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Call for Papers

The Politics of Earth System Dynamics: Planetary Justice for Earth's Future and Educational Change

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Timeline:

- Call for papers: May 2025
- Abstracts due: 15th October 2025
  - Email abstracts (400-500 words) to peta.white@deakin.edu.au
- Full Manuscripts due: 15th February 2026
  - Submit to AJEE (See author instructions, 6 – 7000 words)
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Since mid-twentieth century there have been increasing signs that the Earth's system capacity (physical and biochemical) is reaching saturation and threatening Earth system functioning (i.e., habitability). From this background a planetary boundaries framework has emerged that defines a safe, sustainable space for life on Earth. Rockström et al. (2009) specified nine essential systems that together regulate the state of the Earth system. Subsequently an expanded supportive literature has created openings for extended discourse on global sustainability.

The boundaries framework identifies key geosphere and biosphere functions that regulate Earth system functions including climate change, ocean acidification, stratospheric ozone, biogeochemical nitrogen cycle, and global freshwater limits. The purpose is to generate new thinking and inquiry in areas of "Earth system" functioning in search of thresholds and boundaries crucial for sustainable and essential for the evolution of global systems (i.e., Earth System Science). The rationale is to guide human development within changing planetary systems where, by 2023, six of the nine boundaries are transgressed (Gupta et al., 2023). The resulting paradox: the matter of resilience as opposed to the crossing of thresholds that drive the Earth systems (e.g., Kallis et al., 2025; Rockström et al., 2024; Verne et al., 2025). Subsequent updates working forward on Earth systems dynamics have focused on analysis of the risks that human perturbations could destabilise the Earth system at planetary scale.

Currently, the planetary boundaries framework maintains focus on critical processes that regulate Earth system functioning as the planet evolves (Rockström et al., 2024). While the main educational focus is climate (i.e., biosphere integrity) as regulated in the biosphere, scientists continue to speculate on the increasing risks of biosphere destabilisation. Educational ramifications of this work have focused on ways to engage young people in the politics of decision making in response to the evolving dynamics of Earth system boundaries. However, given the political nature of such discussions, the planetary boundaries framework has extended its mandate to focus beyond simply reporting basic scientific evidence as a challenge, to engage political complexities of decision making directly in education practices (e.g., Kallis et al., 2025).

Extant politically aware publications on the science relating to planetary boundaries have served as a kind of grounding literature for education representation of this work as both science and politics have become jurisdictions of environmental education. For example, from Brown (2015) to Ryder et al. (2024) the concept "planetary boundaries" relates not only to issues of global governance and maintenance of the Earth system but also to the politics of debate about the Earth systems likely to be transgressed by population growth and persistent human activities. Such debate also follows recently updated boundary framings that acknowledge and re-address divergent social contexts and processes driving change (Gengnagel & Zimmermann, 2025; Rockström et al., 2024).

Steffen et al. (2020) suggested that, as we become more familiar with relating science to social and economic processes, we are more likely to engage systems change within a rethinking of the political roots of geopolitics as context that human actions must address (Dalby, 2014; Rockström et al., 2024; Ryder et al., 2024). The challenge for educators is to find ways to engage young people in dilemmas such as who decides whose interests are either resisting or driving "our common future" (Brown, 2015; Richardson et al., 2023).

Towards Eco-social Politics

To get to core issues that now include social processes driving global change requires a rethinking of geopolitics. Human actions are increasingly viewed within geopolitical contexts for political re-arrangements that direct attention to, for example, Earth System Governance, where a planetary boundary framework can be managed. Brown (2015), for example, included social dimensions to these perspectives in recognition that global goals require social boundaries that also encounter educational limits (Leach et al., 2013; Raworth, 2012).

Given this evolution of Earth system thinking, we encourage prospective authors for this SI to engage ideas of planetary boundaries designed to work across scales other than global, as appropriate for different levels of education, that is, within educational limits and constraints (Rockström et al., 2009, 2024). For example, limits to growth, transformed as planetary boundaries, implicate new ideas that can cast positive solutions for Earth system governance to guide these boundaries. Such discussion, at once complex and multidimensional, implicates the politics of planetary boundaries within a political ecology of educational limits as a new development paradigm (Richardson et al., 2023; Rockström et al., 2024). The challenge for social and educational inquiry is to engage critically with the political complexities of the

Anthropocene created by global aspects of natural science within relevant dimensions of social science (Castree, 2015).

The Challenge: Educational Change

Such a challenge implicates focus on levels of engagement in local-to-global tracings critical to end points of system change. The story continues to evolve within educational settings where research and speculation focused on planetary justice becomes a challenge for Earth system governance and whether it is, in fact, possible to govern in such a way as to achieve safe and just corridors for people and for the planet? Rockström et al. (2009, 2024) and Steffen et al. (2015, 2024) identified essential critical boundaries as those required to maintain the planetary biosphere. As Raworth (2012) wrote and Hickel (2018) speculated, any such vision for development within a safe and just space/time will require the rethinking of current basic assumptions on the realities of growth within and beyond evolving debates on post-capitalist economic alternatives. Such transitions as applied to education assume focus on transformative strategies placed within evolving debates on planetary stewardship, Earth system transformation and Earth system governance (Biermann & Kalfagianni., 2020).

There are several perspectives on the self-work of planetary justice. Bendik-Keymer (2023), for example, argues that this means working to 'become right' on moral relations (i.e., a psychological dimension supporting political transformation—the planetary as a category of thought about justice). This self-work seems crucial in addressing how ways of knowing/being are engaged in consultation and participation in concrete decision-making. As Inoue et al. (2023) say, such struggles are part of the politics of "the planetary" as much as other forms of justice. The personal perspective implicates many processes of public decision-making (e.g., sharing limited ecospace) (Gupta et al., 2024) as a significant part of how to engage Earth System Justice through setting of Earth system boundaries. Kurki (2024) conceives of such engagement in terms of justice and ethical commitments at all levels of society as well as in relation to multispecies engagement and application of ethical responsibilities to questions of justice. This is what Kalfagianni et al. (2024) imply contributes to levels of justice that include the planetary. Pavenstädt and Rödder (2024) also recognise this as a concern about the dynamics of de-politicisation originating within discursive framings (of future narratives) of science policy interfaces with critical planetary notions of safe operating spaces for humanity (e.g., Biermann & Kim, 2020).

The invitation

It follows that authors of this SI are encouraged to critically engage perspectives that attend to the role of politics within Earth system change (e.g., Fraser, 2009). Biermann and Kim (2020) provide an expanded research frame intended to assess planetary justice that engages principles, mechanisms and attend to the 2030 Agenda for Sustainable Development and the Inner Development Goals. As such, this kind of inquiry supports a founding commentary on a Future Earth platform as an additional support at planetary scale. As indicated in the periodical *Earth System Justice*, we are in the middle of a planetary crisis that requires strong modes of Earth system governance, and in response, educational participation in planetary justice in search of alternative approaches (Kashwan, et al., 2020). In fact, there are now discussions that critically explore Earth system justice and the dynamics that constitute Earth system boundaries.

Potential authors are encouraged to participate in the challenge to work toward education for integration of human dynamics with Earth system dynamics and to explore ideas that engage planetary/Earth system boundaries from a justice perspective for environmental education. This is where “fun in the bush” meets the challenges of new paradigms for safeguarding Earth regulating systems in the Anthropocene, that is, within planetary boundaries that support sustainable futures (Rockström et al., 2024, p. 773).

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Guest Editors biographies

Paul Hart is Professor Emeritus and Adjunct Professor of Science and Environmental Education at the University of Regina, Canada. He has authored and edited many book chapters and journal articles, served on Canadian research awards selection committees and received local, regional, national and international awards for his publications including the *Journal of Research in Science* Teaching Research Award, the North American Association for Environmental Education (NAAEE) Research Award as well as the NAAEE Jeske Award for leadership and service to the field of environmental education. He has served as Executive Editor of the *Journal of Environmental Education* and on editorial boards for EE journals including the *Australian Journal of Environmental Education* and *Environmental Education Research*.

Peta J. White is an Associate Professor in Science and Environmental Education at Deakin University. She led the OECD PISA Environmental Science contribution to the 2025 Science Framework 'Agency in the Anthropocene' and co-directs the Centre for Regenerating Futures - a Faculty Centre that explores Anthropocene challenges and decolonising practices while building researcher capacity. She is the Editor-In-Chief of the Australian Journal of Environmental Education. Her current research follows three narratives: science and biology education; sustainability, environmental, and climate change education; and collaborative/activist methodology and research.