

## Thanks to Trump, the Doomsday Clock Advances Toward Midnight e

Posted by Joan Russow

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Our organization, the Bulletin of the Atomic Scientists, is marking the 70th anniversary of its Doomsday Clock on Thursday by moving it 30 seconds closer to midnight. In 2016, the global security landscape darkened as the international community failed to come to grips with humanity's most pressing threats: nuclear weapons and climate change.

Making matters worse, the United States now has a president who has promised to impede progress on both of those fronts. Never before has the Bulletin decided to advance the clock largely because of the statements of a single person. But when that person is the new president of the United States, his words matter.

This is the closest to midnight that the clock has been since 1953, when it was moved to two minutes to midnight after United States and the Soviet Union tested their first thermonuclear weapons within six months of one another.

We understand that Mr. Trump has been in office only days, that many of his cabinet nominees are awaiting confirmation and that he has had little time to take official action.

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But Mr. Trump's statements and actions have been unsettling. He has made ill-considered comments about expanding and even deploying the American nuclear arsenal. He has expressed disbelief in the scientific consensus on global warming. He has shown a troubling propensity to discount or reject expert advice related to international security. And his nominees to head the Energy Department, the Environmental Protection Agency and the Office of Management and the Budget have disputed or questioned climate change.

Last year, and the year before, we warned that world leaders were failing to act with the speed and on the scale necessary to protect citizens from the extreme dangers posed by climate change and nuclear war. During the past year, the need for leadership intensified but was met with inaction and brinkmanship.

Other factors that led the committee to advance the Doomsday Clock included:

- North Korea's continuing nuclear weapons development, the steady march of arsenal modernization programs in the nuclear weapon states, simmering tension between nuclear-armed India and Pakistan, and stagnation in arms control. Russia is building new silo-based missiles, the new Borei class of nuclear ballistic missile submarines and new rail-mobile missiles as it revamps other intercontinental ballistic missiles. The United States is moving ahead with plans to modernize each part of its triad (bombers, land-based missiles and missile carrying submarines), adding capabilities, such as cruise missiles with increased ranges. As it improves the survivability of its own nuclear forces, China is helping Pakistan build submarine platforms. And Pakistan and India continue to update and expand their nuclear arsenals.

- Doubt over the future of the Iran nuclear deal, which succeeded in accomplishing its goals during its first year, in the Trump administration.

- Deteriorating relations between the United States and Russia, which possess more than 90 percent of the world's nuclear weapons. This was reflected in disputes over Ukraine, Syria, ballistic missile defenses in Europe and election interference. There seems to be little prospect that negotiations to reduce nuclear arms will resume. Whether this will improve under President Trump is unclear.

- Mixed results in global efforts to limit climate change. The Paris climate accord went into effect in 2016, and countries are taking some actions to bring down emissions of greenhouse gases. There are encouraging signs that global annual emissions were flat this past year, though there is no assurance this heralds a trend.

These are all matters in which President Trump has signaled that he would make matters worse either because of a mistaken belief that the threats posed by nuclear weapons and climate can be ignored or that the words of a president of the United States do not matter to the rest of the world.

Lawrence M. Krauss, a theoretical physicist at Arizona State University, is the chairman of the board of sponsors of the Bulletin of the Atomic Scientists. David Titley, a retired rear admiral

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