』 in Japanese). Most are names shared by other documents; "Zassho," for instance, means "Miscellaneous records." To make such titles unique we add, outside quotation marks, the name of the family (-ke) or daimyo domain (-han) that produced or preserved the document.



Handwritten Japanese text in vertical columns, reading from right to left. The text is a historical account of the 1703 tsunami, starting with the date '一二月八日' (February 8, 1704).

TANABE
田辺
"Tanabe-machi
daichō"
『田辺町
大帳』
p. 86

KUWAGASAKI

鉏ヶ崎
Morioka-han
"Zassho"
盛岡藩
『雑書』

p. 38-39

一 五右衛門代官朝内御津村と云ふ八日
之秋九日津波打寄取者云山々
近中津波高大九折折或指折壊来れ
指之折波高打破比水大二度出来流
道々之不及中一切相おり
千速及隅余少舟人敷百指九人
山麓来れ女宛右波は居不心々小巻
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者
山麓来れ女宛右波は居不心々小巻
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者

TSUGARUISHI

津軽石
Moriiai-ke
"Nikki kakitome chō"
盛合家
『日記書留帳』

p. 52

一 元禄十三年五月八日
津波高大九折折或指折壊来れ
指之折波高打破比水大二度出来流
道々之不及中一切相おり
千速及隅余少舟人敷百指九人
山麓来れ女宛右波は居不心々小巻
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者

ÔTSUCHI

大槌
Morioka-han
"Zassho"
盛岡藩
『雑書』

p. 60

一 菊守井大槌浦云八日
津波高大九折折或指折壊来れ
指之折波高打破比水大二度出来流
道々之不及中一切相おり
千速及隅余少舟人敷百指九人
山麓来れ女宛右波は居不心々小巻
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者

NAKAMINATO

那珂湊
Ôuchi-ke
"Go-yōdome"
大内家
『御用留』

p. 68-69

右相子津正津山米山國願信産後積之去
七日相子津正津山米山國願信産後積之去
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者
山麓来れ女宛右波は居不心々小巻
仕度之秋舟者相おり中云山々
右波は居不心々小巻仕度之秋舟者