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## **The Anthropocene: overview of stratigraphical assessment to date**

Zalasiewicz, J.<sup>1</sup>, Waters, C.N.<sup>3</sup>, An, Z.<sup>3</sup>, Barnosky, A.D.<sup>4</sup>, Cearreta, A.<sup>5</sup>, Edgeworth, M.<sup>1</sup>, Ellis, E.C.<sup>6</sup>, Fairchild, I.J.<sup>7</sup>, Gałuszka, A.<sup>8</sup>, Haff, P.K.<sup>9</sup>, Ivar do Sul, J.A.<sup>10</sup>, Jeandel, C.<sup>11</sup>, Leinfelder, R.<sup>12</sup>, McNeill, J.R.<sup>13</sup>, Odada, E.<sup>14</sup>, Oreskes, N.<sup>15</sup>, Price, S.J.<sup>2</sup>, Richter, D. deB.<sup>9</sup>, Steffen, W.<sup>16</sup>, Summerhayes, C.<sup>17</sup>, Syvitski, J.P.<sup>18</sup>, Wagreich, M.<sup>19</sup>, Williams, M.<sup>1</sup>, Wing, S.<sup>20</sup>, Wolfe, A.P.<sup>21</sup>

1. University of Leicester, University Road, Leicester LE1 7RH, UK. jaz1@le.ac.uk.
2. British Geological Survey, Keyworth, Nottingham NG12 5GG, UK.
3. Institute of Earth Environment, Chinese Academy of Sciences, Xi'an 710061, China.
4. Museum of Vertebrate Zoology, University of California, Berkeley, CA 94720, USA.
5. Facultad de Ciencia y Tecnología, Universidad del País Vasco UPV/EHU, 48080 Bilbao, Spain.
6. University of Maryland Baltimore County, Baltimore MD 21250, USA.
7. University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK.
8. Institute of Chemistry, Jan Kochanowski University, 25-406 Kielce, Poland.
9. Nicholas School of the Environment, Duke University, Box 90233, Durham, NC 27516, USA.
10. Association of Polar Early Career Scientists (APECS-Brazil), RS CEP 93216180, Brazil
11. LEGOS (CNRS/CNES/IRD/Université Paul Sabatier), 31400 Toulouse, France.
12. Freie Universität Berlin, Malteserstr. 74-100/D, 12249 Berlin, Germany.
13. Georgetown University, Washington DC, USA.
14. Department of Geology, University of Nairobi, Kenya.
15. Harvard University, Cambridge, MA 02138, USA
16. The Australian National University, Canberra ACT 0200, Australia.
17. Scott Polar Research Institute, Cambridge University, Cambridge CB2 1ER, UK.
18. University of Colorado, Box 545, Boulder CO, 80309-0545, USA.
19. University of Vienna, A-1090 Vienna, Austria.
20. Museum of Natural History, Smithsonian Institution, Washington, DC, USA
21. University of Alberta, Edmonton, AB T6G 2E9, Canada

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We summarize evidence gathered to date to constrain and assess the Anthropocene as a potential new formal chronostratigraphic unit within the Geological Time Scale. Evidence of importance to the formalization question may be placed within the standard litho-, chemo- and bio-stratigraphic categories, while there are a number of novel phenomena. Lithostratigraphic evidence includes the appearance and rapid, near-isochronous, dispersal of many new mineral forms (including metals, plastics and industrial fly ash), rock types (including concrete and brick) and sediment bodies including artificial ground, landfill and marine trawl layers together with sediments released by land use changes. Humans now move more terrestrial sediment than all natural horizontal fluxes by water (rivers), wind (aeolian), and ice (glaciers). Chemostratigraphic evidence includes isotope patterns altered by perturbations to the carbon, nitrogen and phosphorus cycles at rates and magnitudes unprecedented in Quaternary times, atmospheric gas changes preserved in ice, disseminated metal and persistent organic pollutant and artificial radionuclides traces, many of which are novel signatures. Biostratigraphic evidence includes preservable consequences of extinctions, geologically unprecedented species invasions and marked assemblage changes. Recent climate and sea level trends are outside the Holocene trajectory, though global temperature and sea level are still within the Quaternary interglacial envelope. Anthropogenic influence on stratigraphic signals commenced thousands of years ago, but the most pronounced inflection in most trends away from Holocene patterns is in the mid-20<sup>th</sup> century<sup>2</sup>. The evidence in sum may be used to justify an epoch-scale boundary, though questions of utility and of definition – including selection and detailed multiproxy analysis of candidate GSSP sections – remain. We provide a summary of the balance of opinion within the working group on the major questions regarding the geological reality, potential boundary markers, hierarchical level and formalization potential of the Anthropocene.

