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Supplementary Information for

Protracted Indian Monsoon Droughts of the Past Millennium and Their Societal Impacts

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Supplementary Information Text

1. Historic droughts/famines compilations and historical context

1.1 Historical drought and famine chronology

Historical accounts of catastrophic droughts, famines, and mass mortality are widely available from the Indian subcontinent (e.g., 1-5). Several studies have used various documentary evidence, including government records, gazetteers, newspapers, royal court, and personal diaries, to compile a reliable history of droughts and famines at least for the past five-six centuries (Fig. 3b and Table S3). Beyond that, however, there are only a few instances where unambiguous accounts of historic droughts and famines can be gleaned from the ancient texts. In this paper, we have primarily relied on the drought compilations of the past five centuries as presented in the following sources. One of the most cited Indian drought compilations is by Alexzander Loveday described in his book entitled "The history and economics of Indian Famines" (6). This drought compilation, which spans from CE 1500 to 1915, is predominantly derived from–a series of books entitled "The History of India, as told by its own Historians" Volumes I to VIII by Eliot and Dowson (7).

The drought information compiled between the eighteenth and twentieth centuries is mostly from British administrative documents, e.g., Indian Famine Commission reports, Imperial Gazetteer of India, and the East India Company (EIC) general correspondence documents (Table 3). During British rule in India, the first official report was about the famine's impact on northwest India (8). Another report describes the devastating Orissa famine, which occurred during CE 1865-66 in north-northeastern India, with estimated casualties of 1-2 million people (9). The severity of the Orissa famine deeply impressed EIC officials and in CE 1866 a committee was established by EIC (9) to enquire about famine impact, evaluate the causes of famine, and for detailed inspection of drought recurrence patterns. Later, the representatives of the EIC formed three famine commissions (FC), in CE 1878, 1897, and 1900 respectively. The FC duties involved evaluation of crops failure and drought severity assessment (9). Hence, EIC documents mainly from the mid-18th-century are a more robust source of historic drought chronology, drought severity, and spatial extent.

The most cited drought chronology during the 1980s is given in Mooley and Pant (10). The refined drought chronology from CE 1555 to 1911 was described by Pant (11), where the authors reported 75 droughts in 356 years. The drought chronology of Pant (11) was based on 17 historic sources (Table 3). The Indian drought compilation from CE 1500 to 1915 was reported by Whetton and Rutherfurd (12). In their drought compilation, they reported 81 drought years within 615 years. The drought chronology in Whetton and Rutherfurd (12) was based on 8 historic sources, which also included the description of the droughts. A more recent, and perhaps the most exhaustive, drought compilation is presented by Grove and Chappell (13), which spans from CE 1527 to 1900 and draws information from 19 historic sources (Table S3, Fig. 3). In a span of 373 years, approximately 107 droughts are reported in their compilation. Therefore, here we have used the historic drought chronology as reported by Grove and Chappell (13), with few modifications. Namely, we added 9 additional droughts (CE 1500, 1509, 1520, 1521, 1733, 1738, 1744, 1752, and 1770) reported in Whetton and Rutherfurd, 1994 (12). We have removed two sets of droughts between CE 1559-1561 and CE 1624-1628, which are only mentioned in the Grove and Chappell (13) compilation without a detailed description.

1.2 Chalisa Famine (CE 1783-84)

This famine is known as 'Chalisa' because of its occurrence in the year '1840' of Vikram Samvat, a Hindu calendar (where 40 translates to "Chalis" in Hindi). Historical accounts describe it as one of the most spatially widespread famines that affected large swathes of western and northern India. By one estimate, the death toll was ~ 11 million people (13-14). Some environmental historians have linked this famine to severe droughts over India in response to a protracted El Niño event (13,15).

1.3 Doji Bara Famine (CE 1789-1792)

The Doji Bara famine, also known as the "Skull" famine (presumably because of eyewitness accounts of human skeletons lying on roads and fields), was another devastating historical famine that struck

large parts of India from CE 1789 to 1792, causing widespread mortality. While severe droughts were the underlying reason, the proximate cause of this famine was extreme spikes in prices of essential grains which shot up by 300-800% over a period of 4-5 years in some regions (16) (Fig. S10).

1.4 Deccan Famine (CE 1630-1634)

Chronicles from the court of Mughal Emperor Shah Jahan describe this famine in detail. While an exaggeration or subsequent misinterpretation (or mistranslation) by environmental historians, these accounts describe that no rain was reported for 4 consecutive years from CE 1630-1634 (1) followed by heavy rainfall in 1635 that led to floods and a plague of locust (17). The impact of this drought was greatest over western and northwestern India, which includes the Deccan plateau, now part of Gujarat and Maharashtra. There are widespread reports of cannibalism described by the Dutch merchant Van Twish (18) and by Peter Mundy (17), a seventeenth-century British merchant trader, who portrayed the horrifying impacts of this drought.

1.5 Bengal Famine (CE 1768-1771)

This famine primarily struck the eastern state of India (the state of Bengal) but large regions of central-eastern India including what is now Bangladesh were also affected (Fig. S10). The historic accounts paint a grim picture indicating widespread desertification of rice fields and mass mortality with nearly 10 million people succumbing to this famine (19). The famine was exacerbated by forced opium cultivation by the British East India Company, reducing food availability, and large-scale outmigration of people from affected areas (19).

1.6 Durga Devi Famine (CE 1396-1407)

Multi-year monsoon failures are often described in Hindu Vedic texts, for instance, Rigveda (an ancient Indian collection of Vedic Sanskrit hymns) refers to ten years of prolonged drought (Rv III, 39, 5). Another prominent text, Mahabharat, describes a twelve-year famine (1). In more recent literature, the Durga Devi famine has been described as one that lasted for twelve years, from CE 1396 to 1408 (Fig. 4).

1.7 Abandonment of Fatehpur Sikri

The emperor Akbar constructed a magnificent imperial capital— Fatehpur Sikri (the City of Victory). In CE 1571 the construction of the new city was initiated, and by ~ CE 1576 Akbar moved his residence to the imperial capital. By CE 1580 construction of the magnificent capital was completed, and within the same year, the imperial capital was discarded (Fig. S10). The minting of coins at Sikri gradually ceased from CE 1580 to 1583 (Fig. S10). Subsequently, in CE 1585, Emperor Akbar also left Sikri (Fig. S10), and Sikri no longer remained the governance capital, yet was considered a joint capital along with Agra [previous Mughal empire capital, (20-21)]. In CE 1591, Akbar's poet Allami Faizi, while passing through Sikri described the deserted imperial city of Fatehpur, citing the migration of the city's general population (22). However, Akbar revisited Fatehpur for a brief period in CE 1601 but never returned permanently and resided in Lahore. In CE 1610 Sikri was lying abandoned, the buildings lying at waste without any inhabitants (20-21, 23). According to the literature, much of the city was deserted by CE 1600 (fig. S10), though the Mughal Emperors did pay rare visits to the deserted city for a day or less (20-21).

1.8 The fragmentation of the Mughal Empire and the deindustrialization

The Mughal Empire ruled the South Asian region and was founded by Babur in CE 1526. The Mughal Empire was spread over northwest, and central India and parts of the Deccan Plateau (current states: Telangana, Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu) (24). The most prominent period of the Mughal Empire encompassed the reigns of Akbar (CE 1526—1605), Jahangir (CE 1569—1627), Shah Jahan (CE 1627—1659), and Aurangzeb (CE 1659—1707) (Fig. S10). From the late 18th century Mughal Empire lost its effective control over India to the British East India Company (Fig. S10). In CE 1857 the Mughal Empire went out of existence under the governance of the last crowned Mughal Emperor Bahadur Shah II (24). Mughals had vitalized the monetary economy by developing the domestic fabric industry and introducing their good in European markets, trading with foreign countries in West Asia. India's strong economy at that time was based on the exports of cotton textiles, producing

much of the finest finished textiles in the world (25). Up until the middle 18th century (~ CE 1750) India produced 25% of the world's textiles, and after CE 1750 most textile production had shifted to Britain. Indian per capita gross domestic production (GDP) declined steadily during the mid-17th to the 18th century before stabilizing during the 19th century. The Indian GDP during CE 1600 was over 60% of the British level and by CE 1871 it had fallen to less than 15 % (26). The share of Indian textiles in the West African trade was ~38% in CE 1730s, which had fallen to ~22 % in the CE 1780s and ~3 % in the CE 1840s (27). The share of Indian textiles in total English trade with southern Europe was more than 20 % in the CE 1720s, but this share fell to about 6 % in the CE 1780s and less than 4 % in the CE 1840s (27). Due to Britain's improved technologies and use of machines in textiles output, inexpensive factory-made, European textiles flooded the global market, leading to declining textile prices internationally. India's hand-loom technology could not compete with the cheaper English cloth, which drew Indian workers away from the textile manufacturing industry and they had to work in cash-crop agriculture—specifically, raw cotton—to survive. So instead of exporting cloth (a manufactured good), India became an exporter of cotton (a raw material) and, as a result, the Indian economy collapsed (28).

2 Mawmluh cave isotope systematics

2.1 Cave monitoring

Mawmluh cave is one of the best-studied cave systems in India, and several speleothems $\delta^{18}O$-based reconstructions of the ISM are available from this cave (29-36). The >3-year comprehensive monitoring program indicates that Mawmluh cave is strongly influenced by cave ventilation (30), which also impacts the isotopic composition of stalagmites from this cave (34). Monitoring data indicate that seepage through the epikarst can rapidly transfer the $\delta^{18}O_p$ signature into the cave, and at some locations, with a lag of less than 1 month, preserving the seasonal signal of ISM rainfall. The complex epikarst morphology, however, leads to highly variable drip and response rates, such that waters of different ages can mix to a different degree in the overburden/karstified limestone. Thus, the $\delta^{18}O$ signal can reflect anything from seasonal to multi-annual dynamics, depending on individual drip site characteristics. While the $\delta^{18}O$ of speleothem is biased towards the ISM season because most infiltration is received between June and October (30), dry season dynamics play an important role as well (29). Despite the observed kinetic processes, the high degree of replication among existing speleothem records suggests that robust environmental signals can be retrieved from this cave (32, 36).

2.2 Isotopic equilibrium

Conventional criteria to assess the isotopic equilibrium of stalagmites require that $\delta^{18}O$ and $\delta^{13}C$ along the same growth laminae are uncorrelated and that no enrichment in ^{13}C is observed with distance from the stalagmite apex (37). However, the sampling of individual growth layers has proven difficult, and in some cases, it has been demonstrated that a correlation between $\delta^{18}O$ and $\delta^{13}C$ values along the speleothem's flanks does not preclude deposition of calcite near isotopic equilibrium conditions at the stalagmite apex (38). Instead, the replication test (i.e., a high degree of coherence between isotope profiles of individual speleothems from the same or a nearby cave) is a more rigorous and reliable test for isotopic equilibrium (38). A high degree of visual similarity between the coeval portions of ML-5 and ML-8 $\delta^{18}O$ profiles suggests that both stalagmites primarily record climate signals (Fig. S4). The visual comparison was corroborated by statistically significant correlations between the ML-5 and ML-8 $\delta^{18}O$ profiles (N=116, r = 0.33, and p= 0.02), over their contemporary growth period between CE 1738 and CE 1854, suggesting that carbonate precipitation in Mawmluh cave occurs near isotopic equilibrium (Fig. S4). The Pearson correlation coefficients (r), and the p-value was derived after accounting for the serial autocorrelation in the data (see *Materials and Methods*).

2.3 $\delta^{13}C$ records

The impact of kinetic effects on stalagmites in Mawmluh cave has been comprehensively evaluated by Lechleitner (34) who showed that the $\delta^{13}C$ variability in Mawmluh cave is influenced by prior carbonate precipitation (34). In addition, soil and vegetation activity can influence the carbon isotope signal. Importantly, all factors influencing $\delta^{13}C$ in Mawmluh cave act in the same direction, enhanced infiltration will lead to increased vegetation and soil microbial activity while reducing prior carbonate

precipitation, and increasing drip rates in the cave. This in turn results in a reduced impact of CO_2 degassing on the $\delta^{13}C$ of the growing stalagmite. All these factors converge to limit kinetic isotope fractionation under wet conditions. During dry conditions the same processes intensify kinetic fractionation, leading to higher $\delta^{13}C$ values in the stalagmite. It is interesting to note that $\delta^{18}O$ and $\delta^{13}C$ were positively correlated over much of the Maw record (Fig. S13), but that this correlation broke down after ca. 1800 CE. Since then, $\delta^{13}C$ remained near zero, reflecting the host rock rather than vegetation or soil. This observation is best explained by deforestation above the cave, which likely intensified with charcoal production for iron smelting (39).

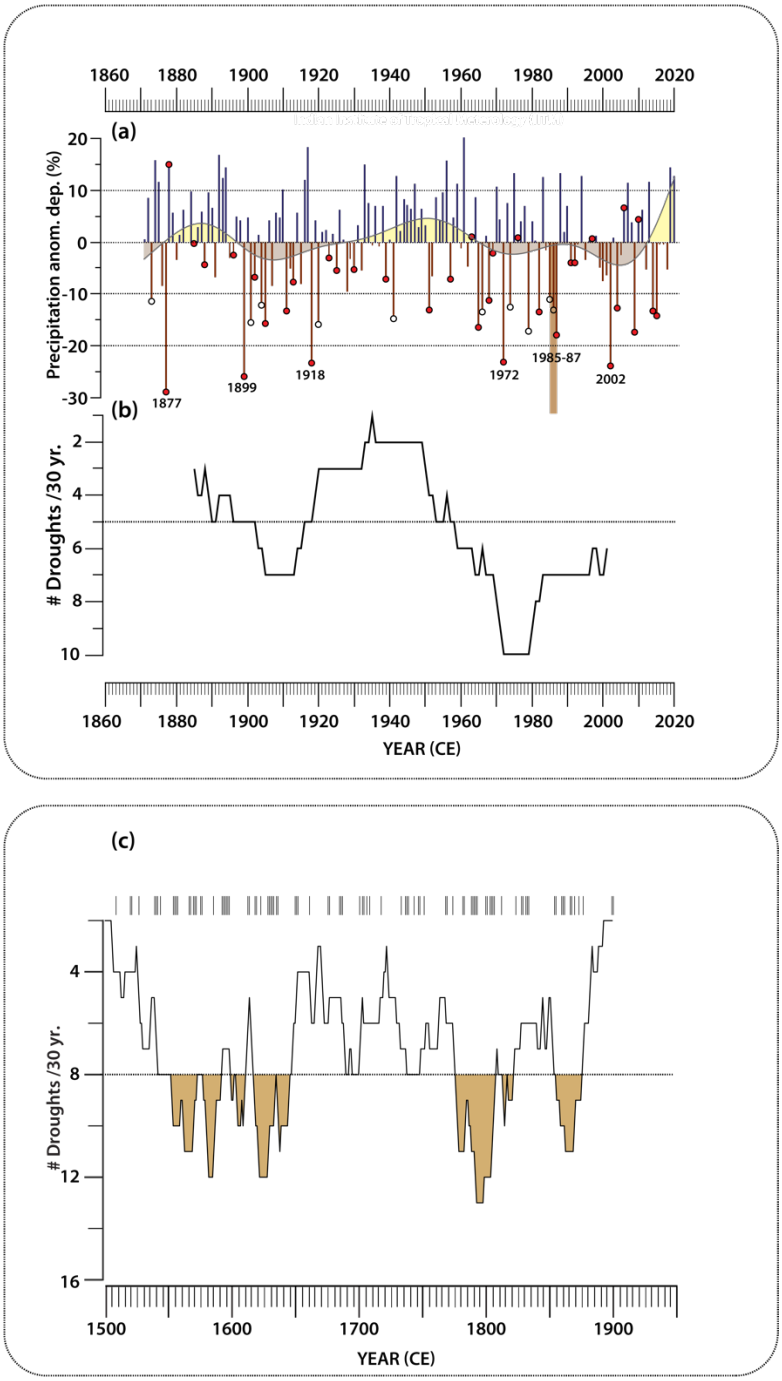

Fig. S1. The All-India Monsoon Rainfall (AIR) and drought frequency. (a) Precipitation anomalies of the AIR-series (40) are expressed as percentage departure from the mean precipitation. Overlain (shaded anomaly) by 30-years Butterworth low-pass filter, highlighting the multidecadal variability. The dotted lines highlight the years with a ±10% decrease (increase) in the Indian Summer Monsoon (ISM) rainfall. Years of AIR that surpassed 10 % below the mean (~ 900 mm) are shown with circles and the years of 20% below are marked and highlighted with circles. The interval with 10% departure in monsoon rainfall for 3 uninterrupted years (1985/86/87) is highlighted by the brown bar. The ENSO (El Niño–Southern Oscillation) years are shown with red circles. **(b)** ISM drought frequency using a 30-year moving window. The dotted line delineates the average drought frequency. **(c)** Number of historic drought frequency using a 30-years moving window (13). The drought frequency >8 is highlighted by the dotted line and filled with a muddy color. The discrete drought years are shown by vertical black lines.

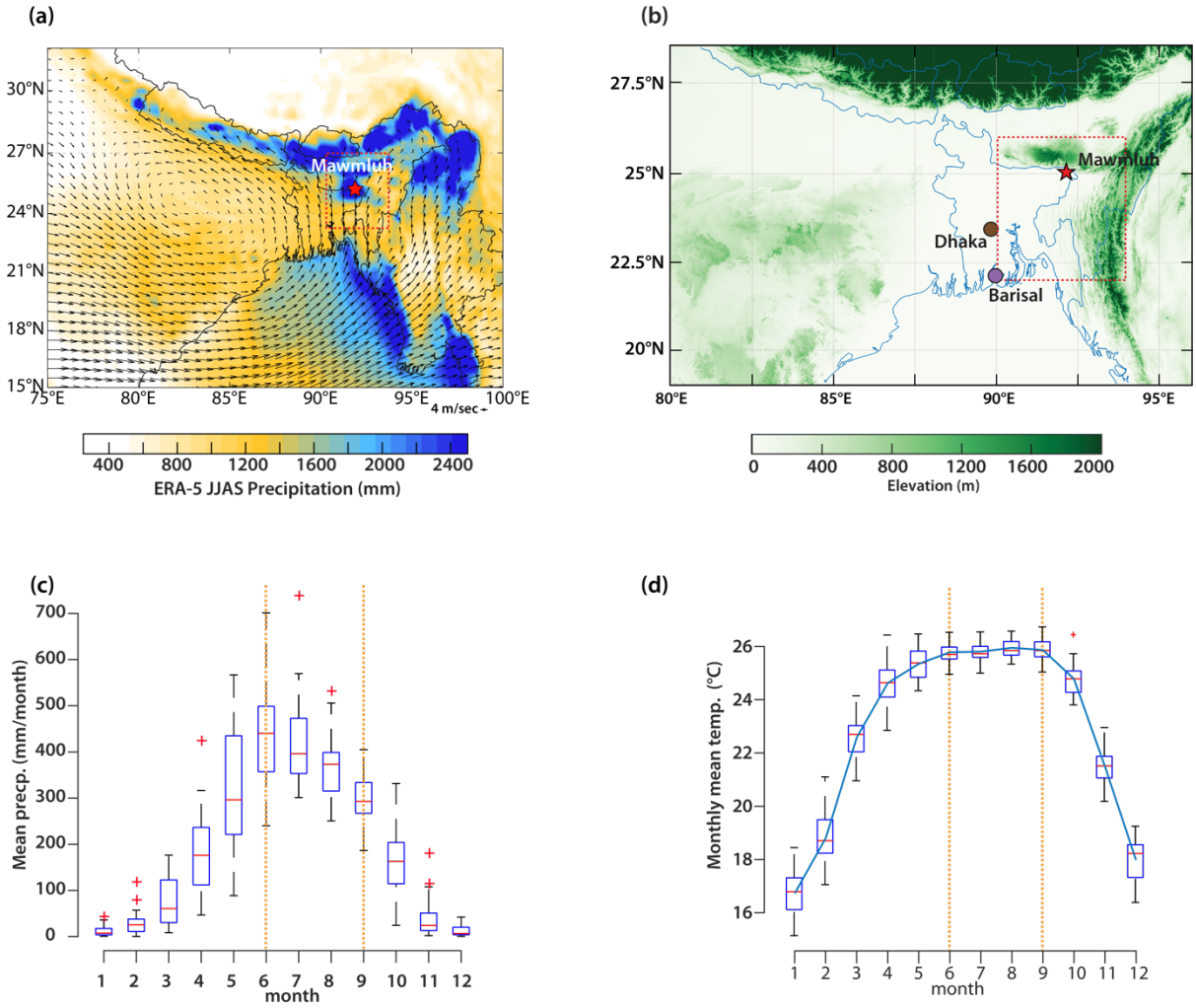

Fig. S2. Study area location, climatology, and elevation. (**a**) Spatial pattern of June, July, August, and September (JJAS) precipitation and 850 hPa wind climatology (1980 to 2010) from the European Centre Medium-Range Weather Forecasts Reanalysis Fifth generation [ERA-5, (41)]. The square 4°x 4° (red) area represents the moisture sink regions centered over the study area. (**b**) The study area (Mawmluh cave, 25°15'N, 91°42'E, red star) is in Cherrapunji on the Meghalayan Plateau (elevation ~1200 m above sea level) with the East Khasi Hills (elevation range ~1200-2000 meter above sea level) to its immediate north and the Bay of Bengal to its south. (**c**) Annual cycle in precipitation (CE 1980 to 2017) averaged over the moisture sink region (from 22°N to 26°S and 90°W to 94°E) from ERA-5 (41). (**d**) Same as panel c but for temperature. The box marks the lower and upper quartiles, and the line in the center of the box is the median. Whiskers extend to the highest and lowest values with points plotted beyond the whiskers considered as outliers (red '+' symbols). The vertical dotted lines highlight the core summer monsoon season over India. The observation precipitation data (sites discussed in the text) are shown (grey circles).

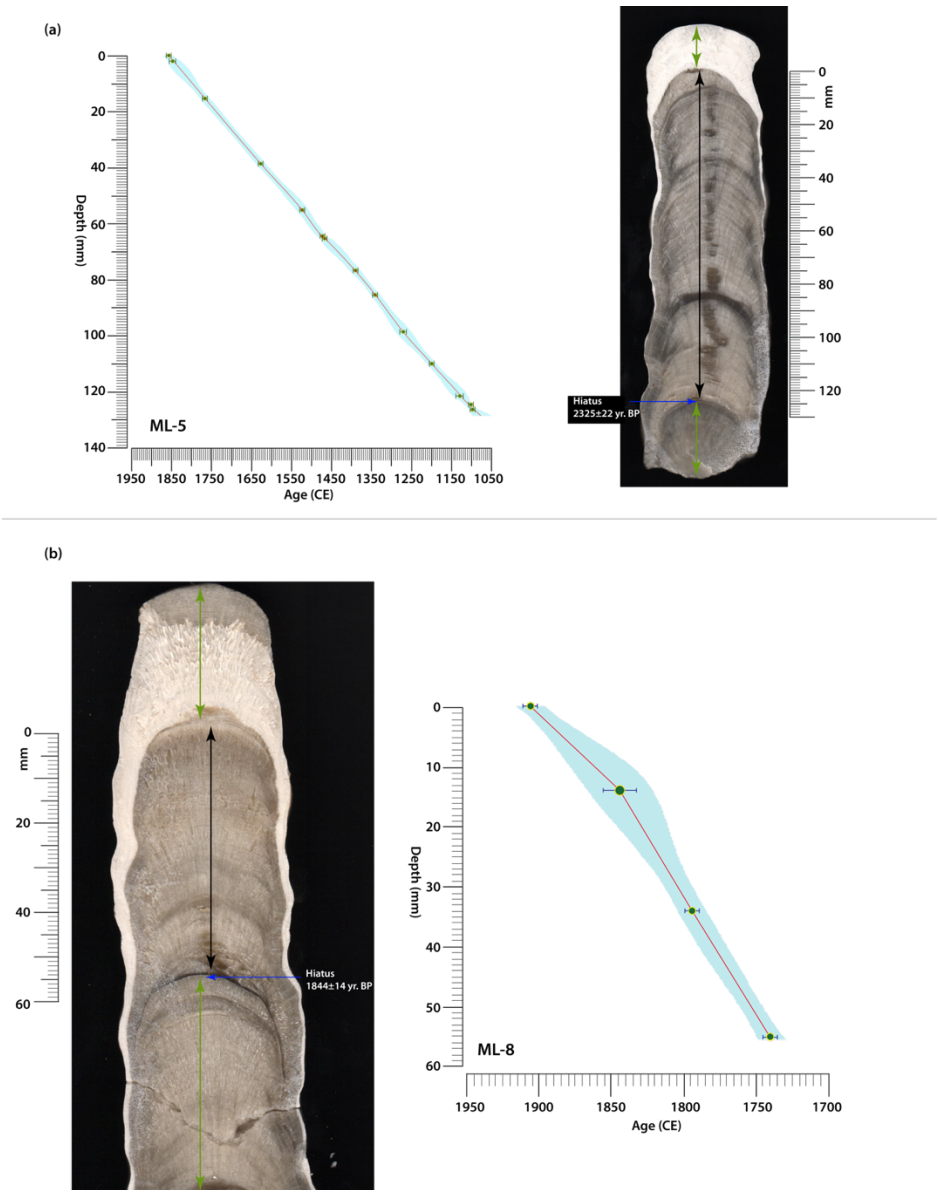

Fig. S3. Age models of Mawmluh cave speleothems. (a) ML-5 age model and modeled age uncertainties using COPRA age-modeling algorithm (42). The red line is the median age and the cyan band depicts the 95% confidence interval. Error bars depict ^{230}Th dates and 2σ analytical errors. (**b**) Same as panel a but for speleothem sample ML-8. The total length of ML-5 and ML-8 is ~ 128.50 mm, and ~55.40 mm respectively. A double black arrow marks the portion of ML-5 and ML-8 sampled for $\delta^{18}O$ measured values to generate the speleothems $\delta^{18}O$ profile. The blue arrows show the location of the hiatus in speleothems. The portions of speleothems not considered in this study are highlighted by double arrows (green).

Photo credit: Gayatri Kathayat, Xi'an Jiaotong University, Xi'an, China.

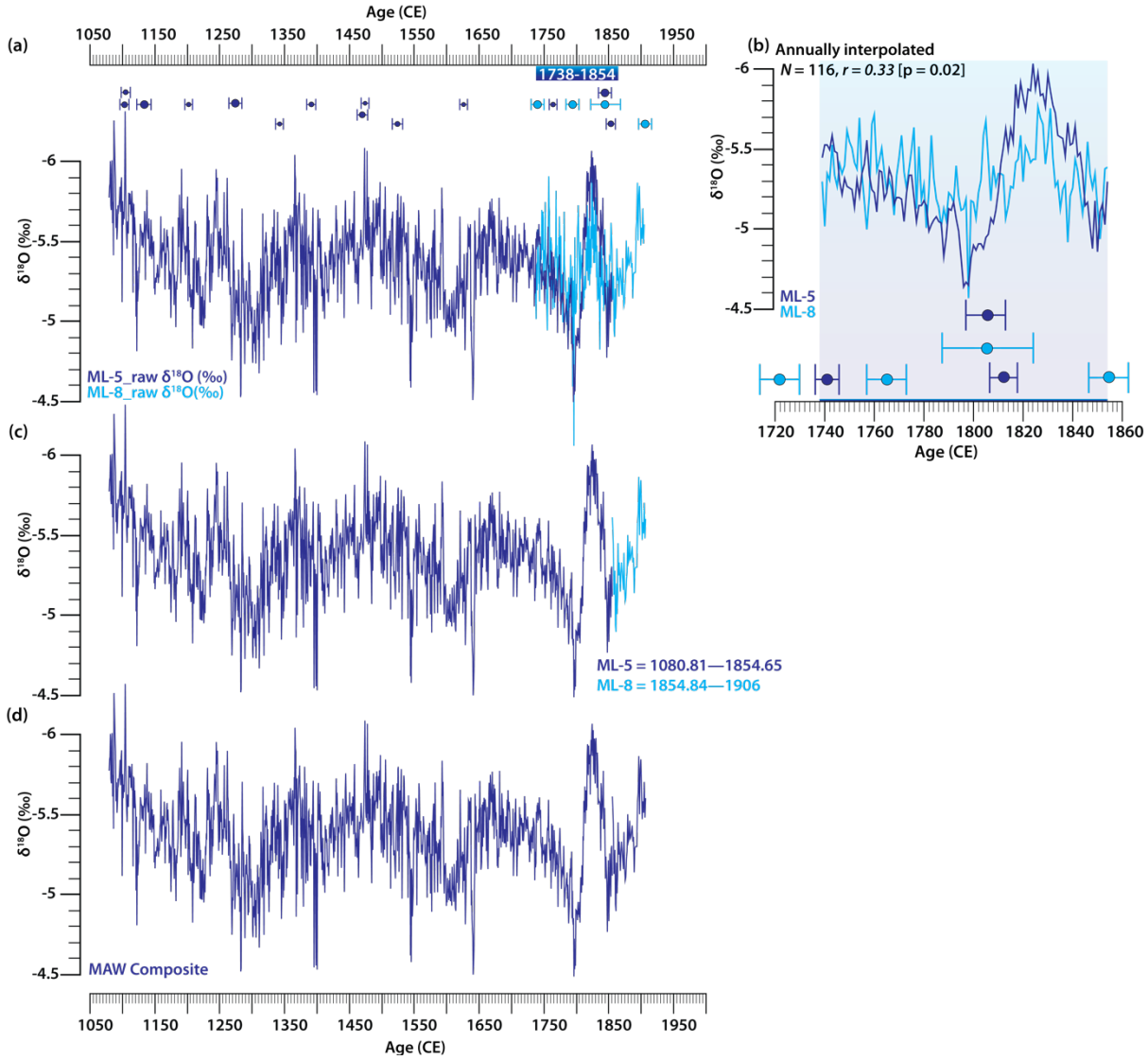

Fig. S4. Composite $\delta^{18}O$ record of Mawmluh cave speleothems. (**a**) Raw $\delta^{18}O$ profiles of ML-5 (indigo) and ML-8 (cyan) on their independent COPRA-derived age models (42) and ^{230}Th dates with 2σ errors (color-coded by speleothems). (**b**) Inset shows the annually interpolated contemporaneous growth periods between CE 1739 and 1854-year CE of different speleothem samples. The horizontal error bars depict ^{230}Th dates and 2σ analytical errors (color-coded by speleothems). The total number of overlapping segments (N), the Pearson correlation coefficients (r), and the p-value are shown. The p-value is derived using the MATLAB routine (corr2 function) that accounts for serial autocorrelation. (**c**) ML-5 and ML-8 raw $\delta^{18}O$ profiles stacking at CE 1854 (color-coded by speleothems) onto a common age scale. (**d**) Raw $\delta^{18}O$ profiles for the MAW composite record from CE 1080 to 1906.

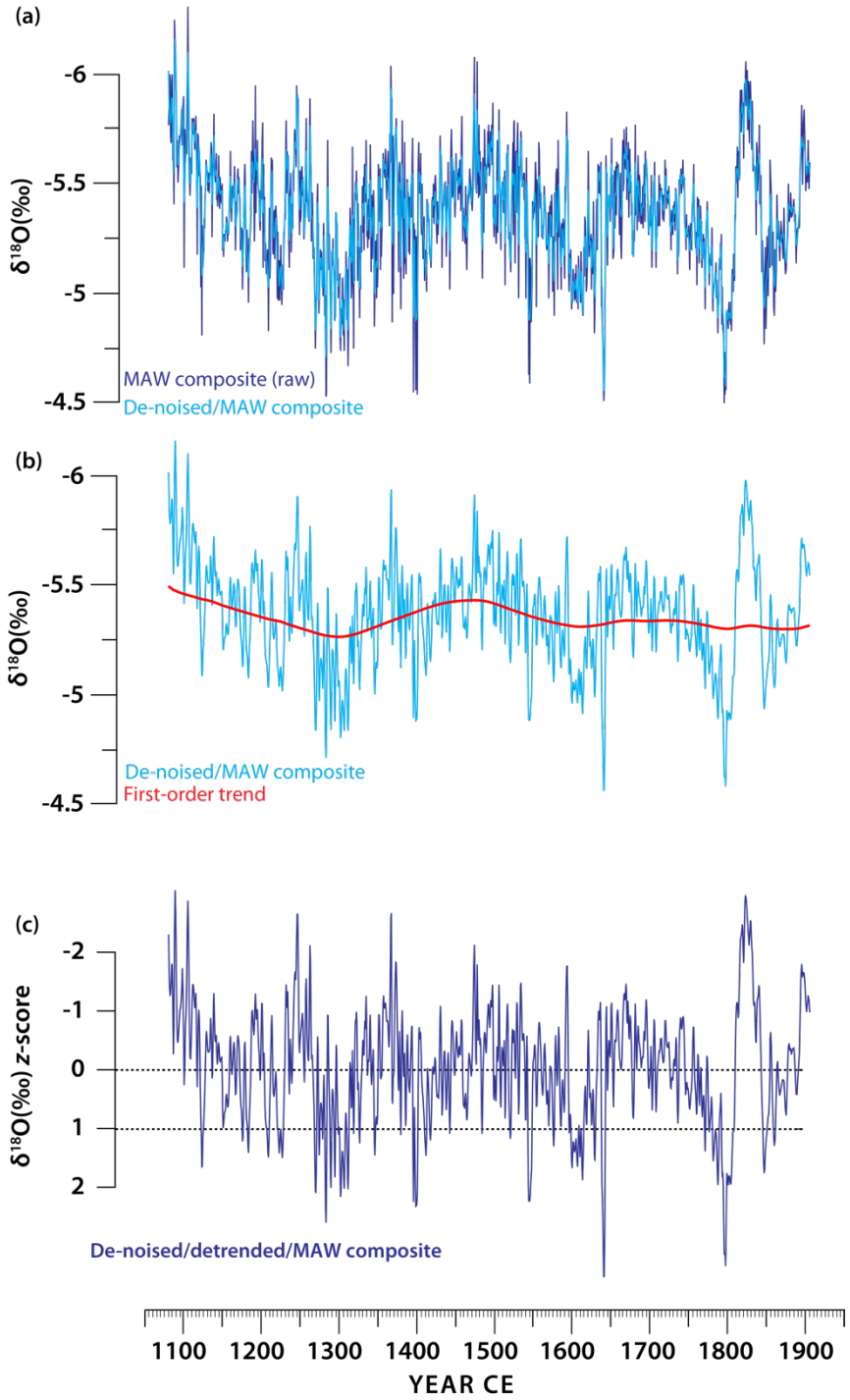

Fig. S5. The denoised, detrended, and annually interpolated Mawmluh cave speleothem $\delta^{18}O$ record. (**a**) Raw $\delta^{18}O$ profile of MAW composite (dark blue) and overlain by the de-noised $\delta^{18}O$ profile for MAW composite (cyan). The white noise is removed by using the ensemble empirical mode decomposition function (43). (**b**) The de-noised $\delta^{18}O$ profile for MAW composite (cyan) and overlain by the long-term first-order trend (red). The long-term first-order trend is calculated using the singular spectrum analysis (44). (**c**) De-noised, detrended, annually interpolated and z-score transformed MAW composite. Z-scored values delineate zero and the number of subdecadal to multidecadal periods of inferred droughts (z-score > 1) is highlighted by horizontal dotted black lines.

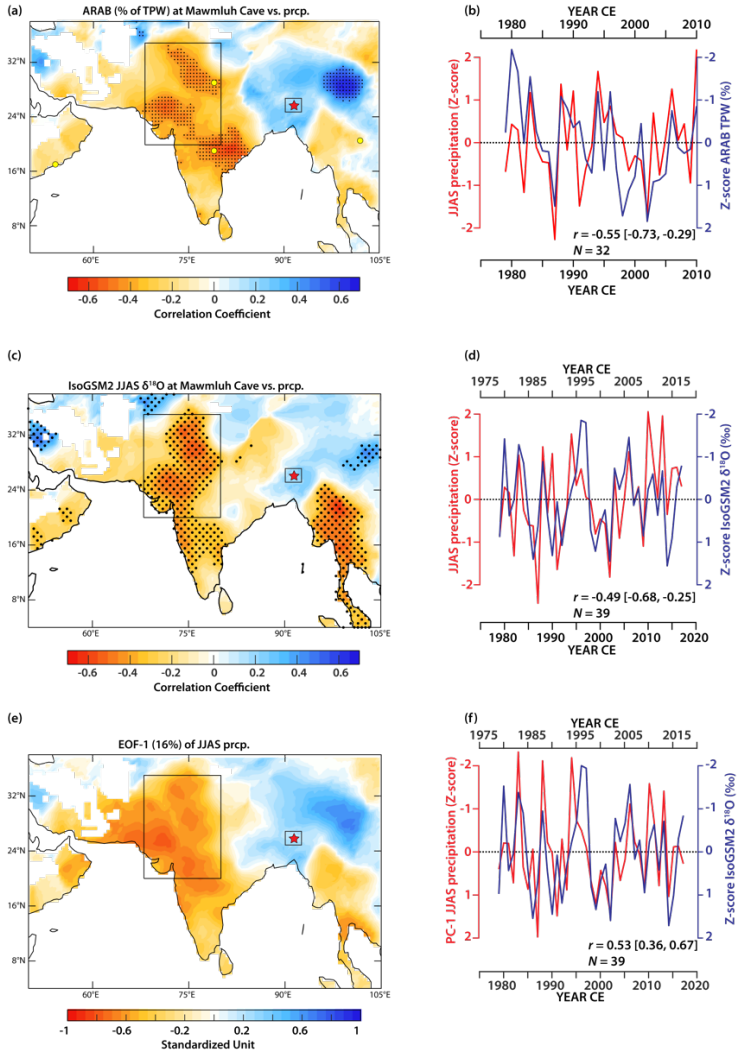

Fig. S6. Spatial patterns of climate field anomalies, proxy locations, and time-series comparisons. (a-c-e panels are the same as Fig. 2. (**a**) The inverse field correlations between the JJAS ARAB (% TPW) extracted from the grid points nearest to Mawmluh cave (small square) and precipitation amount (45) at all other grid points (46). Note that the increased flux of ^{18}O-enriched ARAB moisture over NEI India is associated with reduced rainfall over the rest of the Indian subcontinent. (**b**) Comparisons of z-score transformed time-series data [averaged over a rectangular-shaped region as shown by the rectangle in panel a of JJAS precipitation (red, left axis)] and ARAB (% TPW) (cave location and data extracted grid is shown by the star and small square in panel a) (47) (blue, right axis (reversed). **(c)** Same as panel a, but for IsoGSM2 simulated JJAS $\delta^{18}O_p$ data extracted from the grid points nearest to Mawmluh cave (small square) (48) and precipitation amount (45). Note that the higher (lower) $\delta^{18}O$ values over NEI are associated with reduced (increased) rainfall over the rest of the Indian subcontinent. (**d**) Timeseries comparisons data between IsoGSM2 simulated JJAS $\delta^{18}O_p$ (48) extracted from the nearest grid point around Mawmluh cave (cave location and data extracted grid is shown by the star and small rectangle in panel c) and JJAS precipitation (red, left axis) averaged over a rectangular-shaped region as shown by the rectangle in panel c (45). Note that the higher (lower) $\delta^{18}O$ values over NEI are associated with reduced (increased) rainfall over the rest of the Indian subcontinent. (**e**) The first Empirical Orthogonal Function (EOF) mode of normalized JJAS precipitation (45) over the region 38°N to 4°S and 50°W to 105°E. The EOF-1 shows a strong precipitation dipole akin to the observed weak minus climatology pattern of JJAS rainfall anomalies as in Figure 2 panel a. (**f**) Same as panel d but using the EOF-PC1 of JJAS mean precipitation from CRU (45) averaged over the region 38°N to 4°S and 50°W to 105°E. Stippling indicates regions of significant correlations at a 95% confidence level obtained after accounting for serial correlations in data at each grid point followed by the application of the FDR (46) procedure with a 5% threshold (see *Materials and Methods*). FDR is the expected proportion of rejected hypotheses when the null hypothesis is true for those tests.

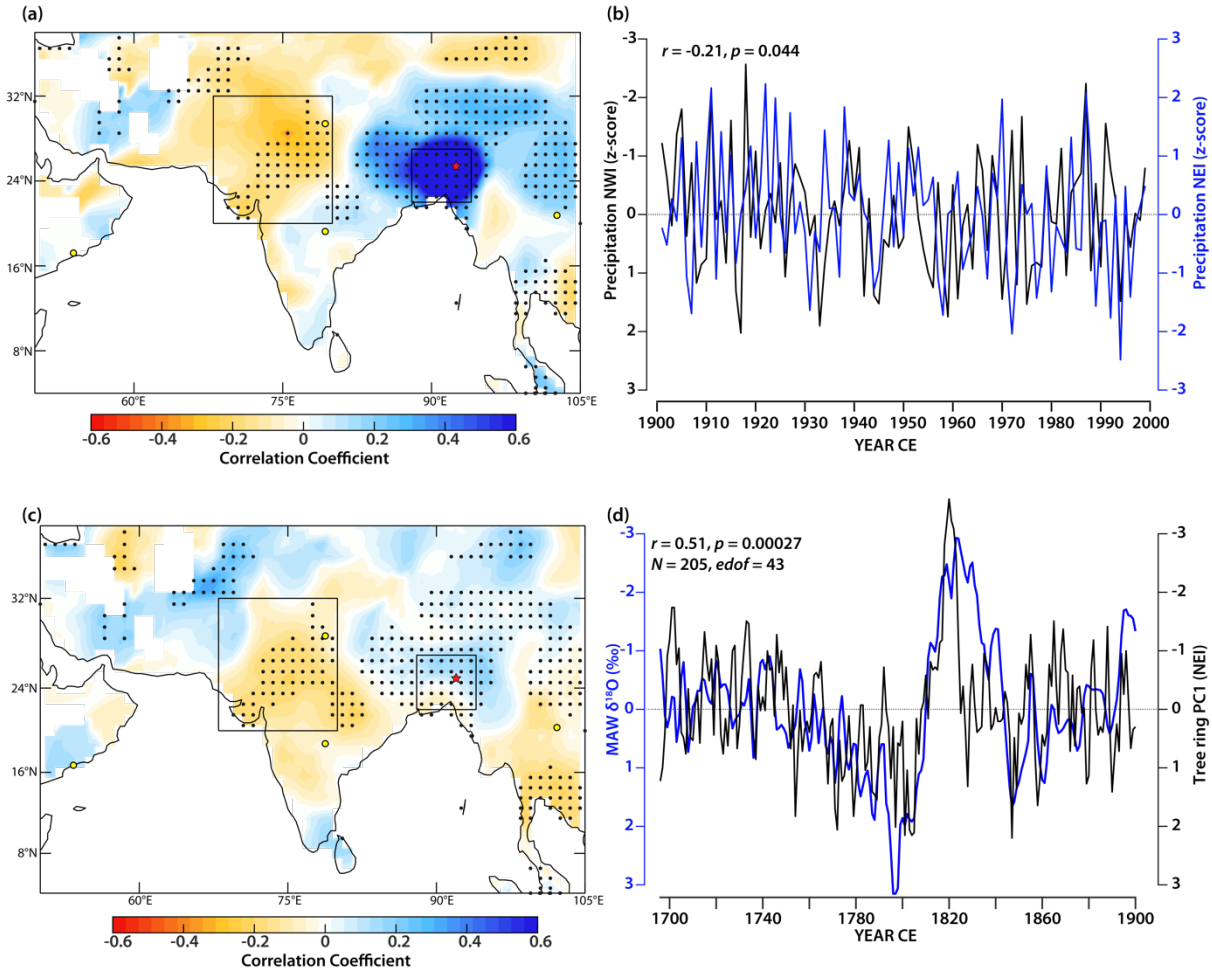

Fig. S7. Modern observations and proxy comparisons. (**a**) Spatial correlations between CRU Ts 4.01(45) JJAS precipitation extracted over NEI (small rectangle) with precipitation at all other grid points. Region of high inverse correlation is shown with a rectangle (**b**) Time series comparison between JJAS precipitation averaged over NEI and northwest India (NWI) (rectangles) for 1901-1999 CE. Note the inverse relationship between the two timeseries. (**c**) Spatial correlations between standardized PC1 of 15 tree ring chronologies from NEI extracted over NEI (small rectangle) and mean CRU Ts 4.01 JJAS precipitation (45) (1901-1999 CE). Tree ring data is from International Tree Ring Data Bank (ITRDB) [https://www.ncdc.noaa.gov/data-access/paleoclimatology-data/datasets/tree-ring], summarized in ref. 49. (**d**) Time series comparison between the MAW record and the standardized PC1 of 15 tree ring chronologies from NEI for the period between 1698 and 1900 CE. Note the y-axes are inverted to show that the wetter conditions over NWI inferred from the MAW record (i.e., more negative z-score $\delta^{18}O$ values) are associated with drier conditions over NEI (negative PC1 values of tree ring data). Stippling in panels a and c indicates regions of significant correlations at a 95% confidence level obtained after accounting for serial correlations in data at each grid point followed by the application of the FDR (46) procedure with a 5% threshold (see *Materials and Methods*). FDR is the expected proportion of rejected hypotheses when the null hypothesis is true for those tests.

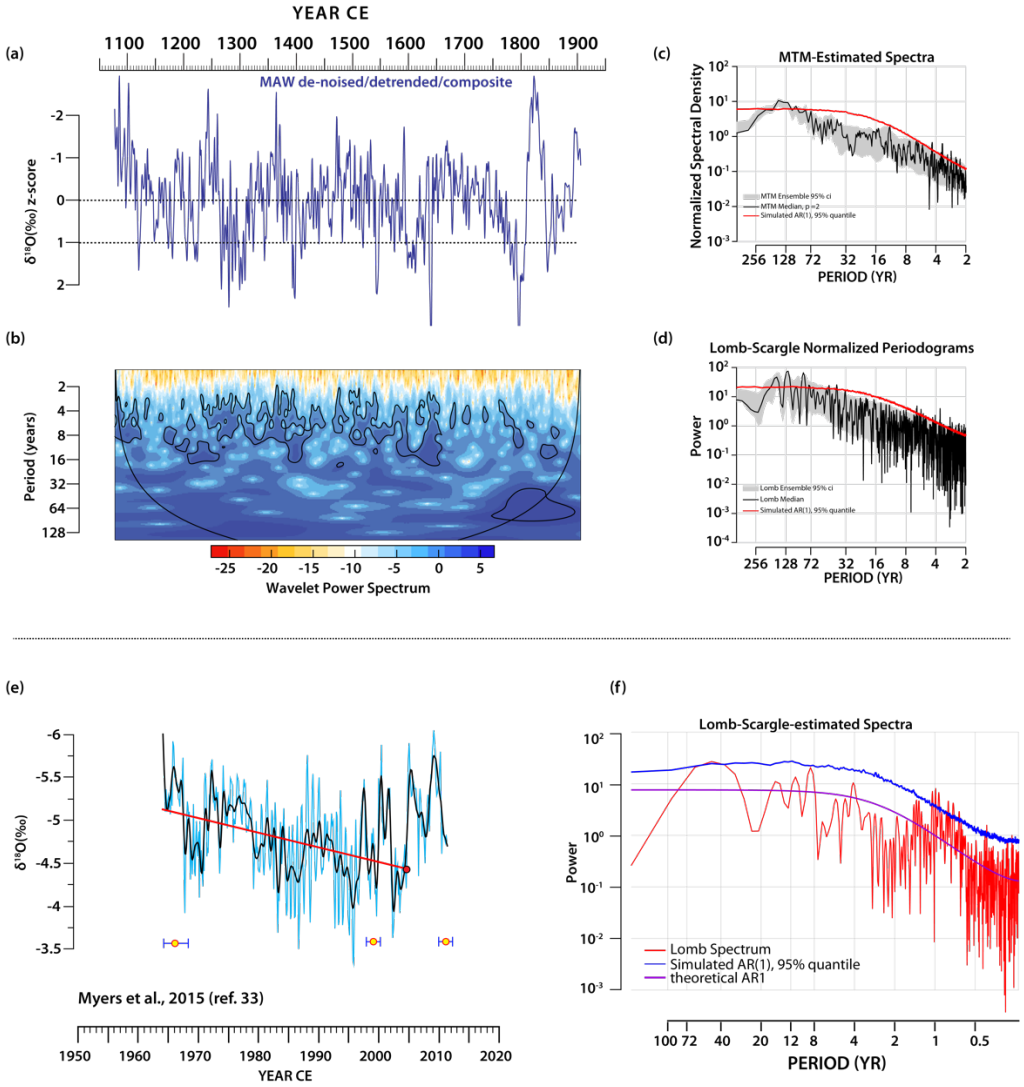

Fig. S8. Spectral and wavelet analysis of the 0.6-year interpolated MAW and modern $\delta^{18}O$ record. (**a**) Z-score transformed MAW record (this study). (**b**) Wavelet power spectrum of the MAW record. The cone-of-influence where edge effects become important is shown by the black arc. Irregular black curves delineate time-frequency regions that are greater than 95% confidence for a red-noise (AR1) process. (**c**) Multitaper method spectral analysis (50) of the MAW $\delta^{18}O$ time-series using the median age model (black). Gray shading delineates the upper bound of the 95% confidence interval obtained from 2000 age model Monte Carlo simulations. Peaks rising above the 95% confidence limit from an ensemble of 1,000 simulated AR(1) timeseries [null hypothesis, red line] are considered significant. (**d**) Same as panel c but showing the Lomb-Scargle (51) spectral analysis results on the raw, unevenly sampled composite MAW record (also see Fig. S5). (**e**) The sub-annually (~ 0.1 year) resolved $\delta^{18}O$ profile of the modern speleothem record from Mawmluh cave (cyan) (*33*) overlain by a 1-year Butterworth low pass filter (black) and ^{230}Th dates with 2σ error (*33*). Linear trends (least-squares fits of speleothem time series) that are significantly different from zero at a 95% confidence level are shown with a red solid line (CE 1962-2005). The statistical significance of the linear trends is calculated using the Mann-Kendall trend test. The change-point in the $\delta^{18}O$ time series is at 2005 (red circle). The change-point analysis is performed using the MATLAB routine. (**f**) Lomb method spectral analysis (*51*) on the $\delta^{18}O$ record (*33*) uneven time series (red). The blue line delineates the upper bound of the 95% confidence interval. Peaks rising above the 95% confidence limit [using an AR (1) (autoregressive) null hypothesis, purple line] include ~2 years of biennial oscillation and 2-8 years in the ENSO band.

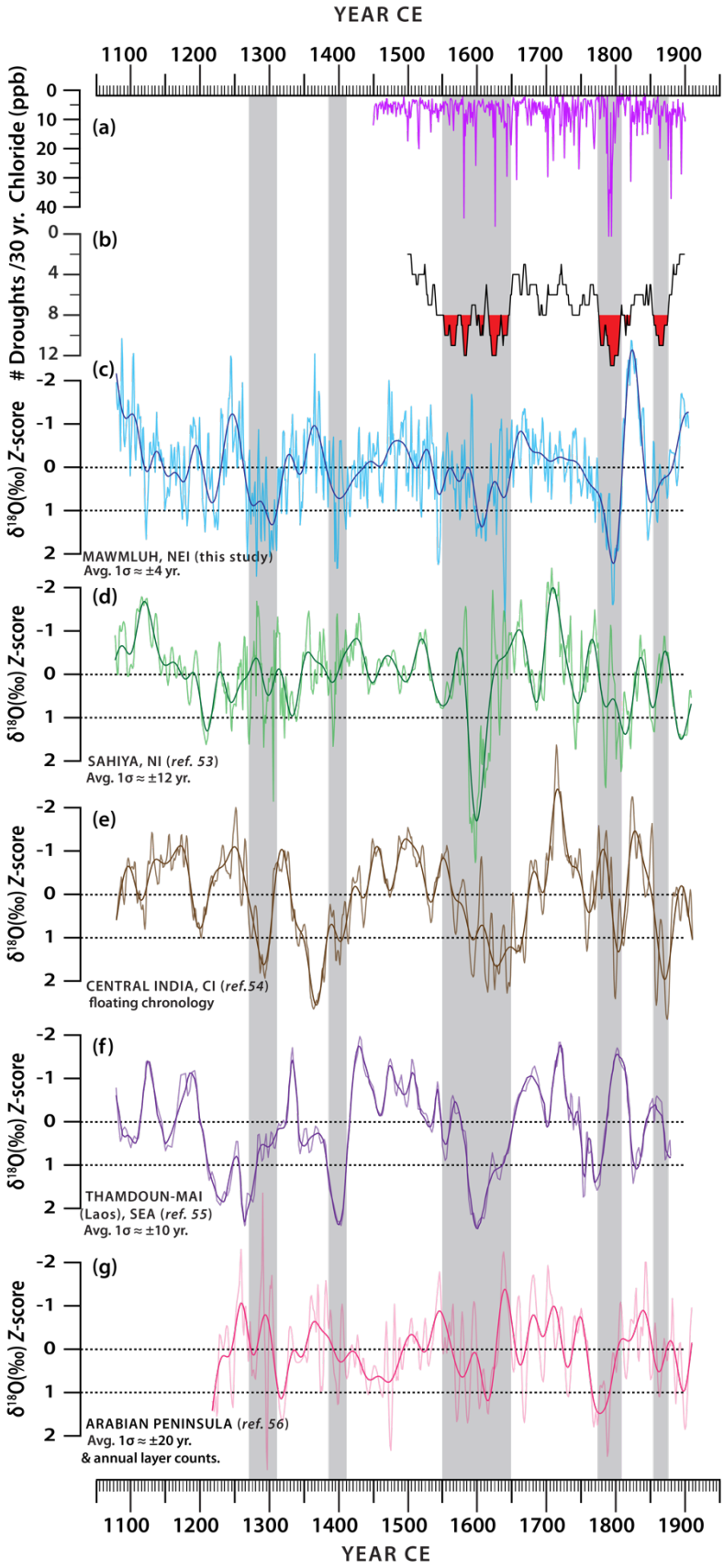

Fig. S9. Historic drought chronology, Himalayan ice core, and speleothem records. (**a**) Chloride concentration in the Dasuopu ice core [purple, (52)]. (**b**) Number of historic droughts in a 30-year moving window [black, (13)]. (**c**) MAW $\delta^{18}O$ record (this study), NEI, overlain by a 30-year Butterworth low pass filter; proxy records from (**d**) Sahiya (30°36'N, 77°52'E) (53), North India (NI); (**e**) Jhumar (18°52'N, 81°52'E) (54), Central India (CI), (**f**) Tham Doun Mai (20°45'N, 102°39'E) (55), Laos, Southeast Asia (SEA), and (**g**) Salalah southern Oman (17°01'N, 54°09'E) (56), Arabian Peninsula. The average 1σ error of ^{230}Th dates of each record is shown in each panel. Z-score values delineate zero and the number of subdecadal to multidecadal periods of inferred droughts (z-score > 1), horizontal dotted black lines. The vertical bars (shaded) highlight intervals of multi-year droughts identified in the MAW record and historical drought compilations (see Fig 3).

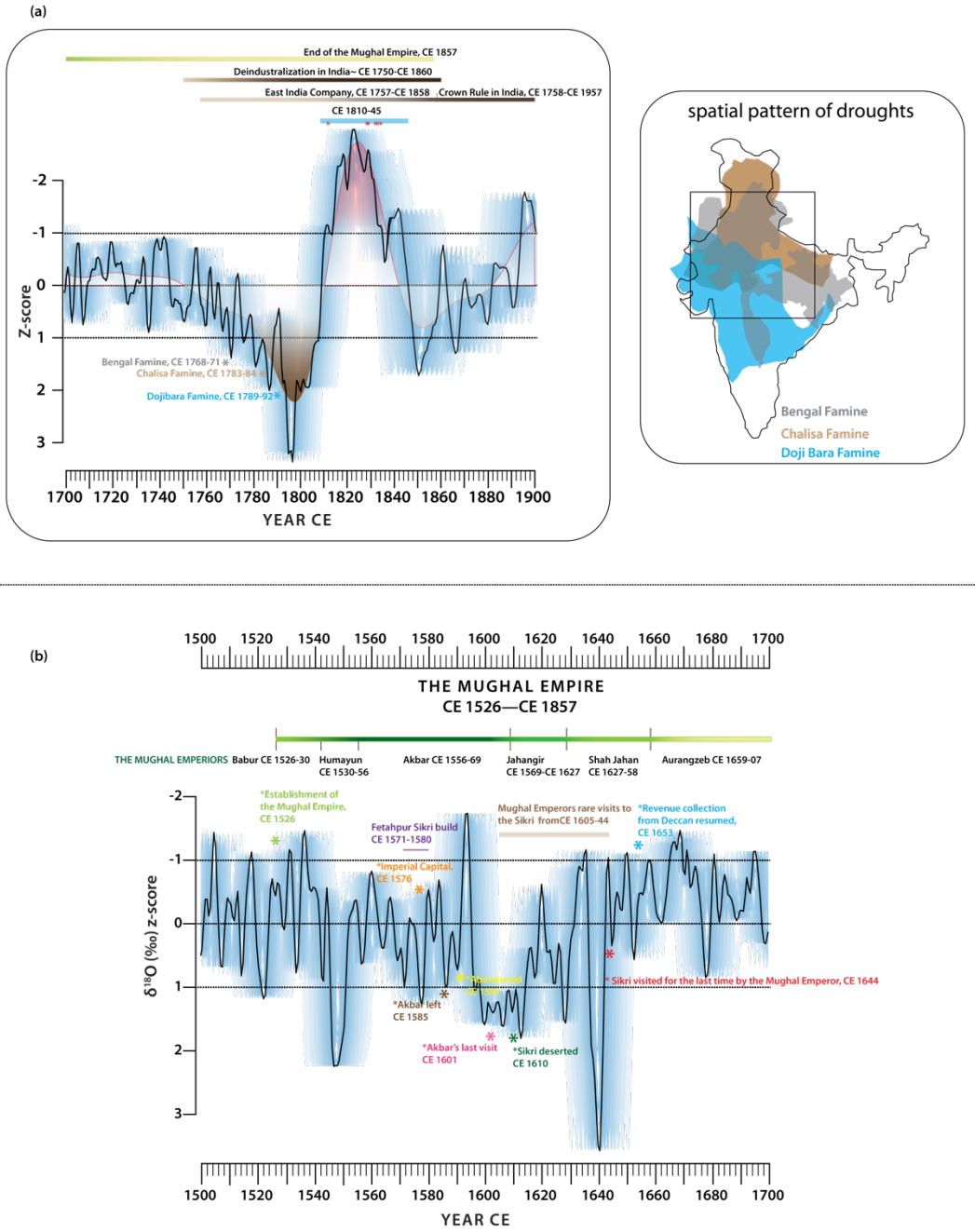

Fig. S10. Comparison between the MAW record and key historical events. (a) Left panel MAW record (this study, cyan) delineates several subdecadal to multidecadal periods of inferred droughts (Z-score > 1, brown) and pluvial conditions (Z-score < -1, red), overlain (shaded anomaly) by a 30-year Butterworth low-pass filter. The cyan band represents 2000 age models based on the Monte Carlo approach of COPRA (42), which depicts the 2σ age uncertainty for the MAW ensemble $\delta^{18}O$ profile. The median age (indigo color) was selected as the final age model. The age uncertainty realizations were calculated using the ^{230}Th dates with 2σ analytical errors (also see Fig. S3 and *Materials and Methods*). Documented historic droughts from CE 1700 to CE 1900 are marked using color-coded asterisks. The right panel shows the spatial pattern of droughts. **Right panel** Spatial pattern of Bengal, Chalisa, and Doji bara famine, modified after (57) **(b)** Same as panel a but from CE 1500 to 1700.

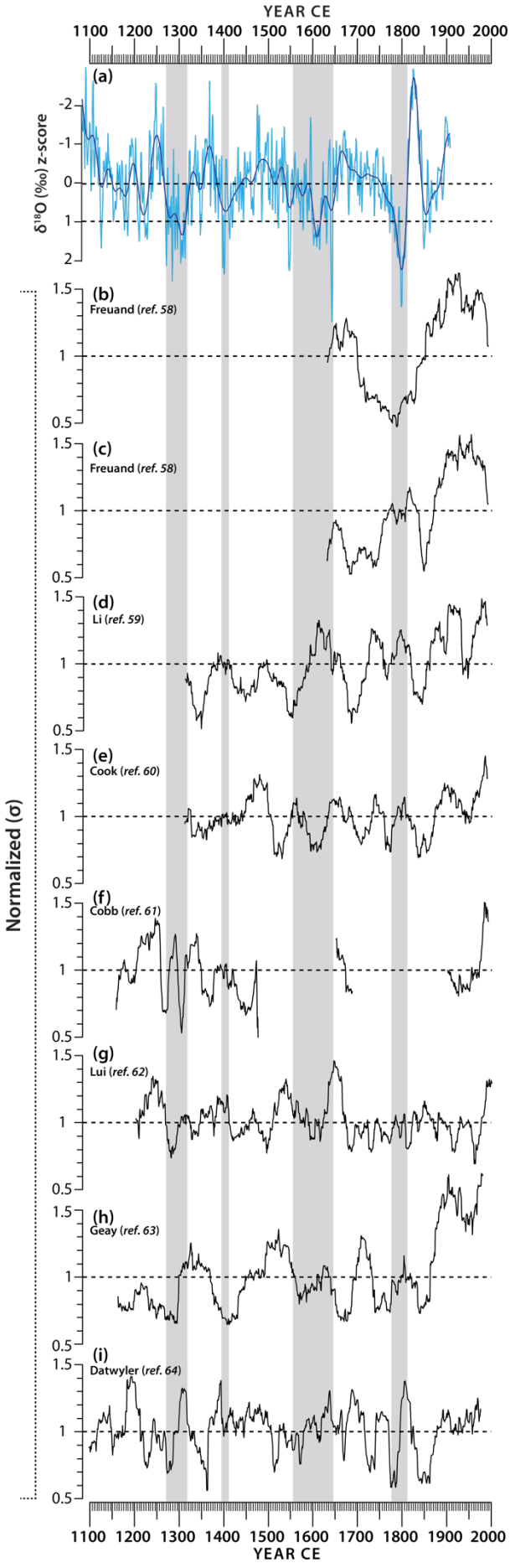

Fig. S11. Comparison between MAW record and ENSO reconstructions. (a) MAW record (this study, cyan). The overlain indigo line represents a 30-year Butterworth low-pass filter. Z-scored values delineate subdecadal to multidecadal periods of inferred droughts (Z-score > 1) (dotted black lines). **(b-i)** The evolution of variance presented by its normalized standard deviation (σ) aggregated over 30-year moving windows for reconstructed Niño 4 and 3.4 SSTs (**b**) Eastern Pacific (58). **(c)** Central Pacific (58). **(d)** ENSO reconstruction based on 2,222 tree-ring chronologies (59). **(e)** ENSO index reconstructions (60). **(f)** Tropical Pacific (61). **(g)** Central Pacific (62). **(h)** Central Equatorial Pacific (63). **(i)** The principal component of SST anomaly from 5°N to 5°S and 170°E to 120°W and proxy reconstructions (64). The vertical bars (shaded) highlight intervals of multi-year droughts identified in the MAW record and historical drought compilations (see Fig. 3 and Fig. S9).

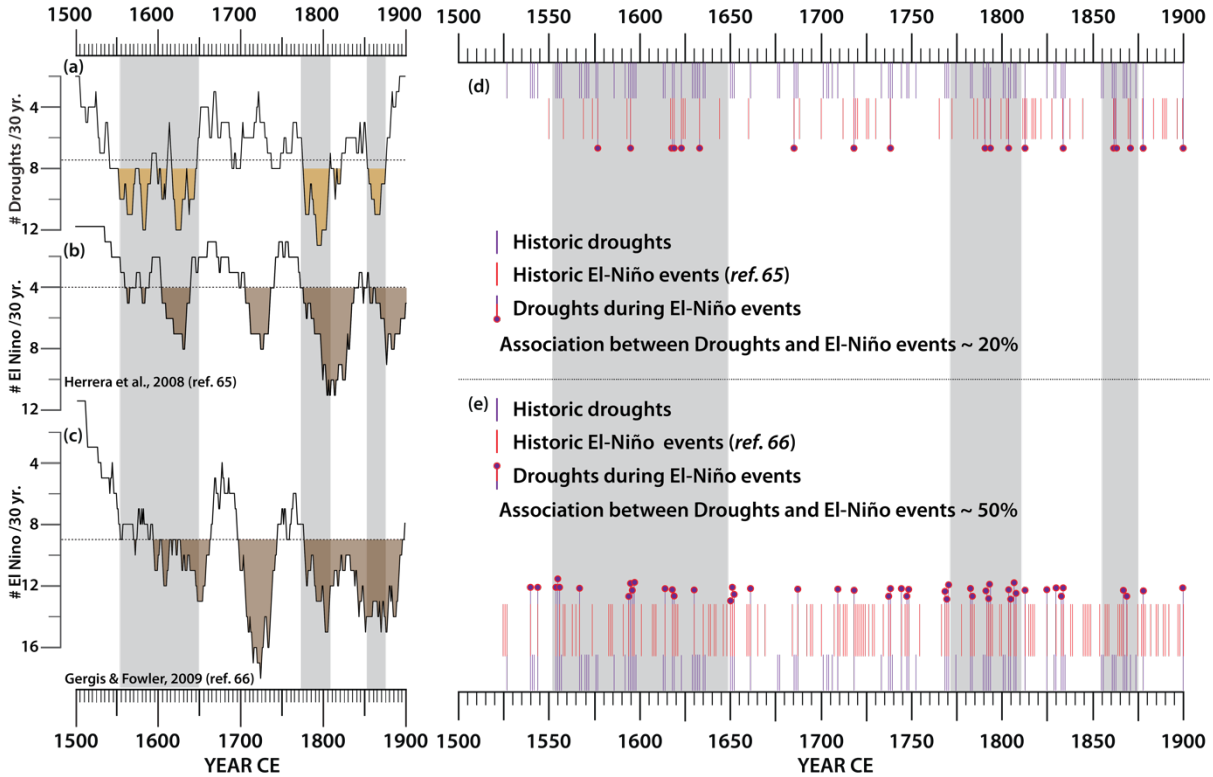

Fig. S12. Association between the historic droughts and El-Niño events. (a) The 30-year moving mean of the historic drought frequency [black, (13)]. **(b-c)** Same as panel a but El Niño events from refs. 65 and 66. Frequencies higher than average are highlighted by the fill color. **(d)** Vertical lines (purple) show historical droughts (13) and El Niño events (65). Red circles indicate co-occurrences of droughts and El Niño events. **(e)** Same as panel d but for El Niño events from ref. 66. The vertical bars (shaded) highlight intervals of multi-year droughts identified in the historical drought compilations.

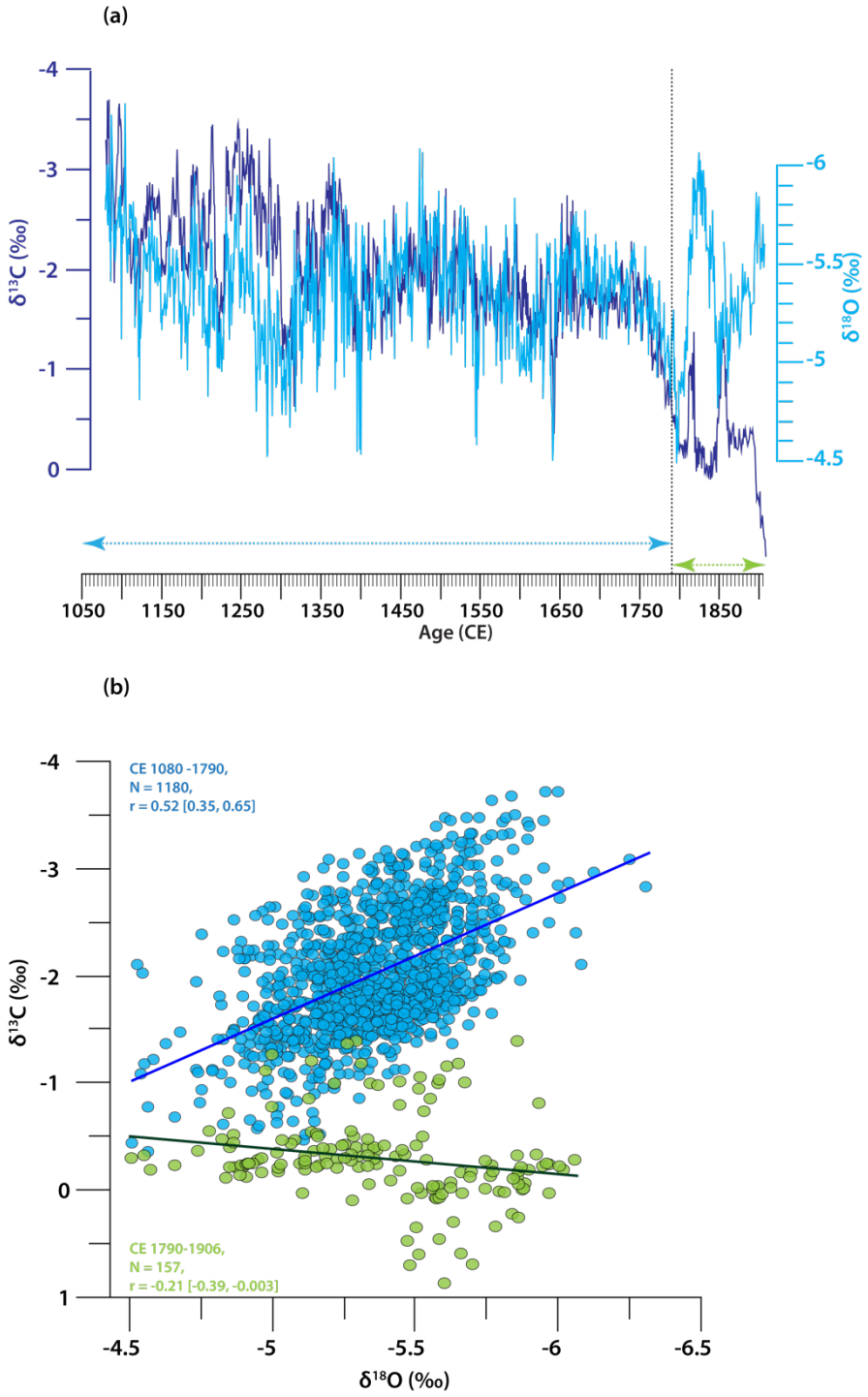

Fig. S13. Mawmluh speleothem $\delta^{18}O$ and $\delta^{13}C$ records. (a) Raw isotopic profiles ($\delta^{13}C$ and $\delta^{18}O$) of the MAW composite record. The arrows (color-coded) and the vertical dotted line highlights the interval since the correlation between $\delta^{18}O$ and $\delta^{13}C$ in MAW record broke down (see Supplementary, Text 2.3*)*. **(b)** Scatter plot of $\delta^{13}C$ and $\delta^{18}O$ profiles from CE 1080 to 1790 and from CE 1790 to 1906. The total number of data points (N) and the Pearson correlation coefficients (r) with 95% confidence intervals (CI) are shown. The 95% CI is derived from pairwise moving-block bootstrap resampling (N=2000) and calibration that account for serial autocorrelation in data (67-68), see *Materials and Methods*.

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Supplementary table S1													
ML-5				ML-8				MAW composite record				Denoised/detrended_composite	
Depth (mm)	Age (yr AD)	δ18O	δ13C	Depth (mm)	Age (yr AD)	δ18O	δ13C	Age (yr AD)	δ18O	δ13C		Age (yr AD)	δ18O_zscored
0.00	1854.7	-5.12	-0.85	0.00	1906.0	-5.60	0.87	1906.0	-5.60	0.87	ML-8	1081	-1.96
0.10	1853.9	-5.31	-1.17	0.20	1905.0	-5.48	0.70	1905.0	-5.48	0.70		1082	-1.47
0.20	1853.2	-5.29	-1.38	0.40	1903.9	-5.70	0.69	1903.9	-5.70	0.69		1083	-1.33
0.30	1852.4	-4.99	-1.26	0.60	1902.9	-5.51	0.60	1902.9	-5.51	0.60		1084	-1.45
0.40	1851.7	-5.13	-1.20	0.80	1901.8	-5.58	0.46	1901.8	-5.58	0.46		1085	-1.77
0.50	1850.9	-5.26	-1.36	1.00	1900.8	-5.47	0.47	1900.8	-5.47	0.47		1086	-1.23
0.60	1850.2	-4.97	-1.11	1.20	1899.7	-5.66	0.59	1899.7	-5.66	0.59		1087	-0.38
0.70	1849.4	-4.84	-0.71	1.40	1898.7	-5.84	0.22	1898.7	-5.84	0.22		1088	-1.59
0.80	1848.6	-5.21	-0.99	1.60	1897.7	-5.78	0.34	1897.7	-5.78	0.34		1089	-2.96
0.90	1847.9	-4.99	-0.77	1.80	1896.6	-5.50	0.35	1896.6	-5.50	0.35		1090	-2.50
1.00	1847.1	-4.77	-0.55	2.00	1895.6	-5.86	0.26	1895.6	-5.86	0.26		1091	-1.28
1.10	1846.4	-5.07	-0.46	2.20	1894.6	-5.63	0.30	1894.6	-5.63	0.30		1092	-0.63
1.20	1845.7	-5.15	-0.52	2.40	1893.5	-5.57	0.07	1893.5	-5.57	0.07		1093	-0.48
1.30	1845.0	-5.24	-0.41	2.60	1892.5	-5.30	-0.21	1892.5	-5.30	-0.21		1094	-0.67
1.40	1844.3	-5.10	0.03	3.00	1890.5	-5.30	-0.31	1890.5	-5.30	-0.31		1095	-0.93
1.50	1843.6	-5.33	-0.05	3.20	1889.4	-5.29	-0.40	1889.4	-5.29	-0.40		1096	-1.08
1.60	1842.9	-5.54	-0.28	3.40	1888.4	-5.14	-0.36	1888.4	-5.14	-0.36		1097	-1.20
1.70	1842.3	-5.44	-0.18	3.60	1887.4	-5.36	-0.37	1887.4	-5.36	-0.37		1098	-1.55
1.80	1841.6	-5.41	-0.09	3.80	1886.4	-5.33	-0.40	1886.4	-5.33	-0.40		1099	-1.51
1.90	1841.0	-5.77	-0.23	4.00	1885.4	-5.43	-0.31	1885.4	-5.43	-0.31		1100	-0.65
2.00	1840.4	-5.62	-0.07	4.40	1883.4	-5.36	-0.24	1883.4	-5.36	-0.24		1101	0.19
2.10	1839.9	-5.57	-0.02	4.60	1882.4	-5.35	-0.29	1882.4	-5.35	-0.29		1102	-0.36
2.20	1839.3	-5.52	0.03	4.80	1881.4	-5.46	-0.33	1881.4	-5.46	-0.33		1103	-0.84
2.30	1838.7	-5.47	0.08	5.00	1880.4	-5.35	-0.40	1880.4	-5.35	-0.40		1104	-1.50
2.40	1838.1	-5.66	-0.16	5.20	1879.4	-5.33	-0.32	1879.4	-5.33	-0.32		1105	-2.53
2.50	1837.6	-5.69	-0.17	5.40	1878.5	-5.50	-0.41	1878.5	-5.50	-0.41		1106	-2.62
2.60	1837.0	-5.27	0.10	5.60	1877.5	-5.27	-0.27	1877.5	-5.27	-0.27		1107	-1.46
2.70	1836.4	-5.51	-0.02	5.80	1876.5	-5.22	-0.29	1876.5	-5.22	-0.29		1108	-0.45
2.80	1835.8	-5.56	-0.01	6.00	1875.6	-5.11	-0.19	1875.6	-5.11	-0.19		1109	-0.17

2.90	1835.3	-5.58	-0.04	6.20	1874.6	-5.09	-0.25	1874.6	-5.09	-0.25		1110	-0.56
3.00	1834.7	-5.58	0.08	6.40	1873.7	-5.18	-0.31	1873.7	-5.18	-0.31		1111	-1.08
3.10	1834.1	-5.58	0.07	6.60	1872.7	-5.39	-0.41	1872.7	-5.39	-0.41		1112	-1.46
3.20	1833.5	-5.59	0.04	6.80	1871.8	-5.16	-0.23	1871.8	-5.16	-0.23		1113	-1.39
3.30	1833.0	-5.56	-0.04	7.00	1870.9	-5.22	-0.20	1870.9	-5.22	-0.20		1114	-1.12
3.40	1832.4	-5.80	0.01	7.40	1869.0	-5.33	-0.22	1869.0	-5.33	-0.22		1115	-1.13
3.50	1831.8	-5.88	-0.06	7.60	1868.1	-5.27	-0.33	1868.1	-5.27	-0.33		1116	-1.17
3.60	1831.2	-5.66	0.03	7.80	1867.2	-5.15	-0.21	1867.2	-5.15	-0.21		1117	-0.23
3.70	1830.7	-5.87	0.00	8.00	1866.4	-5.25	-0.30	1866.4	-5.25	-0.30		1118	0.05
3.80	1830.1	-5.88	-0.01	8.20	1865.5	-5.33	-0.47	1865.5	-5.33	-0.47		1119	-0.87
3.90	1829.5	-5.97	0.03	8.40	1864.6	-5.25	-0.42	1864.6	-5.25	-0.42		1120	-0.92
4.00	1828.9	-5.95	-0.22	8.60	1863.7	-5.45	-0.37	1863.7	-5.45	-0.37		1121	-0.22
4.10	1828.3	-5.69	-0.12	8.80	1862.9	-5.11	-0.25	1862.9	-5.11	-0.25		1122	0.66
4.20	1827.8	-5.76	-0.13	9.00	1862.0	-5.01	-0.35	1862.0	-5.01	-0.35		1123	1.23
4.30	1827.2	-5.97	-0.24	9.20	1861.2	-5.20	-0.38	1861.2	-5.20	-0.38		1124	1.65
4.40	1826.6	-5.86	-0.12	9.40	1860.4	-4.90	-0.12	1860.4	-4.90	-0.12		1125	1.13
4.50	1826.0	-5.75	-0.01	9.60	1859.5	-4.94	-0.28	1859.5	-4.94	-0.28		1126	0.89
4.60	1825.5	-6.02	-0.19	9.80	1858.7	-5.28	-0.50	1858.7	-5.28	-0.50		1127	0.55
4.70	1824.9	-5.86	-0.17	10.00	1857.9	-5.17	-0.39	1857.9	-5.17	-0.39		1128	0.02
4.80	1824.3	-5.90	-0.19	10.20	1857.1	-5.13	-0.54	1857.1	-5.13	-0.54		1129	-0.55
4.90	1823.7	-6.06	-0.28	10.40	1856.4	-5.44	-1.01	1856.4	-5.44	-1.01		1130	-0.58
5.00	1823.1	-6.00	-0.22	10.60	1855.6	-5.53	-0.73	1855.6	-5.53	-0.73		1131	-0.35
5.10	1822.6	-5.86	-0.05	10.80	1854.8	-5.61	-1.15	1854.8	-5.61	-1.15		1132	-0.29
5.20	1822.0	-5.96	-0.25	11.00	1854.1	-5.38	-0.68	1854.7	-5.120	-0.85	ML-5	1133	-0.30
5.30	1821.4	-5.86	-0.32	11.20	1853.4	-5.39	-1.29	1853.9	-5.305	-1.17		1134	-0.54
5.40	1820.8	-5.62	-0.02	11.40	1852.6	-5.40	-1.27	1853.2	-5.287	-1.38		1135	-0.79
5.50	1820.2	-5.87	-0.21	11.60	1851.9	-5.25	-0.63	1852.4	-4.990	-1.26		1136	-0.40
5.60	1819.7	-5.84	-0.10	11.80	1851.2	-5.01	-1.11	1851.7	-5.133	-1.20		1137	0.11
5.70	1819.1	-5.81	0.02	12.00	1850.5	-4.94	-0.50	1850.9	-5.257	-1.36		1138	-0.57
5.80	1818.5	-5.93	-0.33	12.20	1849.8	-5.25	-1.21	1850.2	-4.969	-1.11		1139	-1.27
5.90	1817.9	-5.74	-0.27	12.40	1849.2	-5.03	-0.44	1849.4	-4.838	-0.71		1140	-0.76
6.00	1817.3	-5.77	-0.17	12.60	1848.5	-5.35	-0.95	1848.6	-5.214	-0.99		1141	-0.50

6.10	1816.8	-5.93	-0.81	12.80	1847.9	-5.21	-0.86	1847.9	-4.993	-0.77		1142	-0.58
6.20	1816.2	-5.86	-1.38	13.00	1847.3	-5.30	-0.60	1847.1	-4.771	-0.55		1143	-0.17
6.30	1815.6	-5.55	-0.85	13.20	1846.6	-5.35	-0.95	1846.4	-5.070	-0.46		1144	-0.15
6.40	1815.0	-5.52	-0.50	13.40	1846.0	-5.37	-0.39	1845.7	-5.151	-0.52		1145	-0.41
6.50	1814.4	-5.65	-1.17	13.60	1845.5	-5.57	-0.85	1845.0	-5.238	-0.41		1146	-0.32
6.60	1813.8	-5.58	-0.99	13.80	1844.9	-5.34	-0.52	1844.3	-5.101	0.03		1147	-0.13
6.70	1813.3	-5.44	-0.79	14.00	1844.3	-5.20	-0.74	1843.6	-5.333	-0.05		1148	-0.17
6.80	1812.7	-5.67	-1.00	14.20	1843.8	-5.06	-0.78	1842.9	-5.539	-0.28		1149	-0.22
6.90	1812.1	-5.51	-1.05	14.60	1842.7	-5.25	-0.97	1842.3	-5.444	-0.18		1150	0.38
7.00	1811.5	-5.51	-0.94	14.80	1842.1	-5.16	-0.38	1841.6	-5.409	-0.09		1151	0.98
7.10	1810.9	-5.58	-1.02	15.00	1841.6	-5.39	-1.30	1841.0	-5.769	-0.23		1152	0.87
7.20	1810.4	-5.34	-0.99	15.20	1841.0	-5.22	-0.96	1840.4	-5.621	-0.07		1153	0.71
7.30	1809.8	-5.36	-0.97	15.40	1840.5	-5.45	-1.22	1839.9	-5.571	-0.02		1154	0.69
7.40	1809.2	-5.06	-0.43	15.60	1840.0	-5.46	-1.56	1839.3	-5.520	0.03		1155	0.46
7.50	1808.6	-5.11	-0.31	15.80	1839.4	-5.21	-0.98	1838.7	-5.470	0.08		1156	0.51
7.60	1808.0	-5.18	-0.25	16.00	1838.9	-5.36	-1.15	1838.1	-5.660	-0.16		1157	0.66
7.70	1807.4	-5.01	-0.17	16.20	1838.3	-5.13	-1.08	1837.6	-5.693	-0.17		1158	0.50
7.80	1806.9	-5.01	-0.20	16.40	1837.8	-4.82	-0.62	1837.0	-5.274	0.10		1159	0.01
7.90	1806.3	-5.11	-0.27	16.60	1837.3	-5.00	-1.46	1836.4	-5.507	-0.02		1160	-0.52
8.00	1805.7	-5.02	-0.24	16.80	1836.7	-5.19	-0.86	1835.8	-5.561	-0.01		1161	-0.33
8.10	1805.1	-4.83	-0.11	17.00	1836.2	-5.43	-0.94	1835.3	-5.577	-0.04		1162	0.02
8.20	1804.5	-4.96	-0.30	17.20	1835.7	-5.29	-1.36	1834.7	-5.575	0.08		1163	-0.01
8.30	1803.9	-4.86	-0.21	17.40	1835.1	-5.14	-0.65	1834.1	-5.581	0.07		1164	-0.30
8.40	1803.4	-4.89	-0.22	17.80	1834.1	-5.13	-0.83	1833.5	-5.592	0.04		1165	-0.46
8.50	1802.8	-4.88	-0.14	18.00	1833.6	-5.28	-0.47	1833.0	-5.560	-0.04		1166	-0.01
8.60	1802.2	-4.96	-0.16	18.20	1833.0	-5.47	-1.09	1832.4	-5.796	0.01		1167	0.41
8.70	1801.6	-4.92	-0.25	18.40	1832.5	-5.27	-0.30	1831.8	-5.882	-0.06		1168	0.21
8.80	1801.0	-4.84	-0.21	18.60	1832.0	-5.67	-1.14	1831.2	-5.663	0.03		1169	-0.31
8.90	1800.4	-4.88	-0.23	18.80	1831.5	-5.43	-1.13	1830.7	-5.873	0.00		1170	-0.58
9.00	1799.8	-4.90	-0.24	19.00	1831.0	-5.72	-0.56	1830.1	-5.881	-0.01		1171	-0.49
9.10	1799.3	-4.90	-0.25	19.20	1830.4	-5.77	-1.46	1829.5	-5.972	0.03		1172	-0.19
9.20	1798.7	-4.91	-0.25	19.40	1829.9	-5.36	-0.91	1828.9	-5.947	-0.22		1173	0.33

9.30	1798.1	-4.56	-0.19	19.60	1829.4	-5.60	-0.78	1828.3	-5.691	-0.12		1174	0.64
9.40	1797.5	-4.65	-0.23	19.80	1828.9	-5.54	-1.50	1827.8	-5.764	-0.13		1175	0.84
9.50	1796.9	-4.54	-0.32	20.00	1828.4	-5.36	-0.71	1827.2	-5.969	-0.24		1176	1.19
9.60	1796.3	-4.73	-0.36	20.40	1827.4	-5.71	-1.36	1826.6	-5.857	-0.12		1177	0.84
9.70	1795.8	-4.50	-0.30	20.60	1826.9	-5.45	-0.64	1826.0	-5.745	-0.01		1178	-0.09
9.80	1795.2	-4.86	-0.51	20.80	1826.4	-5.83	-1.39	1825.5	-6.021	-0.19		1179	-0.48
9.90	1794.6	-4.82	-0.47	21.00	1825.8	-5.51	-1.09	1824.9	-5.861	-0.17		1180	0.21
10.00	1794.0	-4.84	-0.40	21.20	1825.3	-5.92	-1.00	1824.3	-5.899	-0.19		1181	0.83
10.10	1793.4	-5.03	-0.46	21.40	1824.8	-5.63	-1.45	1823.7	-6.061	-0.28		1182	0.96
10.20	1792.8	-4.86	-0.44	21.60	1824.3	-5.33	-0.41	1823.1	-6.004	-0.22		1183	1.34
10.30	1792.2	-5.27	-0.55	21.80	1823.8	-5.59	-1.16	1822.6	-5.863	-0.05		1184	1.17
10.40	1791.7	-5.15	-0.50	22.00	1823.3	-5.34	-0.65	1822.0	-5.961	-0.25		1185	0.70
10.50	1791.1	-5.23	-0.54	22.20	1822.8	-5.29	-0.37	1821.4	-5.857	-0.32		1186	0.34
10.60	1790.5	-5.11	-0.47	22.40	1822.3	-5.51	-1.22	1820.8	-5.622	-0.02		1187	-0.39
10.70	1789.9	-5.16	-0.52	22.60	1821.8	-5.22	-0.42	1820.2	-5.869	-0.21		1188	-0.97
10.80	1789.3	-5.12	-0.52	22.80	1821.3	-5.64	-0.93	1819.7	-5.842	-0.10		1189	-0.94
10.90	1788.7	-4.95	-0.57	23.00	1820.8	-5.41	-0.75	1819.1	-5.810	0.02		1190	-0.72
11.00	1788.2	-4.95	-0.60	23.20	1820.3	-5.59	-0.78	1818.5	-5.925	-0.33		1191	-0.68
11.10	1787.6	-4.82	-0.61	23.40	1819.8	-5.25	-0.50	1817.9	-5.743	-0.27		1192	-1.15
11.20	1787.0	-4.97	-0.96	23.60	1819.3	-5.33	-0.85	1817.3	-5.771	-0.17		1193	-1.10
11.30	1786.4	-5.06	-1.06	23.80	1818.9	-5.33	-0.23	1816.8	-5.934	-0.81		1194	-0.95
11.40	1785.8	-4.98	-0.90	24.00	1818.4	-5.72	-1.20	1816.2	-5.859	-1.38		1195	-0.96
11.50	1785.2	-5.14	-0.72	24.20	1817.9	-5.31	-0.33	1815.6	-5.552	-0.85		1196	-0.63
11.60	1784.6	-5.07	-0.64	24.40	1817.4	-5.49	-0.79	1815.0	-5.524	-0.50		1197	-0.41
11.70	1784.1	-5.09	-0.83	24.60	1816.9	-5.31	-0.46	1814.4	-5.648	-1.17		1198	0.02
11.80	1783.5	-5.05	-0.90	24.80	1816.4	-5.45	-0.93	1813.8	-5.576	-0.99		1199	0.06
11.90	1782.9	-5.04	-0.91	25.00	1815.9	-5.20	-0.39	1813.3	-5.443	-0.79		1200	-0.68
12.00	1782.3	-5.02	-0.77	25.20	1815.4	-5.27	-1.02	1812.7	-5.672	-1.00		1201	-1.15
12.10	1781.7	-5.02	-0.70	25.40	1814.9	-5.19	-0.48	1812.1	-5.513	-1.05		1202	-0.44
12.20	1781.1	-4.92	-0.66	25.60	1814.4	-5.28	-0.80	1811.5	-5.511	-0.94		1203	-0.06
12.30	1780.6	-5.15	-0.64	25.80	1814.0	-5.23	-0.47	1810.9	-5.583	-1.02		1204	-0.05
12.40	1780.0	-5.30	-0.85	26.00	1813.5	-5.14	-0.63	1810.4	-5.337	-0.99		1205	0.69

12.50	1779.4	-5.14	-0.90	26.20	1813.0	-5.21	-0.63	1809.8	-5.364	-0.97		1206	0.93
12.60	1778.8	-5.13	-0.98	26.40	1812.5	-5.07	-0.57	1809.2	-5.060	-0.43		1207	1.01
12.70	1778.2	-5.18	-0.95	26.80	1811.5	-5.33	-0.55	1808.6	-5.110	-0.31		1208	1.18
12.80	1777.6	-5.15	-1.04	27.00	1811.1	-5.45	-0.54	1808.0	-5.184	-0.25		1209	1.48
12.90	1777.0	-5.14	-1.04	27.20	1810.6	-5.34	-0.33	1807.4	-5.014	-0.17		1210	1.13
13.00	1776.5	-5.04	-1.10	27.40	1810.1	-5.41	-0.53	1806.9	-5.014	-0.20		1211	0.58
13.10	1775.9	-5.17	-1.04	27.60	1809.6	-5.35	-0.49	1806.3	-5.110	-0.27		1212	0.00
13.20	1775.3	-5.22	-0.95	27.80	1809.1	-5.35	-0.55	1805.7	-5.023	-0.24		1213	-0.77
13.30	1774.7	-5.30	-1.07	28.00	1808.7	-5.29	-0.73	1805.1	-4.829	-0.11		1214	-0.79
13.40	1774.1	-5.42	-1.25	28.20	1808.2	-5.26	-0.51	1804.5	-4.957	-0.30		1215	0.13
13.50	1773.5	-5.34	-1.44	28.40	1807.7	-5.49	-0.61	1803.9	-4.861	-0.21		1216	0.50
13.60	1773.0	-5.33	-1.48	28.60	1807.2	-5.26	-0.52	1803.4	-4.892	-0.22		1217	0.42
13.70	1772.4	-5.19	-1.20	28.80	1806.7	-5.07	-0.44	1802.8	-4.878	-0.14		1218	0.17
13.80	1771.8	-5.16	-1.28	29.00	1806.3	-5.30	-0.58	1802.2	-4.957	-0.16		1219	0.02
13.90	1771.2	-4.93	-0.92	29.40	1805.3	-5.46	-0.64	1801.6	-4.922	-0.25		1220	0.65
14.00	1770.6	-5.18	-1.28	29.60	1804.8	-5.60	-0.82	1801.0	-4.844	-0.21		1221	1.03
14.10	1770.0	-5.25	-1.31	29.80	1804.4	-5.72	-0.50	1800.4	-4.881	-0.23		1222	1.13
14.20	1769.5	-5.19	-1.18	30.00	1803.9	-5.61	-0.64	1799.8	-4.901	-0.24		1223	1.37
14.30	1768.9	-5.27	-1.08	30.20	1803.4	-5.58	-0.62	1799.3	-4.905	-0.25		1224	1.25
14.40	1768.3	-5.16	-1.12	30.60	1802.5	-5.30	-0.37	1798.7	-4.908	-0.25		1225	1.03
14.50	1767.7	-5.18	-1.16	30.80	1802.0	-5.13	-0.25	1798.1	-4.561	-0.19		1226	1.25
14.60	1767.1	-5.12	-1.12	31.00	1801.5	-5.23	-0.41	1797.5	-4.648	-0.23		1227	1.43
14.70	1766.5	-5.33	-1.12	31.20	1801.0	-5.05	-0.41	1796.9	-4.540	-0.32		1228	1.24
14.80	1766.0	-5.31	-1.15	31.40	1800.6	-5.07	-0.44	1796.3	-4.729	-0.36		1229	0.60
14.90	1765.4	-5.40	-1.08	31.60	1800.1	-5.04	-0.41	1795.8	-4.495	-0.30		1230	0.13
15.00	1764.8	-5.24	-1.08	31.80	1799.6	-5.06	-0.38	1795.2	-4.856	-0.51		1231	-0.63
15.10	1764.2	-5.22	-0.99	32.00	1799.2	-5.52	-0.43	1794.6	-4.816	-0.47		1232	-1.35
15.20	1763.6	-5.14	-1.41	32.20	1798.7	-5.14	-0.41	1794.0	-4.842	-0.40		1233	-1.14
15.30	1763.0	-5.43	-1.13	32.40	1798.2	-5.25	-0.47	1793.4	-5.026	-0.46		1234	-1.22
15.40	1762.5	-5.35	-1.61	32.60	1797.7	-4.22	-0.16	1792.8	-4.856	-0.44		1235	-0.46
15.50	1761.9	-5.26	-1.64	32.80	1797.3	-4.97	-0.50	1792.2	-5.269	-0.55		1236	0.40
15.60	1761.3	-5.44	-1.56	33.00	1796.8	-5.11	-0.52	1791.7	-5.152	-0.50		1237	-0.36

15.70	1760.7	-5.04	-1.36	33.20	1796.3	-5.25	-0.45	1791.1	-5.229	-0.54		1238	-0.42
15.80	1760.1	-5.28	-1.48	33.40	1795.9	-4.59	-0.38	1790.5	-5.111	-0.47		1239	0.21
15.90	1759.5	-5.23	-1.43	33.60	1795.4	-5.34	-0.66	1789.9	-5.164	-0.52		1240	0.03
16.00	1759.0	-5.21	-1.64	33.80	1794.9	-5.16	-0.77	1789.3	-5.116	-0.52		1241	-0.58
16.10	1758.4	-5.27	-1.56	34.00	1794.4	-5.11	-0.71	1788.7	-4.949	-0.57		1242	-1.11
16.20	1757.8	-5.35	-1.90	34.20	1794.0	-5.12	-0.71	1788.2	-4.953	-0.60		1243	-1.59
16.30	1757.2	-5.33	-1.73	34.60	1793.0	-5.31	-0.97	1787.6	-4.824	-0.61		1244	-1.58
16.40	1756.6	-5.59	-1.92	34.80	1792.5	-5.41	-0.75	1787.0	-4.966	-0.96		1245	-1.77
16.50	1756.1	-5.43	-1.83	35.00	1792.1	-5.28	-1.10	1786.4	-5.064	-1.06		1246	-2.56
16.60	1755.5	-5.41	-1.82	35.20	1791.6	-5.19	-0.96	1785.8	-4.976	-0.90		1247	-2.49
16.70	1754.9	-5.41	-1.92	35.40	1791.1	-5.08	-0.82	1785.2	-5.139	-0.72		1248	-1.33
16.80	1754.3	-5.32	-1.85	35.60	1790.6	-5.24	-0.84	1784.6	-5.074	-0.64		1249	-0.36
16.90	1753.7	-5.20	-1.64	35.80	1790.1	-5.08	-0.97	1784.1	-5.085	-0.83		1250	-0.51
17.00	1753.1	-5.25	-1.73	36.00	1789.7	-5.27	-0.99	1783.5	-5.054	-0.90		1251	-0.62
17.10	1752.6	-5.32	-1.72	36.20	1789.2	-5.14	-0.95	1782.9	-5.044	-0.91		1252	-0.78
17.20	1752.0	-5.25	-1.43	36.40	1788.7	-5.14	-0.89	1782.3	-5.019	-0.77		1253	-0.95
17.30	1751.4	-5.11	-1.29	36.60	1788.2	-4.90	-0.81	1781.7	-5.018	-0.70		1254	-0.57
17.40	1750.8	-5.20	-1.51	36.80	1787.7	-5.18	-0.91	1781.1	-4.924	-0.66		1255	0.01
17.50	1750.2	-5.31	-1.70	37.00	1787.2	-5.05	-0.94	1780.6	-5.146	-0.64		1256	-0.03
17.60	1749.6	-5.26	-1.77	37.20	1786.7	-5.04	-0.79	1780.0	-5.304	-0.85		1257	-1.05
17.70	1749.1	-5.26	-1.82	37.40	1786.2	-4.99	-0.72	1779.4	-5.144	-0.90		1258	-1.52
17.80	1748.5	-5.27	-1.74	37.60	1785.7	-5.07	-0.80	1778.8	-5.130	-0.98		1259	-0.66
17.90	1747.9	-5.26	-1.89	37.80	1785.2	-5.25	-0.71	1778.2	-5.176	-0.95		1260	-0.19
18.00	1747.3	-5.36	-1.92	38.00	1784.7	-5.18	-1.22	1777.6	-5.152	-1.04		1261	-0.21
18.10	1746.7	-5.20	-1.98	38.20	1784.2	-5.21	-0.98	1777.0	-5.138	-1.04		1262	-1.32
18.20	1746.1	-5.29	-1.79	38.40	1783.7	-5.31	-1.02	1776.5	-5.038	-1.10		1263	-1.95
18.30	1745.5	-5.30	-1.93	38.60	1783.2	-5.35	-1.03	1775.9	-5.166	-1.04		1264	-0.79
18.40	1745.0	-5.33	-1.85	38.80	1782.7	-5.68	-1.49	1775.3	-5.218	-0.95		1265	-0.16
18.50	1744.4	-5.53	-1.70	39.00	1782.2	-5.41	-1.31	1774.7	-5.302	-1.07		1266	-0.14
18.60	1743.8	-5.48	-1.52	39.20	1781.7	-5.29	-1.07	1774.1	-5.415	-1.25		1267	0.14
18.70	1743.2	-5.51	-1.38	39.60	1780.7	-4.99	-1.40	1773.5	-5.339	-1.44		1268	0.71
18.80	1742.6	-5.61	-1.48	39.80	1780.1	-5.08	-1.30	1773.0	-5.328	-1.48		1269	1.57

18.90	1742.0	-5.53	-1.64	40.00	1779.6	-5.29	-1.10	1772.4	-5.193	-1.20		1270	2.11
19.00	1741.5	-5.50	-1.83	40.40	1778.6	-5.20	-1.07	1771.8	-5.155	-1.28		1271	1.46
19.10	1740.9	-5.46	-1.66	40.60	1778.1	-5.14	-1.11	1771.2	-4.926	-0.92		1272	-0.14
19.20	1740.3	-5.57	-1.99	40.80	1777.6	-5.53	-1.27	1770.6	-5.179	-1.28		1273	-0.40
19.30	1739.7	-5.53	-1.90	41.00	1777.1	-5.39	-1.47	1770.0	-5.253	-1.31		1274	1.03
19.40	1739.1	-5.54	-2.17	41.20	1776.5	-5.12	-1.02	1769.5	-5.187	-1.18		1275	1.30
19.50	1738.5	-5.45	-1.98	41.40	1776.0	-5.51	-1.60	1768.9	-5.265	-1.08		1276	0.71
19.60	1737.9	-5.52	-2.29	41.60	1775.5	-5.65	-1.65	1768.3	-5.157	-1.12		1277	0.59
19.70	1737.4	-5.20	-1.97	41.80	1775.0	-5.40	-1.46	1767.7	-5.182	-1.16		1278	0.78
19.80	1736.8	-5.17	-2.04	42.00	1774.5	-5.52	-1.55	1767.1	-5.115	-1.12		1279	1.12
19.90	1736.2	-5.27	-1.88	42.20	1773.9	-5.31	-1.40	1766.5	-5.334	-1.12		1280	0.47
20.00	1735.6	-5.09	-1.59	42.40	1773.4	-5.40	-1.45	1766.0	-5.305	-1.15		1281	0.33
20.10	1735.0	-5.41	-1.84	42.60	1772.9	-5.25	-1.01	1765.4	-5.402	-1.08		1282	1.32
20.20	1734.4	-5.45	-1.65	42.80	1772.4	-5.27	-0.82	1764.8	-5.237	-1.08		1283	2.50
20.30	1733.8	-5.46	-1.70	43.00	1771.8	-5.21	-1.03	1764.2	-5.217	-0.99		1284	2.00
20.40	1733.3	-5.48	-1.73	43.20	1771.3	-5.47	-0.91	1763.6	-5.142	-1.41		1285	-0.24
20.50	1732.7	-5.29	-1.46	43.40	1770.8	-5.39	-1.01	1763.0	-5.431	-1.13		1286	-0.87
20.60	1732.1	-5.42	-1.45	43.60	1770.2	-5.81	-1.16	1762.5	-5.348	-1.61		1287	0.13
20.70	1731.5	-5.41	-1.44	43.80	1769.7	-5.46	-1.43	1761.9	-5.257	-1.64		1288	0.71
20.80	1730.9	-5.33	-1.41	44.00	1769.2	-5.43	-1.16	1761.3	-5.442	-1.56		1289	1.61
20.90	1730.3	-5.40	-1.69	44.20	1768.6	-5.37	-1.42	1760.7	-5.039	-1.36		1290	1.70
21.00	1729.7	-5.27	-1.56	44.40	1768.1	-5.26	-1.32	1760.1	-5.281	-1.48		1291	0.68
21.10	1729.2	-5.28	-1.69	44.60	1767.6	-5.08	-1.12	1759.5	-5.228	-1.43		1292	0.36
21.20	1728.6	-5.36	-1.58	45.00	1766.5	-5.25	-1.40	1759.0	-5.213	-1.64		1293	0.56
21.30	1728.0	-5.38	-1.83	45.20	1766.0	-5.24	-0.84	1758.4	-5.267	-1.56		1294	1.28
21.40	1727.4	-5.20	-1.83	45.40	1765.4	-5.32	-1.81	1757.8	-5.351	-1.90		1295	1.68
21.50	1726.8	-5.34	-1.96	45.60	1764.9	-5.07	-0.77	1757.2	-5.328	-1.73		1296	0.11
21.60	1726.2	-5.31	-2.10	45.80	1764.4	-5.30	-1.61	1756.6	-5.589	-1.92		1297	-0.24
21.70	1725.6	-5.38	-1.75	46.00	1763.8	-5.19	-1.09	1756.1	-5.430	-1.83		1298	0.63
21.80	1725.0	-5.42	-2.07	46.20	1763.3	-5.47	-1.60	1755.5	-5.406	-1.82		1299	1.06
21.90	1724.5	-5.49	-1.77	46.60	1762.2	-5.52	-1.66	1754.9	-5.409	-1.92		1300	1.04
22.00	1723.9	-5.41	-1.73	46.80	1761.7	-5.41	-1.28	1754.3	-5.318	-1.85		1301	1.23

22.10	1723.3	-5.44	-1.52	47.00	1761.2	-5.47	-1.81	1753.7	-5.199	-1.64		1302	2.05
22.20	1722.7	-5.46	-1.42	47.20	1760.6	-5.30	-1.46	1753.1	-5.246	-1.73		1303	1.92
22.30	1722.1	-5.47	-1.42	47.40	1760.1	-5.68	-2.24	1752.6	-5.316	-1.72		1304	1.46
22.40	1721.5	-5.39	-1.46	47.60	1759.5	-5.71	-1.97	1752.0	-5.251	-1.43		1305	1.46
22.50	1720.9	-5.57	-1.60	47.80	1759.0	-5.90	-2.25	1751.4	-5.108	-1.29		1306	1.80
22.60	1720.3	-5.47	-1.61	48.00	1758.5	-5.63	-1.73	1750.8	-5.195	-1.51		1307	1.89
22.70	1719.8	-5.61	-1.78	48.40	1757.4	-5.15	-1.20	1750.2	-5.313	-1.70		1308	1.18
22.80	1719.2	-5.44	-1.69	48.60	1756.8	-4.94	-1.04	1749.6	-5.256	-1.77		1309	0.74
22.90	1718.6	-5.38	-1.77	48.80	1756.3	-5.04	-0.76	1749.1	-5.258	-1.82		1310	1.04
23.00	1718.0	-5.33	-1.61	49.40	1754.7	-5.32	-1.65	1748.5	-5.270	-1.74		1311	1.69
23.10	1717.4	-5.45	-1.72	49.60	1754.1	-5.43	-1.25	1747.9	-5.258	-1.89		1312	1.91
23.20	1716.8	-5.34	-1.60	49.80	1753.6	-5.74	-2.18	1747.3	-5.360	-1.92		1313	0.94
23.30	1716.2	-5.39	-1.80	50.00	1753.1	-5.46	-1.49	1746.7	-5.196	-1.98		1314	0.02
23.40	1715.6	-5.45	-1.74	50.40	1752.0	-5.30	-1.02	1746.1	-5.288	-1.79		1315	0.05
23.50	1715.1	-5.48	-1.81	50.60	1751.4	-5.44	-1.89	1745.5	-5.304	-1.93		1316	0.68
23.60	1714.5	-5.45	-1.60	50.80	1750.9	-5.22	-1.10	1745.0	-5.327	-1.85		1317	0.00
23.70	1713.9	-5.46	-1.78	51.00	1750.4	-5.64	-2.04	1744.4	-5.527	-1.70		1318	0.10
23.80	1713.3	-5.50	-1.77	51.20	1749.8	-5.68	-1.96	1743.8	-5.476	-1.52		1319	1.05
23.90	1712.7	-5.31	-1.67	51.40	1749.3	-5.44	-1.55	1743.2	-5.505	-1.38		1320	0.20
24.00	1712.1	-5.54	-1.99	51.60	1748.7	-5.58	-2.10	1742.6	-5.605	-1.48		1321	-0.80
24.10	1711.5	-5.33	-1.78	51.80	1748.2	-5.69	-1.66	1742.0	-5.525	-1.64		1322	-0.84
24.20	1710.9	-5.31	-1.77	52.00	1747.7	-5.38	-1.29	1741.5	-5.499	-1.83		1323	-0.79
24.30	1710.3	-5.38	-1.61	52.20	1747.1	-5.48	-1.95	1740.9	-5.462	-1.66		1324	0.29
24.40	1709.8	-5.42	-1.77	52.40	1746.6	-5.34	-1.42	1740.3	-5.572	-1.99		1325	0.27
24.50	1709.2	-5.26	-1.61	52.60	1746.0	-5.47	-1.63	1739.7	-5.529	-1.90		1326	1.07
24.60	1708.6	-5.27	-1.61	52.80	1745.5	-5.41	-1.36	1739.1	-5.539	-2.17		1327	1.06
24.70	1708.0	-5.12	-1.44	53.00	1745.0	-5.12	-1.25	1738.5	-5.447	-1.98		1328	0.53
24.80	1707.4	-5.35	-1.51	53.20	1744.4	-5.31	-1.18	1737.9	-5.515	-2.29		1329	0.18
24.90	1706.8	-5.36	-1.59	53.40	1743.9	-5.23	-1.38	1737.4	-5.197	-1.97		1330	-0.23
25.00	1706.2	-5.60	-1.83	53.60	1743.3	-5.39	-1.39	1736.8	-5.171	-2.04		1331	-0.44
25.10	1705.6	-5.48	-1.78	54.00	1742.3	-5.57	-1.77	1736.2	-5.268	-1.88		1332	-0.26
25.20	1705.0	-5.51	-1.75	54.20	1741.7	-5.39	-1.22	1735.6	-5.091	-1.59		1333	-0.67

25.30	1704.4	-5.37	-1.71	54.40	1741.2	-5.19	-1.31	1735.0	-5.414	-1.84		1334	-0.81
25.40	1703.9	-5.28	-1.58	54.60	1740.7	-5.35	-1.19	1734.4	-5.447	-1.65		1335	-1.22
25.50	1703.3	-5.23	-1.78	54.80	1740.1	-5.34	-1.20	1733.8	-5.459	-1.70		1336	-0.34
25.60	1702.7	-5.12	-1.58	55.00	1739.6	-5.01	-1.21	1733.3	-5.477	-1.73		1337	0.05
25.70	1702.1	-5.54	-1.74	55.20	1739.1	-5.14	-0.98	1732.7	-5.287	-1.46		1338	-0.14
25.80	1701.5	-5.31	-1.48	55.40	1738.5	-5.30	-1.26	1732.1	-5.423	-1.45		1339	-0.27
25.90	1700.9	-5.32	-1.56					1731.5	-5.405	-1.44		1340	-0.84
26.00	1700.3	-5.40	-1.58					1730.9	-5.327	-1.41		1341	-0.27
26.10	1699.7	-5.30	-1.61					1730.3	-5.398	-1.69		1342	0.23
26.20	1699.1	-5.30	-1.66					1729.7	-5.273	-1.56		1343	-0.09
26.30	1698.5	-5.27	-1.32					1729.2	-5.282	-1.69		1344	-0.27
26.40	1698.0	-5.33	-1.67					1728.6	-5.363	-1.58		1345	0.43
26.50	1697.4	-5.43	-1.74					1728.0	-5.375	-1.83		1346	1.32
26.60	1696.8	-5.53	-1.81					1727.4	-5.204	-1.83		1347	1.08
26.70	1696.2	-5.58	-1.93					1726.8	-5.338	-1.96		1348	0.79
26.80	1695.6	-5.54	-1.92					1726.2	-5.309	-2.10		1349	0.93
26.90	1695.0	-5.55	-1.95					1725.6	-5.379	-1.75		1350	0.37
27.00	1694.4	-5.65	-1.81					1725.0	-5.423	-2.07		1351	-0.71
27.10	1693.8	-5.33	-1.65					1724.5	-5.486	-1.77		1352	-0.88
27.20	1693.2	-5.59	-1.70					1723.9	-5.409	-1.73		1353	-0.18
27.30	1692.6	-5.50	-1.76					1723.3	-5.442	-1.52		1354	0.14
27.40	1692.0	-5.50	-1.70					1722.7	-5.462	-1.42		1355	0.07
27.50	1691.4	-5.30	-1.71					1722.1	-5.469	-1.42		1356	-0.54
27.60	1690.9	-5.49	-1.72					1721.5	-5.393	-1.46		1357	-1.14
27.70	1690.3	-5.32	-1.66					1720.9	-5.569	-1.60		1358	-1.10
27.80	1689.7	-5.39	-1.63					1720.3	-5.468	-1.61		1359	-1.05
27.90	1689.1	-5.41	-1.52					1719.8	-5.612	-1.78		1360	-1.13
28.00	1688.5	-5.32	-1.60					1719.2	-5.435	-1.69		1361	-0.94
28.10	1687.9	-5.38	-1.55					1718.6	-5.377	-1.77		1362	-0.78
28.20	1687.3	-5.51	-1.76					1718.0	-5.334	-1.61		1363	-0.75
28.30	1686.7	-5.54	-1.69					1717.4	-5.447	-1.72		1364	-0.51
28.40	1686.1	-5.33	-1.39					1716.8	-5.335	-1.60		1365	-0.60

28.50	1685.5	-5.53	-1.80					1716.2	-5.394	-1.80		1366	-1.58
28.60	1684.9	-5.63	-1.88					1715.6	-5.452	-1.74		1367	-2.61
28.70	1684.3	-5.52	-1.85					1715.1	-5.478	-1.81		1368	-0.85
28.80	1683.7	-5.29	-1.61					1714.5	-5.446	-1.60		1369	0.58
28.90	1683.1	-5.49	-1.93					1713.9	-5.459	-1.78		1370	0.11
29.00	1682.6	-5.36	-1.79					1713.3	-5.499	-1.77		1371	-0.09
29.10	1682.0	-5.36	-1.72					1712.7	-5.308	-1.67		1372	-1.23
29.20	1681.4	-5.77	-2.25					1712.1	-5.544	-1.99		1373	-1.75
29.30	1680.8	-5.42	-1.74					1711.5	-5.326	-1.78		1374	-1.63
29.40	1680.2	-5.24	-1.75					1710.9	-5.308	-1.77		1375	-0.82
29.50	1679.6	-5.29	-1.77					1710.3	-5.376	-1.61		1376	-0.01
29.60	1679.0	-5.17	-1.77					1709.8	-5.422	-1.77		1377	0.17
29.70	1678.4	-5.20	-1.65					1709.2	-5.258	-1.61		1378	-0.47
29.80	1677.8	-5.18	-1.81					1708.6	-5.267	-1.61		1379	0.51
29.90	1677.2	-5.41	-1.72					1708.0	-5.117	-1.44		1380	0.74
30.00	1676.6	-5.36	-1.64					1707.4	-5.348	-1.51		1381	-0.71
30.10	1676.0	-5.51	-1.62					1706.8	-5.361	-1.59		1382	-0.71
30.20	1675.4	-5.46	-1.67					1706.2	-5.597	-1.83		1383	0.07
30.30	1674.8	-5.56	-1.64					1705.6	-5.480	-1.78		1384	-0.13
30.40	1674.2	-5.66	-1.76					1705.0	-5.512	-1.75		1385	0.19
30.50	1673.6	-5.49	-1.63					1704.4	-5.370	-1.71		1386	0.91
30.60	1673.0	-5.35	-1.57					1703.9	-5.276	-1.58		1387	0.07
30.70	1672.4	-5.69	-1.54					1703.3	-5.231	-1.78		1388	-0.61
30.80	1671.9	-5.51	-1.47					1702.7	-5.118	-1.58		1389	-0.12
30.90	1671.3	-5.63	-1.36					1702.1	-5.535	-1.74		1390	0.27
31.00	1670.7	-5.43	-1.31					1701.5	-5.308	-1.48		1391	0.38
31.10	1670.1	-5.76	-1.64					1700.9	-5.317	-1.56		1392	-0.03
31.20	1669.5	-5.64	-1.75					1700.3	-5.395	-1.58		1393	-0.43
31.30	1668.9	-5.57	-1.72					1699.7	-5.301	-1.61		1394	-0.70
31.40	1668.3	-5.59	-2.02					1699.1	-5.301	-1.66		1395	0.71
31.50	1667.7	-5.59	-1.80					1698.5	-5.269	-1.32		1396	2.16
31.60	1667.1	-5.75	-1.94					1698.0	-5.334	-1.67		1397	0.81

31.70	1666.5	-5.51	-1.49					1697.4	-5.428	-1.74		1398	1.54
31.80	1665.9	-5.47	-1.71					1696.8	-5.527	-1.81		1399	2.32
31.90	1665.3	-5.70	-1.80					1696.2	-5.577	-1.93		1400	2.31
32.00	1664.7	-5.59	-2.70					1695.6	-5.539	-1.92		1401	1.83
32.10	1664.1	-5.32	-1.58					1695.0	-5.552	-1.95		1402	0.32
32.20	1663.5	-5.16	-2.29					1694.4	-5.649	-1.81		1403	-0.61
32.30	1662.9	-5.22	-1.38					1693.8	-5.331	-1.65		1404	-0.60
32.40	1662.3	-5.55	-2.59					1693.2	-5.591	-1.70		1405	-0.62
32.50	1661.7	-5.40	-1.69					1692.6	-5.497	-1.76		1406	-0.15
32.60	1661.1	-5.27	-1.90					1692.0	-5.498	-1.70		1407	0.26
32.70	1660.5	-5.40	-1.82					1691.4	-5.296	-1.71		1408	0.50
32.80	1659.9	-5.54	-2.34					1690.9	-5.487	-1.72		1409	0.62
32.90	1659.3	-5.59	-1.55					1690.3	-5.320	-1.66		1410	1.00
33.00	1658.7	-5.54	-2.36					1689.7	-5.385	-1.63		1411	1.22
33.10	1658.1	-5.55	-1.71					1689.1	-5.408	-1.52		1412	1.42
33.20	1657.5	-5.60	-2.75					1688.5	-5.320	-1.60		1413	0.85
33.30	1656.9	-5.36	-1.44					1687.9	-5.376	-1.55		1414	-0.01
33.40	1656.3	-5.58	-2.12					1687.3	-5.508	-1.76		1415	0.18
33.50	1655.7	-5.53	-1.98					1686.7	-5.536	-1.69		1416	0.59
33.60	1655.1	-5.30	-1.85					1686.1	-5.328	-1.39		1417	1.05
33.70	1654.5	-5.56	-1.90					1685.5	-5.533	-1.80		1418	1.13
33.80	1653.9	-5.21	-2.09					1684.9	-5.630	-1.88		1419	0.75
33.90	1653.3	-5.17	-1.56					1684.3	-5.518	-1.85		1420	0.19
34.00	1652.8	-5.16	-1.54					1683.7	-5.294	-1.61		1421	-0.04
34.10	1652.2	-5.54	-2.11					1683.1	-5.494	-1.93		1422	0.04
34.20	1651.6	-5.39	-1.31					1682.6	-5.361	-1.79		1423	-0.04
34.30	1651.0	-5.71	-2.67					1682.0	-5.357	-1.72		1424	-0.16
34.40	1650.4	-5.50	-1.86					1681.4	-5.769	-2.25		1425	0.11
34.50	1649.8	-5.53	-2.21					1680.8	-5.424	-1.74		1426	0.44
34.60	1649.2	-5.33	-1.58					1680.2	-5.236	-1.75		1427	0.44
34.70	1648.6	-5.44	-1.95					1679.6	-5.290	-1.77		1428	0.46
34.80	1648.0	-5.44	-1.85					1679.0	-5.168	-1.77		1429	0.10

34.90	1647.4	-5.42	-1.76					1678.4	-5.200	-1.65		1430	-0.79
35.00	1646.8	-5.39	-1.48					1677.8	-5.179	-1.81		1431	-0.92
35.10	1646.2	-5.41	-1.58					1677.2	-5.405	-1.72		1432	0.11
35.20	1645.6	-5.13	-1.33					1676.6	-5.364	-1.64		1433	0.72
35.30	1645.0	-5.55	-1.43					1676.0	-5.512	-1.62		1434	0.30
35.40	1644.4	-5.46	-1.12					1675.4	-5.464	-1.67		1435	-0.17
35.50	1643.8	-5.63	-1.80					1674.8	-5.558	-1.64		1436	-0.29
35.60	1643.2	-5.18	-1.27					1674.2	-5.659	-1.76		1437	0.11
35.70	1642.6	-5.00	-1.40					1673.6	-5.486	-1.63		1438	0.66
35.80	1642.0	-4.66	-0.68					1673.0	-5.347	-1.57		1439	0.38
35.90	1641.4	-4.56	-0.36					1672.4	-5.685	-1.54		1440	-0.12
36.00	1640.8	-4.51	-0.44					1671.9	-5.511	-1.47		1441	-0.13
36.10	1640.2	-4.74	-0.82					1671.3	-5.627	-1.36		1442	0.70
36.20	1639.6	-4.79	-1.13					1670.7	-5.427	-1.31		1443	0.93
36.30	1639.0	-4.85	-1.21					1670.1	-5.764	-1.64		1444	0.01
36.40	1638.4	-5.03	-1.31					1669.5	-5.641	-1.75		1445	-0.73
36.50	1637.8	-4.94	-1.14					1668.9	-5.574	-1.72		1446	-0.80
36.60	1637.2	-5.60	-1.87					1668.3	-5.589	-2.02		1447	-0.41
36.70	1636.5	-5.45	-1.51					1667.7	-5.588	-1.80		1448	-0.07
36.80	1635.9	-5.51	-1.91					1667.1	-5.745	-1.94		1449	0.11
36.90	1635.3	-5.58	-1.89					1666.5	-5.505	-1.49		1450	-0.19
37.00	1634.7	-5.46	-2.06					1665.9	-5.465	-1.71		1451	-0.55
37.10	1634.1	-5.58	-2.04					1665.3	-5.695	-1.80		1452	-0.51
37.20	1633.5	-5.59	-1.96					1664.7	-5.588	-2.70		1453	-0.25
37.30	1632.9	-5.38	-2.13					1664.1	-5.320	-1.58		1454	-0.28
37.40	1632.3	-5.20	-1.83					1663.5	-5.161	-2.29		1455	-0.35
37.50	1631.7	-5.43	-1.68					1662.9	-5.221	-1.38		1456	-0.31
37.60	1631.1	-5.32	-1.62					1662.3	-5.545	-2.59		1457	-0.54
37.70	1630.5	-5.22	-1.48					1661.7	-5.395	-1.69		1458	-0.81
37.80	1629.9	-5.15	-1.61					1661.1	-5.272	-1.90		1459	-0.28
37.90	1629.3	-4.94	-1.53					1660.5	-5.399	-1.82		1460	0.50
38.00	1628.7	-4.82	-1.08					1659.9	-5.544	-2.34		1461	0.66

38.10	1628.1	-5.12	-1.38					1659.3	-5.593	-1.55		1462	0.55
38.20	1627.5	-5.42	-1.71					1658.7	-5.535	-2.36		1463	0.36
38.30	1626.9	-5.10	-1.51					1658.1	-5.547	-1.71		1464	0.78
38.40	1626.3	-5.09	-1.84					1657.5	-5.602	-2.75		1465	0.81
38.50	1625.7	-5.25	-2.06					1656.9	-5.356	-1.44		1466	0.31
38.60	1625.1	-5.02	-1.28					1656.3	-5.576	-2.12		1467	-0.07
38.70	1624.5	-5.27	-2.12					1655.7	-5.526	-1.98		1468	-0.17
38.80	1623.9	-5.24	-1.57					1655.1	-5.299	-1.85		1469	-0.11
38.90	1623.3	-5.22	-1.52					1654.5	-5.560	-1.90		1470	-0.03
39.00	1622.7	-5.24	-1.54					1653.9	-5.209	-2.09		1471	-0.12
39.10	1622.1	-5.17	-1.45					1653.3	-5.170	-1.56		1472	-0.56
39.20	1621.4	-5.42	-1.47					1652.8	-5.157	-1.54		1473	-1.34
39.30	1620.8	-5.65	-1.76					1652.2	-5.543	-2.11		1474	-2.00
39.40	1620.2	-5.26	-1.32					1651.6	-5.387	-1.31		1475	-1.69
39.50	1619.6	-5.12	-1.48					1651.0	-5.706	-2.67		1476	-0.30
39.60	1619.0	-5.04	-1.42					1650.4	-5.498	-1.86		1477	-0.39
39.70	1618.4	-5.01	-1.27					1649.8	-5.532	-2.21		1478	-1.74
39.80	1617.8	-5.21	-1.58					1649.2	-5.326	-1.58		1479	-0.64
39.90	1617.1	-5.33	-1.50					1648.6	-5.441	-1.95		1480	-0.77
40.00	1616.5	-5.35	-1.57					1648.0	-5.440	-1.85		1481	-0.54
40.10	1615.9	-5.08	-1.36					1647.4	-5.419	-1.76		1482	-0.47
40.20	1615.3	-5.21	-1.48					1646.8	-5.387	-1.48		1483	-0.01
40.30	1614.7	-5.08	-1.47					1646.2	-5.413	-1.58		1484	0.99
40.40	1614.0	-4.90	-1.29					1645.6	-5.133	-1.33		1485	0.53
40.50	1613.4	-4.92	-1.36					1645.0	-5.551	-1.43		1486	-0.21
40.60	1612.8	-4.99	-1.16					1644.4	-5.457	-1.12		1487	-0.53
40.70	1612.2	-4.99	-1.51					1643.8	-5.627	-1.80		1488	-0.64
40.80	1611.5	-5.19	-1.62					1643.2	-5.175	-1.27		1489	-0.29
40.90	1610.9	-4.96	-1.35					1642.6	-4.997	-1.40		1490	-0.46
41.00	1610.3	-5.04	-1.54					1642.0	-4.660	-0.68		1491	-0.83
41.10	1609.7	-5.04	-1.43					1641.4	-4.564	-0.36		1492	-1.04
41.20	1609.0	-5.08	-1.36					1640.8	-4.507	-0.44		1493	-1.02

41.30	1608.4	-5.17	-1.77					1640.2	-4.744	-0.82		1494	-0.71
41.40	1607.8	-4.93	-1.50					1639.6	-4.787	-1.13		1495	-1.08
41.50	1607.1	-5.00	-1.54					1639.0	-4.845	-1.21		1496	-1.10
41.60	1606.5	-5.01	-1.88					1638.4	-5.030	-1.31		1497	-1.26
41.70	1605.9	-4.96	-1.55					1637.8	-4.936	-1.14		1498	-1.30
41.80	1605.2	-5.13	-2.05					1637.2	-5.604	-1.87		1499	0.42
41.90	1604.6	-4.98	-1.71					1636.5	-5.447	-1.51		1500	0.26
42.00	1604.0	-5.09	-2.00					1635.9	-5.508	-1.91		1501	0.13
42.10	1603.3	-4.97	-1.63					1635.3	-5.581	-1.89		1502	0.54
42.20	1602.7	-5.04	-1.93					1634.7	-5.462	-2.06		1503	-0.04
42.30	1602.1	-5.02	-1.43					1634.1	-5.579	-2.04		1504	-0.36
42.40	1601.4	-5.11	-1.91					1633.5	-5.588	-1.96		1505	-0.36
42.50	1600.8	-4.96	-1.40					1632.9	-5.383	-2.13		1506	-1.40
42.60	1600.1	-4.98	-1.57					1632.3	-5.195	-1.83		1507	-0.32
42.70	1599.5	-4.93	-1.50					1631.7	-5.426	-1.68		1508	0.67
42.80	1598.9	-5.08	-1.70					1631.1	-5.321	-1.62		1509	0.12
42.90	1598.2	-5.20	-1.78					1630.5	-5.217	-1.48		1510	-0.39
43.00	1597.6	-5.13	-1.71					1629.9	-5.148	-1.61		1511	-0.24
43.10	1596.9	-5.18	-1.98					1629.3	-4.943	-1.53		1512	-0.14
43.20	1596.3	-5.01	-1.65					1628.7	-4.818	-1.08		1513	-0.31
43.30	1595.7	-5.09	-1.49					1628.1	-5.119	-1.38		1514	0.76
43.40	1595.0	-5.44	-2.07					1627.5	-5.418	-1.71		1515	-0.13
43.50	1594.4	-5.70	-2.46					1626.9	-5.104	-1.51		1516	-0.81
43.60	1593.7	-5.61	-1.99					1626.3	-5.087	-1.84		1517	-1.09
43.70	1593.1	-5.83	-2.30					1625.7	-5.252	-2.06		1518	-0.21
43.80	1592.5	-5.55	-2.33					1625.1	-5.015	-1.28		1519	0.65
43.90	1591.8	-5.42	-2.08					1624.5	-5.268	-2.12		1520	1.03
44.00	1591.2	-5.49	-2.06					1623.9	-5.237	-1.57		1521	1.14
44.10	1590.5	-5.07	-1.72					1623.3	-5.222	-1.52		1522	0.35
44.20	1589.9	-5.17	-1.57					1622.7	-5.240	-1.54		1523	-0.60
44.30	1589.2	-5.32	-2.04					1622.1	-5.169	-1.45		1524	-0.52
44.40	1588.6	-5.34	-1.73					1621.4	-5.416	-1.47		1525	-0.64

44.50	1588.0	-5.22	-1.78					1620.8	-5.652	-1.76		1526	-0.43
44.60	1587.3	-5.21	-1.71					1620.2	-5.257	-1.32		1527	0.06
44.70	1586.7	-5.32	-1.58					1619.6	-5.118	-1.48		1528	-0.34
44.80	1586.0	-5.02	-1.45					1619.0	-5.042	-1.42		1529	-1.16
44.90	1585.4	-5.19	-1.59					1618.4	-5.013	-1.27		1530	-0.72
45.00	1584.7	-5.29	-2.12					1617.8	-5.214	-1.58		1531	0.49
45.10	1584.1	-5.33	-1.78					1617.1	-5.327	-1.50		1532	0.42
45.20	1583.4	-5.26	-1.87					1616.5	-5.347	-1.57		1533	-0.86
45.30	1582.8	-5.41	-2.06					1615.9	-5.075	-1.36		1534	-1.44
45.40	1582.2	-5.70	-2.33					1615.3	-5.214	-1.48		1535	-1.03
45.50	1581.5	-5.02	-1.33					1614.7	-5.082	-1.47		1536	-0.55
45.60	1580.9	-5.22	-1.40					1614.0	-4.902	-1.29		1537	-0.56
45.70	1580.2	-5.57	-1.70					1613.4	-4.919	-1.36		1538	-0.53
45.80	1579.6	-5.55	-2.04					1612.8	-4.993	-1.16		1539	-0.30
45.90	1578.9	-5.47	-2.18					1612.2	-4.994	-1.51		1540	0.73
46.00	1578.3	-5.24	-1.68					1611.5	-5.192	-1.62		1541	0.37
46.10	1577.7	-5.46	-1.77					1610.9	-4.958	-1.35		1542	-0.47
46.20	1577.0	-4.90	-1.56					1610.3	-5.044	-1.54		1543	0.82
46.30	1576.4	-5.26	-1.91					1609.7	-5.040	-1.43		1544	2.11
46.40	1575.7	-5.16	-1.68					1609.0	-5.079	-1.36		1545	2.23
46.50	1575.1	-5.01	-1.48					1608.4	-5.174	-1.77		1546	2.17
46.60	1574.4	-5.31	-1.53					1607.8	-4.934	-1.50		1547	1.91
46.70	1573.8	-5.45	-2.07					1607.1	-4.997	-1.54		1548	1.58
46.80	1573.2	-5.26	-1.68					1606.5	-5.012	-1.88		1549	0.48
46.90	1572.5	-5.42	-1.89					1605.9	-4.961	-1.55		1550	-0.11
47.00	1571.9	-5.30	-1.64					1605.2	-5.134	-2.05		1551	-0.23
47.10	1571.2	-5.40	-1.69					1604.6	-4.981	-1.71		1552	-0.36
47.20	1570.6	-5.19	-1.48					1604.0	-5.091	-2.00		1553	-0.12
47.30	1570.0	-4.98	-1.28					1603.3	-4.968	-1.63		1554	0.54
47.40	1569.3	-5.37	-1.61					1602.7	-5.040	-1.93		1555	0.51
47.50	1568.7	-5.21	-1.37					1602.1	-5.015	-1.43		1556	-0.12
47.60	1568.0	-5.22	-1.37					1601.4	-5.105	-1.91		1557	-0.66

47.70	1567.4	-5.20	-1.52					1600.8	-4.955	-1.40		1558	-0.80
47.80	1566.8	-5.23	-1.70					1600.1	-4.984	-1.57		1559	-0.53
47.90	1566.1	-5.37	-1.57					1599.5	-4.932	-1.50		1560	-0.17
48.00	1565.5	-5.38	-1.59					1598.9	-5.078	-1.70		1561	0.22
48.10	1564.9	-5.43	-1.65					1598.2	-5.198	-1.78		1562	0.38
48.20	1564.2	-5.49	-1.70					1597.6	-5.131	-1.71		1563	0.21
48.30	1563.6	-5.35	-1.90					1596.9	-5.183	-1.98		1564	-0.25
48.40	1563.0	-5.28	-1.83					1596.3	-5.009	-1.65		1565	-0.38
48.50	1562.3	-5.25	-2.24					1595.7	-5.092	-1.49		1566	-0.02
48.60	1561.7	-5.31	-1.69					1595.0	-5.440	-2.07		1567	0.46
48.70	1561.1	-5.26	-1.49					1594.4	-5.701	-2.46		1568	0.51
48.80	1560.4	-5.39	-1.70					1593.7	-5.613	-1.99		1569	0.49
48.90	1559.8	-5.46	-1.76					1593.1	-5.832	-2.30		1570	0.98
49.00	1559.2	-5.39	-1.69					1592.5	-5.546	-2.33		1571	0.43
49.10	1558.5	-5.46	-1.70					1591.8	-5.417	-2.08		1572	-0.08
49.20	1557.9	-5.65	-1.94					1591.2	-5.488	-2.06		1573	0.00
49.30	1557.3	-5.69	-1.92					1590.5	-5.069	-1.72		1574	0.12
49.40	1556.6	-5.26	-1.55					1589.9	-5.172	-1.57		1575	0.66
49.50	1556.0	-5.30	-1.44					1589.2	-5.324	-2.04		1576	1.20
49.60	1555.4	-5.48	-1.51					1588.6	-5.344	-1.73		1577	1.10
49.70	1554.8	-5.52	-1.58					1588.0	-5.224	-1.78		1578	-0.05
49.80	1554.1	-4.94	-1.71					1587.3	-5.205	-1.71		1579	-0.52
49.90	1553.5	-5.55	-1.81					1586.7	-5.322	-1.58		1580	-0.09
50.00	1552.9	-5.60	-1.67					1586.0	-5.017	-1.45		1581	0.25
50.10	1552.3	-5.47	-1.71					1585.4	-5.187	-1.59		1582	-0.26
50.20	1551.7	-5.40	-1.72					1584.7	-5.292	-2.12		1583	-0.63
50.30	1551.0	-5.37	-1.67					1584.1	-5.333	-1.78		1584	-0.03
50.40	1550.4	-5.36	-1.71					1583.4	-5.257	-1.87		1585	0.79
50.50	1549.8	-5.34	-1.81					1582.8	-5.411	-2.06		1586	0.97
50.60	1549.2	-5.42	-1.72					1582.2	-5.697	-2.33		1587	0.37
50.70	1548.6	-5.04	-1.67					1581.5	-5.015	-1.33		1588	0.14
50.80	1548.0	-4.95	-1.59					1580.9	-5.219	-1.40		1589	0.50

50.90	1547.3	-4.87	-1.50					1580.2	-5.567	-1.70		1590	0.69
51.00	1546.7	-5.11	-1.46					1579.6	-5.547	-2.04		1591	0.08
51.10	1546.1	-5.16	-1.55					1578.9	-5.470	-2.18		1592	-0.98
51.20	1545.5	-4.59	-1.22					1578.3	-5.242	-1.68		1593	-1.68
51.30	1544.9	-5.16	-1.92					1577.7	-5.459	-1.77		1594	-1.52
51.40	1544.3	-4.63	-1.37					1577.0	-4.896	-1.56		1595	-0.30
51.50	1543.7	-5.16	-1.97					1576.4	-5.255	-1.91		1596	0.87
51.60	1543.1	-5.24	-1.63					1575.7	-5.157	-1.68		1597	1.02
51.70	1542.5	-5.23	-1.61					1575.1	-5.009	-1.48		1598	0.89
51.80	1541.9	-5.33	-2.10					1574.4	-5.314	-1.53		1599	1.30
51.90	1541.3	-5.62	-2.25					1573.8	-5.447	-2.07		1600	1.58
52.00	1540.7	-4.98	-1.88					1573.2	-5.261	-1.68		1601	1.41
52.10	1540.1	-5.36	-1.76					1572.5	-5.416	-1.89		1602	1.29
52.20	1539.5	-5.25	-1.75					1571.9	-5.302	-1.64		1603	1.39
52.30	1538.9	-5.55	-1.90					1571.2	-5.397	-1.69		1604	1.34
52.40	1538.3	-5.43	-1.83					1570.6	-5.191	-1.48		1605	1.23
52.50	1537.7	-5.55	-2.15					1570.0	-4.984	-1.28		1606	1.40
52.60	1537.1	-5.51	-1.88					1569.3	-5.372	-1.61		1607	1.62
52.70	1536.5	-5.50	-1.87					1568.7	-5.209	-1.37		1608	1.30
52.80	1535.9	-5.49	-1.86					1568.0	-5.221	-1.37		1609	1.05
52.90	1535.3	-5.53	-2.13					1567.4	-5.200	-1.52		1610	1.31
53.00	1534.8	-5.70	-2.25					1566.8	-5.228	-1.70		1611	1.22
53.10	1534.2	-5.74	-2.11					1566.1	-5.372	-1.57		1612	1.17
53.20	1533.6	-5.61	-2.33					1565.5	-5.380	-1.59		1613	1.69
53.30	1533.0	-5.52	-2.39					1564.9	-5.434	-1.65		1614	1.68
53.40	1532.4	-5.58	-2.43					1564.2	-5.488	-1.70		1615	1.07
53.50	1531.8	-5.28	-2.13					1563.6	-5.350	-1.90		1616	0.57
53.60	1531.3	-4.98	-1.83					1563.0	-5.275	-1.83		1617	0.38
53.70	1530.7	-5.52	-1.87					1562.3	-5.250	-2.24		1618	0.69
53.80	1530.1	-5.78	-2.54					1561.7	-5.312	-1.69		1619	0.77
53.90	1529.5	-5.68	-2.18					1561.1	-5.263	-1.49		1620	-0.02
54.00	1529.0	-5.49	-1.66					1560.4	-5.392	-1.70		1621	-0.55

54.10	1528.4	-5.37	-1.79					1559.8	-5.459	-1.76		1622	0.07
54.20	1527.8	-5.65	-2.05					1559.2	-5.391	-1.69		1623	0.44
54.30	1527.3	-5.39	-1.49					1558.5	-5.464	-1.70		1624	0.45
54.40	1526.7	-5.14	-1.55					1557.9	-5.648	-1.94		1625	0.88
54.50	1526.1	-5.53	-1.59					1557.3	-5.692	-1.92		1626	0.79
54.60	1525.6	-5.79	-2.22					1556.6	-5.259	-1.55		1627	0.33
54.70	1525.0	-5.78	-1.98					1556.0	-5.304	-1.44		1628	0.91
54.80	1524.5	-5.27	-1.98					1555.4	-5.483	-1.51		1629	1.54
54.90	1523.9	-5.69	-2.14					1554.8	-5.516	-1.58		1630	1.13
55.00	1523.4	-5.57	-2.53					1554.1	-4.936	-1.71		1631	0.33
55.10	1522.8	-5.50	-2.45					1553.5	-5.548	-1.81		1632	0.08
55.20	1522.3	-5.42	-2.37					1552.9	-5.599	-1.67		1633	-0.39
55.30	1521.7	-5.26	-2.21					1552.3	-5.468	-1.71		1634	-0.88
55.40	1521.2	-5.10	-2.05					1551.7	-5.404	-1.72		1635	-0.85
55.50	1520.6	-5.16	-2.11					1551.0	-5.371	-1.67		1636	-1.11
55.60	1520.1	-5.22	-2.17					1550.4	-5.358	-1.71		1637	-0.58
55.70	1519.6	-5.28	-2.23					1549.8	-5.340	-1.81		1638	1.39
55.80	1519.0	-5.26	-2.21					1549.2	-5.417	-1.72		1639	2.14
55.90	1518.5	-5.25	-2.20					1548.6	-5.036	-1.67		1640	2.83
56.00	1518.0	-5.40	-1.77					1548.0	-4.952	-1.59		1641	3.54
56.10	1517.4	-5.68	-2.22					1547.3	-4.867	-1.50		1642	2.81
56.20	1516.9	-5.65	-2.60					1546.7	-5.107	-1.46		1643	0.72
56.30	1516.4	-5.59	-2.48					1546.1	-5.164	-1.55		1644	-0.90
56.40	1515.9	-5.64	-2.34					1545.5	-4.585	-1.22		1645	-0.32
56.50	1515.4	-5.42	-1.87					1544.9	-5.157	-1.92		1646	0.24
56.60	1514.9	-5.31	-1.57					1544.3	-4.626	-1.37		1647	-0.38
56.70	1514.4	-5.46	-2.33					1543.7	-5.158	-1.97		1648	-0.41
56.80	1513.8	-5.04	-1.54					1543.1	-5.242	-1.63		1649	-0.22
56.90	1513.3	-5.56	-2.10					1542.5	-5.228	-1.61		1650	-0.77
57.00	1512.8	-5.46	-2.02					1541.9	-5.327	-2.10		1651	-1.09
57.10	1512.3	-5.53	-1.83					1541.3	-5.617	-2.25		1652	-0.39
57.20	1511.8	-5.37	-1.81					1540.7	-4.982	-1.88		1653	0.45

57.30	1511.3	-5.48	-2.13					1540.1	-5.360	-1.76		1654	0.17
57.40	1510.8	-5.45	-1.82					1539.5	-5.251	-1.75		1655	-0.43
57.50	1510.3	-5.51	-1.81					1538.9	-5.551	-1.90		1656	-0.48
57.60	1509.8	-5.48	-1.77					1538.3	-5.430	-1.83		1657	-0.58
57.70	1509.3	-5.48	-1.55					1537.7	-5.552	-2.15		1658	-0.93
57.80	1508.8	-5.41	-1.48					1537.1	-5.508	-1.88		1659	-0.97
57.90	1508.4	-5.20	-1.60					1536.5	-5.497	-1.87		1660	-0.62
58.00	1507.9	-5.31	-1.71					1535.9	-5.485	-1.86		1661	-0.22
58.10	1507.4	-5.40	-1.87					1535.3	-5.529	-2.13		1662	-0.08
58.20	1506.9	-5.50	-1.77					1534.8	-5.703	-2.25		1663	-0.01
58.30	1506.4	-5.67	-2.01					1534.2	-5.740	-2.11		1664	-0.22
58.40	1505.9	-5.84	-2.82					1533.6	-5.610	-2.33		1665	-0.61
58.50	1505.4	-5.52	-2.10					1533.0	-5.524	-2.39		1666	-1.07
58.60	1504.9	-5.61	-2.20					1532.4	-5.579	-2.43		1667	-1.28
58.70	1504.4	-5.28	-2.24					1531.8	-5.278	-2.13		1668	-1.22
58.80	1503.9	-5.70	-2.39					1531.3	-4.977	-1.83		1669	-1.35
58.90	1503.5	-5.60	-2.02					1530.7	-5.517	-1.87		1670	-1.34
59.00	1503.0	-5.30	-1.84					1530.1	-5.780	-2.54		1671	-0.81
59.10	1502.5	-5.23	-1.36					1529.5	-5.675	-2.18		1672	-1.11
59.20	1502.0	-5.27	-1.69					1529.0	-5.489	-1.66		1673	-0.60
59.30	1501.5	-5.33	-1.71					1528.4	-5.367	-1.79		1674	-0.73
59.40	1501.0	-5.45	-1.88					1527.8	-5.648	-2.05		1675	-0.88
59.50	1500.5	-5.42	-1.85					1527.3	-5.389	-1.49		1676	-0.55
59.60	1500.0	-5.44	-1.91					1526.7	-5.144	-1.55		1677	-0.08
59.70	1499.5	-5.26	-1.94					1526.1	-5.530	-1.59		1678	0.63
59.80	1499.1	-5.34	-1.45					1525.6	-5.794	-2.22		1679	0.80
59.90	1498.6	-5.35	-1.43					1525.0	-5.778	-1.98		1680	0.15
60.00	1498.1	-5.87	-1.95					1524.5	-5.272	-1.98		1681	-0.89
60.10	1497.6	-5.73	-2.48					1523.9	-5.692	-2.14		1682	-0.76
60.20	1497.1	-5.59	-1.96					1523.4	-5.573	-2.53		1683	-0.08
60.30	1496.6	-5.77	-2.27					1522.8	-5.498	-2.45		1684	-0.39
60.40	1496.1	-5.65	-2.20					1522.3	-5.422	-2.37		1685	-0.76

60.50	1495.6	-5.65	-2.59					1521.7	-5.262	-2.21		1686	-0.49
60.60	1495.1	-5.74	-2.39					1521.2	-5.102	-2.05		1687	-0.41
60.70	1494.6	-5.61	-1.81					1520.6	-5.160	-2.11		1688	-0.25
60.80	1494.1	-5.57	-1.77					1520.1	-5.219	-2.17		1689	-0.06
60.90	1493.6	-5.54	-1.74					1519.6	-5.277	-2.23		1690	-0.17
61.00	1493.1	-5.72	-2.25					1519.0	-5.262	-2.21		1691	-0.21
61.10	1492.6	-5.77	-2.58					1518.5	-5.246	-2.20		1692	-0.41
61.20	1492.1	-5.58	-2.42					1518.0	-5.395	-1.77		1693	-0.64
61.30	1491.6	-5.74	-2.57					1517.4	-5.683	-2.22		1694	-0.58
61.40	1491.0	-5.58	-1.98					1516.9	-5.651	-2.60		1695	-1.14
61.50	1490.5	-5.57	-1.86					1516.4	-5.589	-2.48		1696	-1.03
61.60	1490.0	-5.59	-1.90					1515.9	-5.640	-2.34		1697	-0.55
61.70	1489.5	-5.46	-1.75					1515.4	-5.416	-1.87		1698	0.11
61.80	1489.0	-5.48	-1.71					1514.9	-5.307	-1.57		1699	0.31
61.90	1488.5	-5.55	-1.46					1514.4	-5.457	-2.33		1700	0.13
62.00	1487.9	-5.61	-1.71					1513.8	-5.039	-1.54		1701	-0.21
62.10	1487.4	-5.75	-2.34					1513.3	-5.564	-2.10		1702	-0.19
62.20	1486.9	-5.50	-1.63					1512.8	-5.457	-2.02		1703	0.56
62.30	1486.3	-5.28	-1.45					1512.3	-5.533	-1.83		1704	0.27
62.40	1485.8	-5.33	-1.30					1511.8	-5.372	-1.81		1705	-0.54
62.50	1485.3	-5.62	-1.59					1511.3	-5.483	-2.13		1706	-0.80
62.60	1484.7	-5.07	-1.84					1510.8	-5.451	-1.82		1707	-0.12
62.70	1484.2	-5.23	-1.48					1510.3	-5.513	-1.81		1708	0.73
62.80	1483.6	-5.33	-1.82					1509.8	-5.478	-1.77		1709	0.39
62.90	1483.1	-5.38	-1.89					1509.3	-5.475	-1.55		1710	-0.04
63.00	1482.5	-5.60	-2.11					1508.8	-5.412	-1.48		1711	-0.12
63.10	1482.0	-5.47	-2.50					1508.4	-5.199	-1.60		1712	-0.31
63.20	1481.4	-5.65	-2.42					1507.9	-5.311	-1.71		1713	-0.31
63.30	1480.8	-5.45	-2.06					1507.4	-5.402	-1.87		1714	-0.52
63.40	1480.3	-5.77	-2.65					1506.9	-5.500	-1.77		1715	-0.49
63.50	1479.7	-5.44	-1.83					1506.4	-5.673	-2.01		1716	-0.28
63.60	1479.1	-5.74	-2.41					1505.9	-5.839	-2.82		1717	-0.14

63.70	1478.5	-5.50	-2.13					1505.4	-5.518	-2.10		1718	-0.09
63.80	1478.0	-6.06	-2.39					1504.9	-5.612	-2.20		1719	-0.46
63.90	1477.4	-5.46	-1.78					1504.4	-5.281	-2.24		1720	-0.83
64.00	1476.8	-5.63	-2.03					1503.9	-5.698	-2.39		1721	-0.66
64.10	1476.2	-5.48	-1.84					1503.5	-5.604	-2.02		1722	-0.37
64.20	1475.6	-5.52	-1.98					1503.0	-5.303	-1.84		1723	-0.42
64.30	1475.0	-5.69	-1.83					1502.5	-5.232	-1.36		1724	-0.42
64.40	1474.3	-6.08	-2.10					1502.0	-5.273	-1.69		1725	-0.30
64.50	1473.5	-5.81	-2.16					1501.5	-5.333	-1.71		1726	-0.01
64.60	1472.5	-5.52	-1.95					1501.0	-5.446	-1.88		1727	0.33
64.70	1471.5	-5.38	-1.83					1500.5	-5.420	-1.85		1728	0.20
64.80	1470.5	-5.43	-1.89					1500.0	-5.438	-1.91		1729	0.13
64.90	1469.4	-5.49	-1.94					1499.5	-5.261	-1.94		1730	0.09
65.00	1468.4	-5.57	-2.23					1499.1	-5.337	-1.45		1731	-0.11
65.10	1467.4	-5.45	-2.21					1498.6	-5.346	-1.43		1732	-0.06
65.20	1466.5	-5.41	-1.92					1498.1	-5.867	-1.95		1733	-0.20
65.30	1465.8	-5.45	-2.37					1497.6	-5.730	-2.48		1734	-0.51
65.40	1465.1	-5.28	-2.37					1497.1	-5.588	-1.96		1735	0.09
65.50	1464.4	-5.11	-2.02					1496.6	-5.772	-2.27		1736	0.83
65.60	1463.7	-5.29	-1.95					1496.1	-5.652	-2.20		1737	0.53
65.70	1463.0	-5.49	-2.03					1495.6	-5.650	-2.59		1738	-0.38
65.80	1462.4	-5.23	-2.16					1495.1	-5.736	-2.39		1739	-0.79
65.90	1461.7	-5.35	-2.43					1494.6	-5.608	-1.81		1740	-0.84
66.00	1461.0	-5.30	-2.03					1494.1	-5.572	-1.77		1741	-0.68
66.10	1460.3	-5.39	-2.37					1493.6	-5.535	-1.74		1742	-0.82
66.20	1459.6	-5.24	-2.06					1493.1	-5.716	-2.25		1743	-0.90
66.30	1458.9	-5.43	-1.80					1492.6	-5.766	-2.58		1744	-0.69
66.40	1458.3	-5.81	-2.32					1492.1	-5.578	-2.42		1745	-0.11
66.50	1457.6	-5.69	-2.31					1491.6	-5.735	-2.57		1746	0.35
66.60	1456.9	-5.38	-1.99					1491.0	-5.584	-1.98		1747	0.32
66.70	1456.2	-5.57	-2.06					1490.5	-5.567	-1.86		1748	0.27
66.80	1455.5	-5.61	-1.98					1490.0	-5.585	-1.90		1749	0.33

66.90	1454.9	-5.46	-1.77					1489.5	-5.460	-1.75		1750	0.42
67.00	1454.2	-5.57	-1.96					1489.0	-5.475	-1.71		1751	0.66
67.10	1453.5	-5.43	-1.80					1488.5	-5.552	-1.46		1752	0.55
67.20	1452.8	-5.55	-1.91					1487.9	-5.613	-1.71		1753	0.39
67.30	1452.2	-5.53	-1.79					1487.4	-5.753	-2.34		1754	0.27
67.40	1451.5	-5.52	-2.02					1486.9	-5.501	-1.63		1755	-0.14
67.50	1450.8	-5.64	-1.68					1486.3	-5.279	-1.45		1756	-0.68
67.60	1450.1	-5.45	-1.66					1485.8	-5.327	-1.30		1757	-0.47
67.70	1449.4	-5.35	-1.87					1485.3	-5.615	-1.59		1758	0.20
67.80	1448.8	-5.45	-1.46					1484.7	-5.073	-1.84		1759	0.40
67.90	1448.1	-5.56	-1.73					1484.2	-5.232	-1.48		1760	0.71
68.00	1447.4	-5.54	-1.82					1483.6	-5.331	-1.82		1761	0.48
68.10	1446.8	-5.47	-1.68					1483.1	-5.377	-1.89		1762	-0.25
68.20	1446.1	-5.44	-1.78					1482.5	-5.597	-2.11		1763	0.07
68.30	1445.4	-5.60	-1.94					1482.0	-5.471	-2.50		1764	0.58
68.40	1444.7	-5.75	-2.10					1481.4	-5.649	-2.42		1765	0.20
68.50	1444.1	-5.65	-2.44					1480.8	-5.452	-2.06		1766	-0.02
68.60	1443.4	-5.34	-2.12					1480.3	-5.774	-2.65		1767	0.62
68.70	1442.7	-5.02	-1.80					1479.7	-5.441	-1.83		1768	0.76
68.80	1442.1	-5.36	-2.08					1479.1	-5.742	-2.41		1769	0.47
68.90	1441.4	-5.39	-2.20					1478.5	-5.503	-2.13		1770	0.61
69.00	1440.7	-5.60	-2.65					1478.0	-6.061	-2.39		1771	1.26
69.10	1440.1	-5.43	-2.40					1477.4	-5.460	-1.78		1772	0.92
69.20	1439.4	-5.49	-2.03					1476.8	-5.632	-2.03		1773	0.10
69.30	1438.7	-5.32	-1.67					1476.2	-5.478	-1.84		1774	-0.22
69.40	1438.1	-5.17	-1.33					1475.6	-5.520	-1.98		1775	0.27
69.50	1437.4	-5.41	-2.05					1475.0	-5.694	-1.83		1776	0.89
69.60	1436.7	-5.51	-1.63					1474.3	-6.080	-2.10		1777	1.03
69.70	1436.1	-5.47	-1.60					1473.5	-5.813	-2.16		1778	0.82
69.80	1435.4	-5.50	-1.73					1472.5	-5.518	-1.95		1779	0.59
69.90	1434.7	-5.40	-1.69					1471.5	-5.383	-1.83		1780	0.61
70.00	1434.1	-5.41	-1.56					1470.5	-5.434	-1.89		1781	1.26

70.10	1433.4	-5.41	-1.78					1469.4	-5.485	-1.94		1782	1.49
70.20	1432.8	-5.12	-1.57					1468.4	-5.570	-2.23		1783	1.31
70.30	1432.1	-5.51	-1.68					1467.4	-5.445	-2.21		1784	1.13
70.40	1431.4	-5.63	-1.77					1466.5	-5.406	-1.92		1785	1.05
70.50	1430.8	-5.56	-1.61					1465.8	-5.454	-2.37		1786	1.30
70.60	1430.1	-5.72	-1.86					1465.1	-5.281	-2.37		1787	1.79
70.70	1429.5	-5.44	-1.53					1464.4	-5.107	-2.02		1788	1.89
70.80	1428.8	-5.34	-1.53					1463.7	-5.287	-1.95		1789	1.29
70.90	1428.2	-5.37	-1.58					1463.0	-5.491	-2.03		1790	0.77
71.00	1427.5	-5.27	-1.55					1462.4	-5.231	-2.16		1791	0.60
71.10	1426.9	-5.42	-1.59					1461.7	-5.351	-2.43		1792	0.60
71.20	1426.2	-5.23	-1.16					1461.0	-5.299	-2.03		1793	1.61
71.30	1425.6	-5.30	-1.27					1460.3	-5.387	-2.37		1794	1.79
71.40	1424.9	-5.45	-1.52					1459.6	-5.238	-2.06		1795	2.42
71.50	1424.3	-5.54	-1.74					1458.9	-5.428	-1.80		1796	3.15
71.60	1423.6	-5.52	-1.83					1458.3	-5.811	-2.32		1797	3.15
71.70	1423.0	-5.40	-1.73					1457.6	-5.687	-2.31		1798	3.06
71.80	1422.3	-5.32	-1.91					1456.9	-5.376	-1.99		1799	1.98
71.90	1421.7	-5.50	-1.95					1456.2	-5.573	-2.06		1800	1.86
72.00	1421.0	-5.35	-1.94					1455.5	-5.610	-1.98		1801	1.99
72.10	1420.4	-5.44	-2.24					1454.9	-5.458	-1.77		1802	1.79
72.20	1419.7	-5.42	-2.16					1454.2	-5.569	-1.96		1803	1.88
72.30	1419.1	-5.23	-1.87					1453.5	-5.433	-1.80		1804	1.92
72.40	1418.4	-5.12	-2.10					1452.8	-5.548	-1.91		1805	1.86
72.50	1417.8	-5.19	-2.10					1452.2	-5.530	-1.79		1806	1.38
72.60	1417.2	-5.20	-2.20					1451.5	-5.524	-2.02		1807	1.11
72.70	1416.5	-5.18	-2.20					1450.8	-5.637	-1.68		1808	1.05
72.80	1415.9	-5.34	-2.30					1450.1	-5.450	-1.66		1809	0.85
72.90	1415.2	-5.33	-2.31					1449.4	-5.353	-1.87		1810	-0.05
73.00	1414.6	-5.41	-1.78					1448.8	-5.448	-1.46		1811	-0.87
73.10	1414.0	-5.34	-1.65					1448.1	-5.556	-1.73		1812	-1.13
73.20	1413.3	-5.43	-1.40					1447.4	-5.537	-1.82		1813	-1.07

73.30	1412.7	-5.01	-1.20					1446.8	-5.469	-1.68		1814	-0.98
73.40	1412.1	-5.18	-1.87					1446.1	-5.440	-1.78		1815	-1.23
73.50	1411.4	-5.19	-1.70					1445.4	-5.597	-1.94		1816	-1.90
73.60	1410.8	-5.20	-1.97					1444.7	-5.753	-2.10		1817	-2.26
73.70	1410.2	-5.06	-1.59					1444.1	-5.651	-2.44		1818	-2.28
73.80	1409.5	-5.35	-2.48					1443.4	-5.335	-2.12		1819	-2.47
73.90	1408.9	-5.20	-2.21					1442.7	-5.019	-1.80		1820	-2.18
74.00	1408.3	-5.16	-1.89					1442.1	-5.357	-2.08		1821	-1.89
74.10	1407.6	-5.31	-1.76					1441.4	-5.391	-2.20		1822	-2.50
74.20	1407.0	-5.50	-2.01					1440.7	-5.597	-2.65		1823	-2.92
74.30	1406.4	-5.27	-1.97					1440.1	-5.429	-2.40		1824	-2.91
74.40	1405.8	-5.36	-1.98					1439.4	-5.485	-2.03		1825	-2.70
74.50	1405.1	-5.64	-1.88					1438.7	-5.324	-1.67		1826	-2.50
74.60	1404.5	-5.46	-1.70					1438.1	-5.168	-1.33		1827	-2.29
74.70	1403.9	-5.56	-1.91					1437.4	-5.407	-2.05		1828	-2.16
74.80	1403.3	-5.46	-1.69					1436.7	-5.514	-1.63		1829	-2.43
74.90	1402.7	-5.69	-2.25					1436.1	-5.474	-1.60		1830	-2.50
75.00	1402.0	-5.60	-2.06					1435.4	-5.500	-1.73		1831	-2.11
75.10	1401.4	-5.27	-1.59					1434.7	-5.397	-1.69		1832	-1.94
75.20	1400.8	-4.54	-1.09					1434.1	-5.407	-1.56		1833	-1.43
75.30	1400.2	-5.06	-1.08					1433.4	-5.414	-1.78		1834	-1.13
75.40	1399.6	-5.26	-1.47					1432.8	-5.115	-1.57		1835	-1.10
75.50	1399.0	-4.56	-0.77					1432.1	-5.509	-1.68		1836	-0.70
75.60	1398.3	-4.82	-1.40					1431.4	-5.633	-1.77		1837	-0.50
75.70	1397.7	-5.29	-1.41					1430.8	-5.559	-1.61		1838	-1.07
75.80	1397.1	-5.24	-1.45					1430.1	-5.722	-1.86		1839	-1.28
75.90	1396.5	-5.32	-1.66					1429.5	-5.435	-1.53		1840	-1.37
76.00	1395.9	-4.55	-1.18					1428.8	-5.337	-1.53		1841	-1.36
76.10	1395.3	-5.39	-1.58					1428.2	-5.367	-1.58		1842	-0.80
76.20	1394.7	-5.71	-1.66					1427.5	-5.267	-1.55		1843	-0.28
76.30	1394.1	-5.58	-1.84					1426.9	-5.419	-1.59		1844	0.27
76.40	1393.5	-5.35	-1.19					1426.2	-5.230	-1.16		1845	0.81

76.50	1392.9	-5.50	-1.65					1425.6	-5.297	-1.27		1846	1.33
76.60	1392.3	-5.41	-1.28					1424.9	-5.451	-1.52		1847	1.67
76.70	1391.7	-5.44	-1.77					1424.3	-5.544	-1.74		1848	1.58
76.80	1391.1	-5.18	-1.35					1423.6	-5.515	-1.83		1849	1.35
76.90	1390.5	-5.44	-1.73					1423.0	-5.403	-1.73		1850	1.24
77.00	1389.9	-5.19	-1.18					1422.3	-5.320	-1.91		1851	1.05
77.10	1389.3	-5.46	-1.64					1421.7	-5.497	-1.95		1852	0.90
77.20	1388.7	-5.42	-1.54					1421.0	-5.352	-1.94		1853	0.74
77.30	1388.1	-5.52	-1.79					1420.4	-5.442	-2.24		1854	0.54
77.40	1387.5	-5.52	-1.81					1419.7	-5.417	-2.16		1855	-0.60
77.50	1386.9	-5.35	-1.94					1419.1	-5.227	-1.87		1856	-0.56
77.60	1386.3	-5.09	-1.71					1418.4	-5.118	-2.10		1857	0.03
77.70	1385.7	-5.17	-1.69					1417.8	-5.192	-2.10		1858	0.57
77.80	1385.1	-5.14	-1.72					1417.2	-5.199	-2.20		1859	0.95
77.90	1384.5	-5.69	-2.46					1416.5	-5.182	-2.20		1860	1.21
78.00	1383.9	-5.21	-2.04					1415.9	-5.338	-2.30		1861	1.26
78.10	1383.3	-5.07	-2.35					1415.2	-5.333	-2.31		1862	0.90
78.20	1382.7	-5.33	-2.14					1414.6	-5.407	-1.78		1863	0.28
78.30	1382.1	-5.56	-2.38					1414.0	-5.336	-1.65		1864	-0.07
78.40	1381.5	-5.79	-2.61					1413.3	-5.431	-1.40		1865	0.00
78.50	1380.9	-5.35	-2.14					1412.7	-5.014	-1.20		1866	0.28
78.60	1380.3	-5.47	-2.35					1412.1	-5.180	-1.87		1867	0.41
78.70	1379.7	-4.93	-2.18					1411.4	-5.189	-1.70		1868	0.38
78.80	1379.1	-5.14	-1.99					1410.8	-5.199	-1.97		1869	0.33
78.90	1378.5	-5.59	-2.49					1410.2	-5.060	-1.59		1870	0.25
79.00	1377.9	-5.60	-2.61					1409.5	-5.354	-2.48		1871	0.18
79.10	1377.3	-5.55	-2.36					1408.9	-5.200	-2.21		1872	0.18
79.20	1376.8	-5.10	-2.19					1408.3	-5.155	-1.89		1873	0.28
79.30	1376.2	-5.48	-2.57					1407.6	-5.311	-1.76		1874	0.52
79.40	1375.6	-5.36	-2.57					1407.0	-5.497	-2.01		1875	0.71
79.50	1375.0	-5.59	-2.78					1406.4	-5.265	-1.97		1876	0.63
79.60	1374.4	-5.61	-2.75					1405.8	-5.363	-1.98		1877	0.24

79.70	1373.8	-5.80	-2.84					1405.1	-5.641	-1.88		1878	-0.23
79.80	1373.2	-5.72	-2.92					1404.5	-5.460	-1.70		1879	-0.41
79.90	1372.6	-5.73	-2.85					1403.9	-5.563	-1.91		1880	-0.39
80.00	1372.0	-5.66	-2.76					1403.3	-5.464	-1.69		1881	-0.34
80.10	1371.4	-5.58	-2.64					1402.7	-5.694	-2.25		1882	-0.33
80.20	1370.8	-5.53	-2.56					1402.0	-5.599	-2.06		1883	-0.34
80.30	1370.2	-5.00	-2.28					1401.4	-5.271	-1.59		1884	-0.33
80.40	1369.7	-5.72	-2.69					1400.8	-4.538	-1.09		1885	-0.32
80.50	1369.1	-5.55	-2.69					1400.2	-5.056	-1.08		1886	-0.26
80.60	1368.5	-4.87	-2.51					1399.6	-5.260	-1.47		1887	-0.03
80.70	1367.9	-5.89	-2.89					1399.0	-4.563	-0.77		1888	0.29
80.80	1367.3	-5.91	-2.40					1398.3	-4.824	-1.40		1889	0.42
80.90	1366.7	-6.04	-2.86					1397.7	-5.288	-1.41		1890	0.28
81.00	1366.1	-5.60	-2.61					1397.1	-5.237	-1.45		1891	0.06
81.10	1365.6	-5.73	-2.78					1396.5	-5.323	-1.66		1892	-0.16
81.20	1365.0	-5.31	-2.42					1395.9	-4.552	-1.18		1893	-0.59
81.30	1364.4	-5.43	-2.98					1395.3	-5.389	-1.58		1894	-1.25
81.40	1363.8	-5.55	-2.74					1394.7	-5.707	-1.66		1895	-1.68
81.50	1363.2	-5.65	-2.55					1394.1	-5.576	-1.84		1896	-1.70
81.60	1362.7	-5.58	-2.70					1393.5	-5.348	-1.19		1897	-1.60
81.70	1362.1	-5.51	-2.85					1392.9	-5.499	-1.65		1898	-1.59
81.80	1361.5	-5.43	-2.61					1392.3	-5.407	-1.28		1899	-1.54
81.90	1360.9	-5.51	-2.75					1391.7	-5.436	-1.77		1900	-1.33
82.00	1360.3	-5.62	-2.82					1391.1	-5.179	-1.35		1901	-1.08
82.10	1359.8	-5.66	-3.07					1390.5	-5.436	-1.73		1902	-0.95
82.20	1359.2	-5.53	-2.40					1389.9	-5.185	-1.18		1903	-1.15
82.30	1358.6	-5.55	-2.80					1389.3	-5.460	-1.64		1904	-1.25
82.40	1358.0	-5.59	-2.80					1388.7	-5.419	-1.54		1905	-1.18
82.50	1357.5	-5.60	-2.72					1388.1	-5.523	-1.79		1906	-0.90
82.60	1356.9	-5.64	-2.89					1387.5	-5.515	-1.81			
82.70	1356.3	-5.51	-2.76					1386.9	-5.350	-1.94			
82.80	1355.8	-5.37	-2.62					1386.3	-5.087	-1.71			

82.90	1355.2	-5.27	-2.52					1385.7	-5.169	-1.69			
83.00	1354.6	-5.17	-2.42					1385.1	-5.139	-1.72			
83.10	1354.1	-5.48	-2.62					1384.5	-5.693	-2.46			
83.20	1353.5	-5.11	-1.75					1383.9	-5.207	-2.04			
83.30	1352.9	-5.57	-2.60					1383.3	-5.072	-2.35			
83.40	1352.4	-5.33	-2.37					1382.7	-5.325	-2.14			
83.50	1351.8	-5.46	-2.53					1382.1	-5.560	-2.38			
83.60	1351.2	-5.52	-2.59					1381.5	-5.794	-2.61			
83.70	1350.7	-5.59	-2.66					1380.9	-5.352	-2.14			
83.80	1350.1	-5.14	-2.08					1380.3	-5.473	-2.35			
83.90	1349.6	-5.03	-1.95					1379.7	-4.927	-2.18			
84.00	1349.0	-5.27	-2.23					1379.1	-5.135	-1.99			
84.10	1348.5	-4.98	-1.98					1378.5	-5.586	-2.49			
84.20	1347.9	-5.24	-1.90					1377.9	-5.595	-2.61			
84.30	1347.3	-5.24	-1.88					1377.3	-5.553	-2.36			
84.40	1346.8	-5.17	-1.79					1376.8	-5.100	-2.19			
84.50	1346.2	-4.99	-1.70					1376.2	-5.477	-2.57			
84.60	1345.7	-4.85	-1.00					1375.6	-5.358	-2.57			
84.70	1345.1	-5.36	-1.91					1375.0	-5.585	-2.78			
84.80	1344.6	-5.47	-2.28					1374.4	-5.608	-2.75			
84.90	1344.1	-5.39	-2.38					1373.8	-5.802	-2.84			
85.00	1343.5	-5.36	-2.24					1373.2	-5.722	-2.92			
85.10	1343.0	-5.16	-2.01					1372.6	-5.728	-2.85			
85.20	1342.4	-5.45	-2.34					1372.0	-5.657	-2.76			
85.30	1341.9	-5.40	-2.40					1371.4	-5.579	-2.64			
85.40	1341.4	-5.10	-2.39					1370.8	-5.532	-2.56			
85.50	1340.8	-5.50	-2.51					1370.2	-5.004	-2.28			
85.60	1340.3	-5.68	-2.71					1369.7	-5.722	-2.69			
85.70	1339.7	-5.35	-2.49					1369.1	-5.551	-2.69			
85.80	1339.2	-5.50	-2.59					1368.5	-4.866	-2.51			
85.90	1338.7	-5.25	-2.34					1367.9	-5.887	-2.89			
86.00	1338.1	-5.43	-2.40					1367.3	-5.911	-2.40			

86.10	1337.6	-5.33	-2.37					1366.7	-6.036	-2.86			
86.20	1337.1	-5.21	-1.88					1366.1	-5.596	-2.61			
86.30	1336.6	-5.40	-2.27					1365.6	-5.730	-2.78			
86.40	1336.0	-5.26	-1.87					1365.0	-5.306	-2.42			
86.50	1335.5	-5.51	-1.88					1364.4	-5.430	-2.98			
86.60	1335.0	-5.70	-2.52					1363.8	-5.552	-2.74			
86.70	1334.4	-5.42	-1.98					1363.2	-5.649	-2.55			
86.80	1333.9	-5.48	-2.41					1362.7	-5.582	-2.70			
86.90	1333.4	-5.42	-1.59					1362.1	-5.510	-2.85			
87.00	1332.9	-5.59	-2.68					1361.5	-5.434	-2.61			
87.10	1332.3	-5.20	-2.40					1360.9	-5.507	-2.75			
87.20	1331.8	-5.53	-2.31					1360.3	-5.622	-2.82			
87.30	1331.3	-5.33	-1.91					1359.8	-5.661	-3.07			
87.40	1330.8	-5.28	-1.89					1359.2	-5.528	-2.40			
87.50	1330.3	-5.49	-1.86					1358.6	-5.548	-2.80			
87.60	1329.7	-5.29	-1.90					1358.0	-5.586	-2.80			
87.70	1329.2	-5.19	-1.81					1357.5	-5.596	-2.72			
87.80	1328.7	-5.22	-1.87					1356.9	-5.640	-2.89			
87.90	1328.2	-5.31	-1.91					1356.3	-5.507	-2.76			
88.00	1327.7	-5.02	-1.90					1355.8	-5.373	-2.62			
88.10	1327.1	-5.21	-1.94					1355.2	-5.269	-2.52			
88.20	1326.6	-4.89	-1.80					1354.6	-5.165	-2.42			
88.30	1326.1	-5.05	-1.75					1354.1	-5.478	-2.62			
88.40	1325.6	-5.16	-1.81					1353.5	-5.110	-1.75			
88.50	1325.1	-5.24	-1.97					1352.9	-5.567	-2.60			
88.60	1324.6	-5.41	-2.09					1352.4	-5.334	-2.37			
88.70	1324.0	-5.06	-1.94					1351.8	-5.455	-2.53			
88.80	1323.5	-5.45	-2.11					1351.2	-5.521	-2.59			
88.90	1323.0	-5.47	-2.09					1350.7	-5.587	-2.66			
89.00	1322.5	-5.56	-2.16					1350.1	-5.140	-2.08			
89.10	1322.0	-5.43	-2.65					1349.6	-5.027	-1.95			
89.20	1321.5	-5.51	-2.36					1349.0	-5.269	-2.23			

89.30	1321.0	-5.42	-2.69					1348.5	-4.983	-1.98			
89.40	1320.5	-5.46	-2.52					1347.9	-5.242	-1.90			
89.50	1319.9	-5.06	-2.21					1347.3	-5.236	-1.88			
89.60	1319.4	-5.34	-2.59					1346.8	-5.168	-1.79			
89.70	1318.9	-4.75	-0.94					1346.2	-4.993	-1.70			
89.80	1318.4	-5.06	-1.25					1345.7	-4.852	-1.00			
89.90	1317.9	-5.37	-1.56					1345.1	-5.361	-1.91			
90.00	1317.4	-5.67	-1.86					1344.6	-5.466	-2.28			
90.10	1316.9	-5.05	-1.25					1344.1	-5.391	-2.38			
90.20	1316.4	-5.02	-0.63					1343.5	-5.361	-2.24			
90.30	1315.9	-4.98	-1.03					1343.0	-5.160	-2.01			
90.40	1315.3	-5.26	-1.20					1342.4	-5.451	-2.34			
90.50	1314.8	-5.33	-1.27					1341.9	-5.404	-2.40			
90.60	1314.3	-5.39	-1.33					1341.4	-5.101	-2.39			
90.70	1313.8	-5.17	-1.36					1340.8	-5.498	-2.51			
90.80	1313.3	-5.17	-1.10					1340.3	-5.681	-2.71			
90.90	1312.8	-5.16	-1.64					1339.7	-5.347	-2.49			
91.00	1312.3	-4.82	-1.72					1339.2	-5.497	-2.59			
91.10	1311.8	-4.67	-1.47					1338.7	-5.247	-2.34			
91.20	1311.3	-4.86	-1.48					1338.1	-5.428	-2.40			
91.30	1310.8	-5.11	-1.41					1337.6	-5.330	-2.37			
91.40	1310.3	-4.88	-1.32					1337.1	-5.209	-1.88			
91.50	1309.7	-5.09	-1.40					1336.6	-5.395	-2.27			
91.60	1309.2	-5.19	-1.41					1336.0	-5.259	-1.87			
91.70	1308.7	-5.08	-1.33					1335.5	-5.506	-1.88			
91.80	1308.2	-5.08	-1.40					1335.0	-5.695	-2.52			
91.90	1307.7	-4.99	-1.34					1334.4	-5.423	-1.98			
92.00	1307.2	-4.90	-1.18					1333.9	-5.475	-2.41			
92.10	1306.7	-4.74	-1.12					1333.4	-5.415	-1.59			
92.20	1306.2	-4.97	-1.24					1332.9	-5.588	-2.68			
92.30	1305.7	-4.81	-1.40					1332.3	-5.199	-2.40			
92.40	1305.2	-4.92	-1.45					1331.8	-5.527	-2.31			

92.50	1304.7	-5.07	-1.39					1331.3	-5.333	-1.91			
92.60	1304.1	-4.92	-1.26					1330.8	-5.275	-1.89			
92.70	1303.6	-4.86	-1.46					1330.3	-5.490	-1.86			
92.80	1303.1	-4.93	-1.25					1329.7	-5.289	-1.90			
92.90	1302.6	-4.89	-1.41					1329.2	-5.186	-1.81			
93.00	1302.1	-4.74	-1.10					1328.7	-5.219	-1.87			
93.10	1301.6	-4.79	-1.11					1328.2	-5.311	-1.91			
93.20	1301.1	-5.09	-1.49					1327.7	-5.020	-1.90			
93.30	1300.6	-5.05	-1.48					1327.1	-5.213	-1.94			
93.40	1300.1	-5.05	-1.63					1326.6	-4.894	-1.80			
93.50	1299.5	-5.04	-2.04					1326.1	-5.052	-1.75			
93.60	1299.0	-4.98	-2.28					1325.6	-5.161	-1.81			
93.70	1298.5	-5.16	-2.54					1325.1	-5.237	-1.97			
93.80	1298.0	-5.06	-2.30					1324.6	-5.408	-2.09			
93.90	1297.5	-5.32	-2.64					1324.0	-5.060	-1.94			
94.00	1297.0	-5.25	-2.75					1323.5	-5.450	-2.11			
94.10	1296.5	-5.34	-2.59					1323.0	-5.469	-2.09			
94.20	1295.9	-5.37	-2.86					1322.5	-5.555	-2.16			
94.30	1295.4	-4.89	-2.31					1322.0	-5.432	-2.65			
94.40	1294.9	-4.91	-2.15					1321.5	-5.506	-2.36			
94.50	1294.4	-4.88	-2.24					1321.0	-5.419	-2.69			
94.60	1293.9	-5.09	-2.11					1320.5	-5.464	-2.52			
94.70	1293.3	-5.12	-2.22					1319.9	-5.063	-2.21			
94.80	1292.8	-5.13	-2.26					1319.4	-5.344	-2.59			
94.90	1292.3	-5.25	-2.67					1318.9	-4.753	-0.94			
95.00	1291.8	-5.15	-2.27					1318.4	-5.059	-1.25			
95.10	1291.3	-5.13	-2.54					1317.9	-5.365	-1.56			
95.20	1290.7	-5.19	-2.39					1317.4	-5.671	-1.86			
95.30	1290.2	-4.96	-2.17					1316.9	-5.055	-1.25			
95.40	1289.7	-4.73	-1.94					1316.4	-5.015	-0.63			
95.50	1289.2	-4.94	-2.24					1315.9	-4.984	-1.03			
95.60	1288.6	-5.02	-2.20					1315.3	-5.259	-1.20			

95.70	1288.1	-5.13	-2.51					1314.8	-5.325	-1.27			
95.80	1287.6	-5.27	-2.35					1314.3	-5.391	-1.33			
95.90	1287.1	-5.11	-2.92					1313.8	-5.172	-1.36			
96.00	1286.5	-5.36	-2.83					1313.3	-5.165	-1.10			
96.10	1286.0	-5.41	-2.98					1312.8	-5.161	-1.64			
96.20	1285.5	-5.70	-3.32					1312.3	-4.823	-1.72			
96.30	1285.0	-5.36	-2.97					1311.8	-4.674	-1.47			
96.40	1284.4	-5.01	-2.63					1311.3	-4.864	-1.48			
96.50	1283.9	-4.54	-2.02					1310.8	-5.112	-1.41			
96.60	1283.4	-4.53	-2.10					1310.3	-4.883	-1.32			
96.70	1282.8	-4.99	-2.19					1309.7	-5.089	-1.40			
96.80	1282.3	-4.90	-2.03					1309.2	-5.187	-1.41			
96.90	1281.7	-4.90	-2.16					1308.7	-5.079	-1.33			
97.00	1281.2	-5.19	-2.55					1308.2	-5.077	-1.40			
97.10	1280.7	-5.26	-2.61					1307.7	-4.992	-1.34			
97.20	1280.1	-5.32	-2.67					1307.2	-4.900	-1.18			
97.30	1279.6	-4.99	-2.63					1306.7	-4.736	-1.12			
97.40	1279.1	-5.09	-2.47					1306.2	-4.968	-1.24			
97.50	1278.5	-5.03	-2.47					1305.7	-4.810	-1.40			
97.60	1278.0	-5.14	-2.74					1305.2	-4.922	-1.45			
97.70	1277.4	-5.19	-2.70					1304.7	-5.070	-1.39			
97.80	1276.9	-5.11	-2.61					1304.1	-4.918	-1.26			
97.90	1276.3	-5.20	-2.78					1303.6	-4.860	-1.46			
98.00	1275.8	-5.13	-2.54					1303.1	-4.931	-1.25			
98.10	1275.2	-5.05	-2.15					1302.6	-4.890	-1.41			
98.20	1274.7	-4.99	-2.14					1302.1	-4.739	-1.10			
98.30	1274.1	-4.91	-2.24					1301.6	-4.789	-1.11			
98.40	1273.6	-5.32	-2.85					1301.1	-5.088	-1.49			
98.50	1273.0	-5.25	-2.72					1300.6	-5.050	-1.48			
98.60	1272.5	-5.50	-3.20					1300.1	-5.051	-1.63			
98.70	1271.9	-5.43	-3.02					1299.5	-5.036	-2.04			
98.80	1271.4	-4.97	-2.59					1299.0	-4.982	-2.28			

98.90	1270.8	-4.99	-2.51					1298.5	-5.163	-2.54			
99.00	1270.2	-4.88	-2.15					1298.0	-5.061	-2.30			
99.10	1269.7	-4.75	-2.38					1297.5	-5.317	-2.64			
99.20	1269.1	-4.94	-2.56					1297.0	-5.250	-2.75			
99.30	1268.5	-5.12	-2.75					1296.5	-5.340	-2.59			
99.40	1268.0	-5.21	-2.69					1295.9	-5.367	-2.86			
99.50	1267.4	-5.21	-2.70					1295.4	-4.892	-2.31			
99.60	1266.8	-5.16	-2.55					1294.9	-4.905	-2.15			
99.70	1266.2	-5.37	-3.09					1294.4	-4.875	-2.24			
99.80	1265.6	-5.46	-3.12					1293.9	-5.087	-2.11			
99.90	1265.1	-5.41	-2.85					1293.3	-5.121	-2.22			
100.00	1264.5	-5.24	-3.04					1292.8	-5.132	-2.26			
100.10	1263.9	-5.59	-3.09					1292.3	-5.252	-2.67			
100.20	1263.3	-5.61	-3.23					1291.8	-5.146	-2.27			
100.30	1262.7	-5.89	-3.26					1291.3	-5.129	-2.54			
100.40	1262.1	-5.67	-3.13					1290.7	-5.187	-2.39			
100.50	1261.5	-5.33	-2.72					1290.2	-4.960	-2.17			
100.60	1260.9	-5.40	-3.16					1289.7	-4.732	-1.94			
100.70	1260.3	-5.35	-3.01					1289.2	-4.936	-2.24			
100.80	1259.7	-5.41	-2.77					1288.6	-5.021	-2.20			
100.90	1259.1	-5.47	-3.04					1288.1	-5.127	-2.51			
101.00	1258.5	-5.42	-3.07					1287.6	-5.268	-2.35			
101.10	1257.9	-5.80	-3.42					1287.1	-5.112	-2.92			
101.20	1257.3	-5.58	-3.19					1286.5	-5.359	-2.83			
101.30	1256.7	-5.35	-2.96					1286.0	-5.409	-2.98			
101.40	1256.1	-5.41	-3.06					1285.5	-5.701	-3.32			
101.50	1255.5	-5.33	-2.98					1285.0	-5.356	-2.97			
101.60	1254.9	-5.25	-2.91					1284.4	-5.011	-2.63			
101.70	1254.3	-5.44	-2.92					1283.9	-4.544	-2.02			
101.80	1253.6	-5.53	-3.01					1283.4	-4.526	-2.10			
101.90	1253.0	-5.45	-3.13					1282.8	-4.988	-2.19			
102.00	1252.4	-5.58	-2.94					1282.3	-4.902	-2.03			

102.10	1251.8	-5.56	-3.19					1281.7	-4.900	-2.16			
102.20	1251.2	-5.36	-2.80					1281.2	-5.193	-2.55			
102.30	1250.6	-5.33	-2.65					1280.7	-5.257	-2.61			
102.40	1249.9	-5.56	-2.81					1280.1	-5.321	-2.67			
102.50	1249.3	-5.27	-2.45					1279.6	-4.992	-2.63			
102.60	1248.7	-5.45	-2.68					1279.1	-5.093	-2.47			
102.70	1248.1	-5.54	-3.22					1278.5	-5.033	-2.47			
102.80	1247.4	-5.89	-3.42					1278.0	-5.138	-2.74			
102.90	1246.8	-5.83	-3.32					1277.4	-5.191	-2.70			
103.00	1246.2	-5.82	-3.47					1276.9	-5.111	-2.61			
103.10	1245.6	-5.95	-3.44					1276.3	-5.196	-2.78			
103.20	1244.9	-5.58	-3.18					1275.8	-5.127	-2.54			
103.30	1244.3	-5.69	-3.26					1275.2	-5.046	-2.15			
103.40	1243.7	-5.69	-3.22					1274.7	-4.991	-2.14			
103.50	1243.0	-5.75	-3.26					1274.1	-4.912	-2.24			
103.60	1242.4	-5.63	-3.29					1273.6	-5.317	-2.85			
103.70	1241.8	-5.47	-3.02					1273.0	-5.247	-2.72			
103.80	1241.1	-5.56	-3.15					1272.5	-5.502	-3.20			
103.90	1240.5	-5.30	-3.13					1271.9	-5.425	-3.02			
104.00	1239.9	-5.41	-3.09					1271.4	-4.965	-2.59			
104.10	1239.2	-5.30	-2.78					1270.8	-4.985	-2.51			
104.20	1238.6	-5.19	-2.70					1270.2	-4.882	-2.15			
104.30	1237.9	-5.55	-2.64					1269.7	-4.754	-2.38			
104.40	1237.3	-5.48	-2.49					1269.1	-4.939	-2.56			
104.50	1236.7	-5.45	-2.74					1268.5	-5.124	-2.75			
104.60	1236.0	-5.12	-2.56					1268.0	-5.208	-2.69			
104.70	1235.4	-5.24	-2.77					1267.4	-5.210	-2.70			
104.80	1234.8	-5.63	-3.00					1266.8	-5.163	-2.55			
104.90	1234.1	-5.57	-2.76					1266.2	-5.372	-3.09			
105.00	1233.5	-5.65	-3.20					1265.6	-5.459	-3.12			
105.10	1232.8	-5.46	-2.84					1265.1	-5.410	-2.85			
105.20	1232.2	-5.79	-2.89					1264.5	-5.244	-3.04			

105.30	1231.6	-5.66	-3.24					1263.9	-5.585	-3.09			
105.40	1230.9	-5.34	-2.17					1263.3	-5.609	-3.23			
105.50	1230.3	-5.36	-2.02					1262.7	-5.893	-3.26			
105.60	1229.6	-5.27	-2.25					1262.1	-5.674	-3.13			
105.70	1229.0	-5.28	-2.36					1261.5	-5.329	-2.72			
105.80	1228.3	-5.02	-1.68					1260.9	-5.399	-3.16			
105.90	1227.7	-5.13	-1.74					1260.3	-5.346	-3.01			
106.00	1227.1	-5.04	-1.73					1259.7	-5.408	-2.77			
106.10	1226.4	-4.95	-1.58					1259.1	-5.470	-3.04			
106.20	1225.8	-5.06	-1.59					1258.5	-5.416	-3.07			
106.30	1225.1	-5.22	-1.88					1257.9	-5.804	-3.42			
106.40	1224.5	-5.10	-1.75					1257.3	-5.577	-3.19			
106.50	1223.9	-4.97	-1.62					1256.7	-5.349	-2.96			
106.60	1223.2	-5.15	-1.65					1256.1	-5.407	-3.06			
106.70	1222.6	-5.00	-1.33					1255.5	-5.332	-2.98			
106.80	1221.9	-4.97	-1.40					1254.9	-5.249	-2.91			
106.90	1221.3	-5.28	-1.58					1254.3	-5.440	-2.92			
107.00	1220.7	-4.98	-1.47					1253.6	-5.532	-3.01			
107.10	1220.0	-5.30	-1.92					1253.0	-5.452	-3.13			
107.20	1219.4	-5.34	-1.86					1252.4	-5.580	-2.94			
107.30	1218.7	-5.40	-1.92					1251.8	-5.563	-3.19			
107.40	1218.1	-5.37	-1.97					1251.2	-5.356	-2.80			
107.50	1217.5	-5.16	-1.95					1250.6	-5.326	-2.65			
107.60	1216.8	-5.38	-2.65					1249.9	-5.559	-2.81			
107.70	1216.2	-5.35	-2.66					1249.3	-5.274	-2.45			
107.80	1215.6	-5.18	-2.99					1248.7	-5.452	-2.68			
107.90	1214.9	-5.20	-3.08					1248.1	-5.536	-3.22			
108.00	1214.3	-5.61	-3.46					1247.4	-5.894	-3.42			
108.10	1213.7	-5.57	-3.39					1246.8	-5.827	-3.32			
108.20	1213.0	-5.62	-3.44					1246.2	-5.818	-3.47			
108.30	1212.4	-5.44	-3.01					1245.6	-5.947	-3.44			
108.40	1211.8	-5.18	-2.66					1244.9	-5.578	-3.18			

108.50	1211.1	-5.07	-2.56					1244.3	-5.685	-3.26			
108.60	1210.5	-5.39	-2.81					1243.7	-5.691	-3.22			
108.70	1209.9	-5.18	-2.78					1243.0	-5.751	-3.26			
108.80	1209.2	-4.83	-2.22					1242.4	-5.626	-3.29			
108.90	1208.6	-5.18	-2.26					1241.8	-5.465	-3.02			
109.00	1208.0	-5.20	-2.23					1241.1	-5.555	-3.15			
109.10	1207.4	-5.13	-2.25					1240.5	-5.301	-3.13			
109.20	1206.7	-5.09	-2.05					1239.9	-5.407	-3.09			
109.30	1206.1	-5.14	-1.99					1239.2	-5.297	-2.78			
109.40	1205.5	-5.23	-2.27					1238.6	-5.188	-2.70			
109.50	1204.9	-5.15	-2.27					1237.9	-5.545	-2.64			
109.60	1204.3	-5.44	-2.65					1237.3	-5.476	-2.49			
109.70	1203.6	-5.28	-2.53					1236.7	-5.451	-2.74			
109.80	1203.0	-5.59	-2.78					1236.0	-5.116	-2.56			
109.90	1202.4	-5.12	-2.29					1235.4	-5.239	-2.77			
110.00	1201.8	-5.78	-2.72					1234.8	-5.629	-3.00			
110.10	1201.2	-5.70	-2.55					1234.1	-5.572	-2.76			
110.20	1200.6	-5.44	-2.43					1233.5	-5.653	-3.20			
110.30	1199.9	-5.43	-2.38					1232.8	-5.464	-2.84			
110.40	1199.3	-5.47	-2.28					1232.2	-5.788	-2.89			
110.50	1198.7	-5.29	-2.03					1231.6	-5.658	-3.24			
110.60	1198.1	-5.32	-2.26					1230.9	-5.343	-2.17			
110.70	1197.5	-5.47	-2.44					1230.3	-5.357	-2.02			
110.80	1196.8	-5.45	-2.68					1229.6	-5.268	-2.25			
110.90	1196.2	-5.49	-2.67					1229.0	-5.280	-2.36			
111.00	1195.6	-5.50	-2.80					1228.3	-5.016	-1.68			
111.10	1195.0	-5.70	-3.02					1227.7	-5.130	-1.74			
111.20	1194.3	-5.59	-3.03					1227.1	-5.040	-1.73			
111.30	1193.7	-5.56	-2.97					1226.4	-4.954	-1.58			
111.40	1193.1	-5.37	-2.85					1225.8	-5.057	-1.59			
111.50	1192.5	-5.95	-2.99					1225.1	-5.224	-1.88			
111.60	1191.8	-5.39	-2.54					1224.5	-5.097	-1.75			

111.70	1191.2	-5.24	-2.55					1223.9	-4.970	-1.62			
111.80	1190.6	-5.54	-2.74					1223.2	-5.153	-1.65			
111.90	1189.9	-5.65	-3.06					1222.6	-4.999	-1.33			
112.00	1189.3	-5.79	-3.07					1221.9	-4.973	-1.40			
112.10	1188.7	-5.63	-2.84					1221.3	-5.279	-1.58			
112.20	1188.0	-5.46	-2.45					1220.7	-4.978	-1.47			
112.30	1187.4	-5.65	-2.95					1220.0	-5.295	-1.92			
112.40	1186.7	-5.36	-2.22					1219.4	-5.337	-1.86			
112.50	1186.1	-5.29	-2.02					1218.7	-5.396	-1.92			
112.60	1185.5	-5.26	-2.16					1218.1	-5.370	-1.97			
112.70	1184.8	-5.20	-2.08					1217.5	-5.161	-1.95			
112.80	1184.2	-5.25	-2.18					1216.8	-5.378	-2.65			
112.90	1183.6	-4.96	-1.94					1216.2	-5.350	-2.66			
113.00	1182.9	-5.16	-1.96					1215.6	-5.176	-2.99			
113.10	1182.3	-5.21	-2.01					1214.9	-5.196	-3.08			
113.20	1181.6	-5.29	-2.06					1214.3	-5.607	-3.46			
113.30	1181.0	-5.10	-2.00					1213.7	-5.570	-3.39			
113.40	1180.4	-5.24	-2.09					1213.0	-5.624	-3.44			
113.50	1179.7	-5.37	-2.17					1212.4	-5.443	-3.01			
113.60	1179.1	-5.59	-2.51					1211.8	-5.177	-2.66			
113.70	1178.4	-5.53	-2.54					1211.1	-5.074	-2.56			
113.80	1177.8	-5.30	-2.36					1210.5	-5.392	-2.81			
113.90	1177.1	-5.29	-2.34					1209.9	-5.182	-2.78			
114.00	1176.5	-5.14	-2.19					1209.2	-4.829	-2.22			
114.10	1175.9	-5.02	-1.99					1208.6	-5.182	-2.26			
114.20	1175.2	-5.29	-2.26					1208.0	-5.198	-2.23			
114.30	1174.6	-5.30	-2.51					1207.4	-5.126	-2.25			
114.40	1173.9	-5.26	-2.50					1206.7	-5.085	-2.05			
114.50	1173.3	-5.20	-2.25					1206.1	-5.144	-1.99			
114.60	1172.6	-5.43	-2.50					1205.5	-5.230	-2.27			
114.70	1172.0	-5.45	-2.61					1204.9	-5.149	-2.27			
114.80	1171.3	-5.53	-2.70					1204.3	-5.443	-2.65			

114.90	1170.7	-5.46	-2.91					1203.6	-5.283	-2.53			
115.00	1170.1	-5.57	-3.21					1203.0	-5.589	-2.78			
115.10	1169.4	-5.54	-3.05					1202.4	-5.124	-2.29			
115.20	1168.8	-5.38	-2.53					1201.8	-5.776	-2.72			
115.30	1168.1	-5.35	-2.61					1201.2	-5.700	-2.55			
115.40	1167.5	-5.42	-2.71					1200.6	-5.439	-2.43			
115.50	1166.8	-5.20	-2.60					1199.9	-5.429	-2.38			
115.60	1166.2	-5.38	-2.55					1199.3	-5.471	-2.28			
115.70	1165.5	-5.58	-2.76					1198.7	-5.287	-2.03			
115.80	1164.9	-5.45	-2.93					1198.1	-5.319	-2.26			
115.90	1164.3	-5.44	-2.82					1197.5	-5.468	-2.44			
116.00	1163.6	-5.46	-2.64					1196.8	-5.445	-2.68			
116.10	1163.0	-5.49	-2.54					1196.2	-5.485	-2.67			
116.20	1162.3	-5.43	-2.50					1195.6	-5.498	-2.80			
116.30	1161.7	-5.33	-2.30					1195.0	-5.702	-3.02			
116.40	1161.1	-5.38	-2.24					1194.3	-5.588	-3.03			
116.50	1160.4	-5.65	-2.47					1193.7	-5.563	-2.97			
116.60	1159.8	-5.45	-2.55					1193.1	-5.369	-2.85			
116.70	1159.1	-5.43	-2.40					1192.5	-5.949	-2.99			
116.80	1158.5	-5.35	-2.39					1191.8	-5.386	-2.54			
116.90	1157.9	-5.27	-2.29					1191.2	-5.236	-2.55			
117.00	1157.2	-5.29	-2.23					1190.6	-5.544	-2.74			
117.10	1156.6	-5.24	-2.29					1189.9	-5.649	-3.06			
117.20	1155.9	-5.32	-2.07					1189.3	-5.788	-3.07			
117.30	1155.3	-5.35	-1.99					1188.7	-5.629	-2.84			
117.40	1154.7	-5.28	-2.02					1188.0	-5.462	-2.45			
117.50	1154.0	-5.29	-1.95					1187.4	-5.646	-2.95			
117.60	1153.4	-5.24	-2.02					1186.7	-5.358	-2.22			
117.70	1152.8	-5.27	-2.00					1186.1	-5.291	-2.02			
117.80	1152.1	-5.27	-2.07					1185.5	-5.263	-2.16			
117.90	1151.5	-5.17	-2.09					1184.8	-5.196	-2.08			
118.00	1150.9	-5.25	-2.04					1184.2	-5.247	-2.18			

118.10	1150.3	-5.20	-1.93					1183.6	-4.962	-1.94			
118.20	1149.6	-5.50	-2.33					1182.9	-5.161	-1.96			
118.30	1149.0	-5.41	-2.36					1182.3	-5.212	-2.01			
118.40	1148.4	-5.49	-2.57					1181.6	-5.287	-2.06			
118.50	1147.7	-5.42	-2.73					1181.0	-5.100	-2.00			
118.60	1147.1	-5.53	-2.77					1180.4	-5.236	-2.09			
118.70	1146.5	-5.39	-2.71					1179.7	-5.371	-2.17			
118.80	1145.9	-5.47	-2.57					1179.1	-5.588	-2.51			
118.90	1145.3	-5.63	-2.73					1178.4	-5.525	-2.54			
119.00	1144.6	-5.50	-2.72					1177.8	-5.299	-2.36			
119.10	1144.0	-5.40	-2.62					1177.1	-5.289	-2.34			
119.20	1143.4	-5.44	-2.62					1176.5	-5.143	-2.19			
119.30	1142.8	-5.43	-2.60					1175.9	-5.020	-1.99			
119.40	1142.2	-5.64	-2.50					1175.2	-5.294	-2.26			
119.50	1141.6	-5.57	-2.73					1174.6	-5.302	-2.51			
119.60	1140.9	-5.51	-2.59					1173.9	-5.257	-2.50			
119.70	1140.3	-5.54	-2.62					1173.3	-5.197	-2.25			
119.80	1139.7	-5.57	-2.66					1172.6	-5.430	-2.50			
119.90	1139.1	-5.82	-2.86					1172.0	-5.446	-2.61			
120.00	1138.5	-5.61	-2.76					1171.3	-5.529	-2.70			
120.10	1137.9	-5.59	-2.60					1170.7	-5.460	-2.91			
120.20	1137.3	-5.53	-2.74					1170.1	-5.570	-3.21			
120.30	1136.7	-5.26	-2.50					1169.4	-5.537	-3.05			
120.40	1136.1	-5.66	-2.72					1168.8	-5.383	-2.53			
120.50	1135.5	-5.69	-2.88					1168.1	-5.348	-2.61			
120.60	1134.9	-5.58	-2.73					1167.5	-5.424	-2.71			
120.70	1134.3	-5.54	-2.61					1166.8	-5.196	-2.60			
120.80	1133.7	-5.54	-2.49					1166.2	-5.378	-2.55			
120.90	1133.1	-5.46	-2.49					1165.5	-5.578	-2.76			
121.00	1132.5	-5.55	-2.85					1164.9	-5.449	-2.93			
121.10	1131.9	-5.52	-2.33					1164.3	-5.441	-2.82			
121.20	1131.3	-5.47	-2.65					1163.6	-5.463	-2.64			

121.30	1130.8	-5.56	-2.31					1163.0	-5.490	-2.54			
121.40	1130.2	-5.56	-2.50					1162.3	-5.432	-2.50			
121.50	1129.6	-5.58	-2.52					1161.7	-5.330	-2.30			
121.60	1129.0	-5.61	-2.54					1161.1	-5.376	-2.24			
121.70	1128.4	-5.47	-2.42					1160.4	-5.653	-2.47			
121.80	1127.8	-5.45	-2.41					1159.8	-5.447	-2.55			
121.90	1127.2	-5.30	-2.25					1159.1	-5.425	-2.40			
122.00	1126.6	-5.34	-2.39					1158.5	-5.352	-2.39			
122.10	1126.0	-5.20	-2.29					1157.9	-5.273	-2.29			
122.20	1125.4	-5.18	-2.42					1157.2	-5.293	-2.23			
122.30	1124.8	-5.12	-2.38					1156.6	-5.237	-2.29			
122.40	1124.1	-5.31	-2.25					1155.9	-5.321	-2.07			
122.50	1123.5	-4.81	-1.81					1155.3	-5.352	-1.99			
122.60	1122.9	-5.49	-1.87					1154.7	-5.282	-2.02			
122.70	1122.2	-5.03	-1.82					1154.0	-5.288	-1.95			
122.80	1121.6	-5.53	-2.32					1153.4	-5.240	-2.02			
122.90	1120.9	-5.57	-2.02					1152.8	-5.268	-2.00			
123.00	1120.3	-5.65	-2.05					1152.1	-5.268	-2.07			
123.10	1119.7	-5.54	-1.99					1151.5	-5.165	-2.09			
123.20	1119.0	-5.72	-1.95					1150.9	-5.249	-2.04			
123.30	1118.4	-5.73	-1.95					1150.3	-5.202	-1.93			
123.40	1117.7	-5.18	-1.54					1149.6	-5.498	-2.33			
123.50	1117.0	-5.65	-1.91					1149.0	-5.406	-2.36			
123.60	1116.4	-5.65	-1.92					1148.4	-5.489	-2.57			
123.70	1115.7	-5.81	-2.32					1147.7	-5.417	-2.73			
123.80	1115.1	-5.69	-2.23					1147.1	-5.531	-2.77			
123.90	1114.4	-5.66	-2.08					1146.5	-5.387	-2.71			
124.00	1113.8	-5.74	-2.01					1145.9	-5.469	-2.57			
124.10	1113.1	-5.80	-2.00					1145.3	-5.632	-2.73			
124.20	1112.5	-5.73	-1.86					1144.6	-5.499	-2.72			
124.30	1111.8	-5.78	-1.96					1144.0	-5.403	-2.62			
124.40	1111.2	-5.80	-2.42					1143.4	-5.442	-2.62			

124.50	1110.5	-5.55	-2.34					1142.8	-5.429	-2.60			
124.60	1109.8	-5.57	-2.19					1142.2	-5.640	-2.50			
124.70	1109.1	-5.62	-2.32					1141.6	-5.574	-2.73			
124.80	1108.4	-5.45	-2.20					1140.9	-5.512	-2.59			
124.90	1107.7	-5.52	-1.98					1140.3	-5.544	-2.62			
125.00	1106.9	-5.63	-2.15					1139.7	-5.569	-2.66			
125.10	1106.2	-5.97	-2.49					1139.1	-5.817	-2.86			
125.20	1105.5	-6.31	-2.82					1138.5	-5.607	-2.76			
125.30	1104.7	-5.80	-3.31					1137.9	-5.594	-2.60			
125.40	1103.9	-5.64	-2.92					1137.3	-5.525	-2.74			
125.50	1103.2	-5.68	-3.03					1136.7	-5.256	-2.50			
125.60	1102.4	-5.60	-2.78					1136.1	-5.659	-2.72			
125.70	1101.6	-5.75	-2.69					1135.5	-5.686	-2.88			
125.80	1100.8	-5.12	-2.64					1134.9	-5.577	-2.73			
125.90	1100.1	-5.90	-3.39					1134.3	-5.544	-2.61			
126.00	1099.3	-5.85	-3.49					1133.7	-5.542	-2.49			
126.10	1098.5	-5.68	-3.47					1133.1	-5.458	-2.49			
126.20	1097.7	-5.84	-3.67					1132.5	-5.553	-2.85			
126.30	1096.9	-5.76	-3.62					1131.9	-5.516	-2.33			
126.40	1096.1	-5.72	-3.17					1131.3	-5.471	-2.65			
126.50	1095.3	-5.69	-3.15					1130.8	-5.558	-2.31			
126.60	1094.5	-5.72	-3.02					1130.2	-5.558	-2.50			
126.70	1093.7	-5.58	-2.85					1129.6	-5.582	-2.52			
126.80	1092.9	-5.51	-2.68					1129.0	-5.606	-2.54			
126.90	1092.2	-5.70	-2.62					1128.4	-5.466	-2.42			
127.00	1091.4	-5.58	-1.87					1127.8	-5.452	-2.41			
127.10	1090.6	-5.89	-2.70					1127.2	-5.299	-2.25			
127.20	1089.8	-6.00	-2.83					1126.6	-5.337	-2.39			
127.30	1089.1	-6.12	-2.95					1126.0	-5.204	-2.29			
127.40	1088.3	-6.25	-3.08					1125.4	-5.181	-2.42			
127.50	1087.6	-5.41	-2.39					1124.8	-5.121	-2.38			
127.60	1086.9	-5.74	-2.47					1124.1	-5.314	-2.25			

127.70	1086.1	-5.61	-2.33					1123.5	-4.812	-1.81			
127.80	1085.4	-6.00	-2.71					1122.9	-5.485	-1.87			
127.90	1084.7	-5.96	-3.71					1122.2	-5.028	-1.82			
128.00	1084.0	-5.69	-3.32					1121.6	-5.530	-2.32			
128.10	1083.4	-5.72	-3.46					1120.9	-5.569	-2.02			
128.20	1082.7	-6.00	-3.70					1120.3	-5.648	-2.05			
128.30	1082.1	-5.86	-2.77					1119.7	-5.538	-1.99			
128.40	1081.4	-5.84	-3.17					1119.0	-5.724	-1.95			
128.50	1080.8	-5.77	-3.30					1118.4	-5.729	-1.95			
								1117.7	-5.177	-1.54			
								1117.0	-5.651	-1.91			
								1116.4	-5.652	-1.92			
								1115.7	-5.812	-2.32			
								1115.1	-5.686	-2.23			
								1114.4	-5.663	-2.08			
								1113.8	-5.741	-2.01			
								1113.1	-5.796	-2.00			
								1112.5	-5.727	-1.86			
								1111.8	-5.784	-1.96			
								1111.2	-5.800	-2.42			
								1110.5	-5.546	-2.34			
								1109.8	-5.574	-2.19			
								1109.1	-5.622	-2.32			
								1108.4	-5.452	-2.20			
								1107.7	-5.523	-1.98			
								1106.9	-5.631	-2.15			
								1106.2	-5.970	-2.49			
								1105.5	-6.308	-2.82			
								1104.7	-5.804	-3.31			
								1103.9	-5.637	-2.92			
								1103.2	-5.683	-3.03			
								1102.4	-5.600	-2.78			

								1101.6	-5.748	-2.69			
								1100.8	-5.118	-2.64			
								1100.1	-5.896	-3.39			
								1099.3	-5.848	-3.49			
								1098.5	-5.681	-3.47			
								1097.7	-5.837	-3.67			
								1096.9	-5.764	-3.62			
								1096.1	-5.718	-3.17			
								1095.3	-5.692	-3.15			
								1094.5	-5.721	-3.02			
								1093.7	-5.580	-2.85			
								1092.9	-5.509	-2.68			
								1092.2	-5.698	-2.62			
								1091.4	-5.581	-1.87			
								1090.6	-5.889	-2.70			
								1089.8	-5.996	-2.83			
								1089.1	-6.124	-2.95			
								1088.3	-6.251	-3.08			
								1087.6	-5.410	-2.39			
								1086.9	-5.744	-2.47			
								1086.1	-5.610	-2.33			
								1085.4	-6.003	-2.71			
								1084.7	-5.956	-3.71			
								1084.0	-5.692	-3.32			
								1083.4	-5.721	-3.46			
								1082.7	-5.998	-3.70			
								1082.1	-5.855	-2.77			
								1081.4	-5.840	-3.17			
								1080.8	-5.770	-3.30			

Supplementary table S2

^{230}Th dating results

Sample Number	^{238}U (ppb)		^{232}Th (ppt)		^{230}Th / (atomic		δ^{234}U* (measured		^{230}Th / ^{238}U (activity)		^{230}Th Age (uncorrected		^{230}Th Age (corrected		$\delta^{234}U_{initial}$** (corrected		^{230}Th Age (yr BP) (corrected) (1σ)		Depth (mm)
Sample: ML-5																			
ML.5_1a	1293	±1.7	242	±5	114	±4	-146	±1.2	0.001	±0.00004	166	±5	**159**	**±7**	-146	±1.2	**97**	**±3**	0.00
ML.5.2	1293	±1.7	242	±5	121	±4	-146	±1.2	0.001	±0.00004	174	±9	**168**	**±10**	-146	±1	**106**	**±5**	2.00
ML.5_1c	640	±0.5	102	±2	205	±6	-146	±1.0	0.002	±0.00004	255	±6	**249**	**±7**	-146	±1.0	**187**	**±3**	15.30
ML.5_3a	608	±0.7	62	±3	496	±9	-152	±1.1	0.003	±0.00023	396	±6	**393**	**±6**	-152	±1.1	**324**	**±3**	38.50
ML.5_5a	1894	±6.1	259	±5	525	±12	-150	±1.9	0.004	±0.00005	501	±8	**496**	**±8**	-150	±1.9	**427**	**±4**	55.10
ML.5_2b	671	±1.4	36	±1	1318	±32	-145	±1.5	0.004	±0.00004	547	±6	**546**	**±6**	-145	±1.5	**477**	**±3**	64.30
ML.5_3b	1894	±6.1	259	±6	522	±15	-150	±1.9	0.004	±0.00008	555	±8	**550**	**±8**	-150	±1.9	**481**	**±4**	65.30
ML.5_4a	641	±0.9	84	±2	619	±14	-153	±1.2	0.005	±0.00005	633	±6	**628**	**±7**	-153	±1.2	**559**	**±3**	76.80
ML.5_2c	735	±1.4	117	±2	548	±12	-150	±1.3	0.005	±0.00004	682	±5	**677**	**±6**	-150	±1.3	**608**	**±3**	85.30
ML.5_3c	660	±0.8	105	±2	616	±14	-150	±1.2	0.006	±0.00005	751	±10	**746**	**±10**	-150	±1.2	**677**	**±5**	98.50
ML.5_4b	708	±0.9	95	±2	772	±17	-153	±1.1	0.006	±0.00004	822	±5	**818**	**±6**	-154	±1.1	**748**	**±3**	110.00
ML.5_4c	912	±1.3	353	±7	296	±6	-154	±1.2	0.007	±0.00004	899	±5	**886**	**±11**	-154	±1.2	**817**	**±5**	121.50
ML.5_5b	991	±0.8	167	±4	690	±12	-153	±1.2	0.007	±0.00016	913	±5	**907**	**±7**	-154	±0.9	**845**	**±3**	124.30
ML.5_5a	981	±1.6	191	±4	604	±13	-155	±1.2	0.007	±0.00004	924	±5	**917**	**±7**	-155	±1.2	**848**	**±3**	126.30
Sample ML-8																			
ML.8.1	2737	±4	1048	±22	35	±4	-268	±1.2	0.00081	±0.00010	120	±10	**106**	**±10**	-268	±1.2	**44**	**±5**	0.00
ML.8.2b	3863	±12	126	±5	599	±39	-267	±2.5	0.00118	±0.00006	176	±21	**175**	**±23**	-267	±2.5	**106**	**±11**	14.00
ML.8-5b	4112	±12	132	±5	782	±45	-266	±2.4	0.00152	±0.00007	226	±10	**225**	**±10**	-267	±2.4	**156**	**±5**	34.00
ML.8.1A	4545	±8	151	±5	908	±36	-266	±1.3	0.00183	±0.00005	273	±10	**272**	**±10**	-267	±1.3	**210**	**±5**	55.00

U decay constants: $\lambda_{238} = 1.55125 \times 10^{-10}$ (Jaffey et al., 1971) and $\lambda_{234} = 2.82206 \times 10^{-6}$ (Cheng et al., 2013). Th decay constant: $\lambda_{230} = 9.1705 \times 10^{-6}$ (Cheng et al., 2013).
*$\delta^{234}U = ([^{234}U/^{238}U]_{activity} - 1) \times 1000$. ** $\delta^{234}U_{initial}$ was calculated based on ^{230}Th age (T), i.e., $\delta^{234}U_{initial} = \delta^{234}U_{measured} \times e^{\lambda_{234} \times T}$. Corrected ^{230}Th ages assume the initial $^{230}Th/^{232}Th$ atomic ratio of 4.4 ±2.2 $\times 10^{-6}$. Those are the values for a material at secular equilibrium, with the bulk earth $^{232}Th/^{238}U$ value of 3.8. The errors are arbitrarily assumed to be 25%.
***B.P. stands for "Before Present" where the "Present" is defined as the year 1950 A.D.

Supplementary table S3

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