

1 **Methods supplement**2 **“Evidence for a diachronous Late Permian marine crisis from the Canadian Arctic region”**3 **by T.J. Algeo et al.**

4

5 *Sample preparation and petrographic analysis*

6 The 56 samples from the WBF section analyzed in this study were collected by Steve
7 Grasby and Benoit Beauchamp in 1999 and are property of the Geological Survey of Canada.
8 Each sample was visually inspected and veins and weathered surfaces were removed prior to
9 grinding in a tungsten ball mill. Small sample size (~5-15 g each) resulted in samples being
10 mostly or entirely consumed by the analytical protocol described below. Petrographic work was
11 limited to two samples (BF-303 and BF-306) for which chips remained following grinding.
12 These chips were prepared as epoxy mounts for reflected-light petrographic analysis at the
13 University of Kentucky Center for Applied Energy Research.

14 *Mineralogic analysis (X-ray diffraction)*

15 Powdered samples were placed in aluminum holders and analyzed on a Siemens D-500
16 X-ray diffractometer (XRD) at the University of Cincinnati. Samples were scanned from 2° to
17 $32^{\circ} 2\Theta$ at $0.2^{\circ} \text{ min}^{-1}$ using CuK α radiation and a graphite monochromator. For clay-fraction
18 analysis, a portion of each sample was suspended in distilled water after particle separation by
19 ultrasonic disaggregation. The $<2\text{-}\mu\text{m}$ size fraction was recovered by ultracentrifugation and air-
20 dried prior to making oriented slides by standard smear techniques.

21 *Major and trace element analysis (X-ray fluorescence)*

22 Major- and trace-element concentrations were determined on a wavelength-dispersive
23 Rigaku 3040 X-ray fluorescence (XRF) spectrometer at the University of Cincinnati. Results were
24 calibrated using both USGS and internal standards analyzed by XRAL Incorporated. Analytical
25 precision based on replicate analyses was better than $\pm 2\%$ for major and minor elements and $\pm 5\%$
26 for trace elements, and detection limits were 1-2 ppm for most trace elements.

27 *Volatile element analysis (pyrolysis)*

28 Elemental C and S concentrations were measured on an Eltra 2000 C-S analyzer at the
29 University of Cincinnati. Data quality was monitored via multiple analyses of the USGS SDO-1
30 standard, yielding an analytical precision (2σ) of $\pm 2.5\%$ of reported values for C and $\pm 5\%$ for S. An
31 aliquot of each sample was digested in 2N HCl at 50°C for 12 hours to dissolve carbonate minerals,
32 and the residue was analyzed for total organic carbon (TOC) and non-acid-volatile sulfur (NAV-S);
33 total inorganic carbon (TIC) and acid-volatile sulfur (AV-S) were obtained by difference.
34 Elemental C and N compositions were measured on a Costech 5010 analyzer at the University of
35 Kentucky. Average standard deviations were 0.52% and 0.08% for C and N of an acetanilide
36 standard, respectively, and $<0.01\%$ for both C and N of unknowns. The analytical results for
37 elemental C obtained by the two methods above generally differed by less than $\pm 5\%$.

38 *Calculated parameters from elemental data*

39 The chemical index of alteration (CIA) was calculated using weight fractions of major
40 oxides as follows:

$$CIA = \text{Al}_2\text{O}_3 / (\text{Al}_2\text{O}_3 + \text{K}_2\text{O} + \text{Na}_2\text{O} + \text{CaO}_{\text{noncarb}}) \quad (1)$$

where $\text{CaO}_{\text{noncarb}}$ represents the weight fraction of CaO present in noncarbonate phases, which was calculated as $\text{CaO}_{\text{total}} - \text{CaCO}_3 \times 56.1/100.1$, where 56.1 and 100.1 are the molar weights of CaO and CaCO_3 in grams.

The bulk mineralogy of the study section is dominated by quartz and clay minerals (mainly illite and chlorite) as determined by XRD analysis, with small quantities of calcite as determined by TIC analysis. Geochemical concentration data were used to estimate the relative proportions of the major mineralogic fractions in each sample as follows (cf. Algeo et al., 2007):

$$\text{Calcite (\%)} = \text{TIC}_{\text{meas}} \times 100 / 12.0 \quad (2)$$

$$\text{Clay minerals (\%)} = \text{Al}_{\text{meas}} \times 100 / \kappa_1 \quad (3)$$

$$\text{Quartz/chert (\%)} = \text{SiO}_2\text{(meas)} - (\text{Al}_{\text{meas}} / 27.0 \times \kappa_2 \times 60.1) \quad (4)$$

Equation 2 calculates the amount of calcium carbonate in a sample from TIC. Equations 3 and 4 calculate model amounts of clay minerals and quartz (or chert) in a sample based on measured Al and SiO₂ concentrations. The coefficients 12.0, 27.0, and 60.1 represent the molar weights in grams of C, Al, and SiO₂, and the constants κ_1 and κ_2 represent the average concentration of Al and the average molar Si:Al ratio of the clay mineral assemblage, respectively. Owing to differences in clay-mineral composition, different values of κ_1 and κ_2 were used for the Lindström and Blind Fiord formations. For the Lindström Formation (n = 12), values of 9.1 (κ_1) and 1.6 (κ_2) were found to yield a mean sum of 100.0% with minimized variance ($\sigma = 1.3\%$). These values are consistent with dominance of the clay fraction by chlorite, which typically contains 9-13% Al and has a molar Si:Al ratio of 1.0-2.0 depending on the degree of substitution for Al in the octahedral layers (Grim, 1968). For the Blind Fiord Formation (n = 44), values of 11.1 (κ_1) and 1.9 (κ_2) were found to yield a mean sum of 100.0% with minimized variance ($\sigma = 3.2\%$). These values are consistent with a mixture of chlorite with illite, the latter typically containing 13-15% Al and having a molar Si:Al ratio of 2.0 dictated by its TOT structure (Grim, 1968). Where deviating from unity, the three-component sum for each sample was normalized to 100% for display purposes.

67 The quartz/chert component of the sediment (eq. 4) was further assigned to either the detrital
68 quartz fraction or the biogenic chert fraction:

$$\text{Quartz (detrital) (\%)} = \text{Clay minerals} \times 0.24 \quad (5)$$

$$\text{Chert (biogenic) (\%)} = \frac{\text{Quartz/chert} - \text{Quartz}}{\text{Quartz}} \quad (6)$$

The coefficient 0.24 in equation 5 represents the average weight ratio of detrital quartz to clay minerals in the Blind Fiord Formation, which largely lacks biogenic silica; it is based on the regression between quartz/chert (eq. 4) and clay minerals (eq. 3) for samples at 5.6-24 m in the WBF study section ($r^2 = 0.66$; $n = 44$). The concentrations yielded by equations 5 and 6 are tentative in that the proportionality between clay minerals and quartz silt in the detrital fraction is potentially variable between samples. However, the detrital fraction of the Blind Fiord Formation at WBF shows relatively uniform compositional characteristics (see Section 4.1), and the Lindström Formation at WBF contains only small amounts of detrital material making uncertainties in this relationship unimportant.

Bulk sediment flux (or accumulation rate) and the fluxes of individual mineral fractions were calculated as follows (cf. Algeo et al., 2011):

$$f(\text{bulk})_i^{i+1} = \text{LSR}_i^{i+1} \times \rho \quad (7)$$

$$f(A)_i^{i+1} = [A]_i^{i+1} \times LSR_i^{i+1} \times \rho \quad (8)$$

where $f(\text{bulk})$ is the bulk sediment flux and $f(A)$ the flux of mineral fraction A in $\text{g cm}^{-2} \text{ kyr}^{-1}$ for the stratigraphic interval i to $i+1$, LSR is the linear sedimentation rate converted to cm kyr^{-1} , ρ is sediment density in g cm^{-3} (for which a constant value of 2.5 was assumed), and $[A]$ is the concentration of mineral fraction A in weight percent. Fluxes were calculated for the following mineral fractions: calcite (eq. 2), clay minerals (eq. 3), detrital quartz (eq. 5), and biogenic chert (eq. 6).

90 *Degree of pyritization*

DOP analysis was undertaken at the University of California at Riverside. Extractable Fe (an operationally defined parameter) was determined by boiling bulk powdered samples in 12 N HCl for 1 min (Berner, 1970; Raiswell et al., 1988). Pyrite Fe concentrations were calculated from pyrite S concentrations using the Cr-reduction method and assuming FeS_2 stoichiometry. DOP was calculated as the ratio of pyrite Fe to total reactive Fe (i.e., the sum of pyrite Fe and extractable Fe). Additional proxies, i.e., excess S (S_{exc}) and non-pyrite Fe (Fe_{nonpy}), were derived from geochemical concentration data as follows:

$$S_{\text{exc}} = S_{\text{pyrite}} - \text{TOC} / 1.8 \quad (9)$$

$$\text{Fe}_{\text{nonpy}} = \text{Fe}_{\text{total}} - S_{\text{pyrite}} \times 55.85 / 64.12 \quad (10)$$

where the coefficient 1.8 represents the average weight ratio of TOC to pyrite S in ancient oxic-suboxic marine sediments (Raiswell and Berner, 1986), and the coefficients 55.85 and 64.12 represent the molar weights of Fe and S in stoichiometric pyrite.

103 *Pyrite sulfur isotopes*

Pyrite sulfur was separated from sample aliquots at the University of Cincinnati by wet chemical extraction using the Cr-reduction procedure of Canfield et al. (1986). For each sample, 3 g of powder was placed in a reaction vessel along with 5 mL of ethyl alcohol, 100 mL of hydrochloric acid (6N HCl), and 200 mL of chromous chloride (CrCl_3) in the presence of a 100% dinitrogen atmosphere. Liberated H_2S was buffered by sodium citrate prior to reaction with silver nitrate (AgNO_3). Recovery of pyrite S was >95% (based on analysis of pyrite standards) with a reproducibility of $\pm 2\%$. The silver sulfide (Ag_2S) precipitate was filtered and dried in a 55°C oven, and 0.3 mg of the precipitate was weighed and combined with 1.5 mg of vanadium pentoxide. The precipitate was analyzed at the Indiana University Stable Isotope Research Facility using a CE Instruments EA1110 CHN analyzer that was re-configured for sulfur combustion and interfaced with a Finnigan MAT 252 isotopic ratio mass spectrometer. Results were corrected using NBS 127 and two internal laboratory standards, yielding analytical uncertainties of $\pm 0.2\%$. Values are reported relative to the Vienna Canyon Diablo Troilite (V-CDT) standard.

118 *Organic carbon and nitrogen isotopes*

Organic carbon $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ analyses were performed at the University of Kentucky. Ground sample powders were weighed into silver boats and acidified *in situ* using 6% H_2SO_3 . Average standard deviations were 0.09‰ and 0.05‰ for the $\delta^{13}\text{C}$ of USGS-24 and $\delta^{15}\text{N}$ of

122 IAEA-N1 and 0.2‰ and 0.4‰ for the $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of unknowns, respectively. Values are
123 reported relative to the Vienna PDB (V-PDB) for $\delta^{13}\text{C}$ and the air standard for $\delta^{15}\text{N}$.

124 *Magnetic susceptibility*

125 The magnetic susceptibility (MS) of samples was measured using a high-sensitivity
126 susceptibility bridge at Louisiana State University. The susceptibility bridge was calibrated
127 using standard salts, for which values are given in Swartzendruber (1992) and the Handbook of
128 Physics and Chemistry (2004). Reported MS values represent the mean of three measurements
129 in units of $\text{m}^3 \text{ kg}^{-1}$.

130 *Biomarkers*

131 Biomarker analysis was undertaken at the Massachusetts Institute of Technology.
132 Between 8 and 15 g of each powdered sample was extracted manually using a 9:1 mixture of
133 dichloromethane (DCM) and methanol (MeOH). Samples were agitated with a VWR Mini
134 Vortexer MV1 at 2500 rpm for 1 minute, sonicated with a VWR Aquasonic 150Ht instrument for
135 15 minutes, and then centrifuged with an Eppendorff 5804 centrifuge for 20 minutes in order to
136 separate solid material from the solvent. The total lipid extract (TLE) was decanted and
137 collected in a separate vial and the process repeated three times. Elemental sulfur was removed
138 from the pooled extracts using copper shot previously cleaned and activated with hydrochloric
139 acid. The TLE was then separated into saturated, aromatic, and polar fractions using column
140 chromatography on activated silica gel with sequential elution with hexane, a 4:1 hexane:DCM
141 mixture, and a 4:1 DCM:MeOH mixture, respectively. After addition of internal standards,
142 aliquots of the saturated and aromatic hydrocarbon fractions were analyzed by gas
143 chromatography-coupled mass spectrometry (GC-MS-MS) on an Agilent 6890 gas
144 chromatograph interfaced to a Waters AutoSpec Ultima mass spectrometer operated at 70 eV.
145 Samples were injected onto a J&W Scientific DB-1 fused silica capillary column (60m X 0.25
146 mm; 0.25 μm film thickness) via the split/splitless injector operated in splitless mode with
147 helium as the carrier gas. The oven was programmed from 60°C (held for 2 min) to 150°C at
148 10°C/min and then at 3°C/min to 315°C with a final hold of 24 min. For the saturated
149 hydrocarbon fraction, D4- $\alpha\alpha\alpha$ -ethylcholestane (D4) was used as an internal standard and the
150 sample was run in both the full scan (50-600 Da) and multiple reaction monitoring (MRM)
151 modes. In the MRM mode, a suite of C₂₆-C₃₀ steranes, C₂₇-C₃₅ hopanes, C₃₁ methylhopanes and
152 C₂₆-C₃₀ cheilanthanes were quantified via their specific precursor-product reactions and using the
153 internal standard without taking into account response factors. After addition of 200 ng D14
154 terphenyl, the aromatic hydrocarbon fraction was analyzed by GC-MS in specific ion monitoring
155 modes for the following ions: 110, 113, 128, 133, 134, 154, 166, 168, 178, 183, 184, 192, 202,
156 216, 219, 228, 233, 237, 244, 251, 252, 276, 281, 282 and 300 Da. In this fraction, aryl
157 isoprenoids were identified based on a comparison of retention times with authentic standards in
158 the 134 Da chromatogram.

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Sample and standard details

Sample name	BF 356	BF 355	BF 353	BF 352	BF 350	BF 347	BF 349	BF 346	BF 304	BF 308	BF 311	BF 312	BF 314	BF 316	BF 317	BF 319	BF 320	BF 322	BF 324	BF 326	BF 327	BF 329	BF 332	BF 333	BF 335	BF 338	BF 339	BF 343	BF 344		
Acq. Method (sats)	GL9	GL9																													
sat fraction total (mg)	0.5	0.5	0.5	1.2	0.7	0.6	0.4	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
Mass of D4 added for GCMS (ng)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50			
Acq. Method (sats)	arylisoprenoids																														
area fraction total (mg)	0.1	0.4	0.1	0.7	0.7	0.6	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Mass of D14 added for GCMS (ng)	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200			
amount of raw rock powder extracted (g)	3.2523	8.088	6.078	8.706	8.036	10.803	7.328	6.456	9.326	11.957	11.565	14.572	7.39	10.081	12.745																

Saturated compounds

Tricyclics	C19/Tot Tricyclic	0.045	0.084	0.047	0.056	0.050	0.068	0.072	0.074	0.054	0.056	0.038	0.093	0.060	0.098	0.101															
C20/Tot Tricyclic	0.143	0.210	0.165	0.163	0.110	0.146	0.183	0.162	0.134	0.137	0.114	0.187	0.131	0.188	0.169																
C19/Tot Tricyclic	0.027	0.045	0.029	0.039	0.024	0.034	0.026	0.022	0.019	0.019	0.017	0.028	0.011	0.021	0.021																
C22/Tot Tricyclic	0.053	0.062	0.053	0.060	0.033	0.050	0.050	0.049	0.047	0.043	0.045	0.039	0.046	0.045	0.037																
C23/Tot Tricyclic	0.265	0.228	0.261	0.257	0.239	0.225	0.244	0.237	0.251	0.233	0.253	0.200	0.264	0.200	0.239	0.237															
C24/Tot Tricyclic	0.126	0.057	0.123	0.112	0.116	0.071	0.069	0.074	0.114	0.112	0.129	0.098	0.130	0.061	0.102	0.108															
C25/Tot Tricyclic	0.049	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053															
C26/Tot Tricyclic	0.074	0.069	0.057	0.069	0.057	0.073	0.069	0.069	0.071	0.070	0.075	0.076	0.077	0.074	0.077	0.074															
C27 S/R	0.963	0.913	0.988	0.940	1.011	0.855	0.914	1.030	0.724	0.889	0.861	0.994	0.956	1.003	0.879	0.879															
C28 S/R	0.993	1.053	1.007	1.102	0.908	0.960	1.084	1.140	0.959	1.040	1.038	1.016	0.956	0.993	1.013	1.034															
C19/C23	0.170	0.367	0.180	0.217	0.206	0.303	0.295	0.131	0.215	0.241	0.151	0.463	0.229	0.491	0.521	0.454															
C20/C21	0.295	0.237	0.265	0.261	0.257	0.233	0.222	0.248	0.216	0.229	0.252	0.211	0.265	0.224	0.222	0.225															
C24/C23	0.474	0.251	0.471	0.437	0.485	0.315	0.284	0.312	0.452	0.482	0.510	0.491	0.493	0.306	0.451	0.451															
C24/C25	1.440	1.171	1.496	1.707	0.873	0.589	0.751	0.748	1.021	0.953	0.951	1.000	1.288	0.551	1.124	1.166															
C26/C25	0.850	0.942	0.837	0.871	1.195	1.051	0.795	0.948	0.888	0.860	0.798	0.800	0.762	0.748	0.765	0.755															
C24Ter/C23	0.445	0.238	0.405	0.250	0.347	0.530	0.352	0.388	0.442	0.550	0.514	0.532	0.514	0.409	0.370	0.433	0.350	0.356	0.516	0.469	0.503	0.510	0.536	0.475	0.245	0.486					

Steranes	C27 Dia/Reg	0.351	0.388	0.393	0.366	0.438	0.392	0.336	0.398	0.555	0.563	0.553	0.554	0.539	0.490	0.574	0.584	0.538	0.466	0.559	0.572	0.515	0.504	0.509	0.582	0.392	0.534	0.574	0.465	0.493
C27 Dia/S/R	1.274	1.440	1.399	1.313	1.315	1.489	1.418	1.403	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	1.199	
C27 Reg ab/S/R	0.324	0.365	0.360	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	
C27 Reg abaa/S/R	0.395	0.395	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	0.393	
C27 Reg ab/S/R	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	0.395	
C29 Reg abaa/S/R	0.939	1.262	1.197	1.316	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	
C29 Reg ab/S/R	1.240	1.256	1.227	1.289	1.313	1.516	1.816	1.226	1.336	1.685	1.562	1.614	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	1.579	
C29 Reg ab/S/R	1.442	1.256	1.398	1.388	1.229	0.953	1.074	1.255	1.234	1.027	1.184	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	1.237	
C27(C27+C26+C29+C30)	0.313	0.262	0.318	0.322	0.246	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	0.247	
C27(C27+C26+C29+C30)	0.347	0.357	0.343	0.331	0.408	0.343	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	0.340	
C28(C27+C26+C29+C30)	0.881	0.936	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	0.884	
C30/C30 Total	0.068	0.082	0.067	0.069	0.089	0.066	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	
C30/C30 Total	0.068	0.086	1.																											

West Blind Fjord, Ellesmere Island (Sverdrup Basin)
Algeo et al., GSA Bulletin

sample	elev m	TC %	TS %	TOC %	NAVS %	TIC %	AVS %	Fe-HCl %	Fe-py %	DOP	δ34S-py	δ13Corg	δ15N	TN %	MS m3 kg-1	Fe2O3 %	MnO2 %	TiO2 %	SiO2 %	Al2O3 %	CaCO3 %	K2O %	P2O5 %	MgO %	Na2O %	LOI %	Ba ppm	Mo ppm	Nb ppm	Zr ppm	Y ppm	Sr ppm	U ppm	Rb ppm	Th ppm	Pb ppm	Zn ppm	Cu ppm	Ni ppm	Co ppm	Cr ppm	V ppm
345	23.90	0.74	0.42	0.27	0.41	0.47	0.01	2.58	0.42	0.14	-38.10	-30.86	4.90	0.07	7.36E-08	5.41	0.047	0.85	59.60	16.08	3.91	3.43	0.116	2.74	0.57	8.02	431	2.0	14.5	245	35	104	4	134	11.2	14	85	23	58	15	99	102
344	22.90	0.85	0.81	0.24	0.87	0.61	0.00	2.63	0.67	0.20	-25.22	-30.74	4.49	0.05	7.17E-08	5.84	0.067	0.79	61.13	14.30	5.05	2.74	0.110	3.04	0.54	7.25	593	1.7	13.6	233	33	124	2	103	9.3	20	81	19	51	16	89	84
343	21.90	0.84	1.38	0.46	0.65	0.38	0.73				-27.93	-30.64	4.78	0.06	6.28E-08	6.55	0.054	0.83	60.52	14.29	3.15	2.79	0.119	2.87	0.60	7.63	442	3.1	13.4	231	32	101	2	101	9.7	28	84	22	50	14	98	94
342	20.90	0.75	0.66	0.36	0.52	0.39	0.14	2.57	0.58	0.19	-4.02	-31.46	5.11	0.07	8.24E-08	5.93	0.059	0.98	56.92	17.15	3.26	4.10	0.101	2.81	0.57	8.79	423	2.1	15.0	174	30	129	1	156	11.6	15	95	21	59	15	101	153
341	19.90	0.73	1.25	0.37	0.81	0.36	0.44	1.63	0.46	0.22	-33.85	-29.92	4.98	0.08	8.28E-08	6.17	0.059	0.84	57.26	16.86	3.00	3.86	0.101	2.72	0.57	9.13	376	1.8	15.2	177	29	103	4	146	10.7	20	93	19	60	21	98	127
340	18.90	0.35	1.26	0.39	0.11	0.00	1.14	3.75	0.23	0.06	-30.97	-31.43	5.28	0.09	6.56E-08	7.47	0.039	0.95	54.99	17.46	0.00	4.20	0.098	2.33	0.58	9.58	556	3.4	13.0	148	23	148	2	150	10.0	19	97	39	54	19	104	174
339	17.90	0.74	1.39	0.43	0.73	0.31	0.66	1.95	1.27	0.39	-36.13	-30.58	5.14	0.10	7.91E-08	6.56	0.081	0.84	56.37	17.38	2.56	4.17	0.092	2.70	0.54	9.05	451	1.2	13.9	145	28	116	2	157	10.5	23	95	22	62	20	99	147
338	16.90	0.70	1.51	0.36	0.73	0.34	0.78	2.79	1.78	0.39	-33.84	-30.95	4.83	0.09	6.90E-08	7.45	0.044	0.87	55.76	17.14	2.85	4.07	0.098	2.69	0.56	9.07	387	1.8	13.6	145	27	102	2	150	11.0	45	100	20	66	20	103	154
337	15.90	0.60	0.28	0.35	0.06	0.25	0.22	2.52	0.18	0.07	-33.64	-31.01	5.12	0.09	9.61E-08	6.50	0.051	0.88	57.53	17.39	2.09	4.12	0.099	2.69	0.54	8.12	389	0.9	15.0	171	31	110	2	162	11.2	8	81	18	66	18	103	140
336	14.90	0.63	0.16	0.36	0.06	0.27	0.09				-38.31	-30.40	5.18	0.08	1.00E-07	6.64	0.052	0.89	58.54	16.61	2.27	3.79	0.109	2.81	0.53	7.50	427	0.8	15.4	185	32	115	0	149	10.9	10	88	14	62	20	108	117
335	13.90	1.32	0.12	0.19	0.05	1.13	0.07	2.51	0.18	0.07	-30.48	-28.50	4.62	0.04	7.53E-08	5.52	0.105	0.77	64.65	11.19	9.42	1.94	0.102	2.90	0.34	6.89	282	4.2	13.0	305	37	86	3	79	9.5	9	88	12	33	7	88	74
334	13.70	0.53	0.49	0.28	0.62	0.25	0.00	2.41	0.55	0.19	-34.47	-30.55	4.71	0.08	8.33E-08	5.91	0.059	0.87	59.19	17.35	2.11	3.95	0.102	2.61	0.56	7.22	374	0.9	14.9	195	31	115	1	152	11.9	16	126	23	61	21	102	146
333	13.30	0.56	0.58	0.37	0.56	0.19	0.02	2.53	0.80	0.24	-38.50	-30.05	4.81	0.09	9.00E-08	6.72	0.062	0.88	57.72	17.31	1.55	4.06	0.102	2.76	0.55	7.82	850	1.0	14.3	165	30	159	2	155	11.1	20	92	18	60	19	102	161
332	12.80	0.56	0.53	0.28	0.08	0.28	0.45				-35.78	-29.95	4.96	0.09	1.00E-07	6.46	0.073	0.86	57.77	17.40	2.34	4.13	0.097	2.72	0.51	7.81	380	0.7	14.1	159	30	114	1	161	11.9	17	94	14	54	17	105	170
331	12.30	0.52	0.20	0.27	0.20	0.26	0.00	2.76	0.21	0.07	-36.27	-30.24	5.08	0.10	9.94E-08	6.47	0.093	0.87	57.69	17.15	2.15	4.28	0.095	2.66	0.51	8.45	557	0.7	14.6	158	30	142	1	168	11.3	7	91	24	54	18	110	175
330	11.80	0.53	1.27	0.34	1.05	0.19	0.22	1.37	1.23	0.47	-32.11	-30.70	4.88	0.09	1.05E-07	7.56	0.055	0.84	56.95	17.09	1.58	4.09	0.100	2.66	0.58	8.41	497	0.8	13.5	150	28	193	1	151	10.6	30	102	25	66	21	101	201
329	11.30	0.19	2.37	0.32	0.16	0.00	2.21	3.78	0.24	0.06	-30.63	-34.74	4.74	0.10	1.35E-07	13.40	0.021	1.67	47.01	16.16	0.00	4.32	0.108	1.55	1.41	15.34	413	6.0	11.1	131	17	330	8	115	7.0	68	77	112	37	22	297	195
328	11.00	0.46	1.11	0.36	0.96	0.10	0.15	2.01	1.08	0.35	-33.17	-30.88	4.83	0.10	9.88E-08	7.58	0.048	0.83	57.06	17.44	0.83	4.26	0.097	2.69	0.59</td																	