

1 **The landscape of soil carbon data: emerging questions, synergies and databases**

2

3 Avni Malhotra<sup>1\*</sup>, Katherine Todd-Brown<sup>2</sup>, Lucas E. Nave<sup>3</sup>, Niels H. Batjes<sup>4</sup>, James R.  
4 Holmquist<sup>5</sup>, Alison M. Hoyt<sup>6,7</sup>, Colleen M. Iversen<sup>8</sup>, Robert B. Jackson<sup>9</sup>, Kate Lajtha<sup>10</sup>, Corey  
5 Lawrence<sup>11</sup>, Olga Vindušková<sup>1</sup>, William Wieder<sup>12</sup>, Mathew Williams<sup>13</sup>, Gustaf Hugelius<sup>14,15</sup>,  
6 Jennifer Harden<sup>1</sup>

7

8 <sup>1</sup> Earth System Science, Stanford University, Stanford, CA, USA, avnim@stanford.edu

9 *\*corresponding author*

10 <sup>2</sup>Biology Department, Wilfrid Laurier University, Waterloo, Ontario, Canada

11 <sup>3</sup>Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI,  
12 USA <http://orcid.org/0000-0001-8258-833>

13 <sup>4</sup>ISRIC – World Soil Information, Wageningen, The Netherlands. [niels.batjes@isric.org](mailto:niels.batjes@isric.org),  
14 ORCID-ID: 0000-0003-2367-3067

15 <sup>5</sup>Smithsonian Environmental Research Center, Edgewater, Maryland USA

16 <https://orcid.org/0000-0003-2546-6766> HolmquistJ@si.edu

17 <sup>6</sup>Max Planck Institute for Biogeochemistry, Jena, Germany. [ahoyt@bgc-jena.mpg.de](mailto:ahoyt@bgc-jena.mpg.de), ORCID-  
18 ID: 0000-0003-0813-5084

19 <sup>7</sup>Lawrence Berkeley National Laboratory, Berkeley, CA, USA

20 <sup>8</sup>Environmental Sciences Division and Climate Change Science Institute, Oak Ridge National  
21 Laboratory, Oak Ridge, TN, USA

22 <sup>9</sup>Stanford University, Department of Earth System Science, Woods Institute for the Environment,  
23 and Precourt Institute for Energy, Stanford, CA, USA. [Rob.Jackson@stanford.edu](mailto:Rob.Jackson@stanford.edu)

24 <sup>10</sup>Department of Crop and Soil Science, Oregon State University, Corvallis, OR, USA

25 <sup>11</sup>U.S. Geological Survey, Geologic and Environmental Change Science Center, Denver, CO,  
26 USA, [orcid.org/0000-0001-6143-7781](http://orcid.org/0000-0001-6143-7781), [clawrence@usgs.gov](mailto:clawrence@usgs.gov)

27 <sup>12</sup>National Center for Atmospheric Research, Boulder, CO, USA and University of Colorado,  
28 Boulder, CO, USA. [wwieder@ucar.edu](mailto:wwieder@ucar.edu)

29 <sup>13</sup>University of Edinburgh, School of GeoSciences, Edinburgh, UK. [Mat.Williams@ed.ac.uk](mailto:Mat.Williams@ed.ac.uk)

30 <sup>14</sup>Stockholm University, Department of Physical Geography, SE-10691, Stockholm, Sweden,  
31 [gustaf.hugelius@natgeo.su.se](mailto:gustaf.hugelius@natgeo.su.se), ORCID-ID: 0000-0002-8096-1594

32 <sup>15</sup>Stockholm University, Bolin Centre for Climate Research, SE-10691, Stockholm, Sweden

33

34 **Keywords:** soil carbon data, soil database, wetland carbon, soil chronosequence, soil  
35 radiocarbon, long-term ecological research, root traits, soil carbon stabilization, model-data  
36 integration