

Supplement 1: Seasonal Markers: Seven Series of Magdalenian Images and Their Symbolic Use

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SUPPLEMENT 1

The dates given in the article (Table 3) are for the archaeological layer or level to which a given artifact belongs. Direct dates are rarely obtained for the kind of artifacts discussed in this study, but when their stratigraphic position is known, the date range of the corresponding level can be used to the same effect. For the purpose of this project, stratigraphic information on individual artifacts was considered reliable if published after 1950 or, for earlier excavation records, if verified in a recent stratigraphic revision. Reliable stratigraphic data and one or more direct dates for the corresponding level were available for about one-third of the artifacts listed. When available, traditional radiocarbon dates are listed alongside dates obtained through the more reliable AMS methodology. For consistency, all dates originally published using an earlier version of the IntCal atmospheric curve were recalibrated using IntCal13 (Reimer et al. 2013). A complete list of the original uncalibrated dates with reference sources and details of the calibration process are provided in Table SI 1 with enclosed radiocarbon determination charts (Figure SI 1).

REFERENCES

- Barshay-Szmidt, C., Costamagno, S., Henry-Gambier, D., Laroulandie, V., Pétilion, J.-M., Boudadi-Maligne, M., Kuntz, D., Langlais, M., and Mallye, J.-B. 2016. New extensive focused AMS ¹⁴C dating of the Middle and Upper Magdalenian of the western Aquitaine/Pyrenean region of France (ca. 19–14 ka cal BP): proposing a new model for its chronological phases and for the timing of occupation. *Quaternary International* 414, 62–91.
- Blanc, C., and Marsan, G. 1985. Premières datations des niveaux tardiglaciaires et postglaciaires de la grotte d'Espalungue à Arudy (P.A.). *Archéologie des Pyrénées Occidentales* 5, 255–257.
- Boudadi-Maligne, M., Mallye, J.-B., Langlais, M., and Barshay-Szmidt, C. 2012. Des restes de chiens magdaléniens à l'abri du Morin (Gironde, France). Implications socio-économiques d'une innovation zootechnique. *PALEO* 23, 39–54.
- Bouvier, J.-M. 1973. Nouvelle diagnose stratigraphique du gisement éponyme de La Madeleine (Tursac, Dordogne). *Comptes-rendus de l'Académie des Sciences* 277, 2625–2628.
- Bronk Ramsey, C. 2009. Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337–360.
- Cattelain, P., and Pétilion, J.-M. 2015. Le «type 2a», plus ancien modèle de propulseur paléolithique: une nouvelle pièce dans le Magdalénien moyen d'Isturitz (Pyrénées-Atlantiques, France) et ses implications. *PALEO* 26, 17–32.
- Clot, A., and Omnès, J. 1979. Premiers datages radiocarbones du Magdalénien des Hautes-Pyrénées. *Bulletin de la Société préhistorique française* 76 (10–12), 324–339.
- Corchón Rodríguez, M. S. 1995. Reflexiones acerca de la cronología del Magdaleniense cantábrico. Las dataciones ¹⁴C de la Cueva de Las Caldas (Asturias, España). *Zephyrus* XLVIII, 3–19.
- Costamagno, S., Barshay-Szmidt, C., Kuntz, D., Laroulandie, V., Pétilion, J.-M., Boudadi-Maligne, M., Langlais, M., Mallye, J.-B., and Chevallier, A. 2016. Reexamining the timing of reindeer disappearance in southwestern France in the larger context of late glacial faunal turnover. *Quaternary International* 414, 43–61.
- Delibrias, G., Guillaud, M. T., and Labeyrie, J. 1974. Gif Natural Radiocarbon Measurements VIII. *Radiocarbon* 16 (1), 15–94.
- Delibrias, G., Guillaud, M.-T., Évin, J., and Chevallier, J. 1987. Sommaire des datations ¹⁴C concernant la préhistoire en France: III. Dates effectuées de 1979 à fin 1984. *Bulletin de la Société préhistorique française* 84 (7), 207–223.
- Evin, J., Marien, G., and Pachaiaudi, C. 1976. Lyon Natural Radiocarbon Measurements VI. *Radiocarbon* 18(1), 60–88.
- Fortea, J., Corchón, M.-S., Gonzalez Morales, M., Rodríguez Asensio, A., Hoyos, M., Laville, H., Dupré, M. and Fernández Tresguerres, J. 1990. Travaux récents dans les vallées du Nalón et du Sella. In Clottes, J. (ed.), *L'art des objets au Paléolithique*, vol. 1, pp. 219–244. Colloque international Foix/Le Mas-d'Azil, 1987. Paris: Ministère de la Culture.
- Henry-Gambier, D., Normand, C., and Pétilion, J.-M. 2013. Datation radiocarbones directe et attribution culturelle des vestiges humains paléolithiques de la grotte d'Isturitz (Pyrénées-Atlantiques). *Bulletin de la Société préhistorique française* 110, 645–656.
- Housley, R.A., Gamble, C.S., Street, M., and Pettitt, P. 1997.

- Radiocarbon evidence for the Lateglacial human recolonisation of northern Europe. *Proceedings of the Prehistoric Society* 63, 25–54.
- Langlais, M., Costamango, S., Laroulandie, V., Pétilion, J.-M., Discamps, E., Mallye, J.-B., Cochard, D., and Kuntz, D. 2012. The evolution of Magdalenian societies in South-West France between 18,000 and 14,000 calBP: Changing environments, changing tool kits. *Quaternary International* 272–273, 138–149.
- Mallye J.-B., Kuntz D., Langlais M., Boudadi-Maligne M., Barshay-Szmidt C., Costamagno S., Pétilion J.-M., Gourichon L., and Laroulandie, V. 2018. Trente ans après, que reste-t-il du modèle d'azilianisation proposé au Morin par F. Bordes et D. de Sonneville-Bordes? In Averbouh, A., Bonnet-Jacquement, P. and Cleyet-Merle, J. (eds.), *L'Aquitaine à la fin des temps glaciaires: les sociétés de la transition du Paléolithique final au début du Mésolithique dans l'espace Nord aquitain*, pp. 155–168. PALEO numéro spécial 2018.
- Movius, H. L. 1960. Radiocarbon dates and Upper Palaeolithic archaeology in Central and Western Europe. *Current Anthropology* 1(5/6), 355–391.
- Napierala, H. 2008. *Die Tierknochen aus dem Kesslerloch: Neubearbeitung der paläolithischen Fauna*. Beiträge zur Schaffhauser Archäologie 2. Schaffhausen: Baudepartement des Kantons Schaffhausen.
- Ochoa, B., García-Diez, M., Maíllo-Fernández, J.-M., Arrizabalaga, Á., and Pettitt, P. 2019. Gravettian figurative art in the Western Pyrenees: stratigraphy, cultural context, and chronology. *European Journal of Archaeology* 22 (2), 168–184.
- Pailhaugue, N. 1998. Faune et saisons d'occupation de la salle Monique au Magdalénien Pyrénéen, grotte de la Vache (Alliat, Ariège, France). *Quaternaire* 9(4), 385–400.
- Pétilion, J.-M. 2004. Lecture critique de la stratigraphie magdalénienne de la Grande Salle d'Isturitz (Pyrénées-Atlantiques). *Antiquités nationales* 36, 105–131.
- Pétilion, J.-M. 2016. Technological evolution of hunting implements among Pleistocene hunter-gatherers: osseous projectile points in the middle and upper Magdalenian (19–14 ka cal BP). *Quaternary International* 414, 108–134.
- Pétilion, J.-M., Langlais, M., Kuntz, D., Normand, C., Barshay-Szmidt, C., Costamagno, S., Delmas, M., Laroulandie, V., and Marsan, G. 2015. The human occupation of the northwestern Pyrénées in the Late Glacial: new data from the Arudy basin, lower Ossau valley. *Quaternary International* 364, 126–143.
- Pion, G. 2000. Le Magdalénien des deux Savoie et du Jura méridional. In Pion, G. (ed.), *Le Paléolithique supérieur récent : nouvelles données sur le peuplement et l'environnement*, pp. 147–164. Paris: Mémoires de la Société préhistorique française 28.
- Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Grootes, P. M., Guilderson, T. P., Haflidason, H., Hajdas, I., Hatt, C., Heaton, T. J., Hoffmann, D. L., Hogg, A. G., Hughen, K. A., Kaiser, K. F., Kromer, B., Manning, S. W., Niu, M., Reimer, R. W., Richards, D. A., Scott, E. M., Southon, J. R., Staff, R. A., Turney, C. S. M., and van der Plicht, J. 2013. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 Years cal BP. *Radiocarbon* 55(4), 1869–1887.
- San Juan-Foucher, C. 2012. Industria ósea decorada y arte mueble del Gravetiense pirenaico: perspectivas territoriales actualizadas. In Heras, C., Lasheras, J. A., Arrizabalaga, A. and Rasilla, M. (eds.), *Pensando el Gravetiense: Nuevos datos para la región cantábrica en su contexto peninsular y pirenaico*, pp. 438–460. Madrid: Ministerio de Educación, Cultura y Deporte.
- Szmidt, C., Laroulandie, V., Dachary, M., Langlais, M., and Costamagno, S. 2009a. Harfang, Renne et Cerf: nouvelles dates ¹⁴C du Magdalénien supérieur du Bassin aquitain au Morin (Gironde) et Bourrouilla (Pyrénées-Atlantiques). *Bulletin de la Société préhistorique française* 106(3), 583–587.
- Szmidt, C., Pétilion, J.-M., Cattelain, P., Normand, C., and Schwab, C. 2009b. Premières dates radiocarbones pour le Magdalénien d'Isturitz (Pyrénées-Atlantiques). *Bulletin de la Société préhistorique française* 106(3), 588–601.
- Valladas, H., Genty, D., Kaltnecker, E., Quiles, A., Tisnérat-Laborde, N., Arnold, M., Delqué-Količ, E., Moreau, C., Baffier, D., Cleyet Merle, J.J., Clottes, J., Girard, M., Monney, J., Montes, R., Sainz, C., Sanchidrian, J.L., and Simonnet, R. 2013. Dating French and Spanish prehistoric decorated caves in their archaeological contexts. *Radiocarbon* 55(2–3), 1422–1431.
- Vogel, J. C., and Waterbolk, H. T. 1963. Groningen radiocarbon dates IV. *Radiocarbon* 5(1), 163–202.

TABLE SI 1. RADIOCARBON DATES.

SAMPLE				DATING				CALIBRATION								
Main site	Site details	Chamber	Layer / level	Method	Label	Date	First published in	Curve	%	Cal BC	Cal BP	Rounded	Cal BC	Cal BP	Rounded	Source
Abri Morin				MS	Gif-2105	10480±200 BP	Delibrias et al. 1974	IntCal13	94.5	9,747	11,697	11,700	10,796	12,746	12,700	this project
Abri Morin			AIII	AMS	OxA-23628	12450±55 BP	Boudadi-Maligne et al. 2012	IntCal13	99.7		14,144			15,086		Mallye et al. 2018
Abri Morin			AIII	AMS	Poz-36174	12430±60 BP	Langlais et al. 2012	IntCal13	99.7		14,118			15,074		Mallye et al. 2018
Abri Morin			AIV	AMS	Poz-36173	12290±60 BP	Langlais et al. 2012	IntCal13	99.7		13,951			14,827		Mallye et al. 2018
Abri Morin			AIV	AMS	OxA-19827	12630±60 BP	Szmidt et al. 2009a	IntCal13	99.7		14,423			15,318		Mallye et al. 2018
Abri Morin			AIV	AMS	OxA-19828	12690±60 BP	Szmidt et al. 2009a	IntCal13	99.7		14,677			15,431		Mallye et al. 2018
Abri Morin			AIV	AMS	OxA-19829	12380±55 BP	Szmidt et al. 2009a	IntCal13	99.7		14,077			14,992		Mallye et al. 2018
Abri Morin			AIV	AMS	Lyon-9066 (SacA-28333)	12530±60 BP	Costamagno et al. 2016	IntCal13	99.7		14,216			15,182		Mallye et al. 2018
Abri Morin			AIV	AMS	Lyon-9067 (SacA-28334)	11340±50 BP	Mallye et al. 2018	IntCal13	99.7		13,059	13,100		13,328		Mallye et al. 2018
Abri Morin			AIV	AMS	OxA-26669	12785±60 BP	Barzay-Szmidt et al. 2016; Pétilion 2016	IntCal13	99.7		14,880			15,621	15,600	Mallye et al. 2018
Abri Morin			AIV	AMS	OxA-27393	12500±55 BP	Barzay-Szmidt et al. 2016; Pétilion 2016	IntCal13	99.7		14,196			15,136		Mallye et al. 2018
Abri Morin			AIII	AMS	OxA-26667	12705±55 BP	Barzay-Szmidt et al. 2016; Pétilion 2016	IntCal13	99.7		14,725			15,424		Mallye et al. 2018
Abri Morin			AIII	AMS	OxA-28122	12275±60 BP	Barzay-Szmidt et al. 2016	IntCal13	99.7		14,029			14,424		Mallye et al. 2018
Arudy			1	MS	Lyon-3481	12970±160 BP	Blanc and Marsan 1985	IntCal13	95.4		15,084			16,025		Pétilion et al. 2015
Arudy				AMS	Poz-52975	12490±60 BP	Pétilion et al. 2015	IntCal13	95.4		14,285	14,300		15,056		Pétilion et al. 2015
Arudy				AMS	OxA-26675	14145±65 BP	Pétilion et al. 2015	IntCal13	95.4		16,990			17,463	17,500	Pétilion et al. 2015
Arudy				AMS	OxA-26676	12605±55 BP	Pétilion et al. 2015	IntCal13	95.4		14,684			15,199		Pétilion et al. 2015
Arudy				AMS	OxA-28086	13120±55 BP	Pétilion et al. 2015	IntCal13	95.4		15,504			15,995		Pétilion et al. 2015

TABLE SI.1. RADIOCARBON DATES (continued).

SAMPLE				DATING				CALIBRATION								
Main site	Site details	Chamber	Layer / level	Method	Label	Date	First published in	Curve	%	Cal BC	Cal BP	Rounded	Cal BC	Cal BP	Rounded	Source
Arudy	grotte d'Espalungue			AMS	OxA-28087	13630±60 BP	Pétillon et al. 2015	IntCal13	95.4	16,205	16,680		16,680			Pétillon et al. 2015
Arudy	grotte Saint-Michel			AMS	OxA-X-2523-44	13155±75 BP	Pétillon et al. 2015	IntCal13	95.4	15,513	16,070	15,500		16,070		Pétillon et al. 2015
Arudy	grotte Saint-Michel			AMS	OxA-28088	11965±55 BP	Pétillon et al. 2015	IntCal13	95.4	13,612	14,015		14,015			Pétillon et al. 2015
Arudy	grotte Saint-Michel			AMS	OxA-28123	13760±65 BP	Pétillon et al. 2015	IntCal13	95.4	16,359	16,913	16,900		16,913	16,900	Pétillon et al. 2015
Enlène		salle du Fond	3-e	MS	Gif-5321	12800±140 BP	Delibrias and Guillaud 1988	IntCal13	95.4	12,783	14,733	14,700	13,813	15,763	15,800	this project
Enlène		salle du Fond	3-f	MS	Gif-5770	13400±120 BP	Delibrias and Guillaud 1988									
Isturitz		salle Saint-Martin	SI/E ₀	AMS	OxA-19830	13910±70 BP	Szmidt et al. 2009b	IntCal13	95.4	14,615	16,565	16,600	15,171	17,121	17,100	this project
Isturitz		salle Saint-Martin	SI/E ₀	AMS	OxA-19831	14110±60 BP	Szmidt et al. 2009b	IntCal13	95.4	14,995	16,945	16,900	15,473	17,423	17,400	this project
Isturitz		salle Saint-Martin	SI/E ₀	AMS	OxA-19832	14075±60 BP	Szmidt et al. 2009b									
Isturitz		grande salle	II/E	AMS	OxA-19836	15130±110 BP	Szmidt et al. 2009b									
Isturitz		grande salle	II/E	AMS	OxA-19837	12245±60 BP	Szmidt et al. 2009b									
Isturitz		grande salle	II/E	AMS	OxA-19838	13605±65 BP	Szmidt et al. 2009b									
Isturitz		grande salle	II	AMS	GrA-45328	14750±50 BP	Henry-Gambier et al. 2013	IntCal13	95.4	15,819	17,769	17,800	16,171	18,121	18,100	this project
Isturitz		grande salle	II	AMS	GrA-45329	13035±45 BP	Henry-Gambier et al. 2013									
Isturitz		grande salle	II	AMS	OxA-29933	12460±50 BP	Cattelain and Pétillon 2015	IntCal13		14,250	14,985			14,985		Szmidt et al. 2016
Isturitz		grande salle	II	AMS	OxA-28080	12455±55 BP	Cattelain and Pétillon 2015	IntCal13		14,235	14,984	14,200		14,984		Szmidt et al. 2016
Isturitz		grande salle	E	AMS	OxA-28083	15020±70 BP	Cattelain and Pétillon 2015	IntCal13		18,015	18,458	18,500		18,458	18,500	Szmidt et al. 2016
Isturitz		grande salle	E	AMS	OxA-28084	14605±70 BP	Cattelain and Pétillon 2015	IntCal13		17,581	17,984	17,600		17,984		Szmidt et al. 2016

TABLE SI.1. RADIOCARBON DATES (continued).

SAMPLE			DATING				CALIBRATION									
Main site	Site details	Chamber	Layer/ level	Method	Label	Date	First published in	Curve	%	Cal BC	Cal BP	Rounded	Cal BC	Cal BP	Rounded	Source
Kesslerloch				AMS	KIA-11825	12774±54 BP	Napierala 2008									
Kesslerloch				AMS	KIA-11826	12502±52 BP	Napierala 2008									
Kesslerloch			I n	AMS	KIA-11827	13052±53 BP	Napierala 2008									
Kesslerloch			III n	AMS	KIA-11828	13858±55 BP	Napierala 2008									
Kesslerloch			II c	AMS	KIA-11829	12897±53 BP	Napierala 2008									
Kesslerloch			II c	AMS	KIA-33350	12225±45 BP	Napierala 2008	IntCal13	95.4	12,026	13,976	14,000	12,337	14,287	14,300	this project
Kesslerloch			II c	AMS	KIA-33351	12335±45 BP	Napierala 2008									
Kesslerloch			II c	AMS	OxA-5746	13120±90 BP	Housley et al. 1997									
Kesslerloch			III Bc	AMS	OxA-5747	13430±100 BP	Housley et al. 1997									
Kesslerloch			III Bc	AMS	OxA-5748	12770±90 BP	Housley et al. 1997									
Kesslerloch			III Bc	AMS	OxA-5749	14150±100 BP	Housley et al. 1997									
Kesslerloch			III Ac	AMS	OxA-5750	13670±100 BP	Housley et al. 1997									
Kesslerloch			II c	AMS	OxA-10238	14330±110 BP	Napierala 2008	IntCal13	95.4	15168	17,118	17,100	15,834	17,784	17,800	this project
Kesslerloch			II c	AMS	OxA-10239	13980±110 BP	Napierala 2008									
La Madeleine			F/7	MS	Ly-919	12640±260 BP	Evin et al. 1976	IntCal13	95.4	12,106	14,056	14,100	13,841	15,791	15,800	this project
La Vache		salle Monique	2	MS	L-336c	11650±200 BP	Movius 1960	IntCal13	95.4	11,151	13,101	13,100	11,996	13,946	13,900	this project
La Vache		salle Monique	1			12385 BP		IntCal13	95.4	12,241	14,191	14,200	12,723	14,673	14,700	this project
La Vache		salle Monique	2	MS	GrN-2025	12540±105 BP	Vogel and Waterbolk 1963	IntCal13	95.4	12,303	14,253	14,300	13,227	15,177	15,200	this project

TABLE SI.1. RADIOCARBON DATES (continued).

SAMPLE			DATING				CALIBRATION									
Main site	Site details	Chamber	Layer / level	Method	Label	Date	First published in	Curve	%	Cal BC	Cal BP	Rounded	Cal BC	Cal BP	Rounded	Source
La Vache		salle Monique	3			12695 BP		IntCal13	95.4	13,051	15,001	15,000	13,301	15,251	15,300	this project
La Vache		salle Monique	4	MS	GrN-2026	12850±60 BP	Vogel and Waterbolk 1963	IntCal13	95.4	13,187	15,137	15,100	13,638	15,588	15,600	this project
La Vache		salle Monique	2	MS	GfF-7603	12800±140 BP	Pailhaugue 1998	IntCal13	95.4	12,783	14,733	14,700	13,813	15,763	15,800	this project
La Vache		salle Monique		AMS	GfA-96478	13490±120 BP	Pailhaugue 1998	IntCal13	95.4	13,936	15,886	15,900	14,688	16,638		this project
La Vache		salle Monique		AMS	GfA-96479	13770±140 BP	Pailhaugue 1998	IntCal13	95.4	14,281	16,231		15,137	17,087	17,100	this project
La Vache		salle Monique		AMS	GfA-96480	13650±130 BP	Pailhaugue 1998	IntCal13	95.4	14,156	16,106		14,974	16,924		this project
Labastide	grande grotte		surface	MS	Ly-1405	14260±440 BP	Clot and Omnès 1979									
Labastide	grande grotte		1	MS	GfF-6611	13700±120 BP	Delibrias et al. 1987									
Labastide	grande grotte		2	MS	GfF-6612	13500±120 BP	Delibrias et al. 1987									
Labastide	grande grotte		2	MS	GfF-6367	12700±110 BP	Delibrias et al. 1987									
Labastide	grande grotte	diverticule		AMS	GfA-99105	14010±140 BP	Valladas et al. 2013	IntCal13	95.4	14,603	16,553		15,506	17,456	17,500	this project
Labastide	grande grotte	diverticule		AMS	GfA-102394	13610±120 BP	Valladas et al. 2013	IntCal13	95.4	14,112	16,062	16,100	14,888	16,838		this project
Las Caldas		Sala II	VII	MS	Ly-3318	12869±160 BP	Fortea et al. 1990	IntCal13	95.4	12,859	14,809	14,800	13,959	15,909	15,900	this project
Las Caldas		Sala II	VIII	MS	Ly-2936	13310±200 BP	Fortea et al. 1990	IntCal13	95.4	13,402	15,352	15,300	14,633	16,583	16,600	this project
Las Caldas		Sala II	VIII	AMS	Ua-10189	13640±150 BP	Corchón Rodríguez 1995	IntCal13	95.4	14,098	16,048	16,000	15,012	16,962	17,000	this project
Les Hoteaux			g	AMS	Lyon-1132 (OxA-9457)	12830±75 BP	Pion 2000	IntCal13	95.4	13,141	15,091	15,100	13,656	15,606	15,600	this project
Lourdes	grotte des Espéluques			MS	Ly-1406	13170±260 BP	Clot and Omnès 1979	IntCal13	95.4	13,115	15,065	15,100	14,670	16,620	16,600	this project

TABLE SI 1. RADIOCARBON DATES (continued).

SAMPLE			DATING				CALIBRATION									
Main site	Site details	Chamber	Layer / level	Method	Label	Date	First published in	Curve	%	Cal BC	Cal BP	Rounded	Cal BC	Cal BP	Rounded	Source
Mas d'Azil	rive droite	galerie des Silex		MS	GIF-5679	13400±100 BP	Patou 1984	IntCal13	95.4	13,858	15,808		14,481	16,431	16,400	this project
Mas d'Azil	rive droite	galerie des Silex		MS	GIF-5680	13200±110 BP	Patou 1984	IntCal13	95.4	13,524	15,474	15,500	14,255	16,205		this project

Four dates were given in the original sources with the lab code "LYON" or "LYON," which was not found in the latest *Radiocarbon* list of active laboratories. From what I have learned, this is an informal designation used since at least 2005 for samples pre-treated at the University of Lyon but dated elsewhere, not the same as—and not interchangeable with—"Ly," the official code for samples dated at the University of Lyon. In the literature, the true label is sometimes given in parentheses following the "Lyon" label. This convention was adopted and followed here whenever the name of the actual laboratory was known. The date first published as Ly-9096 in Costamagno et al. (2016) is given here as Lyon-9066, which is how it was listed by Mallye et al. (2018) and seems more accurate. For the stratigraphic sequence of the **Abri Morin**, a tentative model composed of three level sets was provisionally used here. This model, inferred from relatively recent sources (Langlais et al. 2012; Mallye et al. 2018), consists of sets AL-AII (Laborian and Azilian), AIII-AIV (Upper Magdalenian), and BI-BII (Early Upper Magdalenian). The most recent date available for **Saint-Michel d'Arudy** was assumed to be an outlier (as suggested in Pétilion et al. 2015) and not considered here. The chamber stated here for the four more recent **Isturitz** dates, not explicitly indicated in the source (Cattelain and Pétilion 2015), was inferred from layer names. The dates given in Szmidt et al. (2009b) rely on a unified stratigraphy for this site that combines the layers defined by Saint-Férier and Passemard. These dates were used here for the *salle Saint-Martin*, where a single Magdalenian layer (*SI/Eo*) was excavated, but not the *grande salle*, for which more dates are available that specifically acknowledge the original stratigraphic layers. The early date for **La Vache**, labeled L-336c, can be found in the literature as Col-336c, as the code for the Lamont-Doherty laboratory was originally "Col" for Columbia University. The levels for the more recent AMS dates were not stated in the source (Pailhaugue 1998) likely because the four levels of the *salle Montique* (1–4) were considered to be artificial subdivisions of a single stratigraphic unit containing all the archaeological material (Pailhaugue 1998: 386). For **Kesslerloch**, only the AMS dates considered to be more reliable by Napierala (2008) were included here. Radiocarbon determination charts for all dates recalibrated as part of this project are attached to this table. Recalibrations were performed so that all calibrated dates listed in this table, including dates reprinted from the sources referenced, would use the same atmospheric curve, namely IntCal13 (Reimer et al. 2013). This project relied on OxCal software version 4.3.2 (Bronk Ramsey 2009) for the calibration process.

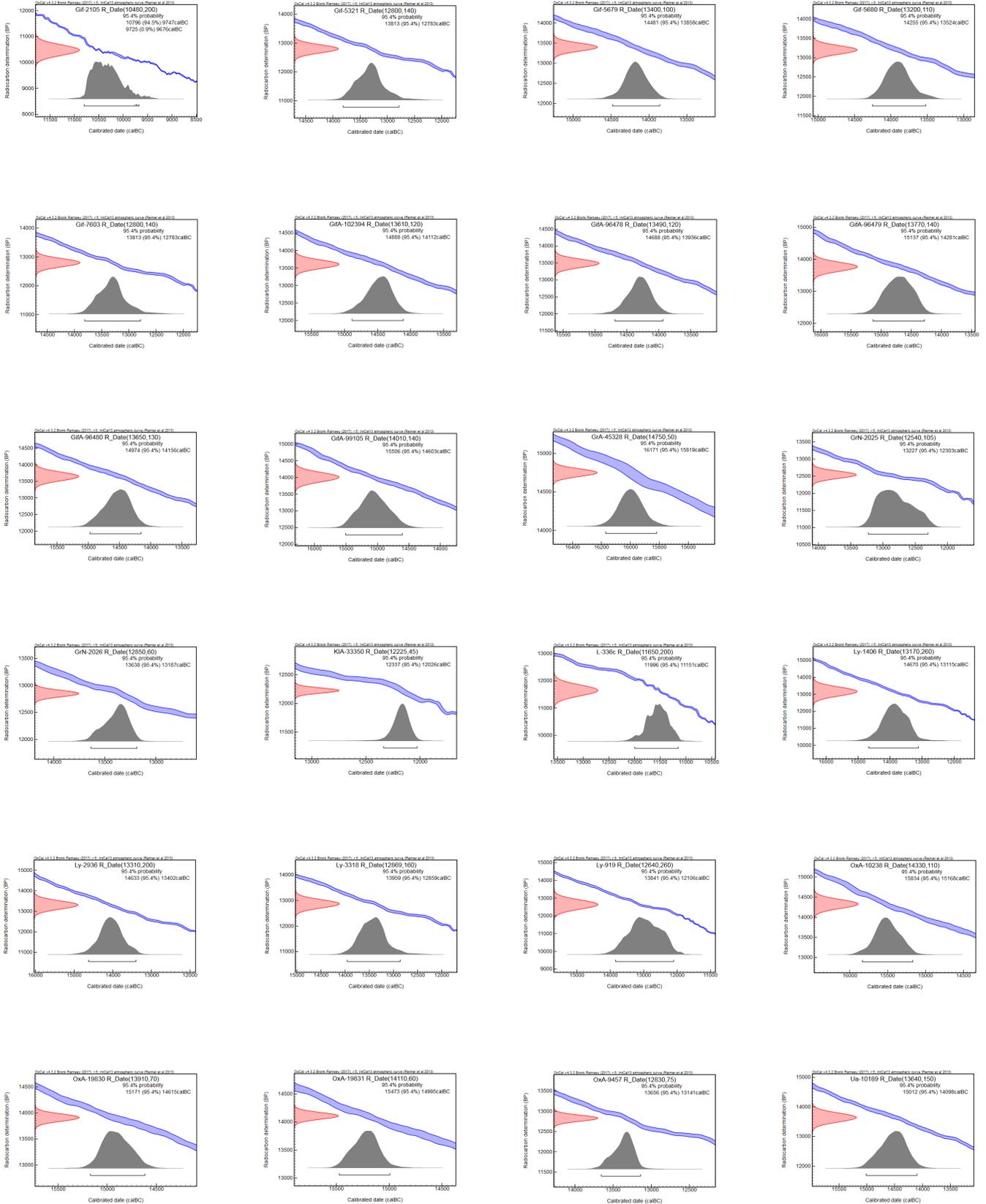


Figure SI 1. Calibrated dates.