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# KSU RADIOCARBON DATES I

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## INTRODUCTION

It was T Higashimura of Kyoto University who did the first liquid scintillation measurement for $^{14}C$ in Japan. The External Standard Method (Higashimura *et al*, 1962) has been accepted the world over as an efficient method of measuring low-level radiation.

Yamada, Higashimura and Sidei (1966) used the methanol synthesis method of $^{14}C$ dating. Subsequently, a $^{14}C$ dating laboratory was established at Kyoto Sangyo University by O Yamada in 1969. An Aloka LSC-601 counter for 20ml vials was introduced in 1971 with an LSC-800 for 100ml vials in 1973. The appended list includes all samples measured with the LSC-800 counter from 1975 to 1984.

## METHANOL SYNTHESIS

Each sample is converted to methanol by the Nystrom formula (Nystrom, Yanko & Brown, 1948)

$$4CO_2 + 3LiAlH_4 = LiAl(OCH_3)_4 + 2LiAlO_2$$
$$LiAl(OCH_3)_4 + 4ROH = 4CH_3OH + LiAl(OR)_4$$

where R is buthyl carbitol.

Each sample is heated and converted to charcoal in an airtight electric furnace at ca 800°C for 2 hours, then boiled in a 1% solution of HCl for one hour, washed well in distilled water, and thoroughly dried.

The samples are then placed in a quartz tube and subjected to a stream of heated $N_2$ gas for one hour at 500°C. $O_2$ is passed through the tube and $CO_2$ gas is made from the charcoal.

The $CO_2$ is then passed through a mixture of $LiAlH_4$ and diethyl carbitol for 2 or 3 hours until the reaction ends. Buthyl carbitol is added slowly and abundantly to the mixture and the methanol is separated from the mixture through distillation.

For shell samples, $CO_2$ is derived using diluted HCl and then transformed into methanol using $LiAlH_4$, as described above. Peat samples are first converted to $CO_2$ and then $CaCO_3$ and then into methanol.

Usually ca 2mol of carbon, 2mol of $LiAlH_4$, 1500ml of diethyl carbitol, and 1000ml of buthyl carbitol are used in the process. The approximate yield rate is ca 80%, falling to 60% after fine distillation. The purity of the final product according to gas chromatography is greater than 99.6%.

## MEASUREMENT

The counting rate and counting efficiency has been measured for all samples to obtain a precise absolute decay rate.

The $^{14}C$ age is given by the formula

$$t = 8033 * \ln(N_0/N)$$

where $N_0$ is the concentration of modern $^{14}C$, *ie*, 95% of the NBS oxalic acid value and N is unknown. Anthracite coal was used for the background dead carbon. One standard deviation was used for the error.

When the $^{14}C$ is measured in a 100cc teflon vial containing a mixture of 40g of methanol, 50cc of xylene, 0.5g of buthyl PBD and 0.05g of PBBO, the C-channel counting efficiency was ca 70% with a background count of 14 cpm.

When the recent $^{14}C$ of 40g of methanol is measured over 48 hours, the statistical error of one sigma is ca 20 years including the background error. The oldest age is ca 60,000 BP with $2\sigma$ criterion measured over a duration of a week.

Isotopic fractionation during the chemical reaction has been extremely small. Fractionation during distillation did occur to some extent but is negligibly smaller than the statistical error for $^{14}C$ dating by mass spectrography (Shimada & Yamada, 1977).

ACKNOWLEDGMENTS

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## GEOLOGIC SAMPLES

### *Japan*

**Mount Fuji series**

These samples date volcanic history of Mt Fuji. Coll 1960 to 1975 and subm 1975 by H Tsuya, Tokyo Univ and T Ogawa, Japan Volcano Speleo Soc. All lava flows and mud flows are described by Tsuya (1968).

**KSU-21. Komakado** **2560 ± 25**

Wood (chestnut) in mud flow erupted from Mt Fuji, Kisegawa River, Gotenba city, Shizuoka pref (35° 14′ 46″ N, 138° 55′ 17″ E) alt 345m.

**KSU-22. Nishimarubi** **2950 ± 25**

Charcoal in Nim lava flow erupted from young parasitic cinder cone, Fujinomiya city, Shizuoka pref (35° 22′ 3″ N, 138° 40′ 36″ E) alt 1495m.

**KSU-23. Katsuragawa** **19,190 ± 150**

Wood (hemlock spruce) in Katsuragawa Older Fuji mud flow, Tsuru city, Yamanashi pref (35° 33′ 28″ N, 138° 54′ 30″ E) alt 450m.

**KSU-42. Kurozuka** **1460 ± 25**

Charcoal in ash of Kurozuka parasitic volcano, Susono city, Shizuoka pref (35° 17′ 18″ N, 138° 46′ 55″ E).

**KSU-44. Kansuyama** **1290 ± 15**

Wood (Japanese cypress) in scoria under Kan lava flow, erupted from young parasitic cinder cone, Susono city (35° 17′ 17″ N, 138° 47′ 3″ E) alt 1230m.

**KSU-43. Fudosawa** **1550 ± 15**

Charcoal under Fud lava flow erupted from small fissure on flank of Mt Fuji, Fuji city, Shizuoka pref (35° 19′ 49″ N, 138° 44′ 48″ E) alt 1620m.

**KSU-49. Shibanuta No. 1** **2350 ± 25**

Wood (Zelkova) in scoria from summit of Mt Fuji, Oyama town, Shizuoka pref (35° 21′ 00″ N, 138° 53′ 30″ E) alt 720m.

**KSU-50. Shibanuta No. 2** **1760 ± 15**

Charcoal, upper of KSU-49.

**KSU-57. Takizawa** **1650 ± 15**

Charcoal in scoria, left bank of Mamabori swamp, Fujiyoshida city, Yamanashi pref (35° 25′ 3″ N, 138° 46′ 50″ E) alt 1215m.

**KSU-62. Takamarubi** **1790±15**

Charcoal in scoria, lower layer of Tam lava flow, Yamanakako village, Yamanashi pref (35° 26′ 57″ N, 138° 51′ 42″ E) alt 995m.

**KSU-64. Nanamagari** **1050 ± 15**

Charcoal in scoria under Fud lava flow, Omote-Fuji hiking road, Fujinomiya city (35° 19′ 50″ N, 138° 44′ 5″ E) alt 2000m.

**KSU-73. Karuisaki** **24,330 ± 110**

Wood (fir) in Older Fuji mud flow, Fujiyoshida city (35° 29′ 48″ N, 138° 48′ 15″ E) alt 450m.

**KSU-74. Jumangoku-Road No. 1** **2570 ± 15**

Charcoal in scoria under Nim lava flow, Fujinomiya city (35° 22′ 1″ N, 138° 40′ 26″ E) alt 1490m.

**KSU-76. Jumangoku-Road No. 2** **2520 ± 15**

Charcoal in scoria under Yam lava flow, Fujinomiya city (35° 22′ 16″ N, 138° 40′ 23″ E) alt 1495m.

**KSU-79. Jumangoku-Road No. 3** **2700 ± 20**

Charcoal in scoria under NW 6 lava flow, Fujinomiya city (35° 21′ 34″ N, 138° 40′ 36″ E) alt 1490m.

**KSU-75. Myogadake** **1430 ± 15**

Charcoal in scoria under SSW 17 lava flow erupted from summit of Mt Fuji, Fujinomiya city (35° 19′ 10″ N, 138° 40′ 26″ E) alt 1530m.

**KSU-77. Futatsu-tsuka** **310 ± 15**

Charcoal in scoria erupted from Houei crater of Mt Fuji in AD 1707, Gotenba city (35° 19′ 45″ N, 138° 46′ 50″ E) alt 1804m.

**KSU-78. Inno-Tainai** **1650 ± 15**

Charcoal from tree mold in Inm lava flow, Gotenba city (35° 17′ 44″ N, 138° 51′ 55″ E) alt 675m.

**KSU-80. Nissawa** **2500 ± 35**

Charcoal from ancient bonfire, Fujinomiya city (35° 18′ 46″ N, 138° 44′ 12″ E) alt 1590m. *Comment:* suggests human activity.

**KSU-81. Taisekiji** **24,520 ± 90**

Charcoal in Older Fuji mud flow, Fujinomiya city (35° 16′ 50″ N, 138° 35′ 15″ E) alt 350m.

**KSU-83. Komitake** **1110 ± 15**

Charcoal in scoria from Ken 2 lava flow, Narusawa village, Yamanashi pref (35° 23′ 28″ N, 138° 44′ 1″ E) alt 2300m.

**KSU-84. Omote-Fuji** **1150 ± 20**

Charcoal in scoria under Fud lava flow, hair-pin curve of Omote-Fuji Road, Fujinomiya city (35° 19′ 52″ N, 138° 44′ 7″ E) alt 2220m.

**KSU-85. Okuniwa** **1350 ± 15**

Charcoal under Oniwa 1 lava flow, erupted Oniwa 1 parasitic fissure, Narusawa village (35° 23′ 24″ N, 138° 41′ 43″ E) alt 2250m.

**KSU-86. Kenmarubi** **1120 ± 15**

Charcoal in scoria under Ken 1 lava flow, Fujiyoshida city (35° 28′ 56″ N, 138° 47′ 6″ E) alt 835m.

**KSU-88. Yamanaka Lake No. 1** **1480 ± 10**

Wood (larch), mostly outer tree rings, standing at 10m depth in lake, Yamanakako village (35° 24′ 50″ N, 138° 53′ 0″ E) alt 970m. *Comment:* dates fm of Yamanaka Lake dammed by lava flow from Mt Fuji.

**KSU-89. Yamanaka Lake No. 2** **1660 ± 15**

Center tree rings of same sample as KSU-88, with 180 tree rings.

**KSU-91. Daifuji golf links** **980 ± 15**

Charcoal in lava tree mold at Obu lava flow, Fuji city (35° 12′ 15″ N, 138° 43′ 15″ E) alt 310m.

**KSU-26. Niijima** **1130 ± 20**

Charcoal from lava flow erupted in AD 886, Niijima I. (34° 23′ N, 139° 16′ E) alt 120m. Coll and subm by T Sameshima, Shizuoka Univ.

**KSU-60. Kurofuji** **41,900 ± 860**

Charcoal in loam strata from Kurofuji, Yamanashi pref (35° 45′ N, 138° 32′ E). Coll and subm by H Shinohara, Tsuru Coll and T Ogawa. *Comment* (TO): datum shows same age as Older Fuji, Yatsugatake, Kayagatake and new Hakone, situated in region usually called southern fossa magna.

**KSU-72. Fukara** **1530 ± 15**

Wood (*Cryptomeria*) in landslide sand from Hakone volcano, Susono city (35° 10′ 40″ N, 138° 55′ 45″ E). Coll and subm by Y Watanabe, Susono city office.

**KSU-87. Kobuta-sawa** **7250 ± 40**

Wood in landslide sand from Hakone volcano, Tertiary strata, Oshino village, Shizuoka pref (35° 24′ 50″ N, 138° 53′ 0″ E) alt 970m. Coll and subm by H Tsuya and T Ogawa.

**Ohtaki Cave series**

Stalactite from Ohtaki, Gifu pref (35° 43′ 27″ N, 136° 59′ 44″ E). Coll and subm by H Wada, Shizuoka Univ.

**KSU-112. Surface No. 1** **3760 ± 50**

**KSU-114. Surface No. 2** **3370 ± 40**

**KSU-131. Coldest temperature part** **>34,000**

**KSU-128. Yogo Lake** **3010 ± 30**

Tree root from bottom of Yogo Lake, Shiga pref (35° 30′ 40″ N, 136° 11′ 40″ E). Coll and subm by Yogo Educ Bd.

**KSU-225. Hyonosen** **3650 ± 80**

Peat, 90cm depth, from Yabu dist, Hyogo pref (35° 21′ N, 134° 1′ E), alt 1470m. Coll and subm 1978 by M Takeoka, Kyoto Pref Univ.

**Amou series**

Samples from Amou marshland, Ono dist, Gifu pref (36° 16′ N, 137° 1′ E). Coll and subm 1978 by M Yagi, Gifu Univ.

**KSU-231. Amou No. 1** **8210 ± 280**

Peat, 220cm depth.

**KSU-366. Amou No. 2** **13,320 ± 190**

Peat, 380 to 400cm depth.

**KSU-244. Karasuma-Gojo** **36,290 ± 800**

Wood, 12.5m depth, Kyoto city (34° 59′ 36″ N, 135° 45′ 44″ E). Coll and subm by S Ishida, Kyoto Univ.

**KSU-275. Aratozaka** **2900 ± 35**

Wood (chestnut) from bottom of rice field, Obanazawa city, Yamagata pref (38° 34′ N, 140° 30′ E). Coll and subm 1979 by M Takeoka, Kyoto Pref Univ.

**KSU-289. Hatchodaira** **6980 ± 200**

Peat, 70 to 80cm depth, from Kuta, Kyoto city (35° 14′ N, 135° 50′ E), alt 810m. Coll and subm 1979 by M Takeoka.

**KSU-290. Ukishima** **2540 ± 90**

Peat, 400 to 410cm depth, from Shinguu city, Wakayama pref (33° 43′ N, 135° 59′ E). Coll and subm 1979 by M Takeoka.

**KSU-291. Sugawara marshland** **5530 ± 80**

Peat, 363 to 373cm depth, from Touhaku dist, Tottri pref (35° 25′ N, 133° 59′ E) alt 680m. Coll and subm 1978 by M Takeoka.

**Hananoego series**

Peat from Yaku I., Kumage dist, Kagoshima pref (30° 18′ 40″ N, 130° 30′ 40″ E) alt 1600m. Coll and subm 1977 by M Takeoka.

**KSU-292. Hananoego No. 1** **2450 ± 80**

Peat, 50 to 60cm depth.

**KSU-293. Hananoego No. 2** **3280 ± 100**

Peat, 80 to 90cm depth.

**Byakushiike series**

Peat from Nishimorogata dist, Miyazaki pref (31° 57′ N, 130° 50′ E) alt 1349m. Coll and subm 1979 by M Takeoka.

**KSU-309. Byakushiike No. 1** **0 ± 50**

Peat, 150 to 160cm depth.

**KSU-310. Byakushiike No. 2** **5530 ± 130**

Peat, 285 to 295cm depth.

**KSU-311. Imuta** **4200 ± 190**

Peat, 390 to 400cm depth, from Satsuma dist, Kagoshima pref (31° 49′ N, 130° 28′ E) alt 295m. Coll and subm 1979 by M Takeoka.

**KSU-314. Okameike** **3890 ± 100**

Peat, 220 to 230cm depth, from Uda dist, Nara pref (34° 30′ 54″ N, 136° 10′ 1″ E) alt 710m. Coll and subm 1979 by M Takeoka.

**Joyo series**

Samples from Joyo city, Kyoto pref (34° 52′ 6″ N, 135° 46′ 0″ E). Coll by J Fukutomi, subm by Educ Bd, Joyo city.

**KSU-340. Joyo No. 1** **3710 ± 30**

Wood, 13.5m depth.

**KSU-341. Joyo No. 2** **3300 ± 35**

Wood, 7m depth.

**KSU-364. Hirugano** **3790 ± 100**

Peat, 90 to 100cm depth, from Gujo dist, Gifu pref (35° 59′ N, 136° 54′ E). Coll and subm 1980 by M Takeoka.

**Hashio series**

Wood from Kouryo, Nara pref (34° 34′ 0″ N, 135° 45′ 20″ E). Coll and subm by H Okuda.

**KSU-431. Hashio No. 1** **3500 ± 40**

Wood, 4m depth, Late Jomon age.

**KSU-424. Hashio No. 2** **38,500 ± 390**

Wood, 5.5m depth, upper portion of volcanic tuff layer.

**KSU-436. Hashio No. 3** **40,100 ± 610**

Wood, 6m depth, right upper portion of same tuff layer.

**KSU-390. Dainaka Lake** **24,610 ±2750**

Wood, 14.8m depth, Shiga pref (35° 11′ N, 136° 7′ E). Coll and subm by S Sasajima, Kyoto Univ, underlying ash of Aira volcano.

**KSU-437. Tominaga-Seisakusho** **24,050 ± 190**

Peat, Nijo-nibo, Kyoto city (35° 0′ 37″ N, 135° 44′ 2″ E). Coll and subm by S Sasajima.

**KSU-438. Seibo Women's College** **19,810 ± 150**

Peat, Fujinomori, Kyoto city (35° 57′ 19″ N, 135° 46′ 37″ E). Coll and subm by S Sasajima.

**KSU-450. Kigo** **8980 ± 70**

Peat, 180 to 200cm depth, from Tango peninsula, Kyoto pref (35° 38′ N, 135° 11′ E). Coll and subm 1981 by M Takeoka, Kyoto Pref Univ.

**KSU-542. Nawagaike** **480 ± 180**

Peat, 70 to 80cm depth, from Higashitonami dist, Toyama pref (36° 28′ 30″ N, 136° 56′ 0″ E). Coll and subm 1982 by M Takeoka.

**KSU-543. Midagahara** **1070 ± 25**

Peat, 44 to 54cm depth, from Tateyama, Nakashinkawa dist, Toyama pref (36° 34′ 0″ N, 137° 33′ 15″ E). Coll and subm 1982 by M Takeoka.

**KSU-546. Shirakimine** **2820 ± 70**

Peat, 68 to 78cm depth, from Yao, Nei dist, Toyama pref (36° 25′ 0″ N, 137° 7′ 15″ E). Coll and subm 1982 by M Takeoka.

**Mikata Lake series**

Peat from Mikata dist, Fukui pref (35° 56′ N, 135° 54′ E). Coll and subm 1978 by Y Yasuda, Hiroshima Univ.

**KSU-640. Mikata No. 1** **2040 ± 80**

Peat, 190 to 200cm depth.

**KSU-641. Mikata No. 2** **5670 ± 100**

Peat, 355 to 375cm depth.

**KSU-642. Mikata No. 3** **8590 ± 140**

Peat, 475 to 495cm depth.

**KSU-465. Mikata No. 4** **15,500 ± 150**

Peat, 579 to 600cm depth.

**KSU-467. Mikata No. 5** **18,100 ± 140**

Peat, 936 to 956cm depth.

**KSU-650. Mikata No. 6** **20,600 ± 800**

Peat, 1270 to 1315cm depth.

**KSU-651. Mikata No. 7** **32,700 $^{+6200}_{-3500}$**

Peat, 2560 to 2584cm depth.

**Azuchi series**

Samples from Azuchi, Gamou dist, Shiga pref. Coll and subm 1982 by Y Tsutsumi, Azuchi town office.

**KSU-558. Azuchi No. 1** **2660 ± 40**

Soil, 56 to 69cm depth, from Dainaka (35° 9′ 57″ N, 136° 7′ 26″ E).

**KSU-567. Azuchi No. 2** **4160 ± 80**

Soil, 70 to 90cm depth, from Dainaka.

**KSU-557. Azuchi No. 3** **3210 ± 40**

Wood from bottom of Dainaka Lake.

**KSU-562. Azuchi No. 4** **4200 ± 110**

Soil from Jionji (35° 8′ 7″ N, 136° 7′ 56″ E).

**KSU-563. Azuchi No. 5** **3770 ± 100**

Soil from Jionji.

**KSU-564. Azuchi No. 6** **1580 ± 60**

Soil, 14 to 25cm depth, from Higashioiso (35° 7′ 40″ N, 136° 9′ 50″ E).

**KSU-565. Azuchi No. 7** **3350 ± 70**

Soil, 38 to 46cm depth, from Higashioiso.

**KSU-566. Azuchi No. 8** **3790 ± 80**

Soil, 56 to 69cm depth, from Higashioiso.

**Ichijoji series**

Soil from Kyoto city (35° 2′ 22″ N, 135° 47′ 43″ E). Coll and subm 1983 by S Ishida, Kyoto Univ.

**KSU-644. Ichijoji No. 1** **8580 ± 170**

Soil from 2nd black layer.

**KSU-645. Ichijoji No. 2** **7790 ± 100**

Soil from same as No. 1.

**KSU-664. Tadachi** **6620 ± 100**

Peat, 32 to 42cm depth, from Minamikiso, Nagano pref (35° 39′ N, 137° 33′ E). Coll and subm 1983 by M Takeoka, Kyoto Pref Univ.

**KSU-665. Kuroauchi** **4520 ± 80**

Peat, 90 to 100cm depth, from Hase, Kamiina dist, Nagano pref (35° 53′ N, 138° 10′ E). Coll and subm 1983 by M Takeoka.

**KSU-666. Karahanami** **7420 ± 70**

Peat, 90 to 100cm depth, from Yasaka, Kitaazumi dist, Nagano pref (36° 29′ N, 137° 54′ E). Coll and subm 1983 by M Takeoka.

**KSU-647. Kurauchi** **2430 ± 30**

Wood (*Cryptmeria*) from Tango, Takeno dist, Kyoto pref (35° 4′ 37″ N, 135° 10′ 0″ E). Coll and subm 1983 by M Takeoka.

**KSU-862. Yakumogahara** **3300 ± 50**

Peat, 92 to 102cm depth, from Shiga, Shiga dist, Shiga pref (35° 37′ N, 135° 55′ E). Coll and subm 1984 by M Takeoka.

**KSU-863. Fukashimizu** **750 ± 60**

Peat, 150 to 160cm depth, from Imazu, Takashima dist, Shiga pref (35° 37′ N, 136° 0′ E). Coll and subm 1984 by M Takeoka.

**KSU-864. Fukakusa** **$31{,}600\ ^{+\ 2600}_{-\ 1900}$**

Wood from Fukakusa-kuragadani Kyoto city (34° 57′ N, 135° 46′ E). Coll 1984 by S Ishidaka and H Okamoto, Kyoto Sci Center for Youth and subm by M Takeoka.

**GG series**

Samples were subm 1983 by H Ohmori, Geog Inst, Tokyo Univ.

**KSU-738. GG-1** **$50{,}600^{+8900}_{-4100}$**

Wood, 150cm depth, from Kurioka, Oshamanbe, Hokkaido (42° 32′ 15″ N, 140° 21′ 31″ E). Coll by A Okumura.

**KSU-739. GG-2** **> 55,100**

Wood, 550cm depth, from Horoiwa, Saroma, Hokkaido (44° 5′ 41″ N, 143° 53′ 27″ E). Coll by M Watanabe.

**KSU-740. GG-3** **5340 ± 60**

Coral from Kamikatetsu, Kikai, Kagoshima pref (28° 16′ 30″ N, 129° 56′ 30″ E). Coll by S Kayane.

**KSU-741. GG-4** **5530 ± 40**

Coral, same as GG-3.

**KSU-742. GG-5** **1610 ± 90**

Peat, 240 to 250cm depth, from Hara, Numazu city, Shizuoka pref (35° 8′ N, 138° 47′ E). Coll by A Matsubara.

**KSU-743. GG-6** **7020 ± 50**

Peat, 500cm depth, from Shinden, Maruyama, Chiba pref (35° 1′ 10″ N, 139° 57′ 30″ E). Coll by K Kashima.

**KSU-744. GG-7** **6980 ± 460**

Shell, 180cm depth, from Amaya, Maruyama, Chiba pref (35° 0′ 40″ N, 139° 58′ 30″ E). Coll by K Kashima.

**KSU-745. GG-8** **4910 ± 45**

Coral, same as GG-3.

**KSU-746. GG-9** **2540 ± 60**

Peat, 220 to 225cm depth, Higashishihiji, Numazu city, Shizuoka pref (35° 7′ N, 138° 51′ E). Coll by A Matsubara.

## HISTORIC SAMPLES

### *Japan*

**Yamanaka Castle series**

Yamanaka Castle, Mishima city, Shizuoka pref (35° 9′ N, 138° 59′ E), was built in 1559, and added on to in 1979. Coll and subm by H Saitoh, Educ Bd, Mishima city.

**KSU-28. Mumei-Kuruwa F9 No. 1** **340 ± 7**

Wood, sample was 11.89g carbon mass; measurement time was 20,200 min.

**KSU-104. Mumei-Kuruwa No. 2** **350 ± 30**

Wood, same sample as KSU-28.

**KSU-29. Nishi-Yagura** **320 ± 5**

Wood from W tr; 13.36g carbon and 34,100 min.

**KSU-184. Konrenji** **810 ± 20**

Wood from Konrenji temple, Kira cho, Aichi pref (34° 49′ N, 137° 6′ E). Coll and subm by T Kondo, Kyoto Sangyo Univ. Temple was built in early stage of Kamakura Age (AD 1192 to 1332).

**Sueki Kama series**

Charcoal, Senboku New Town, Osaka pref (34° 28′ 34″ N, 135° 31′ 35″ E), from AD 8th century. Coll and subm by H Nakamura, Ohtani Women's Coll.

**KSU-185. TK59 No. 1** **1190 ± 20**

**KSU-189. TK59 No. 2** **1200 ± 15**

**KSU-193. TK59 No. 3** **1220 ± 30**

**Makishima series**

Samples were in Uji River, Kyoto city (34° 54′ 11″ N, 135° 47′ 38″ E). Coll and subm by Y Murata. Bank of Uji R was constructed by Taiko Hideyoshi in Azuchi-Momoyama Age (AD 1574 to 1602), and occasionally repaired afterwards.

**KSU-279. Makishima No. 1** **230 ± 10**

Wood, stake in Taiko-Bank.

**KSU-280. Makishima No. 2** **230 ± 15**

Wood, another stake in same place as KSU-279.

**KSU-281. Makishima No. 3** **370 ± 90**

Wood, twig from river sand, 10cm depth.

**Hizume series**

Samples from iron furnaces from Heian Age (AD 794 to 1191), Shimogamo, Minami-Izu cyo, Shizuoka pref (34° 38′ 10″ N, 138° 52′ 0″ E). Coll and subm by T Satoh.

**KSU-307. Hizume No. 1** **920 ± 25**

Charcoal, B2, middle of Layer 2.

**KSU-308. Hizume No. 2** **1050 ± 20**

Charcoal, C3, underlying Layer 3.

## ARCHAEOLOGIC SAMPLES

### *Japan*

**Uryudo series**

Uryudo Nishi-iwata site is ancient village of Yayoi Age in Higashiosaka city (34° 39′ 24″ N, 135° 36′ 0″ E). Coll and subm 1973 by Y Nakanishi. *Comment* (YN): dates cultivation time of waterfield rice in Osaka plain. Results as expected.

**KSU-12. Uryudo 12** **1880 ± 30**

Wood from UU3PY1, blue-gray layer.

**KSU-17. Uryudo 17** **2030 ± 20**

Wood from UU3PY15, black sand layer.

**KSU-18. Uryudo 18** **2460 ± 30**

Wood from UU5CH24, brown clay layer.

**KSU-41. Uryudo 20** **2170 ± 30**

Wood from UU3PY15, Pit 2.

**KSU-51. Uryudo 19** **2140 ± 15**

Wood from UU5CH24, brown clay layer.

**Toro site series**

Toro, Shizuoka city (34° 57′ 3″ N, 138° 24′ 33″ E), is typical site of Yayoi Age in Japan. Coll and subm by T Mochizuki, Toro Mus. *Comment* (TM): expected age: 1800 BP.

**KSU-31. Toro No. 1** **2050 ± 10**

Wood, stake from rice field, 0.5km S of Toro.

**KSU-61. Toro No. 2** **2020 ± 15**

Wood, board from same field.

**KSU-66. Toro No. 3** **1880 ± 15**

Wood, stake from same field.

**Shigasato site series**

Shigasato site is W side of Lake Biwa, Shiga pref (35° 1′ N, 135° 52′ E). Coll and subm by S Tanabe. *Comment* (ST): results of Late and Final Jomon Age as expected, but results of Yayoi Age older.

**KSU-13. Shigasato D** **2320 ± 50**
Wood, assoc with first style of Yayoi pottery.

**KSU-14. Shigasato A** **2470 ± 20**
Wood, same as KSU-13.

**KSU-15. Shigasato C** **2170 ± 15**
Wood, same as KSU-13.

**KSU-16. Shigasato wooden tool** **2940 ± 10**
Wooden tool, between Late and Final Jomon age.

**KSU-40. Shigasato shell** **2730 ± 20**
Shell, Final Jomon Age.

### Hamane site series

Samples from salt-making cottages, Hamane, Ohi, Fukui pref (35° 32′ N, 135° 30′ E). Coll and subm by M Morikawa, Wakasa Mus. *Comment* (MM): results seem to be older.

**KSU-125. Hamane No. 1** **1710 ± 15**
Wood, assoc with Hamane-shiki pottery.

**KSU-207. Hamane No. 2** **1860 ± 40**
Wood, same pottery as KSU-125.

### Yotsuike site series

This site includes many artifacts from Jomon to Kofun Age, Sakai city (34° 32′ 34″ N, 135° 27′ 52″ E). Coll and subm by Y Higuchi, Educ Bd, Sakai city. *Comment* (YH): results as expected except Middle Kofun Age. Results of Middle Kofun Age seem to be older.

**KSU-181. Yotsuike No. 1** **1580 ± 15**
Wood from sand layer in old river, assoc with pot of ca 5th century.

**KSU-183. Yotsuike No. 2** **2120 ± 15**
Wood from black gray layer at Dist 34, Yayoi Age.

**KSU-191. Yotsuike No. 3** **2040 ± 50**
Wood from gray sand layer at Dist 35, Yayoi Age.

**KSU-223. Yotsuike No. 4** **1280 ± 35**
Charcoal from dark-gray layer in river, Late Kofun Age.

**KSU-238. Yotsuike No. 5** **1620 ± 30**
Wood from black clay layer, Middle Kofun Age.

**KSU-239. Yotsuike No. 6** **1670 ± 15**

Wood, Dist 32, Middle Kofun Age.

**KSU-240. Yotsuike No. 7** **1580 ± 40**

Wood from AO gray-brown sand layer, Tr 1 at Dist 32, Middle Kofun Age.

**KSU-457. Yotsuike No. 8** **3660 ± 60**

Charcoal from third phase of Jomon Age at Dist 17, Late Jomon Age.

### Ninomiya site series

Samples from Tsuyama city, Okayama pref (35° 2′ N, 134° 0′ E). Coll and subm by T Takahata, Educ Bd, Okayama pref. *Comment* (TT): KSU-208 as expected. KSU-182 seems to be older.

**KSU-182. Okanotawa** **1960 ± 20**

Charcoal, Late Yayoi Age.

**KSU-208. Koujinmoto** **930 ± 25**

Wood, between Late Heian and Kamakura Age.

### Torihama site series

Torihama is important site from Incipient to Late Jomon Age, Mikata-cho Fukui pref (35° 32′ 56″ N, 135° 52′ 42″ E). Coll and subm 1975 to 1984 by M Morikawa, Wakasa Mus. *Comment* (MM): many Jomon ceramics and Oki volcanic ash are dated. Torihama site may be standard of Jomon Age.

**KSU-94. TR7501** **5800 ± 20**

Shell from shell layer, E wall, Sec 1.

**KSU-95. TR7502** **5760 ± 100**

Wood from shell layer, E wall, Sec 1.

**KSU-118. TR7503** **5670 ± 30**

Shell from shell layer, E wall, Sec 1.

**KSU-134. TR7504** **5450 ± 20**

Wood from shell layer, E wall, Sec 1.

**KSU-141. TR7505** **5520 ± 20**

Walnuts from shell layer, E wall, Sec 1.

**KSU-154. TR7506** **5810 ± 25**

Shell from shell layer, E wall Sec 1.

**KSU-101. TR7507** **5510 ± 20**

Wood from Layer 3, S wall, Sec 2.

**KSU-123. TR7508** **5490 ± 70**
Wood from Layer 5, S wall, Sec 2.

**KSU-102. TR7509** **5460 ± 30**
Wood from Layer 6, S wall, Sec 2.

**KSU-93. TR7510** **6170 ± 20**
Wood from Layer 7, S wall, Sec 2.

**KSU-98. TR7511** **6140 ± 20**
Wood from Layer 7, S wall, Sec 2.

**KSU-92. TR7512** **8340 ± 20**
Wood from Layer 10, S wall, Sec 2.

**KSU-427. TR80R01** **5130 ± 100**
Wood, 90cm depth, from Layer 14, E wall, Sec 3, with Hajima-kasou 2-shiki pottery.

**KSU-405. TR80R02** **5440 ± 40**
Wood, 135cm depth, from Layer 27, E wall, Sec 3, with same pottery as KSU-427.

**KSU-399. TR80R03** **5500 ± 45**
Wood, 140cm depth, from Layer 27, E wall, Sec 3, with same pottery as KSU-427.

**KSU-361. TR80R04** **9780 ± 60**
Wood, 160cm depth, from Layer 31, Sec 2 to 3, with Tajomon pottery.

**KSU-397. TR80R05** **10,080 ± 60**
Wood, 170cm depth, from Layer 31, E wall, Sec 3, with same pottery as KSU-361.

**KSU-404. TR80R06** **10,320 ± 60**
Wood, 190cm depth, from Layer 33, Sec 3, with same pottery as KSU-361.

**KSU-419. TR80L01** **4790 ± 25**
Wood, 60cm depth, Layer 5, Sec 3.

**KSU-396. TR80L02** **5780 ± 20**
Wood, 70cm depth, from Layer 7, 5H, Sec 2, upper Akahoya volcanic ash.

**KSU-395. TR80L03** **7010 ± 30**

Charcoal, 80cm depth, from Layer 8, 5I, Sec 2, under Akahoya volcanic ash.

**KSU-409. TR80L04** **8130 ± 30**

Wood, 185cm depth, from Layer 22 to 23, 15C, Sec 3, with Oshigatamon pottery.

**KSU-389. TR80L05** **8190 ± 300**

Wood, 205cm depth, from Layer 24, Sec 4, upper Oki volcanic ash, with same pottery as KSU-409.

**KSU-382. TR80L06** **8970 ± 120**

Soil, 208cm depth, from bottom of Oki volcanic ash, with same pottery as KSU-409.

**KSU-388. TR80L07** **9170 ± 50**

Wood, 210cm depth, from Layer 26, under Oki volcanic ash, Sec 4, with same pottery as KSU-409.

**KSU-485. TR80L08** **11,850 ± 100**

Wood, 280cm depth, from Layer 32, Tr E, Sec 3.

**KSU-478. TR80L09** **11,900 ± 110**

Wood, 280cm depth, from Layer 32, Tr E, Sec 3.

**KSU-400. TR80L10** **11,470 ± 70**

Wood, 305cm depth, from Layer 37, Sec 3.

**KSU-484. TR80L11** **11,500 ± 100**

Wood, 305cm depth, from Layer 37, Sec 3.

**KSU-471. TR80L12** **12,100 ± 100**

Wood, 305cm depth, from Layer 37, Sec 3.

**KSU-477. TR80L13** **12,100 ± 130**

Wood, 305cm depth, from Layer 37, Sec 3.

**KSU-571. TR8201** **3780 ± 50**

Wood, piece of canoe, from Layer 3, Sec 2 to 3.

**KSU-572. TR8202** **3680 ± 35**

Wood, stick from canoe, from Layer 3, Sec 2.

**KSU-1012. TR8301** **5220 ± 35**

Wood, 95cm depth, from Layer 13, 23B 21D, Sec 1, with Kitashirakawa-kasou 2-c-shiki pottery.

**KSU-1019. TR8401** **5170 ± 30**

Wood, 80cm depth, from Layer 37, Sec 2, with Kitashirakawa-kasou 2-b-shiki pottery.

**KSU-1013. TR8302** **5330 ± 30**

Wood, 170cm depth, from Layer 31 to 34, 22E, Sec 1, with same pottery as KSU-1019.

**KSU-1014. TR8303** **5910 ± 30**

Wood, 95cm depth, from under Layer 73, 33B, Sec 3, with Hajima-kasou 2-shiki pottery.

**KSU-1020. TR8402** **5500 ± 40**

Wood, 110cm depth, from Layer 39, 23H 25I 25K, Sec 2, with same pottery as KSU-1014.

**KSU-1021. TR8403** **5200 ± 40**

Wood, 120cm depth, from Layer 41, 21L, Sec 2, with same pottery as KSU-1014.

**KSU-1022. TR8404** **7250 ± 60**

Peat, 30cm depth, from Layer 49a, 29M, Sec 2, with Initial Jomon pottery.

**KSU-1023. TR8405** **8330 ± 45**

Peat, 40cm depth, from Layer 49b, 29M, Sec 2, with Oshigata-mon pottery.

**KSU-1024. TR8406** **9120 ± 80**

Peat, 60cm depth, from Layer 51, 29M, Sec 2, with same pottery as KSU-1023.

**KSU-1015. TR8304** **10,070 ± 60**

Wood, 130cm depth, from Layer 80, 39B, Sec 3, with Tajomon pottery.

**KSU-1016. TR8305** **10,070 ± 45**

Wood, 150cm depth, from Layer 82, 38D 39B 37B, Sec 3, with same pottery as KSU-1015.

**KSU-1025. TR8407** **10,270 ± 45**

Wood, 105cm depth, from Layer 60, 29M, Sec 2, with same pottery as KSU-1015.

**KSU-1026. TR8408** **10,130 ± 45**

Peat, 105cm depth, from Layer 60, 29M, Sec 2, with same pottery as KSU-1015.

**KSU-1017. TR8306** **10,290 ± 45**

Wood, 180cm depth, from Layer 85, 36E 38C 34D, Sec 3, with Tsume-gata-mon pottery.

**KSU-1027. TR8409** **10,770 ± 160**

Wood, 165cm depth, from Layer 62, 22M, Sec 2, with same pottery as KSU-1017.

**KSU-1028. TR8410** **11,830 ± 60**

Wood, 185cm depth, from Layer 66, 29M, Sec 2, with Ryusenmon pottery.

**KSU-1029. TR8411** **11,800 ± 60**

Wood, 180cm depth, from Layer 66, Sec 3, with same pottery as KSU-1028.

**KSU-1030. TR8412** **11,700 ± 60**

Wood, 200cm depth, from Layer 67, 22M, Sec 2.

**KSU-1018. TR8307** **11,730 ± 50**

Wood, 270cm depth, from Layer 90, Tr A, Sec 2.

**KSU-1031. TR8413** **11,870 ± 50**

Wood, 225cm depth, from Layer 68, 22M, Sec 2.

**Yoshidaminami site series**

Samples from Tarumi-ku, Kobe city (34° 40′ N, 134° 49′ E). Coll and subm by S Tanabe, Nara Univ. *Comment* (ST): expected age: Kofun to Nara Age. Results of Nara Age as expected, but results of Kofun Age older.

**KSU-194. Yoshidaminami No. 1** **1890 ± 30**

Wooden stake, 3YM, Kofun Age.

**KSU-229. Yoshidaminami No. 2** **1760 ± 50**

Wood, 3YM-SB26.

**KSU-235. Yoshidaminami No. 3** **1380 ± 70**

Wood, SE1.

**KSU-227. Yoshidaminami No. 4** **1290 ± 40**

Wood, 1YMSE2, Nara Age.

**KSU-220. Yoshidaminami No. 5** **1260 ± 70**

Wood, 2YM.

**KSU-213. Yoshigo site** **2380 ± 20**

Shell from Tahara, Aichi pref (34° 40′ 41″ N, 137° 17′ 4″ E). Coll and subm by S Sumida, Nagoya Univ. *Comment* (SS): assoc with Final Jomon pottery. Result as expected.

**KSU-215. Hassaki site** **6880 ± 35**

Shell from Ohbu city, Aichi pref (35° 0′ 39″ N, 137° 0′ 14″ E). Coll and subm by S Sumida. *Comment* (SS): assoc with Early Jomon pottery. Result as expected.

**KSU-216. Asahi site** **2600 ± 40**

Shell from Nagoya city (35° 12′ 50″ N, 136° 51′ 10″ E). Coll and subm by S Sumida. *Comment* (SS): assoc with Early Yayoi pottery. Result seems to be much older.

**Tarumiminami site series**

Samples from Suita city, Osaka pref (34° 45′ 37″ N, 135° 30′ 16″ E). Coll and subm by M Fujiwara, Educ Bd, Suita city. *Comment* (MF): assoc with Kofun pottery.

**KSU-268. Tarumiminami No. 1** **1750 ± 10**

Wood.

**KSU-269. Tarumiminami No. 2** **1750 ± 15**

Wood.

**KSU-540. Tarumiminami No. 3** **1780 ± 20**

Wood.

**Senpukuji site series**

Samples from Sasebo city, Nagasaki pref (33° 11′ 54″ N, 129° 44′ 5″ E). Coll and subm by M Asou, Chiba Univ. *Comment* (MA): assoc with microlith and Jokon-mon pottery. Expected age: 8000–10,000 BP.

**KSU-276. Senpukuji No. 1** **10,300 ± 200**

Soil from Layer 7b.

**KSU-277. Senpukuji No. 2** **10,160 ± 150**

Soil from Layer 8.

**Kyodai site series**

Samples from Kyoto city (35° 1′ 44″ N, 135° 47′ 35″ E). Coll and subm by T Izumi, Kyoto Univ. *Comment* (TI): expected period: Final Jomon Age.

**KSU-304. Kyodai No. 1** **2000 ± 10**

Wood from Layer 2.

**KSU-286. Kyodai No. 2** **2340 ± 15**
Soil from Layer 2.

**KSU-299. Kyodai No. 3** **2590 ± 15**
Wood from blue-gray layer.

**KSU-283. Kyodai No. 4** **2780 ± 25**
Wood from blue-gray layer.

**KSU-287. Kyodai No. 5** **2690 ± 50**
Soil from Layer 4.

**KSU-282. Kyodai No. 6** **2740 ± 35**
Wood from Layer 4.

**KSU-284. Kyodai No. 7** **2740 ± 30**
Wood from Layer 4.

**KSU-288. Kyodai No. 8** **2760 ± 35**
Soil from Layer 4.

**KSU-334. Teradani site** **16,060 ± 980**
Charcoal from Late Stone Age site, Iwata city, Shizuoka pref (34° 46′ N, 137° 51′ E). Coll and subm by T Suzuki, Heian Mus. *Comment* (TS): assoc with backed blade. Result as expected.

**Hegi Cave series**

Samples from Honyamakei, Ohita pref (34° 29′ 20″ N, 131° 12′ 24″ E). Coll and subm 1979 to 1983 by M Kagawa, Beppu Univ. *Comment* (MK): assoc with many human bones from Initial to Late Jomon Age. Dates of shell in river ca 1200 yr older than plants. Results as expected.

**KSU-337. Hegi No. 1** **6510 ± 45**
Shell from Layer 4a.

**KSU-346. Hegi No. 2** **7310 ± 20**
Shell from Layer 4b.

**KSU-347. Hegi No. 3** **5150 ± 40**
Soil from Layer 4a.

**KSU-353. Hegi No. 4** **6400 ± 50**
Soil from Layer 4b.

**KSU-354. Hegi No. 5** **7590 ± 50**
Shell from Layer 5b.

**KSU-384. Hegi No. 6** **5850 ± 60**
Soil from Layer 5.

**KSU-385. Hegi No. 7** **7510 ± 50**
Soil from Layer 5.

**KSU-411. Hegi No. 8** **6470 ± 45**
Soil from Layer 4b.

**KSU-412. Hegi No. 9** **3640 ± 40**
Soil from Layer 3a.

**KSU-638. Hegi No. 10** **10,700 ± 900**
Charcoal from Layer 5a.

**KSU-639. Hegi No. 11** **11,100 ± 800**
Charcoal from Layer 7c.

### Hiruzen site series

Samples from Yatsuka, Maniwa dist, Okayama pref (35° 18′ N, 133° 42′ E). Coll and subm 1983 by Y Kamaki, Okayama Coll Sci. *Comment* (YK): assoc with backed blade. Results as expected.

**KSU-568. Hiruzen No. 1** **18,400 ± 230**
Peat from Layer 6, upper Odori volcanic ash.

**KSU-550. Hiruzen No. 2** **24,000 + 4000 − 3000**
Charcoal from Layer 10, underlying AT volcanic ash.

**KSU-612. Hiruzen No. 3** **23,400 ± 500**
Same sample as No. 2.

### Hironokita site series

Charcoal from Toyoda, Shizuoka pref (34° 44′ N, 137° 50′ E). Coll and subm 1983 by H Yamashita, Heian Mus. *Comment* (HY): assoc with backed blade, point and microblade. Results as expected.

**KSU-671. Hironokita No. 1** **22,300 ± 800**
Charcoal from right upper AT volcanic ash.

**KSU-672. Hironokita No. 2** **22,100 ± 800**
Charcoal from upper AT volcanic ash.

**KSU-673. Hironokita No. 3** **25,300 + 3500 − 2000**
Charcoal underlying AT volcanic ash.

**Kannami site series**

Samples coll from rice field of Kannami-cho, Shizuoka pref (35° 5′ N, 138° 57′ E). Coll and subm by Y Nagano. *Comment* (YN): results as expected.

**KSU-355. Kannami No. 1** **1870 ± 15**

Wooden stake from A8 grid, Late Yayoi Age.

**KSU-356. Kannami No. 2** **1750 ± 20**

Wood from Z7 grid, between Late Yayoi and Early Kofun Age.

**KSU-359. Kannami No. 3** **1620 ± 15**

Wood from Z4 grid, Kofun Age.

**KSU-362. Kannami No. 4** **1850 ± 20**

Wood from Z4 grid, W-29 Layer 5, Late Yayoi Age.

**KSU-414. Kurosaki site** **3310 ± 30**

Shell from Kitakyusyu city, Fukuoka pref (33° 51′ 31″ N, 130° 45′ 55″ E). Coll and subm by M Tachibana, Beppu Univ. *Comment* (MT): assoc with Late Jomon pottery. Result as expected.

**KSU-415. Kanegasaki site** **3480 ± 25**

Shell from Genkai, Fukuoka pref (33° 52′ 10″ N, 130° 31′ 57″ E). Coll and subm by M Tachibana. *Comment* (MT): pottery type is older than KSU-414. Result as expected.

**Hyakkengawa site series**

Wood from Kanemoto, Okayama pref (34° 40′ N, 133° 57′ E). Coll and subm by T Takahata, Educ Bd, Okayama pref. *Comment* (TT): results seem to be older.

**KSU-426. Hyakkengawa No. 1** **2180 ± 15**

Wood, Yayoi Age.

**KSU-429. Hyakkengawa No. 2** **1900 ± 20**

Wood, Early Kofun Age.

**Bibi site series**

Samples coll 1980 by N Kimura, subm 1980 by R Asai, Center Archaeol Research Hokkaido, Chitose city, Hokkaido (42° 46′ N, 141° 39′ E). *Comment* (NK): results as expected except for KSU-374.

**KSU-367. Bibi No. 1** **3970 ± 35**

Charcoal, Middle Jomon Age.

**KSU-370. Bibi No. 2** **25,320 ± 1010**

Charcoal underlying Yop3 volcanic ash, Stone Age.

**KSU-372. Bibi No. 3** **14,410 ± 2090**

Charcoal from upper Shikotsu volcanic ash, Stone Age.

**KSU-374. Bibi No. 4** **5450 ± 450**

Charcoal, 0.315g carbon, Late Jomon Age.

**Misawa site series**

Samples coll 1980 by N Kimura, subm 1980 by R Asai, from Tomakomai, Hokkaido (42° 45′ N, 141° 39′ E). *Comment* (NK): results as expected.

**KSU-358. Misawa No. 1** **5620 ± 25**

Shell, Early Jomon Age.

**KSU-360. Misawa No. 2** **5480 ± 35**

Shell, Early Jomon Age.

**KSU-375. Misawa No. 3** **3510 ± 100**

Wood, Late Jomon Age.

**KSU-365. Suehiro site** **1140 ± 25**

Charcoal from Chitose city, Hokkaido (42° 50′ N, 141° 39′ E), with Satsumon pottery. Coll and subm 1980 by T Ohtani Educ Bd, Chitose city. *Comment* (TO): result as expected.

**Shadai site series**

Samples from Shiraoi, Hokkaido (42° 32′ N, 141° 26′ E). Coll 1980 by Y Taneichi, subm 1980 by R Asai. *Comment* (YT): results as expected.

**KSU-368. Shadai No. 1** **2910 ± 45**

Charcoal, Final Jomon Age.

**KSU-369. Shadai No. 2** **190 ± 45**

Driftwood.

**Kawakami B site series**

Samples from Noboribetsu city, Hokkaido (42° 24′ N, 141° 11′ E). Subm 1980 and 1982 by R Asai. *Comment* (YN): expected age: 3000–7000 BP.

**KSU-376. Kawakami No. 1** **5170 ± 90**

Charcoal, J-17-a, inside Jomon pottery. Coll 1980 by Y Nakamura.

**KSU-584. Kawakami No. 2** **3250 ± 80**

Charcoal, L-93-376. Coll 1982 by H Hata.

**KSU-585. Kawakami No. 3** **3200 ± 120**

Charcoal, J-92-d-570. Coll by H Hata.

**KSU-586. Kawakami No. 4** **3530 ± 20**

Charcoal, L-93-a-152. Coll by H Hata.

### Chitose site series

Samples from Noboribetsu city, Hokkaido (42° 24′ N, 141° 11′ E). Subm 1980 and 1982 by R Asai. *Comment* (YN and AO): results as expected.

**KSU-377. Chitose 4 Site No. 1** **4060 ± 110**

Charcoal, K-16-a, Jomon Age. Coll 1980 by Y Nakamura.

**KSU-378. Chitose 4 Site No. 2** **3600 ± 80**

Charcoal, J-16-b. Coll by Y Nakamura.

**KSU-580. Chitose 5 Site No. 1** **3900 ± 120**

Charcoal, H-3, Layer 3, between Middle and Late Jomon Age. Coll 1982 by A Oniyanagi.

**KSU-581. Chitose 5 Site No. 2** **3920 ± 180**

Charcoal, H-6. Coll by A Oniyanagi.

**KSU-582. Chitose 5 Site No. 3** **3170 ± 260**

Charcoal, H-13. Coll by A Oniyanagi.

### Kojohama site series

Samples from Shiraoi, Hokkaido (42° 28′ N, 141° 9′ E). Subm 1980 and 1982 by R Asai.

**KSU-379. Kojohama 4 site** **3860 ± 40**

Charcoal, Middle Jomon Age. Coll 1980 by Y Taneichi. *Comment* (YT): expected age: 4500 – 5000 BP.

**KSU-380. Kojohama 3 Site No. 1** **3820 ± 60**

Charcoal. Coll by Y Taneichi. *Comment* (YT): expected age: 6000 BP.

**KSU-559. Kojohama 3 Site No. 2** **3740 ± 40**

Charcoal. Coll 1982 by K Satoh. *Comment* (KS): expected period: Middle Jomon Age. Result as expected.

**KSU-583. Kojohama 3 Site No. 3** **7450 ± 400**

Charcoal. Coll by K Satoh. *Comment* (KS): assoc with Initial Jomon pottery. Result as expected.

### Kabukai site series

Samples from Rebun I., Hokkaido (45° 24′ N, 141° 0′ E), with Satsumon pottery. Coll and subm 1977 by H Ohi, Hokkaido Univ.

**KSU-192. RKA 1** **1260 ± 40**

Charcoal. *Comment* (HO): younger than KSU-209.

**KSU-209. RKA 2** **1270 ± 30**

Charcoal. *Comment* (HO): assoc with Satsumon 2-3 pottery. Expected age: 1200 BP.

**KSU-210. RKA 3** **1400 ± 25**

Charcoal. *Comment* (HO): assoc with same pottery as KSU-209.

**KSU-211. RKA 4** **2040 ± 60**

Charcoal. *Comment* (HO): expected age is older than KSU-209.

### Komaba 7 site series

Samples from Shizunai, Hokkaido (42° 21′ N, 142° 21′ 30″ E). Coll 1980 and subm 1981 by T Kohara, Educ Bd, Shizunai-cho. *Comment* (TK): results as expected.

**KSU-463. SP-No. 1** **7370 ± 200**

Charcoal, PH-7, with Akatsuki-shiki pottery.

**KSU-454. SP-No. 2** **7310 ± 140**

Charcoal, PH-15.

**KSU-464. SP-No. 3** **8840 ± 200**

Charcoal, PH-18.

**KSU-472. SP-No. 4** **8730 ± 90**

Charcoal, PH-20.

**KSU-462. SP-No. 5** **8730 ± 130**

Charcoal, PH-20.

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