

How the *Elements* approach to scientific communication makes us better researchers

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Every piece of the scientific communication pipeline is critical, from technical reports to popular science and even science fiction. When it comes to actually applying our hard-won scientific knowledge, however, researchers suffer from our tendency to communicate only within our own disciplines. The fragmentation of our knowledge base prevents collaborations necessary to tackle complex, societal problems like climate change, mineral resources, and hazard response. This problem is easy to see but difficult to fix.

Elements is a stand-out effort in addressing this challenge since it is explicitly designed to force interdisciplinary collaboration. Each issue of *Elements* has a central theme that may cover societal issues (“Mineral Resources and Sustainability” v13n5), a particular region (“Cascadia Subduction Zone” v18n4), or even one element, apropos to the publication’s name (“Boron: Light and Lively” v13n4). Editorial oversight by active researchers ensures articles are not just technical summaries but provide big-picture context for a broad audience. Combining peer-reviewed, evidence-based discussion with narrative storytelling embraces the fact that scientists from different fields struggle to understand one another, not just because of jargon, but because they see the world differently.

The superpower of *Elements* is that it communicates in two directions. Its solutions to big-picture problems are as applicable to policymakers as they are to our own technical research. In the next 20 years, the *Elements* approach to scientific communication can be a model for data-driven storytelling via video, online dashboards, and interactive databases. Making this a reality requires updating not only our tools but our culture. Academia incentivizes publication quantity and “impact,” reducing scientists to quantifiable variables for tenure decisions. We get no reward for spending extra time to make our data open, to provide documentation of code, or to create accessible data visualizations. And so, we build models that are not interoperable, even when they are modelling essentially the same thing. In this talk, I hope to convince you that by following the *Elements* approach to scientific communication, we can make our science work harder for ourselves while simultaneously working to make the world a better place.