

## KSU RADIOCARBON DATES II

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### INTRODUCTION

This date list mainly reports on samples processed from 1982 to 1991. Each sample is converted to methanol. Radiocarbon is measured in a Teflon™ vial containing a mixture of 40 g of methanol and 50 cc of xylene, 1% Butyl PBD and 0.1% PBBO using low-background scintillation counters Aloka LSC-800, LB-I and LB-III. The background of LB-III is *ca.* 8 cpm and counting efficiency is *ca.* 70%. The recent <sup>14</sup>C standard used is 95% of NBS oxalic acid; 5568 yr is used as the half-life of <sup>14</sup>C.

For further detail on our measurement methods, see Yamada and Kobashigawa (1986).

### GEOLOGIC SAMPLES

#### JAPAN

#### Hokkaido

#### Hokkaido University Environmental Science (HE) Series

Samples were submitted 1984 to 1986 by H. Yamamoto of the Laboratory of Fundamental Research, the Graduate School of Environmental Science, Hokkaido University.

**KSU-905. HE-1 Mizukami 1** **12,300 ± 430**

Charcoal from Mizukami, Koshimizu-cho, Abashirigun (43°47'34"N, 144°29'52.8"E). Collected 1984 by T. Sone.

*Comment* (T.S.): Expected age: *ca.* 10,000 BP.

**KSU-1248. HE-37 Mizukami 2** **26,100 +2000/-1600**

Charcoal, 1100 cm depth, in Higashi-Kayano scoria, Koshimizu-cho (43°47'34.1"N, 144°29'52.8"E, 70 m asl). Collected 1984 by T. Sone.

*Comment* (T.S.): Expected age: *ca.* 20,000 BP.

**KSU-906. HE-2 Kayano** **28,200 +1700/-1400**

Charcoal, 210 cm depth, from Kayano, Koshimizu-cho (43°50'44.5"N, 144°30'16.8"E). Collected 1984 by T. Sone.

*Comment* (T.S.): Expected age: *ca.* 40,000 BP.

**KSU-907. HE-3 Kamishari** **30,300 +1400/-1200**

Charcoal in Kamishari pumice flow-I, 260 cm depth, from Kamishari, Kiyosato-cho (43°50'44.6"N, 144°34'6.8"E). Collected 1984 by T. Sone.

*Comment* (T.S.): Expected age: *ca.* 32,000 BP.

**KSU-908. HE-4 Nakafurano** **5220 ± 90**

Peat, 230 cm depth, from Nakafurano-cho, Sorachi-gun (43°22'5.4"N, 142°26'42.4"E). Collected 1984 by H. Daimaru.

*Comment* (H.D.): Expected age: 4000–5000 BP.

- KSU-909. HE-5 Shintoku 1** **2140 ± 70**  
 Peat from Shintoku-cho, Kamikawa-gun (43°5'52"N, 142°44'10"E, 420 m asl). Collected 1984 by K. Yamamoto.  
*Comment* (K. Y.): Expected age: 2000–5000 BP.
- KSU-910. HE-6 Shintoku 2** **1480 ± 110**  
 Peat from Shintoku-cho (43°9'49"N, 142°48'33"E, 405 m asl). Collected 1984 by K. Yamamoto.  
*Comment* (K. Y.): Expected age: 2000–5000 BP.
- KSU-911. HE-7 Shintoku 3** **2140 ± 35**  
 Peat from Shintoku-cho (43°6'2"N, 142°46'30"E, 440 m asl). Collected 1984 by K. Yamamoto.  
*Comment* (K. Y.): Expected age: 5000–6000 BP.
- KSU-913. HE-9 Shintoku 4** **4620 ± 40**  
 Peat from Shintoku-cho (43°31'26.8"N, 142°49'6.8"E, 1635 m asl). Collected 1984 by N. Takahashi.
- KSU-912. HE-8 Kamikawa** **140 ± 50**  
 Peat from Kamikawa-cho, Kamikawa-gun (43°32'14.8"N, 142°57'32.8"E, 1424 m asl). Collected 1983 by N. Takahashi.
- KSU-914. HE-10 Biei 1** **3800 ± 40**  
 Peat, 130 cm depth, from Biei-cho, Kamikawa-gun (43°36'3.2"N, 142°53'17"E, 1735 m asl). Collected 1984 by N. Takahashi.
- KSU-915. HE-11 Biei 2** **7540 ± 70**  
 Peat from same site as KSU-914. Collected 1984 by N. Takahashi.
- KSU-1036. HE-12 Konan 12,400 ± 80**  
 Peat, 190 cm depth, from Konan, Kiyosato-cho, Shari-gun (43°48'7.7"N, 144°38'1.3"E, 147 m asl). Collected 1984 by T. Sone.  
*Comment* (T.S.): Expected age: *ca.* 12,000 BP.
- KSU-1090. HE-21 Sapporo 1** **3370 ± 25**  
 Wood, 820 cm depth, from Sapporo City (43°4'27.6"N, 141°21'34.8"E, 14 m asl). Collected 1985 by H. Daimaru.
- KSU-1091. HE-22 Sapporo 2** **5930 ± 60**  
 Wood from same site as KSU-1090.
- KSU-1092. HE-23 Sapporo 3** **9840 ± 60**  
 Wood, 140 cm depth, from same site as KSU-1090.
- KSU-1105. HE-25 Shintokugawa** **5910 ± 60**  
 Peat from Shintokugawa-cho, Kabato-gun (43°34'58.3"N, 141°44'3.7"E, 100 m asl). Collected 1985 by K. Yamamoto.  
*Comment* (K. Y.): Expected age: 1500–12,000 BP.
- KSU-1106. HE-26 Hokuryu** **21,100 ± 600**  
 Peat from Hokuryu-cho, Uryu-gun (43°42'46.6"N, 141°52'39.1"E, 70 m asl). Collected 1985 by K. Yamamoto.  
*Comment* (K. Y.): Expected age: 20,000–30,000 BP.

**KSU-1107. HE-27 Kamoi** **11,800 ± 800**  
Ash under Toyozumi pumice fall, 295 cm depth, from Kamoi, Kiyosato-cho, Abashiri-gun (43°48'27.2"N, 144°33'37.6"E, 42 m asl). Collected 1985 by T. Sone.

*Comment* (T.S.): Expected age: ca. 12,000 BP. *Comment*: gained ca. 1 g carbon from 2 kg ash.

**KSU-1108. HE-28 Izumikawa 1** **4120 ± 40**  
Humus from between Masyudake-e and Masyudake-f ash fall, 125 cm depth, at Izumikawa, Bekkai-cho (43°24'37.2"N, 144°41'15.6"E, 140 m asl). Collected 1985 by T. Sone.

*Comment* (T.S.): dated to 4150 BP by hydrated layer of obsidian.

**KSU-1109. HE-29 Izumikawa 2** **3100 ± 30**  
Humus from between Komagatake-lava flow and Masyudake-e ash fall, 105 cm depth. Same site as KSU-1108.

*Comment* (T.S.): Expected age: 3000 BP.

**KSU-1110. HE-30 Kitaoka** **25,200 +1300/-1000**  
Charcoal under Yoteizan. Ps.-1 pumice fall, 250 cm depth, from Kitaoka, Kyogoku (42°53'27.6"N, 140°51'42.6"E, 300 m asl). Collected 1985 by T. Sone.

*Comment* (T.S.): Expected age: 12,000–15,000 BP.

**KSU-1242. HE-31 Uryunuma 1** **4050 ± 60**  
Peat from Uryunuma marshland, 225–240 cm depth, Uryu-cho (43°41'21"N, 141°36'34"E). Collected 1985 by T. Miyagi, Tohoku Gakuin University.

**KSU-1243. HE-32 Uryunuma 2** **6220 ± 50**  
Peat, 65–70 cm depth, from same site as KSU-1242.

**KSU-1244. HE-33 Uryunuma 3** **9580 ± 80**  
Peat, 105–110 cm depth, from same site as KSU-1242.

**KSU-1245. HE-34 Uryunuma 4** **9910 ± 70**  
Peat, 112–118 cm depth, from same site as KSU-1242.

**KSU-1246. HE-35 Horokayantou-numa 1** **760 ± 90**  
Peat, 80 cm depth, from Horokayantou-numa, Taiki-cho, Hiroo-gun (42°31'42.9"N, 143°27'16.7"E, 8 m asl). Collected 1985 by K. Kanzawa.

**KSU-1247. HE-36 Horokayantou-numa 2** **2560 ± 60**  
Peat, 170 cm depth, from same site as KSU-1246.

**KSU-1249. HE-38 Kami-nishishunbetsu** **10,800 ± 230**  
Charcoal underlying Masyu-1 pumice fall, 200 cm depth, from Kami-nishishunbetsu, Bekkai-cho, Notsuke-gun (43°25'24.5"N, 144°47'15.6"E). Collected 1985 by T. Sone.

*Comment* (T.S.): Expected age: 10,000–13,000 BP.

**KSU-916. Uryunuma** **9500 ± 140**  
Peat, 310–325 cm depth, from Uryunuma marshland, Uryu-cho (43°41'21"N, 141°36'34"E). Collected and submitted 1984 by T. Miyagi.

*Comment* (T.M.): Result agrees with expected age based on pollen analysis.

**Kitahara Series**

Peat from Kitahara basin, Wassamu-cho (44°2'1"N, 142°22'2"E). Collected and submitted 1984 by T. Miyagi.

<b>KSU-917. 375–390 cm depth</b>	<b>6800 ± 80</b>
<b>KSU-918. 600 cm depth</b>	<b>31,500 +810/–740</b>

*Comment* (T.M.): Result agrees with expected age based on pollen analysis.

<b>KSU-1051. Hassamu</b>	<b>60,300 +15,000/–4900</b>
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Peat, 27.0–27.1 m depth, from Shinkotoni-cho, Kita-ku, Sapporo City (43°5'N, 141°18'E, 3.5 m asl). Collected and submitted 1985 by Y. Igarashi, Hokkaido University.

*Comment* (Y.I.): Expected age: 20,000–30,000 BP.

**Nakahurano Series**

Peat from Nakahurano-cho, Sorachi-gun (43°20'12"N, 142°25'30"E, 99.5 m above sea level). Collected and submitted by Y. Igarashi.

*Comment* (Y. I.): Expected period: from last Ice age to early Holocene.

<b>KSU-1417. 5.0–5.2 m depth</b>	<b>8120 ± 140</b>
<b>KSU-1418. 7.05–7.08 m depth</b>	<b>10,200 + 470</b>
<b>KSU-1078. 8.05–8.10 m depth</b>	<b>12,400 ± 120</b>
<b>KSU-1419. 12.05–12.20 m depth</b>	<b>28,500 +810/–740</b>
<b>KSU-1079. 16.28–16.35 m depth</b>	<b>32,400 +1400/–1200</b>
<b>KSU-1080. 20.0–20.05 m depth</b>	<b>47,100</b>

**Karumai Series**

Peat upper Akan ash fall-1, from Karumai, Atsuma-cho, Yufutsu-gun (42°39'47"N, 141°54'0"E). Collected 1985 by N. Wada, Geological Survey of Hokkaido, submitted 1985 by Y. Igarashi.

<b>KSU-1081. Karumai-1</b>	<b>26,800 +1900/–1500</b>
<b>KSU-1082. Karumai-2</b>	<b>38,800 +1200/–900</b>
<b>KSU-1083. Hongo</b>	<b>58,700</b>

Wood, upper Akan ash fall-2, Hongo, Atsuma-cho (42°44'0"N, 141°51'51"E). Collected 1985 by N. Wada, submitted by Y. Igarashi.

<b>KSU-1084. Abira</b>	<b>56,100 +9000/–4100</b>
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Peat in Shikotsu pumice fall-6 and Shikotsu pumice fall-7, from Nakaabira, Oiwake-cho, Yufutsu-gun (42°50'6"N, 141°50'0"E). Collected 1985 N. Wada and submitted 1985 Y. Igarashi.

*Comment* (Y.I.): Samples from upper Shikotsu pumice fall-1 were dated to 32,200 +4700/–3100, Gak-519, and 32,200 ± 2000, Gak-714 (Kigoshi 1967: 48).

**Nemuro Series**

Peat from Habomai-cho, Nemuro City (43°21'20"N, 145°45'5"E, 30 m asl). Collected and submitted 1985 by Y. Igarashi.

<b>KSU-1189. 68–73 cm depth</b>	<b>2030 ± 40</b>
<b>KSU-1190. 155–160 cm depth</b>	<b>10,000 ± 140</b>

**Fujino Series**

Samples from Fujino, Minami-ku, Sapporo City (42°57.8'N, 141°19'E, 170 cm asl). Collected and submitted 1984 by J. Ishii, Tokai University.

<b>KSU-1000. Fujino A</b> Charcoal in Shikotsu pumice flow deposit.	<b>40,700 +1400/-1200</b>
<b>KSU-1001. Fujino B</b> Carbonized root in same layer as KSU-1000.	<b>40,800 +1400/-1200</b>
<b>KSU-1002. Fujino C</b> Charcoal in peat layer.	<b>36,500 +2000/-1600</b>
<b>KSU-1003. Fujino D</b> Peat from same horizon as KSU-1002.	<b>39,500 +1400/-1200</b>

**Komoro Series**

Radiocarbon dates of these samples show the history of activity in Asama Volcano and landslides in Nagano prefecture. The traces of an old large landslide were found by A. Nakagawa and K. Higuchi, 1986 on the landslides in Komoro district (Annuals of the Disaster Prevention Research Institute, Kyoto University, No. 29B-1, April 1986.) Samples were collected in these tracks. Collected and submitted 1984-1991 by K. Higuchi, Komoro High School. Some pieces of Early Jomon pottery were found under the layer (KSU-1260, KSU-1262, KSU-1264, KSU-1302, KSU-1303, KSU-1493, KSU-1496, KSU-1497, KSU-1498, KSU-1516) (T. Hayata 1992). This pottery is the oldest yet found in Japan (N. Kondou, H. Kobayashi, 1990).

<b>KSU-839. Komoro 1</b> Wood ( <i>Picea</i> ) from Oshidashi, Komoro city, Nagano prefecture (36°19'40"N, 138°23'27"E).	<b>52,100</b>
<b>KSU-840. Komoro 2</b> Charcoal ( <i>Picea</i> , <i>Larix</i> ) from Oshidashi, (36°19'48"N, 138°23'33"E).	<b>56,900</b>
<b>KSU-852. Komoro 3</b> Wood from Oshidashi (36°19'54"N, 138°23'42"E).	<b>49,300</b>
<b>KSU-853. Komoro 4</b> Charcoal from same site as KSU-852.	<b>49,300 +18,000/-5100</b>
<b>KSU-854. Komoro 5</b> Charcoal from same site as KSU-852.	<b>54,300 +24,000/-5300</b>
<b>KSU-874. Komoro 6</b> Wood from Kubo, Komoro city (36°18'36"N, 138°25'21"E).	<b>49,100 +6300/-3500</b>
<b>KSU-875. Komoro 7</b> Charcoal from Hakeyama, Kitamimaki village, Kitasaku-gun, Nagano prefecture (36°19'54"N, 138°23'42"E).	<b>55,400</b>
<b>KSU-877. Komoro 8</b> Wood from Oshidashi (36°20'N, 138°23'E).	<b>51,900 +20,000/-5000</b>
<b>KSU-1121. Komoro 9</b> Wood from Okubo, Komoro city (36°19'31"N, 138°24'29"E).	<b>44,600 +3000/-2200</b>

<b>KSU-1122. Komoro 10</b>	<b>40,800 +970/−870</b>
Charcoal from Hakeyama (36°20'32"N, 138°20'35"E).	
<b>KSU-1123. Komoro 11</b>	<b>54,300</b>
Wood from Goushi-gawara, Kitamimaki village (36°20'39"N, 138°19'39"E).	
<b>KSU-1124. Komoro 12</b>	<b>46,100 +3700/−2500</b>
Charcoal from Okui, Komoro city (36°17'55"N, 138°25'28"E).	
<b>KSU-1125. Komoro 13</b>	<b>54,000 +5900/−3400</b>
Charcoal from same place as KSU-1124.	
<b>KSU-1126. Komoro 14</b>	<b>44,600 +1500/−1300</b>
Wood from Okubo (36°19'40"N, 138°23'58"E).	
<b>KSU-1260. Komoro 15</b>	<b>13,600 ± 60</b>
Charcoal in first pumice flow deposit of Asama Volcano, from Namezu, Saku city, Nagano pre- fecture (36°14'21"N, 138°28'46"E).	
<i>Comment</i> (K.H.): Asama first pumice flow was dated to 13,500 ± 500, JGS-16; 13,700 ± 400, JGS-36; 13,600 ± 400, JGS-37; 13,600 ± 400, JGS-40 (Togashi 1984: 207-208).	
<b>KSU-1261. Komoro 16</b>	<b>38,300 +1000/−900</b>
Wood from Shionada, Asashina village, Kitasaku-gun (36°15'38"N, 138°25'02"E).	
<i>Comment</i> (K.H.): Collected in presumed Tsukahara mud-flow deposit.	
<b>KSU-1262. Komoro 17</b>	<b>13,700 ± 60</b>
Wood from Nenei, Saku City (36°15'30"N, 138°27'12"E).	
<b>KSU-1263. Komoro 18</b>	<b>21,250 ± 140</b>
Wood in presumed Tsukahara mud-flow deposit, 5 m under KSU-1262.	
<b>KSU-1264. Komoro 19</b>	<b>13,600 ± 70</b>
Wood from Mimitori, Komoro City (36°17'18"N, 138°25'38"E).	
<b>KSU-1297. Komoro 20</b>	<b>54,200</b>
Charcoal from a cliff beside Chikuma River, Mimitori, Komoro City (36°16'44"N, 138°25'22"E).	
<b>KSU-1298. Komoro 21</b>	<b>57,000</b>
Charcoal from near KSU-1297, Mimitori, Komoro City (36°16'44"N, 138°25'25"E).	
<b>KSU-1299. Komoro 22</b>	<b>54,000</b>
Charcoal from Kubo, Komoro City (36°18'17"N, 138°25'14"E).	
<b>KSU-1300. Komoro 23</b>	<b>52,800</b>
Charcoal from same place as KSU-1299.	
<b>KSU-1301. Komoro 24</b>	<b>51,100 +8100/−4000</b>
Charcoal from same place as KSU-1299.	
<b>KSU-1302. Komoro 25</b>	<b>13,700 ± 60</b>
Wood from same layer of KSU-1262, Komoro City (36°19'08"N, 138°25'16"E).	
<b>KSU-1303. Komoro 26</b>	<b>14,000 ± 60</b>
Charcoal from Chikuma riverside, Mimitori, Komoro City (36°17'16"N, 138°25'01"E).	

<b>KSU-1328. Komoro 27</b>	<b>57,300</b>
Charcoal from Chikuma riverside, Okui, Komoro City (36°17'46"N, 138°24'58"E).	
<b>KSU-1329. Komoro 28</b>	<b>57,900</b>
Charcoal from same place as KSU-1328.	
<b>KSU-1379. Komoro 30</b>	<b>53,000 +8700/−4100</b>
Charcoal from Kubo, Komoro City (36°18'34"N, 138°25'16"E).	
<b>KSU-1380. Komoro 31</b>	<b>48,300 +3400/−2600</b>
Charcoal from Kubo, Komoro City (36°18'34"N, 138°25'34"E).	
<b>KSU-1381. Komoro 32</b>	<b>60,000</b>
Charcoal from Kubo, Komoro City (36°18'02"N, 138°25'00"E).	
<b>KSU-1493. Komoro 33</b>	<b>13,400 ± 70</b>
Charcoal from Amaike, Komoro City (36°21'16"N, 138°27'23"E).	
<b>KSU-1494. Komoro 34</b>	<b>800 ± 20</b>
Wood on a mud-flow deposit, Ohata, Komoro City (36°19'42"N, 138°26'54"E). Datum shows same age as an eruption of Asama Volcano in AD 1108.	
<b>KSU-1495. Komoro 35</b>	<b>23,700 ± 290</b>
Charcoal from same site as KSU-1263.	
<b>KSU-1496. Komoro 36</b>	<b>13,500 ± 60</b>
Charcoal from same site as KSU-1303.	
<b>KSU-1497. Komoro 37</b>	<b>13,300 ± 50</b>
Charcoal from 400 m depth, Mimitori, Komoro City (36°17'20"N, 138°25'19"E).	
<b>KSU-1498. Komoro 38</b>	<b>13,600 ± 100</b>
Wood from Hishino, Komoro City (36°21'06"N, 138°26'17"E).	
<b>KSU-1499. Komoro 39</b>	<b>860 ± 20</b>
Charcoal from Hebihori riverside, Komoro City (36°19'47"N, 138°26'34"E). Datum shows same age as an eruption of Asama Volcano in AD 1108.	
<b>KSU-1516. Komoro 40</b>	<b>13,800 ± 60</b>
Charcoal from upper part of a bed rock, Yugawa riverside, Saku City (36°17'26"N, 138°30'47"E).	
<b>KSU-1517. Komoro 41</b>	<b>700 ± 20</b>
Charcoal from Mitsuishi, Karuizawa village (36°20'38"N, 138°31'40"E). Datum shows same age as an eruption of Asama Volcano in AD 1281.	
<b>KSU-1518. Komoro 42</b>	<b>700 ± 20</b>
Charcoal from 120 cm depth, 1225 m asl, Karuizawa village (36°20'38"N, 138°31'40"E). Datum shows same age as an eruption of Asama Volcano in AD 1281.	
<b>KSU-1519. Komoro 43</b>	<b>22,500 ± 40</b>
Charcoal from Namezu riverside, Saku City (36°14'43"N, 138°27'50"E).	
<b>KSU-1583. Komoro 44</b>	<b>11,400 ± 130</b>
Charcoal in the pumice flow 2 of Asama Volcano, 100 cm depth, Kohara, Komoro City (36°18'48"N, 138°25'32"E).	

- KSU-1584. Komoro 45** **11,800 ± 400**  
Charcoal under a pumice flow, Kohara, Komoro City (36°18'51"N, 138°25'37"E).
- KSU-1585. Komoro 46** **39,100 +14,000/-4800**  
Wood in volcanic gravel layer in a deep well, 141 m depth, Amaike, Komoro City (36°21'30"N, 138°28'03"E).
- KSU-1586. Komoro 47** **850 ± 40**  
Charcoal from same site as KSU-1517.
- KSU-1587. Komoro 48** **1010 ± 210**  
Charcoal under the Oiwake pyroclastic flow, 14 m depth in a deep well, Karuizawa village (36°21'08"N, 138°32'01"E).
- KSU-1697. Komoro 50** **41,800 +2000/-1600**  
Charcoal from Saikouji riverside, Oshidashi, Komoro City (36°21'30"N, 138°28'03"E).
- KSU-1735. Komoro 51** **1760 ± 80**  
Charcoal from Karuizawa village (36°20'51"N, 138°31'45"E).
- KSU-1736. Komoro 53** **1180 ± 12**  
Charcoal in volcanic ash at the foot of Sekison Mountain, 200 cm depth, Karuizawa village (36°22'07"N, 138°31'46"E).
- KSU-1762. Komoro 54** **780 ± 15**  
Charcoal from Karuizawa village (36°29'40"N, 138°31'18"E).
- KSU-1763. Komoro 55** **710 ± 20**  
Charcoal from Karuizawa village (36°27'58"N, 138°30'53"E). Datum shows same age as an eruption of Asama Volcano in AD 1281.
- KSU-1764. Komoro 56** **100 ± 10**  
Charcoal from Karuizawa village (36°28'05"N, 138°34'22"E).
- KSU-1765. Komoro 57** **13,190 ± 40**  
Charcoal from Karuizawa village (36°21'03"N, 138°27'02"E).
- KSU-2061. Komoro 58** **13,480 ± 50**  
Charcoal from Shiozawa, Karuizawa village (36°19'09"N, 138°34'45"E).
- KSU-2127. Komoro 59** **23,400 ± 300**  
Charcoal under the Aira volcanic ash, Nakasato elementary school, Saku city (36°16'00"N, 138°27'02"E).
- KSU-2128. Komoro 60** **0 ± 140**  
Wood (Susuki) from 350 cm depth, Asamadai, Karuizawa village (36°20'49"N, 138° 33'26"E).
- Comment (K.H.):* It seems that there is a possibility of an eruption of Asama Volcano in AD 1800.

### Myoko Series

Samples were collected at various places around the Myoko Volcano. Submitted 1982 by S. Nohda, Kyoto Sangyo University.



- KSU-518. MK-797-3 Suginosawa 1** 4080 ± 40  
Wood in Suginosawa formation, 2.5 m depth, from Suginosawa, Myoko-kogen-cho, Niigata prefecture (36°51'N, 138°10'E). Collected 1980 by K. Hayatsu.
- KSU-1103. MK-797-4 Suginosawa 2** 460 ± 80  
Charcoal in peat layer upper Suginosawa formation, 0.7 m depth, from Suginosawa (36°51'N, 138°10'E). Collected 1980 by K. Hayatsu.
- KSU-519. MK-801-1 Taguchi** 7880 ± 35  
Wood upper Taguchi formation, 5 m depth, from Shin-akakura, Myoko-kogen-cho (36°53'N, 138°12'E). Collected 1980 by K. Hayatsu.
- KSU-1098. MK-802-3 Fukazawa** 17,200 ± 70  
Charcoal in Fukazawa formation from same place as KSU-519. Collected 1980 by S. Nohda.
- KSU-538. MK-802-1 Matsugamine** 0 ± 50  
Wood in Matsugamine volcanic conglomerate, from Matsugamine, Nakagou village, Niigata prefecture (36°58'N, 138°14'E). Collected 1980 by S. Nohda.
- KSU-1099. MK-802-10 Furuma 1** 39,100 +1200/-1000  
Peat between Kan-noki and Sekiyama scoria, 4 m depth, from Furuma Shinano-cho, Nagano prefecture (36°48'N, 138°12'E). Collected 1979 by K. Hayatsu.
- KSU-1100. MK-802-14 Furuma 2** 29,700 ± 600  
Peat above Ohira scoria, 6 m depth, from Furuma (36°47'N, 138°12'E). Collected 1979 by K. Hayatsu.
- KSU-1101. MK-802-17 Kannoki** 23,800 +2700/-2000  
Sand and charcoal in Mutsuki volcanic conglomerate, from Kan-noki, Shinano-cho (36°49'N, 138°12'E). Collected 1980 by S. Nohda.
- KSU-1102. MK-601-2 Sekiyama** 4110 ± 40  
Peat in Otagirigawa formation, 1 m depth, from Sekiyama, Myoko village, Niigata prefecture (36°56'N, 138°12'E). Collected 1972 by K. Hayatsu.
- KSU-536. YK-50-1 Sasakura** 890 ± 30  
Wood from bottom of Hayakawa formation, 2 m depth, from Sasakura-onsen, Itoigawa city, Niigata prefecture (36°59'N, 138°1'E). Collected 1971 by K. Hayatsu.

#### Okamura Fault Series

Samples were collected by the trench excavation survey across the Okamura fault belonging to the Median Tectonic Line active fault system of Southwest Japan. Samples from Ioka, Saijo city, Ehime prefecture (33°55'N, 133°13'E). Collected 1983 and submitted 1984 by M. Andou, Kyoto University, and A. Okada, Aichi Prefectural University.

- KSU-791. NW 30a** 2050 ± 60  
Peat. *x* (level distance) = 8.0–8.5 m and *z* = 2 m in northwest wall.
- KSU-789. NW 30b** 2030 ± 50  
Peat from under part of peat layer, *x* = 8.5 m and *z* = 2 m.
- KSU-786. NW 31** 11,100 ± 260  
Peat from peat and fine sand layer, *x* = 8.5 m and *z* = 4.6 m.

<b>KSU-790. NW 32</b>	<b>11,200 ± 200</b>
Peat from upper part of thick peaty silt-sand layer, $x = 6.5$ m and $z = 5.3$ m.	
<b>KSU-787. NW 33</b>	<b>12,000 ± 80</b>
Peat from under part of thick peaty silt layer, $x = 6.5$ m and $z = 5.3$ m.	
<b>KSU-782. NW 34</b>	<b>13,100 ± 120</b>
Soil from peaty sand layer, $x = 6.5$ m and $z = 5.7$ m.	
<b>KSU-784. NW 35</b>	<b>17,800 ± 370</b>
Soil from under peaty silt layer, $x = 6.5$ m, and $z = 6.7$ m.	
<b>KSU-785. SW 39</b>	<b>3870 ± 90</b>
Peat, $x = 9.2$ m and $z = 3.2$ – $3.3$ m in southwest wall.	
<b>KSU-788. SW 40</b>	<b>2900 ± 60</b>
Wood and soil from conglomerate layer, $x = 12.2$ m and $z = 3.9$ m.	
<b>KSU-783. SW 42</b>	<b>13,200 ± 380</b>
Soil from fine sand layer, $x = 10.2$ m and $z = 6.5$ – $6.6$ m.	
<b>KSU-793. SW 43</b>	<b>9990 ± 80</b>
Soil from upper thick beach silt layer, $x = 10.2$ m and $z = 7.0$ – $7.05$ m.	
<b>KSU-792. SW 44</b>	<b>10,300 ± 120</b>
Soil from under thick beach silt layer, $x = 10.2$ m and $z = 7.8$ m.	

**Kochi Bore Samples**

Peat from Kochi plain, Itachino, Kochi prefecture ( $33^{\circ}33'30''\text{N}$ ,  $133^{\circ}37'50''\text{E}$ ). Collected and submitted by M. Ando.

<b>KSU-1067. 105–110 cm depth</b>	<b>1740 ± 70</b>
<b>KSU-1068. 240–245 cm depth</b>	<b>4850 ± 90</b>
<b>KSU-1069. 460–465 cm depth</b>	<b>8040 ± 60</b>
<b>KSU-1070. 670–675 cm depth</b>	<b>29,100 ± 1000</b>
<b>KSU-1071. 910–915 cm depth</b>	<b>30,200 +1500/–1200</b>
<b>KSU-1072. 1140–1145 cm depth</b>	<b>46,500 +38,000/–5500</b>
<b>KSU-1073. 1795–1800 cm depth</b>	<b>26,600 +1300/–1100</b>

*General comment:* KSU-1073 was the same layer KSU-1070 and KSU-1071. KSU-1073 fell by a fault.

**Hamana Lake Series**

Peat samples were collected by boring, at the shore of Hamana Lake, Shizuoka prefecture ( $34^{\circ}44'\text{N}$ ,  $137^{\circ}38'\text{E}$ ). Collected and submitted 1984 by H. Wada, Shizuoka University.

<b>KSU-845. H7 240–245 cm depth</b>	<b>5390 ± 420</b>
<b>KSU-846. H7 245–250 cm depth</b>	<b>7480 ± 900</b>
<b>KSU-847. H9 230–235 cm depth</b>	<b>4850 ± 370</b>
<b>KSU-848. H9 235–240 cm depth</b>	<b>5290 ± 640</b>
<b>KSU-849. H10 250–255 cm depth</b>	<b>4490 ± 340</b>
<b>KSU-850. H10 255–260 cm depth</b>	<b>6700 ± 1400</b>

**Jindai-sugi Series**

Samples in Kawagodaira pumice, from Ikadaba, Nakaizu-cho, Shizuoka prefecture (34°54'N, 138°57'E). Collected 1982 by E. Okawa, submitted 1984 by H. Wada.

*Comment* (H.W.): Kawagodaira pumice was believed to have erupted ca. 3000 BP.

<b>KSU-952. Ikadaba 0-5</b>	<b>2820 ± 50</b>
Wood ( <i>Cryptmeria japonica</i> ). 5 tree rings from outer side.	
<b>KSU-953. Ikadaba S</b>	<b>2860 ± 50</b>
Bark of same wood as KSU-952.	

**Kagiana Series**

Wood samples were embedded in sandy and clayish sediments, from Kagiana, Shizuoka City (35°2'N, 138°15'E). Collected and submitted 1985 by H. Wada.

<b>KSU-1032. KG-1</b>	<b>2490 ± 25</b>
Bark and 20 tree rings from outer side.	
<b>KSU-1033. KG-2</b>	<b>2500 ± 30</b>
15 tree rings from outer side.	
<b>KSU-1034. KG-3a</b>	<b>2670 ± 30</b>
Bark of tree.	
<b>KSU-1035. KG-3b</b>	<b>2430 ± 50</b>
15 tree rings from outer side.	
<b>KSU-954. Odanoike</b>	<b>4740 ± 230</b>
Peat, 290–300 cm depth, from Odanoike pond, Kuju-cho, Kusu-gun, Ohita prefecture (33°12'N, 131°18'E). Collected and submitted 1984 by M. Takeoka, Kyoto Prefectural University.	
<b>KSU-955. Nonbara</b>	<b>4200 ± 170</b>
Peat, 400–410 cm depth, from Ohike pond, Nonbara, Takeno-gun, Kyoto prefecture (35°45'N, 135°8'E). Collected and submitted 1984 by M. Takeoka.	
<b>KSU-956. Chojidani</b>	<b>890 ± 70</b>
Peat, 120–130. cm depth, from Chojidani valey, Miyama-cho, Kitakuwata-gun, Kyoto prefecture (35°17'N, 135°46'E). Collected and submitted 1984 by M. Takeoka.	
<b>KSU-957. Sugiyaike</b>	<b>4120 ± 120</b>
Peat, 140–150 cm depth, from Sugiyaike pond, Ohtsu city, Shiga prefecture (35°11'N, 135°53'E). Collected and submitted 1984 by M. Takeoka.	
<b>KSU-958. Kojorogaike</b>	<b>4600 ± 110</b>
Peat, 200–210 cm depth, from Kojorogaike pond, Katsuragawa, Otsu City, Shiga prefecture (35°14'N, 135°53'E). Collected and submitted 1984 by M. Takeoka.	
<b>KSU-959. Meiji</b>	<b>60 ± 90</b>
Peat, 240–250 cm depth, from Meiji, Miyama, Tango-cho, Takeno-gun, Kyoto prefecture (35°44'N, 135°10'E). Collected and submitted 1984 by M. Takeoka.	

**KSU-1041. Habikino** **12,770 ± 130**

Peat, 120–130 cm depth, from Konda, Habikino City, Osaka prefecture (34°33'N, 135°15'E). Collected and submitted 1985 by M. Takeoka.

**KSU-1042. Kashiwara** **2330 ± 30**

Peat, 80–85 cm depth, from Kashiwara, Toyono-gun, Osaka prefecture (34°58'N, 135°25'E). Collected and submitted 1985 by M. Takeoka.

**KSU-985. Kamifukada** **3340 ± 40**

Wood, 60–90 cm depth, from Kamifukada, Sanda City, Hyogo prefecture (35°53'N, 135°12'E). Collected and submitted 1984 by K. Mino, Ritsumeikan University.

*Comment (K.M.):* Collected in Yamasaki fault. Dated specimen was presumed to be buried by earthquake of AD 868.

**KSU-1149. Natadera** **54,600 +12,000/–4600**

Charcoal in Natadera fault, Komatsu City, Ishikawa prefecture (36°18'N, 136°25'E). Collected and submitted 1985 by K. Mino.

#### **Yachidaira Series**

Peat from Yachidaira, Onoda-cho, Kami-gun, Miyagi prefecture (38°29'N, 140°37'30"E). Collected 1984 and submitted 1985 by K. Hibino, Miyagi Agricultural College.

**KSU-1074. Yachidaira 1** **830 ± 40**

Peat, 120–130 cm depth.

**KSU-1075. Yachidaira 2** **640 ± 30**

Peat, 85–100 cm depth.

**KSU-1085. Miyatoko-Ohyachi** **7000 ± 50**

Peat, 275–300 cm depth, from Miyatoku-Oyachi, Nagano, Minami-aizu-gun, Fukushima prefecture (37°15'N, 139°34'E). Collected 1984 and submitted 1985 by K. Hibino.

*Comment (K.H.):* This <sup>14</sup>C date age almost agrees with a palynological estimate.

**KSU-1086. Amou marshland** **9680 ± 70**

Peat, 275–295 cm depth, from Amou, Kawai, Kichijo-gun, Gifu prefecture (36°15'N, 136°58'E). Collected 1984 and submitted 1985 by K. Hibino.

#### **Yadegawa Series**

Samples from Yadegawa, Nobeyama, Minamisaku-gun, Nagano-prefecture (36°51'N, 138°29'E). Collected by Y. Yasuda, Hiroshima University. Submitted 1981 by M. Tozawa, Meiji University.

*Comment (Y.Y.):* KSU-1160 and KSU-443 were presumably from the last Ice Age (*ca.* 20,000 to 11,000 BP). KSU-1161 and KSU-1162 were expected to be of Jomon Age.

**KSU-1163. Yadegawa 1** **22,500 ± 160**

Peat.

**KSU-443. Yadegawa 3** **29,750 ± 600**

Wood.

**KSU-1161. Yadegawa 4** **2940 ± 20**

Peat.

**KSU-1162. Yadegawa 6** **4730 ± 25**  
Peat.

**KSU-649. Hananoego** **6100 ± 25**  
Peat under Akahoya volcanic ash, Hananoego, Yaku Island, Kumage-gun, Kagoshima prefecture (30°18'30"N, 130°30'45"E). Collected and submitted 1983 by Y. Yasuda. *Comment* (Y.Y.): Expected age: ca. 7000 BP.

#### CHINA

**KSU-1163. Saiko 200–250 cm depth** **1540 ± 60**  
Peat from Lake Sha, Hong-chou (30°15'N, 120°10'E). Collected 1984 and submitted 1985 by Y. Yasuda.

**KSU-1166. Mongol 140–160 cm depth** **3340 ± 140**  
Peat from Shioziki, Inner Mongolia (40°25'N, 111°10'E). Collected 1984 and submitted 1985 by Y. Yasuda.

#### GREECE

##### Hotousa Moor Series

Peat from Peloponnissos (37°48'N, 22°30'W, 900 m asl). Collected 1984 and submitted 1985 by Y. Yasuda.

**KSU-1111. 100–200 cm depth** **2280 ± 40**  
**KSU-1112. 180–200 cm depth** **3700 ± 70**  
**KSU-1113. 260–280 cm depth** **5180 ± 70**

##### Korone Moor Series

Peat from Korone moor, northwest Greece (39°20'N, 20°11'W, 10 m asl). Collected 1984 and submitted 1985 by Y. Yasuda.

**KSU-1252. 150–160 cm depth** **2740 ± 40**  
**KSU-1114. 380–390 cm depth** **4500 ± 40**  
**KSU-1253. 1400–1420 cm depth** **3940 ± 80**  
**KSU-1115. 1610–1630 cm depth** **6360 ± 40**

##### Katouna Series

Peat from Katouna moor, northwest Greece (38°50'N, 21°5'W). Collected 1984 and submitted 1985 by Y. Yasuda.

**KSU-1170. 170–200 cm depth** **710 ± 50**  
**KSU-1171. 370–400 cm depth** **1770 ± 50**  
**KSU-1172. 910–940 cm depth** **3970 ± 80**

#### TURKEY

##### Civiril Series

Peat from Civiril moor, western Anatolia (38°20'N, 29°40'W). Collected 1984 and submitted 1985 by Y. Yasuda.

<b>KSU-1164. 100–175 cm depth</b>	<b>2700 ± 70</b>
<b>KSU-1165. 305–330 cm depth</b>	<b>4140 ± 80</b>

**Abant Gol Series**

Peat from the lake Abant, northern Turkey (40°50'N, 31°30'W). Collected 1984 and submitted 1985 by Y. Yasuda.

<b>KSU-1167. 100–120 cm depth</b>	<b>350 ± 80</b>
<b>KSU-1168. 320–340 cm depth</b>	<b>1410 ± 180</b>
<b>KSU-1169. 620–650 cm depth</b>	<b>2400 ± 70</b>

*NEPAL*

<b>KSU-648. Kathmandu basin</b>	<b>9950 ± 70</b>
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Wood from Kathmandu (27°40'N, 85°20'E, 1400 m asl). Collected 1982 and submitted 1983 by Y. Yasuda.

*Comment* (Y.Y.): Wood was embedded in lake deposit. Expected time range: Last Ice Age.

<b>KSU-657. Lake Rara</b>	<b>7720 ± 200</b>
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Peat, 480–450 cm depth, from Lake Rara, western Nepal (29°27'N, 82°0'E, 3000 m asl). Collected 1982 and submitted 1983 by Y. Yasuda.

*Comment* (Y.Y.): deposit of 7 m depth was dated to *ca.* 10,000 BP by pollen analysis. Therefore this deposit was presumed *ca.* 7000 BP.

**Partical Series**

Samples from mud-flow deposits in Indrawati River, northeast of Kathmandu basin (27°44'N, 85°40'E). Collected 1985 by M. Yoshida, Trivhuvan University, and submitted 1985 by Y. Igarashi, Hokkaido University.

*Comment* (M.Y.): Expected period: Last Ice Age.

<b>KSU-1087. 84Y 18-1</b>	<b>55,600 +29,000/–5400</b>
Peat.	

<b>KSU-1088. 84Y 18-2</b>	<b>56,200</b>
Wood.	

<b>KSU-1120. Thimi-1</b>	<b>45,300 +6000/–3400</b>
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Wood in Thimi Formation, from Kathmandu basin (27°44'N, 85°23'30"E). Collected 1985 by M. Yoshida, submitted 1985 by Y. Igarashi.

*INDONESIA*

<b>KSU-502. Krakatau Volcano</b>	<b>190 ± 25</b>
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Wood in the outcrop of ash flow at Danan Islands, west Java (6°20'S, 105°30'E). Collected and submitted 1982 by T. Yokohama, Doshisha University.

*Comment* (T.Y.): Presumed to be related to eruption of Krakatau Volcano in AD 1883.

<b>KSU-768. Ug. Kulon</b>	<b>4810 ± 40</b>
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Shell (*Tridacnidae*) in coral reef, 20 m above sea level, from Ug. Kulom, Java Island (6°44'N, 105°13'E). Collected 1983 by P. Hebanssa, Bandung Geological Laboratory, and submitted 1984 by J. Nishida, Ohtani University.

## ARCHAEOLOGICAL SAMPLES

## JAPAN

## Hokkaido Mamachi Site Series

Charcoal from Mamachi, Chitose City (42°48'58"N, 141°38'54"E). Collected 1982 by H. Taguchi and submitted by R. Asai, Hokkaido Archaeological Research Center.

*Comment* (H.T.): Associated with Satsumon pottery.

**KSU-560. Mamachi 1** 1930 ± 40

Charcoal from B point, on floor of Dwelling Pit H-1 of Satsumon period.

**KSU-561. Mamachi 2** 1210 ± 40

Charcoal from fireplace of same pit as KSU-560.

## Horikapp Site Series

Charcoal from Horikapp, Furuu-gun (43°0'N, 140°30'E). Collected 1982 by N. Kimura, submitted by R. Asai.

*Comment* (N.K.): Samples found in layer, included relics of later Middle to early Late Jomon Age.

**KSU-574. Horikapp 1** 4020 ± 50

Charcoal under layer 4, F-8.

**KSU-588. Horikapp 2** 2330 ± 170

Charcoal upper layer 2, D-9-30, P-8.

**KSU-589. Horikapp 3** 2380 ± 500

Charcoal from fireplace 2, E point.

**KSU-590. Horikapp 4** 3800 ± 120

Charcoal from F-12-87, fireplace 14.

**KSU-591. Horikapp 5** 2550 ± 450

Charcoal from H-10, upper black sand layer.

**KSU-967. Bibi 2 site** 2430 ± 90

Charcoal on floor of Dwelling Pit H-1, upper Tarumae-c scoria. Collected 1984 by B. Aoyanagi and submitted 1984 by R. Nakamura, Hokkaido Archaeological Research Center. Charcoal from Bibi, Chitose City (42°46'N, 141°4'E).

*Comment* (B.A.): Expected age: later Jomon to Zoku-Jomon Age.

## Bibi 4 Site Series

This site is near place of Bibi 2 site. Submitted 1983 to 1985 by R. Nakamura.

**KSU-676. Bibi 4-1** 2370 ± 30

Charcoal in buried soil of grave, excavated from upper Tarumae-c volcanic ash layer, P-59. Collected 1983 by K. Nonaka.

*Comment* (K.N.): Associated with Daido-A pottery.

**KSU-677. Bibi 4-2** **3420 ± 30**  
Charcoal on floor of Dwelling Pit H-1 in peat layer between Tarumae-d and Tarumae-c. Collected 1983 by K. Satou.

*Comment* (K.S.): Associated with Teine-shiki pottery of middle Late Jomon Age.

**KSU-747. Bibi 4-3** **2640 ± 400**  
Human bone in grave X-208. Collected 1983 by K. Nonaka.

*Comment* (K.N.): Grave was presumed later Jomon Age.

**KSU-969. Bibi 4-4** **3240 ± 130**  
Charcoal from Pit-149, on grave. Collected 1984 by K. Endo.

*Comment* (K.E.): Expected age: middle Late Jomon Age.

**KSU-970. Bibi 4-5** **3460 ± 40**  
Charcoal from Pit-123. Collected 1984 by H. Mori.

*Comment* (H.M.): Presumed same age as KSU-969.

**KSU-1194. Bibi 4-6** **3180 ± 80**  
Charcoal from Pit-904 under Tarumae-c. Collected 1985 by K. Nonaka.

#### **Yunosato 2 Site Series**

Samples were collected 1983 by T. Takahashi, and submitted 1983 by R. Nakamura at Yunosato, Shiriuchi-cho, Kamiiso-gun (41°35'N, 140°20'E).

**KSU-748. Yunosato 2-1** **4530 ± 120**  
Charcoal from Y2-H-1, Dwelling Pit-1, later Early Jomon Age.

**KSU-749. Yunosato 2-2** **4380 ± 90**  
Charcoal from Y2-H-2, Dwelling Pit-2, later Early Jomon Age.

#### **Yunosato 5 Site Series**

Samples were collected 1983 by H. Taguchi and submitted 1983 by R. Nakamura.

**KSU-678. Yunosato 5-1** **3020 ± 80**  
Charcoal in Layer 3 on Stone Circle of early Late Jomon Age.

**KSU-679. Yunosato 5-2** **3590 ± 70**  
Charcoal in covered soil of Stone Circle.

**KSU-680. Yunosato 5-3** **3970 ± 90**  
Charcoal in pit, presumed same age as Stone Circle.

#### **Yunosato 6 Site Series**

Samples were collected 1983 by Y. Nakata and submitted 1983 by R. Nakamura.

**KSU-681. Yunosato 6-1** **2510 ± 180**  
Charcoal from Y-6, G-64-b, Layer 3, contained Final Jomon Relics.

**KSU-682. Yunosato 6-2** **2780 ± 180**  
Charcoal from Y-6, I-63-d, Pit 5, presumed grave of Final Jomon Age.



**KSU-683. Yunosato 6-3** 3380 ± 640  
Charcoal from Y-6, E-65-a, S-1, Layer 4, fireplace of Late Jomon Age.

#### Kusunoki Site Series

Charcoal from Kusunoki, Bifune-cho, Nakagawa-gun (44°28'N, 142°15'E). Collected 1983 by A. Oniyanaagi and submitted 1983 by R. Nakamura.

*Comment* (A.O.): Expected age: Satsumon Age.

**KSU-684. Kusunoki 1** 920 ± 70  
Charcoal in kitchen range of Dwelling Pit H-6.

**KSU-685. Kusunoki 2** 760 ± 50  
Charcoal in kitchen range of Dwelling Pit H-7.

**KSU-686. Kusunoki 3** 820 ± 60  
Charcoal on floor of Dwelling Pit H-37.

#### Pirika 1 Site Series

Charcoal from Pirika, Imakane-cho, Setana-gun (42°28'N, 140°13'E). Collected 1983 by T. Naganuma and submitted 1983 by R. Nakamura.

**KSU-687. Pirika 1-1** 19,800 ± 380  
Charcoal from M-44-c, bottom of Layer 3.

*Comment* (T.N.): Expected age was comparable to microlith of ran-etsu type of later Early Stone Age.

**KSU-688. Pirika 1-2** 17,500 ± 200  
Charcoal from L-52-d, middle of Layer 3.

*Comment* (T.N.): Expected age was comparable to Yuzetsu point of later Early Stone Age.

**KSU-689. Pirika 1-3** 20,900 ± 260  
Charcoal from M-53-b, bottom of Layer 3.

*Comment* (T.N.): Expected age was comparable to grave of Araya type and microlith of Tougeshita type of later Early Stone Age.

**KSU-750. Nishinoppo 12-17 site** 1070 ± 20  
Charcoal from Pit 88, Nishinoppo, Ebetsu city (43°4'N, 141°32'E). Collected 1983 by T. Kasai and submitted by R. Nakamura.

*Comment* (T.K.): Expected period: late Zoku-Jomon Age.

#### Nakahama E Site Series

Charcoal from Nakahama, Shirikishinai-cho, Kameda-gun (41°44'N, 141°4'E). Collected 1984 by H. Taguchi and submitted by R. Nakamura.

*Comment* (H.T.): Expected age: Initial to Late Jomon Age.

**KSU-961. Nakahama E-1** 4390 ± 40  
Charcoal from P-1.

<b>KSU-962. Nakahama E-2</b>	<b>1920 ± 190</b>
Charcoal from TP-5.	
<b>KSU-963. Nakahama E-3</b>	<b>6820 ± 180</b>
Charcoal on floor of Dwelling Pit H-2.	

**Chitose 5 Site Series**

Charcoal from Chitose-cho, Noboribetsu City (42°24'N, 141°11'E). Collected 1984 by S. Nishida and submitted by R. Nakamura.

*Comment* (S.N.): Expected age: Middle to Late Jomon Age.

<b>KSU-964. Chitose 5-1</b>	<b>4210 ± 60</b>
Charcoal on floor of Dwelling Pit, H-23-B.	
<b>KSU-965. Chitose 5-2</b>	<b>4110 ± 70</b>
Charcoal from bottom of Layer 3, E-100-d.	
<b>KSU-966. Chitose 5-3</b>	<b>4200 ± 50</b>
Charcoal from Layer 2, E-1-c.	

**Osaka Prefecture Sadoh Site Series**

Wood from Sadoh-cho, Yao city (34°37'56"N, 135°35'32"E). Collected and submitted 1982, 1983 by Y. Nishiguchi, Osaka Archaeological Research Center.

<b>KSU-521. Sadoh 1</b>	<b>1390 ± 20</b>
Wood.	
<b>KSU-526. Sadoh 2</b>	<b>1500 ± 20</b>
Wood.	
<b>KSU-575. Sadoh 3</b>	<b>1360 ± 20</b>
Wooden stake from bank of Nagase River.	
<b>KSU-577. Sadoh 4</b>	<b>1410 ± 20</b>
Wooden stake from bank of Nagase River.	
<b>KSU-716. Sadoh 5</b>	<b>250 ± 40</b>
Wooden stake from Tr. F.	

**Yamaga Site Series**

Sample from Yamaga-cho, Yao City (34°38'36"N, 135°35'58"E). Collected and submitted 1982 by Y. Nishiguchi, Osaka Archaeological Research Center.

<b>KSU-524. Yamaga 1</b>	<b>2950 ± 20</b>
Wood from rough sand layer, Tr C-6, 0 m , associated with Final Jomon pottery.	
<b>KSU-529. Yamaga 2</b>	<b>3750 ± 20</b>
Wood from gray-brown gravel layer, Tr B-2, -1.5 m below sea level, associated with Middle Jomon pottery.	
<b>KSU-527. Yamaga 3</b>	<b>4130 ± 20</b>
Wood from dark gray sand layer, Tr B-2, -3 m below sea level. Early Jomon Age.	

<b>KSU-533. Yamaga 4</b>	<b>4480 ± 20</b>
Shell from same layer as KSU-527.	
<b>KSU-528. Yamaga 5</b>	<b>4490 ± 20</b>
Wood from dark grayish-green clay layer, Tr B-2, -4 m below sea level. Early Jomon Age.	
<b>KSU-534. Yamaga 6</b>	<b>4470 ± 30</b>
Shell from same locality as KSU-528.	
<b>KSU-605. Yamaga 7</b>	<b>2520 ± 30</b>
Peat from second black clay layer, Tr B-2, 0 m above sea level. Final Jomon Age.	
<b>KSU-604. Yamaga 8</b>	<b>3140 ± 40</b>
Peat from second black clay layer, Tr B-2, -0.6 m below sea level. Late Jomon Age.	

#### Nishiurabashi Site Series

Wood from Hikisho, Sakai City (34°31'31"N, 135°28'24"E). Collected 1983 by S. Anzato, T. Hashimoto, K. Ohno and submitted by Y. Nakanishi, Osaka Archaeological Research Center.

<b>KSU-704 Nishiurabashi 1</b>	<b>4270 ± 25</b>
Wood from base of bluish gray sand layer, Sec B.	
<i>Comment</i> (Y.N.): Expected period: later Middle Jomon Age.	
<b>KSU-705 Nishiurabashi 2</b>	<b>4360 ± 25</b>
Wood from same locality as KSU-704.	
<b>KSU-706 Nishiurabashi 3</b>	<b>4450 ± 40</b>
Wood from base of bluish gray sand layer, Section A.	
<i>Comment</i> (Y.N.): Expected period: later Middle Jomon Age.	
<b>KSU-707 Nishiurabashi 4</b>	<b>3640 ± 25</b>
Wood in 67b line.	
<i>Comment</i> (Y.N.): Expected period: early Late Jomon Age.	
<b>KSU-708 Nishiurabashi 5</b>	<b>3970 ± 30</b>
Wood in Section A.	
<i>Comment</i> (Y.N.): Expected period: early Late Jomon Age.	
<b>KSU-709 Nishiurabashi 6</b>	<b>1630 ± 20</b>
Wood from a river of Jomon Age, Section D.	
<i>Comment</i> (Y.N.): Expected period: middle Final Jomon Age.	
<b>KSU-710. Nishiurabashi 7</b>	<b>2590 ± 20</b>
Wood from a river of Jomon Age, Section C.	
<i>Comment</i> (Y.N.): Expected period: middle Final Jomon Age.	
<b>KSU-711. Nishiurabashi 8</b>	<b>2400 ± 20</b>
Wood from a river of Yayoi Age, Section C.	
<i>Comment</i> (Y.N.): Expected period: Early Middle Yayoi Age.	

**KSU-712. Nishiurabashi 9** **2160 ± 25**  
Wood in Section C and Section D.

*Comment* (Y.N.): Unknown Period.

**KSU-713. Nishiurabashi 10** **2620 ± 20**  
Wood in Section A and Section B.

*Comment* (Y.N.): Unknown Period.

#### Misono Site Series

Samples from Misono, Yao City (34°38'10"N, 135°35'45"E). Collected 1983 by S. Anzato, T. Hashimoto, K. Ohno and submitted by Y. Nakanishi, Osaka Archaeological Research Center.

**KSU-714. Misono 1** **2690 ± 30**  
Charcoal and soil from Section 7B.

*Comment* (Y.N.): Expected period: later Early to early Middle Yayoi Age.

**KSU-715. Misono 2** **2120 ± 50**  
Natural wood.

*Comment* (Y.N.): Expected period: early Kofun Age.

#### Jogoji Site Series

Samples from Jogoji, Kumatori-cho, Sennan-gun (34°23'N, 135°22'E). Collected and submitted 1984 by S. Anzato and K. Ohno, Osaka Archaeological Research Center.

**KSU-995. Jogoji 1** **940 ± 50**  
Soil and charcoal in Point 321, Section B-8.

**KSU-996. Jogoji 2** **880 ± 40**  
Soil and charcoal in Point 355, Section B-4.

**KSU-997. Jogoji 3** **850 ± 50**  
Soil and charcoal in Point 355, Section B-4. *Comment* (Y.N.): Expected age: AD 1300 to AD 1400.

#### Kyuhoji Site Series

Samples from Nishi-Kyuhoji, Yao City (34°37'N, 135°35'E). Collected and submitted 1983 by M. Imamura, 1985 by K. Ichinose, Osaka Archaeological Research Center.

**KSU-1004. Kyuhoji 1** **1760 ± 30**  
Peat from Layer 4a, SX303, Section H3.

*Comment* (K.I.): Expected period: Early Kofun Age.

**KSU-1005. Kyuhoji 2** **1700 ± 40**  
Peat from same locality as KSU-1004.

**KSU-1006. Kyuhoji 3** **1680 ± 30**  
Peat from same locality as KSU-1004.

**KSU-1007. Kyuhoji 4** 2330 ± 30  
Wood, Shigarami 205, w-167.

*Comment* (K.I.): Expected period: early Middle Yayoi Age.

**KSU-1008. Kyuhoji 5** 2550 ± 50  
Wood, Shigarami 103, w-1.

*Comment* (K.I.): Expected period: middle Middle Yayoi Age.

**KSU-1009. Kyuhoji 6** 2140 ± 25  
Wood, Shigarami 402, w-39. *Comment* (K.I.): Expected period: later Middle Yayoi Age.

**KSU-1061. Kyuhoji 7** 5030 ± 60  
Soil. Associated with Jomon pottery.

*Comment* (M.I.): Expected age: *ca.* 3000 BP.

**KSU-1062. Kyuhoji 8** 4050 ± 30  
Soil. Same as KSU-1061.

#### Joyama Site Series

Wood from Joyama, Nagayoshi-Nagahara-cho, Hirano-ku, Osaka City (34°36'N, 135°34'E). Relics of Incipient Jomon (*ca.* 10,000 BP) were found *ca.* 2.5 m, and samples were found *ca.* 5 m, below present surface. Collected 1983 and submitted 1985 by K. Abe, Osaka Archaeological Research Center.

*Comment* (K.A.): Expected age: *ca.* 30,000 BP.

**KSU-1063. Joyama 1** 43,800  
Wood.

**KSU-1064. Joyama 2** 43,300  
Wood.

**KSU-1065. Joyama 3** 40,000  
Wood.

**KSU-1066. Joyama 4** 39,400 +7300/-3700  
Wood.

#### Kyoto Prefecture Kitakanage Site Series

Samples from Kitakanage, Ohi-cho, Kameoka City, Kyoto prefecture (35°01'48"N, 130°32'38"E). Collected 1984 and submitted by K. Tsutsumi, Kyoto Prefecture Archaeological Research Center.

**KSU-797. Kitakanage 1** 1715 ± 15  
Wooden stake in SD01.

**KSU-798. Kitakanage 2** 2495 ± 15  
Wooden plate in SD01.

**KSU-799. Kitakanage 3** 2040 ± 15  
Wooden plate in SD01.

<b>KSU-800. Kitakanage 4</b> Wooden stake in SD01.	<b>1930 ± 70</b>
<b>KSU-801. Kitakanage 5</b> Natural wood in SD01.	<b>1715 ± 15</b>
<b>KSU-802. Kitakanage 6</b> Charcoal from dwelling pit, SB03.	<b>1820 ± 15</b>

*Comment (K.T.):* expected period: KSI-797 to KSU-801, early Kofun Age, KSU-802, Late Yayoi Age.

#### **Hyogo Prefecture Iwaya-kanre Site Series**

Samples from Iwaya-Kanre, Itami City, Hyogo prefecture (34°46' 33.6"N, 135°26'36"E). Collected and submitted 1984 by T. Asaoka, Board of Education, Itami city.

<b>KSU-841. Iwaya-Kanre 1</b> Wood in Section 3.	<b>3170 ± 25</b>
<b>KSU-842. Iwaya-Kanre 2</b> Nuts in Section 3.	<b>3950 ± 260</b>
<b>KSU-843. Iwaya-Kanre 3</b> Wood in Section 4.	<b>3190 ± 60</b>
<b>KSU-951. Arioka Castle</b> Charcoal from Arioka Castle, Itami City (34°46'28"N, 135°26'12"E). Collected and submitted 1984 by T. Asaoka.	<b>3550 ± 150</b>

*Comment (T.A.):* Associated with Upper Kitashirakawa-shiki pottery of middle Late Jomon Age. Result as expected.

<b>KSU-1044. Aramaki 25,800 ± 180</b> Peat from Aramaki, Itami City (34°48'33"N, 135°23'9"E). Collected 1984 and submitted 1985 by T. Asaoka.	
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*Comment (T.A.):* Date indicates the formative period of Itami plateau. Result as expected.

#### **Morimoto-tsuruta Site Series**

Sample from Morimoto, Itami City (34°46'36"N, 135°26'25"E). Collected and submitted 1985 by T. Asaoka.

<b>KSU-1045. Morimoto 1</b> Peat from bluish-gray clay layer, Point 3 180 cm depth, Final Jomon Age.	<b>3090 ± 20</b>
<b>KSU-1046. Morimoto 2</b> Peat from same locality as KSU-1045.	<b>3940 ± 120</b>
<b>KSU-1047. Morimoto 3</b> Wood from black-gray peat layer, Point 3, 270 cm depth, before Final Jomon.	<b>3700 ± 20</b>
<b>KSU-1048. Morimoto 4</b> Peat from black-gray peat layer, Point 2, 180 cm depth.	<b>2640 ± 20</b>

<b>KSU-1128. Morimoto 5</b>	<b>2730 ± 25</b>
Wood from grayish-yellow peat layer, Point 4, 230 cm depth, Jomon Age.	
<b>KSU-1129. Morimoto 6</b>	<b>2490 ± 40</b>
Peat from gray clay sand layer, Point 10, 160 cm depth, Final Jomon.	
<b>KSU-1130. Morimoto 7</b>	<b>3090 ± 25</b>
Wood from gray sand layer, Point 14, 330 cm depth, Jomon Age.	
<b>KSU-1131. Morimoto 8</b>	<b>2740 ± 25</b>
Wood from gray clay layer, Point 17.	
<b>KSU-1132. Morimoto 9</b>	<b>2330 ± 25</b>
Wood from grayish-blue sand layer, Point 30-1, after Final Jomon.	
<b>KSU-1133. Morimoto 10</b>	<b>2450 ± 25</b>
Peat from black-brown clay layer, Point 30-2, after Final Jomon.	
<b>KSU-1134. Morimoto 11</b>	<b>3630 ± 25</b>
Wood from brown peat layer, Point 30-3, Final Jomon.	

*Comment (T.A.):* Results of KSU-1045, 1046, 1134 seemed to be older, other results as expected.

#### **Kuchisakai Site Series**

Peat from Kuchisakai, Itami city (34°46'20"N, 135°26'33"E). Submitted 1985 by T. Asaoka.

<b>KSU-1049. Kuchisakai 1</b>	<b>2570 ± 40</b>
Peat from gray clay layer, Point 7, Early Yayoi Age. Collected 1985 by T. Asaoka.	
<b>KSU-1050. Kuchisakai 2</b>	<b>2530 ± 20</b>
Peat from grayish-blue sand layer, Point 16, Final Jomon Age.	
<b>KSU-1127. Kuchisakai 3</b>	<b>2690 ± 35</b>
Peat from black sand layer, AM 15, Layer 15, Final Jomon Age. Collected 1985 by T. Izumi, Nara University.	

*Comment (T.A.):* Result of KSU-1049 is older. Other results as expected.

#### **Taiyohno-oka Site Series**

Charcoal from Taiyohno-oka, Hachioji city, Tokyo prefecture (139°20'N, 36°41'E). Collected and submitted 1984 by M. Koshida, Souka University.

<b>KSU-919. Taiyohno-oka 1</b>	<b>1210 ± 30</b>
Charcoal from kiln N-25. Heian era.	
<b>KSU-920. Taiyohno-oka 2</b>	<b>1420 ± 200</b>
Charcoal from kiln 1. Heian era.	
<b>KSU-921. Taiyohno-oka 3</b>	<b>1160 ± 50</b>
Charcoal, same locality as KSU-920.	
<b>KSU-922. Taiyohno-oka 4</b>	<b>860 ± 120</b>
Charcoal from O-18. Jomon Age.	
<b>KSU-923. Taiyohno-oka 5</b>	<b>1390 ± 80</b>
Charcoal from Dwelling Pit P-22. Late Kofun Age.	

<b>KSU-924. Taiyohno-oka 6</b>	<b>1100 ± 110</b>
Charcoal on floor of Dwelling Pit U-27. Heian era.	
<b>KSU-925. Taiyohno-oka 7</b>	<b>1630 ± 30</b>
Charcoal from Dwelling Pit S-23. Late Kofun Age.	
<b>KSU-926. Taiyohno-oka 8</b>	<b>1610 ± 50</b>
Charcoal from Dwelling Pit N-25b. Late Kofun Age.	
<b>KSU-927. Taiyohno-oka 9</b>	<b>1570 ± 70</b>
Charcoal from Dwelling Pit Q-24. Late Kofun Age.	
<b>KSU-928. Taiyohno-oka 10</b>	<b>1390 ± 60</b>
Charcoal from Dwelling Pit N-22. Middle Kofun Age.	
<b>KSU-929. Taiyohno-oka 11</b>	<b>1200 ± 100</b>
Charcoal from Dwelling Pit S-21. Late Kohun Age.	

### **Itai Site Series**

Samples from Itai site, Sasaki-cho, Taki-gun, Hyogo prefecture (35°6'N, 135°11'E). Collected and submitted 1984 by T. Mizuguchi, Board of Education, Hyogo prefecture.

*Comment (T.M.):* Associated with Knife Blade and Point of Late Palaeolithic Age (layer 9 and 44). These results are arranged in order of depth. Charcoal samples are all from fireplaces.

<b>KSU-931. Itai 1</b>	<b>19,700 ± 230</b>
Peat from Point 11, Layer 40, <i>ca.</i> 100 cm depth.	
<b>KSU-932. Itai 2</b>	<b>19,600 ± 200</b>
Peat from Point 11, Layer 4, 110 cm depth.	
<b>KSU-933. Itai 3</b>	<b>20,400 ± 260</b>
Peat from Point 11, Layer 41, 120 cm depth.	
<b>KSU-934. Itai 4</b>	<b>25,000 ± 260</b>
Wood (numerous twigs) from Point 11, Layer 9A, 130 cm. These twigs are similar to KSU-939.	

*General Comment:* It is presumed that the twigs are of same age as KSU-939 piled again from higher place to lower.

<b>KSU-935. Itai 5</b>	<b>22,700 ± 330</b>
Wood and peat from Point 11, Layer 9B, 140 cm depth.	
<b>KSU-936. Itai 6</b>	<b>21,500 ± 230</b>
Wood and peat from Point 11, Layer 9C, 150 cm depth.	
<b>KSU-937. Itai 7</b>	<b>17,000 ± 330</b>
Ash of Aira Volcano, from Point 11, Layer Iic, 170 cm depth.	

*General Comment:* Ash of Aira Volcano is presumed *ca.* 23,000 BP between KSU-936 and KSU-938. The ash includes very little organic matter. The result is affected with permeated substance afterward.

<b>KSU-938. Itai 8</b>	<b>23,600 ± 200</b>
Peat from Point 11, upper part of Layer 44A, 190 cm depth.	



<b>KSU-939. Itai 9</b>	<b>25,900 ± 340</b>
Wood (numerous twigs) from Point 11, lower part of Layer 44Q, 210 cm depth.	
<b>KSU-940. Itai 10</b>	<b>24,900 ± 320</b>
Peat from Point 11, upper part of Layer 44B, 230 cm depth.	
<b>KSU-941. Itai 11</b>	<b>26,000 ± 340</b>
Peat from Point 11, upper part of Layer 44B, 250 cm depth.	
<b>KSU-942. Itai 12</b>	<b>25,800 ± 440</b>
Wood and peat from Point 11, Layer 50, 270 cm depth.	
<b>KSU-943. Itai 13</b>	<b>21,400 +1400 / -1200</b>
Clay from Point 11, Layer 45, 300 cm depth.	
<b>KSU-1139. Itai 14</b>	<b>25,100 ± 360</b>
Charcoal from Point F-10, Layer Peat-3.	
<b>KSU-1140. Itai 15</b>	<b>26,300 ± 360</b>
Charcoal from Point I-15, Layer Peat-3.	
<b>KSU-1141. Itai 16</b>	<b>25,000 ± 1100</b>
Charcoal from Point M-5 and N-5, Layer Peat-3.	
<b>KSU-1142. Itai 17</b>	<b>24,700 ± 250</b>
Charcoal and peat from Point F-10, Layer Peat-3.	

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#### REFERENCES

- Hayata, T. 1992 Nagano prefecture cultural asset center. *The Report of Excavation* 11: 242 (in Japanese).
- Igarashi, Y. Miyagi, T. 1993 Vegetation history of Kenbuchi Basin and Furano Basin in Hokkaido, North Japan, since 32,000 years BP. *Quaternary Research* 32(2): 89–105 (in Japanese).
- Kigoshi, K. 1967 Gakushuin natural radiocarbon measurements VI. *Radiocarbon* 9: 43–62.
- Kondoh, N. Kobayashi, H. 1990 A typical factory of large both-sides processed points. *Journal of Archaeology* 324: 18–22 (in Japanese).
- Togashi, S. and Matsumoto, E. 1984 Geological Survey of Japan radiocarbon dates I. *Radiocarbon* 26(2): 206–211.
- Yamada, O. and Kobashigawa, A. 1984 KSU radiocarbon dates I. *Radiocarbon* 28(3): 1077–1101.