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## Recovery of the forest ecosystem in the tropical lowlands of northern Guatemala after disintegration of Classic Maya polities

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Pollen analysis was completed at 3-cm intervals. Samples of 1-2 cm<sup>3</sup> were processed with standard laboratory procedures, using KOH, HCL and acetolysis. A known amount of exotic *Lycopodium* spores was added to each sample to enable calculation of absolute pollen concentration. Residues were mounted in glycerine jelly and pollen grains were identified using Roubik and Moreno (1991), Palacios *et al.* (1991) and the reference collection of the Ecosur Herbarium. A pollen sum of 200 was targeted, as some samples had few pollen elements, excluding aquatic elements, ferns and fungal spores. Diagrams were constructed with Palaeo Data Plotter (Juggins, 2002). Pollen was grouped by ecological preference: tropical forest elements, pine & temperate elements, disturbance elements, spores and algae.

Total carbon (TC) and total inorganic carbon (TIC) were measured by coulometry with a UIC, Inc.<sup>TM</sup> system. For the TC measurement, samples were combusted at 950 °C to convert all forms of carbon into CO<sub>2</sub>. Samples were acidified to convert carbonate to CO<sub>2</sub>. Total organic carbon content (TOC) was calculated as TC minus TIC. Weight

percent calcium carbonate (CaCO<sub>3</sub> %) was calculated by multiplying TIC by 8.33. Weight percent organic matter (OM %) was estimated by multiplying TOC by 2.2. Ca elemental concentrations in bulk sediment were measured at high resolution (1 mm) using an Avaatech X-ray fluorescence (XRF) core-scanner at ETH Zurich.

**Table DR1.** Accelerator mass spectrometry (AMS) radiocarbon dates and calibrated ages of terrestrial organic material in Lake Petén Itzá core PI VIII-05 7C. Radiocarbon ages were measured using the accelerator mass spectrometry (AMS) facility at ETH, Zurich. All radiocarbon dates were calibrated using a depositional P Sequence model (k=3) of the OxCal 4.1 calibration program (Bronk-Ramsey, 2008).

Core	Accession number	Material	Core depth (cm)	δ <sup>13</sup> C (‰)	<b>Radiocarbon age</b> (B.P., 1σ-error)	Calibrated age
						(cal yr A.D., 2o-error)
PI VIII-05 7C	ETH-33815	Wood	66	-29.4	$635\pm50$	1345 AD ± 65
PI VIII-05 7C	ETH-33816	Wood	84	-25.6	$860\pm45$	1180 AD $\pm$ 50
PI VIII-05 7C	ETH-31560	Charcoal, Wood	95	-28.8	$825 \pm 50$	1105 AD $\pm$ 75
PI VIII-05 7C	ETH-31561	Charcoal	102	-27.6	$1060 \pm 45$	$1045AD \pm 105$

**Figure DR1.** Pollen percentage diagram for Lake Petén Itzá, core PI VIII-05 7C. Elements were grouped by ecological preference: tropical forest elements, pine & temperate elements, disturbance elements, spores and algae.



## REFERENCES

- Bronk-Ramsay, C., 2008, Deposition models for chronological records: Quaternary Science Reviews 27, 42-60.
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- Roubik, D. W., and Moreno, J. E., 1991, Pollen and spores of Barro Colorado Island: Miss Bot Garden 36, 1–270.