OP-ED

Blinkered Vision: The Wider Effects of the US Shutdown

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The partial shutdown of the Federal government had far-reaching effects on US science, and STEM research in general: research programs were put on hold, clinical trials have been postponed or canceled, and scientists across many disciplines were on enforced, unpaid leave. Whilst this is devastating for many research programs in the US, there are much wider effects now being felt by the scientific community around the world. Science is, by its very nature, a highly collaborative and international endeavor. Scientists do not work in isolation, but often as part of global teams cooperating across many borders, both physical and political, and the current situation affects us all.

In astrophysics many of my colleagues at NASA were unable to continue with active research projects. Currently-operational missions had an exemption, so spacecraft - and astronauts - in flight were not jeopardized, but many of the scientists whose job it is to deal with the data flow and carry out the actual science which these expensive missions were intended to do, were unable to work, and publicly-accessible data archives have been suspended. In radio astronomy the National Radio Astronomy Observatory, the US agency which operates some of the best radio telescope facilities on the planet, has also had to close its doors. While a skeleton staff remained in order to maintain site security and ensure the safety of the telescopes (which are spread across the US from Hawaii to the Virgin Islands), experiments carefully planned by astronomers around the world were abandoned as the telescopes sat idle. Worse still, many of the data archives and databases which radio astronomers everywhere use were also off-line, hampering both researchers and the operational efforts of facilities in other countries.

One international casualty of the shutdown was a set of planned experiments using a technique known as Global Very Long Baseline Interferometry. This technique is a highly collaborative affair, with an array of radio telescopes spread throughout the US, Europe, Russia, China and South Africa, which cooperate for just a few weeks each year. By observing together, the array effectively becomes a telescope the size of planet Earth, capable of producing images of the sky at spectacularly high angular resolution. No other technique available to astronomers is capable of producing images in such detail, and the process of obtaining observing time with this array is highly competitive. This technique is only possible through the cooperation of universities and national institutes in many countries - all of the individual telescopes have their own local, open or national research programs and commitments to other scientific users, so little time is available for observations with the full array. Without the US-based telescopes, the resolution of the array diminishes significantly, making some experiments impossible. The next observing session for this array begins on October 16th, but may go ahead without the ten antennas in North America, affecting the research programs of the international teams who were successful at obtaining telescope time through the highly competitive proposal peer-review process. Since continued funding for their jobs depends on scientists continuing to produce research output, the unavailability of vital resources has potentially far-reaching effects.

Whilst astronomy is, admittedly, not the most important casualty of the shutdown, it does illustrate the broader international effects and implications for science. The longer budgetary uncertainty persists, the more likely it becomes that dedicated people vital to scientific operations in US labs or observatories will look elsewhere for employment. It is unlikely they would come back once government decides to stop arguing. As astrophysicists, we may not be developing a cure for cancer, but we are exploring the universe and working on some of the big scientific questions which human-kind has always asked. More than that, we are inspiring and training many future scientists who will go on to contribute to the wider economy - but only if we have the tools, and the financial stability, to do our jobs. If science as a whole is deemed essential to bringing our economies out of the depths of the financial crisis, then surely scientists should be considered essential workers?