Figure DR1. (A) A large number of tsunamigenic boulders on the reef flat or coastal line at Miyara Bay. (B) Deceased and fossilized coral near the reef edge as a reference recorder of the present Earth's magnetic field, (C) tsunamigenic coral boulder (called boulder 'KK') transported by the 1771 Meiwa Tsunami emplaced along the shoreline of the Miyara bay area (Kato and Kimura, 1983). (D) One of the biggest boulders on the reef flat of the Miyara area.

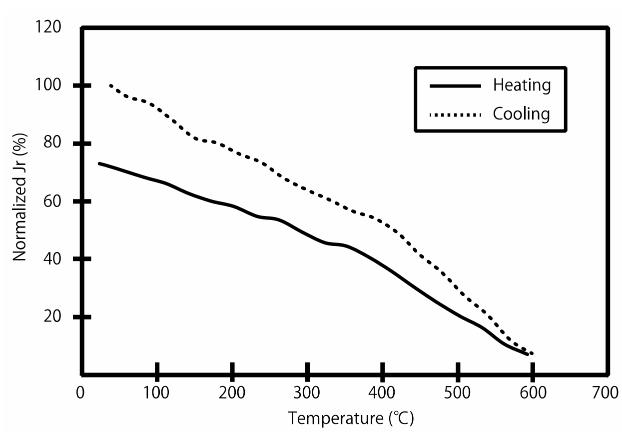

Figure DR2. A custom-made high-temperature vibrating sample magnetometer (VSM) measurement to determine the Curie temperature of the remanence-carrying mineral at the National Institute of Polar Research (Yamanaka et al., 1995). Infrared heating device was attached to sample holder to heat the samples during the VSM measurement from room temperature and 600 ºC in a vacuum of 10^{-3} Pa. Magnetization of tsunamigenic coral boulders reduced toward 580 ºC, suggesting the origin of magnetization is stoichiometric magnetite.

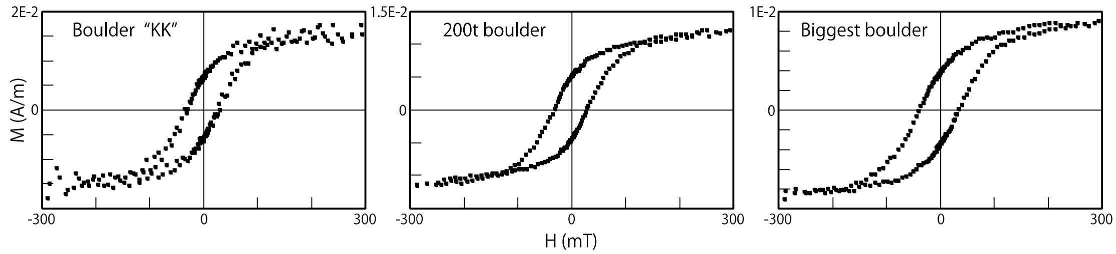

Figure DR3. Hysteresis loops of tsunamigenic boulders for each boulder.

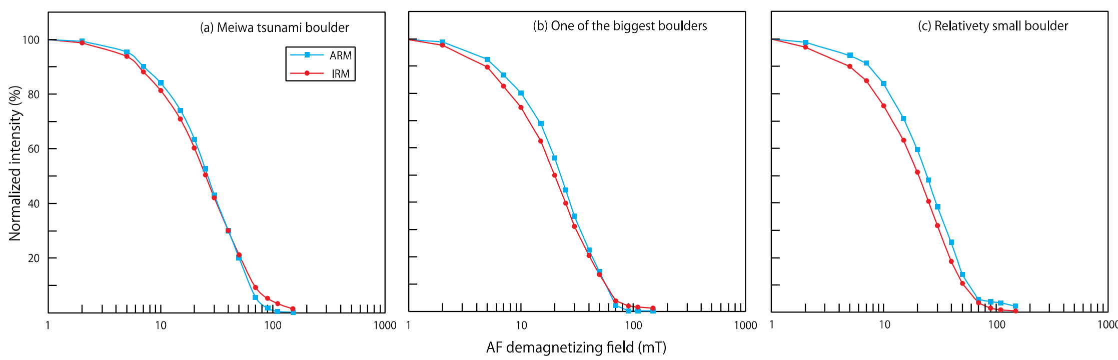

Figure DR4. Lowrie-Fuller test of (a) Tsunami boulder deposited by the Meiwa tsunami (boulder 'KK': grayish-color sample), (b) One of the biggest tsunamigenic boulders of coral *Porites* in the Miyara Bay (grayish-color sample), and (c) Relativity small dimension *Porites* boulder in the Hoshino area (ivory-color sample). The blue solid squares are ARM, and the red solid circles are IRM. These three samples all showed that the ARM is more stable than IRM, suggesting that the NRM in the coral is carried by fine-grained magnetite (Lowrie and Fuller, 1971). These samples preserve a fresh coral skeleton without any diagenesis. Thus, it is inferred that the remanence of any sample is employed by fine-grained magnetite.

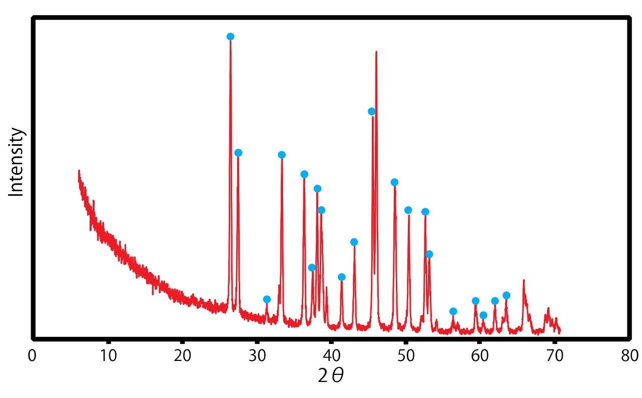

Figure DR5. X-ray diffraction pattern showing the presence of aragonite peaks (blue circle). The clear double peaks of aragonite around $2\theta = 27^{\circ}$ are found. This shows that our deceased fossilized corals have not been affected by diagenesis (Fyfe and Bischoff, 1965; Bischoff and Fyfe, 1968). Diagenesis of corals often produces diagenic magnetites, carrying a chemical remanent magnetization (CRM) (McCabe et al., 1983; McNeil, 1997). Therefore, the remanence of our boulders is of depositional remanence in origin during a coral growth.

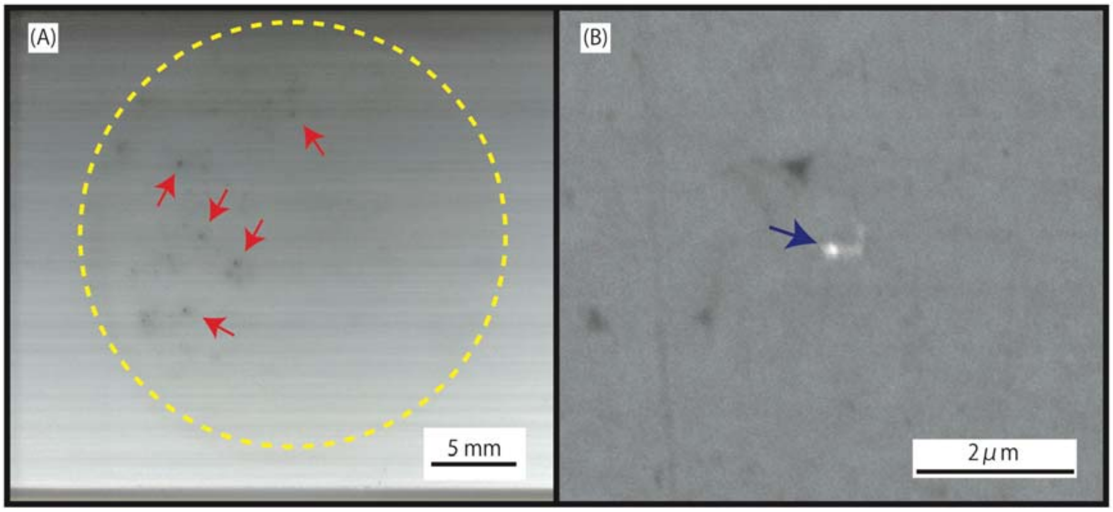

Figure DR6. Position determination of remanence-carrying minerals in a coral: A) Scanning Magneto-Impedance (MI) magnetic microscope image of the coral (a stack of twenty MI images), revealing the presence of remanence-carrying minerals in tsunamigenic coral boulders. The sample acquired an isothermal saturation remanent magnetization (SIRM) by the exposure of 1 Tesla strong magnetic field. The scanning MI magnetic microscope allows us to show both the presence and their positions of remanence-carrying grains (Uehara and Nakamura, 2007, 2008; Nakamura et al. 2010). Red arrows show the position of remanence-carrying grains with skeltons, and yellow dotted circle is an outline of core sample dimension. B) The microphotograph of SIRM-carrying grains beneath the area of red arrows by a Schottky field-emission scanning electron microscope (JEOL JSM7001F, JEOL Ltd., Tokyo, Japan), showing the presence of nanometer-scale iron-oxide grains.

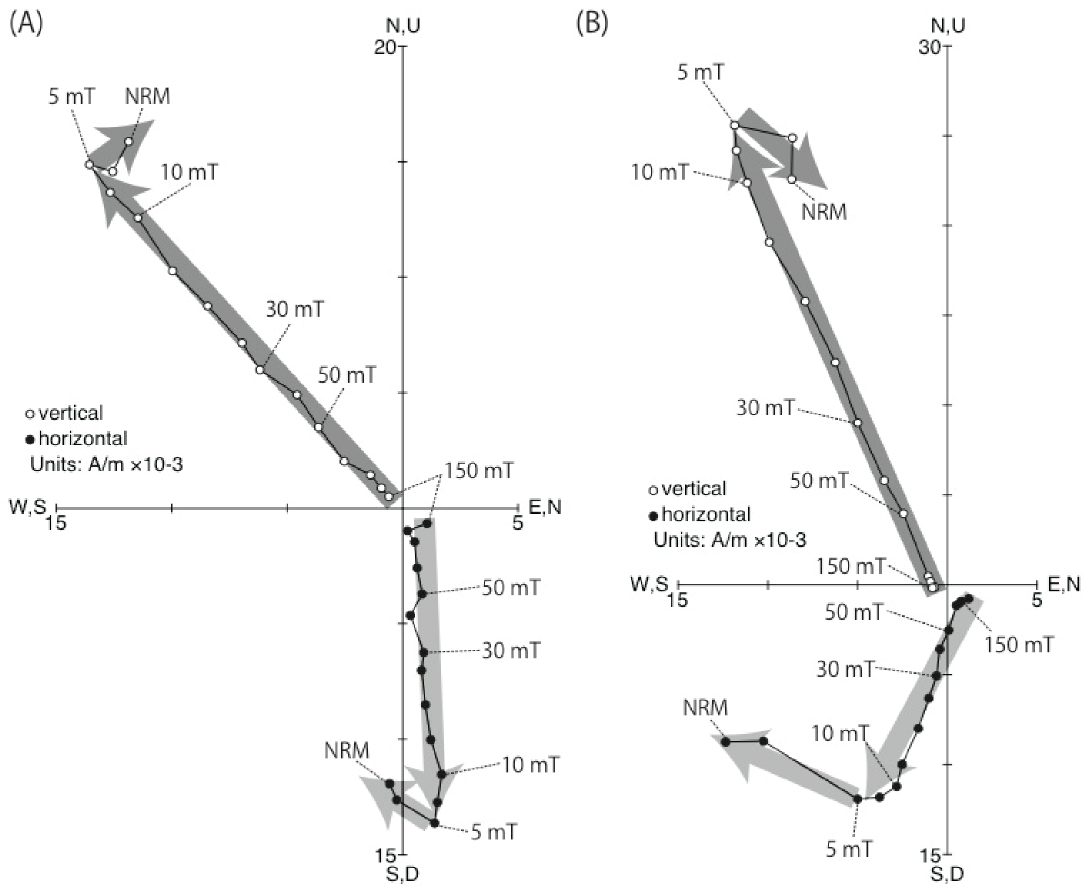

Figure DR7. Examples of Zijderveld plot of AF demagnetization. (A) Tsunamigenic coral boulder (boulder ‘KK’), emplaced by the 1771 Meiwa Tsunami. The remanence was separated at 5mT, resembling the entire trend of thermal demagnetization. (B)The biggest boulders (200 tons). Older and younger component could also be separated at 5mT. These changes in vector components suggest these tsunami boulder had been transported to land by tsunami.

Table DR1: Low-temperature demagnetization (LTD) provides an effective and quick means of magnetic cleaning (Borradaile, 1994). This method erases the MD fraction and isolates the SD part (Dunlop and Kenneth, 1991). We conducted LTD to 28 cores drilled from 10 samples for three times and measured intensity in each demagnetized step. After the LTD, the average remaining of the remanence is 95% (n=28), suggesting the dominant fraction of SD grains as the coral magnetization.

Sample name	NRM (kA/m)	LTD_1 (kA/m)	LTD_1/NRM (%)	LTD_2 (kA/m)	LTD_2/NRM (%)	LTD_3 (kA/m)	LTD_3/NRM (%)	Average (%)
IS_03_1	2.39E-05	2.34E-05	98%	2.37E-05	101%	2.30E-05	96%	98%
IS_06	1.95E-06	2.13E-06	109%	2.08E-06	97%	1.85E-06	95%	101%
IS_13_1	2.55E-05	2.79E-05	109%	2.70E-05	97%	2.66E-05	104%	104%
IS_13_2	4.28E-05	4.10E-05	96%	3.98E-05	97%	4.07E-05	95%	96%
IS_13_3	3.86E-05	3.67E-05	95%	3.67E-05	100%	3.65E-05	94%	96%
IS_13_4	2.70E-05	2.69E-05	100%	2.78E-05	103%	2.74E-05	102%	102%
IS_16_1	2.08E-05	2.36E-05	113%	2.29E-05	97%	2.32E-05	111%	107%
IS_16_2	1.57E-05	1.65E-05	105%	1.64E-05	99%	1.74E-05	111%	105%
IS_19_1	5.68E-06	5.28E-06	93%	5.57E-06	106%	5.77E-06	102%	100%
IS_19_2	1.68E-06	1.34E-06	80%	1.33E-06	100%	1.42E-06	85%	88%
IS_19_3	5.45E-06	5.42E-06	100%	5.30E-06	98%	5.50E-06	101%	99%
MI_01_1	8.09E-06	8.85E-06	109%	8.45E-06	95%	8.55E-06	106%	104%
MI_01_2	1.95E-05	1.85E-05	95%	1.97E-05	106%	1.99E-05	102%	101%
MI_01_3	3.13E-05	3.08E-05	98%	3.38E-05	110%	3.11E-05	99%	102%
MI_02	1.38E-06	1.36E-06	99%	1.47E-06	108%	1.40E-06	102%	103%
M_05_1	8.10E-06	8.47E-06	105%	7.86E-06	93%	7.41E-06	91%	96%
M_05_2	1.06E-05	1.07E-05	101%	1.06E-05	99%	1.08E-05	102%	101%
M_05_3	9.79E-06	9.15E-06	93%	9.23E-06	101%	9.16E-06	94%	96%
M_05_4	8.33E-06	8.60E-06	103%	8.69E-06	101%	8.78E-06	105%	103%
M_05_5	1.81E-05	1.79E-05	99%	1.73E-05	97%	1.73E-05	95%	97%
M_05_6	7.96E-06	1.04E-05	131%	9.88E-06	95%	9.36E-06	118%	115%
M_06_1	8.27E-06	9.07E-06	110%	8.47E-06	93%	8.60E-06	104%	102%
M_06_2	7.82E-06	6.97E-06	89%	6.82E-06	98%	6.68E-06	85%	91%
M_06_3	1.28E-05	1.34E-05	104%	1.30E-05	97%	1.37E-05	107%	103%
Miyara_01_1	3.91E-06	3.29E-06	84%	3.27E-06	99%	3.53E-06	90%	91%
Miyara_01_2	2.25E-05	2.20E-05	98%	2.15E-05	98%	2.18E-05	97%	97%
Miyara_01_3	1.97E-05	1.93E-05	98%	2.08E-05	108%	1.96E-05	99%	102%
Miyara_01_4	6.89E-06	6.38E-06	93%	6.72E-06	105%	6.21E-06	90%	96%

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