

**BOSTON
UNIVERSITY**

**Boston University College of Arts & Sciences
Center for Space Physics**

2018 - 2019 SPACE PHYSICS SEMINAR SERIES

Ionospheric Modification Experiments

The ionosphere is a region in the Earth's atmosphere which is ionised by extreme UV solar radiation and fluctuates in response to events such as solar flares, geomagnetic storms, and lightning. All of these can have a huge, and often adverse, impact on the performance of transionospheric radio systems. Traditionally, investigations into the ionosphere have been focused on measuring and modelling the naturally occurring effects in order to mitigate system impacts. More recently, however, research has been conducted into artificially modifying the ionosphere. Artificial Ionospheric Modification (AIM) attempts to alter a small region of the ionosphere in order to perturb the RF propagation environment. This can be achieved through injecting the ionosphere with aerosols, chemicals or radio signals. The effects of any such modification can be detected through the deployment of sensors, including ground based high-frequency (HF) sounders and dual-band Global Navigation Satellite System (GNSS) receivers. HF sounders allow measurements of the bottom-side of the ionosphere. GNSS receivers offer a convenient means of obtaining information about the ionosphere, including ionospheric disturbances through changes in the derived total electron content information. Recent campaigns have investigated both the chemical approach, such as the Metal Oxide Space Clouds (MOSC) experiment, and RF heating such as The Heating EXperiment (HEX), which used the Arecibo HF facility. This talk will present results from the two campaigns and identify key differences between the two approaches.



Thursday, October 18th

4:00 - 5:00 p.m.

725 Commonwealth Avenue | Room 502



Natasha Jackson-Booth

QinetiQ

Ionospheric and Space Weather Research