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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/1 **Job:** 23349 **NZA Number:** 15024

Submitter: Naoko Kitada

Sample ID: GRI 1024

Description: Wood with soil

Details: Sample consisted of a lump of sandy hard soil with some wood within. Soil has an acrid smell. Microscopic exam revealed small fragments of degraded wood with soil attached. Very brittle fragments of plant, small amount of wood. Removed wood fragments from soil, washed in ultrasonic bath in desionised water for a few minutes, rinsed through sieve, vacuum dried. Crushed in beaker and treated with mild acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** Untreated remainder, treated wood

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/2 **Job:** 23350 **NZA Number:** 15025

Submitter: Naoko Kitada

Sample ID: GRI 1025

Description: Wood with soil

Details: Sample consisted of half a core, mainly light brown grey (munsell 2.5Y 6/2) solid soil, with small fragments of degraded wood. Microscopic exam revealed very degarded wizened up wood. No vascular structure clear, some wood is black and shiny. Stick-like wood, hollow inside, some flat leaf-like material - have stored this. Removed wood from soil and washed in ultrasonic bath in deionised water, dried in vacuum oven. Crushed in beaker, treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** untreated remainder, treated wood.

R: 26827/3 **Job:** 23351 **NZA Number:** 15026

Submitter: Naoko Kitada

Sample ID: GRI 1026

Description: Soil

Details: Sample consisted of part of core of soil - grey and light brownish grey (munsell 2.5Y 6/1 & 2.5Y 6/2), maybe some shell. Soil smells acrid. Crushed core, picked out plant material. Microscopic exam revealed tiny fragments of very degraded wood, black and very shiny. Seed pods, perhaps grasses all with small amount of pale soil. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated plant material/soil **Stored:** Untreated soil, treated plant material.

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/4 **Job:** 23352 **NZA Number:** 15027

Submitter: Naoko Kitada

Sample ID: GRI 1027

Description: Soil

Details: Sample consisted of grey-brown (munsell 10YR 5/2) lumps of soil. Microscopic exam revealed light and fluffy, fine soil. Few minerals, tiny amount of plant. No obvious contaminents. Crushed and mixed all lumps together before sampling. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treaed soil/plant **Stored:** Untreated remainder, treated soil

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R: 26827/5 **Job:** 23353 **NZA Number:** 15170

Submitter: Naoko Kitada

Sample ID: GRI 1028

Description: Wood with soil

Details: Sample consisted of part of a core of soil with wood cannot see any wood by eye. Soil is grey (Munsell 5Y 6/1) slightly gritty. Microscopic exam revealed paper thin pieces of plant, tiny amount of degraded wood. Crushed all three lumps of soil in mortar to find wood. Picked out plant material and crushed in beaker. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Untreated soil remainder, treated wood **Stored:**

R: 26827/5 **Job:** 23353 **NZA Number:** 15170

Submitter: Naoko Kitada

Sample ID: GRI 1028

Description: Wood with soil

Details: Second attempt, soil this time. Microscopic exam revealed fine soil, many quartz pebbles, no obvious plant material or wood. Seived soil to <212 um. Treated with acid /alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil **Stored:** remainder untreated soil and treated soil

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/6 **Job:** 23354 **NZA Number:** 15028

Submitter: Naoko Kitada

Sample ID: GRI 1029

Description: Wood with soil

Details: Sample consisted of grey (Munsell 5Y 6/1) soil with small fragments of wood slivers. Microscopic exam revealed small fragments of wood, very dark brown, black in colour all degraded. Some paper thin fragments of plant, leaf-like wood and plant. Small amount of soil. Crushed and picked out wood and plant material. Crushed and treated with acid / alkali / acid process. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** remainder untreated and treated

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R: 26827/7 **Job:** 23355 **NZA Number:** 15029

Submitter: Naoko Kitada

Sample ID: GRI 1030

Description: Wood with soil

Details: Sample consisted of grey-brown soil (munsell 2.5Y 5/2) in a lump with pices of wood running through middle - maybe root. Microscopic exam revealed very degraded pices of wood, wrinkly and a covering of pale soil. Small fragment is black with soil coating. Pulled wood away from soil with tweezers. Brushed with toothbrush then ultrasonic bath for 10 minutes. Rinsed through sieve, dried in vacuum oven. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** Untreated remainder, treated wood.

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/8 **Job:** 23356 **NZA Number:** 15064

Submitter: Naoko Kitada

Sample ID: GRI 1031

Description: Root with soil

Details: Sample consisted of a lump of light grey (munsell 2.5Y 7/2) clay with orange staining where root has been. Microscopic reddish brown dried up old root. Paper thin sheets of slightly fibrous plant. Black, dark brown knobbly pieces of woody knots. Pulled root out from lump of soil with tweezers. Removed most of soil. Crushed up plant in beaker with tweezers. Treated acid / alkaline / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated root **Stored:** untreated soil remainder

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R: 26827/9 **Job:** 23357 **NZA Number:** 15030

Submitter: Naoko Kitada

Sample ID: GRI 1032

Description: Wood with soil

Details: Sample consisted of crumbly soil and fines along with twig like fragments of wood. Soil is light yellowish brown (munsell 2.5Y 6/3). Micrsocopic exam on four fragments of twig-like degraded wood and two of black shiny oxidised wood, vascular structure. Rest is seed pods, black brown leather-like with tiny indentations. Picked out twiggy fragments and plant from soil. Removed some soil. Crushed in beaker with end of pestle handle. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wwod **Stored:** remainder untreated and treated

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/10 **Job:** 23358 **NZA Number:** 15065

Submitter: Naoko Kitada

Sample ID: GRI 1033

Description: Wood with soil

Details: Sample consisted of light brownish grey soil with some plant material. Munsell 2.5Y 6/2, along with some plant material. Microscopic exam revealed very small amount of wood or plant material. A piece of dried up wood with coating of sand, and leaf material. Crushed lump in mortar , picked out wood with leaf like material. Crushed and treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated plant material **Stored:** remainder untreated

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R: 26827/11 **Job:** 23359 **NZA Number:** 15171

Submitter: Naoko Kitada

Sample ID: GRI 1034

Description: Wood with soil

Details: Sample consisted of light brownish grey - munsell 2.5Y 6/2, coarse sand with a black smudge running across one side. Microscopic exam revealed black smudge is like tiny pebbles all together, no vascular structure. The soil is gritty with mica and quartz. No contaminents. The black is very brittle. Picked out black material with tweezers. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** humics, untreated remainder

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/12 **Job:** 23360 **NZA Number:** 15131

Submitter: Naoko Kitada

Sample ID: GRI 1035

Description: Soil

Details: Sample consisted of three dried blocks of soil, greyish brown (Munsell 2.5Y 5/2) with a few black fragments visible. Microscopic exam revealed oven baked gritty soil along with small fragments of balck shiny, very degraded plant or wood. Some have a vascular structure, very brittle. Picked out all the black wood or plant and surrounding soil. Crushed in mortar and pestle and treated with acid / alklai / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil **Stored:** remainder

R: 26827/13 **Job:** 23361 **NZA Number:** 15132

Submitter: Naoko Kitada

Sample ID: GRI 1036

Description: Wood with soil

Details: Sample consisted of lumps of grey (Munsell 5Y 6/1) soil along with some wood. Soil is really baked. Picked out wood. Microscopic exam revealed very degraded wood, covered with the grey soil. Very dark brown and pale brown wood. Stringy and solid pieces. Washed in ultrasonic bath in deionised water to remove soil. Rinsed and picked out of sieve. Dried in vacuum oven. Ground with mortar and pestle and treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** untreated soil remainder, treated wood

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/14 **Job:** 23362 **NZA Number:** 15172

Submitter: Naoko Kitada

Sample ID: GRI 1037

Description: Wood with soil

Details: Sample consisted of two lumps of light grey soil (Munsell 2.5Y 7/1), rock hard. Pieces of wood running through. Broke lumps of soil with chisel and hammer, removed wood. Microscopic exam on wood revealed very brittle degraded wood, some soil. Very dark brown (nearly black) and pale brown in colour. Some knot pieces. Crushed with pestle handle in beaker.

Comments:

Fraction dated: Treated wood **Stored:** Untreated wood and soil remainder, treated wood

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R: 26827/15 **Job:** 23363 **NZA Number:** 15133

Submitter: Naoko Kitada

Sample ID: GRI 1038

Description: Plant material with soil

Details: Sample consisted of a degraded piece of wood running through the middle of light grey (munsell 2.5Y 7/2) and pale yellow (Munsell 2.5Y 7/3) soil. Microscopic examination revealed piece of plant approx. 2.5cm X 1cm. Hollow inside filled with pale clay. Plant seems very degraded and is black in colour, perhaps burnt. Some plant material, is thin, like leaf. Removed piece of plant from soil, washed in ultrasonic bath in deionised water. Dried in vacuum oven. Ground in mortar and pestle. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood **Stored:** Untreated wood and soil remainder, treated wood.

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/16 **Job:** 23364 **NZA Number:** 15160

Submitter: Naoko Kitada

Sample ID: GRI 1039

Description: Plant material with soil

Details: Sample consisted of dense, solid lump of clay-like soil. (Munsell 10Y 6/1 - greenish grey and 2.5Y 7/25 light grey. Used hammer to break up rock-like lumps. Microscopic exam revealed soft powdery soil, once broken or sieved, some black degraded plant or charcoal. Tiny fragments. Sample dried too hard to lift out tiny fragments. Selected lumps with a seam of plant material for dating. Ground in mortar and pestle. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil with plant material **Stored:** remainder untreated soil and treated soil.

R: 26827/17 **Job:** 23365 **NZA Number:** 15134

Submitter: Naoko Kitada

Sample ID: GRI 1040

Description: Wood with soil

Details: Sample consisted of very hard lump of soil, no visible wood observed. Soil oven baked and light grey (Munsell 2.5Y 7/2) in colour. Microscopic examination revealed rock hard soil, tiny fragments of black charcoal or very degraded plant. Vascular structure visible. The horizon is of light grey soil, the charcoal is very shiny. Broke lump up with chisel and hammer, then removed enriched soil with scalpel - including charcoal fragments. Ground in mortar and pestle. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil **Stored:** Untreated soil remainder, treated soil

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/18 **Job:** 23366 **NZA Number:** 15190

Submitter: Naoko Kitada

Sample ID: GRI 1041

Description: Wood with soil

Details: Sample consisted of three lumps of dried soil with seams of black charcoal running through. Soil is grey Munsell 2.5Y 6/1. Microscopic exam revealed grey sandy looking soil with black, very shiny fragments of charcoal or degraded wood embedded in soil. Took the black charcoal seam and removed with scalpel blade - used this for dating. Ground in mortar and pestle, treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil/charcoal **Stored:** untreated soil, treated soil/charcoal

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R: 26827/19 **Job:** 23367 **NZA Number:** 15215

Submitter: Naoko Kitada

Sample ID: GRI 1042

Description: Wood with soil

Details: Sample consisted of pale grey soil - Munsell 2.5Y 6/1. Dark brown plant matter in amongst soil. Microscopic exam revealed soil is very fine clay. Dark plant material with obvious vascular structure and fibrous curly nature. Picked out plant matter with tweezers. Washed in deionised water in ultrasonic bath. Dried in vacuum oven. Crushed in mortar and pestle and treated with cellulose extraction process. Dried in vacuum oven.

Comments:

Fraction dated: treated wood - cellulose **Stored:** untreated soil and treated wood

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/20 **Job:** 23368 **NZA Number:** 15216

Submitter: Naoko Kitada

Sample ID: GRI 1043

Description: Wood with soil

Details: Sample consisted of grey soil (munsell 10YR 5/1) with dark plant material. Picked out plant material with tweezers. Microscopic exam revealed soil on all surfaces. Fine soil, wood/plant material is gnarled and very dark brown-black. Visible vascular structure, crunchy. Washed in deionised water in ultrasonic bath. Dried in vacuum oven, ground in mortar and pestle. Treated with cellulose extraction process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood - cellulose **Stored:** untreated soil and treated wood

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R: 26827/21 **Job:** 23369 **NZA Number:** 15217

Submitter: Naoko Kitada

Sample ID: GRI 1044

Description: Wood

Details: Sample consisted of dark brown pieces of dried up wood, almost like the bark, each piece has a coating of grey (munsell 5Y 5/1) soil. Microscopic exam revealed very dark brown dried degraded wood, with a coating of grey sandy soil baked on. Wood is all wizened up. Soil may be hard to remove. Washed in ultrasonic bath in deionised water. Rinsed and sieved. Dried in vacuum oven, picked out cleanest wood and ground in ball mill. Treated with cellulose extraction process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood - cellulose **Stored:** remainder untreated and treated

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Sample Treatment Report

Date Printed: *06-Jun-02*

R: 26827/22 **Job:** 23370 **NZA Number:** 15221

Submitter: Naoko Kitada

Sample ID: GRI 1045

Description: Wood with soil

Details: Sample consisted as two hard-as-rock lumps of baked soil. Very fine, munsell 2.5Y 5/1 grey. No visible plant matter. Broke one lump up in mortar and pestle. Microscopic exam revealed no plant material visible whatsoever. Tiny specks of glistening mica or similar. Very uniform-looking sediment, no obvious contaminents. Ground in mortar and pestle. Treated with acid / alkali / acid process. Dried in vacuum oven.

Comments:

Fraction dated: Treated soil **Stored:** untreated soil, treated soil

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R: 26827/23 **Job:** 23371 **NZA Number:** 15218

Submitter: Naoko Kitada

Sample ID: GRI 1046

Description: Wood

Details: Sample consisted of gritty sandy soil with one obvious large wood fragment and several fragments of plant material - quartz-like grains in with soil. Microscopic exam revealed shiny mica fragments, coarse sand. Dark brown plant fragments. Picked out plant fragments, washed in deionised water in ultrasonic bath, dried in vacuum oven. Cut up with scalpel and ground in mortar and pestle. Treated with cellulose extraction process. Dried in vacuum oven.

Comments:

Fraction dated: Treated wood - cellulose **Stored:** remainder untreated and treated

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Accelerator Mass Spectrometry Result

Sample	**R 26827/1**
Description	Wood with soil
Sample ID	GRI 1024
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15024**
Date measured	23-Apr-02
$\delta^{13}C$	-26.6 ‰
* **Radiocarbon Age**	4411 ± 60 BP
$\delta^{14}C$	-428.1 ± 4.1 ‰
$\Delta^{14}C$	-426.1 ± 4.1 ‰
** **Per cent modern**	57.39 ± 0.41

Job No. 23349

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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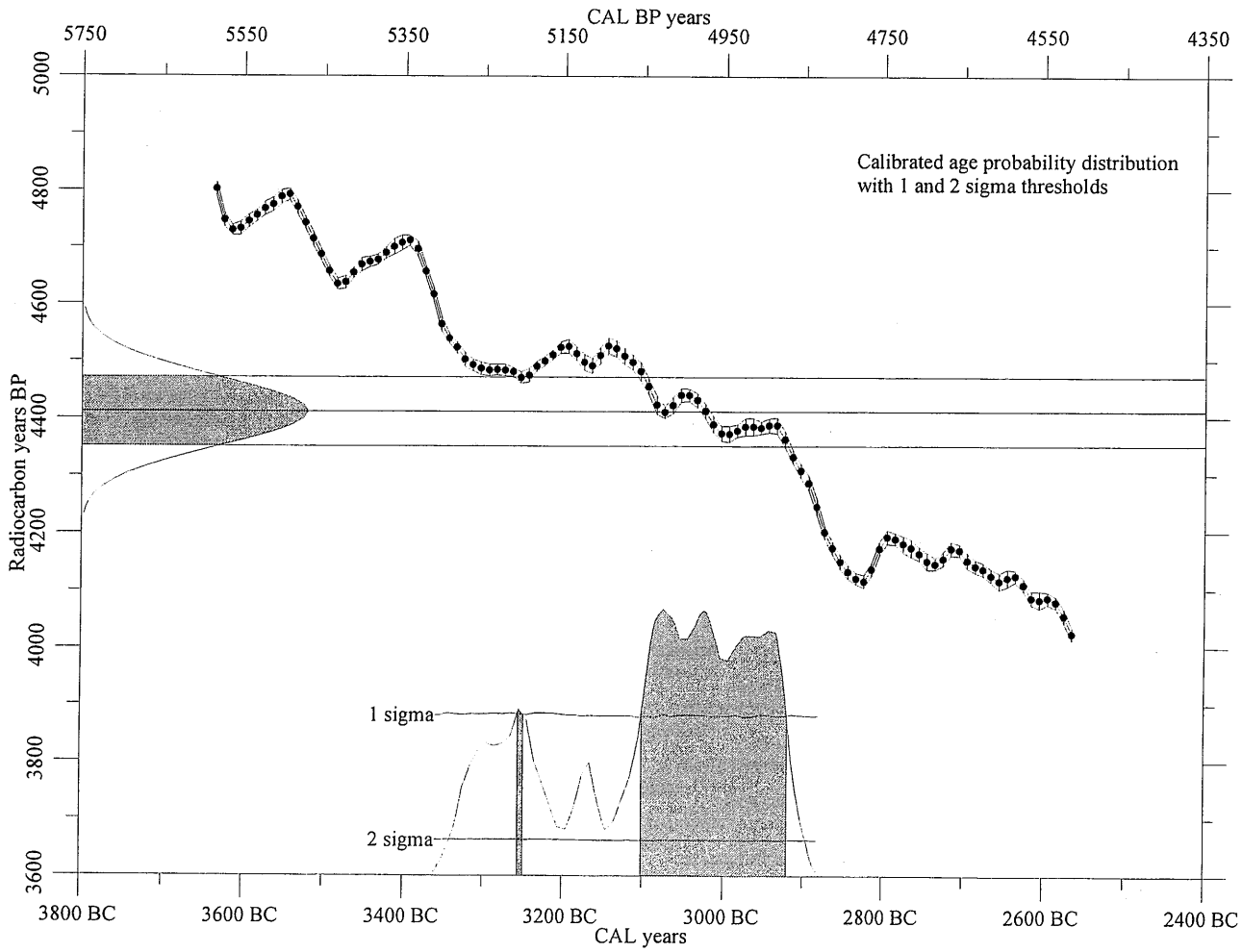
RADIOCARBON CALIBRATION REPORT

NZA15024 CONVENTIONAL RADIOCARBON AGE 4411 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 3340 BC to 2896 BC	5289 BP to 4845 BP (99.0% of area)
1 sigma interval is 3256 BC to 3249 BC	5205 BP to 5198 BP (1.7% of area)
plus 3101 BC to 2920 BC	5050 BP to 4869 BP (62.2% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/2**
Description	Wood with soil
Sample ID	GRI 1025
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15025**
Date measured	23-Apr-02
$\delta^{13}C$	-28.8 ‰
* **Radiocarbon Age**	4437 ± 65 BP
$\delta^{14}C$	-432.4 ± 4.7 ‰
$\Delta^{14}C$	-428 ± 4.8 ‰
** **Per cent modern**	57.2 ± 0.48

Job No. 23350

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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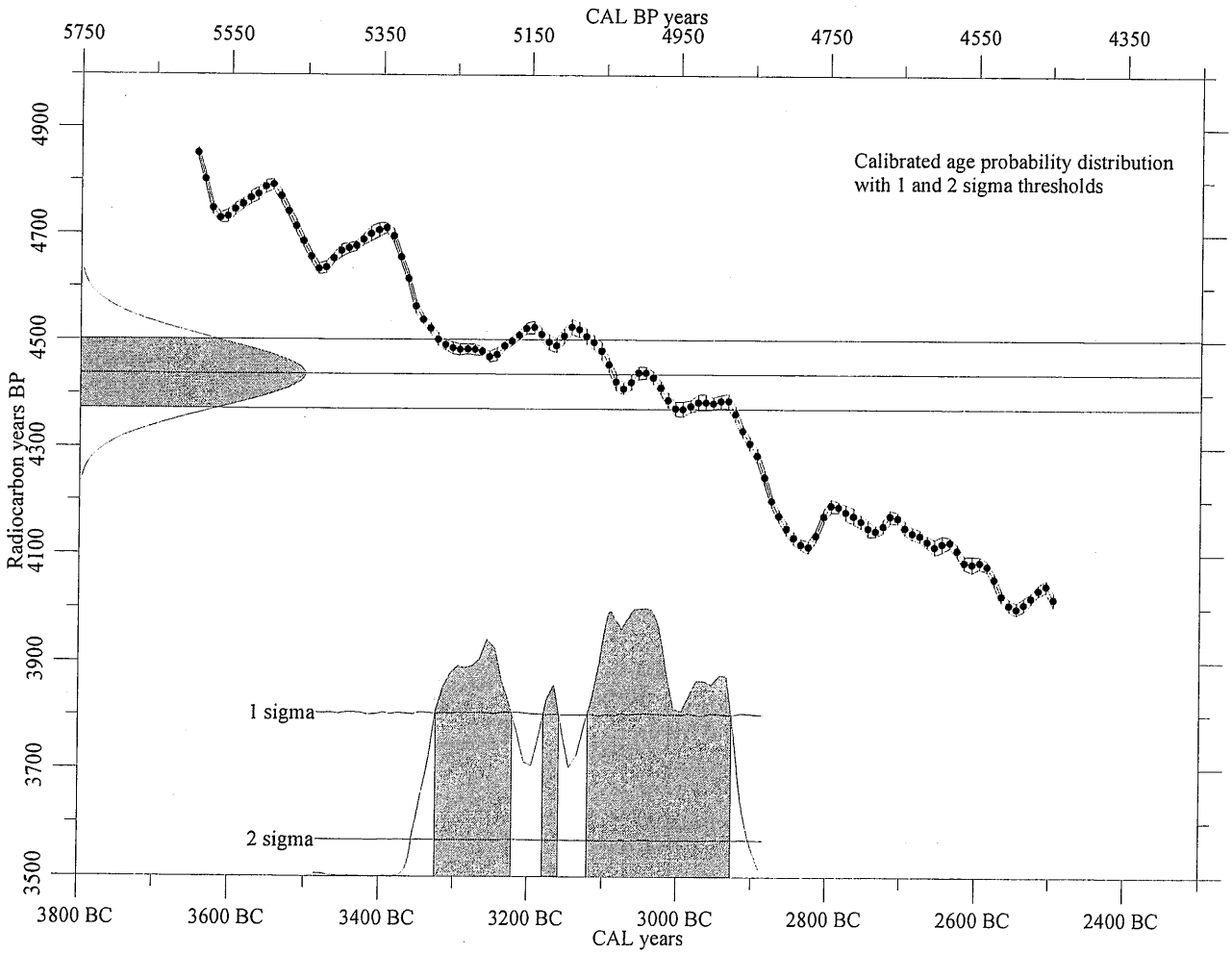
RADIOCARBON CALIBRATION REPORT

NZA15025 CONVENTIONAL RADIOCARBON AGE 4437 ± 65 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 3356 BC to 2903 BC	5305 BP to 4852 BP (99.2% of area)
1 sigma interval is 3325 BC to 3221 BC	5274 BP to 5170 BP (25.6% of area)
plus 3179 BC to 3158 BC	5128 BP to 5107 BP (4.5% of area)
plus 3120 BC to 2928 BC	5069 BP to 4877 BP (50.3% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/3**
Description	Soil
Sample ID	GRI 1026
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15026**
Date measured	23-Apr-02
$\delta^{13}C$	-22.2 ‰
* **Radiocarbon Age**	5115 ± 60 BP
$\delta^{14}C$	-471.2 ± 3.9 ‰
$\Delta^{14}C$	-474.3 ± 3.9 ‰
** **Per cent modern**	52.57 ± 0.39

Job No. 23351

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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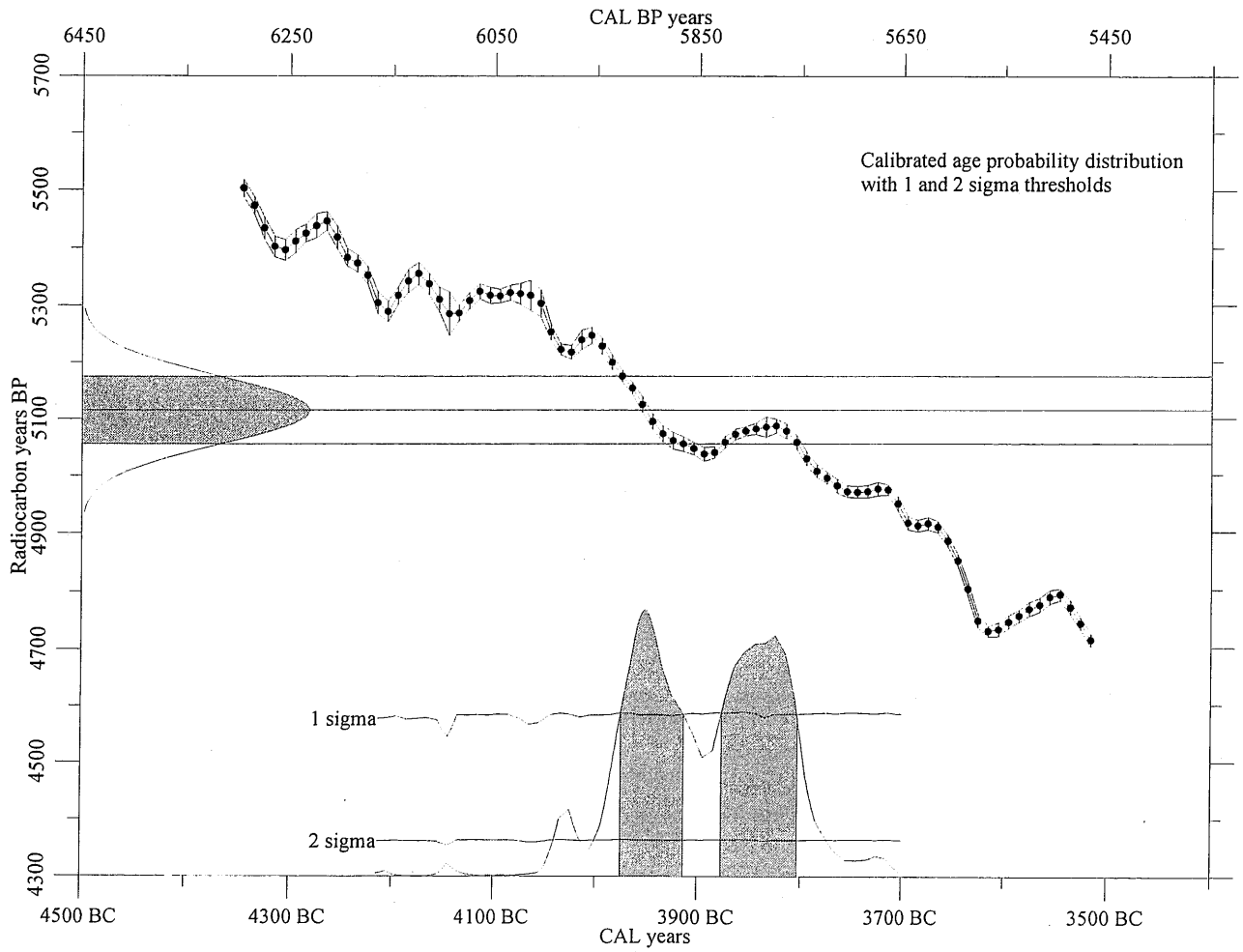
RADIOCARBON CALIBRATION REPORT

NZA15026 CONVENTIONAL RADIOCARBON AGE 5115 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 4039 BC to 3773 BC	5988 BP to 5722 BP (94.3% of area)
1 sigma interval is 3975 BC to 3913 BC	5924 BP to 5862 BP (31.2% of area)
plus 3877 BC to 3803 BC	5826 BP to 5752 BP (37.5% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/4**
Description	Soil
Sample ID	GRI 1027
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15027**
Date measured	23-Apr-02
$\delta^{13}C$	-26.4 ‰
* **Radiocarbon Age**	7049 ± 65 BP
$\delta^{14}C$	-588 ± 3.4 ‰
$\Delta^{14}C$	-586.8 ± 3.4 ‰
** **Per cent modern**	41.32 ± 0.34

Job No. 23352

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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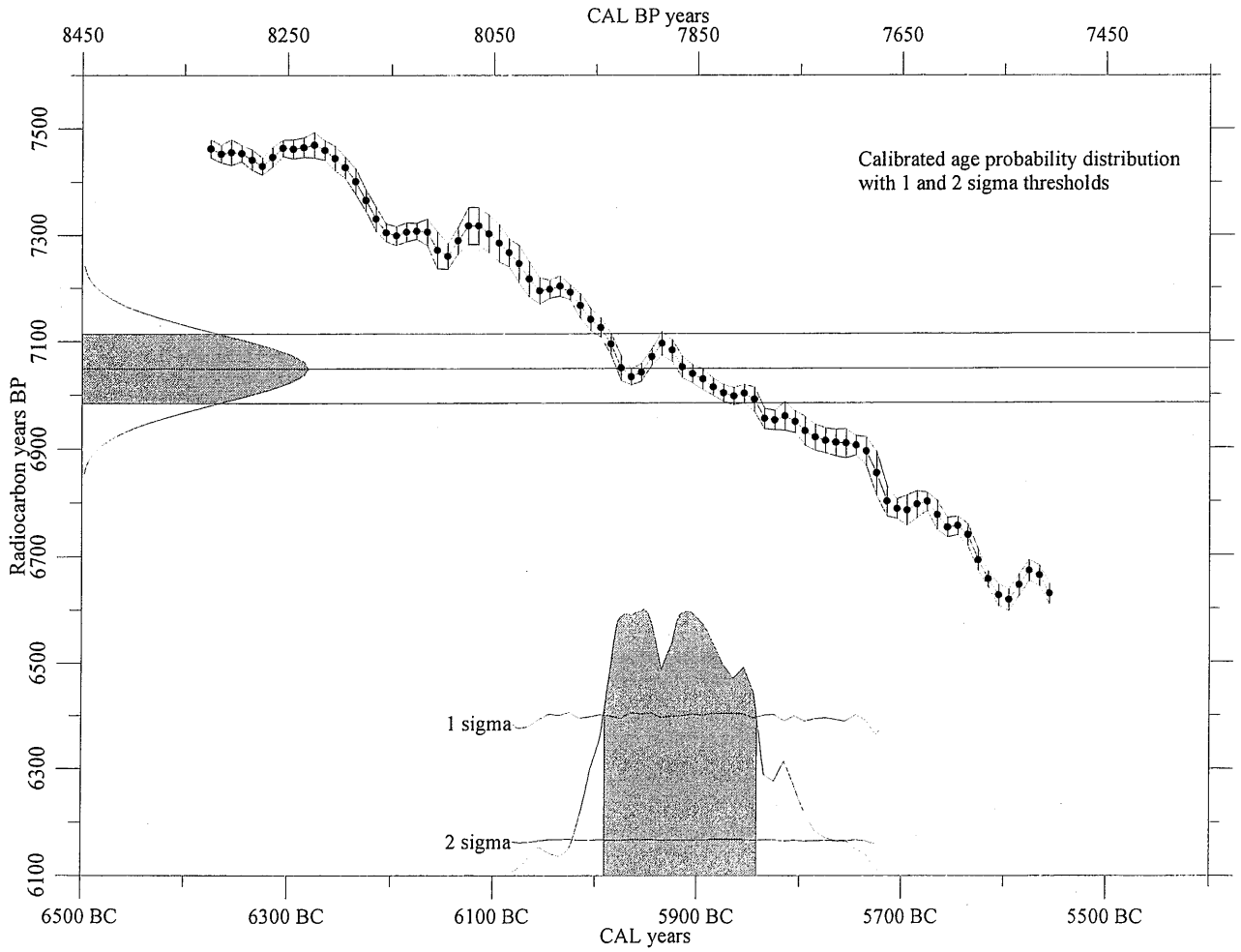
RADIOCARBON CALIBRATION REPORT

NZA15027 CONVENTIONAL RADIOCARBON AGE 7049 ± 65 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 6021 BC to 5754 BC	7970 BP to 7703 BP (95.6% of area)
1 sigma interval is 5991 BC to 5842 BC	7940 BP to 7791 BP (75.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/5**
Description	Wood with soil
Sample ID	GRI 1028
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15170**
Date measured	15-May-02
$\delta^{13}C$	-23.8 ‰
* **Radiocarbon Age**	13909 ± 65 BP
$\delta^{14}C$	-823.7 ± 1.4 ‰
$\Delta^{14}C$	-824.1 ± 1.4 ‰
** **Per cent modern**	17.59 ± 0.14

Job No. 23353

Issued 15/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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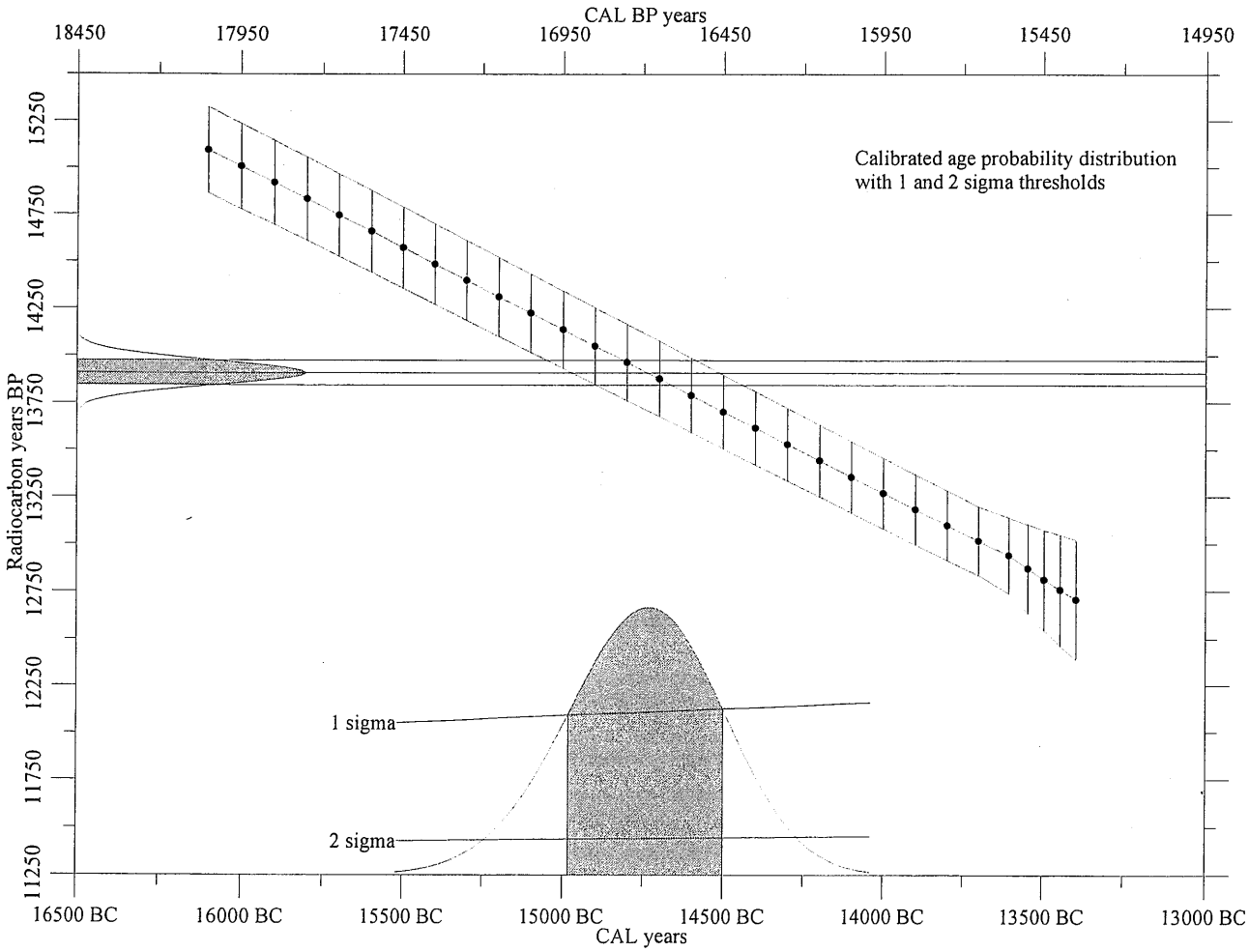
RADIOCARBON CALIBRATION REPORT

NZA15170 CONVENTIONAL RADIOCARBON AGE 13909 ± 65 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 15244 BC to 14269 BC	17193 BP to 16218 BP (95.4% of area)
1 sigma interval is 14983 BC to 14499 BC	16932 BP to 16448 BP (68.0% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/6**
Description	Wood with soil
Sample ID	GRI 1029
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15028**
Date measured	23-Apr-02
$\delta^{13}C$	-28.7 ‰
* **Radiocarbon Age**	5594 ± 60 BP
$\delta^{14}C$	-508.5 ± 3.7 ‰
$\Delta^{14}C$	-504.7 ± 3.7 ‰
** **Per cent modern**	49.53 ± 0.37

Job No. 23354

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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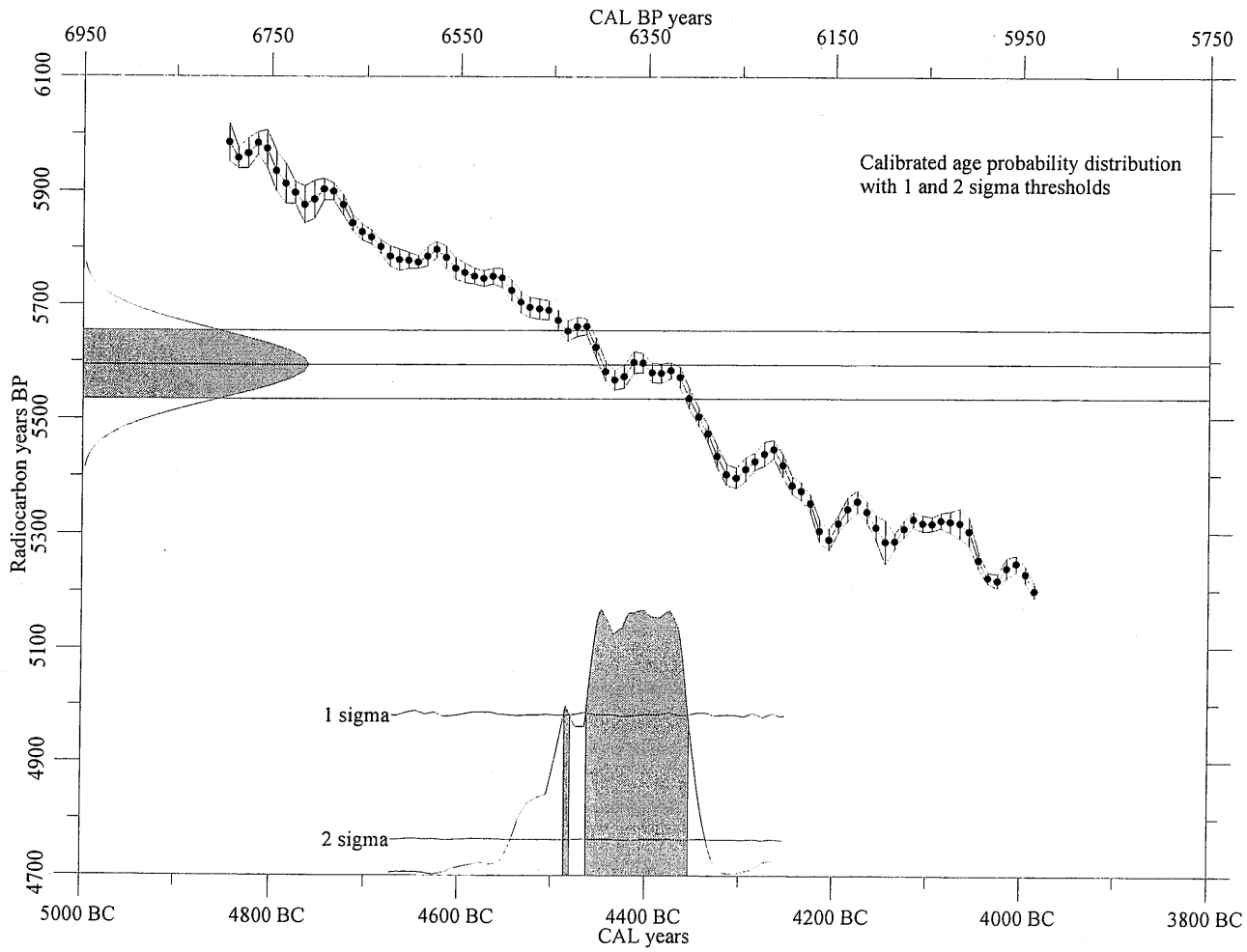
RADIOCARBON CALIBRATION REPORT

NZA15028 CONVENTIONAL RADIOCARBON AGE 5594 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 4542 BC to 4334 BC	6491 BP to 6283 BP (95.4% of area)
1 sigma interval is 4486 BC to 4480 BC	6435 BP to 6429 BP (2.5% of area)
plus 4463 BC to 4353 BC	6412 BP to 6302 BP (69.8% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/7**
Description	Wood with soil
Sample ID	GRI 1030
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15029**
Date measured	23-Apr-02
$\delta^{13}C$	-31.2 ‰
* **Radiocarbon Age**	5971 ± 60 BP
$\delta^{14}C$	-533.4 ± 3.4 ‰
$\Delta^{14}C$	-527.5 ± 3.4 ‰
** **Per cent modern**	47.25 ± 0.34

Job No. 23355

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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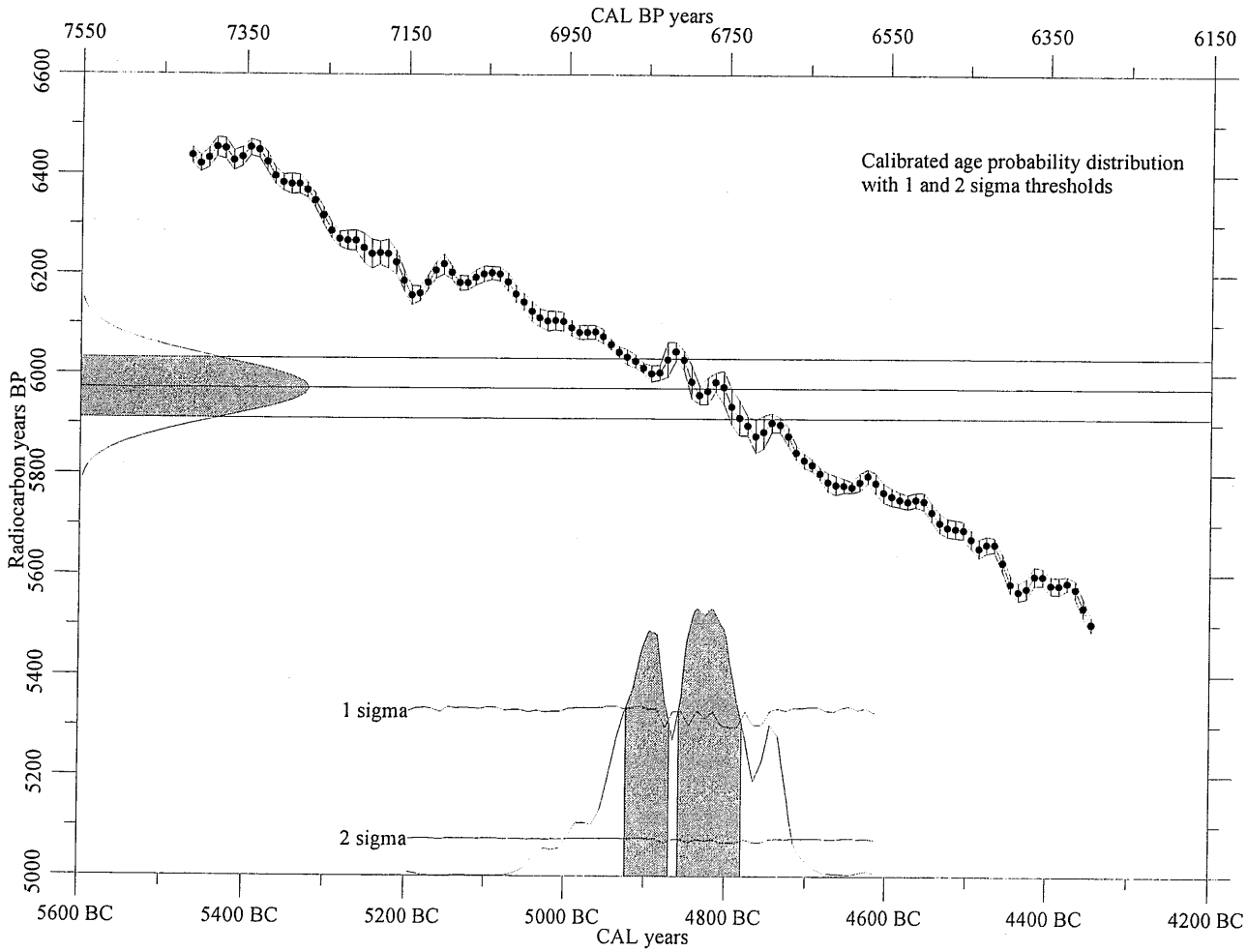
RADIOCARBON CALIBRATION REPORT

NZA15029 CONVENTIONAL RADIOCARBON AGE 5971 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 4997 BC to 4716 BC	6946 BP to 6665 BP (95.1% of area)
1 sigma interval is 4923 BC to 4869 BC	6872 BP to 6818 BP (24.1% of area)
plus 4858 BC to 4779 BC	6807 BP to 6728 BP (39.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/8**
Description	Root with soil
Sample ID	GRI 1031
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15064**
Date measured	29-Apr-02
$\delta^{13}C$	-26.3 ‰
* **Radiocarbon Age**	424 ± 55 BP
$\delta^{14}C$	-59.9 ± 6.7 ‰
$\Delta^{14}C$	-57.3 ± 6.7 ‰
** **Per cent modern**	94.27 ± 0.67

Job No. 23356

Issued 29/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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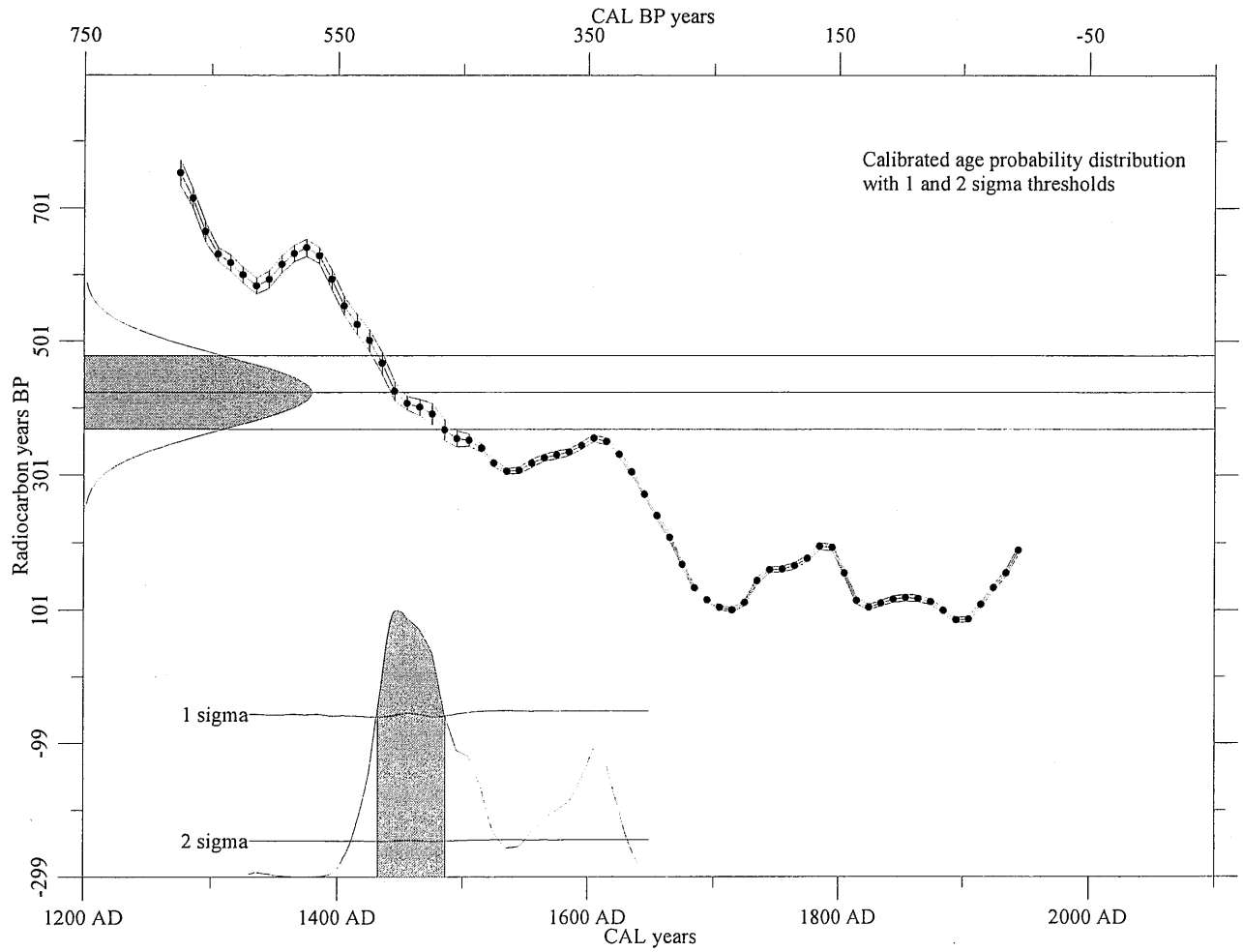
RADIOCARBON CALIBRATION REPORT

NZA15064 CONVENTIONAL RADIOCARBON AGE 424 ± 55 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 1411 AD to 1530 AD	539 BP to 420 BP (70.8% of area)
plus 1550 AD to 1633 AD	400 BP to 317 BP (24.5% of area)
1 sigma interval is 1432 AD to 1486 AD	518 BP to 464 BP (47.2% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/9**
Description	Wood with soil
Sample ID	GRI 1032
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15030**
Date measured	23-Apr-02
$\delta^{13}C$	-29 ‰
* **Radiocarbon Age**	3071 ± 85 BP
$\delta^{14}C$	-327.6 ± 7 ‰
$\Delta^{14}C$	-322 ± 7 ‰
** **Per cent modern**	67.8 ± 0.7

Job No. 23357

Issued 23/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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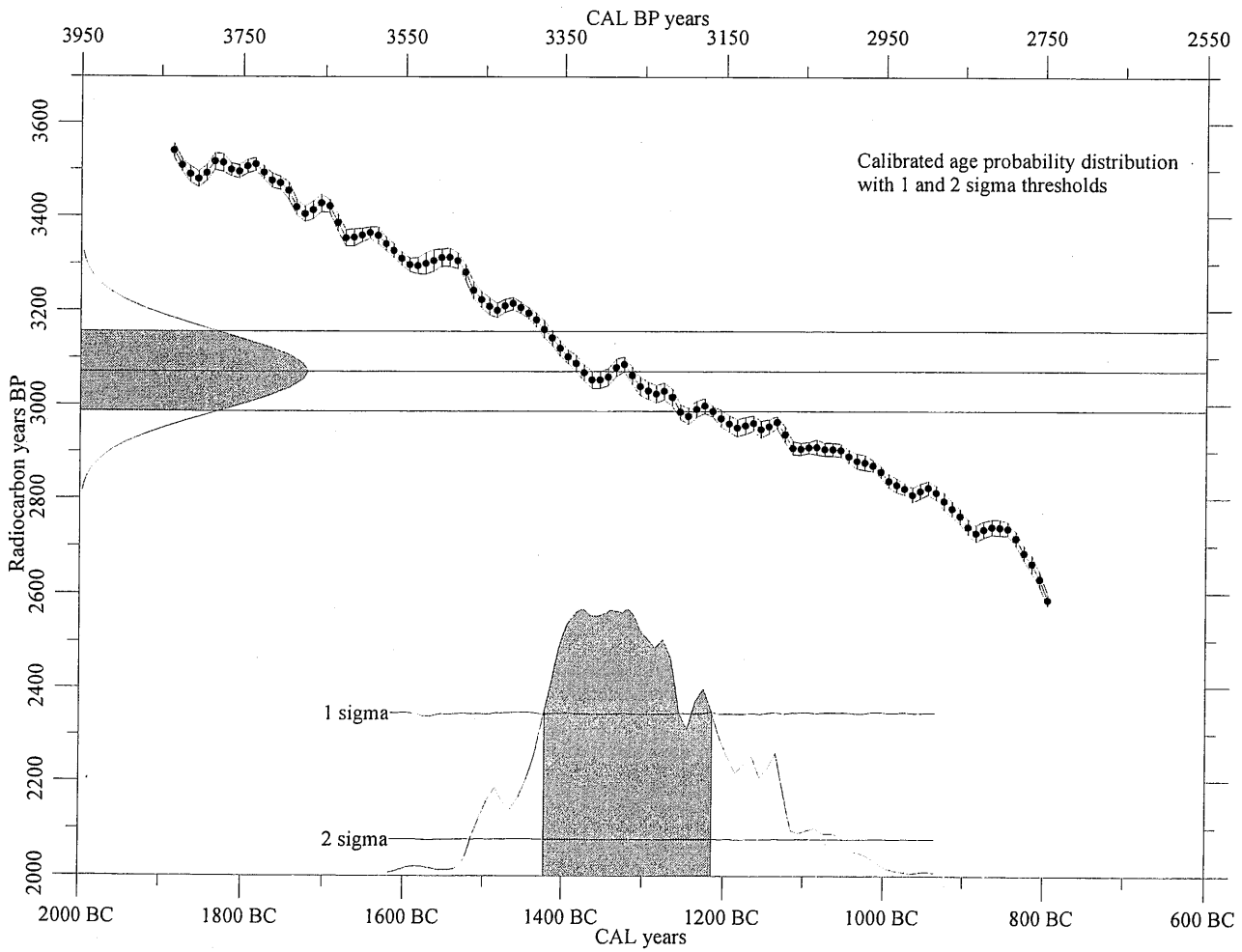
RADIOCARBON CALIBRATION REPORT

NZA15030 CONVENTIONAL RADIOCARBON AGE 3071 ± 85 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 1515 BC to 1051 BC	3464 BP to 3000 BP (96.6% of area)
1 sigma interval is 1423 BC to 1214 BC	3372 BP to 3163 BP (63.5% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/10**
Description	Wood with soil
Sample ID	GRI 1033
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15065**
Date measured	29-Apr-02
$\delta^{13}C$	-28.5 ‰
* **Radiocarbon Age**	2495 ± 65 BP
$\delta^{14}C$	-276.8 ± 5.9 ‰
$\Delta^{14}C$	-271.6 ± 5.9 ‰
** **Per cent modern**	72.84 ± 0.59

Job No. 23358

Issued 29/04/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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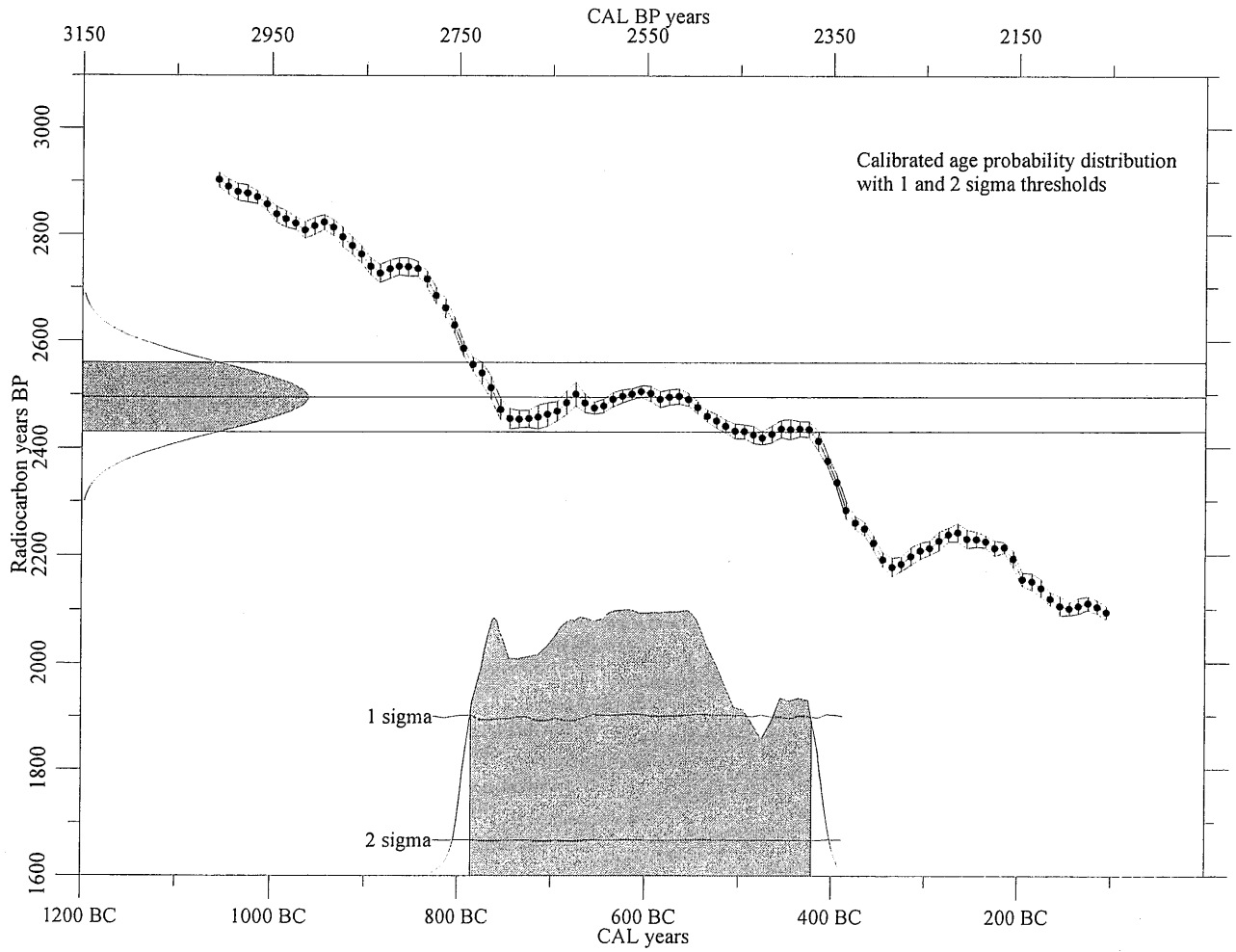
RADIOCARBON CALIBRATION REPORT

NZA15065 CONVENTIONAL RADIOCARBON AGE 2495 ± 65 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 804 BC to 401 BC	2753 BP to 2350 BP (99.3% of area)
1 sigma interval is 786 BC to 421 BC	2735 BP to 2370 BP (90.2% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/11**
Description	Wood with soil
Sample ID	GRI 1034
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15171**
Date measured	15-May-02
$\delta^{13}C$	-25.5 ‰
* **Radiocarbon Age**	9450 ± 60 BP
$\delta^{14}C$	-693.9 ± 2.2 ‰
$\Delta^{14}C$	-693.6 ± 2.2 ‰
** **Per cent modern**	30.64 ± 0.22

Job No. 23741

Issued 15/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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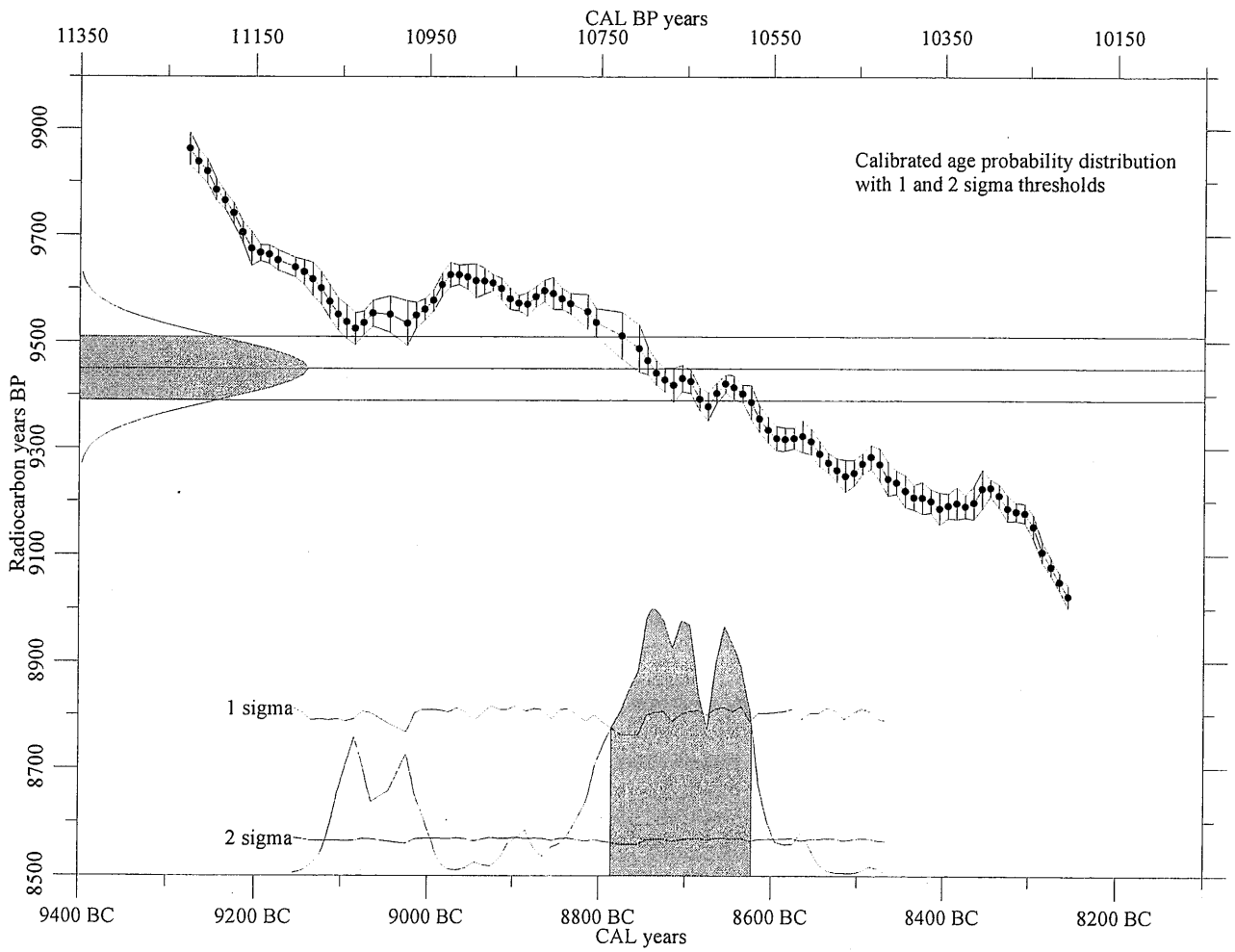
RADIOCARBON CALIBRATION REPORT

NZA15171 CONVENTIONAL RADIOCARBON AGE 9450 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 9118 BC to 8995 BC	11067 BP to 10944 BP (18.5% of area)
plus 8895 BC to 8880 BC	10844 BP to 10829 BP (1.1% of area)
plus 8839 BC to 8596 BC	10788 BP to 10545 BP (71.5% of area)
plus 8570 BC to 8560 BC	10519 BP to 10509 BP (0.7% of area)
1 sigma interval is 8786 BC to 8623 BC	10735 BP to 10572 BP (58.1% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/12**
Description	Soil
Sample ID	GRI 1035
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15131**
Date measured	09-May-02
$\delta^{13}C$	-24 ‰
* **Radiocarbon Age**	6116 ± 60 BP
$\delta^{14}C$	-535 ± 3.4 ‰
$\Delta^{14}C$	-535.9 ± 3.3 ‰
** **Per cent modern**	46.41 ± 0.33

Job No. 23360

Issued 14/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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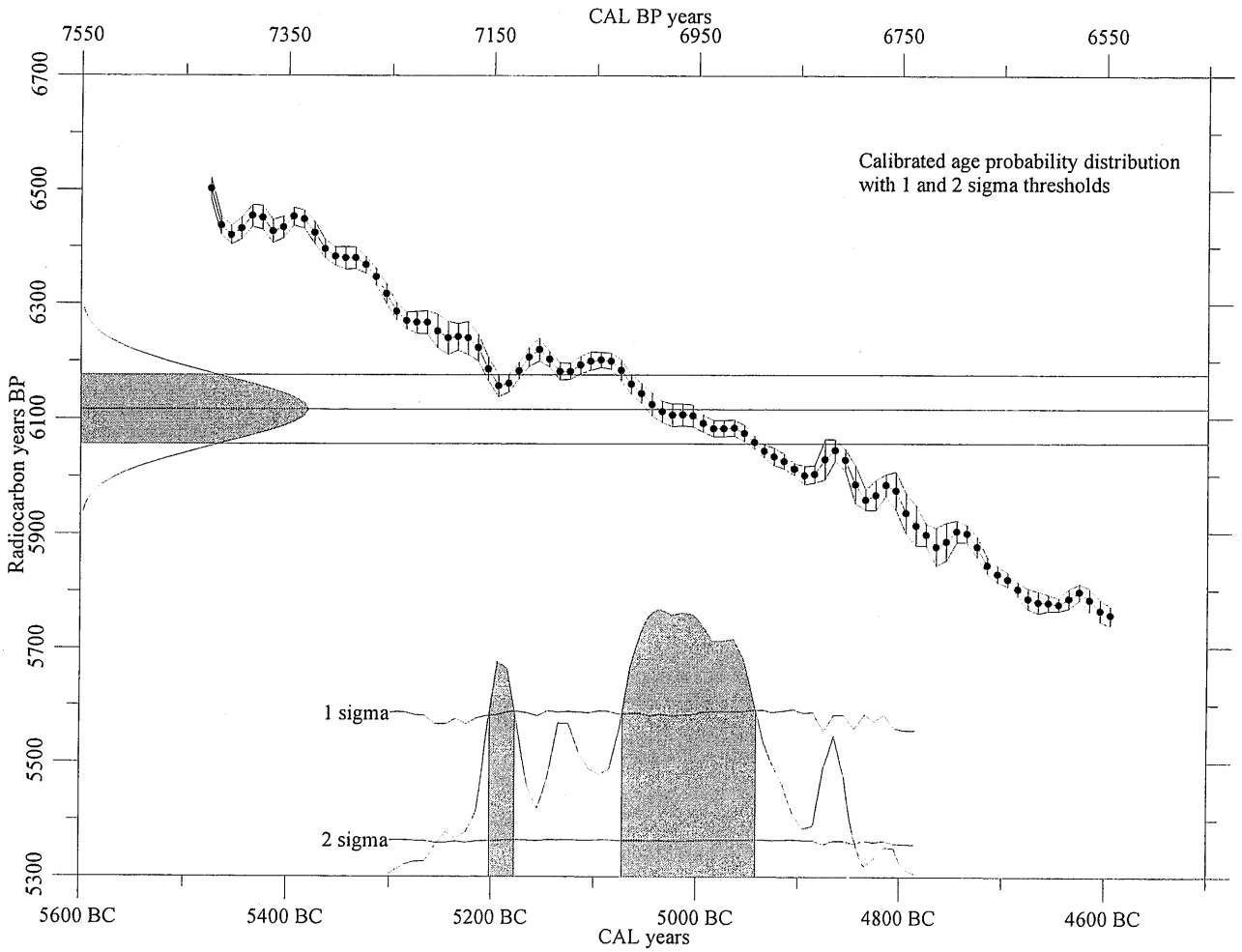
RADIOCARBON CALIBRATION REPORT

NZA15131 CONVENTIONAL RADIOCARBON AGE 6116 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 5252 BC to 4843 BC	7201 BP to 6792 BP (97.0% of area)
1 sigma interval is 5202 BC to 5177 BC	7151 BP to 7126 BP (7.9% of area)
plus 5072 BC to 4942 BC	7021 BP to 6891 BP (49.8% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/13**
Description	Wood with soil
Sample ID	GRI 1036
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15132**
Date measured	09-May-02
$\delta^{13}C$	-28.5 ‰
* **Radiocarbon Age**	4560 ± 60 BP
$\delta^{14}C$	-440.7 ± 4 ‰
$\Delta^{14}C$	-436.7 ± 4 ‰
** **Per cent modern**	56.33 ± 0.4

Job No. 23361

Issued 14/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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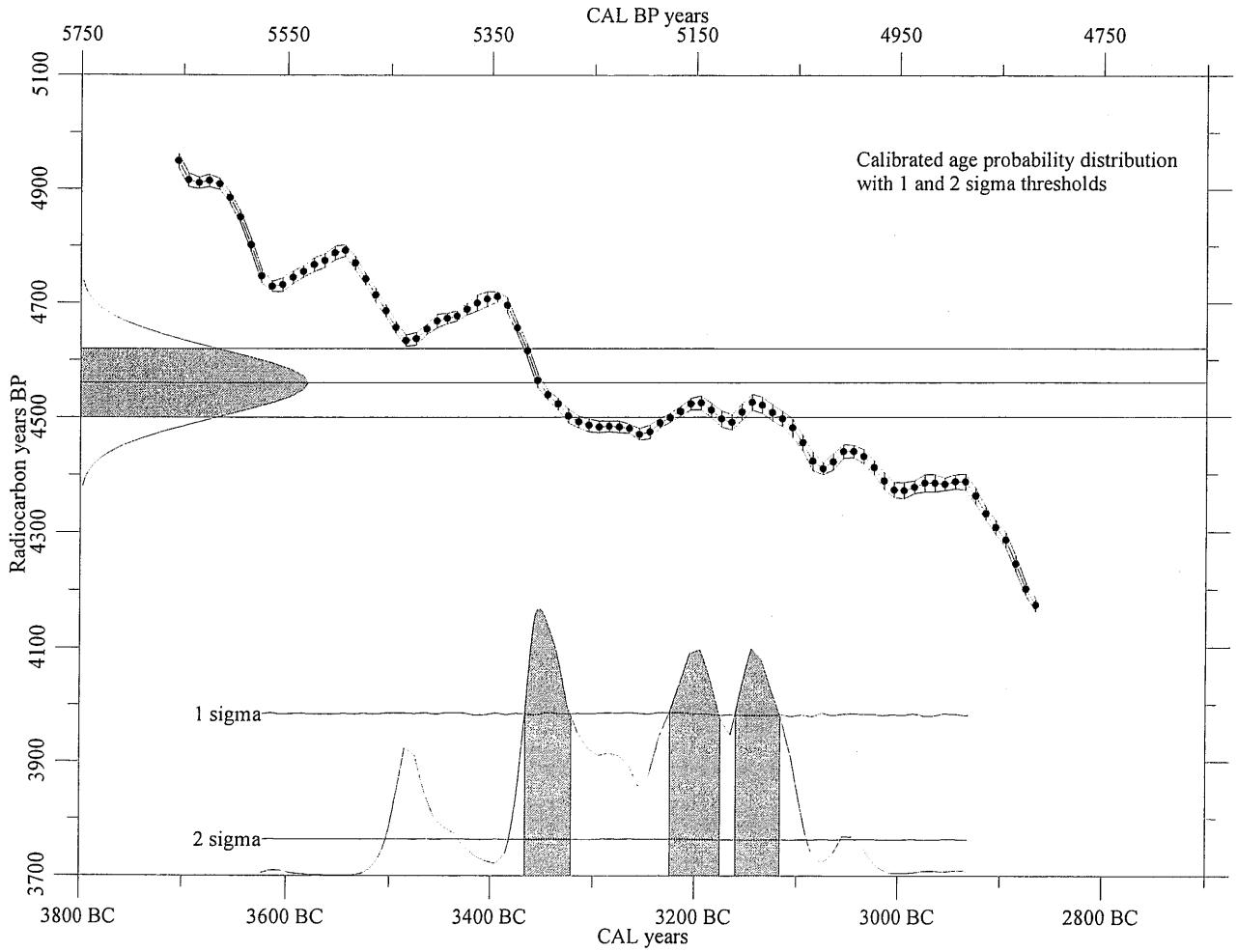
RADIOCARBON CALIBRATION REPORT

NZA15132 CONVENTIONAL RADIOCARBON AGE 4560 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 3503 BC to 3431 BC	5452 BP to 5380 BP (9.8% of area)
plus 3381 BC to 3089 BC	5330 BP to 5038 BP (83.6% of area)
plus 3056 BC to 3042 BC	5005 BP to 4991 BP (1.0% of area)
1 sigma interval is 3366 BC to 3321 BC	5315 BP to 5270 BP (18.0% of area)
plus 3224 BC to 3175 BC	5173 BP to 5124 BP (17.5% of area)
plus 3160 BC to 3116 BC	5109 BP to 5065 BP (15.6% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/14**
Description	Wood with soil
Sample ID	GRI 1037
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15172**
Date measured	15-May-02
$\delta^{13}C$	-27.3 ‰
* **Radiocarbon Age**	6261 ± 60 BP
$\delta^{14}C$	-546.3 ± 3.4 ‰
$\Delta^{14}C$	-544.2 ± 3.4 ‰
** **Per cent modern**	45.58 ± 0.34

Job No. 23362

Issued 15/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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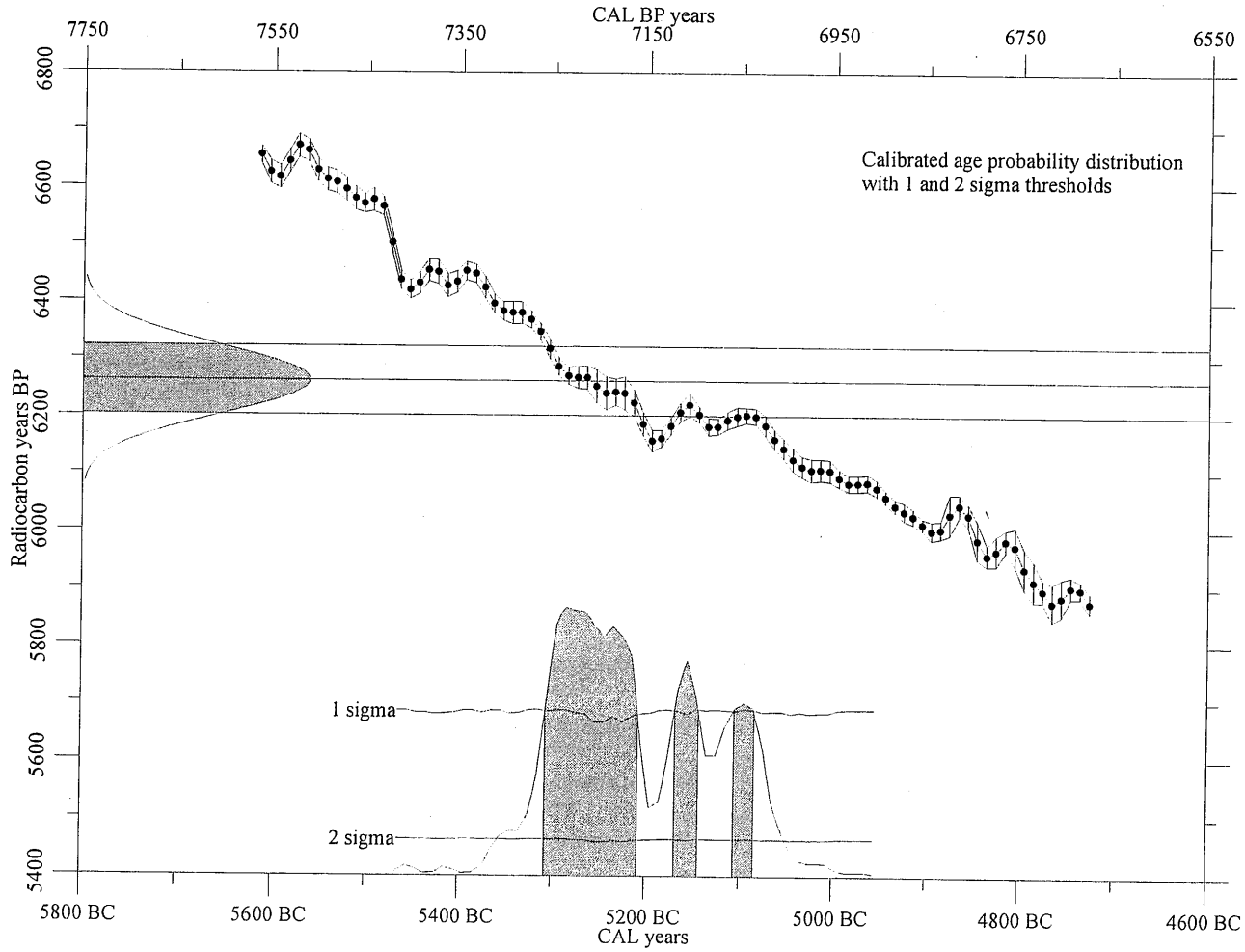
RADIOCARBON CALIBRATION REPORT

NZA15172 CONVENTIONAL RADIOCARBON AGE 6261 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 5356 BC to 5050 BC	7305 BP to 6999 BP (96.0% of area)
1 sigma interval is 5307 BC to 5208 BC	7256 BP to 7157 BP (47.9% of area)
plus 5168 BC to 5143 BC	7117 BP to 7092 BP (9.6% of area)
plus 5106 BC to 5084 BC	7055 BP to 7033 BP (7.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/15**
Description	Plant material with soil
Sample ID	GRI 1038
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15133**
Date measured	09-May-02
$\delta^{13}C$	-24.8 ‰
* **Radiocarbon Age**	367 ± 60 BP
$\delta^{14}C$	-50.2 ± 7.1 ‰
$\Delta^{14}C$	-50.7 ± 7.1 ‰
** **Per cent modern**	94.93 ± 0.71

Job No. 23363

Issued 14/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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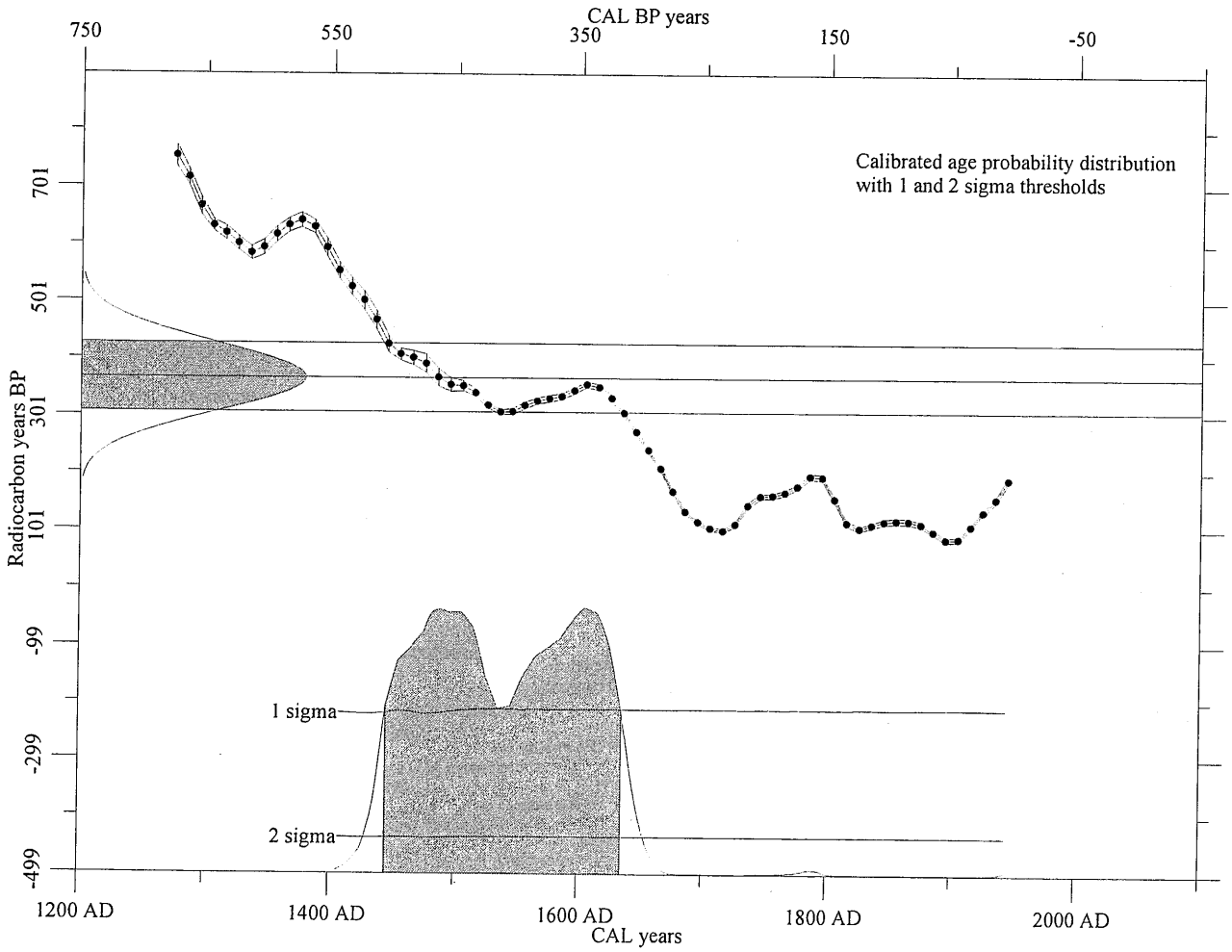
RADIOCARBON CALIBRATION REPORT

NZA15133 CONVENTIONAL RADIOCARBON AGE 367 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 1429 AD to 1654 AD	521 BP to 296 BP (98.3% of area)
1 sigma interval is 1445 AD to 1635 AD	505 BP to 315 BP (91.6% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/16**
Description	Plant material with soil
Sample ID	GRI 1039
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15160**
Date measured	15-May-02
$\delta^{13}C$	-25.4 ‰
* **Radiocarbon Age**	2645 ± 85 BP
$\delta^{14}C$	-285.6 ± 7.4 ‰
$\Delta^{14}C$	-285 ± 7.4 ‰
** **Per cent modern**	71.5 ± 0.74

Job No. 23364

Issued 15/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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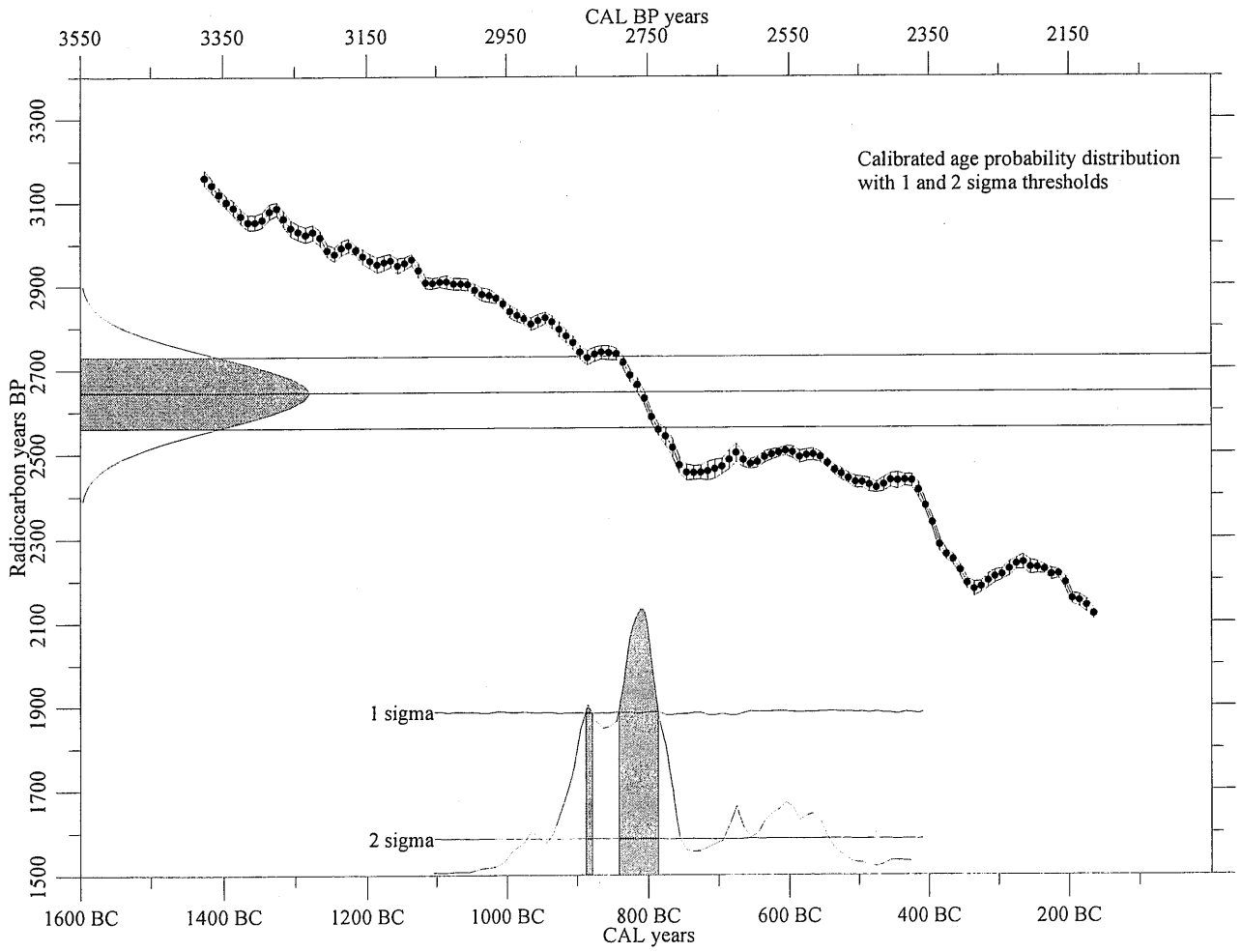
RADIOCARBON CALIBRATION REPORT

NZA15160 CONVENTIONAL RADIOCARBON AGE 2645 ± 85 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 971 BC to 754 BC	2920 BP to 2703 BP (67.3% of area)
plus 693 BC to 543 BC	2642 BP to 2492 BP (19.6% of area)
1 sigma interval is 888 BC to 879 BC	2837 BP to 2828 BP (3.5% of area)
plus 842 BC to 786 BC	2791 BP to 2735 BP (30.1% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/17**
Description	Wood with soil
Sample ID	GRI 1040
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15134**
Date measured	09-May-02
$\delta^{13}C$	-27 ‰
* **Radiocarbon Age**	2468 ± 65 BP
$\delta^{14}C$	-272.1 ± 6 ‰
$\Delta^{14}C$	-269.1 ± 6 ‰
** **Per cent modern**	73.09 ± 0.6

Job No. 23365

Issued 14/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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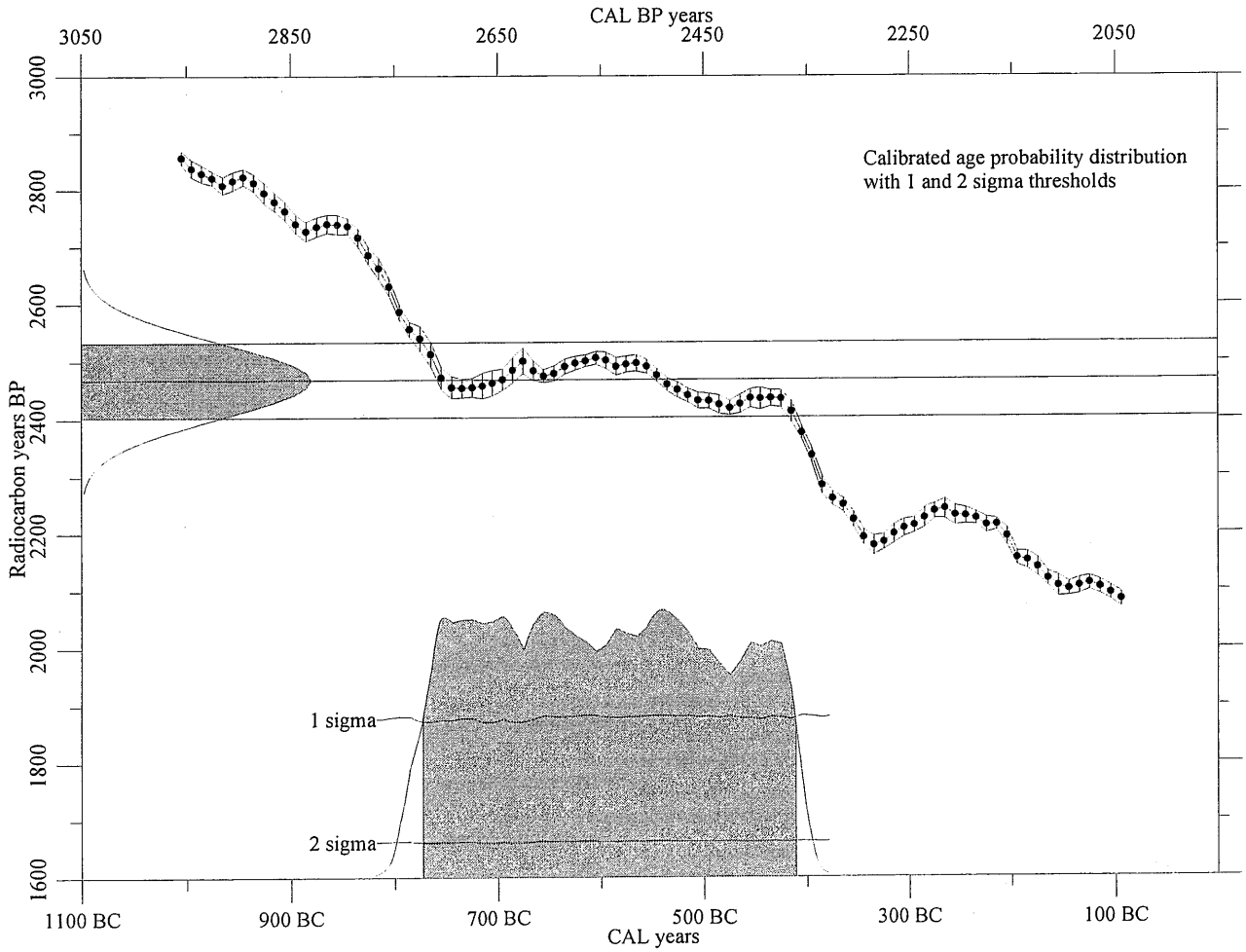
RADIOCARBON CALIBRATION REPORT

NZA15134 CONVENTIONAL RADIOCARBON AGE 2468 ± 65 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 798 BC to 394 BC	2747 BP to 2343 BP (99.4% of area)
1 sigma interval is 773 BC to 411 BC	2722 BP to 2360 BP (95.1% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/18**
Description	Wood with soil
Sample ID	GRI 1041
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15190**
Date measured	21-May-02
$\delta^{13}C$	-21.7 ‰
* **Radiocarbon Age**	1918 ± 55 BP
$\delta^{14}C$	-212.1 ± 5.6 ‰
$\Delta^{14}C$	-217.3 ± 5.6 ‰
** **Per cent modern**	78.27 ± 0.56

Job No. 23366

Issued 21/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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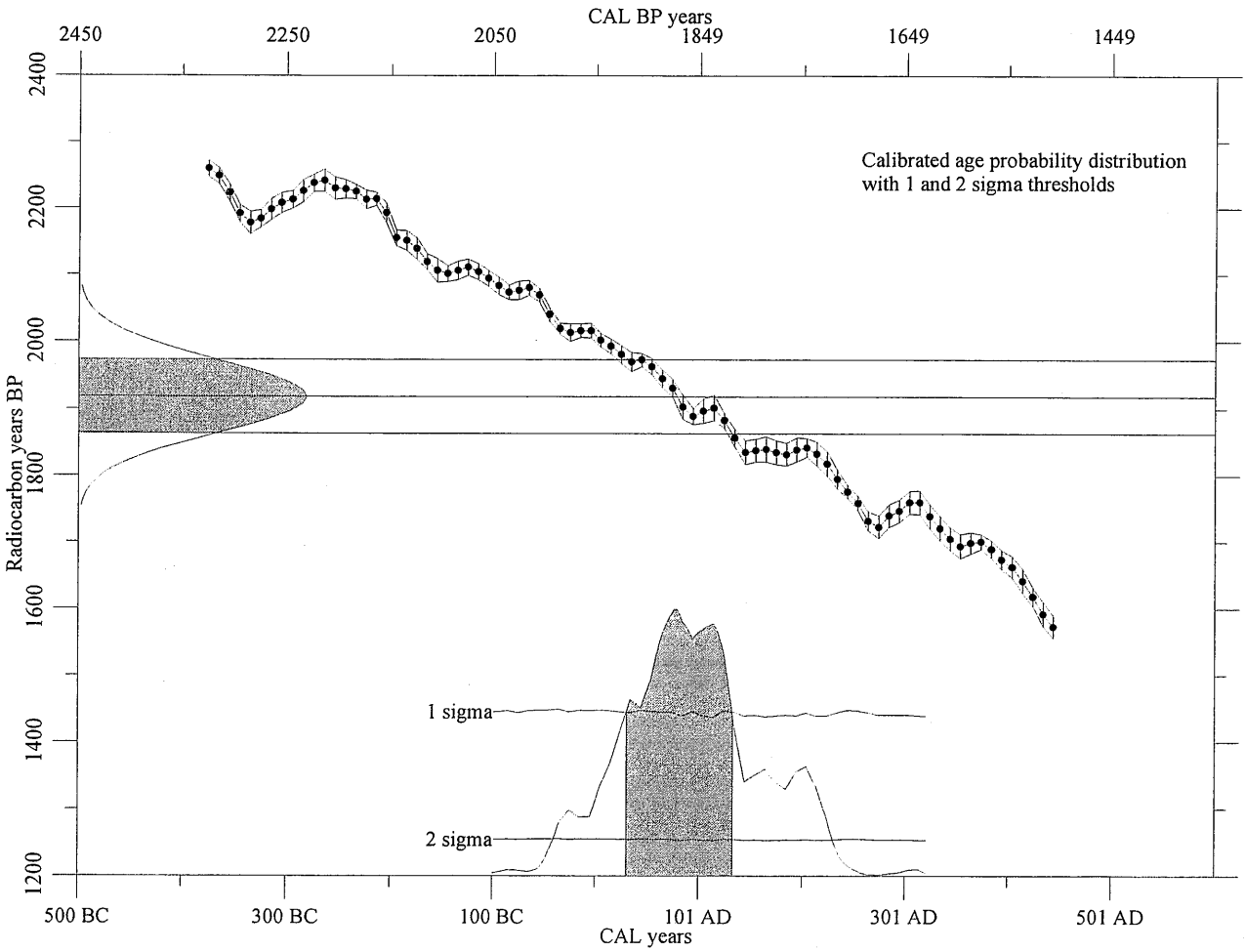
RADIOCARBON CALIBRATION REPORT

NZA15190 CONVENTIONAL RADIOCARBON AGE 1918 ± 55 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 39 BC to 232 AD	1988 BP to 1718 BP (96.9% of area)
1 sigma interval is 31 AD to 134 AD	1919 BP to 1816 BP (58.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/19**
Description	Wood with soil
Sample ID	GRI 1042
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15215**
Date measured	24-May-02
$\delta^{13}C$	-27.3 ‰
* **Radiocarbon Age**	2552 ± 60 BP
$\delta^{14}C$	-280.1 ± 5.2 ‰
$\Delta^{14}C$	-276.7 ± 5.2 ‰
** **Per cent modern**	72.33 ± 0.52

Job No. 23367

Issued 27/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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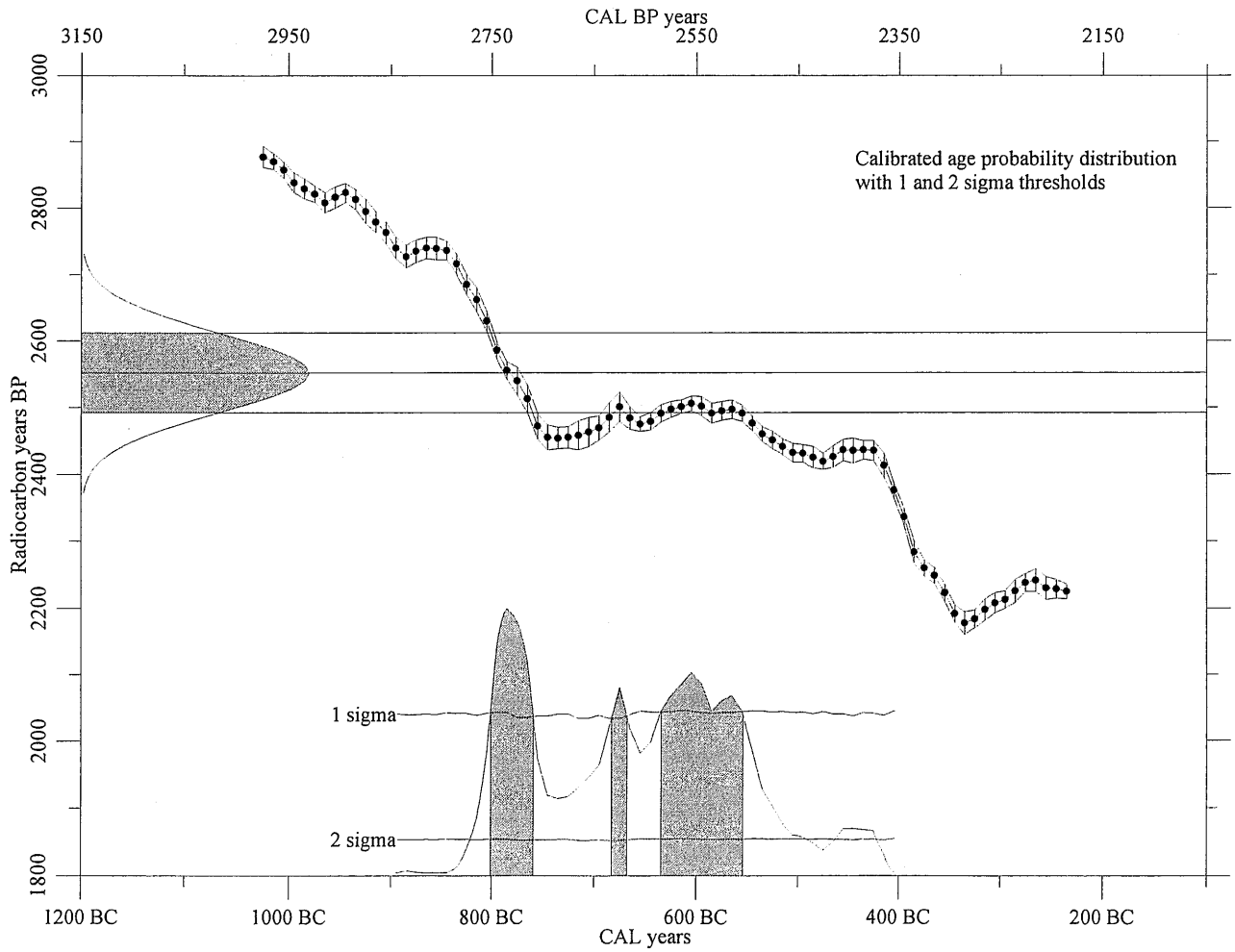
RADIOCARBON CALIBRATION REPORT

NZA15215 CONVENTIONAL RADIOCARBON AGE 2552 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 821 BC to 421 BC	2770 BP to 2370 BP (96.5% of area)
1 sigma interval is 801 BC to 759 BC	2750 BP to 2708 BP (20.1% of area)
plus 683 BC to 668 BC	2632 BP to 2617 BP (5.3% of area)
plus 635 BC to 554 BC	2584 BP to 2503 BP (29.8% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/20**
Description	Wood with soil
Sample ID	GRI 1043
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15216**
Date measured	24-May-02
$\delta^{13}C$	-28.7 ‰
* **Radiocarbon Age**	4652 ± 60 BP
$\delta^{14}C$	-447.3 ± 4.1 ‰
$\Delta^{14}C$	-443.1 ± 4.2 ‰
** **Per cent modern**	55.69 ± 0.42

Job No. 23368

Issued 27/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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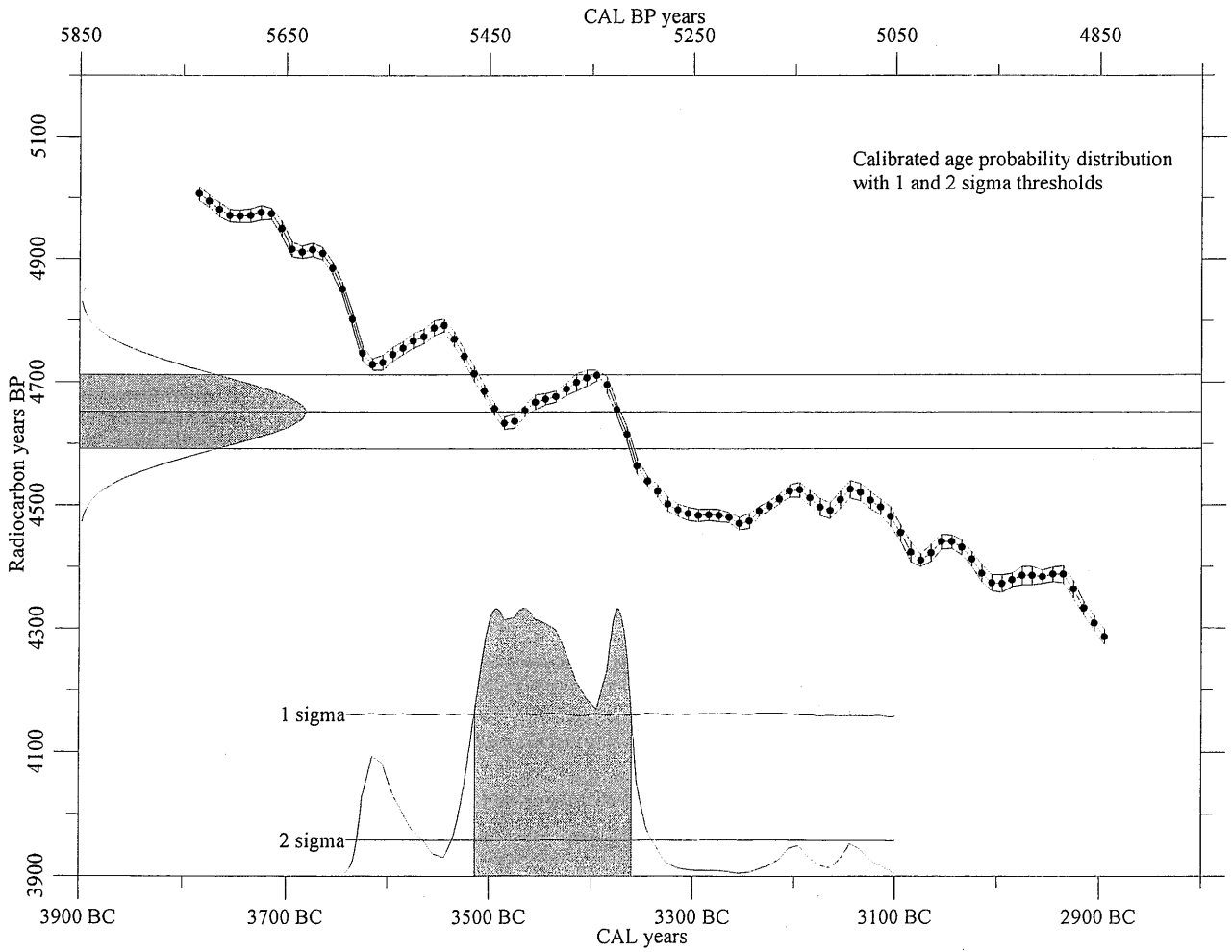
RADIOCARBON CALIBRATION REPORT

NZA15216 CONVENTIONAL RADIOCARBON AGE 4652 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 3629 BC to 3564 BC	5578 BP to 5513 BP (10.5% of area)
plus 3536 BC to 3339 BC	5485 BP to 5288 BP (80.9% of area)
1 sigma interval is 3514 BC to 3360 BC	5463 BP to 5309 BP (73.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/21**
Description	Wood
Sample ID	GRI 1044
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15217**
Date measured	24-May-02
$\delta^{13}C$	-27.9 ‰
* **Radiocarbon Age**	5993 ± 60 BP
$\delta^{14}C$	-531.6 ± 3.6 ‰
$\Delta^{14}C$	-528.7 ± 3.6 ‰
** **Per cent modern**	47.13 ± 0.36

Job No. 23369

Issued 27/05/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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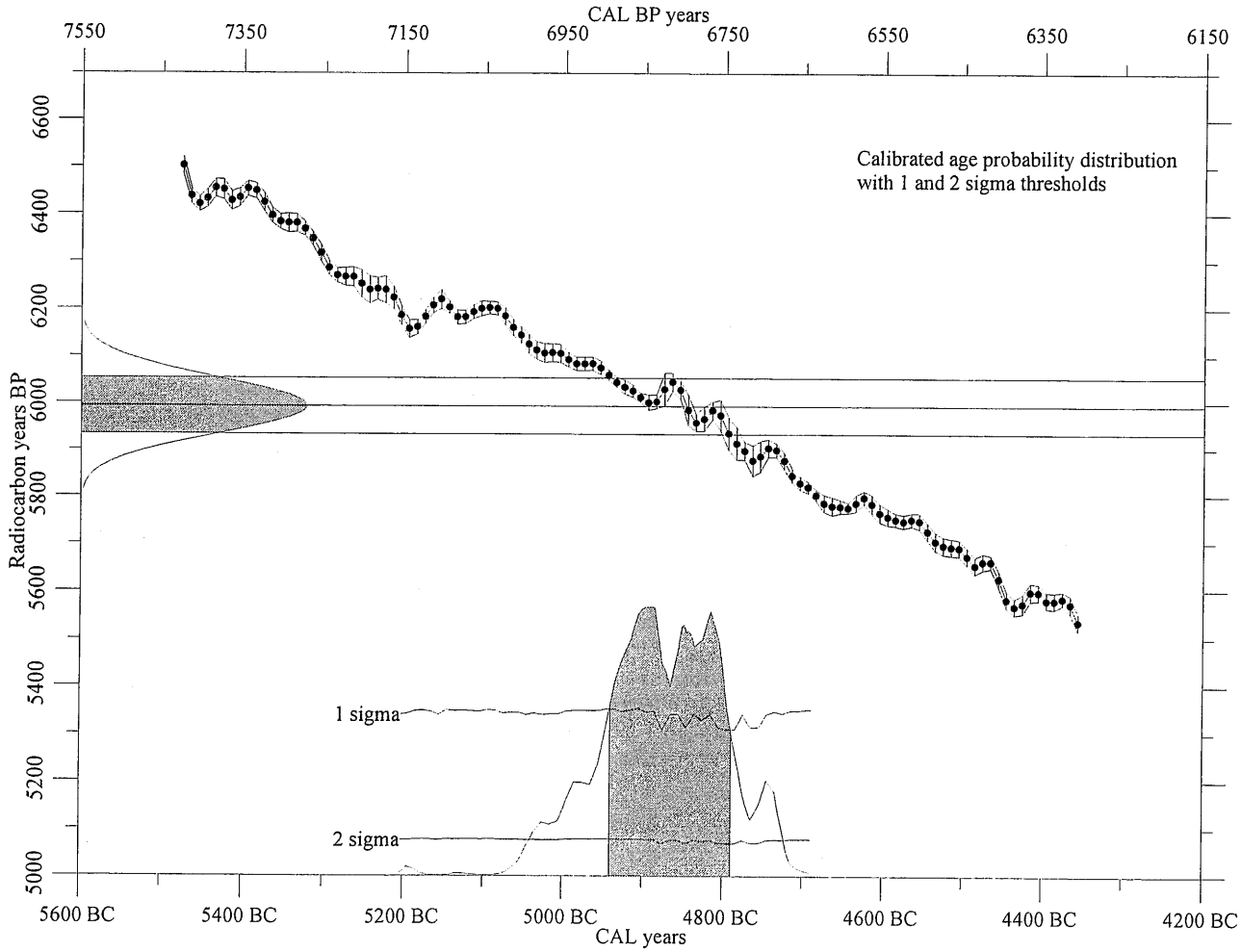
RADIOCARBON CALIBRATION REPORT

NZA15217 CONVENTIONAL RADIOCARBON AGE 5993 ± 60 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 5040 BC to 4722 BC	6989 BP to 6671 BP (97.4% of area)
1 sigma interval is 4941 BC to 4789 BC	6890 BP to 6738 BP (70.3% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/22**
Description	Wood with soil
Sample ID	GRI 1045
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15221**
Date measured	04-Jun-02
$\delta^{13}C$	-20.9 ‰
* **Radiocarbon Age**	15071 ± 70 BP
$\delta^{14}C$	-846.5 ± 1.3 ‰
$\Delta^{14}C$	-847.8 ± 1.3 ‰
** **Per cent modern**	15.22 ± 0.13

Job No. 23370

Issued 5/06/02

* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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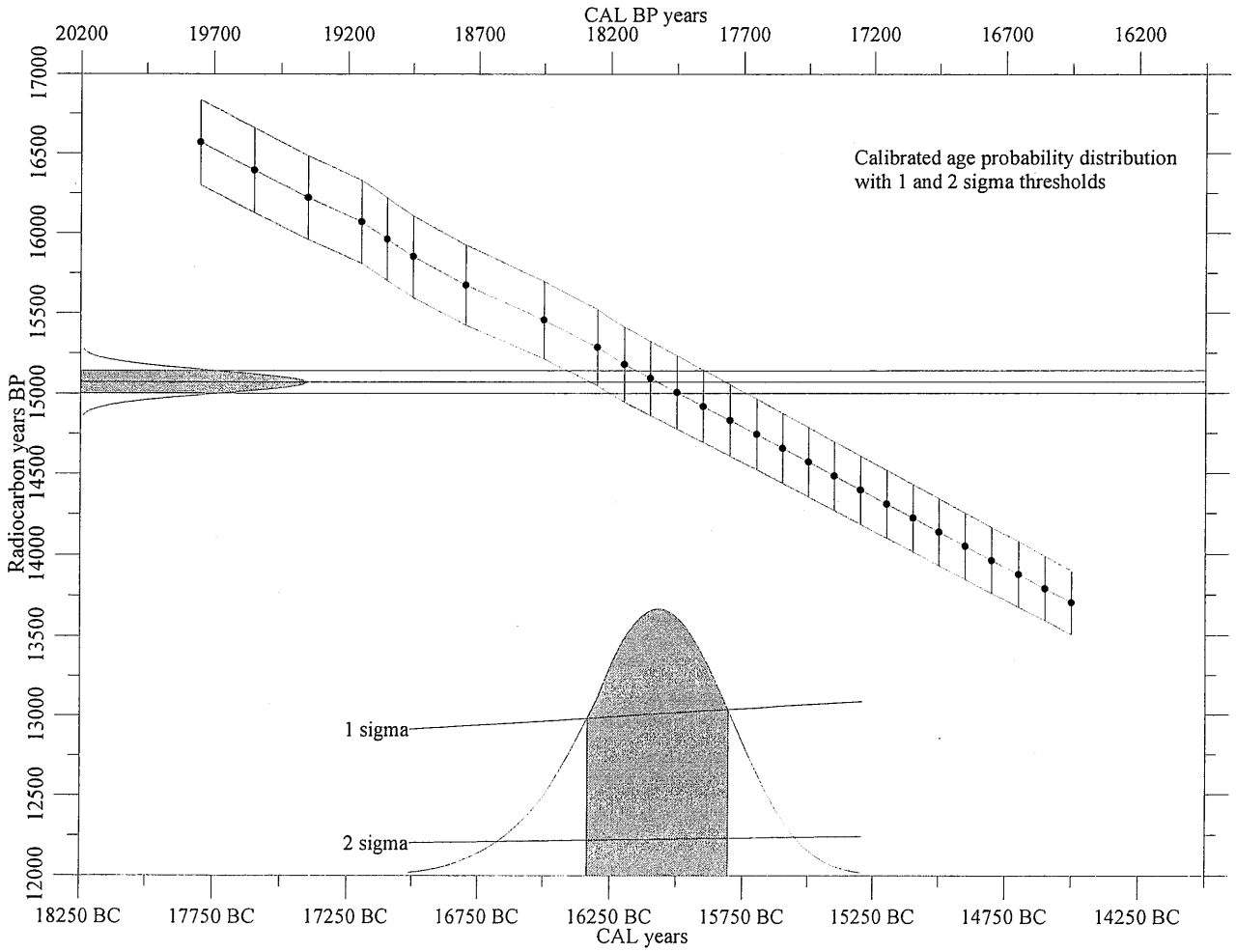
RADIOCARBON CALIBRATION REPORT

NZA15221 CONVENTIONAL RADIOCARBON AGE 15071 ± 70 years BP

INTCAL98_14C
1998 Atmospheric delta 14C and radiocarbon ages from:
Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S.,
Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and
Spurk,M. 1998, Radiocarbon 40(3):1041-1083

CALIBRATED AGE in terms of cofidence intervals (Smoothing parameter: 1, Offset: 0)

2 sigma interval is 16674 BC to 15549 BC 18623 BP to 17498 BP (95.1% of area)
1 sigma interval is 16336 BC to 15804 BC 18285 BP to 17753 BP (66.4% of area)



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Accelerator Mass Spectrometry Result

Sample	**R 26827/23**
Description	Wood
Sample ID	GRI 1046
Submitter	Naoko Kitada
	Geo-Research Institute, Osaka Soil Test Laboratory

Laboratory Code	**NZA 15218**
Date measured	24-May-02
$\delta^{13}C$	-27.7 ‰
* **Radiocarbon Age**	> 47000 BP
$\delta^{14}C$	-999.8 ± 0.8 ‰
$\Delta^{14}C$	-999.8 ± 0.8 ‰
** **Per cent modern**	0.02 ± 0.08

Job No. 23371

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* Reported age is the conventional radiocarbon age before present (BP)

** Per cent modern means absolute per cent modern relative to the NBS oxalic acid standard, (HOxI) corrected for decay since 1950.

Age, $\Delta^{14}C$, $\delta^{14}C$ and absolute per cent modern are as defined by Stuiver and Polach, Radiocarbon 19:355-363 (1977)

The reported errors comprise statistical errors in sample and standard determinations, combined in quadrature with a system error component that is based on the analysis of an ongoing series of measurements on oxalic acid secondary standard. For the present result the system error component is conservatively estimated as 0.4% (= ± 32 radiocarbon years).

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